Sewer Acct.#: **1011728100**

Company: **SPECGX LLC**

Address: **3600 N 2nd St**

City: **St. Louis**

State and Zip: **MO 63147**

Industry ID	File Code	File Description
35331	31	INDUSTRY OVERFLOW

Sewer Acct. #: 2112059600

Company: **MALLINCKRODT INC**

Address: 3600 N 2nd St

City: St. Louis

State and Zip: MO , 63147

Ind_id	File Code	File Description
35350	30	INDUSTRY

ARCHIVED INDUSTRY

ACCOUNT NUMBER: **10117281-00**

COMPANY NAME: **MALLINCKRODT LLC**

CORRESPONDENCE

FROM: 11-29-11 THRU: 11-29-12

X	CORRESPONDANCE LOCATED IN OVERFLOW FILE

02-02-15 Moved to Archived IU files. MI

Metropolitan St. Louis Sewer District

Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

November 29, 2012

Amber Crouch
MALLINCKRODT, LLC
3600 N. 2nd St.
St. Louis, MO 63147

RE: NOTICE OF VIOLATION – WASTEWATER DISCHARGE PERMIT NO. 2112059600
For premise at: 3600 N. 2nd St.

Dear Ms. Crouch:

As our field personnel notified you on November 20, 2012, MSD personnel recently collected and analyzed samples of wastewater discharged to the MSD system from the premise above. Unfortunately, we identified the following violation:

VIOLATION OF DISCHARGE LIMITATIONS:

DATE	TIME	SAMPLE POINT	SAMPLE TYPE	POLLUTANT	DISCHARGE LIMIT	LIMIT TYPE	VALUE FOUND
11-20-12	0906	002	Grab	pH	5.5-11.5 SU	IN	11.68 SU

002 = MH 5' S of bldg #96, 30' E of SP 003, (6" pipe from NE, 3' down)
SU = Standard pH Units
IN = Instantaneous

Our field personnel also provided you with a Field Notice of Discharge Violation, copy enclosed, for the above pH violations. Please be aware that laboratory analyses of the samples collected may potentially result in other discharge violations. Should there be any, we will notify you of them upon completion of the analyses.

REQUIRED ACTION/RESPONSE:

1. Submit a report of corrective actions, to ensure compliance with MSD limitations for pH.
   In the report:
   a. Indicate which corrective actions are initiated and which are still to come
   b. Include plans for additional sampling to verify a return to compliance

2. Submit all additional sampling results to MSD. Sample collection must occur as follows:
   a. Sample at the identified sampling points
   b. Collect grab samples for pH
   c. Take samples at times representative of normal operations
   d. pH and temperature readings must be taken immediately when the sample is collected, and not after transporting to a laboratory for analysis
   e. pH readings must be measured using a pH probe, rather than with pH paper strips

3. Refer to the enclosure for additional information on:
   a. Potential enforcement actions should noncompliance continue
   b. Percentages applicable to Significant Noncompliance, when planning for additional sampling

4. Submit your response no later than **December 31, 2012**.

Thank you for helping us to comply with state and federal regulations. If you have any questions, please contact me at 314.436.8709.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Jason Gill
Environmental Engineering Associate

Enclosures: SNC enclosure, SP map, Field Notice

cc: Doug Mendoza
Chris Bulmahn

File: Mallinckrodt, LLC (10117281-00)

MSD

FIELD NOTICE OF DISCHARGE VIOLATION

METROPOLITAN ST. LOUIS SEWER DISTRICT
DIVISION OF ENVIRONMENTAL COMPLIANCE
10 EAST GRAND AVENUE
ST. LOUIS, MO 63147

COMPANY NAME Mallinckrodt PRETREATMENT ACCOUNT NO. 1011728100

MSD Industrial Waste Technicians conducted sampling of the wastewater discharge from your facility today. This sampling involved up to four separate visits to each sampling point (SP). The samples collected will be analyzed by the Division of Environmental Compliance laboratory and the results will become a part of the District's records for your facility.

Conditions, which we wish to bring to your attention at the earliest possible time, were noted during the sampling visits. These conditions may include pH and/or temperature readings which fell outside the limits allowed under MSD Sewer Use Ordinance 12559 or other conditions which may indicate a potential problem with the discharge from your facility.

SP NO.	TIME	pH	TEMP	OTHER CONDITIONS
002	9:06	11.68	20.2	

SP NO.	TIME	pH	TEMP	OTHER CONDITIONS

pH must be within the range of 5.5 to 11.5 at all times and the temperature may not exceed 60 degrees Celsius (140 degrees Fahrenheit) at any time.

Your company will receive a formal notice of the above violations as well as notice of any violations of other parameter limits which are detected during analysis by the MSD laboratory.

This field notice is provided to assist you in making an early determination of the cause of the above violations and to take immediate corrective actions. Please direct any questions you may have to Doug Mendoza at 314-436-8717.

Presented to company representative (Printed Name) Amber Crouch

(Signature) Amber Crouch

by MSD Ind. Waste Technician WESLEY WILLIAMS Date 11/20/12 Time 12:40

NOV-Field 1/08 Distribution: White Copy → Industry; Yellow Copy → Pretreatment Unit; Pink Copy → Field Unit

Metropolitan St. Louis Sewer District

Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

November 5, 2012

Amber Crouch
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Dear Ms. Crouch:

We have reviewed your application dated October 23, 2012 requesting approval to discharge 700 gallons of wastewater to the Metropolitan St. Louis Sewer District for treatment. This wastewater is an off-specification batch of iothalmic acid resulting from a process upset in Building 200 of the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri. We understand that the wastewater will be discharged through sampling point 010.

Based on the information and laboratory analytical report you provided, this wastewater meets MSD Ordinance 12559 standards and is approved for discharge into a combined sewer on site. The discharge into the sewer must be controlled at a rate that will not surcharge the lines in the area. **This approval is valid for 30 days from the date of this letter.**

You must be certain the waste is discharged into a combined sewer inlet only. This letter does not authorize any discharge to a separate storm sewer, or to any watercourse, as any such discharge would be in violation of state and federal laws. **Please notify me at the number below when the discharge is to commence, and please ensure the onsite personnel discharging the wastewater in question are provided with a copy of this letter.**

For billing purposes associated with this high strength wastewater, you must confirm the volume of this wastewater discharged to us, in writing, at the completion of the discharge. This report is due no later than 28 days after this approval expires. Please refer to this letter and include the date of the discharge when providing that figure. Under the provisions of Ordinance 13042, you will be billed by invoice at the billing rate in effect at the time of discharge. The current rate contained in MSD Ordinance 13042 is $310.07 per ton for COD over 600 mg/L. Using the COD concentration contained in the laboratory analytical report, and the proposed discharge volume provided in your application, it is estimated that you will be discharging under one ton of COD over 600 mg/L. (Our quantitative estimate is 0.28 tons COD times $310.07.) Please do not pay this amount until you receive our invoice.

This discharge has been approved based upon the information and sample analysis you provided and is subject to the conditions stated above. This approval may be revoked by the District at any time if any of the information is found to be incorrect, or if the conditions of this approval are violated. Also, if the discharge causes any operational or maintenance problem within the District's collection or treatment system, or results in violations of any conditions of the District's NPDES permit, Mallinckrodt will be considered responsible for damages.

If you have any questions, please call me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

ec: Brian Gibson
Doug Mendoza

File: IU, MALLINCKRODT LLC [1011728100]

C1A

SD EVALUATION CHECKLIST - ON SITE

APPLICATION INFORMATION

Source Name: Mallinckrodt LLC Evaluated by: SMG

Premise Address: 3600 N. 2nd St. Date: 11/5/12

Send approval letter to applicant

Application Dated: 10/23/12 Received: 10/23/12 All Requested Info. Received: 11/5/12

SOURCE FILING/DESCRIPTION

1 - Source in PIMS?	(Y) / N	
2 - If No, on IU Cross-Ref list? *	Y / N	SOURCE TYPE (circle):
3 - If No, MSD Account # from E-CIS?	Y / N	(IU) / Dead IU / SD
4 - If none, on "Source" list (pre-IMS)? **	Y / N	INDUSTRY ID:
5 - If No, assigned SOUR# from PIMS.		1011728-00

* o:\costrecovery\cross reference xls file

** o:\costrecovery\sourlist xls file

Sample Point: No. Assigned: 853 Description: off-spec batch of half amide soln. (iothalmic acid) resulting from a process upset

Normal WW flow from premise? N/A _____ ccf/month, 2,992,101 GPD, _____ GPH.

REGULATORY STATUS

Is waste a Hazardous Waste? (N) / Y _____

Categorical standards apply? (N) / Y _____

Contain PCB/ asbestos/ radioactive/ dioxin/ used oil? (N) / Y _____

Regulatory Agency Oversight? (N) / Y _____

DISCHARGE CONSIDERATIONS At MSD's connection:

Ordinance Limits (12559, p. 32) exceeded? (N) / Y _____

Ordinance other limits exceeded (dye, flash pt <140° F, temp >140° F, obstruction, nuisance foaming/odor, corrosion causing): (N) / Y _____

Water Quality Standard exceeded? (N) / Y _____

Fumes in sewer exceed PEL/TLV limits? (N) / Y _____

Vapors in sewer exceed 10% of LEL? (N) / Y _____

RECOMMENDATION: (APPROVE) / DENY (cc WWTP Mgr for timed discharge)

APPROVAL CONDITIONS:

Timed Discharge (COD/BOD/WQ/foam): (N) / Y Limit = _____ gal/hour

Require Treatment before Discharge? (N) / Y _____

Laboratory analysis fee due? (N) / Y $_____

SMR required? (N) / Y Frequency/analysis: _____

SMR log: (N/A) / Remediation.xls / Nonremediation.xls

Volume Billing applies (water unmetered or credited)? (N) / Y

Bill High Strength? N / (Y) Yes, If use >60,000 gal/month water ✓ and, > norm WW strgth

Surcharge calculation attached: N/A / N / (Y)

Expiration log updated: (N/A) / N / Y

O:\CostRecovery\Special Discharge\C1a.Checklist.doc

On-Site Special Discharge High Strength Flow Rate and Surcharge Calculator

1 GENERAL INFORMATION:

Date: 11/05/12
Calculated by: Steve Grace
Source name: MALLINCKRODT LLC [1011728100]
Waste material: off-spec batch of lothalmic acid (process upset) from Building 200
Discharge volume: 700 gallons

2 STRENGTH INFORMATION:

Sample BOD =	0	mg/l =	0	lbs BOD to be discharged
Sample COD =	96,100	mg/l =	561	lbs COD to be discharged
Sample TSS =	19	mg/l =	for surcharge calculation only	

3 PLANT DATA: 2007

Treatment area: Bissell

Max Loading = 10%

	Flow (MGD)	BOD (mg/L)	COD (mg/L)	BOD (lb/hr)	COD (lb/hr)	BOD (lb/hr)	COD (lb/hr)
Bissell	**119**	**174**	**348**	**7,171**	**14,341**	**717**	**1,434**
Coldwater	23	226	452	1,768	3,535	177	354
Fenton	5	307	614	482	964	48	96
Grand Glaize	16	152	399	830	2,183	83	218
Lemay	122	81	228	3,438	9,610	344	961
Lower Meramec	10	124	364	452	1,326	45	133
Missouri River	28	281	561	2,732	5,465	273	546

4 MINIMUM REQUIRED FLOW RATE:

	BOD (hours)	BOD (gpm)	COD (hours)	COD (gpm)
Bissell	**0.00**	**0**	**0.39**	**30**
Coldwater	0.00	0	1.59	7
Fenton	0.00	0	5.82	2
Grand Glaize	0.00	0	2.57	5
Lemay	0.00	0	0.58	20
Lower Meramec	0.00	0	4.23	3
Missouri River	0.00	0	1.03	11

5 SURCHARGE AND VOLUME BILLING

Is volume subject to billing? no (yes/no)
Ratio of BOD/COD = 0.00

(Sample BOD) - 300 = 0 mg/l subject to surcharge
(sample COD) - 600 = 95500 mg/l subject to surcharge
(sample TSS) - 300 = 0 mg/l subject to surcharge

If BOD/COD ratio <= 0.35, the following calculations use the COD value. Otherwise they use the BOD value

Current rates under Ordinance: 13402

Volume =	$	2.28	/CcF
BOD =	$	620.14	/ton
COD =	$	310.07	/ton
TSS =	$	231.35	/ton

Flow charge = $ - based on volume = 0.9 CcF
BOD surcharge = $ -
COD surcharge = $ 86.46
TSS surcharge = $ -
Total discharge charge = $ 86.46
Customer charge = $ 86.46 DEC charges special discharge customers for total charges > $20.00
Approximate charge/gallon = $ 0.12

Comments

require volume report for billing purposes. Smg

Metropolitan St. Louis Sewer District
2350 Market Street
St. Louis, MO 63103

APPLICATION FOR SPECIAL DISCHARGE APPROVAL

I. WASTEWATER SOURCE IDENTIFICATION:

Site Name: Mallinckrodt
Premise Address: 3600 N. 2nd Street
City: St. Louis State: MO Zip: 63147
Owner: Mallinckrodt
Contact Person: Amber Crouch
Title: Sr. Env. Specialist
Phone: 314-654-0127 Fax: 314-654-1251

II. APPLICANT (mailing information):

Applicant Name: Amber Crouch
Title: EHS department
Company Name: Mallinckrodt
Mailing Address: 3600 N. 2nd Street
City: St. Louis State: MO Zip: 63147
Phone: 314-654-0127 Fax: 314-654-1251

III. A. MATERIAL TO BE DISCHARGED (check all applicable boxes):

1. Wastewater description/location: Half Amide Solution
2. Process/activity generating wastewater: process upset
3. Physical and chemical composition: List all constituents, and known or potentially present regulated contaminants below.
   ☐ See separate listing enclosed, and/or ☐ See analytical results enclosed, and/or ☒ Material Safety Data Sheet enclosed.

DESCRIPTION	RANGE	UNIT
Half Amide	15-25	%
Water	75-85	%

DESCRIPTION *(continued)*	RANGE	UNIT

4. Is this wastewater from a process subject to EPA's categorical standards in 40 CFR Subchapter N? ☐ Yes ☒ No
   a. If yes, the applicable standards are in: 40 CFR Part _____, Subpart _____ ☐ Existing source ☐ New source
5. Does this wastewater contain polychlorinated biphenyls, asbestos or radioactive material? ☐ Yes ☒ No
   a. If yes, describe: _____
6. Representative sample: ☐ Laboratory results attached, and/or ☐ Sample provided (1/2 gallon minimum, clear container)
   a. Sample collection point/location: _____ Collection method: _____
   b. Sampler's name/Co.: _____ Sample date/time: _____
   c. Attach chain of custody as available
7. Discharge will occur over the following time period: ☒ < 30 days ☐ ≥ Two years ☐ Other: _____
   a. Expected total volume of wastewater to be discharged over the time period above: 700 Gallons
   b. Proposed discharge volume: 700 Gallons, at a frequency of: ☒ One time ☐ Daily ☐ Weekly ☐ Monthly ☐ Once/three months ☐ Once/six months ☐ Other: _____
8. Pretreatment of wastewater prior to discharge: ☐ None ☒ Yes, describe: pH adjust at main outfall SP010
   a. If yes, attach site plan, pretreatment system schematic, and design specifications.
9. Wastewater from a remediation project under: ☐ Superfund/CERCLA ☐ RCRA ☐ Voluntary program ☐ UST ☒ Not applicable
   a. If from a remediation project, briefly describe the past and present utilization of the property: _____

III.B. MATERIAL FROM UNDERGROUND STORAGE TANK SOURCE

☒ Not applicable (go to Section IV)

Please answer the following questions if you are requesting to discharge wastewater associated with an underground storage tank system.

1. a. Wastewater from: ☐ Inside UST(s) ☐ UST system pit ☐ Excavation outside UST system pit ☐ Monitoring well ☐ Groundwater remediation system

   b. UST project involves wastewater from: ☐ UST(s) closed in place ☐ UST(s) removed ☐ Remediation ☐ Upgrade ☐ Maintenance activities ☐ Well monitoring ☐ Other, explain: _____

   c. If wastewater is from a closure project, how long has UST(s) been out of service: _____ years

2. a. State assigned UST site identification number: _____ ☐ Not applicable

   b. Number of USTs affected: _____ ☐ Unknown

   c. For the UST(s) involved, their state identification number(s): _____ ☐ Not applicable

   d. Service Station Identification Number, as applicable: _____

3. Tank contents/former contents: ☐ Gasoline ☐ #2 diesel ☐ Used oil ☐ Unknown ☐ Other: _____

IV. DISCHARGE LOCATION

1. ☒ On-site. Describe proposed point of entry to sewer and the discharge rate (must be a sanitary or combined sewer): Plant Sewer to main out fall SP010 Note: Range of discharge must not surcharge sewer line.

2. ☐ Haul to MSD Bissell Point Hauled Waste Receiving Station at 10 E. Grand, St. Louis, MO.

   a. Transporters Name: _____ and MSD Hauler ID Number: _____

   b. Hazardous Waste Certification:

   For wastewater which is hauled to MSD's Bissell Point Hauled Waste Receiving Station, I hereby certify that to the best of my knowledge and belief, the above hauled waste is not classified as a RCRA "hazardous waste" as defined by the MDNR in 10 CSR 25 or USEPA in 40 CFR Part 261.

   Applicant Name (print): _____

   Signature: _____ **Date:** _____

ADDITIONAL INFORMATION:

_____

V. APPLICANT SIGNATURE AND CERTIFICATION

This application must be signed by the applicant: either the source contact, or a contractor or agent directly responsible for site activities.

I hereby certify that I am directly responsible for activities at the site regarding the wastewater to be discharged, and to the best of my knowledge and belief, based on appropriate inquiry, the information in this application is true, complete, and accurate. The samples or analyses submitted are representative of the materials to be discharged. If granted approval to discharge, I agree to abide by the MSD Ordinances, and all applicable federal, state and local regulations. I agree to pay the costs of any pre-approval analyses performed by MSD and to pay any applicable disposal charges for the volume and strength of the wastes discharged.

Applicant Name (print): Amber Crouch

Signature: Amber Crouch **Date:** 10/23/12

FOR MSD USE ONLY:

File Name: Mallinckrodt LLC ID No. 10117281-00 Sample Point No. 853

November 01, 2012

Amber Crouch
Mallinckrodt Inc.
3600 N. 2nd St.
St. Louis, MO 63147
TEL: (314) 654-0127
FAX: (314) 654-1251

RE: Bldg. 200W-Reduced Half-Amide **WorkOrder:** 12101434

Dear Amber Crouch:

TEKLAB, INC received 1 sample on 10/29/2012 2:30:00 PM for the analysis presented in the following report.

Samples are analyzed on an as received basis unless otherwise requested and documented. The sample results contained in this report relate only to the requested analytes of interest as directed on the chain of custody. NELAP accredited fields of testing are indicated by the letters NELAP under the Certification column. Unless otherwise documented within this report, Teklab Inc. analyzes samples utilizing the most current methods in compliance with 40CFR. All tests are performed in the Collinsville, IL laboratory unless otherwise noted in the Case Narrative.

All quality control criteria applicable to the test methods employed for this project have been satisfactorily met and are in accordance with NELAP except where noted. The following report shall not be reproduced, except in full, without the written approval of Teklab, Inc.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Shelly A Hennessy

Shelly A. Hennessy
Project Manager
(618)344-1004 ex 36
SHennessy@teklabinc.com

Client: Mallinckrodt Inc.

Work Order: 12101434

Client Project: Bldg. 200W-Reduced Half-Amide

Report Date: 01-Nov-12

Cooler Receipt Temp: 0.0 °C

Locations and Accreditations

Collinsville		Springfield		Kansas City	
Address	5445 Horseshoe Lake Road Collinsville, IL 62234-7425	Address	3920 Pintail Dr Springfield, IL 62711-9415	Address	8421 Nieman Road Lenexa, KS 66214
Phone	(618) 344-1004	Phone	(217) 698-1004	Phone	(913) 541-1998
Fax	(618) 344-1005	Fax	(217) 698-1005	Fax	(913) 541-1998
Email	jhriley@teklabinc.com	Email	kmcclain@teklabinc.com	Email	dthompson@teklabinc.com

State	Dept	Cert #	NELAP	Exp Date	Lab
Illinois	IEPA	100226	NELAP	1/31/2013	Collinsville
Kansas	KDHE	E-10374	NELAP	1/31/2013	Collinsville
Louisiana	LDEQ	166493	NELAP	6/30/2013	Collinsville
Louisiana	LDEQ	166578	NELAP	6/30/2013	Springfield
Texas	TCEQ	T104704515-12-1	NELAP	7/31/2013	Collinsville
Arkansas	ADEQ	88-0966		3/14/2013	Collinsville
Illinois	IDPH	17584		4/30/2013	Collinsville
Kentucky	UST	0073		5/26/2013	Collinsville
Missouri	MDNR	00930		4/13/2013	Collinsville
Oklahoma	ODEQ	9978		8/31/2013	Collinsville

Teklab, Inc.
Environmental Laboratory

Laboratory Results

http://www.teklabinc.com/

Client: Mallinckrodt Inc.
Work Order: 12101434
Client Project: Bldg. 200W-Reduced Half-Amide
Report Date: 01-Nov-12
Lab ID: 12101434-001
Client Sample ID: Bldg 22W-Reduced Half Amide
Matrix: AQUEOUS
Collection Date: 10/24/2012 10:00

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 410.4								
Chemical Oxygen Demand	NELAP	5000		**96100**	mg/L	100	10/30/2012 14:28	R169937
STANDARD METHOD 4500-H B, LABORATORY ANALYZED								
Lab pH	NELAP	1.00		**6.66**		1	10/30/2012 14:19	R169928
STANDARD METHODS 2540 D								
Total Suspended Solids	NELAP	6		**19**	mg/L	1	10/29/2012 18:40	R169867

Teklab, Inc.
Environmental Laboratory

Receiving Check List

http://www.teklabinc.com/

Client: Mallinckrodt Inc.

Client Project: Bldg. 200W-Reduced Half-Amide

Work Order: 12101434

Report Date: 01-Nov-12

Carrier: Ron Korte

Received By: EEP

Completed by: Timothy W. Mathis
On: 29-Oct-12

Reviewed by: Shelly A. Hennessy
On: 29-Oct-12

Pages to follow: Chain of custody 1 Extra pages included 0

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐	Temp °C 0.0
Type of thermal preservation?	None ☐	Ice ☑	Blue Ice ☐	Dry Ice ☐
Chain of custody present?	Yes ☑	No ☐		
Chain of custody signed when relinquished and received?	Yes ☑	No ☐		
Chain of custody agrees with sample labels?	Yes ☑	No ☐		
Samples in proper container/bottle?	Yes ☑	No ☐		
Sample containers intact?	Yes ☑	No ☐		
Sufficient sample volume for indicated test?	Yes ☑	No ☐		
All samples received within holding time?	Yes ☑	No ☐		
Reported field parameters measured:	Field ☐	Lab ☑	NA ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐		
When thermal preservation is required, samples are compliant with a temperature between 0.1°C - 6.0°C, or when samples are received on ice the same day as collected.				
Water – at least one vial per sample has zero headspace?	Yes ☐	No ☐	No VOA vials ☑	
Water - TOX containers have zero headspace?	Yes ☐	No ☐	No TOX containers ☑	
Water - pH acceptable upon receipt?	Yes ☐	No ☑		
NPDES/CWA TCN interferences checked/treated in the field?	Yes ☐	No ☐	NA ☑	

Any No responses must be detailed below or on the COC.

Additional sulfuric acid was needed upon arrival at the laboratory. EEP 10/29/12

CHAIN OF CUSTODY

pg. 1 of 1 Work Order # 1210 1434

TEKLAB, INC. 5445 Horseshoe Lake Road ~ Collinsville, IL 62234 ~ Phone: (618) 344-1004 ~ Fax: (618) 344-1005

Client: Mallinckrodt LLC
Address: 3600 N. 2nd Street
City / State / Zip: St. Louis, MO 63147
Contact: Amber Crouch Phone: 314-654-0127
E-Mail: Fax:

Samples on: ☒ Ice ☐ Blue Ice ☐ No Ice 0.0 °C
Preserved in: ☒ Lab ☐ Field FOR LAB USE ONLY
Lab Notes: 125 mL container needs add'l H_2SO_4

Comments:

- Are these samples known to be involved in litigation? If yes, a surcharge will apply. ☐ Yes ☒ No
- Are these samples known to be hazardous? ☐ Yes ☒ No
- Are there any required reporting limits to be met on the requested analysis? If yes, please provide limits in comment section. ☐ Yes ☒ No

Project Name / Number: Bldg. 200W - reduced half-amide
Sample Collector's Name: Tom Mahl
Results Requested: ☐ Standard ☐ 1-2 Day (100% Surcharge) ☐ Other_____ ☐ 3 Day (50% Surcharge)
Billing Instructions: —

Lab Use Only	Sample Identification	Date/Time Sampled	# and Type of Containers: UNPRES	HNO_3	NaOH	H_2SO_4	HCL	MeOH	$NaHSO_4$	Other	MATRIX: Water	Drinking Water	Soil	Sludge	Sp. Waste	INDICATE ANALYSIS REQUESTED: COD	TSS	pH
1210 1434 COL	Bldg. 200W-Reduced half amide	10/24/12 10:00am	1			1					X					X	X	X

Teklab, inc. Courier Pick Up

Relinquished By	Date / Time	Received By	Date / Time
Amber Crouch	10/29/12 1250	Ron [illegible]	10/29/12 1250
Ron [illegible]	10/29/12 230	[illegible]	10/29/12 14:30

The individual signing this agreement on behalf of client acknowledges that he/she has read and understands the terms and conditions of this agreement, on the reverse side, and that he/she has the authority to sign on behalf of client.

WHITE – LAB YELLOW – SAMPLER'S COPY

MSDS Number: **INTHA** * * * * * *Effective Date: 12/06/05* * * * * *Supercedes: 02/19/97*

MSDS Material Safety Data Sheet

From: Mallinckrodt Inc.
675 McDonnell Blvd.
St. Louis, MO 63042

MALLINCKRODT

24 Hour Emergency Telephone: 314-654-1600
CHEMTREC: 1-800-424-9300
National Response in Canada
CANUTEC: 613-996-6666
Outside U.S. And Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

HALF AMIDE

1. Product Identification

Synonyms: N-methyl-5-isophthalamic acid; Iothalamic acid half amide; Iothalamic acid intermediate
CAS No.: Not applicable to mixtures.
Molecular Weight: 242.16
Chemical Formula: C9H8O5N2
Product Codes: 4470

MSDS Not Scanned

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Half Amide	N/A	100%	Yes

3. Hazards Identification

Emergency Overview

As part of good industrial and personal hygiene and safety procedure, avoid all unnecessary exposure to the chemical substance and ensure prompt removal from skin, eyes and clothing.

Potential Health Effects

The health effects from exposure to Half Amide are not known, but are expected to be similar to Iothalamic acid.

Inhalation:
Can cause coughing, sneezing and possible breathing difficulty if inhaled in large amounts.
Ingestion:
Information on ingestion toxicity of the acid is limited but is believed to be low (sodium salt is an intravenous x-ray contrast medium). Large amounts may cause moderate gastrointestinal distress through digestive disassociation of the compound, so normal precautions against ingestion should be observed.
Skin Contact:
No adverse effects expected.
Eye Contact:

No adverse effects expected but dust may cause mechanical irritation.
Chronic Exposure:
No information found.
Aggravation of Pre-existing Conditions:
No adverse health effects expected.

4. First Aid Measures

Inhalation:
Remove to fresh air. Get medical attention for any breathing difficulty.
Ingestion:
If large amounts were swallowed, give water to drink and get medical advice.
Skin Contact:
Wash exposed area with soap and water. Get medical advice if irritation develops.
Eye Contact:
Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

5. Fire Fighting Measures

Fire:
Not expected to be a fire hazard.
Explosion:
No information found.
Fire Extinguishing Media:
Use any means suitable for extinguishing surrounding fire.
Special Information:
In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Sweep up and containerize for reclamation or disposal. Vacuuming or wet sweeping may be used to avoid dust dispersal.

7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:
None established.
Ventilation System:
A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.
Personal Respirators (NIOSH Approved):
For conditions of use where exposure to dust or mist is apparent and engineering controls are not feasible, a

particulate respirator (NIOSH type N95 or better filters) may be worn. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection:

Safety glasses. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:

White solid.

Odor:

Odorless.

Solubility:

Insoluble in water.

Specific Gravity:

No information found.

pH:

No information found.

% Volatiles by volume @ 21C (70F):

No information found.

Boiling Point:

No information found.

Melting Point:

No information found.

Vapor Density (Air=1):

No information found.

Vapor Pressure (mm Hg):

No information found.

Evaporation Rate (BuAc=1):

No information found.

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:

Burning may produce carbon monoxide, carbon dioxide, nitrogen oxides.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

No information found.

Conditions to Avoid:

No information found.

11. Toxicological Information

--------\Cancer Lists\----------

Ingredient	---NTP Carcinogen--- Known	Anticipated	IARC Category

Half Amide	No	No	None

12. Ecological Information

Environmental Fate:
No information found.
Environmental Toxicity:
No information found.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Not regulated.

15. Regulatory Information

--------\Chemical Inventory Status - Part 1\--------

Ingredient	TSCA	EC	Japan	Australia
Half Amide	Exempt	No	No	No

--------\Chemical Inventory Status - Part 2\--------

Ingredient	Korea	--Canada-- DSL	NDSL	Phil.
Half Amide	No	No	No	No

--------\Federal, State & International Regulations - Part 1\--------

Ingredient	-SARA 302- RQ	TPQ	------SARA 313------ List	Chemical Catg.
Half Amide	No	No	No	No

--------\Federal, State & International Regulations - Part 2\--------

Ingredient	CERCLA	-RCRA- 261.33	-TSCA- 8(d)
Half Amide	No	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: No Chronic: No Fire: No Pressure: No
Reactivity: No (Pure / Solid)

Australian Hazchem Code: None allocated.

Poison Schedule: None allocated.
WHMIS:
This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: **0** Flammability: **0** Reactivity: **0**
Label Hazard Warning:
As part of good industrial and personal hygiene and safety procedure, avoid all unnecessary exposure to the chemical substance and ensure prompt removal from skin, eyes and clothing.
Label Precautions:
None.
Label First Aid:
Not applicable.
Product Use:
Drug manufacturing intermediate.
Revision Information:
MSDS Section(s) changed since last revision of document include: 8.
Disclaimer:
****
Mallinckrodt provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose. MALLINCKRODT MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE INFORMATION SET FORTH HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS. ACCORDINGLY, MALLINCKRODT WILL NOT BE RESPONSIBLE FOR DAMAGES RESULTING FROM USE OF OR RELIANCE UPON THIS INFORMATION.
****

Prepared by: Environmental Health & Safety
Phone Number: (314) 654-1600 (U.S.A.)

MSD

TO: Chris Verplancke - Finance Department

FROM: Steven M. Grace – DEC SMG

DATE: November 2, 2012

RE: **Wastewater User Charge Billing for Special Discharge**

Please bill, by invoice, the following charges applicable to an on-site special discharge approved in our letter dated October 30, 1998, as modified in letters dated November 20, 1998, July 19, 1999, March 28, 2001, October 13, 2004, June 19, 2006, May 22, 2008, May 10, 2010, and May 24, 2012. The discharge dates and quantity are from information submitted by Sharon Cotner, Corps of Engineers, in a letter dated October 30, 2012. Please note that, as of July 1, 2012, the volume charge of $2.28 per 100 cubic feet of wastewater became effective.

This charge is based on the rates in MSD Wastewater User Charge Ordinance 13021.

PARTY TO BILL: Larry Joellenbeck
The Shaw Group Inc.
1 Angelrodt Street
St. Louis, MO 63147

BILLING IS FOR: On-Site Special Discharge

DISCHARGE PERIOD: July through September 2012

SOURCE OF WASTE: Treated construction water from the St. Louis Downtown FUSRAP Site located at Mallinckrodt, Inc., 3600 N. Second Street, St. Louis, Missouri.

Discharge Period	Billing Item	Quantity	Units	Rate	Charge
7/1/12 - 9/30/12	Volume	114	CcF	$2.28	$259.92
Totals:	---	114	CcF	---	$259.92

If you have any questions, please call me on extension 8755.

bv

pc: Becky Bartholomew – Finance Dept.
Mary Wimsatt – Finance Dept.
Laura Joiner – Finance Dept.
Brian Gibson
Doug Mendoza
Larry Joellenbeck, The Shaw Group Inc., 1 Angelrodt St., St. Louis, MO 63147

File: IU, MALLINCKRODT INC ~~[2112059000]~~

10117281-00

DEPARTMENT OF THE ARMY
ST. LOUIS DISTRICT, CORPS OF ENGINEERS
8945 LATTY AVENUE
BERKELEY, MISSOURI 63134

October 30, 2012

Formerly Utilized Sites Remedial Action Program (FUSRAP)

SUBJECT: Quarterly Metropolitan Sewer District (MSD) Self-Monitoring Report for July through September 2012, FUSRAP St. Louis Sites

Mr. Steve Grace
St. Louis Metropolitan Sewer District
Department of Environmental Compliance
10 East Grand Avenue
St. Louis, Missouri 63147-2913

RECEIVED
OCT 31 2012
DIVISION OF
ENVIRONMENTAL COMPLIANCE

Dear Mr. Grace:

During the third quarter of 2012, no batches of wastewater were discharged from the North St. Louis County Sites to the MSD.

During the third quarter of 2012, three batches of wastewater from the St. Louis Downtown Site were discharged to the MSD. Batch 499 occurred late in the second quarter of CY 2012 and is included in this report. Batch 502 occurred late in the third quarter of CY 2012 and will be included in the fourth quarter of 2012 report. For the batches reported in this quarter, 85,400 gallons of wastewater were discharged with activities of 4.8E-07 curies of thorium, 4.6E-06 curies of uranium, and 3.8E-07 curies of radium. All three batches (Batch 499, Batch 500, and Batch 501) were from Plant 6 West Half. Data for each discharge are presented on the attached pages.

Should you have any comments or questions regarding this letter, please feel free to contact Ms. Laura Ruf at (314) 260-3917.

Sincerely,

Sharon R. Cotner
FUSRAP Program Manager

Enclosures

FUSRAP SLDS
Self Monitoring Report for 3rd Quarter 2012

Parameter	Batch Number	Date of Discharge	Batch[1] Results	Amount Discharged (gallons)	Total Activity[3] per Discharge (Ci)	MSD Limits	10CFR20 Limits	10CFR20 Sum of Ratios
Gross Alpha (raw water)	SLDS-BK499[4]	06/13/12 (6WH)	<20 pCi/L	28,438	1.1E-06	3,000 pCi/L	3,000 pCi/L	
Gross Beta			<25 pCi/L		1.3E-06	N/A	N/A	
TH-228			0.4 pCi/L		4.3E-08	2,000 pCi/L	2,000 pCi/L	
TH-230			1 pCi/L		1.1E-07	1,000 pCi/L	1,000 pCi/L	
TH-232			0.3 pCi/L		3.2E-08	300 pCi/L	300 pCi/L	
Uranium (KPA)			14 pCi/L		1.5E-06	3,000 pCi/L	3,000 pCi/L	
RA-226			<2 pCi/L		8.3E-08	10 pCi/L	600 pCi/L	
RA-228[2]			0.4 pCi/L		4.3E-08	30 pCi/L	600 pCi/L	0.01
Total Suspended Solids			38 mg/L					
Gross Alpha (raw water)	SLDS-BK500	07/25/12 (6WH)	13 pCi/L	15,780	7.7E-07	3,000 pCi/L	3,000 pCi/L	
Gross Beta			12 pCi/L		7.4E-07	N/A	N/A	
TH-228			<1 pCi/L		1.5E-08	2,000 pCi/L	2,000 pCi/L	
TH-230			1 pCi/L		6.0E-08	1,000 pCi/L	1,000 pCi/L	
TH-232			<0.2 pCi/L		6.6E-09	300 pCi/L	300 pCi/L	
Uranium (KPA)			24 pCi/L		1.4E-06	3,000 pCi/L	3,000 pCi/L	
RA-226			<2 pCi/L		5.1E-08	10 pCi/L	600 pCi/L	
RA-228[2]			<1 pCi/L		1.5E-08	30 pCi/L	600 pCi/L	0.01
Total Suspended Solids			5 mg/L					
Gross Alpha (raw water)	SLDS-BK501[5,6]	08/08/12 -08/29/12 (6WH)	10 pCi/L	41,182	1.6E-06	3,000 pCi/L	3,000 pCi/L	
Gross Beta			<12 pCi/L		9.7E-07	N/A	N/A	
TH-228			<0.4 pCi/L		2.9E-08	2,000 pCi/L	2,000 pCi/L	
TH-230			1 pCi/L		1.6E-07	1,000 pCi/L	1,000 pCi/L	
TH-232			<0.5 pCi/L		3.5E-08	300 pCi/L	300 pCi/L	
Uranium (KPA)			11 pCi/L		1.7E-06	3,000 pCi/L	3,000 pCi/L	
RA-226			<2 pCi/L		1.6E-07	10 pCi/L	600 pCi/L	
RA-228[2]			<0.4 pCi/L		2.9E-08	30 pCi/L	600 pCi/L	0.01
Total Suspended Solids			12 mg/L					

NOTES:
[1] = Non-detect sample results are converted to half the detection limit.
[2] = Ra-228 assumed to be in equilibrium with Th-228
[3] = The weighted average was used to calculate the total activity.
[4] = Batch 499 occurred late in the Second Quarter and is included in this Third Quarter Report.
[5] = See Attachment 1 - Batch 501 Discharge Table
[6] = Batch 502 occurred late in the Third Quarter and will be included in the Fourth Quarter Report.
N/A = Not applicable

Total Activity Discharged in 3rd Quarter of CY12 (Ci)

TH-228	8.7E-08
TH-230	3.2E-07
TH-232	7.4E-08
Uranium (KPA)	4.6E-06
RA-226	2.9E-07
RA-228[2]	8.7E-08

Total Activity Discharged through 09/30/12 (Ci)

TH-228	6.1E-07
TH-230	1.6E-05
TH-232	3.8E-07
Uranium (KPA)	2.6E-05
RA-226	1.8E-06
RA-228[2]	6.1E-07

Total Volume Discharged in 3rd Quarter of CY12 (gal)

Gallons	85,400

Total Volume Discharged through 09/30/12 (gal)

Gallons	498,609

Attachment 1
FUSRAP SLDS
Batch 501 Discharge Table 08/08/12 - 08/29/12

Date:	08/08/12	08/29/12	Total	**Result[2,3]**
Volume Discharged:	15,818	25,364	41,182	
Sample ID:	SLD135436	SLD135437		
SLDS				
Gross Alpha, raw water, unfiltered (HISS, pCi/L):	13	8		10
Gross Beta, raw water, unfiltered (HISS, pCi/L):	8	-1		3
Total Uranium, KPA (filtered, HISS, pCi/L):	17	7		11
TSS (HISS, mg/L):	8	15		12
Isotopics (HISS, pCi/L):				
Th-228	0.45	0.28		0.35
Th-230	0.71	0.67		0.69
Th-232	-0.03	-0.06		-0.05
Ra-226	0.37	0.62		0.52
Ra-228[1]	0.45	0.28		0.35

NOTES:

[1] = Ra-228 and Th-228 assumed to be in equilibrium

[2] = Volume weighted average was used to calculate the total activity.

[3] = Highest MDA used for calculation

N/A = Not applicable

Batch	Sample ID	Analyte	Collection Date	Units	MDA	Lab ID	Location	Results
Batch 499 (01)	SLD135434TW	Gross Beta	6/13/2012	pCi/L	24.8995216	HISS	6WH LOADOUT	15.73170968
Batch 499 (01)	SLD135434TW	Gross Alpha of TSS FILTRATE	6/13/2012	pCi/L	19.7005037	HISS	6WH LOADOUT	6.744085555
Batch 499 (01)	SLD135434TW	Gross Beta of TSS FILTRATE	6/13/2012	pCi/L	24.8995216	HISS	6WH LOADOUT	-5.47189902
Batch 499 (01)	SLD135434TW	TotalU	6/13/2012	pCi/L	2.5	HISS	6WH LOADOUT	14.052
Batch 499 (01)	SLD135434TW	pH	6/13/2012	pH units	0.1	HISS	6WH LOADOUT	8.02
Batch 499 (01)	SLD135434TW	RA-226	6/13/2012	pCi/L	1.546	HISS	6WH LOADOUT	1.26
Batch 499 (01)	SLD135434TW	TH-228	6/13/2012	pCi/L	0.1771	HISS	6WH LOADOUT	0.3922
Batch 499 (01)	SLD135434TW	TH-230	6/13/2012	pCi/L	0.4817	HISS	6WH LOADOUT	1.178
Batch 499 (01)	SLD135434TW	TH-232	6/13/2012	pCi/L	0.177	HISS	6WH LOADOUT	0.3266
Batch 499 (01)	SLD135434TW	Total Suspended Solids	6/13/2012	mg/L	2.12	HISS	6WH LOADOUT	37.6
Batch 499 (01)	SLD135434TW	Gross Alpha	6/13/2012	pCi/L	19.7005037	HISS	6WH LOADOUT	16.55366454
Batch 500 (01)	SLD135435TW	Total Suspended Solids	7/25/2012	mg/L	2.12	HISS	6WH LOADOUT	4.8
Batch 500 (01)	SLD135435TW	Gross Alpha	7/25/2012	pCi/L	9.46265644	HISS	6WH LOADOUT	12.95742804
Batch 500 (01)	SLD135435TW	Gross Beta	7/25/2012	pCi/L	11.3027785	HISS	6WH LOADOUT	12.40403906
Batch 500 (01)	SLD135435TW	Gross Alpha of TSS FILTRATE	7/25/2012	pCi/L	9.46265644	HISS	6WH LOADOUT	20.02511607
Batch 500 (01)	SLD135435TW	Gross Beta of TSS FILTRATE	7/25/2012	pCi/L	11.3027785	HISS	6WH LOADOUT	9.261682499
Batch 500 (01)	SLD135435TW	TotalU	7/25/2012	pCi/L	2.5	HISS	6WH LOADOUT	23.5251
Batch 500 (01)	SLD135435TW	pH	7/25/2012	pH units	0.1	HISS	6WH LOADOUT	7.71
Batch 500 (01)	SLD135435TW	RA-226	7/25/2012	pCi/L	1.702	HISS	6WH LOADOUT	-5.347E-06
Batch 500 (01)	SLD135435TW	TH-228	7/25/2012	pCi/L	0.4956	HISS	6WH LOADOUT	0.3718
Batch 500 (01)	SLD135435TW	TH-230	7/25/2012	pCi/L	0.4962	HISS	6WH LOADOUT	0.7858
Batch 500 (01)	SLD135435TW	TH-232	7/25/2012	pCi/L	0.2238	HISS	6WH LOADOUT	0.08257
Batch 501 (01)	SLD135436TW	Total Suspended Solids	8/8/2012	mg/L	2.12	HISS	6WH LOADOUT	7.8
Batch 501 (01)	SLD135436TW	Gross Alpha	8/8/2012	pCi/L	9.46265644	HISS	6WH LOADOUT	12.66294104
Batch 501 (01)	SLD135436TW	Gross Beta	8/8/2012	pCi/L	11.3027785	HISS	6WH LOADOUT	8.434746562
Batch 501 (01)	SLD135436TW	Gross Alpha of TSS FILTRATE	8/8/2012	pCi/L	9.46265644	HISS	6WH LOADOUT	23.26447308
Batch 501 (01)	SLD135436TW	Gross Beta of TSS FILTRATE	8/8/2012	pCi/L	11.3027785	HISS	6WH LOADOUT	6.615487499
Batch 501 (01)	SLD135436TW	TotalU	8/8/2012	pCi/L	2.5	HISS	6WH LOADOUT	17.35165
Batch 501 (01)	SLD135436TW	pH	8/8/2012	pH units	0.1	HISS	6WH LOADOUT	7.65
Batch 501 (01)	SLD135436TW	RA-226	8/8/2012	pCi/L	2.046	HISS	6WH LOADOUT	0.365
Batch 501 (01)	SLD135436TW	TH-228	8/8/2012	pCi/L	0.174	HISS	6WH LOADOUT	0.4493
Batch 501 (01)	SLD135436TW	TH-230	8/8/2012	pCi/L	0.1742	HISS	6WH LOADOUT	0.707
Batch 501 (01)	SLD135436TW	TH-232	8/8/2012	pCi/L	0.3848	HISS	6WH LOADOUT	-0.03208
Batch 501 (02)	SLD135437TW	RA-226	8/29/2012	pCi/L	1.52	HISS	6WH LOADOUT	0.6195
Batch 501 (02)	SLD135437TW	TH-228	8/29/2012	pCi/L	0.3675	HISS	6WH LOADOUT	0.2757
Batch 501 (02)	SLD135437TW	TH-230	8/29/2012	pCi/L	0.1662	HISS	6WH LOADOUT	0.6747
Batch 501 (02)	SLD135437TW	TH-232	8/29/2012	pCi/L	0.4507	HISS	6WH LOADOUT	-0.06124
Batch 501 (02)	SLD135437TW	Gross Alpha	8/29/2012	pCi/L	9.88562256	HISS	6WH LOADOUT	8.245636028
Batch 501 (02)	SLD135437TW	Gross Beta	8/29/2012	pCi/L	12.4676305	HISS	6WH LOADOUT	-0.66154875
Batch 501 (02)	SLD135437TW	Gross Alpha of TSS FILTRATE	8/29/2012	pCi/L	9.88562256	HISS	6WH LOADOUT	7.656662026
Batch 501 (02)	SLD135437TW	Gross Beta of TSS FILTRATE	8/29/2012	pCi/L	12.4676305	HISS	6WH LOADOUT	-5.78855156
Batch 501 (02)	SLD135437TW	TotalU	8/29/2012	pCi/L	2.5	HISS	6WH LOADOUT	6.526376
Batch 501 (02)	SLD135437TW	pH	8/29/2012	pH units	0.1	HISS	6WH LOADOUT	7.66
Batch 501 (02)	SLD135437TW	Total Suspended Solids	8/29/2012	mg/L	2.12	HISS	6WH LOADOUT	15.2

Metropolitan St. Louis Sewer District
Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

October 22, 2012

Amber Crouch
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Dear Ms. Crouch:

We have reviewed your application dated October 19, 2012 requesting approval to discharge 500 gallons of wastewater to the Metropolitan St. Louis Sewer District for treatment. This wastewater is a 25% ethylene glycol solution from the chiller system associated with the boiler house at the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri. We understand that the wastewater will be discharged through sampling point 010. Information provided on the application indicates this wastewater is being generated as a result of demolition of the boiler house chiller system tank.

Based on the information you provided, this wastewater meets MSD Ordinance 12559 standards and is approved for discharge into a combined sewer on site. The discharge into the sewer must be controlled at a rate that will not surcharge the lines in that area. **This approval is valid for 30 days from the date of this letter.**

You must be certain the waste is discharged into a combined sewer inlet only. This letter does not authorize any discharge to a separate storm sewer, or to any watercourse, as any such discharge would be in violation of state and federal laws. **Please notify me at the number below when the discharge is to commence, and please ensure the onsite personnel discharging the wastewater in question are provided with a copy of this letter.**

For billing purposes associated with this high strength wastewater, you must confirm the volume of this wastewater discharged to us, in writing, at the completion of the discharge. This report is due no later than 28 days after this approval expires. Please refer to this letter and include the date of the discharge when providing that figure. Under the provisions of Ordinance 13042, you will be billed by invoice at the billing rate in effect at the time of discharge. The current rate contained in MSD Ordinance 13042 is $310.07 per ton for COD over 600 mg/L. Using the assumed COD concentration based on the percent of ethylene glycol contained in the wastewater in question, and the proposed discharge volume provided in your application, it is estimated that you will be discharging just over one half tons of COD over 600 mg/L. (Our quantitative estimate is 0.52 tons COD times $310.07.) Please do not pay this amount until you receive our invoice.

This discharge has been approved based upon the information and sample analysis you provided and is subject to the conditions stated above. This approval may be revoked by the District at any time if any of the information is found to be incorrect, or if the conditions of this approval are violated. Also, if the discharge causes any operational or maintenance problem within the District's collection or treatment system, or results in violations of any conditions of the District's NPDES permit, Mallinckrodt will be considered responsible for damages.

If you have any questions, please call me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

ec: Brian Gibson
Doug Mendoza

File: IU, MALLINCKRODT INC [1011728100]

C1A

SD EVALUATION CHECKLIST - ON SITE

APPLICATION INFORMATION

Source Name: Mallinckrodt Inc. Evaluated by: SMG

Premise Address: 3600 N. 2nd St. Date: 10/22/12

Send approval letter to applicant

Application Dated: 10/19/12 Received: 10/19/12 All Requested Info. Received: 10/22/12

SOURCE FILING/DESCRIPTION

1 - Source in PIMS? (Y) / N

2 - If No, on IU Cross-Ref list? * Y / N

3 - If No, MSD Account # from E-CIS? Y / N

4 - If none, on "Source" list (pre-IMS)? ** Y / N

5 - If No, assigned SOUR# from PIMS.

* o:\costrecovery\cross reference xls file

** o:\costrecovery\sourlist xls file

SOURCE TYPE (circle): (IU) / Dead IU / SD

INDUSTRY ID: 10117281-00

Sample Point: No. Assigned: 820 Description: 25% ethylene glycol soln. from chiller system assoc. w/boiler house

Normal WW flow from premise? (N/A) _____ ccf/month, _____ GPD, _____ GPH.

REGULATORY STATUS

Is waste a Hazardous Waste? (N) / Y

Categorical standards apply? (N) / Y

Contain PCB/ asbestos/ radioactive/ dioxin/ used oil? (N) / Y

Regulatory Agency Oversight? (N) / Y

DISCHARGE CONSIDERATIONS At MSD's connection:

Ordinance Limits (12559, p. 32) exceeded? (N) / Y

Ordinance other limits exceeded (dye, flash pt <140° F, temp >140° F, obstruction, nuisance foaming/odor, corrosion causing): (N) / Y

Water Quality Standard exceeded? (N) / Y

Fumes in sewer exceed PEL/TLV limits? (N) / Y

Vapors in sewer exceed 10% of LEL? (N) / Y

RECOMMENDATION: (APPROVE) / DENY (cc WWTP Mgr for timed discharge)

APPROVAL CONDITIONS:

Timed Discharge (COD/BOD/WQ/foam): (N) / Y Limit = _____ gal/hour

Require Treatment before Discharge? (N) / Y

Laboratory analysis fee due? (N) / Y $_____

SMR required? (N) / Y Frequency/analysis: _____

SMR log: (N/A) / Remediation.xls / Nonremediation.xls

Volume Billing applies (water unmetered or credited)? (N) / Y

Bill High Strength? N / (Y) Yes, If use >60,000 gal/month water ✓ and, > norm WW strgth

Surcharge calculation attached: N/A / N / (Y)

Expiration log updated: (N/A) / N / Y

O:\CostRecovery\Special Discharge\C1a.Checklist.doc

On-Site Special Discharge High Strength Flow Rate and Surcharge Calculator

1 GENERAL INFORMATION:

Date: 10/22/12
Calculated by: Steve Grace
Source name: MALLINCKRODT INC, SP820
Waste material: 25% ethylene glycol soultion at Boiler house
Discharge volume: 500 gallons

2 STRENGTH INFORMATION:

Sample BOD =	0	mg/l =	0	lbs BOD to be discharged
Sample COD =	250,000	mg/l =	1043	lbs COD to be discharged
Sample TSS =	0	mg/l =	for surcharge calculation only	

3 PLANT DATA: 2007

Treatment area: Bissell

	Flow (MGD)	BOD (mg/L)	COD (mg/L)	BOD (lb/hr)	COD (lb/hr)	Max Loading = 10% BOD (lb/hr)	COD (lb/hr)
Bissell	119	174	348	7,171	14,341	717	1,434
Coldwater	23	226	452	1,768	3,535	177	354
Fenton	5	307	614	482	964	48	96
Grand Glaize	16	152	399	830	2,183	83	218
Lemay	122	81	228	3,438	9,610	344	961
Lower Meramec	10	124	364	452	1,326	45	133
Missouri River	28	281	561	2,732	5,465	273	546

4 MINIMUM REQUIRED FLOW RATE:

	BOD (hours	BOD (gpm)	COD (hours)	COD (gpm)
Bissell	0.00	0	0.73	11
Coldwater	0.00	0	2.95	3
Fenton	0.00	0	10.81	1
Grand Glaize	0.00	0	4.77	2
Lemay	0.00	0	1.08	8
Lower Meramec	0.00	0	7.86	1
Missouri River	0.00	0	1.91	4

5 SURCHARGE AND VOLUME BILLING

Is volume subject to billing? no (yes/no)
Ratio of BOD/COD = 0.00

(Sample BOD) - 300 = 0 mg/l subject to surcharge
(sample COD) - 600 = 249400 mg/l subject to surcharge
(sample TSS) - 300 = 0 mg/l subject to surcharge

If BOD/COD ratio <= 0.35, the following calculations use the COD value. Otherwise they use the BOD value

Current rates under Ordinance: 13402

Volume = $ 2.28 /CcF
BOD = $ 620.14 /ton
COD = $ 310.07 /ton
TSS = $ 231.35 /ton

Flow charge = $ - based on volume = 0.7 CcF
BOD surcharge = $ -
COD surcharge = $ 161.28
TSS surcharge = $ -
Total discharge charge = $ 161.28
Customer charge = $ 161.28 DEC charges special discharge customers for total charges > $20.00
Approximate charge/gallon = $ 0.32

Comments

require volume report for billing purposes. Smg

Metropolitan St. Louis Sewer District
2350 Market Street
St. Louis, MO 63103

APPLICATION FOR SPECIAL DISCHARGE APPROVAL

I. WASTEWATER SOURCE IDENTIFICATION:

Site Name: Mallinckrodt
Premise Address: 3600 N. 2nd St.
City: St. Louis State: MO Zip: 63147
Owner: Mallinckrodt
Contact Person: Amber Crouch
Title: EHS
Phone: 314-654-0127 Fax: 314-654-1251

II. APPLICANT (mailing information):

Applicant Name: Amber Crouch
Title: EHS
Company Name: Mallinckrodt
Mailing Address: 3600 N. 2nd St.
City: St. Louis State: MO Zip: 63147
Phone: 314-654-0127 Fax: 314-654-1251

III. A. MATERIAL TO BE DISCHARGED (check all applicable boxes):

1. Wastewater description/location: Ethylene Glycol & water
2. Process/activity generating wastewater: Demo of Boilerhouse Tank
3. Physical and chemical composition: List all constituents, and known or potentially present regulated contaminants below.
   ☐ See separate listing enclosed, and/or ☐ See analytical results enclosed, and/or ☒ Material Safety Data Sheet enclosed.

DESCRIPTION	RANGE	UNIT
ethylene glycol	25	%
water	75	%

DESCRIPTION *(continued)*	RANGE	UNIT

4. Is this wastewater from a process subject to EPA's categorical standards in 40 CFR Subchapter N? ☐ Yes ☒ No
   a. If yes, the applicable standards are in: 40 CFR Part _____, Subpart _____ ☐ Existing source ☐ New source
5. Does this wastewater contain polychlorinated biphenyls, asbestos or radioactive material? ☐ Yes ☒ No
   a. If yes, describe: _____
6. Representative sample: ☐ Laboratory results attached, and/or ☐ Sample provided (1/2 gallon minimum, clear container)
   a. Sample collection point/location: _____ Collection method: _____
   b. Sampler's name/Co.: _____ Sample date/time: _____
   c. Attach chain of custody as available
7. Discharge will occur over the following time period: ☒ < 30 days ☐ ≥ Two years ☐ Other: _____
   a. Expected total volume of wastewater to be discharged over the time period above: _____ Gallons
   b. Proposed discharge volume: 500 Gallons, at a frequency of: ☐ One time ☐ Daily ☐ Weekly ☐ Monthly ☐ Once/three months ☐ Once/six months ☐ Other: _____
8. Pretreatment of wastewater prior to discharge: ☐ None ☒ Yes, describe: pH adjust @ main outfall
   a. If yes, attach site plan, pretreatment system schematic, and design specifications.
9. Wastewater from a remediation project under: ☐ Superfund/CERCLA ☐ RCRA ☐ Voluntary program ☐ UST ☒ Not applicable
   a. If from a remediation project, briefly describe the past and present utilization of the property: _____

III.B. MATERIAL FROM UNDERGROUND STORAGE TANK SOURCE

☒ Not applicable (go to Section IV)

Please answer the following questions if you are requesting to discharge wastewater associated with an underground storage tank system.

1. a. Wastewater from: ☐ Inside UST(s) ☐ UST system pit ☐ Excavation outside UST system pit ☐ Monitoring well ☐ Groundwater remediation system

   b. UST project involves wastewater from: ☐ UST(s) closed in place ☐ UST(s) removed ☐ Remediation ☐ Upgrade ☐ Maintenance activities ☐ Well monitoring ☐ Other, explain: _____

   c. If wastewater is from a closure project, how long has UST(s) been out of service: _____ years

2. a. State assigned UST site identification number: _____ ☐ Not applicable

   b. Number of USTs affected: _____ ☐ Unknown

   c. For the UST(s) involved, their state identification number(s): _____ ☐ Not applicable

   d. Service Station Identification Number, as applicable: _____

3. Tank contents/former contents: ☐ Gasoline ☐ #2 diesel ☐ Used oil ☐ Unknown ☐ Other: _____

IV. DISCHARGE LOCATION

1. ☒ On-site. Describe proposed point of entry to sewer and the discharge rate (must be a sanitary or combined sewer): _____
   Plant Sewer to main outfall SP010 Note: Range of discharge must not surcharge sewer line.

2. ☐ Haul to MSD Bissell Point Hauled Waste Receiving Station at 10 E. Grand, St. Louis, MO.

   a. Transporters Name: _____ and MSD Hauler ID Number: _____

   b. Hazardous Waste Certification:

   For wastewater which is hauled to MSD's Bissell Point Hauled Waste Receiving Station, I hereby certify that to the best of my knowledge and belief, the above hauled waste is not classified as a RCRA "hazardous waste" as defined by the MDNR in 10 CSR 25 or USEPA in 40 CFR Part 261.

   Applicant Name (print): _____

   Signature: _____ **Date:** _____

ADDITIONAL INFORMATION:

_____

V. APPLICANT SIGNATURE AND CERTIFICATION

This application must be signed by the applicant: either the source contact, or a contractor or agent directly responsible for site activities.

I hereby certify that I am directly responsible for activities at the site regarding the wastewater to be discharged, and to the best of my knowledge and belief, based on appropriate inquiry, the information in this application is true, complete, and accurate. The samples or analyses submitted are representative of the materials to be discharged. If granted approval to discharge, I agree to abide by the MSD Ordinances, and all applicable federal, state and local regulations. I agree to pay the costs of any pre-approval analyses performed by MSD and to pay any applicable disposal charges for the volume and strength of the wastes discharged.

Applicant Name (print): Amber Crouch

Signature: Amber Crouch **Date:** 10/19/12

FOR MSD USE ONLY:

File Name: Mallinckrodt Inc. ID No. 10117281-00 Sample Point No. 820

MSD

COVIDIEN

Mallinckrodt.
1011 728100

October 22, 2012

Mr. Doug Mendoza
Metropolitan St. Louis Sewer District
Department of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147

Re: 2012 3rd Quarter Self-Monitoring Report for Permit No. 21120596 – 3.1

Dear Mr. Mendoza,

Please find enclosed the 2012 3rd Quarter Self-Monitoring report for Mallinckrodt Inc.

The following sample points received no pharmaceutical process water flow during the second quarter: SP935.

CT Excavation activities continued during the third quarter 2012 and there were multiple discharges under the Special Discharge Permit issued for wastewater generated from CT remediation activities. A summary of the discharges is provided in the Industrial User Radioactive Discharge Report included in this submittal.

Our planned electrical shut down occurred on September 28th through October 1st. As stated in our letter to you dated September 4th, 2012, the two lift station outfalls SP008 and SP011 overflowed directly to MSD during this time. Samples were taken and analyzed and are included in this report as well as pH readings during the overflow event for September 28th, 29th and 30th. The pH readings for October 1st, 2012 will be included in the 4th Quarter Self-Monitoring report.

Also stated in the September 4th, 2012 letter was that we would be completing a sewer project and diverting a portion of the flow from the lift station at SP011 to a MSD sewer. Samples were not required for this overflow. pH readings and flow for this overflow are included in this report with the Sample Point 011 report.

RECEIVED
OCT 24 2012
DIVISION OF
ENVIRONMENTAL COMPLIANCE

COVIDIEN/MALLINCKRODT
3600 NORTH SECOND STREET
ST. LOUIS, MO 63147

TELEPHONE: 314-654-2000
FAX: 314-654-1251

COVIDIEN

If you have any questions or require more detailed information, please contact me at 314-654-0127.

Sincerely,

Amber Crouch

Amber Crouch
Sr. Environmental Specialist

ENCLOSURES

COVIDIEN/MALLINCKRODT
3600 NORTH SECOND STREET
ST. LOUIS, MO 63147

TELEPHONE: 314-654-2000
FAX: 314-654-1251

METROPOLITAN ST. LOUIS SEWER DISTRICT
2012 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 05-01-2011 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: _____(JAN-MAR) ____(APR-JUNE) _X___(JULY-SEPT) _____(OCT-DEC)

Samples Collected By: Mallinckrodt Inc

Analysis Performed By: Teklab

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->>		**001**						
DATES ON WHICH SAMPLES WERE COLLECTED	----->>		NA						
TIMES AT WHICH SAMPLES WERE COLLECTED	----->>								
PARAMETER	LIMIT	**RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW** G=grab,C=composite,M=measured flow,E=estimated flo							UNITS
FLOW		E	1,000						gal/day
NO MONITORING REQUIRED (Sanitary Only)									
There have been no change in the character of the wastes discharged since the last report.									

METROPOLITAN ST. LOUIS SEWER DISTRICT
2012 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 05-01-2011 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: _____(JAN-MAR) _____(APR-JUNE) __X__(JULY-SEPT) __(OCT-DEC)

Samples Collected By: Mallinckrodt Inc

Analysis Performed By: Teklab

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->		**002**					
DATES ON WHICH SAMPLES WERE COLLECTED	----->		NA					
TIMES AT WHICH SAMPLES WERE COLLECTED	----->							
PARAMETER	LIMIT	**RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW** G=grab,C=composite,M=measured flow,E=estimated flo						UNITS
FLOW		E	2,200					gal/day
NO MONITORING REQUIRED (Sanitary Only)								
There have been no change in the character of the wastes discharged since the last report.								

METROPOLITAN ST. LOUIS SEWER DISTRICT
2012 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 05-01-2011 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: ____(JAN-MAR) ____(APR-JUNE) _X___(JULY-SEPT) ____(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS ----->		003		009		099		
DATES ON WHICH SAMPLES WERE COLLECTED ----->		8/7/2012		8/7/2012		calculated		
TIMES AT WHICH SAMPLES WERE COLLECTED ----->		0710, 0810, 0910, 1010		0735, 0835, 0935, 1035		n/a		
PARAMETER	LIMIT	RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW G=grab,C=composite,M=measured flow,E=estimated flow						UNITS
FLOW		M	21,341	M	12,960	E	8,381	gal/day
Oil & Grease	200	G	7	G	8	E	5	mg/l
Biochemical Oxygen Demand	****	C	165	C	385	E	0*	mg/l
Chemical Oxygen Demand	****	C	422	C	993	E	0*	mg/l
Total Suspended Solids	****	C	34	C	72	E	0*	mg/l
Temperature	****	G	36	G	27	E	32	deg C
pH	****	G	7.0	G	7.0	E	7.0	S.U.
Lab Dilution Factor			1		1, 5			

**** No limits for SP003 or SP009;
monitoring requirement only for calculation at SP099

* Calculated value was less than zero.

METROPOLITAN ST. LOUIS SEWER DISTRICT
2012 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 06-01-2010 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: _____(JAN-MAR) _____(APR-JUNE) _X___(JULY-SEPT) _____(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->		**005**					
DATES ON WHICH SAMPLES WERE COLLECTED	----->		8/7/2012					
TIMES AT WHICH SAMPLES WERE COLLECTED	----->		0720, 0820, 0920, 1020					
PARAMETER	LIMIT	**RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW** G=grab,C=composite,M=measured flow,E=estimated flo						UNITS
FLOW		E	32,000					gal/day
Oil & Grease	200	G	2					mg/l
Biochemical Oxygen Demand	****	C	14					mg/l
Chemical Oxygen Demand	****	C	56					mg/l
Total Suspended Solids	****	C	<6					mg/l
Temperature	60	G	32					deg C
pH	5.5 - 11.5	G	7.0					S.U.
**** No limits for SP005								
Lab Dilution Factor			1					

METROPOLITAN ST. LOUIS SEWER DISTRICT
2012 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 05-01-2011 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: ____(JAN-MAR) ____(APR-JUNE) __X__(JULY-SEPT) ____(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->		**008**					
DATES ON WHICH SAMPLES WERE COLLECTED	----->		9/28/2012					
TIMES AT WHICH SAMPLES WERE COLLECTED	----->		0845					
PARAMETER	LIMIT	**RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW** G=grab,C=composite,M=measured flow,E=estimated flow						UNITS
FLOW		E	130,000 ✓					gal/day
Oil & Grease	200	G	4 ✓					mg/l
Biochemical Oxygen Demand	****	G	30 ✓					mg/l
Chemical Oxygen Demand	****	G	66 ✓					mg/l
Temperature	60	G	23 ✓					deg C
Total Suspended Solids	****	G	7 ✓					mg/L
pH	5.5 - 11.5	G	see attached sheet					S.U.
Lab Dilution Factor			NA					

Electrical Shutdown Manual pH Monitoring			
Date	Friday, September 28th, 2012		
Sample Point	SP008		
Time	pH	Time	pH
0810	No Flow	2005	No Flow
0840	No Flow	2035	No Flow
0910	7.77	2105	No Flow
0935	7.19	2135	No Flow
1005	7.06	2205	No Flow
1035	6.6	2235	No Flow
1105	6.34	2305	6.46
1135	6.07	2335	6.49
1205	5.85		
1235	5.9		
1305	6.27		
1335	6.2		
1405	5.82		
1435	No Flow		
1505	No Flow		
1535	No Flow		
1605	No Flow		
1635	No Flow		
1708	No Flow		
1735	No Flow		
1805	No Flow		
1835	No Flow		
1905	No Flow		
1935	No Flow		

Electrical Shutdown Manual pH Monitoring			
Date	Saturday, September 29th, 2012		
Sample Point	SP008		
Time	pH	Time	pH
0005	8.08	1235	7.92
0035	8.32	1305	7.51
0105	8.57	1335	7.65
0135	8.64	1405	7.56
0205	8.72	1435	7.27
0235	7.75	1505	7.57
0305	8.82	1535	No Flow
0335	8.75	1605	No Flow
0405	8.75	1635	8
0435	8.75	1705	8.02
0505	8.77	1735	8.17
0535	8.17	1805	8.33
0605	9.47	1835	8.36
0635	9.08	1905	8.43
0705	8.97	1935	8.55
0735	8.23	2005	8.72
0805	8.21	2035	8.84
0835	8.12	2105	8.87
0905	8.04	2135	8.89
0935	8.15	2205	8.55
1005	8.2	2235	8.6
1035	8.02	2305	6.42
1105	8.12	2335	6.5
1135	8.00		
1205	7.96		

Electrical Shutdown Manual pH Monitoring			
Date	Sunday, September 30th, 2012		
Sample Point	SP008		
Time	pH	Time	pH
0005	6.56	1235	8.8
0035	6.72	1305	8.85
0105	6.98	1335	8.88
0135	7.21	1405	8.92
0205	7.63	1435	8.94
0235	7.82	1505	8.95
0305	8.47	1535	8.95
0335	8.52	1605	8.97
0405	8.71	1635	8.97
0435	8.74	1705	8.98
0505	8.78	1735	8.99
0535	8.84	1805	8.93
0605	8.87	1835	8.87
0635	8.33	1905	8.84
0705	8.7	1935	8.76
0735	8	2005	8.83
0805	8.33	2035	8.77
0835	7.82	2105	8.72
0905	7.51	2135	8.84
0935	7.48	2205	8.81
1005	7.39	2235	8.83
1035	8.37	2305	8.79
1105	8.26	2335	8.81
1135	8.22		
1205	8.78		

METROPOLITAN ST. LOUIS SEWER DISTRICT
2012 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 05-01-2011 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: ____(JAN-MAR) ____(APR-JUNE) _X__(JULY-SEPT) ____(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	---->		**008**						
DATES ON WHICH SAMPLES WERE COLLECTED	---->		9/28/2012						
TIMES AT WHICH SAMPLES WERE COLLECTED	---->		0845						
PARAMETER	LIMIT	**RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW** G=grab,C=composite,M=measured flow,E=estimated fld							UNITS
FLOW		E	130,000						gal/day
1,1,1-Trichloroethane		G	<0.005						mg/l
1,1,2,2-Tetrachloroethane		G	<0.005						mg/l
1,1,2-Trichloroethane		G	<0.005						mg/l
1,1-Dichloroethane		G	<0.005						mg/l
1,1-Dichloroethene		G	<0.005						mg/l
1,2-Dichlorobenzene		G	<0.005						mg/l
1,2-Dichloroethane		G	<0.005						mg/l
1,2-Dichloropropane		G	<0.005						mg/l
1,3-Dichlorobenzene		G	<0.005						mg/l
1,4-Dichlorobenzene		G	<0.005						mg/l
2-Chloroethylvinylether		G	<0.020						mg/l
Acrolein		G	<0.100						mg/l
Acrylonitrile		G	<0.005						mg/l
Benzene		G	<0.002						mg/l
Bromodichloromethane		G	<0.005						mg/l
Bromoform		G	<0.005						mg/l
Bromomethane		G	<0.010						mg/l
Carbon Tetrachloride		G	<0.005						mg/l
Chlorobenzene		G	<0.005						mg/l
Chloroethane		G	<0.010						mg/l
Chloroform		G	0.0026						mg/l
Chloromethane		G	<0.010						mg/l
cis-1,3-Dicholropropene		G	<0.005						mg/l
Dibromochloromethane		G	<0.005						mg/l
Ethylbenzene		G	<0.005						mg/l
Methylene Chloride		G	0.0012						mg/l
Tetrachloroethene		G	<0.005						mg/l
Toluene		G	<0.005						mg/l
1,2-Dichloroethene		G	<0.005						mg/l
trans-1,3-Dichloropropene		G	<0.005						mg/l
Trichloroethene		G	<0.005						mg/l
Vinyl Chloride		G	0.0016						mg/l
1,2,4-Trichlorobenzene		G	<0.042						mg/l
2,4,6-Trichlorophenol		G	<0.042						mg/l
2,4-Dichlorophenol		G	<0.042						mg/l
2,4-Dimethylphenol		G	<0.042						mg/l
2,4-Dinitrophenol		G	<0.083						mg/l
2,4-Dinitrotoluene		G	<0.042						mg/l
2,6-Dinitrotoluene		G	<0.042						mg/l
2-Chloronapthalene		G	<0.042						mg/l
2-Chlorophenol		G	<0.042						mg/l
2-Nitrophenol		G	<0.083						mg/l
3,3-Dichlorobenzidine		G	<0.042						mg/l
2-Methyl-4,6-dinitrophenol		G	<0.083						mg/l
4-Bromophenyl-phenylether		G	<0.042						mg/l
4-Chloro-3-methylphenol		G	<0.083						mg/l
4-Chlorophenyl-phenylether		G	<0.042						mg/l
4-Nitrophenol		G	<0.083						mg/l
Acenapthene		G	<0.042						mg/l
Acenaphthylene		G	<0.042						mg/l
Anthracene		G	<0.042						mg/l
Benzidine		G	<0.167						mg/l
Benzo(a)anthracene		G	<0.042						mg/l
Benzo(a)pyrene		G	<0.042						mg/l

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 05-01-2011 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: ____(JAN-MAR) ____(APR-JUNE) _X__(JULY-SEPT) ____(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->		**008**					
DATES ON WHICH SAMPLES WERE COLLECTED	----->		9/28/2012					
TIMES AT WHICH SAMPLES WERE COLLECTED	----->		0845					
PARAMETER	LIMIT	**RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW** G=grab,C=composite,M=measured flow,E=estimated flo						UNITS
FLOW		E	130,000					gal/day
Benzo(b)fluoranthene		G	<0.042					mg/l
Benzo(g,h,i)perylene		G	<0.042					mg/l
Benzo(k)fluoranthene		G	<0.042					mg/l
Bis(2-chloroethoxy)methane		G	<0.042					mg/l
Bis(2-chloroethyl)ether		G	<0.042					mg/l
Bis(2-chloroisopropyl)ether		G	<0.042					mg/l
Bis(2-ethylhexyl)phthalate		G	<0.025					mg/l
Butyl benzyl phthalate		G	<0.042					mg/l
Chrysene		G	<0.042					mg/l
Dibenzo(a,h)anthracene		G	<0.042					mg/l
Diethyl phthalate		G	<0.042					mg/l
Dimethyl phthalate		G	<0.042					mg/l
Di-n-butyl phthalate		G	<0.042					mg/l
Di-n-octyl-phthalate		G	<0.042					mg/l
Fluorene		G	<0.042					mg/l
Fluoranthene		G	<0.042					mg/l
Hexachlorobenzene		G	<0.042					mg/l
Hexachlorobutadiene		G	<0.042					mg/l
Hexachlorocyclopentadiene		G	<0.083					mg/l
Hexachloroethane		G	<0.042					mg/l
Ideno(1,2,3-cd)pyrene		G	<0.042					mg/l
Isophorone		G	<0.042					mg/l
Naphthalene		G	<0.042					mg/l
Nitrobenzene		G	<0.042					mg/l
N-nitrosodimethylamine		G	<0.083					mg/l
N-nitrosodi-n-propylamine		G	<0.042					mg/l
N-nitrosodiphenylamine		G	<0.042					mg/l
Pentachlorophenol		G	<0.083					mg/l
Phenanthrene		G	<0.042					mg/l
Phenol		G	<0.021					mg/l
Pyrene		G	<0.042					mg/l
1,2-Diphenylhydrazine		G	<0.042					mg/l
Total Toxic Organics	5.844	--	2.955					mg/l
Lab Dilution Factor			1,5					

METROPOLITAN ST. LOUIS SEWER DISTRICT
2012 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 06-01-2010 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: ____(JAN-MAR) ____(APR-JUNE) _X___(JULY-SEPT) _____(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->		**010**					
DATES ON WHICH SAMPLES WERE COLLECTED	----->		8/7/2012					
TIMES AT WHICH SAMPLES WERE COLLECTED	----->		0750, 0850, 0950, 1050					
PARAMETER	LIMIT	**RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW** G=grab,C=composite,M=measured flow,E=estimated flo						UNITS
FLOW		E	1,142,913					gal/day
Oil & Grease	200	G	16					mg/l
Biochemical Oxygen Demand	****	C	245					mg/l
Chemical Oxygen Demand	****	C	876					mg/l
Total Suspended Solids	****	C	154					mg/l
Temperature	60	G	38					deg C
pH	5.5 - 11.5	G	see attached					S.U.
Chromium	5.0	C	0.015					mg/l
Copper	2.7	C	0.022					mg/l
Nickel	2.3	C	0.021					mg/l
Zinc	3.0	C	0.048					mg/l
Lab Dilution Factor			1, 1.54, 2, 5					

Mallinckrodt pH Monitoring for SP010: July 2012 through September 2012

Date / Time	pH	pH	Total for Event in Minutes
7/16/12 9:00	52	5.2	5
7/23/12 21:25	55	5.5	5
		July Total:	**10**

Mallinckrodt pH Monitoring for SP010: August 2012

Date / Time	pH	pH	Total for Event in Minutes
8/6/12 10:10	48	4.8	5
		August Total:	**5**

Mallinckrodt pH Monitoring for SP010: September 2012

Date / Time	pH	pH	Total for Event in Minutes
9/6/12 8:20	42	4.2	5
9/15/12 3:00	52	5.2	5
		September Total:	**10**

METROPOLITAN ST. LOUIS SEWER DISTRICT
2012 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

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Permit No.: 2112059600 - 3 Effective Date: 05-01-2011 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: ___(JAN-MAR) ____(APR-JUNE) _X___(JULY-SEPT) ____(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->>		**011**						
DATES ON WHICH SAMPLES WERE COLLECTED	----->>		9/28/2012						
TIMES AT WHICH SAMPLES WERE COLLECTED	----->>		0800						
PARAMETER	LIMIT	**RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW** G=grab,C=composite,M=measured flow,E=estimated flow							UNITS
FLOW		E	14,000						gal/day
Oil & Grease	200	G	3						mg/l
Biochemical Oxygen Demand	****	G	6						mg/l
Chemical Oxygen Demand	****	G	<50						mg/l
Total Suspended Solids	****	G	5						mg/l
Temperature	60	G	22						deg C
pH	5.5 - 11.5	G	see attached sheets						S.U.
Lab Dilution Factor			NA						

Electrical Shutdown Manual pH Monitoring			
Date	Friday, September 28th, 2012		
Sample Point	**SP011**		
Time	pH	Time	pH
0800	8.44	2000	9.61
0830	9.44	2030	9.62
0900	9.07	2100	9.62
0930	9.31	2130	9.62
1000	10.57	2200	9.62
1030	9.83	2230	9.62
1100	9.65	2300	9.62
1130	9.48	2330	9.62
1200	9.42		
1230	9.89		
1300	9.23		
1330	9.17		
1400	9.29		
1430	9.09		
1500	9.41		
1530	9.5		
1600	9.54		
1630	9.55		
1700	9.58		
1730	9.58		
1800	9.57		
1830	9.57		
1900	9.58		
1930	9.6		

Electrical Shutdown Manual pH Monitoring			
Date	Saturday, September 29th, 2012		
Sample Point	**SP011**		
Time	pH	Time	pH
0000	9.52	1230	9.58
0030	9.57	1300	9.6
0100	9.58	1330	9.46
0130	9.62	1400	9.5
0200	9.62	1430	8.57
0230	9.62	1500	9.54
0300	9.62	1530	9.56
0330	9.62	1600	9.56
0400	9.62	1630	9.54
0430	9.67	1700	9.4
0500	9.65	1730	9.51
0530	9.59	1800	9.44
0600	9.62	1830	9.34
0630	9.63	1900	9.53
0700	9.64	1930	9.59
0730	9.84	2000	9.54
0800	9.64	2030	9.61
0830	9.64	2100	9.62
0900	9.65	2130	9.62
0930	9.62	2200	9.61
1000	9.63	2230	9.61
1030	9.62	2300	9.61
1100	9.61	2330	9.61
1130	9.63		
1200	9.6		

Electrical Shutdown Manual pH Monitoring			
Date	Sunday, September 30th, 2012		
Sample Point	**SP011**		
Time	pH	Time	pH
0000	9.61	1230	9.54
0030	9.62	1300	9.55
0100	9.61	1330	9.55
0130	9.61	1400	9.49
0200	9.61	1430	9.54
0230	9.61	1500	9.55
0300	9.63	1530	9.51
0330	9.63	1600	9.52
0400	9.63	1630	9.55
0430	9.63	1700	9.55
0500	9.62	1730	9.55
0530	9.62	1800	9.54
0600	9.58	1830	9.53
0630	9.6	1900	9.53
0700	9.59	1930	9.57
0730	9.59	2000	9.54
0800	9.59	2030	9.55
0830	9.61	2100	9.54
0900	9.61	2130	9.53
0930	9.58	2200	9.54
1000	9.61	2230	9.52
1030	9.59	2300	9.52
1100	9.59	2330	9.52
1130	9.59		
1200	9.56		

Electrical Shutdown Manual pH Monitoring			
Date	Friday, September 28th, 2012		Flow = 800 gal/ min
Sample Point	Sewer Project (diverted from SP011)		
Time	pH	Time	pH
0915	8	1515	7
0930	7.5	1530	8
0945	7.5	1545	7.5
1000	7	1600	8
1015	7	1615	7
1030	7.5	1630	7
1045	8	1645	7.5
1100	7	1700	7
1115	7.5	1715	7
1130	7.5	1730	7
1145	7	1745	7
1200	7.5	1800	7.5
1215	7.5	1815	7.5
1230	7.5	1830	7.5
1245	7	1845	8
1300	7.5	1900	8
1315	7.5	1915	8
1330	7.5	1930	8
1345	7	1945	7.5
1400	8	2000	7
1415	7.5		
1430	7		
1445	7.5		
1500	7.5		

Electrical Shutdown Manual pH Monitoring	
Date	Saturday, September 29th, 2012 Flow = 800 gal/ min
Sample Point	Sewer Project (diverted from SP011)
Time	pH
0730	7.5
0745	8
0800	8.5
0815	8.5
0830	7.5
0845	7.5
0900	7.5
0915	7.5
0930	7.5
0945	7
1000	7.5
1015	7
1030	7
1045	7.5
1100	7.5
1115	7
1130	7.5
1145	7.5
1200	7.5
1215	7.5
1230	7
1245	7.5
1300	7.5
1315	7.5

Electrical Shutdown Manual pH Monitoring	
Date	Sunday, September 30th, 2012 Flow = 800 gal/ min
Sample Point	Sewer Project (diverted from SP011)
Time	pH
0700	7
0715	7
0730	7.5
0745	7.5
0800	7.5
0815	7.5
0830	7
0845	7.5
0900	7.5
0915	7.5
0930	7.5
0945	7.5

METROPOLITAN ST. LOUIS SEWER DISTRICT
2012 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 05-01-2011 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: ____(JAN-MAR) _____(APR-JUNE) _X___(JULY-SEPT) ____(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->		**011**					
DATES ON WHICH SAMPLES WERE COLLECTED	----->		9/28/2012					
TIMES AT WHICH SAMPLES WERE COLLECTED	----->		0800					
PARAMETER	LIMIT	**RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW** G=grab,C=composite,M=measured flow,E=estimated flo						UNITS
FLOW		E	14,000					gal/day
1,1,1-Trichloroethane		G	<0.005					mg/l
1,1,2,2-Tetrachloroethane		G	<0.005					mg/l
1,1,2-Trichloroethane		G	<0.005					mg/l
1,1-Dichloroethane		G	<0.005					mg/l
1,1-Dichloroethene		G	<0.005					mg/l
1,2-Dichlorobenzene		G	<0.005					mg/l
1,2-Dichloroethane		G	<0.005					mg/l
1,2-Dichloropropane		G	<0.005					mg/l
1,3-Dichlorobenzene		G	<0.005					mg/l
1,4-Dichlorobenzene		G	<0.005					mg/l
2-Chloroethylvinylether		G	<0.020					mg/l
Acrolein		G	<0.100					mg/l
Acrylonitrile		G	<0.005					mg/l
Benzene		G	<0.002					mg/l
Bromodichloromethane		G	<0.005					mg/l
Bromoform		G	<0.005					mg/l
Bromomethane		G	<0.010					mg/l
Carbon Tetrachloride		G	<0.005					mg/l
Chlorobenzene		G	<0.005					mg/l
Chloroethane		G	<0.010					mg/l
Chloroform		G	0.0046					mg/l
Chloromethane		G	<0.010					mg/l
cis-1,3-Dicholropropene		G	<0.005					mg/l
Dibromochloromethane		G	<0.005					mg/l
Ethylbenzene		G	<0.005					mg/l
Methylene Chloride		G	<0.005					mg/l
Tetrachloroethene		G	<0.005					mg/l
Toluene		G	<0.005					mg/l
trans-1,2-Dichloroethene		G	<0.005					mg/l
trans-1,3-Dichloropropene		G	<0.005					mg/l
Trichloroethene		G	<0.005					mg/l
Vinyl Chloride		G	<0.002					mg/l
1,2,4-Trichlorobenzene		G	<0.042					mg/l
2,4,6-Trichlorophenol		G	<0.042					mg/l
2,4-Dichlorophenol		G	<0.042					mg/l
2,4-Dimethylphenol		G	<0.042					mg/l
2,4-Dinitrophenol		G	<0.083					mg/l
2,4-Dinitrotoluene		G	<0.042					mg/l
2,6-Dinitrotoluene		G	<0.042					mg/l
2-Chloronapthalene		G	<0.042					mg/l
2-Chlorophenol		G	<0.042					mg/l
2-Nitrophenol		G	<0.083					mg/l
3,3-Dichlorobenzidine		G	<0.042					mg/l
2-Methyl-4,6-dinitrophenol		G	<0.083					mg/l
4-Bromophenyl-phenylether		G	<0.042					mg/l
4-Chloro-3-methylphenol		G	<0.083					mg/l
4-Chlorophenyl-phenylether		G	<0.042					mg/l
4-Nitrophenol		G	<0.083					mg/l
Acenapthene		G	<0.042					mg/l
Acenaphthylene		G	<0.042					mg/l
Anthracene		G	<0.042					mg/l
Benzidine		G	<0.167					mg/l
Benzo(a)anthracene		G	<0.042					mg/l

METROPOLITAN ST. LOUIS SEWER DISTRICT
2012 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 05-01-2011 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: ____(JAN-MAR) _____(APR-JUNE) _X___(JULY-SEPT) ____(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->		**011**					
DATES ON WHICH SAMPLES WERE COLLECTED	----->		9/28/2012					
TIMES AT WHICH SAMPLES WERE COLLECTED	----->		0800					
PARAMETER	LIMIT	**RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW** G=grab,C=composite,M=measured flow,E=estimated flo						UNITS
FLOW		E	14,000					gal/day
Benzo(a)pyrene		G	<0.042	/				mg/l
Benzo(b)fluoranthene		G	<0.042					mg/l
Benzo(g,h,i)perylene		G	<0.042					mg/l
Benzo(k)fluoranthene		G	<0.042					mg/l
Bis(2-chloroethoxy)methane		G	<0.042					mg/l
Bis(2-chloroethyl)ether		G	<0.042					mg/l
Bis(2-chloroisopropyl)ether		G	<0.042					mg/l
Bis(2-ethylhexyl)phthalate		G	<0.025	/				mg/l
Butyl benzyl phthalate		G	<0.042					mg/l
Chrysene		G	<0.042					mg/l
Dibenzo(a,h)anthracene		G	<0.042					mg/l
Diethyl phthalate		G	<0.042	/				mg/l
Dimethyl phthalate		G	<0.042	/				mg/l
Di-n-butyl phthalate		G	<0.042					mg/l
Di-n-octyl-phthalate		G	<0.042					mg/l
Fluoranthene		G	<0.042					mg/l
Fluorene		G	<0.042					mg/l
Hexachlorobenzene		G	<0.042					mg/l
Hexachlorobutadiene		G	<0.042	/				mg/l
Hexachlorocyclopentadiene		G	<0.083	/				mg/l
Hexachloroethane		G	<0.042	/				mg/l
Ideno(1,2,3-cd)pyrene		G	<0.042					mg/l
Isophorone		G	<0.042					mg/l
Naphthalene		G	<0.042					mg/l
Nitrobenzene		G	<0.042	/				mg/l
N-nitrosodimethylamine		G	<0.083	/				mg/l
N-nitrosodi-n-propylamine		G	<0.042					mg/l
N-nitrosodiphenylamine		G	<0.042					mg/l
Pentachlorophenol		G	<0.083					mg/l
Phenanthrene		G	<0.042	/				mg/l
Phenol		G	<0.021	/				mg/l
Pyrene		G	<0.042					mg/l
1,2-Diphenylhydrazine		G	<0.042					mg/l
Total Toxic Organics	5.844	--	2.962					mg/l
Lab Dilution Factor			1					

METROPOLITAN ST. LOUIS SEWER DISTRICT
2012 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3.1 Effective Date: 05-01-2011 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: _____(JAN-MAR) ___(APR-JUN) _X___(JULY-SEP) _____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS					**080**							
DATES ON WHICH SAMPLES WERE COLLECTED					8/22/2012							
TIMES AT WHICH SAMPLES WERE COLLECTED					10:00, 11:00, 12:00, 1:00							
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS** G=Grab, C-composite, M=measured flow, E=estimated								UNITS
FLOW				E	3,500							gal/day
Acetone	524.2	20.70	8.20	G	<1.000							mg/L
n-Amyl Acetate	1666	20.70	8.20	G	<0.100							mg/L
Benzene	524.2	3.00	0.70	G	0.026							mg/L
n-Butyl acetate	1666	20.70	8.20	G	<0.100							mg/L
Chlorobenzene	524.2	3.00	0.70	G	<0.100							mg/L
Chloroform*	524.2	0.10	0.03	G	<0.02							mg/L
1,2-Dichlorobenzene	524.2	20.70	8.20	G	<0.100							mg/L
1,2-Dichloroethane	524.2	20.70	8.20	G	<0.100							mg/L
Diethyl amine	1671	255.00	100.00	G	<50							mg/L
Ethyl Acetate	1666	20.70	8.20	G	<0.200							mg/L
n-Heptane	1666	3.00	0.70	G	<0.200							mg/L
n-Hexane	1666	3.00	0.70	G	<0.200							mg/L
Isobutyraldehyde	1666	20.70	8.20	G	<0.200							mg/L
Isopropyl acetate	1666	20.70	8.20	G	<0.100							mg/L
Isopropyl ether	1666	20.70	8.20	G	<0.100							mg/L
Methylene chloride	524.2	3.00	0.70	G	<0.100							mg/L
Methyl formate	1666	20.70	8.20	G	<1.000							mg/L
4-Methyl-2-pentanone	1666	20.70	8.20	G	<0.200							mg/L
Tetrahydrofuran	1666	9.20	3.40	G	<0.400							mg/L
Toluene	524.2	0.30	0.20	G	<0.100							mg/L
Triethyl amine	1671	255.00	100.00	G	<20							mg/L
Xylenes	1666	3.00	0.70	G	<0.260							mg/L
Oil & Grease	1664	200		G	2							mg/L
Biochemical Oxygen Demand		****		C	<5							mg/L
Chemical Oxygen Demand		****		C	<50							mg/L
Total Suspended Solids		****		C	21							mg/L
Temperature		60		G	27.4							deg C
pH		5.5 - 11.5		G	7.7							S.U.
***Chloroform Results**	**Raw Water**	**SP080**										
8/22/2012	**<0.02**	**<0.02**										
Results above reported as the difference between SP080 and Raw Water												
If Raw Water result is > than SP936 result, the result for SP080 will be used												
Shaded values represent detection limits												
Dilution by lab					1,20							

METROPOLITAN ST. LOUIS SEWER DISTRICT
2012 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 06-01-2010 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: ____(JAN-MAR) _____ (APR-JUNE) __X___(JULY-SEPT) ____(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS		----->		**905**			
DATES ON WHICH SAMPLES WERE COLLECTED		----->		8/2/2012			
TIMES AT WHICH SAMPLES WERE COLLECTED		----->		9:30			
	MONTHLY LIMIT (ave)	DAILY MAX LIMIT	**RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW** G=grab,C=composite,M=measured flow,E=estimated flow				
PARAMETER	(gm/day)	(gm/day)			Lab results mg/L		UNITS
FLOW			M	67134			gal/day
1,2,4-Trichlorobenzene	74	301	G	2.03	0.008		gm/day
1,2-Dichlorobenzene	74	301	G	1.27	0.005		gm/day
1,3-Dichlorobenzene	54	144	G	1.27	0.005		gm/day
1,4-Dichlorobenzene	54	144	G	1.27	0.005		gm/day
2-Nitrophenol	25	87	G	4.07	0.016		gm/day
2-Methyl-4,6-dinitrophenol	30	105	G	4.07	0.016		gm/day
4-Nitrophenol	61	218	G	4.07	0.016		gm/day
Acenapthene	7	18	G	2.03	0.008		gm/day
Anthracene	7	18	G	2.03	0.008		gm/day
Bis(2-ethylhexyl)phthalate	36	98	G	1.27	0.005		gm/day
Diethyl phthalate	17	43	G	2.03	0.008		gm/day
Dimethyl phthalate	7	18	G	2.03	0.008		gm/day
Di-n-butyl phthalate	8	16	G	2.03	0.008		gm/day
Fluoranthene	8	20	G	2.03	0.008		gm/day
Fluorene	7	18	G	2.03	0.008		gm/day
Hexachlorobenzene	74	301	G	2.03	0.008		gm/day
Hexachlorobutadiene	54	144	G	2.03	0.008		gm/day
Hexachloroethane	74	301	G	2.03	0.008		gm/day
Naphthalene	7	18	G	2.03	0.008		gm/day
Phenanthrene	7	18	G	2.03	0.008		gm/day
Pyrene	8	18	G	2.03	0.008		gm/day
1,1,1-Trichloroethane	8	22	G	1.27	0.005		gm/day
1,1,2-Trichloroethane	12	48	G	1.27	0.005		gm/day
1,1-Dichloroethane	8	22	G	1.27	0.005		gm/day
1,1-Dichloroethene	8	23	G	1.27	0.005		gm/day
1,2-Dichloroethane	74	301	G	1.27	0.005		gm/day
1,2-Dichloropropane	74	301	G	1.27	0.005		gm/day
Benzene	22	51	G	0.51	0.002		gm/day
Carbon Tetrachloride	54	144	G	1.27	0.005		gm/day
Chlorobenzene	54	144	G	1.27	0.005		gm/day
Chloroethane	42	112	G	2.54	0.010		gm/day
Chloroform	42	123	G	0.89	0.004		gm/day
Chloromethane	42	112	G	2.54	0.010		gm/day
cis-1,3-Dichloropropene	74	301	G	1.27	0.005		gm/day
Ethylbenzene	54	144	G	1.27	0.005		gm/day
Methylene Chloride	14	64	G	1.27	0.005		gm/day
Nitrobenzene	847	2423	G	2.03	0.008		gm/day
Tetrachloroethene	20	62	G	1.27	0.005		gm/day
Toluene	11	28	G	1.27	0.005		gm/day
trans-1,2-Dichloroethene	9	25	G	1.27	0.005		gm/day
trans-1,3-Dichloropropene	74	301	G	1.27	0.005		gm/day
Trichloroethene	10	26	G	1.27	0.005		gm/day
Vinyl Chloride	37	65	G	0.51	0.002		gm/day
Shaded values represent detection limits							
Lab Dilution Factor				1			

METROPOLITAN ST. LOUIS SEWER DISTRICT
2012 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 06-01-2010 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: _____(JAN-MAR) ____(APR-JUNE) __X__(JULY-SEPT) ____(OCT-DEC)

Samples Collected By: Mallinckrodt Inc

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->>		**912**		**912**		**912**	
DATES ON WHICH SAMPLES WERE COLLECTED	----->>		7/10/2012		8/2/2012		9/4/2012	
TIMES AT WHICH SAMPLES WERE COLLECTED	----->>		900		930		1020	
		RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW						
PARAMETER	LIMIT	G=grab,C=composite,M=measured flow,E=estimated fld						UNITS
FLOW		M	59522	M	64083	M	50379	gal/day
DMAC (daily max)	7091	C	859	C	1415	C	2011	lb/day
DMAC (monthly average)	5459	C	859	C	1415	C	2011	lb/day
Lab Dilution Factor			2		2		5	

METROPOLITAN ST. LOUIS SEWER DISTRICT
2012 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **MALLINCKRODT INC.**
Permit No.: 2112059600 - 3 Effective Date: 06-01-2010 Expiration Date: 05-31-2015
Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: ____(JAN-MAR) ____(APR-JUN) __X__(JULY-SEP) ____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->		**915**						
DATES ON WHICH SAMPLES WERE COLLECTED			---->		8/1/2012						
TIMES AT WHICH SAMPLES WERE COLLECTED			---->		14:00						
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW** G=Grab, C-composite, M=measured flow, E=estimated flow							UNITS
FLOW				E	2,700						gal/day
Acetone	524.2	20.70	8.20	G	3.210						mg/L
n-Amyl acetate	1666	20.70	8.20	G	<0.25						mg/L
Benzene	524.2	3.00	0.70	G	<0.250						mg/L
n-Butyl acetate	1666	20.70	8.20	G	<0.250						mg/L
Chlorobenzene	524.2	3.00	0.70	G	<0.250						mg/L
Chloroform	524.2	0.10	0.03	G	<0.025						mg/L
1,2-Dichlorobenzene	524.2	20.70	8.20	G	<0.25						mg/L
1,2-Dichloroethane	524.2	20.70	8.20	G	<0.25						mg/L
Diethyl amine*	1671	255.00	100.00	G	*						mg/L
Ethyl Acetate	1666	20.70	8.20	G	<0.500						mg/L
n-Heptane	1666	3.00	0.70	G	<0.500						mg/L
n-Hexane	1666	3.00	0.70	G	<0.500						mg/L
Isobutyraldehyde	1666	20.70	8.20	G	<0.500						mg/L
Isopropyl acetate	1666	20.70	8.20	G	<0.250						mg/L
Isopropyl ether	1666	20.70	8.20	G	<0.250						mg/L
Methylene chloride	524.2	3.00	0.70	G	<0.250						mg/L
Methyl formate	1666	20.70	8.20	G	<2.5						mg/L
4-Methyl-2-pentanone	1666	20.70	8.20	G	<0.500						mg/L
Tetrahydrofuran	1666	9.20	3.40	G	<1.000						mg/L
Toluene	524.2	0.30	0.20	G	<0.100						mg/L
Triethyl amine*	1671	255.00	100.00	G	*						mg/L
Xylenes	1666	3.00	0.70	G	<0.65						mg/L
** Annual monitoring requirement - Diethyl amine and Triethyl amine were reported first quarter 2012*											
Shaded values represent detection limits.											
Dilution by lab					50						

METROPOLITAN ST. LOUIS SEWER DISTRICT
2012 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **MALLINCKRODT INC.**
Permit No.: 2112059600 - 3 Effective Date: 06-01-2010 Expiration Date: 05-31-2015
Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: ____(JAN-MAR) ____(APR-JUN) _X___(JULY-SEP) ____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->		920						
DATES ON WHICH SAMPLES WERE COLLECTED			---->		8/7/2012						
TIMES AT WHICH SAMPLES WERE COLLECTED			---->		1320						
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW** G=Grab, C-composite, M=measured flow, E=estimated flow							UNITS
FLOW				E	13,000	E					gal/day
Tetrahydrofuran	1666	9.20	3.40	G	<0.400	G					mg/L
Toluene	524.2	0.30	0.20	G	<0.100	G					mg/L
Shaded values represent detection limits											
Dilution by lab					20						

METROPOLITAN ST. LOUIS SEWER DISTRICT
2012 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **MALLINCKRODT INC.**
Permit No.: 2112059600 - 3 Effective Date: 06-01-2010 Expiration Date: 05-31-2015
Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: ____(JAN-MAR) ____(APR-JUN) _X___(JULY-SEP) ____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->		**927**						
DATES ON WHICH SAMPLES WERE COLLECTED			---->		8/7/2012						
TIMES AT WHICH SAMPLES WERE COLLECTED			---->		09:30						
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW** G=Grab, C-composite, M=measured flow, E=estimated flow							UNITS
FLOW				E	2,700						gal/day
Acetone	524.2	20.70	8.20	G	0.451						mg/L
n-Amyl acetate	1666	20.70	8.20	G	<0.100						mg/L
Ethyl Acetate	1666	20.70	8.20	G	<0.200						mg/L
Isopropyl acetate	1666	20.70	8.20	G	<0.100						mg/L
Methylene chloride	524.2	3.00	0.70	G	<0.100						mg/L
Shaded values represent detection limits.											
Dilution by lab					20						

METROPOLITAN ST. LOUIS SEWER DISTRICT
2012 INDUSTRIAL USER SELF MONITORING REPORT

PLEASE READ THE INSTRUCTIONS BEFORE COMPLETING THIS REPORT

PART I: IDENTIFYING INFORMATION

Company Name: Mallinckrodt Inc.
Permit No.: 2112059600 - 3
Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: ____(JAN-MAR) ____(APR-JUN) __X__(JULY-SEP) ____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TekLab

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->		**930**						
DATES ON WHICH SAMPLES WERE COLLECTED			---->		8/17/2012						
TIMES AT WHICH SAMPLES WERE COLLECTED			---->		13:30						
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW** G=Grab, C-composite, M=measured flow, E=estimated flow							UNITS
FLOW				E	650 ✓						gal/day
Acetone	524.2	20.70	8.20	G	<1.0 ✓						mg/L
Ethyl Acetate	1666	20.70	8.20	G	<0.2 ✓						mg/L
Isopropyl acetate	1666	20.70	8.20	G	<0.1 ✓						mg/L
Methylene chloride	524.2	3.00	0.70	G	<0.1 ✓						mg/L
n-Amyl acetate	1666	20.70	8.20	G	<0.1 ✓						mg/L
Dilution by lab					20						

METROPOLITAN ST. LOUIS SEWER DISTRICT
2012 INDUSTRIAL USER SELF MONITORING REPORT

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Permit No.: 2112059600 - 3
Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: ____(JAN-MAR) ____(APR-JUN) _X___(JULY-SEP) ____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TekLab

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->		**933**						
DATES ON WHICH SAMPLES WERE COLLECTED			---->		7/23/2012						
TIMES AT WHICH SAMPLES WERE COLLECTED			---->		10:40						
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW** G=Grab, C-composite, M=measured flow, E=estimated flow							UNITS
FLOW				E	100						gal/day
Acetone	524.2	20.70	8.20	G	0.140						mg/L
n-Amyl acetate	1666	20.70	8.20	G	<0.100						mg/L
Ethyl Acetate	1666	20.70	8.20	G	<0.200						mg/L
Isopropyl acetate	1666	20.70	8.20	G	<0.100						mg/L
Methylene chloride	524.2	3.00	0.70	G	<0.100						mg/L
Shaded values represent detection limits											
Dilution by lab					20						

METROPOLITAN ST. LOUIS SEWER DISTRICT
2012 INDUSTRIAL USER SELF MONITORING REPORT

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PART I: IDENTIFYING INFORMATION

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Permit No.: 2112059600 - 3
Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: ____(JAN-MAR) ____(APR-JUN) _X___(JULY-SEP) ____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By:

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->		**935**							
DATES ON WHICH SAMPLES WERE COLLECTED			---->		NA							
TIMES AT WHICH SAMPLES WERE COLLECTED			---->		NA							
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW** G=Grab, C-composite, M=measured flow, E=estimated flow								UNITS
FLOW				E	*							gal/day
Acetone	524.2	20.70	8.20	G	*							mg/L
Benzene	524.2	3.00	0.70	G	*							mg/L
Chlorobenzene	524.2	3.00	0.70	G	*							mg/L
Chloroform	524.2	0.10	0.03	G	*							mg/L
1,2-Dichlorobenzene	524.2	20.70	8.20	G	*							mg/L
1,2-Dichloroethane	524.2	20.70	8.20	G	*							mg/L
Ethyl Acetate	1666	20.70	8.20	G	*							mg/L
n-Hexane	1666	3.00	0.70	G	*							mg/L
Methylene chloride	524.2	3.00	0.70	G	*							mg/L
4-Methyl-2-pentanone	1666	20.70	8.20	G	*							mg/L
Tetrahydrofuran	1666	9.20	3.40	G	*							mg/L
Toluene	524.2	0.30	0.20	G	*							mg/L
Xylenes	1666	3.00	0.70	G	*							mg/L
Isobutyraldehyde	1666	20.70	8.20	G	*							mg/L
n-Amyl acetate	1666	20.70	8.20	G	*							mg/L
n-Butyl acetate	1666	20.70	8.20	G	*							mg/L
Isopropyl acetate	1666	20.70	8.20	G	*							mg/L
Isopropyl ether	1666	20.70	8.20	G	*							mg/L
n-Heptane	1666	3.00	0.70	G	*							mg/L
Methyl formate	1666	20.70	8.20	G	*							mg/L
Diethyl amine	1671	255.00	100.00	G	*							mg/L
Triethyl amine	1671	255.00	100.00	G	*							mg/L
**** No PEG flow this quarter***												
Dilution by lab												

METROPOLITAN ST. LOUIS SEWER DISTRICT
2012 INDUSTRIAL USER SELF MONITORING REPORT

PLEASE READ THE INSTRUCTIONS BEFORE COMPLETING THIS REPORT

PART I: IDENTIFYING INFORMATION

Company Name: Mallinckrodt Inc.
Permit No.: 2112059600 - 3
Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: ____(JAN-MAR) _____(APR-JUN) __X__(JULY-SEP) ____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS ----->					**936**						
DATES ON WHICH SAMPLES WERE COLLECTED ----->					8/1/2012						
TIMES AT WHICH SAMPLES WERE COLLECTED ----->					1310						
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS** G=Grab, C-composite, M=measured flow, E=estimated flow							UNITS
FLOW				E	16,500						gal/day
Acetone	524.2	20.70	8.20	G	0.824						mg/L
n-Amyl acetate	1666	20.70	8.20	G	<0.100						mg/L
Benzene	524.2	3.00	0.70	G	<0.100						mg/L
n-Butyl acetate	1666	20.70	8.20	G	<0.100						mg/L
Chlorobenzene	524.2	3.00	0.70	G	<0.100						mg/L
Chloroform*	524.2	0.10	0.03	G	0.02						mg/L
1,2-Dichlorobenzene	524.2	20.70	8.20	G	<0.100						mg/L
1,2-Dichloroethane	524.2	20.70	8.20	G	<0.100						mg/L
Diethyl amine**	1671	255.00	100.00	G	**						mg/L
Ethyl Acetate	1666	20.70	8.20	G	<0.200						mg/L
n-Heptane	1666	3.00	0.70	G	<0.200						mg/L
n-Hexane	1666	3.00	0.70	G	<0.200						mg/L
Isobutyraldehyde	1666	20.70	8.20	G	<0.200						mg/L
Isopropyl acetate	1666	20.70	8.20	G	<0.100						mg/L
Isopropyl ether	1666	20.70	8.20	G	<0.100						mg/L
Methylene chloride	524.2	3.00	0.70	G	<0.100						mg/L
Methyl formate	1666	20.70	8.20	G	<1						mg/L
4-Methyl-2-pentanone	1666	20.70	8.20	G	<0.200						mg/L
Tetrahydrofuran	1666	9.20	3.40	G	<0.400						mg/L
Toluene	524.2	0.30	0.20	G	<0.100						mg/L
Triethyl amine**	1671	255.00	100.00	G	**						mg/L
Xylenes	1666	3.00	0.70	G	<0.26						mg/L
*** Chloroform Results**	**Raw Water**	**SP936**	**SP936- Raw Water**								
8/1/2012	**<0.02 mg/l**	**0.020 mg/l**	**0.02**								
Results above reported as the difference between SP936 and Raw Water.											
*** Annual monitoring requirement - Diethyl amine and Triethyl amine were reported first quarter 2012*											
Shaded values represent detection limits.											
Dilution by lab					20						

2012 3Q SP9XX PEG.xlsx

METROPOLITAN ST. LOUIS SEWER DISTRICT
2012 INDUSTRIAL USER SELF MONITORING REPORT

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Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: ____(JAN-MAR) ____(APR-JUN) __X__(JULY-SEP) ____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->		**937**						
DATES ON WHICH SAMPLES WERE COLLECTED			---->		8/7/2012						
TIMES AT WHICH SAMPLES WERE COLLECTED			---->		13:10						
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW** G=Grab, C-composite, M=measured flow, E=estimated flow							UNITS
FLOW				E	23,000						gal/day
Tetrahydrofuran	524.2	9.20	3.40	G	<0.400						mg/L
Toluene	524.2	0.30	0.20	G	<0.100						mg/L
Shaded values represent detection limits.											
Dilution by lab					20						

METROPOLITAN ST. LOUIS SEWER DISTRICT
2012 INDUSTRIAL USER SELF MONITORING REPORT

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PART I: IDENTIFYING INFORMATION

Company Name: Mallinckrodt Inc.
Permit No.: 2112059600 - 3
Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: _____(JAN-MAR) ____(APR-JUN) _X___(JULY-SEP) ____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TekLab

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->		**938**						
DATES ON WHICH SAMPLES WERE COLLECTED			---->		8/16/2012						
TIMES AT WHICH SAMPLES WERE COLLECTED			---->		10:00						
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW** G=Grab, C-composite, M=measured flow, E=estimated flow							UNITS
FLOW				E	71						gal/day
Acetone	524.2	20.70	8.20	G	<1						mg/L
n-Amyl acetate	1666	20.70	8.20	G	<0.100						mg/L
Ethyl Acetate	1666	20.70	8.20	G	<0.200						mg/L
Isopropyl acetate	1666	20.70	8.20	G	<0.100						mg/L
Methylene chloride	524.2	3.00	0.70	G	<0.100						mg/L
Shaded values represent detection limits.											
Dilution by lab					20						

PART III: SPECIAL CERTIFICATION STATEMENTS

Based on the special conditions contained in your discharge permit you may be required to certify the following. Please review your permit and **PLACE YOUR INITIALS ON THE LINES NEXT TO THE CERTIFICATIONS.**

A	NO CHANGE IN WASTEWATER DISCHARGE AT SAMPLE POINTS WITH NO MONITORING REQUIRED
	For permit special conditions that waive monitoring at any sample point(s) specified in your permit, you are required to make the following certification for each report in which monitoring is waived: ____ I certify, since the last discharge monitoring report, there has been no change in the character of the wastes discharged at sample points 001 and 002. ____ I certify, since the last discharge monitoring report, there has been no discharge from sample points 008 and 011.
B	NO CHANGE IN WASTEWATER DISCHARGE AT ACTIVE CONNECTIONS WITHOUT SAMPLE POINTS
	For permit special conditions that waive monitoring at active connection points which are not specified as sample points in your permit, you are required to make the following certification: ____ I certify, since the last discharge monitoring report, there has been no change in the character of wastes discharged at those active connection points which are not specified in my permit.
E	NO DISCHARGE OF CATEGORICAL WASTE
	For permit special conditions that prohibit discharge of wastes which are subject to certain categorical pretreatment standards, you are required to make the following certification: ____ I certify, since the last discharge monitoring report, there has been no discharge of wastes which are subject to pretreatment standards in 40 CFR 414 (except for those wastes conveyed by SP 905).
F	CYANIDE NOT USED OR GENERATED IN 40 CFR 439 OPERATIONS
	Discharges subject to Pharmaceutical Categorical Standards (40 CFR 439) can be exempted from limitations and monitoring for Total Cyanide at the Pharmaceutical sample points 080, 915, 920, 935, 936, and 937, subject to the following certification: ____ I certify, since the last discharge monitoring report, cyanide has not been used or generated in any pharmaceutical manufacturing process subject to Categorical Standards in 40 CFR 439.
H	PHARMACEUTICAL POLLUTANTS NOT USED OR GENERATED IN 40 CFR 439 OPERATIONS
	Discharges subject to Pharmaceutical Categorical Standards (40 CFR 439) can be exempted from monitoring for certain 40 CFR 439-regulated pollutants at the Pharmaceutical sample points 915, 935, and 936, subject to the following certification: ____ I certify, since the last discharge monitoring report, the 40 CFR 439-regulated pollutants, as determined in permittee's report dated April 5, 2010, have not been used or generated in any pharmaceutical manufacturing process subject to Categorical Standards in 40 CFR 439. In addition, the above-referenced report remains valid.
I	SURROGATE MONITORING ALLOWED FOR 40 CFR 439 OPERATIONS
	Discharges subject to Pharmaceutical Categorical Standards (40 CFR 439) can be exempted from monitoring for certain 40 CFR 439-regulated pollutants, and replaced by monitoring for surrogate pollutant(s), at the Pharmaceutical sample points 920 and 937 subject to the following certification: ____ I certify, since the last discharge monitoring report, the 40 CFR 439-regulated pollutants, as determined in permittee's report dated April 5, 2010, continue to receive the same degree of treatment as the surrogate pollutant(s). In addition, the above-referenced report remains valid.

PART IV: GENERAL CERTIFICATION STATEMENTS

B	DISCHARGE MONITORING REPORT CERTIFICATION
	All permittees must sign and complete the information below: I certify under penalty of Law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. Print or type name of signing official: James A. Walter Title: Senior Director of Manufacturing Telephone: 314-654-1300 Signature: ____ Date: 10/23/12

METROPOLITAN ST. LOUIS SEWER DISTRICT
INDUSTRIAL USER RADIOACTIVE MATERIALS DISCHARGE REPORT

CB 10.25

PART I: IDENTIFYING INFORMATION

Company Name: Mallinckrodt -

Permit No: 2112059600-3

Premise Address: 3600 N Second St. St. Louis, MO 63147

Reporting Period: ☐(JAN-MAR) ☐(APR-JUNE) ☒(JULY-SEPT) ☐(OCT-DEC)

PART II: RECORD OF DISPOSAL OF RADIOACTIVE MATERIALS TO THE SEWER SYSTEM

RADIONUCLIDE	ACTIVITY DISCHARGED (millicuries)
Ur-234	9.5×10^{-5}
Ur-235	3.09×10^{-5}
Ur-238	1.22×10^{-4}
Ra-226	1.01×10^{-3}
Ra-228	3.71×10^{-4}
Th-228	2.06×10^{-5}
Th-230	2.38×10^{-4}
Th-232	3.64×10^{-5}
TOTAL ACTIVITY DISCHARGED:	1.92×10^{-3}

PART III: CERTIFICATION STATEMENTS

Place your initials in the box under item A.
Everyone must complete the information under items A & B and sign this report.

A. CERTIFICATION OF COMPLIANCE WITH STATE AND FEDERAL REGULATIONS

JW I certify that to the best of my knowledge & belief, all requirements of 10 CFR Part 20.2003 and 19 CSR Part 20-10.090 governing disposal by release into sanitary sewage for material regulated by the Nuclear Regulatory Commission and the Missouri Department of Health, respectively, have been met for the period covered by this report.

B. RADIOACTIVE MATERIALS DISCHARGE REPORT CERTIFICATION

I certify under penalty of Law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Print/type name of signing official: James A. Walter

Title: Senior Director of Manufacturing Telephone: 314-654-1300

Signature: Date: 10/23/12

radrpt.doc 2/00

Metropolitan St. Louis Sewer District

Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

October 22, 2012

Karen Burke
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Dear Ms. Burke:

We have reviewed the correspondence provided on your behalf by Energy*Solutions*, dated September 26, 2012. This correspondence was in regards to the discharge of wastewater to the Metropolitan St. Louis Sewer District of treated rainwater and groundwater from the remediation of the Columbium-Tantalum (CT) decommissioning project at the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri. Specifically, Energy*Solutions* proposed discharge limits for radionuclides of concern, including radionuclides that would be present as part of the natural decay chain(s), as outlined in 10 CFR Part 20, Appendix B, Table 3.

Based on a review of the information provided, each batch of treated wastewater will continue to be submitted for laboratory analysis of the parameters outlined in the original approval letter dated January 21, 2011, and extensions dated June 24, 2011 and July 16, 2012. In addition, as outlined in the January 21 and June 24, 2011 and July 16, 2012 correspondence, copies of the laboratory analytical results of each batch of treated wastewater need only be submitted on a monthly basis. The laboratory analytical results for radionuclides of concern, submitted in conjunction with each of the batches, must meet MSD Ordinance 12559 standards in addition to compliance with the limits for releases to sewers in 10 CFR Part 20, Appendix B, Table 3, and the Missouri Department of Health disposal of radioactive wastes in 19 CSR Division 20, Chapter 10, Appendix I, Table 2.

As a general reminder, you must confirm the volume of each batch of treated wastewater discharged to us, in writing, for billing purposes. These reports are due no later than 28 days after each discharge event. Please notify us of any changes, which would affect the characteristics of this discharge. The current approval for this wastewater expires on December 21, 2012. All other conditions of the original approval and extensions remain in effect.

Please contact me at (314) 436-8755 with questions or comments.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

pc: Brian Gibson
Doug Mendoza

File: IU, MALLINCKRODT INC [2112059600]

I(●) - Mallinckrodt Inc.
3600 N. 2nd St. SP850

Steve Grace **MSD**

From: Doug Mendoza
Sent: Thursday, October 18, 2012 12:53 PM
To: Steve Grace
Cc: Brian G. Gibson
Subject: RE: Phone call with Karen Burke of Mallinckrodt yesterday...

All,

Steve and I just called Karen. She wasn't in, so I left a voice message for her. Basically, I told her that it was unfortunate that they were operating under some obsolete requirements in the past, and the limits that Steve just told her about were the ones that they should have been using. Regardless, the limits are from either Federal or State regulations, and MSD does not have authority to require something less than what State or Federal regulations require. In cases where one is more strict than the other (e.g. Radium in this case), the stricter one applies. If she can provide Federal or State citations or regulations that show our citations are incorrect, MSD will be happy to make adjustments. Otherwise, these limits have to stand.

Doug

From: Steve Grace
Sent: Thursday, October 18, 2012 11:25 AM
To: Doug Mendoza
Cc: Brian G. Gibson
Subject: Phone call with Karen Burke of Mallinckrodt yesterday...

Hello,

I spoke with Karen Burke yesterday; she had called to discuss the discharge limit changes for radionuclides associated with their C-T Decommissioning project. I had emailed her Tuesday afternoon, giving her a heads-up on the new discharge limits. She called back yesterday and expressed some frustration (heartburn) over the changes in the Radium limits...we are requiring them to meet the limits outlined in 19 CSR 20-10 (10 pCi/L for 226 and 30 pCi/L for 228) as opposed to the limits outlined in 10 CFR 20 (600 pCi/L for both 226 and 228). She told me she even spoke to the Corps of Engineers about those limits. They told her they must meet those limits as well, but never really pushed back since (paraphrasing here) "remediation costs aren't a big concern for the Corps"...she reminded me that remediation costs ARE a big concern for Mallinckrodt compared to the Corps.

I told her the final decision on discharge limits was made by my superiors; given the nature of the project and contaminants of concern, I do not have the authority to make that decision. When she asked me why the state limits were chosen as opposed to the federal limits, I told her that's a question for Doug...I was not going to answer on his behalf. I only speculated that, generally speaking, in instances where the state limit is more stringent than the federal limit, the state limit can be imposed. I directed her to the specific state regulation 19 CSR 20-10.090, and she was going to review it herself.

I told her yesterday that I would pass on the crux of this phone call onto Doug. She appreciated that and was hoping that Doug could contact her today if possible to discuss. Her direct number is 654-5838, her cell number is 795-6574.

If that is seen as "passing the buck" then I apologize. I get the feeling that this project can move forward for them if they get the "final word" from someone in greater authority than me.

Steve

SR

MSD

COVIDIEN

September 4, 2012

Mr. Doug Mendoza
Metropolitan St. Louis Sewer District
Department of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913

RE: Electrical outage - PERMIT NO. 2112059600-3

Dear Mr. Mendoza:

A plant-wide electrical outage for periodic maintenance has been scheduled for Friday, September 28, 2012 through Sunday, September 30, 2012. As a result of the outage, the two lift stations at Sample Points 008 and 011 will lose power, causing the plant's wastewater to overflow through these sample points rather than to the plant-wide pH neutralization tanks and through our main outfall, Sample Point 010.

Per our permit conditions, a sample will be taken at the two sample points after overflow discharge commences, in addition to pH readings. There will be no processes in operation as a result of the power outage, and therefore reduced wastewater discharge is expected. This notification is in accordance with Ordinance 12559 and Permit #2112059600-3.

During this outage we are going to be completing a sewer project by Building 501. We will be diverting a portion of the flow from the lift station at SP011 to a MSD sewer so that the sewer work can be completed. This was previously discussed by phone and email with Scott Rehmer on July 19, 2012. Per Scott's email we will follow up with MSD regarding the start and end date, time and flow estimate as well as pH monitoring of the diverted flow.

If you have any questions or need additional information, please call me at 314-654-0127.

Sincerely,

Amber Crouch

Amber Crouch
Sr. EHS Specialist
Mallinckrodt, St. Louis Plant

RECEIVED
SEP 05 2012
DIVISION OF
ENVIRONMENTAL COMPLIANCE

COVIDIEN/MALLINCKRODT
3600 NORTH SECOND STREET
ST. LOUIS, MO 63147

TELEPHONE: 314-654-2000
FAX: 314-654-1251

From: Steve Grace
Sent: Monday, August 20, 2012 11:18 AM
To: 'Crouch, Amber'
Subject: RE: Crouch.Mallinckrodt SP812 6-11-12.doc

Mallinckrodt
3600 N. 2nd St.
SP821

Hello Amber,

Got it. I will go ahead and close out the approval.

Thanks,
Steve Grace

From: Crouch, Amber [mailto:Amber.Crouch@Covidien.com]
Sent: Monday, August 20, 2012 9:52 AM
To: Steve Grace
Subject: RE: Crouch.Mallinckrodt SP812 6-11-12.doc

Steve,

We have decided we are not going to discharge this ethylene glycol solution. This permit can be closed out.

Thanks,

Amber Crouch
Senior HSE Engineer
Covidien
3600 North Second Street
St. Louis, MO 63147
USA

(314) 654-0127 office
(314) 253-2213 pager
(314) 654-1251 fax

www.covidien.com

This information may be confidential and/or privileged. Use of this information by anyone other than the intended recipient is prohibited. If you receive this in error, please inform the sender and remove any record of this message.

From: Steve Grace [mailto:sgrace@stlmsd.com]
Sent: Thursday, July 26, 2012 10:26 AM
To: Crouch, Amber
Subject: FW: Crouch.Mallinckrodt SP812 6-11-12.doc

Hello Amber,

Here is the approval letter you emailed me about a few minutes ago. We've had people on vacation the past week or so...so that would explain the delay in getting this approval letter out.

See me with any questions.

Thanks,
Steve

From: Rebecca Vitelli
Sent: Thursday, July 26, 2012 10:24 AM
Cc: Steve Grace; Brian G. Gibson; Doug Mendoza
Subject: Crouch.Mallinckrodt SP812 6-11-12.doc

July 18, 2012

Amber Crouch
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Dear Ms. Crouch:

We have reviewed your application dated July 16, 2012 requesting approval to discharge 200 gallons of wastewater to the Metropolitan St. Louis Sewer District for treatment. This wastewater is 40% ethylene glycol solution from the chiller system associated with the Peptides processing area in Building 96 of the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri. We understand that the wastewater will be discharged through sampling point 010.

Based on the information you provided, this wastewater meets MSD Ordinance 12559 standards and is approved for discharge into a combined sewer on site. **This approval is valid for 30 days from the date of this letter.**

You must be certain the waste is discharged into a combined sewer inlet only. This letter does not authorize any discharge to a separate storm sewer, or to any watercourse, as any such discharge would be in violation of state and federal laws. **Please notify me at the number below when the discharge is to commence, and please ensure the onsite personnel discharging the wastewater in question are provided with a copy of this letter.**

For billing purposes associated with this high COD wastewater, you must confirm the volume of this wastewater discharged to us, in writing, at the completion of the discharge. This report is due no later than 28 days after this approval expires. Please refer to this letter and include the date of the discharge when providing that figure. Under the provisions of Ordinance 13402, you will be billed by invoice at the billing rate in effect at the time of discharge. The current rate contained in MSD Ordinance 13402 is $310.07 per ton for COD over 600 mg/L. Using the assumed COD concentration based on the percent of ethylene glycol contained in the wastewater in question, and the proposed discharge volume provided in your application, it is estimated that you will be discharging under 0.5 tons of COD over 600 mg/L. (Our quantitative estimate is 0.33 tons COD times $310.07). Please do not pay this amount until you receive our invoice.

This discharge has been approved based upon the information and sample analysis you provided, and is subject to the conditions stated above. This approval may be revoked by the District at any time if any of the information is found to be incorrect, or if the conditions of this approval are violated. Also, if the discharge causes any operational or maintenance problem within the District's collection or treatment system, or results in violations of any conditions of the District's NPDES permit, Mallinckrodt will be considered responsible for damages. If you have any questions, please call me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

ec: Brian Gibson
Doug Mendoza

File: IU, MALLINCKRODT INC [1011728100]

MSD

Mallinckrodt
COVIDIEN
1011728100

July 17, 2012

Mr. Doug Mendoza
Metropolitan St. Louis Sewer District
Department of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147

Re: 2012 2nd Quarter Self-Monitoring Report for Permit No. 21120596 – 3.1

Dear Mr. Mendoza,

Please find enclosed the 2012 2nd Quarter Self Monitoring report for Mallinckrodt Inc.

The following sample points received no pharmaceutical process water flow during the second quarter: SP008, SP011, SP930 and SP935.

CT Excavation activities continued during the second quarter 2012 and there were multiple discharges under the Special Discharge Permit issued for wastewater generated from CT remediation activities. A summary of the discharges is provided in the Industrial User Radioactive Discharge Report included in this submittal.

If you have any questions or require more detailed information, please contact me at 314-654-0127.

Sincerely,

Amber Crouch

Amber Crouch
Sr. Environmental Specialist

ENCLOSURES

RECEIVED
JUL 30 2012
DIVISION OF
ENVIRONMENTAL COMPLIANCE

COVIDIEN/MALLINCKRODT
3600 NORTH SECOND STREET
ST. LOUIS, MO 63147

TELEPHONE: 314-654-2000
FAX: 314-654-1251

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 05-01-2011 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: _____(JAN-MAR) _X___(APR-JUNE) ____(JULY-SEPT) _____(OCT-DEC)

Samples Collected By: Mallinckrodt Inc

Analysis Performed By: Teklab

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->		001					
DATES ON WHICH SAMPLES WERE COLLECTED	----->		NA					
TIMES AT WHICH SAMPLES WERE COLLECTED	----->							
PARAMETER	LIMIT	RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW G=grab,C=composite,M=measured flow,E=estimated flo						UNITS
FLOW		E	1,000 ✓					gal/day
NO MONITORING REQUIRED (Sanitary Only)								
There have been no change in the character of the wastes discharged since the last report.								

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 05-01-2011 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: _____(JAN-MAR) _X___(APR-JUNE) ____(JULY-SEPT) __(OCT-DEC)

Samples Collected By: Mallinckrodt Inc

Analysis Performed By: Teklab

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->		002						
DATES ON WHICH SAMPLES WERE COLLECTED	----->		NA						
TIMES AT WHICH SAMPLES WERE COLLECTED	----->								
PARAMETER	LIMIT	RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW G=grab,C=composite,M=measured flow,E=estimated flo							UNITS
FLOW		E	2,200						gal/day
NO MONITORING REQUIRED (Sanitary Only)									
There have been no change in the character of the wastes discharged since the last report.									

RECEIVED
JUL 30 2012
DIVISION OF
ENVIRONMENTAL COMPLIANCE

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 05-01-2011 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: ____(JAN-MAR) _X___(APR-JUNE) ____(JULY-SEPT) ____(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->	003		009		099		
DATES ON WHICH SAMPLES WERE COLLECTED	----->	5/9/2012		5/9/2012		calculated		
TIMES AT WHICH SAMPLES WERE COLLECTED	----->	0705, 0805, 0905, 1005		0725, 0825, 0925, 1030		n/a		
PARAMETER	LIMIT	RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW G=grab,C=composite,M=measured flow,E=estimated flow						UNITS
FLOW		M	14,256	M	10,973	E	3,283	gal/day
Oil & Grease	200	G	12	G	18	E	0*	mg/l
Biochemical Oxygen Demand	****	C	207	C	270	E	0*	mg/l
Chemical Oxygen Demand	****	C	468	C	468	E	468	mg/l
Total Suspended Solids	****	C	170	C	135	E	287	mg/l
Temperature	****	G	26	G	20	E	46	deg C
pH	****	G	6.5	G	7.0	E	4.8	S.U.
**** No limits for SP003 or SP009;								
monitoring requirement only for calculation at SP099								
* Calculated value was less than zero.								
Lab Dilution Factor			1, 1.25		1, 5			

RECEIVED
JUL 30 2012
DIVISION OF
ENVIRONMENTAL COMPLIANCE

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 06-01-2010 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: _____(JAN-MAR) _X___(APR-JUNE) ____(JULY-SEPT) ____(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	---->		**005**					
DATES ON WHICH SAMPLES WERE COLLECTED	---->		5/9/2012					
TIMES AT WHICH SAMPLES WERE COLLECTED	---->		0710, 0810, 0910, 1010					
PARAMETER	LIMIT	**RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW** G=grab,C=composite,M=measured flow,E=estimated flo						UNITS
FLOW		E	32,000					gal/day
Oil & Grease	200	G	<5					mg/l
Biochemical Oxygen Demand	****	C	129					mg/l
Chemical Oxygen Demand	****	C	193					mg/l
Total Suspended Solids	****	C	14					mg/l
Temperature	60	G	26					deg C
pH	5.5 - 11.5	G	6.0					S.U.
**** No limits for SP005								
Lab Dilution Factor			1					

RECEIVED
JUL 30 2012
DIVISION OF
ENVIRONMENTAL COMPLIANCE

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 05-01-2011 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: ____(JAN-MAR) _X___(APR-JUNE) ____(JULY-SEPT) ____(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->		008					
DATES ON WHICH SAMPLES WERE COLLECTED	----->		NA					
TIMES AT WHICH SAMPLES WERE COLLECTED	----->		NA					
PARAMETER	LIMIT	RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW G=grab,C=composite,M=measured flow,E=estimated flow						UNITS
FLOW		E	*					gal/day
Oil & Grease	200	G	*					mg/l
Biochemical Oxygen Demand	****	G	*					mg/l
Chemical Oxygen Demand	****	G	*					mg/l
Temperature	60	G	*					deg C
Total Suspended Solids	****	G	*					mg/L
pH	5.5 - 11.5	G	*					S.U.
* No flow this quarter								
Lab Dilution Factor			NA					

RECEIVED
JUL 30 2012
DIVISION OF
ENVIRONMENTAL COMPLIANCE

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 06-01-2010 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: ____(JAN-MAR) _X___(APR-JUNE) ____(JULY-SEPT) _____(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	---->		010					
DATES ON WHICH SAMPLES WERE COLLECTED	---->		5/9/2012					
TIMES AT WHICH SAMPLES WERE COLLECTED	---->		0735, 0835, 0935, 1045					
PARAMETER	LIMIT	RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW G=grab,C=composite,M=measured flow,E=estimated flo						UNITS
FLOW		E	1,142,913					gal/day
Oil & Grease	200	G	16					mg/l
Biochemical Oxygen Demand	****	C	530					mg/l
Chemical Oxygen Demand	****	C	813					mg/l
Total Suspended Solids	****	C	88					mg/l
Temperature	60	G	32					deg C
pH	5.5 - 11.5	G	see attached					S.U.
Chromium	5.0	C	0.013					mg/l
Copper	2.7	C	0.009					mg/l
Nickel	2.3	C	0.014					mg/l
Zinc	3.0	C	0.035					mg/l
Lab Dilution Factor			1, 2, 5					

RECEIVED
JUL 30 2012
DIVISION OF
ENVIRONMENTAL COMPLIANCE

Mallinckrodt pH Monitoring for SP010: April 2012 through June 2012

Date / Time	pH	pH	Total for Event in Minutes
4/4/12 10:45	46	4.6	5
4/19/12 13:25	40	4.0	5
		April Total:	**10**

Mallinckrodt pH Monitoring for SP010: May 2012

Date / Time	pH	pH	Total for Event in Minutes
5/2/12 8:05	40	4.0	5
		May Total:	**5**

Mallinckrodt pH Monitoring for SP010: June 2012

Date / Time	pH	pH	Total for Event in Minutes
6/29/12 10:40	49	4.9	5
6/29/12 10:45	53	5.3	5
		June Total:	**10**

RECEIVED
JUL 30 2012
DIVISION OF
ENVIRONMENTAL COMPLIANCE

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 05-01-2011 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: ___(JAN-MAR) _X___(APR-JUNE) ____(JULY-SEPT) ____(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->		011					
DATES ON WHICH SAMPLES WERE COLLECTED	----->		NA					
TIMES AT WHICH SAMPLES WERE COLLECTED	----->		NA					
PARAMETER	LIMIT	RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW G=grab,C=composite,M=measured flow,E=estimated flow						UNITS
FLOW		E	*					gal/day
Oil & Grease	200	G	*					mg/l
Biochemical Oxygen Demand	****	G	*					mg/l
Chemical Oxygen Demand	****	G	*					mg/l
Total Suspended Solids	****	G	*					mg/l
Temperature	60	G	*					deg C
pH	5.5 - 11.5	G	*					S.U.
* No flow during this reporting period.								
Lab Dilution Factor			NA					

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DIVISION OF
ENVIRONMENTAL COMPLIANCE

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3.1 Effective Date: 05-01-2011 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: _____(JAN-MAR) _X__(APR-JUN) ____(JULY-SEP) _____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->		**080**							
DATES ON WHICH SAMPLES WERE COLLECTED			---->		4/30/2012							
TIMES AT WHICH SAMPLES WERE COLLECTED			---->		10:40, 11:40, 12:40, 1:40							
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS** G=Grab, C-composite, M=measured flow, E=estimated								UNITS
FLOW				E	3,500							gal/day
Acetone	524.2	20.70	8.20	G	<1.000							mg/L
n-Amyl Acetate	1666	20.70	8.20	G	<0.100							mg/L
Benzene	524.2	3.00	0.70	G	0.033							mg/L
n-Butyl acetate	1666	20.70	8.20	G	<0.100							mg/L
Chlorobenzene	524.2	3.00	0.70	G	<0.100							mg/L
Chloroform*	524.2	0.10	0.03	G	0.016							mg/L
1,2-Dichlorobenzene	524.2	20.70	8.20	G	<0.100							mg/L
1,2-Dichloroethane	524.2	20.70	8.20	G	<0.100							mg/L
Diethyl amine	1671	255.00	100.00	G	<50							mg/L
Ethyl Acetate	1666	20.70	8.20	G	<0.200							mg/L
n-Heptane	1666	3.00	0.70	G	<0.200							mg/L
n-Hexane	1666	3.00	0.70	G	<0.200							mg/L
Isobutyraldehyde	1666	20.70	8.20	G	<0.200							mg/L
Isopropyl acetate	1666	20.70	8.20	G	<0.100							mg/L
Isopropyl ether	1666	20.70	8.20	G	<0.100							mg/L
Methylene chloride	524.2	3.00	0.70	G	<0.100							mg/L
Methyl formate	1666	20.70	8.20	G	<1.000							mg/L
4-Methyl-2-pentanone	1666	20.70	8.20	G	<0.200							mg/L
Tetrahydrofuran	1666	9.20	3.40	G	<0.400							mg/L
Toluene	524.2	0.30	0.20	G	<0.100							mg/L
Triethyl amine	1671	255.00	100.00	G	<20							mg/L
Xylenes	1666	3.00	0.70	G	<0.260							mg/L
Oil & Grease	1664	200		G	4							mg/L
Biochemical Oxygen Demand		****		C	7.0							mg/L
Chemical Oxygen Demand		****		C	<50							mg/L
Total Suspended Solids		****		C	35							mg/L
Temperature		60		G	18.0							deg C
pH		5.5 - 11.5		G	9.0							S.U.
***Chloroform Results**	**Raw Water**	**SP080**										
4/30/2012	**0.021**	**0.016**										
Results above reported as the difference between SP080 and Raw Water												
If Raw Water result is > than SP936 result, the result for SP080 will be used												
Shaded values represent detection limits												
Dilution by lab					1,20							

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METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 06-01-2010 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: ____(JAN-MAR) X (APR-JUNE) _____(JULY-SEPT) ____(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS		---->		**905**			
DATES ON WHICH SAMPLES WERE COLLECTED		---->		5/11/2012			
TIMES AT WHICH SAMPLES WERE COLLECTED		---->		10:00			
	MONTHLY LIMIT (ave)	DAILY MAX LIMIT	**RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW** G=grab,C=composite,M=measured flow,E=estimated flow				
PARAMETER	(gm/day)	(gm/day)			Lab results mg/L		UNITS
FLOW			M	84171			gal/day
1,2,4-Trichlorobenzene	74	301	G	3.19	0.010		gm/day
1,2-Dichlorobenzene	74	301	G	1.59	0.005		gm/day
1,3-Dichlorobenzene	54	144	G	1.59	0.005		gm/day
1,4-Dichlorobenzene	54	144	G	1.59	0.005		gm/day
2-Nitrophenol	25	87	G	6.37	0.020		gm/day
2-Methyl-4,6-dinitrophenol	30	105	G	6.37	0.020		gm/day
4-Nitrophenol	61	218	G	6.37	0.020		gm/day
Acenapthene	7	18	G	3.19	0.010		gm/day
Anthracene	7	18	G	3.19	0.010		gm/day
Bis(2-ethylhexyl)phthalate	36	98	G	1.91	0.006		gm/day
Diethyl phthalate	17	43	G	3.19	0.010		gm/day
Dimethyl phthalate	7	18	G	3.19	0.010		gm/day
Di-n-butyl phthalate	8	16	G	3.19	0.010		gm/day
Fluoranthene	8	20	G	3.19	0.010		gm/day
Fluorene	7	18	G	3.19	0.010		gm/day
Hexachlorobenzene	74	301	G	3.19	0.010		gm/day
Hexachlorobutadiene	54	144	G	3.19	0.010		gm/day
Hexachloroethane	74	301	G	3.19	0.010		gm/day
Naphthalene	7	18	G	3.19	0.010		gm/day
Phenanthrene	7	18	G	3.19	0.010		gm/day
Pyrene	8	18	G	3.19	0.010		gm/day
1,1,1-Trichloroethane	8	22	G	1.59	0.005		gm/day
1,1,2-Trichloroethane	12	48	G	1.59	0.005		gm/day
1,1-Dichloroethane	8	22	G	1.59	0.005		gm/day
1,1-Dichloroethene	8	23	G	1.59	0.005		gm/day
1,2-Dichloroethane	74	301	G	1.59	0.005		gm/day
1,2-Dichloropropane	74	301	G	1.59	0.005		gm/day
Benzene	22	51	G	0.64	0.002		gm/day
Carbon Tetrachloride	54	144	G	1.59	0.005		gm/day
Chlorobenzene	54	144	G	1.59	0.005		gm/day
Chloroethane	42	112	G	3.19	0.010		gm/day
Chloroform	42	123	G	5.10	0.016		gm/day
Chloromethane	42	112	G	3.19	0.010		gm/day
cis-1,3-Dichloropropene	74	301	G	1.59	0.005		gm/day
Ethylbenzene	54	144	G	1.59	0.005		gm/day
Methylene Chloride	14	64	G	1.59	0.005		gm/day
Nitrobenzene	847	2423	G	3.19	0.010		gm/day
Tetrachloroethene	20	62	G	1.59	0.005		gm/day
Toluene	11	28	G	1.59	0.005		gm/day
trans-1,2-Dichloroethene	9	25	G	1.59	0.005		gm/day
trans-1,3-Dichloropropene	74	301	G	1.59	0.005		gm/day
Trichloroethene	10	26	G	1.59	0.005		gm/day
Vinyl Chloride	37	65	G	0.64	0.002		gm/day
Shaded values represent detection limits							
Lab Dilution Factor				1			

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METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 06-01-2010 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: _____(JAN-MAR) _X___(APR-JUNE) ____(JULY-SEPT) ____(OCT-DEC)

Samples Collected By: Mallinckrodt Inc

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->		912		912		912	
DATES ON WHICH SAMPLES WERE COLLECTED	----->		4/4/2012		5/3/2012		6/8/2012	
TIMES AT WHICH SAMPLES WERE COLLECTED	----->		945		1030		930	
PARAMETER	LIMIT	RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW G=grab,C=composite,M=measured flow,E=estimated flo						UNITS
FLOW		M	48616	M	40104	M	30096	gal/day
DMAC (daily max)	7091	C	702	C	511	C	409	lb/day
DMAC (monthly average)	5459	C	702	C	511	C	409	lb/day
DMAC			1730		1527		1629	mg/L
# lbs / day / # gal / day x 119833	mg/L lbs / gal.							
Lab Dilution Factor			1		1		1	

08 10-9

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METROPOLITAN ST. LOUIS SEWER DISTRICT
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PART I: IDENTIFYING INFORMATION

Company Name: **MALLINCKRODT INC.**
Permit No.: 2112059600 - 3 Effective Date: 06-01-2010 Expiration Date: 05-31-2015
Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: ____(JAN-MAR) _X___(APR-JUN) ____(JULY-SEP) ____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->		915						
DATES ON WHICH SAMPLES WERE COLLECTED			---->		5/10/2012						
TIMES AT WHICH SAMPLES WERE COLLECTED			---->		0830						
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW G=Grab, C-composite, M=measured flow, E=estimated flow							UNITS
FLOW				E	2,700						gal/day
Acetone	524.2	20.70	8.20	G	0.200						mg/L
n-Amyl acetate	1666	20.70	8.20	G	0.027						mg/L
Benzene	524.2	3.00	0.70	G	<0.100						mg/L
n-Butyl acetate	1666	20.70	8.20	G	<0.100						mg/L
Chlorobenzene	524.2	3.00	0.70	G	<0.100						mg/L
Chloroform	524.2	0.10	0.03	G	<0.020						mg/L
1,2-Dichlorobenzene	524.2	20.70	8.20	G	<0.100						mg/L
1,2-Dichloroethane	524.2	20.70	8.20	G	<0.100						mg/L
Diethyl amine*	1671	255.00	100.00	G	*						mg/L
Ethyl Acetate	1666	20.70	8.20	G	<0.200						mg/L
n-Heptane	1666	3.00	0.70	G	<0.200						mg/L
n-Hexane	1666	3.00	0.70	G	<0.200						mg/L
Isobutyraldehyde	1666	20.70	8.20	G	<0.200						mg/L
Isopropyl acetate	1666	20.70	8.20	G	<0.100						mg/L
Isopropyl ether	1666	20.70	8.20	G	<0.100						mg/L
Methylene chloride	524.2	3.00	0.70	G	<0.100						mg/L
Methyl formate	1666	20.70	8.20	G	<1						mg/L
4-Methyl-2-pentanone	1666	20.70	8.20	G	<0.200						mg/L
Tetrahydrofuran	1666	9.20	3.40	G	<0.400						mg/L
Toluene	524.2	0.30	0.20	G	<0.100						mg/L
Triethyl amine*	1671	255.00	100.00	G	*						mg/L
Xylenes	1666	3.00	0.70	G	<0.26						mg/L
** Annual monitoring requirement - Diethyl amine and Triethyl amine were reported first quarter 2012*											
Shaded values represent detection limits.											
Dilution by lab					20						

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METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

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Company Name: **MALLINCKRODT INC.**
Permit No.: 2112059600 - 3 Effective Date: 06-01-2010 Expiration Date: 05-31-2015
Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: ____(JAN-MAR) __X__(APR-JUN) ____(JULY-SEP) ____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->		920						
DATES ON WHICH SAMPLES WERE COLLECTED			---->		4/3/2012						
TIMES AT WHICH SAMPLES WERE COLLECTED			---->		1120						
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW G=Grab, C-composite, M=measured flow, E=estimated flow							UNITS
FLOW				E	13,000	E					gal/day
Tetrahydrofuran	1666	9.20	3.40	G	<0.400	G					mg/L
Toluene	524.2	0.30	0.20	G	<0.100	G					mg/L
Shaded values represent detection limits.											
Dilution by lab					20						

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PART I: IDENTIFYING INFORMATION

Company Name: **MALLINCKRODT INC.**
Permit No.: 2112059600 - 3 Effective Date: 06-01-2010 Expiration Date: 05-31-2015
Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: ____(JAN-MAR) _X___(APR-JUN) ____(JULY-SEP) ____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->		927							
DATES ON WHICH SAMPLES WERE COLLECTED			---->		5/14/2012							
TIMES AT WHICH SAMPLES WERE COLLECTED			---->		13:00							
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW G=Grab, C-composite, M=measured flow, E=estimated flow								UNITS
FLOW				E	2,700							gal/day
Acetone	524.2	20.70	8.20	G	<1							mg/L
n-Amyl acetate	1666	20.70	8.20	G	<0.100							mg/L
Ethyl Acetate	1666	20.70	8.20	G	<0.200							mg/L
Isopropyl acetate	1666	20.70	8.20	G	<0.100							mg/L
Methylene chloride	524.2	3.00	0.70	G	<0.100							mg/L
Shaded values represent detection limits.												
Dilution by lab					20							

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METROPOLITAN ST. LOUIS SEWER DISTRICT
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PART I: IDENTIFYING INFORMATION

Company Name: Mallinckrodt Inc.
Permit No.: 2112059600 - 3
Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: ____(JAN-MAR) __X__(APR-JUN) ____(JULY-SEP) ____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TekLab

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->		930						
DATES ON WHICH SAMPLES WERE COLLECTED			---->		NA						
TIMES AT WHICH SAMPLES WERE COLLECTED			---->		NA						
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW G=Grab, C-composite, M=measured flow, E=estimated flow						UNITS	Permit
FLOW				E	*					gal/day	Avg Flow
Acetone	524.2	20.70	8.20	G	*					mg/L	
Ethyl Acetate	1666	20.70	8.20	G	*					mg/L	
Isopropyl acetate	1666	20.70	8.20	G	*					mg/L	
Methylene chloride	524.2	3.00	0.70	G	*					mg/L	
n-Amyl acetate	1666	20.70	8.20	G	*					mg/L	
* No flow during this reporting period.											
Dilution by lab					20						

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Monitoring Period: _____(JAN-MAR) _X___(APR-JUN) ____(JULY-SEP) ___(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TekLab

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->		933							
DATES ON WHICH SAMPLES WERE COLLECTED			---->		4/16/2012							
TIMES AT WHICH SAMPLES WERE COLLECTED			---->		13:15							
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW G=Grab, C-composite, M=measured flow, E=estimated flow								UNITS
FLOW				E	100							gal/day
Acetone	524.2	20.70	8.20	G	1.820							mg/L
n-Amyl acetate	1666	20.70	8.20	G	<0.100							mg/L
Ethyl Acetate	1666	20.70	8.20	G	<0.200							mg/L
Isopropyl acetate	1666	20.70	8.20	G	<0.100							mg/L
Methylene chloride	524.2	3.00	0.70	G	<0.100							mg/L
Shaded values represent detection limits.												
Dilution by lab					20							

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PART I: IDENTIFYING INFORMATION

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Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: ___(JAN-MAR) _X__(APR-JUN) ___(JULY-SEP) ___(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By:

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->		935 ✓							
DATES ON WHICH SAMPLES WERE COLLECTED			---->		NA							
TIMES AT WHICH SAMPLES WERE COLLECTED			---->		NA							
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW** G=Grab, C-composite, M=measured flow, E=estimated flow								UNITS
FLOW				E	*							gal/day
Acetone	524.2	20.70	8.20	G	*							mg/L
Benzene	524.2	3.00	0.70	G	*							mg/L
Chlorobenzene	524.2	3.00	0.70	G	*							mg/L
Chloroform	524.2	0.10	0.03	G	*							mg/L
1,2-Dichlorobenzene	524.2	20.70	8.20	G	*							mg/L
1,2-Dichloroethane	524.2	20.70	8.20	G	*							mg/L
Ethyl Acetate	1666	20.70	8.20	G	*							mg/L
n-Hexane	1666	3.00	0.70	G	*							mg/L
Methylene chloride	524.2	3.00	0.70	G	*							mg/L
4-Methyl-2-pentanone	1666	20.70	8.20	G	*							mg/L
Tetrahydrofuran	1666	9.20	3.40	G	*							mg/L
Toluene	524.2	0.30	0.20	G	*							mg/L
Xylenes	1666	3.00	0.70	G	*							mg/L
Isobutyraldehyde	1666	20.70	8.20	G	*							mg/L
n-Amyl acetate	1666	20.70	8.20	G	*							mg/L
n-Butyl acetate	1666	20.70	8.20	G	*							mg/L
Isopropyl acetate	1666	20.70	8.20	G	*							mg/L
Isopropyl ether	1666	20.70	8.20	G	*							mg/L
n-Heptane	1666	3.00	0.70	G	*							mg/L
Methyl formate	1666	20.70	8.20	G	*							mg/L
Diethyl amine	1671	255.00	100.00	G	*							mg/L
Triethyl amine	1671	255.00	100.00	G	*							mg/L
**** No PEG flow this quarter***												
Dilution by lab												

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Company Name: Mallinckrodt Inc.
Permit No.: 2112059600 - 3
Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: ____(JAN-MAR) __X___(APR-JUN) ____(JULY-SEP) ____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS ----->					**936**	
DATES ON WHICH SAMPLES WERE COLLECTED ----->					5/11/2012	
TIMES AT WHICH SAMPLES WERE COLLECTED ----->					1000	
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS** G=Grab, C-composite, M=measured flow, E=estimated flow		UNITS
FLOW				E	16,500	gal/day
Acetone	524.2	20.70	8.20	G	0.16	mg/L
n-Amyl acetate	1666	20.70	8.20	G	<0.100	mg/L
Benzene	524.2	3.00	0.70	G	<0.100	mg/L
n-Butyl acetate	1666	20.70	8.20	G	<0.100	mg/L
Chlorobenzene	524.2	3.00	0.70	G	<0.100	mg/L
Chloroform*	524.2	0.10	0.03	G	0.01	mg/L
1,2-Dichlorobenzene	524.2	20.70	8.20	G	<0.100	mg/L
1,2-Dichloroethane	524.2	20.70	8.20	G	<0.100	mg/L
Diethyl amine**	1671	255.00	100.00	G	**	mg/L
Ethyl Acetate	1666	20.70	8.20	G	1.26	mg/L
n-Heptane	1666	3.00	0.70	G	<0.200	mg/L
n-Hexane	1666	3.00	0.70	G	<0.200	mg/L
Isobutyraldehyde	1666	20.70	8.20	G	<0.200	mg/L
Isopropyl acetate	1666	20.70	8.20	G	<0.100	mg/L
Isopropyl ether	1666	20.70	8.20	G	<0.100	mg/L
Methylene chloride	524.2	3.00	0.70	G	<0.100	mg/L
Methyl formate	1666	20.70	8.20	G	<1	mg/L
4-Methyl-2-pentanone	1666	20.70	8.20	G	<0.200	mg/L
Tetrahydrofuran	1666	9.20	3.40	G	<0.400	mg/L
Toluene	524.2	0.30	0.20	G	<0.100	mg/L
Triethyl amine**	1671	255.00	100.00	G	**	mg/L
Xylenes	1666	3.00	0.70	G	<0.26	mg/L
*** Chloroform Results**	**Raw Water**	**SP936**	**SP936- Raw Water**			
5/11/2012	**0.012 mg/l**	**<0.020 mg/l**	**0.01**			
Results above reported as the difference between SP936 and Raw Water.						
If Raw Water result is > than SP936 result, the result for SP936 will be used						
*** Annual monitoring requirement - Diethyl amine and Triethyl amine were reported first quarter 2012*						
Shaded values represent detection limits.						
Dilution by lab					20	

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2012 2Q SP9XX PEG.xlsx

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PLEASE READ THE INSTRUCTIONS BEFORE COMPLETING THIS REPORT

PART I: IDENTIFYING INFORMATION

Company Name: Mallinckrodt Inc.
Permit No.: 2112059600 - 3
Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: ____(JAN-MAR) _X___(APR-JUN) ____(JULY-SEP) ____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->		937						
DATES ON WHICH SAMPLES WERE COLLECTED			---->		4/3/2012						
TIMES AT WHICH SAMPLES WERE COLLECTED			---->		11:20						
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW** G=Grab, C-composite, M=measured flow, E=estimated flow							UNITS
FLOW				E	23,000						gal/day
Tetrahydrofuran	524.2	9.20	3.40	G	<0.400						mg/L
Toluene	524.2	0.30	0.20	G	<0.100						mg/L
Shaded values represent detection limits.											
Dilution by lab					20						

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METROPOLITAN ST. LOUIS SEWER DISTRICT
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Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: ____(JAN-MAR) _X___(APR-JUN) ____(JULY-SEP) ____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TekLab

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS ---->					938						
DATES ON WHICH SAMPLES WERE COLLECTED ---->					5/18/2012						
TIMES AT WHICH SAMPLES WERE COLLECTED ---->					12:00						
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW G=Grab, C-composite, M=measured flow, E=estimated flow							UNITS
FLOW				E	71						gal/day
Acetone	524.2	20.70	8.20	G	<1						mg/L
n-Amyl acetate	1666	20.70	8.20	G	<0.100						mg/L
Ethyl Acetate	1666	20.70	8.20	G	<0.200						mg/L
Isopropyl acetate	1666	20.70	8.20	G	<0.100						mg/L
Methylene chloride	524.2	3.00	0.70	G	<0.100						mg/L
Shaded values represent detection limits.											
Dilution by lab					20						

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PART III: SPECIAL CERTIFICATION STATEMENTS

Based on the special conditions contained in your discharge permit you may be required to certify the following. Please review your permit and **PLACE YOUR INITIALS ON THE LINES NEXT TO THE CERTIFICATIONS.**

A	NO CHANGE IN WASTEWATER DISCHARGE AT SAMPLE POINTS WITH NO MONITORING REQUIRED
	For permit special conditions that waive monitoring at any sample point(s) specified in your permit, you are required to make the following certification for each report in which monitoring is waived: __JA__ I certify, since the last discharge monitoring report, there has been no change in the character of the wastes discharged at sample points 001 and 002. __JA__ I certify, since the last discharge monitoring report, there has been no discharge from sample points 008 and 011.
B	NO CHANGE IN WASTEWATER DISCHARGE AT ACTIVE CONNECTIONS WITHOUT SAMPLE POINTS
	For permit special conditions that waive monitoring at active connection points which are not specified as sample points in your permit, you are required to make the following certification: __JA__ I certify, since the last discharge monitoring report, there has been no change in the character of wastes discharged at those active connection points which are not specified in my permit.
E	NO DISCHARGE OF CATEGORICAL WASTE
	For permit special conditions that prohibit discharge of wastes which are subject to certain categorical pretreatment standards, you are required to make the following certification: __JA__ I certify, since the last discharge monitoring report, there has been no discharge of wastes which are subject to pretreatment standards in 40 CFR 414 (except for those wastes conveyed by SP 905).
F	CYANIDE NOT USED OR GENERATED IN 40 CFR 439 OPERATIONS
	Discharges subject to Pharmaceutical Categorical Standards (40 CFR 439) can be exempted from limitations and monitoring for Total Cyanide at the Pharmaceutical sample points 080, 915, 920, 935, 936, and 937, subject to the following certification: __JA__ I certify, since the last discharge monitoring report, cyanide has not been used or generated in any pharmaceutical manufacturing process subject to Categorical Standards in 40 CFR 439.
H	PHARMACEUTICAL POLLUTANTS NOT USED OR GENERATED IN 40 CFR 439 OPERATIONS
	Discharges subject to Pharmaceutical Categorical Standards (40 CFR 439) can be exempted from monitoring for certain 40 CFR 439-regulated pollutants at the Pharmaceutical sample points 915, 935, and 936, subject to the following certification: __JA__ I certify, since the last discharge monitoring report, the 40 CFR 439-regulated pollutants, as determined in permittee's report dated April 5, 2010, have not been used or generated in any pharmaceutical manufacturing process subject to Categorical Standards in 40 CFR 439. In addition, the above-referenced report remains valid.
I	SURROGATE MONITORING ALLOWED FOR 40 CFR 439 OPERATIONS
	Discharges subject to Pharmaceutical Categorical Standards (40 CFR 439) can be exempted from monitoring for certain 40 CFR 439-regulated pollutants, and replaced by monitoring for surrogate pollutant(s), at the Pharmaceutical sample points 920 and 937 subject to the following certification: __JA__ I certify, since the last discharge monitoring report, the 40 CFR 439-regulated pollutants, as determined in permittee's report dated April 5, 2010, continue to receive the same degree of treatment as the surrogate pollutant(s). In addition, the above-referenced report remains valid.

PART IV: GENERAL CERTIFICATION STATEMENTS

B	DISCHARGE MONITORING REPORT CERTIFICATION
	All permittees must sign and complete the information below: I certify under penalty of Law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. Print or type name of signing official: James A. Walter Title: Senior Director of Manufacturing Telephone: 314-654-1300 Signature: _____ Date: 7/27/12 RECEIVED

JUL 30 2012

DIVISION OF ENVIRONMENTAL COMPLIANCE

METROPOLITAN ST. LOUIS SEWER DISTRICT
INDUSTRIAL USER RADIOACTIVE MATERIALS DISCHARGE REPORT

PART I: IDENTIFYING INFORMATION

Company Name: Mallinckrodt

Permit No: 2112059600-3

Premise Address: 3600 N Second St. St. Louis, MO 63147

Reporting Period: ☐(JAN-MAR) ☒(APR-JUNE) ☐(JULY-SEPT) ☐(OCT-DEC)

PART II: RECORD OF DISPOSAL OF RADIOACTIVE MATERIALS TO THE SEWER SYSTEM

RADIONUCLIDE	ACTIVITY DISCHARGED (millicuries)
Ur-234	1.07×10^{-3}
Ur-235	5.01×10^{-4}
Ur-238	1.07×10^{-3}
Ra-226	2.3×10^{-3}
Ra-228	1.68×10^{-3}
Th-228	1.28×10^{-3}
Th-230	9.57×10^{-4}
Th-232	7.27×10^{-4}
TOTAL ACTIVITY DISCHARGED:	9.59×10^{-3}

PART III: CERTIFICATION STATEMENTS

Place your initials in the box under item A.
Everyone must complete the information under items A & B and sign this report.

A. CERTIFICATION OF COMPLIANCE WITH STATE AND FEDERAL REGULATIONS

I certify that to the best of my knowledge & belief, all requirements of 10 CFR Part 20.2003 and 19 CSR Part 20-10.090 governing disposal by release into sanitary sewage for material regulated by the Nuclear Regulatory Commission and the Missouri Department of Health, respectively, have been met for the period covered by this report.

B. RADIOACTIVE MATERIALS DISCHARGE REPORT CERTIFICATION

I certify under penalty of Law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

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Print/type name of signing official: James A. Walter

Title: Senior Director of Manufacturing Telephone: 314-654-1300

Signature: Date: 7/27/12

radrpt.doc 2/00

MSD 012368

MSD

TO: Chris Verplancke - Finance Department

FROM: Steven M. Grace – DEC SMG

DATE: July 30, 2012

RE: **Wastewater User Charge Billing for Special Discharge**

Please bill, by invoice, the following charges applicable to an on-site special discharge approved in our letter dated October 30, 1998, as modified in letters dated November 20, 1998, July 19, 1999, March 28, 2001, October 13, 2004, June 19, 2006, May 22, 2008, May 10, 2010, and May 24, 2012. The discharge dates and quantity are from information submitted by Sharon Cotner, Corps of Engineers, in a letter dated July 26, 2012. Please note that, as of July 1, 2012, the volume charge of $2.28 per 100 cubic feet of wastewater became effective.

This charge is based on the rates in MSD Wastewater User Charge Ordinance 13021.

PARTY TO BILL: Larry Joellenbeck
The Shaw Group Inc.
1 Angelrodt Street
St. Louis, MO 63147

BILLING IS FOR: On-Site Special Discharge

DISCHARGE PERIOD: April through June 2012

SOURCE OF WASTE: Treated construction water from the St. Louis Downtown FUSRAP Site located at Mallinckrodt, Inc., 3600 N. Second Street, St. Louis, Missouri.

Discharge Period	Billing Item	Quantity	Units	Rate	Charge
4/1/12 - 6/30/12	Volume	223	CcF	$2.11	$470.53
Totals:	---	223	CcF	---	$470.53

If you have any questions, please call me on extension 8755.

bv

pc: Becky Bartholomew – Finance Dept.
Laura Joiner – Finance Dept.
Brian Gibson
Doug Mendoza
Larry Joellenbeck, The Shaw Group Inc., 1 Angelrodt St., St. Louis, MO 63147

File: IU, MALLINCKRODT INC [2112059600]

Metropolitan St. Louis Sewer District

Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

July 18, 2012

Amber Crouch
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Dear Ms. Crouch:

We have reviewed your application dated July 16, 2012 requesting approval to discharge 200 gallons of wastewater to the Metropolitan St. Louis Sewer District for treatment. This wastewater is 40% ethylene glycol solution from the chiller system associated with the Peptides processing area in Building 96 of the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri. We understand that the wastewater will be discharged through sampling point 010.

Based on the information you provided, this wastewater meets MSD Ordinance 12559 standards and is approved for discharge into a combined sewer on site. **This approval is valid for 30 days from the date of this letter.**

You must be certain the waste is discharged into a combined sewer inlet only. This letter does not authorize any discharge to a separate storm sewer, or to any watercourse, as any such discharge would be in violation of state and federal laws. **Please notify me at the number below when the discharge is to commence, and please ensure the onsite personnel discharging the wastewater in question are provided with a copy of this letter.**

For billing purposes associated with this high COD wastewater, you must confirm the volume of this wastewater discharged to us, in writing, at the completion of the discharge. This report is due no later than 28 days after this approval expires. Please refer to this letter and include the date of the discharge when providing that figure. Under the provisions of Ordinance 13402, you will be billed by invoice at the billing rate in effect at the time of discharge. The current rate contained in MSD Ordinance 13402 is $310.07 per ton for COD over 600 mg/L. Using the assumed COD concentration based on the percent of ethylene glycol contained in the wastewater in question, and the proposed discharge volume provided in your application, it is estimated that you will be discharging under 0.5 tons of COD over 600 mg/L. (Our quantitative estimate is 0.33 tons COD times $310.07). Please do not pay this amount until you receive our invoice.

This discharge has been approved based upon the information and sample analysis you provided, and is subject to the conditions stated above. This approval may be revoked by the District at any time if any of the information is found to be incorrect, or if the conditions of this approval are violated. Also, if the discharge causes any operational or maintenance problem within the District's collection or treatment system, or results in violations of any conditions of the District's NPDES permit, Mallinckrodt will be considered responsible for damages. If you have any questions, please call me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

ec: Brian Gibson
Doug Mendoza

File: IU, MALLINCKRODT INC [1011728100]

C1A

SD EVALUATION CHECKLIST - ON SITE

APPLICATION INFORMATION

Source Name: Mallinckrodt LLC Evaluated by: SMG

Premise Address: 3600 N. 2nd St. Date: 7/18/12

Send approval letter to applicant

Application Dated: 7/16/12 Received: 7/18/12 All Requested Info. Received: 7/18/12

SOURCE FILING/DESCRIPTION

1 - Source in PIMS? (Y) / N
2 - If No, on IU Cross-Ref list? * Y / N
3 - If No, MSD Account # from E-CIS? Y / N
4 - If none, on "Source" list (pre-IMS)? ** Y / N
5 - If No, assigned SOUR# from PIMS.

SOURCE TYPE (circle): (IU) / Dead IU / SD

INDUSTRY ID: 1011728-00

* o:\costrecovery\cross reference xls file

** o:\costrecovery\sourlist xls file

Sample Point: No. Assigned: 821 Description: 40% ethylene glycol soln. from the chiller system assoc. w/ Peptides proc. area in Bldg. 96

Normal WW flow from premise? N/A _____ ccf/month, 2,992,010 GPD, _____ GPH.

REGULATORY STATUS

Is waste a Hazardous Waste? (N) / Y _____

Categorical standards apply? (N) / Y _____

Contain PCB/ asbestos/ radioactive/ dioxin/ used oil? (N) / Y _____

Regulatory Agency Oversight? (N) / Y _____

DISCHARGE CONSIDERATIONS At MSD's connection:

Ordinance Limits (12559, p. 32) exceeded? (N) / Y _____

Ordinance other limits exceeded (dye, flash pt <140° F, temp >140° F, obstruction, nuisance foaming/odor, corrosion causing): (N) / Y _____

Water Quality Standard exceeded? (N) / Y _____

Fumes in sewer exceed PEL/TLV limits? (N) / Y _____

Vapors in sewer exceed 10% of LEL? (N) / Y _____

RECOMMENDATION: (APPROVE) / DENY (cc WWTP Mgr for timed discharge)

APPROVAL CONDITIONS:

Timed Discharge (COD/BOD/WQ/foam): (N) / Y Limit = _____ gal/hour

Require Treatment before Discharge? (N) / Y _____

Laboratory analysis fee due? (N) / Y $_____

SMR required? (N) / Y Frequency/analysis: _____

SMR log: (N/A) / Remediation.xls / Nonremediation.xls

Volume Billing applies (water unmetered or credited)? (N) / Y

Bill High Strength? N / (Y) Yes, If use >60,000 gal/month water ✓ and, > norm WW strgth

Surcharge calculation attached: N/A / N / (Y)

Expiration log updated: (N/A) / N / Y

O:\CostRecovery\Special Discharge\C1a.Checklist.doc

On-Site Special Discharge High Strength Flow Rate and Surcharge Calculator

1 GENERAL INFORMATION:

Date: 07/18/12
Calculated by: Steve Grace
Source name: MALLINCKRODT LLC [1011728100]
Waste material: Used ethylene glycol solution from building 96 chiller system
Discharge volume: 200 gallons

2 STRENGTH INFORMATION:

Sample BOD =	0	mg/l =	0	lbs BOD to be discharged
Sample COD =	400,000	mg/l =	667	lbs COD to be discharged
Sample TSS =	0	mg/l =	for surcharge calculation only	

3 PLANT DATA: 2007

Treatment area: Bissell

	Flow (MGD)	BOD (mg/L)	COD (mg/L)	BOD (lb/hr)	COD (lb/hr)	Max Loading = BOD (lb/hr)	10% COD (lb/hr)
Bissell	119	174	348	7,171	14,341	717	1,434
Coldwater	23	226	452	1,768	3,535	177	354
Fenton	5	307	614	482	964	48	96
Grand Glaize	16	152	399	830	2,183	83	218
Lemay	122	81	228	3,438	9,610	344	961
Lower Meramec	10	124	364	452	1,326	45	133
Missouri River	28	281	561	2,732	5,465	273	546

4 MINIMUM REQUIRED FLOW RATE:

	BOD (hours	BOD (gpm)	COD (hours)	COD (gpm)
Bissell	0.00	0	0.47	7
Coldwater	0.00	0	1.89	2
Fenton	0.00	0	6.92	0
Grand Glaize	0.00	0	3.06	1
Lemay	0.00	0	0.69	5
Lower Meramec	0.00	0	5.03	1
Missouri River	0.00	0	1.22	3

5 SURCHARGE AND VOLUME BILLING

Is volume subject to billing? no (yes/no)
Ratio of BOD/COD = 0.00

(Sample BOD) - 300 = 0 mg/l subject to surcharge
(sample COD) - 600 = 399400 mg/l subject to surcharge
(sample TSS) - 300 = 0 mg/l subject to surcharge

If BOD/COD ratio <= 0.35, the following calculations use the COD value. Otherwise they use the BOD value

Current rates under Ordinance: 13402

Volume = $ 2.28 /CcF
BOD = $ 620.14 /ton
COD = $ 310.07 /ton
TSS = $ 231.35 /ton

Flow charge = $ - based on volume = 0.3 CcF
BOD surcharge = $ -
COD surcharge = $ 103.31
TSS surcharge = $ -
Total discharge charge = $ 103.31
Customer charge = $ 103.31 DEC charges special discharge customers for total charges > $20.00
Approximate charge/gallon = $ 0.52

Comments

require volume report for billing purposes. Smg

Steve Grace

From: Crouch, Amber <Amber.Crouch@Covidien.com>
Sent: Wednesday, July 18, 2012 11:44 AM
To: Steve Grace
Subject: RE: Special Discharge Request - Mallinckrodt 7-18-2012

It is in bldg. 96

From: Steve Grace [mailto:sgrace@stlmsd.com]
Sent: Wednesday, July 18, 2012 11:33 AM
To: Crouch, Amber
Subject: RE: Special Discharge Request - Mallinckrodt 7-18-2012

Hello Amber,

Can I ask where the Peptides processing area is located...is there a specific building in which this occurs?

Thanks,
Steve

From: Crouch, Amber [mailto:Amber.Crouch@Covidien.com]
Sent: Wednesday, July 18, 2012 10:45 AM
To: Steve Grace
Subject: Special Discharge Request - Mallinckrodt 7-18-2012

Steve,

Please see the attached special discharge permit application and MSDS. This request is for 200 gallons of 40% ethylene glycol from cleaning out of chiller lines in the Peptides processing area.

Please let me know if you need any additional information.

Thanks,

Amber Crouch
Senior HSE Engineer
Covidien
3600 North Second Street
St. Louis, MO 63147
USA

(314) 654-0127 office
(314) 253-2213 pager
(314) 654-1251 fax

www.covidien.com

This information may be confidential and/or privileged. Use of this information by anyone other than the intended recipient is prohibited. If you receive this in error, please inform the sender and remove any record of this message.

Metropolitan St. Louis Sewer District
2350 Market Street
St. Louis, MO 63103

APPLICATION FOR SPECIAL DISCHARGE APPROVAL

I. WASTEWATER SOURCE IDENTIFICATION:

Site Name: Mallinckrodt
Premise Address: 3600 N. 2nd St.
City: St. Louis State: MO Zip: 63147
Owner: Mallinckrodt
Contact Person: Amber Crouch
Title: EHS
Phone: 314-654-0127 Fax: 314-654-1251

II. APPLICANT (mailing information):

Applicant Name: Amber Crouch
Title: EHS
Company Name: Mallinckrodt
Mailing Address: 3600 N. 2nd St.
City: St. Louis State: MO Zip: 63147
Phone: 314-654-0127 Fax: 314-654-1251

III. A. MATERIAL TO BE DISCHARGED (check all applicable boxes):

1. Wastewater description/location: ethylene glycol + water
2. Process/activity generating wastewater: Clean out of chiller lines
3. Physical and chemical composition: List all constituents, and known or potentially present regulated contaminants below.
   ☐ See separate listing enclosed, and/or ☐ See analytical results enclosed, and/or ☑ Material Safety Data Sheet enclosed.

DESCRIPTION	RANGE	UNIT
ethylene glycol	40	%
water	60	%

DESCRIPTION *(continued)*	RANGE	UNIT

4. Is this wastewater from a process subject to EPA's categorical standards in 40 CFR Subchapter N? ☐ Yes ☑ No
   a. If yes, the applicable standards are in: 40 CFR Part _____, Subpart _____ ☐ Existing source ☐ New source
5. Does this wastewater contain polychlorinated biphenyls, asbestos or radioactive material? ☐ Yes ☑ No
   a. If yes, describe: _____
6. Representative sample: ☐ Laboratory results attached, and/or ☐ Sample provided (1/2 gallon minimum, clear container)
   a. Sample collection point/location: _____ Collection method: _____
   b. Sampler's name/Co.: _____ Sample date/time: _____
   c. Attach chain of custody as available
7. Discharge will occur over the following time period: ☑ < 30 days ☐ ≥ Two years ☐ Other: _____
   a. Expected total volume of wastewater to be discharged over the time period above: ~~100~~ ~~250~~ 200 Gallons
   b. Proposed discharge volume: 200 Gallons, at a frequency of: ☑ One time ☐ Daily ☐ Weekly ☐ Monthly ☐ Once/three months ☐ Once/six months ☐ Other: _____
8. Pretreatment of wastewater prior to discharge: ☐ None ☑ Yes, describe: pH adjust at main outfall
   a. If yes, attach site plan, pretreatment system schematic, and design specifications.
9. Wastewater from a remediation project under: ☐ Superfund/CERCLA ☐ RCRA ☐ Voluntary program ☐ UST ☑ Not applicable
   a. If from a remediation project, briefly describe the past and present utilization of the property: _____

III.B. MATERIAL FROM UNDERGROUND STORAGE TANK SOURCE

☑ Not applicable (go to Section IV)

Please answer the following questions if you are requesting to discharge wastewater associated with an underground storage tank system.

1. a. Wastewater from: ☐ Inside UST(s) ☐ UST system pit ☐ Excavation outside UST system pit ☐ Monitoring well ☐ Groundwater remediation system

   b. UST project involves wastewater from: ☐ UST(s) closed in place ☐ UST(s) removed ☐ Remediation ☐ Upgrade ☐ Maintenance activities ☐ Well monitoring ☐ Other, explain: _____

   c. If wastewater is from a closure project, how long has UST(s) been out of service: _____ years

2. a. State assigned UST site identification number: _____ ☐ Not applicable

   b. Number of USTs affected: _____ ☐ Unknown

   c. For the UST(s) involved, their state identification number(s): _____ ☐ Not applicable

   d. Service Station Identification Number, as applicable: _____

3. Tank contents/former contents: ☐ Gasoline ☐ #2 diesel ☐ Used oil ☐ Unknown ☐ Other: _____

IV. DISCHARGE LOCATION

1. ☑ On-site. Describe proposed point of entry to sewer and the discharge rate (must be a sanitary or combined sewer): _____
   plant sewer to main outfall SP010 Note: Range of discharge must not surcharge sewer line.

2. ☐ Haul to MSD Bissell Point Hauled Waste Receiving Station at 10 E. Grand, St. Louis, MO.

   a. Transporters Name: _____ and MSD Hauler ID Number: _____

   b. Hazardous Waste Certification:

   For wastewater which is hauled to MSD's Bissell Point Hauled Waste Receiving Station, I hereby certify that to the best of my knowledge and belief, the above hauled waste is not classified as a RCRA "hazardous waste" as defined by the MDNR in 10 CSR 25 or USEPA in 40 CFR Part 261.

   Applicant Name (print): _____

   Signature: _____ **Date:** _____

ADDITIONAL INFORMATION:

_____

V. APPLICANT SIGNATURE AND CERTIFICATION

This application must be signed by the applicant: either the source contact, or a contractor or agent directly responsible for site activities.

I hereby certify that I am directly responsible for activities at the site regarding the wastewater to be discharged, and to the best of my knowledge and belief, based on appropriate inquiry, the information in this application is true, complete, and accurate. The samples or analyses submitted are representative of the materials to be discharged. If granted approval to discharge, I agree to abide by the MSD Ordinances, and all applicable federal, state and local regulations. I agree to pay the costs of any pre-approval analyses performed by MSD and to pay any applicable disposal charges for the volume and strength of the wastes discharged.

Applicant Name (print): Amber Crouch

Signature: Amber Crouch **Date:** 7/16/12

FOR MSD USE ONLY:

File Name: Mallinckrodt LLC ID No. 10117281-00 Sample Point No. 821

Metropolitan St. Louis Sewer District
Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

July 17, 2012

Julie Summers
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Re: Wastewater User Charge Billing for Special Discharge

Dear Ms. Summers:

This is to advise you of the wastewater user charges applicable to an on-site special discharge approved in our original letter to you dated January 21, 2011, and extensions dated January 13, 2012 and July 16, 2012. The discharge dates and quantities are from information submitted by you in emails dated June 22 and July 16, 2012.

Our Finance Department will bill you by invoice for the charges described below. These charges are based on the rates in MSD Wastewater User Charge Ordinance 13021.

PARTY TO BILL: Addressee

BILLING IS FOR: On-Site Special Discharge

DISCHARGE PERIOD: May 8, 2012

SOURCE OF WASTE: One batch of treated rainwater and groundwater from the remediation of the Columbium-Tantalum (CT) decommissioning project at the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri.

Discharge Period	Billing Item	Quantity	Units	Rate	Charge
May 8, 2012	Volume	22	CcF	$2.11	$46.42
Totals:	------	22	CcF	-----	$46.42

Please do not pay until you receive our invoice. If you have any questions, please contact me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT
Steven M. Grace
Steve Grace
Environmental Assistant Engineer

bv

pc Chris Verplancke - Finance Dept.
Becky Bartholomew – Finance Dept.
Laura Joiner – Finance Dept.
Doug Mendoza
Brian Gibson

File: IU, MALLINCKRODT INC [2112059600], 3600 North Second Street, St. Louis, Missouri

Metropolitan St. Louis Sewer District

Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

July 16, 2012

Amber Crouch
MALLINCKRODT LLC
3600 N. 2nd Street
St. Louis, MO 63147

Re: Change in compliance charge rate
For premise at: **3600 N 2nd St.**
St. Louis, MO 63147

Dear Amber Crouch:

As you probably are aware, citizens in the Metropolitan St. Louis Sewer District's boundaries voted on June 5, 2012 to revise the rate structure for MSD customers. This revised rate structure affects more than the charge for volume. It also changes the compliance charge that is assessed for commercial accounts. This charge is a separate line item on your monthly bill.

Previously, the compliance charge was a flat rate for all non-residential accounts. It is now a tiered rate, more accurately reflecting the actual costs involved for federal regulatory requirements to inspect and sample companies. In addition to changing to a more equitable tiered rate, MSD has also re-evaluated the costs involved and program requirements, and has been able to make changes to greatly reduce the overall impact of the compliance charge.

For the vast majority of non-residential accounts, the compliance charge will decrease. However, certain companies that federal regulations require to be inspected or have their wastewater sampled will see their compliance charge increase, due to the costs involved in conducting the inspections and sampling. Your facility is one of the companies that these federal regulations encompass.

Barring any recent changes at your facility, the new compliance charge for your MSD sewer account will be **$163.75** per month. Please note also that the tier, and associated compliance charge, can change as conditions change at your facility.

Please note that MSD recognizes that many companies receive more than one MSD bill, because they have more than one incoming water account. The above compliance charge will apply to only one MSD account for each premise, with any other accounts receiving the minimum compliance charge of $23.00 per month. In addition, the minimum compliance charge for those additional accounts will further reduce to $2.15 per month by July 1, 2015.

An insert explaining the compliance charge in more detail will be included with the August bill for all non-residential accounts. This will help insure that the person or department actually paying the bill will also be aware of the changes.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Douglas M. Mendoza, P.E.
Manager of Industrial Pretreatment

Metropolitan St. Louis Sewer District
Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

July 16, 2012

Julie Summers
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Re: Wastewater User Charge Billing for Special Discharge

Dear Ms. Summers:

This is to advise you of the wastewater user charges applicable to an on-site special discharge approved in our original letter to you dated January 21, 2011, and extension dated January 13, 2012. The discharge dates and quantities are from information submitted by you in emails dated June 22 and July 16, 2012.

Our Finance Department will bill you by invoice for the charges described below. These charges are based on the rates in MSD Wastewater User Charge Ordinance 13021.

PARTY TO BILL: Addressee

BILLING IS FOR: On-Site Special Discharge

DISCHARGE PERIOD: April 1 – 30, 2012

SOURCE OF WASTE: 26 batches of treated rainwater and groundwater from the remediation of the Columbium-Tantalum (CT) decommissioning project at the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri.

Discharge Period	Billing Item	Quantity	Units	Rate	Charge
April 1-30, 2012	Volume	1,304	CcF	$2.11	$2,751.44
Totals:	------	1,304	CcF	-----	$2,751.44

Please do not pay until you receive our invoice. If you have any questions, please contact me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

pc Chris Verplancke - Finance Dept.
Becky Bartholomew – Finance Dept.
Laura Joiner – Finance Dept.
Doug Mendoza
Brian Gibson

File: IU, MALLINCKRODT INC [2112059600], 3600 North Second Street, St. Louis, Missouri

IU - Mallinckrodt SP850
3600 N. 2nd St.

MSD

Steve Grace

From: Steve Grace
Sent: Monday, July 16, 2012 9:07 AM
To: 'Summers, Julie'
Cc: Crouch, Amber; Burke, Karen
Subject: RE: CT Excavation Special Discharge Permit Extension Request

Hello Julie,

Based on the information provided below and the previously submitted laboratory analytical report, your request for an extension is granted. The new expiration date for this approval is December 21, 2012. All other conditions of the original approval remain in effect.

Please note that, as outlined in my email to you dated June 25, 2012, I believe I'm missing discharges 217-229, which may have occurred between March 27 and April 19. In addition, the most recent discharge information provided to me was a discharge that occurred on May 8, 2012. Please provide the summary of the missing discharges and the May discharges by July 20, and a summary of the June discharges by July 27, 2012.

Contact me with any questions.

Thanks,
Steve Grace

From: Summers, Julie [mailto:Julie.Summers@Covidien.com]
Sent: Friday, June 22, 2012 3:18 PM
To: Steve Grace
Cc: Crouch, Amber; Burke, Karen
Subject: CT Excavation Special Discharge Permit Extension Request

Steve,

The Special Discharge Permit for wastewater generated from the CT Excavation activities dated January 21, 2011 and modified by your June 24, 2011 letter and January 13, 2012 is due to expire on July 21, 2012. We are requesting an extension of this permit for 6 months to December 21, 2012. There are no changes in the source or characteristics of the wastewater since the discharge was originally approved.

Thanks and let me know if you have any questions or request additional information.

Julie Summers
Environmental Manager
Covidien/Mallinckrodt
3600 North 2nd Street
St. Louis, MO 63147
314-654-1969 Phone
314-654-1251 Fax

Industry: Mallinckrodt LLC 1011728100

From: David Kupke DK

Date: 07/02/12

Re: Change in Account Number

The account number for this company has been changed from: 2112059600

to: 1011728100

The change is due to the need to have all industry account numbers conform to the billing premise # - based system, so that the correct "compliance fee tier" charge can be automatically added to the sewer bill each month.

Metropolitan St. Louis Sewer District
Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

July 2, 2012

Amber Crouch
Senior HSE Engineer
MALLINCKRODT, LLC
3600 N. 2nd St.
St. Louis, MO 63147

RE: Zinc results at SP010 will not be averaged

Dear Ms. Crouch:

Thank you for your e-mail with sample data that you submitted on June 12, 2012. I had requested that you submit Zinc (T) results at SP010 from your 2nd Quarter self-monitoring sampling event. Since it was thought that your self-monitoring sample at SP010 was taken at or about the same time as our MSD sample at SP010, I mentioned in my June 7, 2012 Notice of Violation for Zinc (T) that the two samples were to be averaged once we received the results from your independent testing lab. The sample dates from the Zinc (T) data you submitted to me in your June 12, 2012 e-mail showed that your composite sample was started on 5/9/12 and picked up on 5/10/12. The MSD sample data composite sample was started on 5/10/12 and picked up on 5/11/12.

During our June 22, 2012 phone conversation, we had confirmed on both sides respectively that the composite samples were taken one day apart as stated above. Therefore, the two samples will not be averaged as previously thought.

Thank you for helping us to comply with state and federal regulations. If you have any questions, please contact me at 314.436.8709.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Jason Gill
Environmental Engineering Associate

File: Mallinckrodt, LLC (21120596-00)

cc: Doug Mendoza
Chris Bulmahn

Metropolitan St. Louis Sewer District
Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

June 28, 2012

Amber Crouch
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Re: Wastewater User Charge Billing for Special Discharge

Dear Ms. Crouch:

This is to advise you of the wastewater user charges applicable to an on-site special discharge approved in our letter to you dated June 14, 2012. That charge was determined using the ethylene glycol concentration in your application for special discharge. The discharge date and quantity are from information submitted by you in an email dated June 28, 2012.

Our Finance Department will bill you by invoice for the charge described below. This charge is based on the rates in MSD Wastewater User Charge Ordinance 13021. For your convenience, using the volume and strength of the waste discharged, the ordinance rates have been converted to a per-gallon basis.

PARTY TO BILL: Addressee

BILLING IS FOR: On-Site Special Discharge

DISCHARGE PERIOD: June 26, 2012

SOURCE OF WASTE: 20% ethylene glycol solution from Building 235 of the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri.

Discharge Period	Billing Item	Quantity	Units	Rate	Charge
6/26/12	Extra-Strength Surcharge	6,620	Gal	$0.26	$1,721.20
Total:	------	**6,620**	Gal	-----	**$1,721.20**

Please do not pay until you receive our invoice. If you have any questions, please contact me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

ec: Chris Verplancke - Finance Dept.
Becky Bartholomew – Finance Dept.
Laura Joiner – Finance Dept.
Doug Mendoza
Brian Gibson
File: IU, MALLINCKRODT INC [2112059600], 3600 North Second Street

Steve Grace

From: Crouch, Amber <Amber.Crouch@Covidien.com>
Sent: Thursday, June 28, 2012 8:25 AM
To: Steve Grace
Subject: Special Discharge dated June 14, 2012 - 20% Ethylene Glycol Bldg. 235

Steve,

The following discharge took place on 6/26/2012 and 6/27/2012.

20% Ethylene Glycol Solution from Bldg. 235
6/26/2012 4:00 am to 7:00 am – 621 gallons (207 gal/ hr)
6/26/2012 1:00 pm to 5:36 pm – 2541 gallons (583 gal/ hr)
6/26/2012 5:51 pm to 6/27/2012 12:12 am – 3458 gallons (556 gal/ hr)

Total discharge was 6620 gallons

Please let me know if you need any additional information.

Thanks,

Amber Crouch
Senior HSE Engineer
Covidien
3600 North Second Street
St. Louis, MO 63147
USA

(314) 654-0127 office
(314) 253-2213 pager
(314) 654-1251 fax

www.covidien.com

This information may be confidential and/or privileged. Use of this information by anyone other than the intended recipient is prohibited. If you receive this in error, please inform the sender and remove any record of this message.

Metropolitan St. Louis Sewer District
Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

June 28, 2012

Amber Crouch
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Re: Wastewater User Charge Billing for Special Discharge

Dear Ms. Crouch:

This is to advise you of the wastewater user charges applicable to an on-site special discharge approved in our letter to you dated May 29, 2012. You were advised of the extra-strength surcharges as part of the original approval letter. That charge was determined using the COD concentration contained in the laboratory analytical report dated February 29, 2012. The discharge date and quantity are from information submitted by you in an email dated June 28, 2012.

Our Finance Department will bill you by invoice for the charges described below. These charges are based on the rates in MSD Wastewater User Charge Ordinance 13021. For your convenience, using the volume and strength of the waste discharged, the ordinance rates have been converted to a per-gallon basis.

PARTY TO BILL: Addressee

BILLING IS FOR: On-Site Special Discharge

DISCHARGE PERIOD: June 26, 2012

SOURCE OF WASTE: Off-specification batch of iothalmic acid resulting from a process upset in Building 200 at the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri.

Discharge Period	Billing Item	Quantity	Units	Rate	Charge
6/26/12	Extra-Strength Surcharge	990	Gal	$0.34	$336.60
Total:	------	**990**	Gal	-----	**$336.60**

Please do not pay until you receive our invoice. If you have any questions, please contact me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT
Steven M. Grace

Steve Grace
Environmental Assistant Engineer
bv

ec: Chris Verplancke - Finance Dept.
Becky Bartholomew – Finance Dept.
Laura Joiner – Finance Dept.
Doug Mendoza
Brian Gibson
File: IU, MALLINCKRODT INC [2112059600], 3600 North Second Street

Steve Grace

From: Crouch, Amber <Amber.Crouch@Covidien.com>
Sent: Thursday, June 28, 2012 3:33 PM
To: Steve Grace
Subject: Special Discharge dated May 29, 2012 - Iothalmic Acid Bldg. 200

Steve,

The following discharge took place on 6/26/2012

Iothalmic acid solution from Bldg. 200
2:00 pm through 8:00 pm - 990 gallons total

Please let me know if you need any additional information.

Thanks,

Amber Crouch
Senior HSE Engineer
Covidien
3600 North Second Street
St. Louis, MO 63147
USA

(314) 654-0127 office
(314) 253-2213 pager
(314) 654-1251 fax

www.covidien.com

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MSD

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June 27, 2012

Jason Gill
Metropolitan St. Louis Sewer District
Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147

Re: Notice of Violation Dated June 7, 2012
Mallinckrodt, St. Louis Plant

Dear Mr. Gill,

Following is a summary of Mallinckrodt's responses to the action items outlined in the NOV issued on June 7, 2012.

An internal investigation was conducted to determine potential sources of Zinc. This included meeting with representatives from the process building and laboratories that handle materials containing Zinc to determine their potential contribution to Zinc in the wastewater that discharges to SP010.

Process Building X – Zinc stearate is used in the blending and packaging operations in Building X. Zinc stearate is insoluble in water, but could be present in wastewater as a suspended solid. Calculations were made to determine the potential concentration of Zinc in the wastewater that was discharged from affected operations on May 11, 2012. The calculated concentration of Zinc in the wastewater was 0.000308 mg/ L. The result was well below the permit limit of 3 mg/L and the MSD sample result of 12.0 mg/ L.

Laboratories – The quality laboratories have several analytical methods which require the use of Zinc-containing compounds. However, none of the waste from these laboratory methods is discharged to the sewer; it is sent offsite for disposal through our waste contractor.

Despite our investigation, the source of the high level of Zinc identified in the May 11, 2012 MSD sample was not identified. Therefore, no corrective action plans could be developed. Mallinckrodt will continue to monitor raw materials, intermediates, and lab chemicals for the presence of Zinc.

Immediately following notification by MSD, Mallinckrodt implemented plans to collect additional samples. Two additional samples were collected in June, falling in the same sampling period as Mallinckrodt's second quarter sample (collected on May 9, 2012)

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COVIDIEN/MALLINCKRODT
3600 NORTH SECOND STREET
ST. LOUIS, MO 63147

TELEPHONE: 314-654-2000
FAX: 314-654-1251

Mallinckrodt, LLC 10117281-00

COVIDIEN

and MSD's sample. The additional samples were collected to evaluate the site's compliance with MSD limitations for Zinc.

Additional Sampling – Corrective actions were taken as required by the NOV and included the collection of two samples from SP010. The two additional samples were collected on June 12 and June 14 and were analyzed for Zinc (T). The results of these two samples, along with the results from samples collected previously in 2012, are summarized in the table below. With the exception of the MSD sampling result on May 11, 2012, the results of the samples were all below the Zinc permit limit for SP010.

Zinc Results from SP010				
Date	Pollutant/ Sample Type	Discharge Limit	Limit Type	Value Found
2/9/2012 (1st quarter sample)	zinc/ composite	3.0 mg/L	DA	0.0401 mg/ L
5/9/2012 (2nd quarter sample)	zinc/ composite	3.0 mg/L	DA	0.0350 mg/ L
5/11/2012 (MSD sample)	zinc/ composite	3.0 mg/ L	DA	12.0 mg/ L
6/12/2012 (additional sample)	zinc/ composite	3.0 mg/ L	DA	0.0585 mg/ L
6/14/2012 (additional sample)	zinc/ composite	3.0 mg/ L	DA	0.1230 mg/ L

Results from the February and May analyses were previously provided. Attached are the analytical results for the two additional samples taken in June 2012. Based on the above, Mallinckrodt believes it has demonstrated its return to compliance.

If you have any questions or require more information, please contact me at 314-654-0127.

Sincerely,

Amber Crouch

Amber Crouch
Sr. Environmental Specialist

ENCLOSURES

Per 7/12/12 voicemail from Amber Crouch, the 6/12/12 + 6/14/12 samples were taken by Environmental Resources of St. Louis. – JAG

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COVIDIEN/MALLINCKRODT
3600 NORTH SECOND STREET
ST. LOUIS, MO 63147

TELEPHONE: 314-654-2000
FAX: 314-654-1251

June 14, 2012

Amber Crouch
Mallinckrodt Inc.
3600 N. 2nd St.
St. Louis, MO 63147
TEL: (314) 654-0127
FAX: (314) 654-1251

RE: SP010 - Zinc 1

WorkOrder: 12060546

Dear Amber Crouch:

TEKLAB, INC received 1 sample on 6/13/2012 1:16:00 PM for the analysis presented in the following report.

Samples are analyzed on an as received basis unless otherwise requested and documented. The sample results contained in this report relate only to the requested analytes of interest as directed on the chain of custody. NELAP accredited fields of testing are indicated by the letters NELAP under the Certification column. All tests are performed in the Collinsville, IL laboratory unless otherwise noted in the Case Narrative.

All quality control criteria applicable to the test methods employed for this project have been satisfactorily met and are in accordance with NELAP except where noted. The following report shall not be reproduced, except in full, without the written approval of Teklab, Inc.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Elizabeth A. Hurley

Elizabeth A. Hurley
Project Manager
(618)344-1004 ex 33
ehurley@teklabinc.com

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DIVISION OF
ENVIRONMENTAL COMPLIANCE

Definitions

Client: Mallinckrodt Inc.
Client Project: SP010 - Zinc 1

Work Order: 12060546
Report Date: 14-Jun-12

Abbr	Definition
CCV	Continuing calibration verification is a check of a standard to determine the state of calibration of an instrument between recalibration.
DF	Dilution factor is the dilution performed during analysis only and does not take into account any dilutions made during sample preparation. The reported result is final and includes all dilutions factors.
DNI	Did not ignite
DUP	Laboratory duplicate is an aliquot of a sample taken from the same container under laboratory conditions for independent processing and analysis independently of the original aliquot.
ICV	Initial calibration verification is a check of a standard to determine the state of calibration of an instrument before sample analysis is initiated.
IDPH	IL Dept. of Public Health
LCS	Laboratory control sample, spiked with verified known amounts of analytes, is analyzed exactly like a sample to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system. The acceptable recovery range is in the QC Package (provided upon request).
LCSD	Laboratory control sample duplicate is a replicate laboratory control sample that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MB	Method blank is a sample of a matrix similar to the batch of associated sample (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences should present at concentrations that impact the analytical results for sample analyses.
MDL	Method detection limit means the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.
MS	Matrix spike is an aliquot of matrix fortified (spiked) with known quantities of specific analytes that is subjected to the entire analytical procedures in order to determine the effect of the matrix on an approved test method's recovery system. The acceptable recovery range is listed in the QC Package (provided upon request).
MSD	Matrix spike duplicate means a replicate matrix spike that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MW	Molecular weight
ND	Not Detected at the Reporting Limit
NELAP	NELAP Accredited
PQL	Practical quantitation limit means the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operation conditions. The acceptable recovery range is listed in the QC Package (provided upon request).
RL	The reporting limit the lowest level that the data is displayed in the final report. The reporting limit may vary according to customer request or sample dilution. The reporting limit may not be less than the MDL.
RPD	Relative percent difference is a calculated difference between two recoveries (ie. MS/MSD). The acceptable recovery limit is listed in the QC Package (provided upon request).
SPK	The spike is a known mass of target analyte added to a blank sample or sub-sample; used to determine recovery deficiency or for other quality control purposes.
Surr	Surrogates are compounds which are similar to the analytes of interest in chemical composition and behavior in the analytical process, but which are not normally found in environmental samples.
TNTC	Too numerous to count (> 200 CFU)

Qualifiers

- # - Unknown hydrocarbon
- E - Value above quantitation range
- J - Analyte detected below quantitation limits
- ND - Not Detected at the Reporting Limit
- S - Spike Recovery outside recovery limits
- B - Analyte detected in associated Method Blank
- H - Holding times exceeded
- M - Manual Integration used to determine area response
- R - RPD outside accepted recovery limits
- X - Value exceeds Maximum Contaminant Level

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Teklab, Inc.
Environmental Laboratory

Case Narrative

http://www.teklabinc.com/

Client: Mallinckrodt Inc.
Client Project: SP010 - Zinc 1

Work Order: 12060546
Report Date: 14-Jun-12

Cooler Receipt Temp: 3.2 °C

Locations and Accreditations

Collinsville

Address	5445 Horseshoe Lake Road Collinsville, IL 62234-7425
Phone	(618) 344-1004
Fax	(618) 344-1005
Email	jhriley@teklabinc.com

Springfield

Address	3920 Pintail Dr Springfield, IL 62711-9415
Phone	(217) 698-1004
Fax	(217) 698-1005
Email	kmcclain@teklabinc.com

Kansas City

Address	8421 Nieman Road Lenexa, KS 66214
Phone	(913) 541-1998
Fax	(913) 541-1998
Email	dthompson@teklabinc.com

State	Dept	Cert #	NELAP	Exp Date	Lab
Illinois	IEPA	100226	NELAP	1/31/2013	Collinsville
Kansas	KDHE	E-10374	NELAP	1/31/2013	Collinsville
Louisiana	LDEQ	166493	NELAP	6/30/2012	Collinsville
Louisiana	LDEQ	166578	NELAP	6/30/2012	Springfield
Arkansas	ADEQ	88-0966		3/14/2013	Collinsville
Illinois	IDPH	17584		4/30/2013	Collinsville
Kentucky	UST	0073		5/26/2014	Collinsville
Missouri	MDNR	00930		4/13/2013	Collinsville
Oklahoma	ODEQ	9978		8/31/2012	Collinsville

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ENVIRONMENTAL COMPLIANCE

MSD 012390

Teklab, Inc.
Environmental Laboratory

Laboratory Results

http://www.teklabinc.com/

Client: Mallinckrodt Inc.
Client Project: SP010 - Zinc 1
Lab ID: 12060546-001
Matrix: AQUEOUS

Work Order: 12060546
Report Date: 14-Jun-12
Client Sample ID: SP010 - Zinc 1
Collection Date: 06/12/2012 10:15

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL)								
Zinc	NELAP	0.0500		**0.0585**	mg/L	5	06/14/2012 12:03	78959

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Teklab, Inc.
Environmental Laboratory

Receiving Check List

http://www.teklabinc.com/

Client: Mallinckrodt Inc.
Client Project: SP010 - Zinc 1

Work Order: 12060546
Report Date: 14-Jun-12

Carrier: Dawn Brantley

Received By: HLR

Completed by: Heather L. Riley
On: 13-Jun-12

Reviewed by: Elizabeth A. Hurley
On: 13-Jun-12

Pages to follow: Chain of custody 1 Extra pages included 0

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐	Temp °C 3.2
Type of thermal preservation?	None ☐	Ice ☑	Blue Ice ☐	Dry Ice ☐
Chain of custody present?	Yes ☑	No ☐		
Chain of custody signed when relinquished and received?	Yes ☑	No ☐		
Chain of custody agrees with sample labels?	Yes ☑	No ☐		
Samples in proper container/bottle?	Yes ☑	No ☐		
Sample containers intact?	Yes ☑	No ☐		
Sufficient sample volume for indicated test?	Yes ☑	No ☐		
All samples received within holding time?	Yes ☑	No ☐		
Reported field parameters measured:	Field ☐	Lab ☐	NA ☑	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐		

When thermal preservation is required, samples are compliant with a temperature between 0.1°C - 6.0°C, or when samples are received on ice the same day as collected.

Water – at least one vial per sample has zero headspace?	Yes ☐	No ☐	No VOA vials ☑
Water - TOX containers have zero headspace?	Yes ☐	No ☐	No TOX containers ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	

Any No responses must be detailed below or on the COC.

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JUL 02 2012
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ENVIRONMENTAL COMPLIANCE

MSD 012392

CHAIN OF CUSTODY

pg. 1 of 1 Work Order # 12060546

TEKLAB, INC. 5445 Horseshoe Lake Road ~ Collinsville, IL 62234 ~ Phone: (618) 344-1004 ~ Fax: (618) 344-1005

Client: Mallinckrodt Inc.
Address: 3600 N. 2nd St.
City / State / Zip: St. Louis, MO 63147
Contact: A. Crouch Phone: 314-654-0127
E-Mail: Fax:

Samples on: ☒ Ice ☐ Blue Ice ☐ No Ice 3.2 °C
Preserved in: ☐ Lab ☒ Field
FOR LAB USE ONLY
Lab Notes: JAA 6/13/12

Comments:
RL < Rlg. Limit
If headspace; continue processing.

- Are these samples known to be involved in litigation? If yes, a surcharge will apply. ☐ Yes ☒ No
- Are these samples known to be hazardous? ☐ Yes ☒ No
- Are there any required reporting limits to be met on the requested analysis? If yes, please provide limits in comment section. ☒ Yes ☐ No

Project Name / Number: SP010-Zinc 1
Sample Collector's Name: Dave Hensen

Results Requested: ☐ Standard ☒ 1-2 Day (100% Surcharge) ☐ Other_____ ☐ 3 Day (50% Surcharge)

Billing Instructions:

Lab Use Only	Sample Identification	Date/Time Sampled	UNPRES	HNO_3	NaOH	H_2SO_4	HCL	MeOH	$NaHSO_4$	Other	Water	Drinking Water	Soil	Sludge	Sp. Waste	Zinc
12060546 001	SP010-zinc 1	6/12/12 0715 to 1015		X							X					X

Teklab Inc. Courier Pick Up

One Day TAT

Relinquished By	Date / Time	Received By	Date / Time
Amber Crouch	6/13/12 11:50am	[signature]	6/13/12 1148
[signature]	6/13/12 1316	[signature]	6/13/12 1316

The individual signing this agreement on behalf of client acknowledges that he/she has read and understands the terms and conditions of this agreement, on the reverse side, and that he/she has the authority to sign on behalf of client.

WHITE – LAB YELLOW – SAMPLER'S COPY

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Teklab, Inc.
Environmental Laboratory

http://www.teklabinc.com/

June 18, 2012

Amber Crouch
Mallinckrodt Inc.
3600 N. 2nd St.
St. Louis, MO 63147
TEL: (314) 654-0127
FAX: (314) 654-1251

NELAP ACCREDITED LABORATORY

RE: SP010 - Zinc 2

WorkOrder: 12060691

Dear Amber Crouch:

TEKLAB, INC received 1 sample on 6/15/2012 3:54:00 PM for the analysis presented in the following report.

Samples are analyzed on an as received basis unless otherwise requested and documented. The sample results contained in this report relate only to the requested analytes of interest as directed on the chain of custody. NELAP accredited fields of testing are indicated by the letters NELAP under the Certification column. Unless otherwise documented within this report, Teklab Inc. analyzes samples utilizing the most current methods in compliance with 40CFR. All tests are performed in the Collinsville, IL laboratory unless otherwise noted in the Case Narrative.

All quality control criteria applicable to the test methods employed for this project have been satisfactorily met and are in accordance with NELAP except where noted. The following report shall not be reproduced, except in full, without the written approval of Teklab, Inc.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Deborah L Taylor

Deborah L. Taylor
Project Manager
(618)344-1004 ex 18
dtaylor@teklabinc.com

RECEIVED
JUL 02 2012
DIVISION OF
ENVIRONMENTAL COMPLIANCE

MSD 012394

Teklab, Inc.
Environmental Laboratory

Definitions

http://www.teklabinc.com/

Client: Mallinckrodt Inc.

Client Project: SP010 - Zinc 2

Work Order: 12060691

Report Date: 18-Jun-12

Abbr Definition

CCV Continuing calibration verification is a check of a standard to determine the state of calibration of an instrument between recalibration.

DF Dilution factor is the dilution performed during analysis only and does not take into account any dilutions made during sample preparation. The reported result is final and includes all dilutions factors.

DNI Did not ignite

DUP Laboratory duplicate is an aliquot of a sample taken from the same container under laboratory conditions for independent processing and analysis independently of the original aliquot.

ICV Initial calibration verification is a check of a standard to determine the state of calibration of an instrument before sample analysis is initiated.

IDPH IL Dept. of Public Health

LCS Laboratory control sample, spiked with verified known amounts of analytes, is analyzed exactly like a sample to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system. The acceptable recovery range is in the QC Package (provided upon request).

LCSD Laboratory control sample duplicate is a replicate laboratory control sample that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).

MB Method blank is a sample of a matrix similar to the batch of associated sample (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences should present at concentrations that impact the analytical results for sample analyses.

MDL Method detection limit means the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

MS Matrix spike is an aliquot of matrix fortified (spiked) with known quantities of specific analytes that is subjected to the entire analytical procedures in order to determine the effect of the matrix on an approved test method's recovery system. The acceptable recovery range is listed in the QC Package (provided upon request).

MSD Matrix spike duplicate means a replicate matrix spike that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).

MW Molecular weight

ND Not Detected at the Reporting Limit

NELAP NELAP Accredited

PQL Practical quantitation limit means the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operation conditions. The acceptable recovery range is listed in the QC Package (provided upon request).

RL The reporting limit the lowest level that the data is displayed in the final report. The reporting limit may vary according to customer request or sample dilution. The reporting limit may not be less than the MDL.

RPD Relative percent difference is a calculated difference between two recoveries (ie. MS/MSD). The acceptable recovery limit is listed in the QC Package (provided upon request).

SPK The spike is a known mass of target analyte added to a blank sample or sub-sample; used to determine recovery deficiency or for other quality control purposes.

Surr Surrogates are compounds which are similar to the analytes of interest in chemical composition and behavior in the analytical process, but which are not normally found in environmental samples.

TNTC Too numerous to count (> 200 CFU)

Qualifiers

- Unknown hydrocarbon

E - Value above quantitation range

J - Analyte detected below quantitation limits

ND - Not Detected at the Reporting Limit

S - Spike Recovery outside recovery limits

B - Analyte detected in associated Method Blank

H - Holding times exceeded

M - Manual Integration used to determine area response

R - RPD outside accepted recovery limits

X - Value exceeds Maximum Contaminant Level

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Teklab, Inc.
Environmental Laboratory

Case Narrative

http://www.teklabinc.com/

Client: Mallinckrodt Inc.
Client Project: SP010 - Zinc 2

Work Order: 12060691
Report Date: 18-Jun-12

Cooler Receipt Temp: 3.4 °C

Locations and Accreditations

Collinsville

Address	5445 Horseshoe Lake Road Collinsville, IL 62234-7425
Phone	(618) 344-1004
Fax	(618) 344-1005
Email	jhriley@teklabinc.com

Springfield

Address	3920 Pintail Dr Springfield, IL 62711-9415
Phone	(217) 698-1004
Fax	(217) 698-1005
Email	kmcclain@teklabinc.com

Kansas City

Address	8421 Nieman Road Lenexa, KS 66214
Phone	(913) 541-1998
Fax	(913) 541-1998
Email	dthompson@teklabinc.com

State	Dept	Cert #	NELAP	Exp Date	Lab
Illinois	IEPA	100226	NELAP	1/31/2013	Collinsville
Kansas	KDHE	E-10374	NELAP	1/31/2013	Collinsville
Louisiana	LDEQ	166493	NELAP	6/30/2012	Collinsville
Louisiana	LDEQ	166578	NELAP	6/30/2012	Springfield
Arkansas	ADEQ	88-0966		3/14/2013	Collinsville
Illinois	IDPH	17584		4/30/2013	Collinsville
Kentucky	UST	0073		5/26/2014	Collinsville
Missouri	MDNR	00930		4/13/2013	Collinsville
Oklahoma	ODEQ	9978		8/31/2012	Collinsville

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ENVIRONMENTAL COMPLIANCE

MSD 012396

Teklab, Inc.
Environmental Laboratory

Laboratory Results

http://www.teklabinc.com/

Client: Mallinckrodt Inc.
Client Project: SP010 - Zinc 2
Lab ID: 12060691-001
Matrix: AQUEOUS

Work Order: 12060691
Report Date: 18-Jun-12
Client Sample ID: SP010-Zinc 2
Collection Date: 06/14/2012 10:15

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL)								
Zinc	NELAP	0.0500		0.123	mg/L	5	06/18/2012 14:23	79048

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ENVIRONMENTAL COMPLIANCE

Teklab, Inc.
Environmental Laboratory

Receiving Check List

http://www.teklabinc.com/

Client: Mallinckrodt Inc.
Client Project: SP010 - Zinc 2

Work Order: 12060691
Report Date: 18-Jun-12

Carrier: Dawn Brantley

Received By: TWM

Completed by: Timothy W. Mathis
On: 15-Jun-12

Reviewed by: Elizabeth A. Hurley
On: 15-Jun-12

Pages to follow: **Chain of custody** 1 **Extra pages included** 0

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐	Temp °C 3.4
Type of thermal preservation?	None ☐	Ice ☑	Blue Ice ☐	Dry Ice ☐
Chain of custody present?	Yes ☑	No ☐		
Chain of custody signed when relinquished and received?	Yes ☑	No ☐		
Chain of custody agrees with sample labels?	Yes ☑	No ☐		
Samples in proper container/bottle?	Yes ☑	No ☐		
Sample containers intact?	Yes ☑	No ☐		
Sufficient sample volume for indicated test?	Yes ☑	No ☐		
All samples received within holding time?	Yes ☑	No ☐		
Reported field parameters measured:	Field ☐	Lab ☐	NA ☑	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐		

When thermal preservation is required, samples are compliant with a temperature between 0.1°C - 6.0°C, or when samples are received on ice the same day as collected.

Water – at least one vial per sample has zero headspace?	Yes ☐	No ☐	No VOA vials	☑
Water - TOX containers have zero headspace?	Yes ☐	No ☐	No TOX containers	☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐		
NPDES/CWA TCN interferences checked/treated in the field?	Yes ☐	No ☐	NA	☑

Any No responses must be detailed below or on the COC.

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ENVIRONMENTAL COMPLIANCE

MSD 012398

CHAIN OF CUSTODY

TEKLAB, INC. 5445 Horseshoe Lake Road ~ Collinsville, IL 62234 ~ Phone: (618) 344-1004 ~ Fax: (618) 344-1005

pg. 1 of 1 Work Order # 12060691

Client: Mallinckrodt Inc.
Address: 3600 N. 2nd St.
City / State / Zip: St. Louis, MO 63147
Contact: A. Crouch Phone: 314-654-0127
E-Mail: Fax:

Samples on: ☒ Ice ☐ Blue Ice ☐ No Ice 3.4 °C
Preserved in: ☐ Lab ☒ Field
Lab Notes: 03 6/15/12
FOR LAB USE ONLY

Comments: RL < Rlg. Limit
If headspace; continue processing

- Are these samples known to be involved in litigation? If yes, a surcharge will apply. ☐ Yes ☒ No
- Are these samples known to be hazardous? ☐ Yes ☒ No
- Are there any required reporting limits to be met on the requested analysis? If yes, please provide limits in comment section. ☒ Yes ☐ No

Project Name / Number: SP010-Zinc 2
Sample Collector's Name: Dave Hensen

Results Requested: ☐ Standard ☒ 1-2 Day (100% Surcharge) ☐ Other_____ ☐ 3 Day (50% Surcharge)

Billing Instructions:

Lab Use Only	Sample Identification	Date/Time Sampled	UNPRES	HNO_3	NaOH	H_2SO_4	HCL	MeOH	$NaHSO_4$	Other	Water	Drinking Water	Soil	Sludge	Sp. Waste	Zinc
12060691-001	SP010-Zinc 2	6/14/12 0715-1015		X							X					X

Teklab, Inc
Courier Pick Up

One Day TAT

Relinquished By	Date / Time	Received By	Date / Time
Amber Crouch	6/15/12 13:45	[signature]	6/15/12 1520
[signature]	6/15/12 1554	[signature]	6/15/12 ~~1520~~ 1554

The individual signing this agreement on behalf of client acknowledges that he/she has read and understands the terms and conditions of this agreement, on the reverse side, and that he/she has the authority to sign on behalf of client.

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ENVIRONMENTAL COMPLIANCE DIVISION RECEIVED 02 JUL 2012

MSD 012399

Metropolitan St. Louis Sewer District
Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

June 15, 2012

Amber Crouch
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Re: Wastewater User Charge Billing for Special Discharge

Dear Ms. Crouch:

This is to advise you of the wastewater user charges applicable to an on-site special discharge approved in our letter to you dated April 17, 2012. That charge was determined using the ethylene glycol concentration in your application for special discharge. The discharge dates and quantities are from information submitted by you in an email dated May 16, 2012.

Our Finance Department will bill you by invoice for the charges described below. These charges are based on the rates in MSD Wastewater User Charge Ordinance 13021. For your convenience, using the volume and strength of the waste discharged, the ordinance rates have been converted to a per-gallon basis.

PARTY TO BILL: Addressee

BILLING IS FOR: On-Site Special Discharge

DISCHARGE PERIOD: May 15, 2012

SOURCE OF WASTE: 45% ethylene glycol solution from Building 97 of the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri.

Discharge Period	Billing Item	Quantity	Units	Rate	Charge
5/15/12	Extra-Strength Surcharge	385	Gal	$0.58	$223.30
Total:	------	**385**	Gal	-----	**$223.30**

Please do not pay until you receive our invoice. If you have any questions, please contact me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

ec: Chris Verplancke - Finance Dept.
Becky Bartholomew – Finance Dept.
Laura Joiner – Finance Dept.
Doug Mendoza
Brian Gibson

File: IU, MALLINCKRODT INC [2112059600], 3600 North Second Street

Steve Grace

From: Crouch, Amber <Amber.Crouch@Covidien.com>
Sent: Wednesday, May 16, 2012 7:53 AM
To: Steve Grace
Subject: Mallinckrodt Special Discharge Permit dated April 17, 2012

Bldg. 97 Glycol
This discharge is complete and the permit can be closed.

Date of discharge – 5/15/2012
Start time – 0700
End time – 1100
Volume – 385 gallons

Let me know if you need any additional information.

Thanks,

Amber Crouch
Senior HSE Engineer
Covidien
3600 North Second Street
St. Louis, MO 63147
USA

(314) 654-0127 office
(314) 253-2213 pager
(314) 654-1251 fax

www.covidien.com

This information may be confidential and/or privileged. Use of this information by anyone other than the intended recipient is prohibited. If you receive this in error, please inform the sender and remove any record of this message.

✓JAG
CB

Jason Gill MSD

From: Crouch, Amber <Amber.Crouch@Covidien.com>
Sent: Tuesday, June 12, 2012 8:42 AM
To: Jason Gill
Subject: Mallinckrodt analytical for SP010
Attachments: 0413_001.pdf

Jason,

As discussed on the phone, here is the analytical for SP010 from our 2nd quarter sample. Analysis for SP010 is on page 7. Let me know if you have any questions.

Thanks,

This data will be entered when the 2nd Qtr SMR is received. CB

Amber Crouch
Senior HSE Engineer
Covidien
3600 North Second Street
St. Louis, MO 63147
USA

(314) 654-0127 office
(314) 253-2213 pager
(314) 654-1251 fax

www.covidien.com

This information may be confidential and/or privileged. Use of this information by anyone other than the intended recipient is prohibited. If you receive this in error, please inform the sender and remove any record of this message.

Mallinckrodt LLC 21120596-00

2nd Qtr

SP003 SP009
SP005 SP010

Teklab, Inc.
Environmental Laboratory

http://www.teklabinc.com/

May 15, 2012

Amber Crouch
Mallinckrodt Inc.
3600 N. 2nd St.
St. Louis, MO 63147
TEL: (314) 654-0127
FAX: (314) 654-1251

NELAP ACCREDITED LABORATORY

RE: Q2 Wastewater Samples

WorkOrder: 12050451

Dear Amber Crouch:

TEKLAB, INC received 4 samples on 5/9/2012 2:02:00 PM for the analysis presented in the following report.

Samples are analyzed on an as received basis unless otherwise requested and documented. The sample results contained in this report relate only to the requested analytes of interest as directed on the chain of custody. NELAP accredited fields of testing are indicated by the letters NELAP under the Certification column. All tests are performed in the Collinsville, IL laboratory unless otherwise noted in the Case Narrative.

All quality control criteria applicable to the test methods employed for this project have been satisfactorily met and are in accordance with NELAP except where noted. The following report shall not be reproduced, except in full, without the written approval of Teklab, Inc.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Deborah L Taylor

Deborah L. Taylor
Project Manager
(618)344-1004 ex 18
dtaylor@teklabinc.com

Client: Mallinckrodt Inc. **Work Order:** 12050451

Client Project: Q2 Wastewater Samples **Report Date:** 15-May-12

Abbr Definition

CCV	Continuing calibration verification is a check of a standard to determine the state of calibration of an instrument between recalibration.
DF	Dilution factor is the dilution performed during analysis only and does not take into account any dilutions made during sample preparation. The reported result is final and includes all dilutions factors.
DNI	Did not ignite
DUP	Laboratory duplicate is an aliquot of a sample taken from the same container under laboratory conditions for independent processing and analysis independently of the original aliquot.
ICV	Initial calibration verification is a check of a standard to determine the state of calibration of an instrument before sample analysis is initiated.
IDPH	IL Dept. of Public Health
LCS	Laboratory control sample, spiked with verified known amounts of analytes, is analyzed exactly like a sample to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system. The acceptable recovery range is in the QC Package (provided upon request).
LCSD	Laboratory control sample duplicate is a replicate laboratory control sample that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MB	Method blank is a sample of a matrix similar to the batch of associated sample (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences should present at concentrations that impact the analytical results for sample analyses.
MDL	Method detection limit means the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.
MS	Matrix spike is an aliquot of matrix fortified (spiked) with known quantities of specific analytes that is subjected to the entire analytical procedures in order to determine the effect of the matrix on an approved test method's recovery system. The acceptable recovery range is listed in the QC Package (provided upon request).
MSD	Matrix spike duplicate means a replicate matrix spike that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MW	Molecular weight
ND	Not Detected at the Reporting Limit
NELAP	NELAP Accredited
PQL	Practical quantitation limit means the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operation conditions. The acceptable recovery range is listed in the QC Package (provided upon request).
RL	The reporting limit the lowest level that the data is displayed in the final report. The reporting limit may vary according to customer request or sample dilution. The reporting limit may not be less than the MDL.
RPD	Relative percent difference is a calculated difference between two recoveries (ie. MS/MSD). The acceptable recovery limit is listed in the QC Package (provided upon request).
SPK	The spike is a known mass of target analyte added to a blank sample or sub-sample; used to determine recovery deficiency or for other quality control purposes.
Surr	Surrogates are compounds which are similar to the analytes of interest in chemical composition and behavior in the analytical process, but which are not normally found in environmental samples.
TNTC	Too numerous to count (> 200 CFU)

Qualifiers

# -	Unknown hydrocarbon	B -	Analyte detected in associated Method Blank
E -	Value above quantitation range	H -	Holding times exceeded
J -	Analyte detected below quantitation limits	M -	Manual Integration used to determine area response
ND -	Not Detected at the Reporting Limit	R -	RPD outside accepted recovery limits
S -	Spike Recovery outside recovery limits	X -	Value exceeds Maximum Contaminant Level

Client: Mallinckrodt Inc.
Client Project: Q2 Wastewater Samples

Work Order: 12050451
Report Date: 15-May-12

Cooler Receipt Temp: 1.8 °C

Locations and Accreditations

Collinsville		Springfield		Kansas City	
Address	5445 Horseshoe Lake Road Collinsville, IL 62234-7425	Address	3920 Pintail Dr Springfield, IL 62711-9415	Address	8421 Nieman Road Lenexa, KS 66214
Phone	(618) 344-1004	Phone	(217) 698-1004	Phone	(913) 541-1998
Fax	(618) 344-1005	Fax	(217) 698-1005	Fax	(913) 541-1998
Email	jhrilcy@teklabinc.com	Email	kmcclain@teklabinc.com	Email	dthompson@teklabinc.com

State	Dept	Cert #	NELAP	Exp Date	Lab
Illinois	IEPA	100226	NELAP	1/31/2013	Collinsville
Kansas	KDHE	E-10374	NELAP	1/31/2013	Collinsville
Louisiana	LDEQ	166493	NELAP	6/30/2012	Collinsville
Louisiana	LDEQ	166578	NELAP	6/30/2012	Springfield
Arkansas	ADEQ	88-0966		3/14/2013	Collinsville
Illinois	IDPH	17584		4/30/2013	Collinsville
Kentucky	UST	0073		5/26/2014	Collinsville
Missouri	MDNR	00930		4/13/2013	Collinsville
Oklahoma	ODEQ	9978		8/31/2012	Collinsville

Teklab, Inc.
Environmental Laboratory

Laboratory Results

http://www.teklabinc.com/

Client: Mallinckrodt Inc.
Work Order: 12050451
Client Project: Q2 Wastewater Samples
Report Date: 15-May-12
Lab ID: 12050451-001
Client Sample ID: SP003
Matrix: AQUEOUS
Collection Date: 05/09/2012 7:05

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 1664A Oil and Grease								
Hexane Extractable Material	NELAP	5		12	mg/L	1	05/10/2012 9:14	R163486
EPA 600 410.4								
Chemical Oxygen Demand	NELAP	50		468	mg/L	1	05/11/2012 12:22	R163525
STANDARD METHODS 18TH ED. 2540 D								
Total Suspended Solids	NELAP	8		170	mg/L	1.25	05/10/2012 13:15	R163452
STANDARD METHODS 18TH ED. 5210 B								
Biochemical Oxygen Demand	NELAP	5		207	mg/L	1	05/10/2012 15:31	78026

Teklab, Inc.
Environmental Laboratory

Laboratory Results

http://www.teklabinc.com/

Client: Mallinckrodt Inc.
Work Order: 12050451
Client Project: Q2 Wastewater Samples
Report Date: 15-May-12
Lab ID: 12050451-002
Client Sample ID: SP005
Matrix: AQUEOUS
Collection Date: 05/09/2012 7:10

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 1664A								
Hexane Extractable Material	NELAP	5		< 5	mg/L	1	05/11/2012 8:14	R163548
EPA 600 410.4								
Chemical Oxygen Demand	NELAP	50		193	mg/L	1	05/11/2012 12:22	R163525
STANDARD METHODS 18TH ED. 2540 D								
Total Suspended Solids	NELAP	6		14	mg/L	1	05/10/2012 9:35	R163452
STANDARD METHODS 18TH ED. 5210 B								
Biochemical Oxygen Demand	NELAP	5		129	mg/L	1	05/10/2012 15:36	78026

Teklab, Inc.
Environmental Laboratory

Laboratory Results

http://www.teklabinc.com/

Client: Mallinckrodt Inc.
Work Order: 12050451
Client Project: Q2 Wastewater Samples
Report Date: 15-May-12
Lab ID: 12050451-003
Client Sample ID: SP009
Matrix: AQUEOUS
Collection Date: 05/09/2012 7:25

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 1664A								
Hexane Extractable Material	NELAP	5		18	mg/L	1	05/11/2012 8:14	R163548
EPA 600 410.4								
Chemical Oxygen Demand	NELAP	50		468	mg/L	1	05/11/2012 12:22	R163525
STANDARD METHODS 18TH ED. 2540 D								
Total Suspended Solids	NELAP	6		135	mg/L	1	05/10/2012 9:35	R163452
STANDARD METHODS 18TH ED. 5210 B								
Biochemical Oxygen Demand	NELAP	25		270	mg/L	5	05/10/2012 15:39	78026

Teklab, Inc.
Environmental Laboratory

Laboratory Results

http://www.teklabinc.com/

Client: Mallinckrodt Inc.
Work Order: 12050451
Client Project: Q2 Wastewater Samples
Report Date: 15-May-12
Lab ID: 12050451-004
Client Sample ID: SP010
Matrix: AQUEOUS
Collection Date: 05/09/2012 7:35

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 1664A								
Hexane Extractable Material	NELAP	5		16	mg/L	1	05/11/2012 8:15	R163548
EPA 600 410.4								
Chemical Oxygen Demand	NELAP	50		813	mg/L	1	05/11/2012 12:22	R163525
STANDARD METHODS 18TH ED. 2540 D								
Total Suspended Solids	NELAP	6		88	mg/L	1	05/10/2012 9:35	R163452
STANDARD METHODS 18TH ED. 5210 B								
Biochemical Oxygen Demand	NELAP	25		530	mg/L	5	05/10/2012 15:42	78026
EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL)								
Chromium	NELAP	0.0100		0.0130	mg/L	1	05/10/2012 18:32	77980
Copper	NELAP	0.0100	J	0.0089	mg/L	1	05/10/2012 18:32	77980
Nickel	NELAP	0.0100		0.0143	mg/L	1	05/10/2012 18:32	77980
Zinc	NELAP	0.0200		0.0350	mg/L	2	05/11/2012 17:26	77980

Teklab, Inc.
Environmental Laboratory

Receiving Check List

http://www.teklabinc.com/

Client: Mallinckrodt Inc.
Client Project: Q2 Wastewater Samples

Work Order: 12050451
Report Date: 15-May-12

Carrier: Dawn Brantley

Received By: SRH

Completed by: Timothy W. Mathis
On: 09-May-12

Reviewed by: Elizabeth A. Hurley
On: 10-May-12

Pages to follow: **Chain of custody** 1 **Extra pages included** 0

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐	Temp °C 1.8
Type of thermal preservation?	None ☐	Ice ☑	Blue Ice ☐	Dry Ice ☐
Chain of custody present?	Yes ☑	No ☐		
Chain of custody signed when relinquished and received?	Yes ☑	No ☐		
Chain of custody agrees with sample labels?	Yes ☑	No ☐		
Samples in proper container/bottle?	Yes ☑	No ☐		
Sample containers intact?	Yes ☑	No ☐		
Sufficient sample volume for indicated test?	Yes ☑	No ☐		
All samples received within holding time?	Yes ☑	No ☐		
Reported field parameters measured:	Field ☐	Lab ☐	NA ☑	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐		
When thermal preservation is required, samples are compliant with a temperature between 0.1°C - 6.0°C, or when samples are received on ice the same day as collected.				
Water – at least one vial per sample has zero headspace?	Yes ☐	No ☐	No VOA vials ☑	
Water - TOX containers have zero headspace?	Yes ☐	No ☐	No TOX containers ☑	
Water - pH acceptable upon receipt?	Yes ☑	No ☐		

Any No responses must be detailed below or on the COC.

CHAIN OF CUSTODY

pg. 1 of 1 Work Order # 1205 0457

TEKLAB, INC. 5445 Horseshoe Lake Road ~ Collinsville, IL 62234 ~ Phone: (618) 344-1004 ~ Fax: (618) 344-1005

Client: Mallinckrodt Inc.
Address: 3600 N. 2nd St.
City / State / Zip: St. Louis, MO 63147
Contact: A. Crouch Phone: 314-654-0127
E-Mail: Fax:

Samples on: ☒ Ice ☐ Blue Ice ☐ No Ice 1.8 °C
Preserved in: ☐ Lab ☒ Field FOR LAB USE ONLY
Lab Notes: KR 5/9/12
* METALS = Cr, Cu, Ni, Zn per Request & Past History (WO 1205 0457) TM 5.9.12
Comments: RL < Reg. Limit
If headspace, continue processing

- Are these samples known to be involved in litigation? If yes, a surcharge will apply. ☐ Yes ☒ No
- Are these samples known to be hazardous? ☐ Yes ☒ No
- Are there any required reporting limits to be met on the requested analysis? If yes, please provide limits in comment section. ☒ Yes ☐ No

Project Name / Number: Q2 Waste Water Samples
Sample Collector's Name: DH
Results Requested: ☒ Standard ☐ 1-2 Day (100% Surcharge) ☐ Other_____ ☐ 3 Day (50% Surcharge)
Billing instructions:

Lab Use Only	Sample Identification	Date/Time Sampled	UNPRES	HNO_3	NaOH	H_2SO_4	HCL	MeOH	$NaHSO_4$	Other	Water	Drinking Water	Soil	Sludge	Sp. Waste	BOD	COD	TSS	Oil & Grease	Metals *
1205 0457 001	SP003	5/9/12 0705	1			2					X					X	X	X	X	
002	SP005	5/9/12 0710	1			2					X					X	X	X	X	
003	SP009	5/9/12 0725	1			2					X					X	X	X	X	
004	SP010	5/9/12 0735	1	1		2					X					X	X	X	X	X

Teklab, Inc. Courier Pick Up

Relinquished By	Date / Time	Received By	Date / Time
Amber Crouch	5/9/12 1301	[signature]	5/9/12 1301
[signature]	5/9/12 1402	Stephanie Hayes	5/9/12 14:52

The individual signing this agreement on behalf of client acknowledges that he/she has read and understands the terms and conditions of this agreement, on the reverse side, and that he/she has the authority to sign on behalf of client.

WHITE & YELLOW – LAB PINK – SAMPLER'S COPY

Metropolitan St. Louis Sewer District
Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

June 20, 2012

Amber Crouch
Senior HS&E Engineer
MALLINCKRODT LLC
3600 N. 2nd Street
St. Louis, MO 63147

RE: WASTEWATER DISCHARGE PERMIT NO. 2112059600-3.1
For premise at: 3600 N 2nd Street, St. Louis, MO 63147

Dear Ms. Crouch:

As I explained on your phone message on June 19, 2012, your first quarter 2012 self-monitoring report had reported values that were above the monthly average mass limits at Sample Point 905. The nine pollutants above the limits were Acenaphthene, Anthracene, Dimethyl Phthalate, Di-n-butyl Phthalate, Fluoranthene, Fluorene, Naphthalene, Phenanthrene, and Pyrene. These exceedances were due to the fact that your analytical lab reported higher concentration results at Sample Point 905, which resulted in higher calculated mass-based results. On your self-monitoring report you have listed the mass-based limits and the calculated mass-based results. These exceedances should have been identified and reported to MSD within one day of becoming aware of them.

For future analyses, you will need to instruct your testing lab to reach lower detection limits in order to show compliance with all discharge limits.

Thank you for helping us to comply with state and federal regulations. If you have any questions, please contact me at 314.436. 8721.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Chris Bulmahn

Chris Bulmahn
Associate Engineer

cc: Doug Mendoza
Jason Gill

Facility ID: 21120596 | Name: MALLINCKRODT LLC [2112059600] | SIU: ☑ Class: Significant Industrial User | All Facilities

Sample Points

Number of Sample Points: **102** Sample Point: 930 Valve on 4" PVC line inside NW corner of Bldg. 222S, only when sump is discharging f

Definition | Pretreatment | **Discharge** | Limits | All Limits | Meters

Discharge Component	Process Description	Discharge Is	Stream Is	Avg Flow	Unit	Max Flow	Unit	Effective	End Date
Categorical	439 Sub B PSES	Batch	Regulated	1,800	GPD		GPD	07/01/2012	
Categorical	439 Sub B PSES	Batch	Regulated	650	GPD		GPD	12/01/2009	06/30/2012
Categorical	439 Sub B PSES	Batch	Regulated	650	GPD		GPD	06/01/2005	12/01/2009
Categorical	439 Sub C PSES (CN-no, NH3 exemp	Batch	Regulated	650	GPD		GPD	10/04/2004	05/31/2005
Categorical	439 Sub C PSES (CN-no, NH3 exemp	Batch	Regulated	650	GPD		GPD	07/09/2004	10/03/2004

Total Avg. Flow: 0 GPD

Permits

- 2112059600 - 3
  - 2112059600 - 3.1
- Permit Number 14
- Permit Number 13
- Permit Number 12
- Permit Number 11
- Permit Number 10
- Permit Number 9
- Permit Number 8
- Permit Number 7
- Permit Number 6
- Permit Number 5
- Permit Number 4
- Permit Number 3
- Permit Number 2
- Permit Number 1

Permit | Special Conditions | Self-Monitoring Reports | General Reports

Type: Permanent Comments:

Permit: 2112059600 - 3.1 Original Permit: 2112059600 - 3

Author: Scott Rehmer

Effective: 05/01/2011 Expire: 05/31/2015 Actual Expire:

Comments

File Edit

Added SC D.12 (B.6) for chloroform net/gross provisions (403.15) at sample pts 080 & 936. SR

Next permit, correct Special Condition E.23 to reference Subpart C. DMM 5/30/2012
Received e-mail 6/20/12, SP930 flow estimate increased from 650 gpd to 1800 gpd; PIMS updated. SR

Create Revision | Create Renewal

MSD

Metropolitan St. Louis Sewer District
Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

June 14, 2012

Amber Crouch
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Re: Wastewater User Charge Billing for Special Discharge

Dear Ms. Crouch:

This is to advise you of the wastewater user charges applicable to an on-site special discharge approved in our letter to you dated June 7, 2012. You were advised of the extra-strength surcharges as part of the original approval letter. That charge was determined using the COD and TSS concentrations contained in the previously provided laboratory analytical report dated January 28, 2011. The discharge date and quantity are from information submitted by you in an email dated June 11, 2012.

Our Finance Department will bill you by invoice for the charges described below. These charges are based on the rates in MSD Wastewater User Charge Ordinance 13021. For your convenience, using the volume and strength of the waste discharged, the ordinance rates have been converted to a per-gallon basis.

PARTY TO BILL: Addressee

BILLING IS FOR: On-Site Special Discharge

DISCHARGE PERIOD: June 8, 2012

SOURCE OF WASTE: Wastewater from a failed batch of magnesium stearate solution from Building X at the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri.

Discharge Period	Billing Item	Quantity	Units	Rate	Charge
6/8/12	Extra-Strength Surcharge	12,000	Gal	$0.02	$240.00
Total:	------	**12,000**	Gal	-----	**$240.00**

Please do not pay until you receive our invoice. If you have any questions, please contact me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT
Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv
ec: Chris Verplancke - Finance Dept.
Becky Bartholomew – Finance Dept.
Laura Joiner – Finance Dept.
Doug Mendoza
Brian Gibson
File: IU, MALLINCKRODT INC [2112059600], 3600 North Second Street

Steve Grace

From: Crouch, Amber <Amber.Crouch@Covidien.com>
Sent: Monday, June 11, 2012 9:03 AM
To: Steve Grace
Subject: RE: Crouch.Mallinckrodt SP834 6-7-12.doc

Steve,

The below permit can be closed. 12000 gallons of 3% magnesium stearate solution was discharge on 6/8/2012. Start time was 11:00 am and end time was 12:30 pm.

Let me know if you need any additional information.

Thanks,

Amber Crouch
Senior HSE Engineer
Covidien
3600 North Second Street
St. Louis, MO 63147
USA

(314) 654-0127 office
(314) 253-2213 pager
(314) 654-1251 fax

www.covidien.com

This information may be confidential and/or privileged. Use of this information by anyone other than the intended recipient is prohibited. If you receive this in error, please inform the sender and remove any record of this message.

From: Steve Grace [mailto:sgrace@stlmsd.com]
Sent: Friday, June 08, 2012 10:37 AM
To: Crouch, Amber
Subject: FW: Crouch.Mallinckrodt SP834 6-7-12.doc

Hello Amber,

Your timing is impeccable, lol. Hard copy will follow via snail mail. I was in a meeting this morning and couldn't send this until now.

Thanks,
Steve

From: Rebecca Vitelli
Sent: Friday, June 08, 2012 7:45 AM
Cc: Steve Grace; Brian G. Gibson; Doug Mendoza
Subject: Crouch.Mallinckrodt SP834 6-7-12.doc

June 7, 2012

Amber Crouch
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Dear Ms. Crouch:

We have reviewed your application dated June 7, 2012 requesting approval to discharge 12,000 gallons of wastewater to the Metropolitan St. Louis Sewer District for treatment. This wastewater is from a failed batch of magnesium stearate solution from Building X at the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri. This wastewater is subject to the categorical pretreatment standards in 40 CFR Part 414 subparts G and H. We understand that the wastewater will be discharged through sampling point 010.

Based on the information and sample results you provided, this wastewater meets MSD Ordinance 12559 standards and is approved for discharge into a sanitary sewer on site. The discharge into the sewer must be controlled at a rate that will not surcharge the lines in the area. **This approval is valid for 30 days from the date of this letter.**

You must be certain the waste is discharged into a sanitary or combined sewer inlet only. This letter does not authorize any discharge to a separate storm sewer, or to any watercourse, as any such discharge would be in violation of state and federal laws. **Please notify me at the number below when the discharge is to commence, and please ensure the onsite personnel discharging the wastewater in question are provided with a copy of this letter.**

For billing purposes associated with this high strength wastewater, you must confirm the volume of this wastewater discharged to us, in writing, at the completion of the discharge. This report is due no later than 28 days after this approval expires. Please refer to this letter and include the date of the discharge when providing that figure. Under the provisions of Ordinance 13021, you will be billed by invoice at the billing rate in effect at the time of discharge. The current rate contained in MSD Ordinance 13021 is $2.11 per hundred cubic feet ($2.82 per thousand gallons), $310.07 per ton for COD over 600 mg/L, and $231.35 per ton for TSS over 300 mg/L. Using the assumed COD and TSS concentrations contained in a previously provided laboratory analytical report, and the proposed discharge volume provided in your application, it is estimated that you will be discharging just over 20 hundred cubic feet, well under one ton of COD over 600 mg/L (our quantitative estimate is 0.04 tons COD times $310.07), and just under one ton of TSS over 300 mg/L (our quantitative estimate is 0.95 tons TSS times $231.35). Please do not pay this amount until you receive our invoice.

This discharge has been approved based upon the information you provided, and is subject to the conditions stated above. This approval may be revoked by the District at any time if any of the information is found to be incorrect, or if the conditions of this approval are violated. Also, if the discharge causes any operational or maintenance problem within the District's collection or treatment system, or results in violations of any conditions of the District's NPDES permit, Mallinckrodt will be considered responsible for damages.

If you have any questions, please call me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

pc: Brian Gibson
Doug Mendoza

File: IU, MALLINCKRODT INC [2112059600], SP834

Metropolitan St. Louis Sewer District
Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

June 14, 2012

Amber Crouch
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Dear Ms. Crouch:

We have reviewed your application dated June 11, 2012 requesting approval to discharge 8,000 gallons of wastewater to the Metropolitan St. Louis Sewer District for treatment. This wastewater is 20% ethylene glycol solution at the Building 235 Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri. We understand that the wastewater will be discharged through sampling point 010.

Based on the information you provided, this wastewater meets MSD Ordinance 12559 standards and is approved for discharge into a combined sewer on site. Due to the assumed COD concentration based on the ethylene glycol percentage, the discharge is limited to 840 gallons per hour. **This approval is valid for 30 days from the date of this letter.**

You must be certain the waste is discharged into a combined sewer inlet only. This letter does not authorize any discharge to a separate storm sewer, or to any watercourse, as any such discharge would be in violation of state and federal laws. **Please notify me at the number below when the discharge is to commence, and please ensure the onsite personnel discharging the wastewater in question are provided with a copy of this letter.**

For billing purposes associated with this high COD wastewater, you must confirm the volume of this wastewater discharged to us, in writing, at the completion of the discharge. This report is due no later than 28 days after this approval expires. Please refer to this letter and include the date of the discharge when providing that figure. Under the provisions of Ordinance 13021, you will be billed by invoice at the billing rate in effect at the time of discharge. The current rate contained in MSD Ordinance 13021 is $310.07 per ton for COD over 600 mg/L and $2.11 per hundred cubic feet ($2.82 per thousand gallons). Using the assumed COD concentration based on the percent of ethylene glycol contained in the wastewater in question, and the proposed discharge volume provided in your application, it is estimated that you will be discharging under seven tons of COD over 600 mg/L. (Our quantitative estimate is 6.65 tons COD times $310.07) and approximately 11 hundred cubic feet of wastewater. Please do not pay this amount until you receive our invoice.

This discharge has been approved based upon the information and sample analysis you provided, and is subject to the conditions stated above. This approval may be revoked by the District at any time if any of the information is found to be incorrect, or if the conditions of this approval are violated. Also, if the discharge causes any operational or maintenance problem within the District's collection or treatment system, or results in violations of any conditions of the District's NPDES permit, Mallinckrodt will be considered responsible for damages. If you have any questions, please call me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

ec: Brian Gibson
Doug Mendoza

File: IU, MALLINCKRODT INC [2112059600]

C1A

SD EVALUATION CHECKLIST - ON SITE

APPLICATION INFORMATION

Source Name: Mallinckrodt LLC

Premise Address: 3600 N. 2nd St.

Send approval letter to applicant

Evaluated by: SMG

Date: 6/11/12

Application Dated: 6/11/12 Received: 6/11/12 All Requested Info. Received: 6/11/12

SOURCE FILING/DESCRIPTION

1 - Source in PIMS? (Y) / N
2 - If No, on IU Cross-Ref list? * Y / N
3 - If No, MSD Account # from E-CIS? Y / N
4 - If none, on "Source" list (pre-IMS)? ** Y / N
5 - If No, assigned SOUR# from PIMS.

* o:\costrecovery\cross reference xls file

** o:\costrecovery\sourlist xls file

SOURCE TYPE (circle): (IU) / Dead IU / SD

INDUSTRY ID: 21120596-00

Sample Point: No. Assigned: 812 Description: 20% ethylene glycol soln. @ Bldg. 235

Normal WW flow from premise? N/A _____ ccf/month, 2,992,101 GPD, _____ GPH.

REGULATORY STATUS

Is waste a Hazardous Waste? (N) / Y

Categorical standards apply? (N) / Y

Contain PCB/ asbestos/ radioactive/ dioxin/ used oil? (N) / Y

Regulatory Agency Oversight? (N) / Y

DISCHARGE CONSIDERATIONS At MSD's connection:

Ordinance Limits (12559, p32) exceeded? (N) / Y

Ordinance other limits exceeded (dye, flash pt <140F, temp >140F, obstruction, nuisance foaming/odor, corrosion causing): (N) / Y

Water Quality Standard exceeded? (N) / Y

Fumes in sewer exceed PEL/TLV limits? (N) / Y

Vapors in sewer exceed 10% of LEL? (N) / Y

RECOMMENDATION: (APPROVE) / DENY (cc WWTP Mgr for timed discharge)

APPROVAL CONDITIONS:

Timed Discharge (COD/BOD/WQ/foam): N / (Y) Limit = 840 gal/hour

Require Treatment before Discharge? (N) / Y

Laboratory analysis fee due? (N) / Y $_____

SMR required? (N) / Y Frequency/analysis: _____

SMR log: (N/A) / Remediation.xls / Nonremediation.xls

Volume Billing applies (water unmetered or credited)? N / (Y)

Bill High Strength? N / (Y) Yes, If use >60,000 gal/month water ✓ and, > norm WW strgth

Surcharge calculation attached: N/A / N / (Y)

Expiration log updated: (N/A) / N / Y

O:\CostRecovery\Special Discharge\C1a.Checklist.doc

On-Site Special Discharge High Strength Flow Rate and Surcharge Calculator

1 GENERAL INFORMATION:

Date: 06/11/12
Calculated by: Steve Grace
Source name: MALLINCKRODT LLC [2112059600]
Waste material: used ethylene glycol coolant solution from building 235 chiller system
Discharge volume: 8,000 gallons

2 STRENGTH INFORMATION:

Sample BOD =	0	mg/l =	0	lbs BOD to be discharged
Sample COD =	200,000	mg/l =	13344	lbs COD to be discharged
Sample TSS =		mg/l =	for surcharge calculation only	

3 PLANT DATA: 2007

Treatment area: Bissell

	Flow (MGD)	BOD (mg/L)	COD (mg/L)	BOD (lb/hr)	COD (lb/hr)	Max Loading = 10% BOD (lb/hr)	COD (lb/hr)
Bissell	**140**	**146**	**292**	**7,113**	**14,227**	**711**	**1,423**
Coldwater	23	226	452	1,768	3,535	177	354
Fenton	5	307	614	482	964	48	96
Grand Glaize	16	152	399	830	2,183	83	218
Lemay	122	81	228	3,438	9,610	344	961
Lower Meramec	10	124	364	452	1,326	45	133
Missouri River	28	281	561	2,732	5,465	273	546

4 MINIMUM REQUIRED FLOW RATE:

	BOD (hours)	BOD (gpm)	COD (hours)	COD (gpm)
Bissell	**0.00**	**0**	**9.38**	**14**
Coldwater	0.00	0	37.74	4
Fenton	0.00	0	138.36	1
Grand Glaize	0.00	0	61.11	2
Lemay	0.00	0	13.89	10
Lower Meramec	0.00	0	100.61	1
Missouri River	0.00	0	24.42	5

5 SURCHARGE AND VOLUME BILLING

Is volume subject to billing? yes (yes/no)
Ratio of BOD/COD = 0.00

(Sample BOD) - 300 = 0 mg/l subject to surcharge
(sample COD) - 600 = 199400 mg/l subject to surcharge
(sample TSS) - 300 = 0 mg/l subject to surcharge

If BOD/COD ratio <= 0.35, the following calculations use the COD value. Otherwise they use the BOD value

Current rates under Ordinance: 12561

Volume = $ 2.11 /CcF
BOD = $ 620.14 /ton
COD = $ 310.07 /ton
TSS = $ 231.35 /ton

Flow charge = $ 22.57 based on volume = 10.7 CcF
BOD surcharge = $ -
COD surcharge = $2,063.14
TSS surcharge = $ -
Total discharge charge = $2,085.71
Customer charge = $2,085.71 DEC charges special discharge customers for total charges > $20.00
Approximate charge/gallon = $ 0.26

Comments

require volume report for billing purposes. Smg

Metropolitan St. Louis Sewer District
2350 Market Street
St. Louis, MO 63103

APPLICATION FOR SPECIAL DISCHARGE APPROVAL

I. WASTEWATER SOURCE IDENTIFICATION:

Site Name: Mallinckrodt
Premise Address: 3600 N. 2nd St.
City: St. Louis State: MO Zip: 63147
Owner: Mallinckrodt
Contact Person: Amber Crouch
Title: EHS
Phone: 314-654-0127 Fax: 314-654-1251

II. APPLICANT (mailing information):

Applicant Name: Amber Crouch
Title: EHS
Company Name: Mallinckrodt
Mailing Address: 3600 N. 2nd St.
City: St. Louis State: MO Zip: 63147
Phone: 314-654-0127 Fax: 314-654-1251

III. A. MATERIAL TO BE DISCHARGED (check all applicable boxes):

1. Wastewater description/location: ethylene glycol / water
2. Process/activity generating wastewater: Bldg. 235 chiller system

3. Physical and chemical composition: List all constituents, and known or potentially present regulated contaminants below.
☐ See separate listing enclosed, and/or ☐ See analytical results enclosed, and/or ☑ Material Safety Data Sheet enclosed.

DESCRIPTION	RANGE	UNIT
ethylene glycol	15-20	%
water	80-85	%

DESCRIPTION *(continued)*	RANGE	UNIT

4. Is this wastewater from a process subject to EPA's categorical standards in 40 CFR Subchapter N? ☐ Yes ☑ No
   a. If yes, the applicable standards are in: 40 CFR Part _____, Subpart _____ ☐ Existing source ☐ New source
5. Does this wastewater contain polychlorinated biphenyls, asbestos or radioactive material? ☐ Yes ☑ No
   a. If yes, describe: _____
6. Representative sample: ☐ Laboratory results attached, and/or ☐ Sample provided (1/2 gallon minimum, clear container)
   a. Sample collection point/location: _____ Collection method: _____
   b. Sampler's name/Co.: _____ Sample date/time: _____
   c. Attach chain of custody as available
7. Discharge will occur over the following time period: ☑ < 30 days ☐ ≥ Two years ☐ Other: _____
   a. Expected total volume of wastewater to be discharged over the time period above: 8000 Gallons
   b. Proposed discharge volume: _____ Gallons, at a frequency of: ☑ One time ☐ Daily ☐ Weekly ☐ Monthly ☐ Once/three months ☐ Once/six months ☐ Other: _____
8. Pretreatment of wastewater prior to discharge: ☐ None ☑ Yes, describe: pH adjust at main outfall
   a. If yes, attach site plan, pretreatment system schematic, and design specifications.
9. Wastewater from a remediation project under: ☐ Superfund/CERCLA ☐ RCRA ☐ Voluntary program ☐ UST ☑ Not applicable
   a. If from a remediation project, briefly describe the past and present utilization of the property: _____

III.B. MATERIAL FROM UNDERGROUND STORAGE TANK SOURCE

☑ Not applicable (go to Section IV)

Please answer the following questions if you are requesting to discharge wastewater associated with an underground storage tank system.

1. a. Wastewater from: ☐ Inside UST(s) ☐ UST system pit ☐ Excavation outside UST system pit ☐ Monitoring well ☐ Groundwater remediation system

   b. UST project involves wastewater from: ☐ UST(s) closed in place ☐ UST(s) removed ☐ Remediation ☐ Upgrade ☐ Maintenance activities ☐ Well monitoring ☐ Other, explain: _____

   c. If wastewater is from a closure project, how long has UST(s) been out of service: _____ years

2. a. State assigned UST site identification number: _____ ☐ Not applicable

   b. Number of USTs affected: _____ ☐ Unknown

   c. For the UST(s) involved, their state identification number(s): _____ ☐ Not applicable

   d. Service Station Identification Number, as applicable: _____

3. Tank contents/former contents: ☐ Gasoline ☐ #2 diesel ☐ Used oil ☐ Unknown ☐ Other: _____

IV. DISCHARGE LOCATION

1. ☑ On-site. Describe proposed point of entry to sewer and the discharge rate (must be a sanitary or combined sewer): _____

   plant sewer to main. Outfall SP010 Note: Range of discharge must not surcharge sewer line.

2. ☐ Haul to MSD Bissell Point Hauled Waste Receiving Station at 10 E. Grand, St. Louis, MO.

   a. Transporters Name: _____ and MSD Hauler ID Number: _____

   b. Hazardous Waste Certification:

   For wastewater which is hauled to MSD's Bissell Point Hauled Waste Receiving Station, I hereby certify that to the best of my knowledge and belief, the above hauled waste is not classified as a RCRA "hazardous waste" as defined by the MDNR in 10 CSR 25 or USEPA in 40 CFR Part 261.

   Applicant Name (print): _____

   Signature: _____ **Date:** _____

ADDITIONAL INFORMATION:

_____

V. APPLICANT SIGNATURE AND CERTIFICATION

This application must be signed by the applicant: either the source contact, or a contractor or agent directly responsible for site activities.

I hereby certify that I am directly responsible for activities at the site regarding the wastewater to be discharged, and to the best of my knowledge and belief, based on appropriate inquiry, the information in this application is true, complete, and accurate. The samples or analyses submitted are representative of the materials to be discharged. If granted approval to discharge, I agree to abide by the MSD Ordinances, and all applicable federal, state and local regulations. I agree to pay the costs of any pre-approval analyses performed by MSD and to pay any applicable disposal charges for the volume and strength of the wastes discharged.

Applicant Name (print): Amber Crouch

Signature: Amber Crouch **Date:** 6/11/12

FOR MSD USE ONLY:

File Name: Mallinckrodt LLC ID No. 21120596-00 Sample Point No. 812

MSD

MEMO TO: Chris Verplancke
Rebecca Bartholomew

FROM: Sara Kammerer SK

DATE: June 13, 2012

SUBJECT: **RETURN FACTOR UPDATE REVIEW**

RE: **MALLINCKRODT MEDICAL INC**
675 James S. McDonnell Blvd., Hazelwood, MO 63042

MSD Sewer Account No: 79066-7

Recommended Return Factor (RF) for future billing: 0.65
Previous Return Factor: 0.73

Total annualized consumption on this account from water agency records as of May 2012 was 37,748 CcF.

Total annualized nonsewered water from metered data and company records for cooling tower evaporation (Building 50) and irrigation as of May 2012 was 13,106 Ccf.

We recommend RF credits be applied effective the start of the documentation program in May 2011.

Under the current Ordinance 13021 rates, this new RF equates to a revenue decrease per year as follows:

Volume Charges ($2.11/Ccf)	= $	6,371.86
Extra Strength Surcharges	= $	0.00
Total Revenue Decrease	= $	6,371.86

If you have any questions, please call me at 436-8763.

bv

ec: Brian G. Gibson
Doug Mendoza
Laura Joiner

File: RF, 0710-1002-00, MALLINCKRODT MEDICAL INC
IU, 0710-1002-00, MALLINCKRODT LLC

MSD

Christopher J. Bulmahn

From: Jason Gill
Sent: Friday, June 08, 2012 10:28 AM
To: Christopher J. Bulmahn
Subject: SNC avoidance phone call reminder - Mallinckrodt, LLC (21120596-00)

Chris,

I left a voicemail for Mallinckrodt's Amber Crouch on 6/8/12 to remind her that they will need 3 (three) GOOD samples for Zinc (T) by June 30, 2012 in order to avoid SNC for the current six-month review period. Mallinckrodt's independent testing lab took a sample for their 2nd Qtr. on the same day. This result (not submitted by the company yet...) will be averaged with the sample result that we got. Therefore, three samples total are still needed.

Jason

Metropolitan St. Louis Sewer District
Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

June 8, 2012

Julie Summers
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Dear Ms. Summers:

In a letter dated January 21, 2011, we approved of the discharge to the Metropolitan St. Louis Sewer District of treated rainwater and groundwater from the remediation of the Columbium-Tantalum (CT) decommissioning project at the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri. This approval was extended until July 21, 2012 in our letter dated January 13, 2012. If you wish to continue to discharge this material, you will need to obtain an extension of your special discharge approval within the next 30 days to maintain your approval.

Since we require monthly self-monitoring reports for each discharge event, you need only to submit a request for an extension of up to two years for this special discharge. When requesting an extension, please identify any changes in the source or characteristics of this wastewater since this special discharge was originally approved.

Please contact me at (314) 436-8755 with questions or comments.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

pc: Brian Gibson
Doug Mendoza

File: IU, MALLINCKRODT INC [2112059600]

Metropolitan St. Louis Sewer District
Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

June 7, 2012

Amber Crouch
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Re: Wastewater User Charge Billing for Special Discharge

Dear Ms. Crouch:

This is to advise you of the wastewater user charges applicable to an on-site special discharge approved in our letter to you dated May 11, 2012. That charge was determined using the ethylene glycol concentration in your application for special discharge. The discharge dates and quantities are from information submitted by you in an email dated June 7, 2012.

Our Finance Department will bill you by invoice for the charges described below. These charges are based on the rates in MSD Wastewater User Charge Ordinance 13021. For your convenience, using the volume and strength of the waste discharged, the ordinance rates have been converted to a per-gallon basis.

PARTY TO BILL: Addressee

BILLING IS FOR: On-Site Special Discharge

DISCHARGE PERIOD: June 5, 2012

SOURCE OF WASTE: 35% ethylene glycol solution from Building 250 of the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri.

Discharge Period	Billing Item	Quantity	Units	Rate	Charge
6/5/12	Extra-Strength Surcharge	150	Gal	$0.45	$67.50
Total:	------	**150**	Gal	-----	**$67.50**

Please do not pay until you receive our invoice. If you have any questions, please contact me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

ec: Chris Verplancke - Finance Dept.
Becky Bartholomew – Finance Dept.
Laura Joiner – Finance Dept.
Doug Mendoza
Brian Gibson

File: IU, MALLINCKRODT INC [2112059600], 3600 North Second Street

Steve Grace

From: Crouch, Amber <Amber.Crouch@Covidien.com>
Sent: Thursday, June 07, 2012 7:30 AM
To: Steve Grace
Subject: Mallinckrodt Special Discharge Permit dated May 11, 2012

Steve,

The special discharge permit dated May 11, 2012 for approval of 200 gallons of 35% ethylene glycol from bldg. 200W can be closed.

Discharge date: 6/5/2012
Discharge start time: 12:30pm
Discharge end time: 1:30pm
Discharge Volume: 150 gallons

Please let me know if you need any additional information.

Thanks,

Amber Crouch
Senior HSE Engineer
Covidien
3600 North Second Street
St. Louis, MO 63147
USA

(314) 654-0127 office
(314) 253-2213 pager
(314) 654-1251 fax

www.covidien.com

This information may be confidential and/or privileged. Use of this information by anyone other than the intended recipient is prohibited. If you receive this in error, please inform the sender and remove any record of this message.

Metropolitan St. Louis Sewer District

Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

June 7, 2012

Amber Crouch
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Dear Ms. Crouch:

We have reviewed your application dated June 7, 2012 requesting approval to discharge 12,000 gallons of wastewater to the Metropolitan St. Louis Sewer District for treatment. This wastewater is from a failed batch of magnesium stearate solution from Building X at the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri. This wastewater is subject to the categorical pretreatment standards in 40 CFR Part 414 subparts G and H. We understand that the wastewater will be discharged through sampling point 010.

Based on the information and sample results you provided, this wastewater meets MSD Ordinance 12559 standards and is approved for discharge into a sanitary sewer on site. The discharge into the sewer must be controlled at a rate that will not surcharge the lines in the area. **This approval is valid for 30 days from the date of this letter.**

You must be certain the waste is discharged into a sanitary or combined sewer inlet only. This letter does not authorize any discharge to a separate storm sewer, or to any watercourse, as any such discharge would be in violation of state and federal laws. **Please notify me at the number below when the discharge is to commence, and please ensure the onsite personnel discharging the wastewater in question are provided with a copy of this letter.**

For billing purposes associated with this high strength wastewater, you must confirm the volume of this wastewater discharged to us, in writing, at the completion of the discharge. This report is due no later than 28 days after this approval expires. Please refer to this letter and include the date of the discharge when providing that figure. Under the provisions of Ordinance 13021, you will be billed by invoice at the billing rate in effect at the time of discharge. The current rate contained in MSD Ordinance 13021 is $2.11 per hundred cubic feet ($2.82 per thousand gallons), $310.07 per ton for COD over 600 mg/L, and $231.35 per ton for TSS over 300 mg/L. Using the assumed COD and TSS concentrations contained in a previously provided laboratory analytical report, and the proposed discharge volume provided in your application, it is estimated that you will be discharging just over 20 hundred cubic feet, well under one ton of COD over 600 mg/L (our quantitative estimate is 0.04 tons COD times $310.07), and just under one ton of TSS over 300 mg/L (our quantitative estimate is 0.95 tons TSS times $231.35). Please do not pay this amount until you receive our invoice.

This discharge has been approved based upon the information you provided, and is subject to the conditions stated above. This approval may be revoked by the District at any time if any of the information is found to be incorrect, or if the conditions of this approval are violated. Also, if the discharge causes any operational or maintenance problem within the District's collection or treatment system, or results in violations of any conditions of the District's NPDES permit, Mallinckrodt will be considered responsible for damages.

If you have any questions, please call me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

pc: Brian Gibson
Doug Mendoza

File: IU, MALLINCKRODT INC [2112059600], SP834

C1A

SD EVALUATION CHECKLIST - ON SITE

APPLICATION INFORMATION

Source Name: Mallinckrodt, Inc.

Premise Address: 3600 N. 2nd St.

Send approval letter to applicant

Evaluated by: SMG

Date: 6/7/12

Application Dated: 6/7/12 Received: 6/7/12 All Requested Info. Received: 6/7/12

SOURCE FILING/DESCRIPTION

1 - Source in PIMS? (Y) / N
2 - If No, on IU Cross-Ref list? * Y / N
3 - If No, MSD Account # from E-CIS? Y / N
4 - If none, on "Source" list (pre-IMS)? ** Y / N
5 - If No, assigned SOUR# from PIMS.

* o:\costrecovery\cross reference xls file

** o:\costrecovery\sourlist xls file

SOURCE TYPE (circle): (IU) / Dead IU / SD

INDUSTRY ID: 21120596-00

Sample Point: No. Assigned: 834 Description: failed batch of magnesium stearate solution from Bldg. X

Normal WW flow from premise? N/A _____ ccf/month 2,992,101 GPD, _____ GPH.
from SP010

REGULATORY STATUS

Is waste a Hazardous Waste? (N) / Y

Categorical standards apply? N / (Y) 40 CFR 414, Subparts G&H

Contain PCB/ asbestos/ radioactive/ dioxin/ used oil? (N) / Y

Regulatory Agency Oversight? (N) / Y

DISCHARGE CONSIDERATIONS At MSD's connection:

Ordinance Limits (12559, p32) exceeded? (N) / Y

Ordinance other limits exceeded (dye, flash pt <140F, temp >140F, obstruction, nuisance foaming/odor, corrosion causing): (N) / Y

Water Quality Standard exceeded? (N) / Y

Fumes in sewer exceed PEL/TLV limits? (N) / Y

Vapors in sewer exceed 10% of LEL? (N) / Y

RECOMMENDATION: (APPROVE) / DENY (cc WWTP Mgr for timed discharge)

APPROVAL CONDITIONS:

Timed Discharge (COD/BOD/WQ/foam): (N) / Y Limit = _____ gal/hour

Require Treatment before Discharge? (N) / Y

Laboratory analysis fee due? (N) / Y $_____

SMR required? (N) / Y Frequency/analysis: _____

SMR log: (N/A) / Remediation.xls / Nonremediation.xls

Volume Billing applies (water unmetered or credited)? (N) / Y

Bill High Strength? N / (Y) Yes, If use >60,000 gal/month water ✓ and, > norm WW strgth

Surcharge calculation attached: N/A / N / (Y)

Expiration log updated: (N/A) / N / Y

O:\CostRecovery\Special Discharge\C1a.Checklist.doc

On-Site Special Discharge High Strength Flow Rate and Surcharge Calculator

1 GENERAL INFORMATION:

Date: 06/07/12
Calculated by: Steve Grace
Source name: MALLINCKRODT INC
Waste material: Off-specification magnesium stearate
Discharge volume: 15,000 gallons

2 STRENGTH INFORMATION:

Sample BOD =	0	mg/l =	0	lbs BOD to be discharged
Sample COD =	1,170	mg/l =	146	lbs COD to be discharged
Sample TSS =	15,500	mg/l =	for surcharge calculation only	

3 PLANT DATA: 2010

Treatment area: Bissell

	Flow (MGD)	BOD (mg/L)	COD (mg/L)	BOD (lb/hr)	COD (lb/hr)	Max Loading = 10% BOD (lb/hr)	COD (lb/hr)
Bissell	**140**	**146**	**292**	**7,113**	**14,227**	**711**	**1,423**
Coldwater	26	188	377	1,704	3,408	170	341
Fenton	5	388	776	679	1,357	68	136
Grand Glaize	16	129	405	708	2,218	71	222
Lemay	131	78	210	3,531	9,584	353	958
Lower Meramec	13	124	409	543	1,785	54	179
Missouri River	27	280	559	2,671	5,341	267	534

4 MINIMUM REQUIRED FLOW RATE:

	BOD (hours	BOD (gpm)	COD (hours)	COD (gpm)
Bissell	**0.00**	**0**	**0.10**	**2430**
Coldwater	0.00	0	0.43	582
Fenton	0.00	0	1.08	232
Grand Glaize	0.00	0	0.66	379
Lemay	0.00	0	0.15	1637
Lower Meramec	0.00	0	0.82	305
Missouri River	0.00	0	0.27	912

5 SURCHARGE AND VOLUME BILLING

Is volume subject to billing? yes (yes/no)
Ratio of BOD/COD = 0.00

(Sample BOD) - 300 = 0 mg/l subject to surcharge
(sample COD) - 600 = 570 mg/l subject to surcharge
(sample TSS) - 300 = 15200 mg/l subject to surcharge

If BOD/COD ratio <= 0.35, the following calculations use the COD value. Otherwise they use the BOD value

Current rates under Ordinance: 13021

Volume = $ 2.11 /CcF
BOD = $ 620.14 /ton
COD = $ 310.07 /ton
TSS = $ 231.35 /ton

Flow charge = $ 42.31 based on volume = 20.1 CcF
BOD surcharge = $ -
COD surcharge = $ 11.06
TSS surcharge = $ 220.02
Total discharge charge = $ 273.39
Customer charge = $ 273.39 DEC charges special discharge customers for total charges > $20.00
Approximate charge/gallon = $ 0.02

Comments

require volume report for billing purposes. Smg

Metropolitan St. Louis Sewer District
2350 Market Street
St. Louis, MO 63103

APPLICATION FOR SPECIAL DISCHARGE APPROVAL

I. WASTEWATER SOURCE IDENTIFICATION:

Site Name: Mallinckrodt
Premise Address: 3600 N. 2nd St.
City: St. Louis State: MO Zip: 63147
Owner: Mallinckrodt
Contact Person: Amber Crouch
Title: EHS
Phone: 314-654-0127 Fax: 314-654-1251

II. APPLICANT (mailing information):

Applicant Name: Amber Crouch
Title: EHS
Company Name: Mallinckrodt
Mailing Address: 3600 N. 2nd St.
City: St. Louis State: MO Zip: 63147
Phone: 314-654-0127 Fax: 314-654-1251

III. A. MATERIAL TO BE DISCHARGED (check all applicable boxes):

1. Wastewater description/location: Bldg. X: Magnesium Stearate Solution
2. Process/activity generating wastewater: process upset / failed batch
3. Physical and chemical composition: List all constituents, and known or potentially present regulated contaminants below.
   ☐ See separate listing enclosed, and/or ☐ See analytical results enclosed, and/or ☒ Material Safety Data Sheet enclosed.

DESCRIPTION	RANGE	UNIT
Water	97	%
magnesium stearate	3	%

DESCRIPTION *(continued)*	RANGE	UNIT

4. Is this wastewater from a process subject to EPA's categorical standards in 40 CFR Subchapter N? ☒ Yes ☐ No
   a. If yes, the applicable standards are in: 40 CFR Part 414, Subpart G + H ☒ Existing source ☐ New source
5. Does this wastewater contain polychlorinated biphenyls, asbestos or radioactive material? ☐ Yes ☒ No
   a. If yes, describe:
6. Representative sample: ☐ Laboratory results attached, and/or ☐ Sample provided (1/2 gallon minimum, clear container)
   a. Sample collection point/location: Collection method:
   b. Sampler's name/Co.: Sample date/time:
   c. Attach chain of custody as available
7. Discharge will occur over the following time period: ☒ < 30 days ☐ ≥ Two years ☐ Other:
   a. Expected total volume of wastewater to be discharged over the time period above: 15,000 Gallons
   b. Proposed discharge volume: Gallons, at a frequency of: ☐ One time ☐ Daily ☐ Weekly ☐ Monthly ☐ Once/three months ☐ Once/six months ☐ Other:
8. Pretreatment of wastewater prior to discharge: ☒ None ☐ Yes, describe: pH adjust at main outfall (SP010)
   a. If yes, attach site plan, pretreatment system schematic, and design specifications.
9. Wastewater from a remediation project under: ☐ Superfund/CERCLA ☐ RCRA ☐ Voluntary program ☐ UST ☒ Not applicable
   a. If from a remediation project, briefly describe the past and present utilization of the property:

III.B. MATERIAL FROM UNDERGROUND STORAGE TANK SOURCE

☒ Not applicable (go to Section IV)

Please answer the following questions if you are requesting to discharge wastewater associated with an underground storage tank system.

1. a. Wastewater from: ☐ Inside UST(s) ☐ UST system pit ☐ Excavation outside UST system pit ☐ Monitoring well ☐ Groundwater remediation system

   b. UST project involves wastewater from: ☐ UST(s) closed in place ☐ UST(s) removed ☐ Remediation ☐ Upgrade ☐ Maintenance activities ☐ Well monitoring ☐ Other, explain: _____

   c. If wastewater is from a closure project, how long has UST(s) been out of service: _____ years

2. a. State assigned UST site identification number: _____ ☐ Not applicable

   b. Number of USTs affected: _____ ☐ Unknown

   c. For the UST(s) involved, their state identification number(s): _____ ☐ Not applicable

   d. Service Station Identification Number, as applicable: _____

3. Tank contents/former contents: ☐ Gasoline ☐ #2 diesel ☐ Used oil ☐ Unknown ☐ Other: _____

IV. DISCHARGE LOCATION

1. ☒ On-site. Describe proposed point of entry to sewer and the discharge rate (must be a sanitary or combined sewer): _____
   Bldg. X sewer to SP10 (Main Outfall) Note: Range of discharge must not surcharge sewer line.

2. ☐ Haul to MSD Bissell Point Hauled Waste Receiving Station at 10 E. Grand, St. Louis, MO.

   a. Transporters Name: _____ and MSD Hauler ID Number: _____

   b. Hazardous Waste Certification:

   For wastewater which is hauled to MSD's Bissell Point Hauled Waste Receiving Station, I hereby certify that to the best of my knowledge and belief, the above hauled waste is not classified as a RCRA "hazardous waste" as defined by the MDNR in 10 CSR 25 or USEPA in 40 CFR Part 261.

   Applicant Name (print): _____

   Signature: _____ **Date:** _____

ADDITIONAL INFORMATION:

_____

V. APPLICANT SIGNATURE AND CERTIFICATION

This application must be signed by the applicant: either the source contact, or a contractor or agent directly responsible for site activities.

I hereby certify that I am directly responsible for activities at the site regarding the wastewater to be discharged, and to the best of my knowledge and belief, based on appropriate inquiry, the information in this application is true, complete, and accurate. The samples or analyses submitted are representative of the materials to be discharged. If granted approval to discharge, I agree to abide by the MSD Ordinances, and all applicable federal, state and local regulations. I agree to pay the costs of any pre-approval analyses performed by MSD and to pay any applicable disposal charges for the volume and strength of the wastes discharged.

Applicant Name (print): Amber Crouch

Signature: Amber Crouch **Date:** 6/7/12

FOR MSD USE ONLY:

File Name: _____ ID No. _____ Sample Point No. _____

Teklab, Inc.
Environmental Laboratory

Laboratory Results

http://www.teklabinc.com/

Client: Mallinckrodt Inc.
Work Order: 11010866
Client Project: BX
Report Date: 28-Jan-11
Lab ID: 11010866-001
Client Sample ID: BX
Matrix: AQUEOUS
Collection Date: 01/27/2011 7:45

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 410.4								
Chemical Oxygen Demand	NELAP	100		1170	mg/L	2	01/27/2011 12:35	R145042
STANDARD METHODS 18TH ED. 2540 D								
Total Suspended Solids	NELAP	6		15500	mg/L	1	01/27/2011 9:13	R145002

MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Material name	MAGNESIUM STEARATE
Version #	02
Revision date	04-19-2011
CAS #	557-04-0
Product Codes	Macron: 2257, 5712
Synonym(s)	STEARIC ACID, MAGNESIUM SALT * Octadecanoic acid, magnesium salt
Manufacturer	Avantor Performance Materials, Inc.
Address	222 Red School Lane Phillipsburg, NJ 08865 US
Customer Service	800-582-2537
24 Hour Emergency	908-859-2151
Chemtrec	800-424-9300

2. Hazards Identification

Emergency overview	CAUTION Dust may form explosive mixture with air. Product dust may be irritating to eyes, skin and respiratory system.
OSHA regulatory status	This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).
Potential health effects	
Routes of exposure	Inhalation. Skin contact. Eye contact. Ingestion.
Eyes	Dust or powder may irritate eye tissue. If irritation should occur, it is expected to be transient.
Skin	Dust or powder may irritate the skin.
Inhalation	Inhalation of dusts may cause respiratory irritation.
Ingestion	Expected to be a low ingestion hazard. May cause temporary irritation of the throat, stomach, and gastrointestinal tract.
Target organs	None known.
Chronic effects	Inhalation of powder/dust may cause lung edema.
Potential environmental effects	The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

3. Composition / Information on Ingredients

Components	CAS #	Percent
MAGNESIUM STEARATE	557-04-0	90 - 100

4. First Aid Measures

First aid procedures	
Eye contact	Any material that contacts the eye should be washed out immediately with water. If easy to do, remove contact lenses. Get medical attention if irritation develops and persists.
Skin contact	Wash off with soap and water. Get medical attention if irritation develops and persists.
Inhalation	Move to fresh air. Treat symptomatically. Get medical attention if symptoms persist.
Ingestion	Seek medical advice.
Notes to physician	Treat symptomatically.

General advice	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

5. Fire Fighting Measures

Flammable properties	Dust may form explosive mixture with air.
Extinguishing media	
Suitable extinguishing media	Water. Carbon dioxide (CO2). Dry chemical.
Unsuitable extinguishing media	None known.
Protection of firefighters	
Specific hazards arising from the chemical	Dust may form explosive mixture with air.
Protective equipment and precautions for firefighters	Firefighters should wear full protective gear. Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.
Special protective equipment for fire-fighters	As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.
Specific methods	In the event of fire, cool tanks with water spray. In the event of fire and/or explosion do not breathe fumes.

6. Accidental Release Measures

Personal precautions	Keep unnecessary personnel away. Keep upwind. Ventilate the area. Avoid inhalation of dust from the spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
Environmental precautions	Prevent further leakage or spillage if safe to do so.
Methods for containment	ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). If sweeping of a contaminated area is necessary use a dust suppressant agent which does not react with the product. Prevent entry into waterways, sewer, basements or confined areas.
Methods for cleaning up	Avoid dust formation. Small Spills: Sweep up or vacuum up spillage and collect in suitable container for disposal. Large Spills: Collect dust or particulates using a vacuum cleaner with a HEPA filter. Reduce airborne dust and prevent scattering by moistening with water. Never return spills in original containers for re-use. Clean contaminated surface thoroughly. Clean up in accordance with all applicable regulations.
Other information	Clean up in accordance with all applicable regulations.

7. Handling and Storage

Handling	Keep formation of airborne dusts to a minimum. Dust may form explosive mixture with air. DO NOT handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Avoid breathing dust. Avoid contact with eyes, skin, and clothing. Use only with adequate ventilation. Wash thoroughly after handling. See Section 8 of the MSDS for Personal Protective Equipment.
Storage	Keep container tightly closed. Store in a well-ventilated place.

8. Exposure Controls / Personal Protection

Occupational exposure limits

ACGIH

Material	Type	Value
MAGNESIUM STEARATE (557-04-0)	TWA	10.0000 mg/m3

U.S. - OSHA

Material	Type	Value	Form
MAGNESIUM STEARATE (557-04-0)	PEL	15.0000 mg/m3	Total dust.
		5.0000 mg/m3	Respirable fraction for nuisance dusts

Engineering controls Ventilation should be sufficient to effectively remove and prevent buildup of any dusts or fumes that may be generated during handling or thermal processing. If engineering measures are not sufficient to maintain concentrations of dust particulates below the OEL, suitable respiratory protection must be worn.

Personal protective equipment

Eye / face protection Use tight fitting goggles if dust is generated.

Skin protection No special protective equipment required. Wear appropriate clothing to prevent repeated or prolonged skin contact.

Respiratory protection In case of inadequate ventilation or risk of inhalation of dust, use suitable respiratory equipment with particle filter (type P2).

General hygeine considerations Provide eyewash station and safety shower. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical & Chemical Properties

Appearance	Powder.
Color	White or Yellow.
Odor	Slight.
Odor threshold	Not available.
Physical state	Solid.
Form	Powder.
pH	Not available.
Melting point	302 - 338 °F (150 - 170 °C)
Freezing point	Not available.
Boiling point	Not available.
Flash point	Not available.
Evaporation rate	Not applicable.
Flammability limits in air, upper, % by volume	Not available.
Flammability limits in air, lower, % by volume	Not available.
Vapor density	Not applicable.
Specific gravity	1.028
Relative density	Not available.
Solubility (water)	Insoluble in water.
Partition coefficient (n-octanol/water)	Not available
Auto-ignition temperature	Not available.
Molecular weight	591.27 g/mol
Molecular formula	C18-H36-O2.1/2Mg
Dust Electrostatic Properties	
Minimum Ignition Energy (Cloud)	50 - 100 mJ

Dust Explosion Properties

dP/dT	934 bar/s
Kst	254 bar.m/s
Limiting Oxygen Concentration	12 - 13 %
Minimum Explosible Concentration	20 - 30 g/m3
Minimum Ignition Temperature-Cloud	824 - 860 °F (440 - 460 °C)
Minimum Ignition Temperature-Layer	716 - 734 °F (380 - 390 °C)
Pmax	8.8 bar

10. Chemical Stability & Reactivity Information

Chemical stability	Stable under normal temperature conditions.
Conditions to avoid	Heat, flames and sparks. Dust clouds may be explosive under certain conditions.
Incompatible materials	Strong oxidizing agents. Acids.
Hazardous decomposition products	At thermal decomposition temperatures, carbon monoxide and carbon dioxide.
Possibility of hazardous reactions	Hazardous polymerization does not occur.

11. Toxicological Information

Sensitization	Not a skin sensitizer.
Acute effects	Low hazard for usual industrial or commercial handling.
Local effects	May cause eye irritation. May cause skin irritation. May cause irritation to the respiratory system.
Chronic effects	Inhalation of powder/dust may cause lung edema.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

ACGIH Carcinogens

MAGNESIUM STEARATE (CAS 557-04-0) A4 Not classifiable as a human carcinogen.

Skin corrosion/irritation	May irritate and cause redness and pain.
Epidemiology	No epidemiological data is available for this product.
Mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Neurological effects	None known.
Reproductive effects	Contains no ingredient listed as toxic to reproduction
Teratogenicity	No data available to indicate product or any components present at greater than 0.1% may cause birth defects.
Symptoms and target organs	Irritant effects.

12. Ecological Information

Ecotoxicity	This product has no known eco-toxicological effects.
Environmental effects	Ecological injuries are not known or expected under normal use. An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Aquatic toxicity	This material is not expected to be harmful to aquatic life.
Persistence and degradability	The product is not biodegradable.
Partition coefficient (n-octanol/water)	Not available

13. Disposal Considerations

Disposal instructions	Dispose of contents/container in accordance with local/regional/national/international regulations. Incinerate the material under controlled conditions in an approved incinerator.
Contaminated packaging	Offer rinsed packaging material to local recycling facilities. Since emptied containers retain product residue, follow label warnings even after container is emptied.

14. Transport Information

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

15. Regulatory Information

US federal regulations	This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200. All components are on the U.S. EPA TSCA Inventory List. CERCLA/SARA Hazardous Substances - Not applicable.

CERCLA (Superfund) reportable quantity

None

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - Yes Delayed Hazard - No Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No
Section 311 hazardous chemical	Yes
Food and Drug Administration (FDA)	Total food additive Direct food additive GRAS food additive

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

State regulations	This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

Saf-T-Data	Health: 1 - Slight Flammability: 2 - Moderate Reactivity: 1 - Slight Contact: 1 - Slight Lab Protective Equip: B - GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES Storage Color Code: G - Green (General Storage)

16. Labeling Info

Label Hazard Warning	CAUTION Dust may form explosive mixture with air. Product dust may be irritating to eyes, skin and respiratory system.
Label Precautions	Keep away from heat, sparks and flame. Avoid breathing dust. Avoid contact with eyes, skin, and clothing. Use only with adequate ventilation. Wash thoroughly after handling. Keep container closed.
Label First Aid	Immediately flush eyes with plenty of water for at least 15 minutes. Flush skin thoroughly with water. If gas/fume/vapor/dust/mist from the material is inhaled, remove the affected person immediately to fresh air. If ingestion of a large amount does occur, call a poison control center immediately.

17. Other Information

NFPA ratings	Health: 1 Flammability: 1 Instability: 0
Disclaimer	THE INFORMATION PRESENTED IN THIS MATERIAL SAFETY DATA SHEET (MSDS/SDS) WAS PREPARED BY TECHNICAL PERSONNEL BASED ON DATA THAT THEY BELIEVE IN THEIR GOOD FAITH JUDGMENT IS ACCURATE. HOWEVER, THE INFORMATION PROVIDED HEREIN IS PROVIDED "AS IS," AND AVANTOR PERFORMANCE MATERIALS MAKES AND GIVES NO REPRESENTATIONS OR WARRANTIES WHATSOEVER, AND EXPRESSLY DISCLAIMS ALL WARRANTIES REGARDING SUCH INFORMATION AND THE PRODUCT TO WHICH IT RELATES, WHETHER EXPRESS, IMPLIED, OR STATUTORY, INCLUDING WITHOUT LIMITATION, WARRANTIES OF ACCURACY, COMPLETENESS, MERCHANTABILITY, NON-INFRINGEMENT, PERFORMANCE, SAFETY, SUITABILITY, STABILITY, AND FITNESS FOR A PARTICULAR PURPOSE, AND ANY WARRANTIES ARISING FROM COURSE OF DEALING, COURSE OF PERFORMANCE, OR USAGE OF TRADE. THIS MSDS/SDS IS INTENDED ONLY AS A GUIDE TO THE APPROPRIATE PRECAUTIONARY HANDLING OF THE MATERIAL BY A PROPERLY TRAINED PERSON USING THIS PRODUCT, AND IS NOT INTENDED TO BE COMPREHENSIVE AS TO THE MANNER AND CONDITIONS OF USE, HANDLING, STORAGE, OR DISPOSAL OF THE PRODUCT. INDIVIDUALS RECEIVING THIS MSDS/SDS MUST ALWAYS EXERCISE THEIR OWN INDEPENDENT JUDGMENT IN DETERMINING THE APPROPRIATENESS OF SUCH ISSUES. ACCORDINGLY, AVANTOR PERFORMANCE MATERIALS ASSUMES NO LIABILITY WHATSOEVER FOR THE USE OF OR RELIANCE UPON THIS INFORMATION. NO SUGGESTIONS FOR USE ARE INTENDED AS, AND NOTHING HEREIN SHALL BE CONSTRUED AS, A RECOMMENDATION TO INFRINGE ANY EXISTING PATENTS OR TO VIOLATE ANY FEDERAL, STATE, LOCAL, OR FOREIGN LAWS. AVANTOR PERFORMANCE MATERIALS REMINDS YOU THAT IT IS YOUR LEGAL DUTY TO MAKE ALL INFORMATION IN THIS MSDS/SDS AVAILABLE TO YOUR EMPLOYEES.
Issue date	04-19-2011
This data sheet contains changes from the previous version in section(s):	This document has undergone significant changes and should be reviewed in its entirety.

Metropolitan St. Louis
Sewer District
Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

June 7, 2012

Amber Crouch
Senior HSE Engineer
MALLINCKRODT, LLC
3600 N. 2nd St.
St. Louis, MO 63147

RE: NOTICE OF VIOLATION – SEWER USE ORDINANCE NO. 12559
For premise at: 3600 N. 2nd St.

Dear Ms. Crouch:

As I had mentioned during our phone conversation on May 21, 2012, MSD personnel recently collected and analyzed samples of wastewater discharged to the MSD system from the premise above. Unfortunately, we identified the following violation:

VIOLATION OF DISCHARGE LIMITATIONS:

DATE	TIME	SAMPLE POINT	SAMPLE TYPE	POLLUTANT	DISCHARGE LIMIT	LIMIT TYPE	VALUE FOUND
5-11-12	0750	010	24-Hr. Comp	Zinc (T)	3.0 mg/L	DA	12.0 mg/L**

SP010 = MH w/square lid 50' N of neutralization control building at Hall & Salisbury
mg/L = milligrams per liter DA = Daily Average (T) = Total substance

See the enclosure for an explanation of the asterisks appearing in the Value Found column.

REQUIRED ACTION/RESPONSE:

Per our June 7, 2012 phone conversation, you informed me that your independent testing lab took a composite sample at SP010 that included Zinc (T) analysis on the same day as the MSD sample. Upon receiving the results from your independent sample, the two will be averaged to form a single sample result for that day.

1. Submit a report of corrective actions, to ensure compliance with MSD limitations for Zinc (T). In the report:
   a. Indicate which corrective actions are initiated and which are still to come
   b. Include plans for additional sampling to verify a return to compliance
2. Submit all additional sampling results to MSD. Sample collection must occur as follows:
   a. Sample at the identified sampling point
   b. Collect Composite samples for Zinc (T)
   c. Take samples at times representative of normal operations

3. Refer to the enclosure for additional information on:

    a. Potential enforcement actions should noncompliance continue
    b. The meaning of the asterisks that appear in the Value Found column above
    c. Percentages applicable to Significant Noncompliance, when planning for additional sampling
    d. As we discussed, sufficient resamples to avoid Significant Noncompliance must be collected by June 30, 2011

4. Submit your response no later than **July 9, 2012**.

Thank you for helping us to comply with state and federal regulations. If you have any questions, please contact me at 314.436.8709.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Jason Gill
Environmental Engineering Associate

Enclosures: SNC enclosure, pages 1 & 3 of SP map

File: Mallinckrodt, LLC (21120596-00)

cc: Doug Mendoza
Chris Bulmahn

Metropolitan St. Louis Sewer District

Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

May 29, 2012

Amber Crouch
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Dear Ms. Crouch:

We have reviewed your application dated May 25, 2012 requesting approval to discharge 2,000 gallons of wastewater to the Metropolitan St. Louis Sewer District for treatment. This wastewater is an off-specification batch of iothalmic acid resulting from a process upset in Building 200 of the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri. We understand that the wastewater will be discharged through sampling point 010. In an email dated May 29, 2012, you indicated that the laboratory analytical report dated February 29, 2012 is representative of this waste stream.

Based on the information and laboratory analytical report you provided, this wastewater meets MSD Ordinance 12559 standards and is approved for discharge into a sanitary sewer on site. Due to the elevated chemical oxygen demand (COD) concentration, this wastewater discharge is limited to 660 gallons per hour. The discharge into the sewer must be controlled at a rate that will not surcharge the lines in the area. **This approval is valid for 30 days from the date of this letter.**

You must be certain the waste is discharged into a sanitary or combined sewer inlet only. This letter does not authorize any discharge to a separate storm sewer, or to any watercourse, as any such discharge would be in violation of state and federal laws. **Please notify me at the number below when the discharge is to commence, and please ensure the onsite personnel discharging the wastewater in question are provided with a copy of this letter.**

For billing purposes associated with this high strength wastewater, you must confirm the volume of this wastewater discharged to us, in writing, at the completion of the discharge. This report is due no later than 28 days after this approval expires. Please refer to this letter and include the date of the discharge when providing that figure. Under the provisions of Ordinance 13021, you will be billed by invoice at the billing rate in effect at the time of discharge. The current rate contained in MSD Ordinance 13021 is $310.07 per ton for COD over 600 mg/L. Using the COD concentration contained in the laboratory analytical report, and the proposed discharge volume provided in your application, it is estimated that you will be discharging just over two tons of COD over 600 mg/L. (Our quantitative estimate is 2.16 tons COD times $310.07.) Please do not pay this amount until you receive our invoice.

This discharge has been approved based upon the information and sample analysis you provided and is subject to the conditions stated above. This approval may be revoked by the District at any time if any of the information is found to be incorrect, or if the conditions of this approval are violated. Also, if the discharge causes any operational or maintenance problem within the District's collection or treatment system, or results in violations of any conditions of the District's NPDES permit, Mallinckrodt will be considered responsible for damages.

If you have any questions, please call me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

ec: Brian Gibson
Doug Mendoza

File: IU, MALLINCKRODT INC [2112059600]

C1A

SD EVALUATION CHECKLIST - ON SITE

APPLICATION INFORMATION

Source Name: Mallinckrodt LLC

Premise Address: 3600 N. 2nd St.

Send approval letter to applicant

Evaluated by: SMG

Date: 5/29/12

Application Dated: 5/25/12 Received: 5/29/12 All Requested Info. Received: 5/29/12

SOURCE FILING/DESCRIPTION

1 - Source in PIMS? (Y) / N
2 - If No, on IU Cross-Ref list? * Y / N
3 - If No, MSD Account # from E-CIS? - Y / N
4 - If none, on "Source" list (pre-IMS)? ** Y / N
5 - If No, assigned SOUR# from PIMS.

* o:\costrecovery\cross reference xls file

** o:\costrecovery\sourlist xls file

SOURCE TYPE (circle): (IU) / Dead IU / SD

INDUSTRY ID: 21120596-00

Sample Point: No. Assigned: 853 Description: off-spec. batch of iothalmic acid resulting from a process upset

Normal WW flow from premise? N/A _____ ccf/month, 2,992,101 GPD, _____ GPH.

REGULATORY STATUS

Is waste a Hazardous Waste? (N) / Y

Categorical standards apply? (N) / Y

Contain PCB/ asbestos/ radioactive/ dioxin/ used oil? (N) / Y

Regulatory Agency Oversight? (N) / Y

DISCHARGE CONSIDERATIONS At MSD's connection:

Ordinance Limits (12559, p32) exceeded? (N) / Y

Ordinance other limits exceeded (dye, flash pt <140F, temp >140F, obstruction, nuisance foaming/odor, corrosion causing): (N) / Y

Water Quality Standard exceeded? (N) / Y

Fumes in sewer exceed PEL/TLV limits? (N) / Y

Vapors in sewer exceed 10% of LEL? (N) / Y

RECOMMENDATION: (APPROVE) / DENY (cc WWTP Mgr for timed discharge)

APPROVAL CONDITIONS:

Timed Discharge (COD/BOD/WQ/foam): N / (Y) Limit = 660 gal/hour

Require Treatment before Discharge? (N) / Y

Laboratory analysis fee due? (N) / Y $_____

SMR required? (N) / Y Frequency/analysis: _____

SMR log: (N/A) / Remediation.xls / Nonremediation.xls

Volume Billing applies (water unmetered or credited)? (N) / Y

Bill High Strength? N / (Y) Yes, If use >60,000 gal/month water ✓ and, > norm WW strgth

Surcharge calculation attached: N/A / N / (Y)

Expiration log updated: (N/A) N / Y

O:\CostRecovery\Special Discharge\C1a.Checklist doc

On-Site Special Discharge High Strength Flow Rate and Surcharge Calculator

1 GENERAL INFORMATION:

Date: 05/29/12
Calculated by: Steve Grace
Source name: MALLINCKRODT LLC [2112059600]
Waste material: off-spec batch of lothalmic acid (process upset) from Building 200
Discharge volume: 2,000 gallons

2 STRENGTH INFORMATION:

Sample BOD =	0	mg/l =	0	lbs BOD to be discharged
Sample COD =	260,000	mg/l =	4337	lbs COD to be discharged
Sample TSS =	32	mg/l =	for surcharge calculation only	

3 PLANT DATA: 2010

Treatment area: Bissell

Max Loading = 10%

	Flow (MGD)	BOD (mg/L)	COD (mg/L)	BOD (lb/hr)	COD (lb/hr)	BOD (lb/hr)	COD (lb/hr)
Bissell	**140**	**146**	**292**	**7,113**	**14,227**	**711**	**1,423**
Coldwater	26	188	377	1,704	3,408	170	341
Fenton	5	388	776	679	1,357	68	136
Grand Glaize	16	129	405	708	2,218	71	222
Lemay	131	78	210	3,531	9,584	353	958
Lower Meramec	13	124	409	543	1,785	54	179
Missouri River	27	280	559	2,671	5,341	267	534

4 MINIMUM REQUIRED FLOW RATE:

	BOD (hours)	BOD (gpm)	COD (hours)	COD (gpm)
Bissell	**0.00**	**0**	**3.05**	**11**
Coldwater	0.00	0	12.73	3
Fenton	0.00	0	31.95	1
Grand Glaize	0.00	0	19.56	2
Lemay	0.00	0	4.53	7
Lower Meramec	0.00	0	24.30	1
Missouri River	0.00	0	8.12	4

5 SURCHARGE AND VOLUME BILLING

Is volume subject to billing? no (yes/no)
Ratio of BOD/COD = 0.00

(Sample BOD) - 300 = 0 mg/l subject to surcharge
(sample COD) - 600 = 259400 mg/l subject to surcharge
(sample TSS) - 300 = 0 mg/l subject to surcharge

If BOD/COD ratio <= 0.35, the following calculations use the COD value. Otherwise they use the BOD value

Current rates under Ordinance: 13021

Volume =	$	2.11	/CcF
BOD =	$	620.14	/ton
COD =	$	310.07	/ton
TSS =	$	231.35	/ton

Flow charge = $ - based on volume = 2.7 CcF
BOD surcharge = $ -
COD surcharge = $ 670.98
TSS surcharge = $ -
Total discharge charge = $ 670.98
Customer charge = $ 670.98 DEC charges special discharge customers for total charges > $20.00
Approximate charge/gallon = $ 0.34

Comments

require volume report for billing purposes. Smg

Steve Grace

From: Crouch, Amber <Amber.Crouch@Covidien.com>
Sent: Tuesday, May 29, 2012 3:08 PM
To: Steve Grace
Subject: RE: Mallinckrodt Special Discharge Permit Request - Bldg. 200 Iothalmic Acid/ Water

Yes it is. It is the same material and the lab data is representative.

From: Steve Grace [mailto:sgrace@stlmsd.com]
Sent: Tuesday, May 29, 2012 2:59 PM
To: Crouch, Amber
Subject: RE: Mallinckrodt Special Discharge Permit Request - Bldg. 200 Iothalmic Acid/ Water

Hello Amber,

One quick question...is the lab data submitted in conjunction with the previous application in February of this year still representative of this waste stream?

Thanks,
Steve Grace

From: Crouch, Amber [mailto:Amber.Crouch@Covidien.com]
Sent: Tuesday, May 29, 2012 7:42 AM
To: Steve Grace
Subject: Mallinckrodt Special Discharge Permit Request - Bldg. 200 Iothalmic Acid/ Water

Steve,

Please see the attached special discharge permit for Iothalmic Acid/ Water from building 200. This is the same material a permit was issued to us for back in February. Let me know if you need any additional information.

Thanks,

Amber Crouch
Senior HSE Engineer
Covidien
3600 North Second Street
St. Louis, MO 63147
USA

(314) 654-0127 office
(314) 253-2213 pager
(314) 654-1251 fax

www.covidien.com

This information may be confidential and/or privileged. Use of this information by anyone other than the intended recipient is prohibited. If you receive this in error, please inform the sender and remove any record of this message.

Metropolitan St. Louis Sewer District
2350 Market Street
St. Louis, MO 63103

APPLICATION FOR SPECIAL DISCHARGE APPROVAL

I. WASTEWATER SOURCE IDENTIFICATION:

Site Name: Mallinckrodt
Premise Address: 3600 N. 2nd St.
City: St. Louis State: MO Zip: 63147
Owner: Mallinckrodt
Contact Person: Amber Crouch
Title: EHS
Phone: 314-654-0127 Fax: 314-654-1251

II. APPLICANT (mailing information):

Applicant Name: Amber Crouch
Title: EHS
Company Name: Mallinckrodt
Mailing Address: 3600 N. 2nd St.
City: St. Louis State: MO Zip: 63147
Phone: 314-654-0127 Fax: 314-654-1251

III. A. MATERIAL TO BE DISCHARGED (check all applicable boxes):

1. Wastewater description/location: Ethalmic acid /water Bldg. 200
2. Process/activity generating wastewater: process upset
3. Physical and chemical composition: List all constituents, and known or potentially present regulated contaminants below.
   ☐ See separate listing enclosed, and/or ☐ See analytical results enclosed, and/or ☒ Material Safety Data Sheet enclosed.

DESCRIPTION	RANGE	UNIT
Ethalmic acid	20-25	%
water	75-80	%

DESCRIPTION *(continued)*	RANGE	UNIT

4. Is this wastewater from a process subject to EPA's categorical standards in 40 CFR Subchapter N? ☐ Yes ☒ No
   a. If yes, the applicable standards are in: 40 CFR Part _____, Subpart _____ ☐ Existing source ☐ New source
5. Does this wastewater contain polychlorinated biphenyls, asbestos or radioactive material? ☐ Yes ☒ No
   a. If yes, describe: _____
6. Representative sample: ☐ Laboratory results attached, and/or ☐ Sample provided (1/2 gallon minimum, clear container)
   a. Sample collection point/location: _____ Collection method: _____
   b. Sampler's name/Co.: _____ Sample date/time: _____
   c. Attach chain of custody as available
7. Discharge will occur over the following time period: ☒ < 30 days ☐ ≥ Two years ☐ Other: _____
   a. Expected total volume of wastewater to be discharged over the time period above: _____ Gallons
   b. Proposed discharge volume: ~~150~~ 2000 Gallons, at a frequency of: ☒ One time ☐ Daily ☐ Weekly ☐ Monthly ☐ Once/three months ☐ Once/six months ☐ Other: _____
8. Pretreatment of wastewater prior to discharge: ☐ None ☒ Yes, describe: pH adjust at manout fall
   a. If yes, attach site plan, pretreatment system schematic, and design specifications.
9. Wastewater from a remediation project under: ☐ Superfund/CERCLA ☐ RCRA ☐ Voluntary program ☐ UST ☒ Not applicable
   a. If from a remediation project, briefly describe the past and present utilization of the property: _____

III.B. MATERIAL FROM UNDERGROUND STORAGE TANK SOURCE

☒ **Not applicable (go to Section IV)**

Please answer the following questions if you are requesting to discharge wastewater associated with an underground storage tank system.

1. a. Wastewater from: ☐ Inside UST(s) ☐ UST system pit ☐ Excavation outside UST system pit ☐ Monitoring well ☐ Groundwater remediation system

   b. UST project involves wastewater from: ☐ UST(s) closed in place ☐ UST(s) removed ☐ Remediation ☐ Upgrade ☐ Maintenance activities ☐ Well monitoring ☐ Other, explain: _____

   c. If wastewater is from a closure project, how long has UST(s) been out of service: _____ years

2. a. State assigned UST site identification number: _____ ☐ Not applicable

   b. Number of USTs affected: _____ ☐ Unknown

   c. For the UST(s) involved, their state identification number(s): _____ ☐ Not applicable

   d. Service Station Identification Number, as applicable: _____

3. Tank contents/former contents: ☐ Gasoline ☐ #2 diesel ☐ Used oil ☐ Unknown ☐ Other: _____

IV. DISCHARGE LOCATION

1. ☒ On-site. Describe proposed point of entry to sewer and the discharge rate (must be a sanitary or combined sewer): _____
   Bldg. 200 to plant sewer @ SP01C Note: Range of discharge must not surcharge sewer line.

2. ☐ Haul to MSD Bissell Point Hauled Waste Receiving Station at 10 E. Grand, St. Louis, MO.

   a. Transporters Name: _____ and MSD Hauler ID Number: _____

   b. Hazardous Waste Certification:

   For wastewater which is hauled to MSD's Bissell Point Hauled Waste Receiving Station, I hereby certify that to the best of my knowledge and belief, the above hauled waste is not classified as a RCRA "hazardous waste" as defined by the MDNR in 10 CSR 25 or USEPA in 40 CFR Part 261.

   Applicant Name (print): _____

   Signature: _____ **Date:** _____

ADDITIONAL INFORMATION:

_____

V. APPLICANT SIGNATURE AND CERTIFICATION

This application must be signed by the applicant: either the source contact, or a contractor or agent directly responsible for site activities.

I hereby certify that I am directly responsible for activities at the site regarding the wastewater to be discharged, and to the best of my knowledge and belief, based on appropriate inquiry, the information in this application is true, complete, and accurate. The samples or analyses submitted are representative of the materials to be discharged. If granted approval to discharge, I agree to abide by the MSD Ordinances, and all applicable federal, state and local regulations. I agree to pay the costs of any pre-approval analyses performed by MSD and to pay any applicable disposal charges for the volume and strength of the wastes discharged.

Applicant Name (print): Amber Crouch

Signature: Amber Crouch **Date:** 5/25/12

FOR MSD USE ONLY:

File Name: Mallinckrodt LLC ID No. 21120596-00 Sample Point No. 853

February 29, 2012

Amber Crouch
Mallinckrodt Inc.
3600 N. 2nd St.
St. Louis, MO 63147
TEL: (314) 654-0127
FAX: (314) 654-1251

RE: Iothalmic Acid Soln. **WorkOrder:** 12021022

Dear Amber Crouch:

TEKLAB, INC received 1 sample on 2/23/2012 1:42:00 PM for the analysis presented in the following report.

Samples are analyzed on an as received basis unless otherwise requested and documented. The sample results contained in this report relate only to the requested analytes of interest as directed on the chain of custody. NELAP accredited fields of testing are indicated by the letters NELAP under the Certification column. All tests are performed in the Collinsville, IL laboratory unless otherwise noted in the Case Narrative.

All quality control criteria applicable to the test methods employed for this project have been satisfactorily met and are in accordance with NELAP except where noted. The following report shall not be reproduced, except in full, without the written approval of Teklab, Inc.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Deborah L Taylor

Deborah L. Taylor
Project Manager
(618)344-1004 ex 18
dtaylor@teklabinc.com

MSD 012447

Definitions

Client: Mallinckrodt Inc.
Client Project: Iothalmic Acid Soln.

Work Order: 12021022
Report Date: 29-Feb-12

Abbr Definition

CCV	Continuing calibration verification is a check of a standard to determine the state of calibration of an instrument between recalibration.
DF	Dilution factor is the dilution performed during analysis only and does not take into account any dilutions made during sample preparation. The reported result is final and includes all dilutions factors.
DNI	Did not ignite
DUP	Laboratory duplicate is an aliquot of a sample taken from the same container under laboratory conditions for independent processing and analysis independently of the original aliquot.
ICV	Initial calibration verification is a check of a standard to determine the state of calibration of an instrument before sample analysis is initiated.
IDPH	IL Dept. of Public Health
LCS	Laboratory control sample, spiked with verified known amounts of analytes, is analyzed exactly like a sample to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system. The acceptable recovery range is in the QC Package (provided upon request).
LCSD	Laboratory control sample duplicate is a replicate laboratory control sample that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MB	Method blank is a sample of a matrix similar to the batch of associated sample (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences should present at concentrations that impact the analytical results for sample analyses.
MDL	Method detection limit means the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.
MS	Matrix spike is an aliquot of matrix fortified (spiked) with known quantities of specific analytes that is subjected to the entire analytical procedures in order to determine the effect of the matrix on an approved test method's recovery system. The acceptable recovery range is listed in the QC Package (provided upon request).
MSD	Matrix spike duplicate means a replicate matrix spike that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MW	Molecular weight
ND	Not Detected at the Reporting Limit
NELAP	NELAP Accredited
PQL	Practical quantitation limit means the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operation conditions. The acceptable recovery range is listed in the QC Package (provided upon request).
RL	The reporting limit the lowest level that the data is displayed in the final report. The reporting limit may vary according to customer request or sample dilution. The reporting limit may not be less than the MDL.
RPD	Relative percent difference is a calculated difference between two recoveries (ie. MS/MSD). The acceptable recovery limit is listed in the QC Package (provided upon request).
SPK	The spike is a known mass of target analyte added to a blank sample or sub-sample; used to determine recovery deficiency or for other quality control purposes.
Surr	Surrogates are compounds which are similar to the analytes of interest in chemical composition and behavior in the analytical process, but which are not normally found in environmental samples.
TNTC	Too numerous to count (> 200 CFU)

Qualifiers

# - Unknown hydrocarbon	B - Analyte detected in associated Method Blank
E - Value above quantitation range	H - Holding times exceeded
J - Analyte detected below quantitation limits	M - Manual Integration used to determine area response
ND - Not Detected at the Reporting Limit	R - RPD outside accepted recovery limits
S - Spike Recovery outside recovery limits	X - Value exceeds Maximum Contaminant Level

Case Narrative

Client: Mallinckrodt Inc.

Client Project: Iothalmic Acid Soln.

Work Order: 12021022

Report Date: 29-Feb-12

Cooler Receipt Temp: 5.8 °C

Locations and Accreditations

Collinsville		Springfield		Kansas City	
Address	5445 Horseshoe Lake Road Collinsville, IL 62234-7425	Address	3920 Pintail Dr Springfield, IL 62711-9415	Address	8421 Nieman Road Lenexa, KS 66214
Phone	(618) 344-1004	Phone	(217) 698-1004	Phone	(913) 541-1998
Fax	(618) 344-1005	Fax	(217) 698-1005	Fax	(913) 541-1998
Email	jhriley@teklabinc.com	Email	kmcclain@teklabinc.com	Email	dthompson@teklabinc.com

State	Dept	Cert #	NELAP	Exp Date	Lab
Illinois	IEPA	100226	NELAP	1/31/2013	Collinsville
Kansas	KDHE	E-10374	NELAP	1/31/2013	Collinsville
Louisiana	LDEQ	166493	NELAP	6/30/2012	Collinsville
Louisiana	LDEQ	166578	NELAP	6/30/2012	Springfield
Arkansas	ADEQ	88-0966		3/14/2012	Collinsville
Illinois	IDPH	17584		4/30/2012	Collinsville
Kentucky	UST	0073		5/26/2012	Collinsville
Missouri	MDNR	00930		4/13/2013	Collinsville
Oklahoma	ODEQ	9978		8/31/2012	Collinsville

Teklab, Inc.
Environmental Laboratory

Laboratory Results

http://www.teklabinc.com/

Client: Mallinckrodt Inc.
Work Order: 12021022
Client Project: Iothalmic Acid Soln.
Report Date: 29-Feb-12
Lab ID: 12021022-001
Client Sample ID: Iothalmic Acid Solution
Matrix: AQUEOUS
Collection Date: 02/23/2012 9:00

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 410.4								
Chemical Oxygen Demand	NELAP	12500		260000	mg/L	250	02/24/2012 15:13	R160363
STANDARD METHOD 18TH ED. 4500-H B, LABORATORY ANALYZED								
Lab pH	NELAP	1.00		7.23		1	02/24/2012 12:36	R160332
STANDARD METHODS 18TH ED. 2540 D								
Total Suspended Solids	NELAP	6		32	mg/L	1	02/25/2012 10:36	R160389

Teklab, Inc.
Environmental Laboratory

Receiving Check List

http://www.teklabinc.com/

Client: Mallinckrodt Inc.
Client Project: Iothalmic Acid Soln.

Work Order: 12021022
Report Date: 29-Feb-12

Carrier: Dawn Brantley

Received By: SRH

Completed by: Heather Riley
On: 23-Feb-12

Reviewed by: Deborah L Taylor
On: 23-Feb-12

Pages to follow: **Chain of custody** 1 **Extra pages included** 0

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐	Temp °C 5.8
Type of thermal preservation?	None ☐	Ice ☑	Blue Ice ☐	Dry Ice ☐
Chain of custody present?	Yes ☑	No ☐		
Chain of custody signed when relinquished and received?	Yes ☑	No ☐		
Chain of custody agrees with sample labels?	Yes ☑	No ☐		
Samples in proper container/bottle?	Yes ☑	No ☐		
Sample containers intact?	Yes ☑	No ☐		
Sufficient sample volume for indicated test?	Yes ☑	No ☐		
All samples received within holding time?	Yes ☑	No ☐		
Reported field parameters measured:	Field ☐	Lab ☐	NA ☑	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐		

When thermal preservation is required, samples are compliant with a temperature between 0.1°C - 6.0°C, or when samples are received on ice the same day as collected.

Water – at least one vial per sample has zero headspace?	Yes ☐	No ☐	No VOA vials	☑
Water - TOX containers have zero headspace?	Yes ☐	No ☐	No TOX containers	☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐		

Any No responses must be detailed below or on the COC.

CHAIN OF CUSTODY

pg. 1 of 1 Work Order # 12021022

TEKLAB, INC. 5445 Horseshoe Lake Road ~ Collinsville, IL 62234 ~ Phone: (618) 344-1004 ~ Fax: (618) 344-1005

Client: Mallinckrodt
Address: 3600 N. 2nd St.
City / State / Zip: St. Louis, MO 63147
Contact: Amber Crouch Phone: 314-654-0127
E-Mail: Fax: 314-654-1251

Samples on: ☒ Ice ☐ Blue Ice ☐ No Ice 5.8 °C
Preserved in: ☐ Lab ☒ Field FOR LAB USE ONLY
Lab Notes:

Comments: Teklab Inc. Courier Pick Up

- Are these samples known to be involved in litigation? If yes, a surcharge will apply. ☐ Yes ☒ No
- Are these samples known to be hazardous? ☐ Yes ☒ No
- Are there any required reporting limits to be met on the requested analysis? If yes, please provide limits in comment section. ☐ Yes ☐ No

Project Name / Number: Iothalmic Acid Soln.
Sample Collector's Name:
Results Requested: ☒ Standard ☐ 1-2 Day (100% Surcharge) ☐ Other_____ ☐ 3 Day (50% Surcharge)
Billing Instructions:

Lab Use Only	Sample Identification	Date/Time Sampled	# and Type of Containers: UNPRES	HNO_3	NaOH	H_2SO_4	HCL	MeOH	$NaHSO_4$	Other	MATRIX: Water	Drinking Water	Soil	Sludge	Sp. Waste	INDICATE ANALYSIS REQUESTED: TSS	pH	COD
12021022-001	Iothalmic Acid soln.	02-23-12/0900	2			1										X	X	X
			1															

Relinquished By	Date / Time	Received By	Date / Time
Amber Crouch	2/23/12 1250	[signature]	2/23/12 1250
[signature]	2/23/12 1342	Stephanie Haynes	2/23/12 13:42

The individual signing this agreement on behalf of client acknowledges that he/she has read and understands the terms and conditions of this agreement, on the reverse side, and that he/she has the authority to sign on behalf of client.

WHITE & YELLOW – LAB PINK – SAMPLER'S COPY

Metropolitan St. Louis Sewer District
Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

May 29, 2012

Amber Crouch
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Re: Wastewater User Charge Billing for Special Discharge

Dear Ms. Crouch:

This is to advise you of the wastewater user charges applicable to an on-site special discharge approved in our letter to you dated May 4, 2012. That charge was determined using the ethylene glycol concentration in your application for special discharge. The discharge dates and quantities are from information submitted by you in emails dated May 16 and 25, 2012.

Our Finance Department will bill you by invoice for the charges described below. These charges are based on the rates in MSD Wastewater User Charge Ordinance 13021. For your convenience, using the volume and strength of the waste discharged, the ordinance rates have been converted to a per-gallon basis.

PARTY TO BILL: Addressee

BILLING IS FOR: On-Site Special Discharge

DISCHARGE PERIOD: May 15 and 22, 2012

SOURCE OF WASTE: 15% ethylene glycol solution from Building 250 of the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri.

Discharge Period	Billing Item	Quantity	Units	Rate	Charge
5/15 and 22/12	Extra-Strength Surcharge	4,300	Gal	$0.19	$817.00
Total:	------	**4,300**	Gal	-----	**$817.00**

Please do not pay until you receive our invoice. If you have any questions, please contact me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

ec: Chris Verplancke - Finance Dept.
Becky Bartholomew – Finance Dept.
Laura Joiner – Finance Dept.
Doug Mendoza
Brian Gibson

File: IU, MALLINCKRODT INC [2112059600], 3600 North Second Street

Steve Grace

From: Crouch, Amber <Amber.Crouch@Covidien.com>
Sent: Friday, May 25, 2012 1:12 PM
To: Steve Grace
Subject: RE: Crouch.mallinckrodt815 5-4-12.doc

Steve,

This special discharge permit can be closed. The discharge took place on 5/22/2012 and included 1100 gallons. The discharge started at 1100 am and ended at 3:30 pm.

Let me know if you need any additional information.

Thanks,

Amber Crouch
Senior HSE Engineer
Covidien
3600 North Second Street
St. Louis, MO 63147
USA

(314) 654-0127 office
(314) 253-2213 pager
(314) 654-1251 fax

www.covidien.com

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From: Steve Grace [mailto:sgrace@stlmsd.com]
Sent: Friday, May 18, 2012 9:22 AM
To: Crouch, Amber
Subject: RE: Crouch.mallinckrodt815 5-4-12.doc

Sorry for the delay, Amber. Discharging the additional volume under the current approval would be fine. This waste stream can be discharged until the approval expires on June 4th. All we would need is a final volume report submitted within 28 days of the permit expiration date.

Thanks,
Steve

From: Crouch, Amber [mailto:Amber.Crouch@Covidien.com]
Sent: Friday, May 18, 2012 8:19 AM
To: Steve Grace
Subject: RE: Crouch.mallinckrodt815 5-4-12.doc

Steve,

Have you had a chance to look at this? Would it be possible for us to discharge an additional 1500 gallons under this same permit?

Thanks,
Amber

From: Crouch, Amber
Sent: Wednesday, May 16, 2012 7:42 AM
To: 'Steve Grace'
Subject: FW: Crouch.mallinckrodt815 5-4-12.doc

Steve,

This discharge took place 5/15/2012 and started 0730 and ended at 1330. Total gallons was 3200.

We would like to keep this permit open and possibly add another 1500 gallons. This would be from the same building and is also a 15% ethylene glycol solution.

Let me know if you need any additional information.

Thanks,

Amber Crouch
Senior HSE Engineer
Covidien
3600 North Second Street
St. Louis, MO 63147
USA

(314) 654-0127 office
(314) 253-2213 pager
(314) 654-1251 fax

www.covidien.com

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From: Rebecca Vitelli
Sent: Monday, May 07, 2012 8:28 AM
Cc: Steve Grace; Brian G. Gibson; Doug Mendoza
Subject: Crouch.mallinckrodt815 5-4-12.doc

May 4, 2012

Amber Crouch
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Dear Ms. Crouch:

We have reviewed your application dated May 2, 2012 requesting approval to discharge 3,200 gallons of wastewater to the Metropolitan St. Louis Sewer District for treatment. This wastewater is 15% ethylene glycol solution from Building 250 at the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri. We understand that the wastewater will be discharged through sampling point 010.

Based on the information you provided, this wastewater meets MSD Ordinance 12559 standards and is approved for discharge into a sanitary sewer on site. Due to the high ethylene glycol concentration, the discharge is limited to 1,200 gallons per hour. This approval is valid for 30 days from the date of this letter.

You must be certain the waste is discharged into a sanitary or combined sewer inlet only. This letter does not authorize any discharge to a separate storm sewer, or to any watercourse, as any such discharge would be in violation of state and federal laws. **Please notify me at the number below when the discharge is to commence, and please ensure the onsite personnel discharging the wastewater in question are provided with a copy of this letter.**

For billing purposes associated with this high COD wastewater, you must confirm the volume of this wastewater discharged to us, in writing, at the completion of the discharge. This report is due no later than 28 days after this approval expires. Please refer to this letter and include the date of the discharge when providing that figure. Under the provisions of Ordinance 13021, you will be billed by invoice at the billing rate in effect at the time of discharge. The current rate contained in MSD Ordinance 13021 is $310.07 per ton for COD over 600 mg/L. Using the assumed COD concentration based on the percent of ethylene glycol contained in the wastewater in question, and the proposed discharge volume provided in your application, it is estimated that you will be discharging just under two tons of COD over 600 mg/L. (Our quantitative estimate is 1.99 tons COD times $310.07.) Please do not pay this amount until you receive our invoice.

This discharge has been approved based upon the information and sample analysis you provided, and is subject to the conditions stated above. This approval may be revoked by the District at any time if any of the information is found to be incorrect, or if the conditions of this approval are violated. Also, if the discharge causes any operational or maintenance problem within the District's collection or treatment system, or results in violations of any conditions of the District's NPDES permit, Mallinckrodt will be considered responsible for damages. If you have any questions, please call me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

pc: Brian Gibson
Doug Mendoza

File: IU, MALLINCKRODT INC [2112059600]

Metropolitan St. Louis Sewer District

Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

May 24, 2012

Sharon R. Cotner
DEPARTMENT OF THE ARMY,
CORPS OF ENGINEERS
8945 Latty Avenue
Berkeley, MO 63134

Re: FUSRAP St. Louis Downtown Site

Dear Ms. Cotner:

We have reviewed your request dated May 22, 2012 for extension of a special discharge originally approved in our letters dated July 23, 2001 and October 13, 2004, and extended through July 23, 2012 in our letters dated June 19, 2006, May 22, 2008, and May 10, 2010. This approval was for stormwater and groundwater that accumulates in excavations of radioactively contaminated soils at the St. Louis Downtown FUSRAP site located at the Mallinckrodt facility, 3600 N. 2nd Street, St. Louis, Missouri. You have requested a two-year extension of your current approval.

Your request for an extension is granted. This approval will expire on July 23, 2014.

As a condition of this approval, you must notify us of any changes that would affect the characteristics of this discharge. The self-monitoring reporting requirements and all other conditions of the above-referenced approvals remain in effect.

Please contact me at (314) 436-8755 with questions or comments.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

pc: Brian Gibson
Doug Mendoza

File: IU – MALLINCKRODT INC [2112059600], SP809

DEPARTMENT OF THE ARMY
ST. LOUIS DISTRICT, CORPS OF ENGINEERS
8945 LATTY AVENUE
BERKELEY, MISSOURI 63134

May 22, 2012

REPLY TO
ATTENTION OF:

FUSRAP/SLDS

Mr. Steve Grace
Metropolitan St. Louis Sewer District
Office of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147

SUBJECT: St. Louis Downtown Site (SLDS) FUSRAP Metropolitan St. Louis Sewer District (MSD) Discharge Permit

Dear Mr. Grace:

The U.S. Army Corps of Engineers (USACE) is requesting a two-year extension to the SLDS MSD Discharge Permit. The total amount of water discharged from this site will remain limited to 100,000 gallons per day, unless otherwise authorized by the MSD.

Please contact Mr. Ron Frerker at (314) 260-3936, if you have any questions.

Sincerely,

Sharon Cotner
FUSRAP Program Manager

Metropolitan St. Louis Sewer District
Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

May 15, 2012

Amber Crouch
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Re: Wastewater User Charge Billing for Special Discharge

Dear Ms. Crouch:

This is to advise you of the wastewater user charges applicable to an on-site special discharge approved in our letter to you dated April 4, 2012. That charge was determined using the ethylene glycol concentration in your application for special discharge. The discharge date and quantity are from information submitted by you in an email dated May 2, 2012.

Our Finance Department will bill you by invoice for the charges described below. These charges are based on the rates in MSD Wastewater User Charge Ordinance 13021. For your convenience, using the volume and strength of the waste discharged, the ordinance rates have been converted to a per-gallon basis.

PARTY TO BILL: Addressee

BILLING IS FOR: On-Site Special Discharge

DISCHARGE PERIOD: April 27, 2012

SOURCE OF WASTE: Unused 100% ethylene glycol from Building 5 of the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri.

Discharge Period	Billing Item	Quantity	Units	Rate	Charge
4/27/12	Extra-Strength Surcharge	110	Gal	$1.29	$141.90
Total:	------	**110**	Gal	-----	**$141.90**

Please do not pay until you receive our invoice. If you have any questions, please contact me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

ec: Chris Verplancke - Finance Dept.
Becky Bartholomew – Finance Dept.
Laura Joiner – Finance Dept.
Doug Mendoza
Brian Gibson

File: IU, MALLINCKRODT INC [2112059600], 3600 North Second Street

Steve Grace

From: Crouch, Amber <Amber.Crouch@Covidien.com>
Sent: Wednesday, May 02, 2012 8:44 AM
To: Steve Grace
Subject: Mallinckrodt - Special Discharge Permit dated 4/4/2012

Steve,

The following discharge has been completed:

Unused 100% ethylene glycol from bldg. 5

Date of discharge: 4/27/2012
Time of discharge: 12:30 to 1:30
Amount of discharge: 110 gallons

Let me know if you need any additional information.

Thanks,

Amber Crouch
Senior HSE Engineer
Covidien
3600 North Second Street
St. Louis, MO 63147
USA

(314) 654-0127 office
(314) 253-2213 pager
(314) 654-1251 fax

www.covidien.com

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Metropolitan St. Louis Sewer District
Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

May 11, 2012

Amber Crouch
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Dear Ms. Crouch:

We have reviewed your application dated May 9, 2012 requesting approval to discharge 200 gallons of wastewater to the Metropolitan St. Louis Sewer District for treatment. This wastewater is 35% ethylene glycol solution at the Building 200W Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri. We understand that the wastewater will be discharged through sampling point 010.

Based on the information you provided, this wastewater meets MSD Ordinance 12559 standards and is approved for discharge into a sanitary sewer on site. The discharge into the sewer must be controlled at a rate that will not surcharge the lines in the area. **This approval is valid for 30 days from the date of this letter.**

You must be certain the waste is discharged into a sanitary or combined sewer inlet only. This letter does not authorize any discharge to a separate storm sewer, or to any watercourse, as any such discharge would be in violation of state and federal laws. **Please notify me at the number below when the discharge is to commence, and please ensure the onsite personnel discharging the wastewater in question are provided with a copy of this letter.**

For billing purposes associated with this high COD wastewater, you must confirm the volume of this wastewater discharged to us, in writing, at the completion of the discharge. This report is due no later than 28 days after this approval expires. Please refer to this letter and include the date of the discharge when providing that figure. Under the provisions of Ordinance 13021, you will be billed by invoice at the billing rate in effect at the time of discharge. The current rate contained in MSD Ordinance 13021 is $310.07 per ton for COD over 600 mg/L. Using the assumed COD concentration based on the percent of ethylene glycol contained in the wastewater in question, and the proposed discharge volume provided in your application, it is estimated that you will be discharging under one ton of COD over 600 mg/L. (Our quantitative estimate is 0.29 tons COD times $310.07.) Please do not pay this amount until you receive our invoice.

This discharge has been approved based upon the information and sample analysis you provided, and is subject to the conditions stated above. This approval may be revoked by the District at any time if any of the information is found to be incorrect, or if the conditions of this approval are violated. Also, if the discharge causes any operational or maintenance problem within the District's collection or treatment system, or results in violations of any conditions of the District's NPDES permit, Mallinckrodt will be considered responsible for damages. If you have any questions, please call me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

pc: Brian Gibson
Doug Mendoza

File: IU, MALLINCKRODT INC [2112059600]

C1A

SD EVALUATION CHECKLIST - ON SITE

APPLICATION INFORMATION

Source Name: Mallinckrodt LLC

Premise Address: 3600 N. 2nd St.

Send approval letter to applicant

Evaluated by: SMG

Date: 5/11/12

Application Dated: 5/9/12 Received: 5/10/12 All Requested Info. Received: 5/10/12

SOURCE FILING/DESCRIPTION

1 - Source in PIMS? (Y) / N
2 - If No, on IU Cross-Ref list? * Y / N
3 - If No, MSD Account # from E-CIS? Y / N
4 - If none, on "Source" list (pre-IMS)? ** Y / N
5 - If No, assigned SOUR# from PIMS.

* o:\costrecovery\cross reference xls file

** o:\costrecovery\sourlist xls file

SOURCE TYPE (circle): (IU) / Dead IU / SD

INDUSTRY ID: 21120596-00

Sample Point: No. Assigned: 832 Description: 35% ethylene glycol soln. from Bldg. 200W chiller system

Normal WW flow from premise? N/A _____ ccf/month, 2,992,101 GPD, _____ GPH. @ SP010

REGULATORY STATUS

Is waste a Hazardous Waste? (N) / Y

Categorical standards apply? (N) / Y

Contain PCB/ asbestos/ radioactive/ dioxin/ used oil? (N) / Y

Regulatory Agency Oversight? (N) / Y

DISCHARGE CONSIDERATIONS At MSD's connection:

Ordinance Limits (12559, p32) exceeded? (N) / Y

Ordinance other limits exceeded (dye, flash pt <140F, temp >140F, obstruction, nuisance foaming/odor, corrosion causing): (N) / Y

Water Quality Standard exceeded? (N) / Y

Fumes in sewer exceed PEL/TLV limits? (N) / Y

Vapors in sewer exceed 10% of LEL? (N) / Y

RECOMMENDATION: (APPROVE) / DENY (cc WWTP Mgr for timed discharge)

APPROVAL CONDITIONS:

Timed Discharge (COD/BOD/WQ/foam): (N) / Y Limit = _____ gal/hour

Require Treatment before Discharge? (N) / Y

Laboratory analysis fee due? (N) / Y $_____

SMR required? (N) / Y Frequency/analysis: _____

SMR log: (N/A) / Remediation.xls / Nonremediation.xls

Volume Billing applies (water unmetered or credited)? (N) / Y

Bill High Strength? N / (Y) Yes, If use >60,000 gal/month water ✓ and, > norm WW strgth

Surcharge calculation attached: N/A / N / (Y)

Expiration log updated: (N/A) / N / Y

O:\CostRecovery\Special Discharge\C1a.Checklist doc

On-Site Special Discharge High Strength Flow Rate and Surcharge Calculator

1 GENERAL INFORMATION:

Date: 05/11/12
Calculated by: Steve Grace
Source name: MALLINCKRODT LLC [2112059600]
Waste material: Spent ethylene glycol from building 200 W chller system
Discharge volume: 200 gallons

2 STRENGTH INFORMATION:

Sample BOD =	0	mg/l =	0	lbs BOD to be discharged
Sample COD =	350,000	mg/l =	584	lbs COD to be discharged
Sample TSS =	0	mg/l =	for surcharge calculation only	

3 PLANT DATA: 2007

Treatment area: Bissell

	Flow (MGD)	BOD (mg/L)	COD (mg/L)	BOD (lb/hr)	COD (lb/hr)	Max Loading = 10% BOD (lb/hr)	COD (lb/hr)
Bissell	119	174	348	7,171	14,341	717	1,434
Coldwater	23	226	452	1,768	3,535	177	354
Fenton	5	307	614	482	964	48	96
Grand Glaize	16	152	399	830	2,183	83	218
Lemay	122	81	228	3,438	9,610	344	961
Lower Meramec	10	124	364	452	1,326	45	133
Missouri River	28	281	561	2,732	5,465	273	546

4 MINIMUM REQUIRED FLOW RATE:

	BOD (hours	BOD (gpm)	COD (hours)	COD (gpm)
Bissell	0.00	0	0.41	8
Coldwater	0.00	0	1.65	2
Fenton	0.00	0	6.05	1
Grand Glaize	0.00	0	2.67	1
Lemay	0.00	0	0.61	5
Lower Meramec	0.00	0	4.40	1
Missouri River	0.00	0	1.07	3

5 SURCHARGE AND VOLUME BILLING

Is volume subject to billing? no (yes/no)
Ratio of BOD/COD = 0.00

(Sample BOD) - 300 = 0 mg/l subject to surcharge
(sample COD) - 600 = 349400 mg/l subject to surcharge
(sample TSS) - 300 = 0 mg/l subject to surcharge

If BOD/COD ratio <= 0.35, the following calculations use the COD value. Otherwise they use the BOD value

Current rates under Ordinance: 12561

Volume =	$ 2.11	/CcF
BOD =	$ 620.14	/ton
COD =	$ 310.07	/ton
TSS =	$ 231.35	/ton

Flow charge =	$ -	based on volume = 0.3 CcF
BOD surcharge =	$ -	
COD surcharge =	$ 90.38	
TSS surcharge =	$ -	
Total discharge charge =	$ 90.38	
Customer charge =	**$ 90.38**	DEC charges special discharge customers for total charges > $20.00
Approximate charge/gallon =	$ 0.45	

Comments

require volume report for billing purposes. Smg

Metropolitan St. Louis Sewer District
2350 Market Street
St. Louis, MO 63103

APPLICATION FOR SPECIAL DISCHARGE APPROVAL

I. WASTEWATER SOURCE IDENTIFICATION:

Site Name: Mallinckrodt
Premise Address: 3600 N. 2nd St.
City: St. Louis State: MO Zip: 63147
Owner: Mallinckrodt
Contact Person: Amber Crouch
Title: EHS
Phone: 314-654-0127 Fax: 314-654-1251

II. APPLICANT (mailing information):

Applicant Name: Amber Crouch
Title: EHS
Company Name: Mallinckrodt
Mailing Address: 3600 N. 2nd St.
City: St. Louis State: MO Zip: 63147
Phone: 314-654-0127 Fax: 314-654-1251

III. A. MATERIAL TO BE DISCHARGED (check all applicable boxes):

1. Wastewater description/location: Bldg. 200W Ethylene Glycol / Water
2. Process/activity generating wastewater: Bldg. 200W chiller
3. Physical and chemical composition: List all constituents, and known or potentially present regulated contaminants below.
   ☐ See separate listing enclosed, and/or ☐ See analytical results enclosed, and/or ☒ Material Safety Data Sheet enclosed.

DESCRIPTION	RANGE	UNIT
ethylene glycol	35	%
water	65	%

DESCRIPTION *(continued)*	RANGE	UNIT

4. Is this wastewater from a process subject to EPA's categorical standards in 40 CFR Subchapter N? ☐ Yes ☑ No
   a. If yes, the applicable standards are in: 40 CFR Part _____, Subpart _____ ☐ Existing source ☐ New source
5. Does this wastewater contain polychlorinated biphenyls, asbestos or radioactive material? ☐ Yes ☑ No
   a. If yes, describe: _____
6. Representative sample: ☐ Laboratory results attached, and/or ☐ Sample provided (1/2 gallon minimum, clear container)
   a. Sample collection point/location: _____ Collection method: _____
   b. Sampler's name/Co.: _____ Sample date/time: _____
   c. Attach chain of custody as available
7. Discharge will occur over the following time period: ☑ < 30 days ☐ ≥ Two years ☐ Other: _____
   a. Expected total volume of wastewater to be discharged over the time period above: 200 Gallons
   b. Proposed discharge volume: _____ Gallons, at a frequency of: ☑ One time ☐ Daily ☐ Weekly ☐ Monthly ☐ Once/three months ☐ Once/six months ☐ Other: _____
8. Pretreatment of wastewater prior to discharge: ☐ None ☑ Yes, describe: pH adjust at main outfall
   a. If yes, attach site plan, pretreatment system schematic, and design specifications.
9. Wastewater from a remediation project under: ☐ Superfund/CERCLA ☐ RCRA ☐ Voluntary program ☐ UST ☑ Not applicable
   a. If from a remediation project, briefly describe the past and present utilization of the property: _____

III.B. MATERIAL FROM UNDERGROUND STORAGE TANK SOURCE

☑ Not applicable (go to Section IV)

Please answer the following questions if you are requesting to discharge wastewater associated with an underground storage tank system.

1. a. Wastewater from: ☐ Inside UST(s) ☐ UST system pit ☐ Excavation outside UST system pit ☐ Monitoring well ☐ Groundwater remediation system

   b. UST project involves wastewater from: ☐ UST(s) closed in place ☐ UST(s) removed ☐ Remediation ☐ Upgrade ☐ Maintenance activities ☐ Well monitoring ☐ Other, explain: _____

   c. If wastewater is from a closure project, how long has UST(s) been out of service: _____ years

2. a. State assigned UST site identification number: _____ ☐ Not applicable

   b. Number of USTs affected: _____ ☐ Unknown

   c. For the UST(s) involved, their state identification number(s): _____ ☐ Not applicable

   d. Service Station Identification Number, as applicable: _____

3. Tank contents/former contents: ☐ Gasoline ☐ #2 diesel ☐ Used oil ☐ Unknown ☐ Other: _____

IV. DISCHARGE LOCATION

1. ☑ On-site. Describe proposed point of entry to sewer and the discharge rate (must be a sanitary or combined sewer): _____

   Plant sewer in 200W to main outfall SP010 Note: Range of discharge must not surcharge sewer line.

2. ☐ Haul to MSD Bissell Point Hauled Waste Receiving Station at 10 E. Grand, St. Louis, MO.

   a. Transporters Name: _____ and MSD Hauler ID Number: _____

   b. Hazardous Waste Certification:

   For wastewater which is hauled to MSD's Bissell Point Hauled Waste Receiving Station, I hereby certify that to the best of my knowledge and belief, the above hauled waste is not classified as a RCRA "hazardous waste" as defined by the MDNR in 10 CSR 25 or USEPA in 40 CFR Part 261.

   Applicant Name (print): _____

   Signature: _____ **Date:** _____

ADDITIONAL INFORMATION:

_____

V. APPLICANT SIGNATURE AND CERTIFICATION

This application must be signed by the applicant: either the source contact, or a contractor or agent directly responsible for site activities.

I hereby certify that I am directly responsible for activities at the site regarding the wastewater to be discharged, and to the best of my knowledge and belief, based on appropriate inquiry, the information in this application is true, complete, and accurate. The samples or analyses submitted are representative of the materials to be discharged. If granted approval to discharge, I agree to abide by the MSD Ordinances, and all applicable federal, state and local regulations. I agree to pay the costs of any pre-approval analyses performed by MSD and to pay any applicable disposal charges for the volume and strength of the wastes discharged.

Applicant Name (print): Amber Crouch

Signature: Amber Crouch **Date:** 5/9/2012

FOR MSD USE ONLY:

File Name: Mallinckrodt Inc. ID No. 21120596-00 Sample Point No. 832

MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Material name	ETHYLENE GLYCOL
Version #	02
Revision date	08-26-2011
CAS #	107-21-1
Product Codes	**J.T.Baker: 5387, 5845, 9298, 9300, 9346, 9356, L715** **Macron: 5001, 5037**
Synonym(s)	1,2-Ethanediol; glycol; 1,2-Dihydroxyethane; Ethylene Alcohol; Ethulene Dihydrate
Manufacturer	Avantor Performance Materials, Inc.
Address	3477 Corporate Parkway Suite #200 Center Valley, PA 18034 US
Customer Service	855-282-6867
24 Hour Emergency	908-859-2151
Chemtrec	800-424-9300

2. Hazards Identification

Emergency overview	WARNING Harmful if swallowed. Causes eye irritation. Can cause kidney damage. Causes central nervous system effects. May cause reproductive effects.
OSHA regulatory status	This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).
Potential health effects	
Routes of exposure	Inhalation. Ingestion. Skin contact. Eye contact.
Eyes	Causes eye irritation.
Skin	May cause skin irritation in susceptible persons.
Inhalation	High mist concentrations may cause irritation of respiratory tract.
Ingestion	Harmful if swallowed. Ingestion of ethylene glycol may result in nausea, vomiting, abdominal cramps, blindness, liver damage, irritation, reproductive effects, nerve damage, convulsions, edema of the lung, cardiopulmonary effects (metabolic acidosis), pneumonia and kidney failure which could result in death. The single lethal dose for humans is about 100 ml. Inhalation of high levels of vapors or mists for prolonged periods of time may also result in toxic effects.
Target organs	Eyes. Central nervous system. Kidney. Reproductive organs.
Chronic effects	Can cause kidney damage. Causes central nervous system effects. May cause adverse reproductive effects - such as birth defects, miscarriages, or infertility based on animal data.
Potential environmental effects	The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

3. Composition / Information on Ingredients

Components	CAS #	Percent
ETHYLENE GLYCOL	107-21-1	99 - 100

4. First Aid Measures

First aid procedures

Eye contact	Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention.

Skin contact	Wash skin with soap and water. Get medical attention if irritation develops or persists.
Inhalation	Move to fresh air. Treat symptomatically. Get medical attention, if needed.
Ingestion	Call a physician or poison control center immediately. Only induce vomiting at the instruction of medical personnel. Never give anything by mouth to an unconscious person. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.
Notes to physician	Keep victim under observation. Treat symptomatically. Symptoms may be delayed.
General advice	In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

5. Fire Fighting Measures

Flammable properties	This product is not flammable. May burn, but does not ignite readily.
Extinguishing media	
Suitable extinguishing media	Water. Carbon dioxide (CO2). Dry chemical powder. Foam.
Unsuitable extinguishing media	None known.
Protection of firefighters	
Specific hazards arising from the chemical	Fire may produce irritating, corrosive and/or toxic gases.
Protective equipment and precautions for firefighters	Use water spray to cool unopened containers. Self-contained breathing apparatus and full protective clothing must be worn in case of fire. Cool containers exposed to flames with water until well after the fire is out.
Special protective equipment for fire-fighters	Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask. Wear self-contained breathing apparatus with a full facepiece operated in the positive pressure demand mode when fighting fires.
Specific methods	In the event of fire and/or explosion do not breathe fumes.
Hazardous combustion products	Carbon monoxide and carbon dioxide.

6. Accidental Release Measures

Personal precautions	Wear appropriate protective equipment and clothing during clean-up. Keep upwind. Keep out of low areas. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained.
Environmental precautions	Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.
Methods for containment	Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Prevent entry into waterways, sewer, basements or confined areas.
Methods for cleaning up	Large Spills: Dike far ahead of spill for later disposal. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills in original containers for re-use. Clean up in accordance with all applicable regulations. Collect in a non-combustible container for prompt disposal.

7. Handling and Storage

Handling	Wear appropriate personal protective equipment. Avoid breathing mist or vapor. Avoid contact with eyes, skin, and clothing. Do not taste or swallow. Wash thoroughly after handling. See Section 8 of the MSDS for Personal Protective Equipment.
Storage	Keep container tightly closed.

8. Exposure Controls / Personal Protection

ACGIH

Material	Type	Value	Form
ETHYLENE GLYCOL (107-21-1)	TWA	100.0000 mg/m3	Aerosol.

Engineering controls	Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.
Personal protective equipment	
Eye / face protection	Wear safety glasses with side shields (or goggles).
Skin protection	Wear appropriate chemical resistant clothing. Wear appropriate chemical resistant gloves.
Respiratory protection	If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Respirator type: Chemical respirator with organic vapor cartridge, full facepiece, dust and mist filter.
General hygeine considerations	Provide eyewash station and safety shower. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.
General	Wear chemical protective equipment that is specifically recommended by the manufacturer. Launder contaminated clothing before reuse.

9. Physical & Chemical Properties

Appearance	Clear.
Color	Colorless.
Odor	Odorless.
Odor threshold	Not available.
Physical state	Liquid.
Form	Liquid.
pH	Not available.
Melting point	8.6 °F (-13 °C)
Freezing point	8.6 °F (-13 °C)
Boiling point	386.6 °F (197.3 °C)
Flash point	231.8 °F (111 °C) Closed Cup
Evaporation rate	Not available.
Flammability limits in air, upper, % by volume	15.3
Flammability limits in air, lower, % by volume	3.2
Vapor pressure	0.012265 kPa at 25°C
Vapor density	2.14
Specific gravity	1.1135 @20°C
Relative density	Not available.
Solubility (water)	Miscible
Partition coefficient (n-octanol/water)	-1.36
Auto-ignition temperature	748 °F (397.8 °C)
Decomposition temperature	Not available.
Molecular weight	62.07 g/mol

Molecular formula	C2-H6-O2

10. Chemical Stability & Reactivity Information

Chemical stability	Stable under normal temperature conditions.
Conditions to avoid	Excessive heat.
Incompatible materials	Strong oxidizing agents. Acids.
Hazardous decomposition products	At thermal decomposition temperatures, carbon monoxide and carbon dioxide.
Possibility of hazardous reactions	Hazardous polymerization does not occur.

11. Toxicological Information

Toxicological data

Product	Test Results
ETHYLENE GLYCOL (107-21-1)	Acute Dermal LD50 Rabbit: 9530 mg/kg Acute Oral LD50 Rat: 5.89 g/kg

Sensitization	Not a skin sensitizer.
Acute effects	Harmful if swallowed. Can cause kidney damage. Causes central nervous system effects.
Local effects	Causes eye irritation.
Chronic effects	Prolonged exposure may cause chronic effects. Can cause kidney damage. Causes central nervous system effects.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.
ACGIH Carcinogens	
ETHYLENE GLYCOL (CAS 107-21-1)	A4 Not classifiable as a human carcinogen.
Skin corrosion/irritation	Defatting, drying and cracking of skin.
Epidemiology	No epidemiological data is available for this product.
Mutagenicity	Not classified.
Neurological effects	Central and/or peripheral nervous system damage. High vapor/aerosol concentrations (attainable only at elevated temperatures) may cause central nervous system effects such as dizziness, drowsiness or headaches.
Reproductive effects	Suspected of damaging the unborn child.
Teratogenicity	Components in this product have been shown to cause birth defects and reproductive disorders in laboratory animals.
Symptoms and target organs	Irritant effects. Drowsiness and dizziness. Decrease in motor functions. Unconsciousness. Birth defects. Renal injury.
Further information	Ingestion of ethylene glycol may result in nausea, vomiting, abdominal cramps, blindness, liver damage, irritation, reproductive effects, nerve damage, convulsions, edema of the lung, cardiopulmonary effects (metabolic acidosis), pneumonia and kidney failure which could result in death. The single lethal dose for humans is about 100 ml. Inhalation of high levels of vapors or mists for prolonged periods of time may also result in toxic effects.

12. Ecological Information

Ecotoxicological data

Product	Test Results
ETHYLENE GLYCOL (107-21-1)	LC50 Fathead minnow (Pimephales promelas): 8050 mg/l 96.00 hours

Ecotoxicity	This product has no known eco-toxicological effects. Not expected to be harmful to aquatic organisms.
Environmental effects	Ecological injuries are not known or expected under normal use. An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Aquatic toxicity	The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.
Persistence and degradability	The product is expected to be biodegradable.
Partition coefficient (n-octanol/water)	-1.36

13. Disposal Considerations

Disposal instructions	Dispose of contents/container in accordance with local/regional/national/international regulations. Incinerate the material under controlled conditions in an approved incinerator.
Contaminated packaging	Offer rinsed packaging material to local recycling facilities. Since emptied containers retain product residue, follow label warnings even after container is emptied.

14. Transport Information

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

15. Regulatory Information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: De minimis concentration

ETHYLENE GLYCOL (CAS 107-21-1) 1.0 %

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: Listed substance

ETHYLENE GLYCOL (CAS 107-21-1) Listed.

CERCLA (Superfund) reportable quantity

ETHYLENE GLYCOL: 5000.0000

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - Yes Delayed Hazard - Yes Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No
Section 311 hazardous chemical	Yes

Clean Air Act (CAA) HAPS list

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes

Country(s) or region	Inventory name	On inventory (yes/no)*
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

State regulations This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

US - New Jersey Community RTK (EHS Survey): Reportable threshold

ETHYLENE GLYCOL (CAS 107-21-1) 500 LBS

US - Pennsylvania RTK - Hazardous Substances: Listed substance

ETHYLENE GLYCOL (CAS 107-21-1) Listed.

Saf-T-Data

Health: 2 - Moderate (Life)
Flammability: 1 - Slight
Reactivity: 1 - Slight
Contact: 2 - Moderate
Lab Protective Equip: B - GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES
Storage Color Code: G - Green (General Storage)

16. Labeling Info

Label Hazard Warning

WARNING

Harmful if swallowed. Causes eye irritation. Can cause kidney damage. Causes central nervous system effects. May cause reproductive effects.

Label Precautions

Avoid breathing dust/fume/gas/mist/vapors/spray. Avoid contact with eyes, skin, and clothing. Do not taste or swallow. Use only with adequate ventilation. Wash thoroughly after handling. Keep container closed.

Label First Aid

Immediately flush eyes with plenty of water for at least 15 minutes. Flush skin thoroughly with water. If gas/fume/vapor/dust/mist from the material is inhaled, remove the affected person immediately to fresh air. Get medical attention if irritation develops or persists. IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Do not induce vomiting without advice from poison control center. Do not use mouth-to-mouth method if victim ingested the substance. Never give anything by mouth to a victim who is unconscious or is having convulsions.

17. Other Information

NFPA ratings

Health: 2
Flammability: 1
Instability: 0

Disclaimer	THE INFORMATION PRESENTED IN THIS MATERIAL SAFETY DATA SHEET (MSDS/SDS) WAS PREPARED BY TECHNICAL PERSONNEL BASED ON DATA THAT THEY BELIEVE IN THEIR GOOD FAITH JUDGMENT IS ACCURATE. HOWEVER, THE INFORMATION PROVIDED HEREIN IS PROVIDED "AS IS," AND AVANTOR PERFORMANCE MATERIALS MAKES AND GIVES NO REPRESENTATIONS OR WARRANTIES WHATSOEVER, AND EXPRESSLY DISCLAIMS ALL WARRANTIES REGARDING SUCH INFORMATION AND THE PRODUCT TO WHICH IT RELATES, WHETHER EXPRESS, IMPLIED, OR STATUTORY, INCLUDING WITHOUT LIMITATION, WARRANTIES OF ACCURACY, COMPLETENESS, MERCHANTABILITY, NON-INFRINGEMENT, PERFORMANCE, SAFETY, SUITABILITY, STABILITY, AND FITNESS FOR A PARTICULAR PURPOSE, AND ANY WARRANTIES ARISING FROM COURSE OF DEALING, COURSE OF PERFORMANCE, OR USAGE OF TRADE. THIS MSDS/SDS IS INTENDED ONLY AS A GUIDE TO THE APPROPRIATE PRECAUTIONARY HANDLING OF THE MATERIAL BY A PROPERLY TRAINED PERSON USING THIS PRODUCT, AND IS NOT INTENDED TO BE COMPREHENSIVE AS TO THE MANNER AND CONDITIONS OF USE, HANDLING, STORAGE, OR DISPOSAL OF THE PRODUCT. INDIVIDUALS RECEIVING THIS MSDS/SDS MUST ALWAYS EXERCISE THEIR OWN INDEPENDENT JUDGMENT IN DETERMINING THE APPROPRIATENESS OF SUCH ISSUES. ACCORDINGLY, AVANTOR PERFORMANCE MATERIALS ASSUMES NO LIABILITY WHATSOEVER FOR THE USE OF OR RELIANCE UPON THIS INFORMATION. NO SUGGESTIONS FOR USE ARE INTENDED AS, AND NOTHING HEREIN SHALL BE CONSTRUED AS, A RECOMMENDATION TO INFRINGE ANY EXISTING PATENTS OR TO VIOLATE ANY FEDERAL, STATE, LOCAL, OR FOREIGN LAWS. AVANTOR PERFORMANCE MATERIALS REMINDS YOU THAT IT IS YOUR LEGAL DUTY TO MAKE ALL INFORMATION IN THIS MSDS/SDS AVAILABLE TO YOUR EMPLOYEES.
Issue date	08-26-2011

MSD

INDUSTRY REPORT OF FLOW MEASUREMENT AT TIME OF MSD SAMPLING FOR DISCHARGE POINTS HAVING MASS LIMITATIONS

COMPANY NAME: Mallinckrodt PERMIT NO: 2112059600

Presented to company representative (Name) Amber Crouch by:

MSD Ind. Waste Technician Dave Schepers Date 5/10/12 Time 9:10

Certain wastewater discharges from your facility are subject to mass limitations as specified in your Industrial Wastewater Discharge Permit. MSD technicians collected samples from these locations on the date and times indicated below.

In order for MSD to fully evaluate the results of this sampling, you must, for each point, provide MSD with a measured flow for a 24-hour period. The 24 hour period must include the hours between the sample collection Start and End Times shown.

If you have any questions, you may contact Doug Mendoza at (314) 436-8717.

Industry Representative: Please fill in the information on the right side of this table and sign below:

Samp Pt #	Sample Collection by MSD					24-hour Flow Measurement by Company			
	Sample Match #	Start Date	End Date	Start Time	End Time	Start Time	End Time	Total Flow	Units
905	1298499	5/10/12	5/11/12	9:08 a.m.	8:56 a.m.	ac ~~0903~~ 0910	0850	84,171	gal

I certify under penalty of Law that the flow information in this document was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature: Amber Crouch Date: 5/10/12

As soon as possible, and no later than 14 days after the Sample End date, send the completed form:

Via US Mail: Attn: Doug Mendoza
Metropolitan St. Louis Sewer District
Office of Environmental Compliance
10 E. Grand Avenue
St. Louis, MO 63147

or, via fax: Attn: Doug Mendoza
(314) 436-8753

MSD-OEC 01/02

Scott Rehmer MALLINCKRODT MSD

2112-0596-00

From: Scott Rehmer
Sent: Wednesday, May 09, 2012 2:45 PM
To: 'Crouch, Amber'
Subject: RE: Mallinckrodt Discharge Question

Hi Amber,

Thank you for your notification that your facility will begin to allow the condensate from a steam-powered generator to be discharged directly to the sewer. Since the location of the generator is in Bldg 250, the discharge will flow east along Destrehan, then through MSD Sample Point 001, then to MSD's treatment plant. We will include the estimated flow (less than 10 gallons per week) into our database. No permit revision will be necessary. Please keep us informed of any other changes.

Scott M. Rehmer

Assistant Engineer

Environmental Compliance

Department of Engineering

Metropolitan St. Louis Sewer District

10 East Grand Avenue

St. Louis, MO 63147

Phone: 314.436.8756

Fax: 314.436.8753

Customer Service: 314.768.6260

Email: srehmer@stlmsd.com

From: Crouch, Amber [mailto:Amber.Crouch@Covidien.com]
Sent: Wednesday, May 09, 2012 7:35 AM
To: Scott Rehmer
Subject: RE: Mallinckrodt Permit Question

Scott,
I talked to the engineer regarding this project and she said that it would be < 10 gallons/ week of condensate.
Let me know if you need any additional information.

Thanks,

Amber Crouch
Senior HSE Engineer
Covidien
3600 North Second Street

St. Louis, MO 63147
USA

(314) 654-0127 office
(314) 253-2213 pager
(314) 654-1251 fax

www.covidien.com

This information may be confidential and/or privileged. Use of this information by anyone other than the intended recipient is prohibited. If you receive this in error, please inform the sender and remove any record of this message.

From: Crouch, Amber
Sent: Monday, May 07, 2012 10:11 AM
To: 'srehmer@stlmsd.com'
Subject: Mallinckrodt Permit Question

Scott,

I have a question that I thought was appropriate for our permit writer. We have an electric HVAC unit with a steam clean generator. We would like to put the condensate to the sewer. This would not be a plant sewer that goes through our main outfall (SP010). My question to you is can we do this?

If you need any additional information please let me know.

Thanks,

Amber Crouch
Senior HSE Engineer
Covidien
3600 North Second Street
St. Louis, MO 63147
USA

(314) 654-0127 office
(314) 253-2213 pager
(314) 654-1251 fax

www.covidien.com

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Facility ID: 2112059600 | Name: MALLINCKRODT LLC [2112059600] | SIU: ☑ | Class: Significant Industrial User | All Facilities

Sample Points

Number of Sample Points: **102** Sample Point: 001 MH (Gatewell) at foot of Destrahan 100' E of RR

Definition | Pretreatment | **Discharge** | Limits | All Limits | Meters

Discharge Component	Process Description	Discharge Is	Stream Is	Avg Flow	Unit	Max Flow	Unit	Effective	End Date
Sanitary		Continuou:	Dilution	1,000	GPD		GPD	12/01/2009	
Condensate	from steam generator, Bldg 250	Continuou:	Dilution	10	Gal/Wk	10	GPD	05/09/2012	
Storm Water		Batch	Dilution	0	GPD		GPD	12/01/2009	00/00/0000
Sanitary		Continuou:	Dilution	1,100	GPD		GPD	02/23/1996	10/03/2004
Storm Water		Continuou:	Dilution	0	GPD		GPD	09/06/2007	12/01/2009
Sanitary		Continuou:	Dilution	1,000	GPD		GPD	10/04/2004	12/01/2009

Total Avg. Flow: 1,000 GPD

Metropolitan St. Louis
Sewer District
Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

May 8, 2012

Julie Summers
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Re: Wastewater User Charge Billing for Special Discharge

Dear Ms. Summers:

This is to advise you of the wastewater user charges applicable to an on-site special discharge approved in our original letter to you dated January 21, 2011, and extension dated January 13, 2012. The discharge dates and quantities are from information submitted by you in an email dated May 7, 2012.

Our Finance Department will bill you by invoice for the charges described below. These charges are based on the rates in MSD Wastewater User Charge Ordinance 13021.

PARTY TO BILL: Addressee

BILLING IS FOR: On-Site Special Discharge

DISCHARGE PERIOD: March 1 – 27, 2012

SOURCE OF WASTE: 13 batches of treated rainwater and groundwater from the remediation of the Columbium-Tantalum (CT) decommissioning project at the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri.

Discharge Period	Billing Item	Quantity	Units	Rate	Charge
March 1-27, 2012	Volume	695	CcF	$2.11	$1,466.45
Totals:	------	695	CcF	-----	$1,466.45

Please do not pay until you receive our invoice. If you have any questions, please contact me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT
Steven M. Grace
Steve Grace
Environmental Assistant Engineer

bv

pc Chris Verplancke - Finance Dept.
Becky Bartholomew – Finance Dept.
Laura Joiner – Finance Dept.
Doug Mendoza
Brian Gibson

File: IU, MALLINCKRODT INC [2112059600], 3600 North Second Street, St. Louis, Missouri

Summary of CT Excavation Wastewater Discharges
Mallinckrodt St. Louis Plant

	Date of Discharge	Start Time	End Time	Volume Discharged (gallons)
Discharge 204	3/1/2012	1600	1915	40,000
Discharge 205	3/2/2012	930	1215	40,000
Discharge 206	3/3/2012	215	645	40,000
Discharge 207	3/4/2012	1100	1515	40,000
Discharge 208	3/5/2012	910	1230	40,000
Discharge 209	3/6/2012	300	600	40,000
Discharge 210	3/6/2012	2155	3/7/12 225	40,000
Discharge 211	3/11/2012	1230	1530	40,000
Discharge 212	3/14/2012	800	1130	40,000
Discharge 213	3/18/2012	1115	1415	40,000
Discharge 214	3/20/2012	1225	1525	40,000
Discharge 215	3/25/2012	2115	3/26/2012 0:30	40,000
Discharge 216	3/27/2012	1420	1735	40,000

Metropolitan St. Louis Sewer District
Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

May 4, 2012

Amber Crouch
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Dear Ms. Crouch:

We have reviewed your application dated May 2, 2012 requesting approval to discharge 3,200 gallons of wastewater to the Metropolitan St. Louis Sewer District for treatment. This wastewater is 15% ethylene glycol solution from Building 250 at the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri. We understand that the wastewater will be discharged through sampling point 010.

Based on the information you provided, this wastewater meets MSD Ordinance 12559 standards and is approved for discharge into a sanitary sewer on site. Due to the high ethylene glycol concentration, the discharge is limited to 1,200 gallons per hour. This approval is valid for 30 days from the date of this letter.

You must be certain the waste is discharged into a sanitary or combined sewer inlet only. This letter does not authorize any discharge to a separate storm sewer, or to any watercourse, as any such discharge would be in violation of state and federal laws. **Please notify me at the number below when the discharge is to commence, and please ensure the onsite personnel discharging the wastewater in question are provided with a copy of this letter.**

For billing purposes associated with this high COD wastewater, you must confirm the volume of this wastewater discharged to us, in writing, at the completion of the discharge. This report is due no later than 28 days after this approval expires. Please refer to this letter and include the date of the discharge when providing that figure. Under the provisions of Ordinance 13021, you will be billed by invoice at the billing rate in effect at the time of discharge. The current rate contained in MSD Ordinance 13021 is $310.07 per ton for COD over 600 mg/L. Using the assumed COD concentration based on the percent of ethylene glycol contained in the wastewater in question, and the proposed discharge volume provided in your application, it is estimated that you will be discharging just under two tons of COD over 600 mg/L. (Our quantitative estimate is 1.99 tons COD times $310.07.) Please do not pay this amount until you receive our invoice.

This discharge has been approved based upon the information and sample analysis you provided, and is subject to the conditions stated above. This approval may be revoked by the District at any time if any of the information is found to be incorrect, or if the conditions of this approval are violated. Also, if the discharge causes any operational or maintenance problem within the District's collection or treatment system, or results in violations of any conditions of the District's NPDES permit, Mallinckrodt will be considered responsible for damages. If you have any questions, please call me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace
Steve Grace
Environmental Assistant Engineer

bv

pc: Brian Gibson
Doug Mendoza

File: IU, MALLINCKRODT INC [2112059600]

C1A

SD EVALUATION CHECKLIST - ON SITE

APPLICATION INFORMATION

Source Name: Mallinckrodt Inc.

Premise Address: 3600 N. 2nd St.

Send approval letter to applicant

Evaluated by: SMG

Date: 5/4/12

Application Dated: 5/2/12 Received: 5/2/12 All Requested Info. Received: 5/2/12

SOURCE FILING/DESCRIPTION

1 - Source in PIMS? (Y) / N
2 - If No, on IU Cross-Ref list? * Y / N
3 - If No, MSD Account # from E-CIS? Y / N
4 - If none, on "Source" list (pre-IMS)? ** Y / N
5 - If No, assigned SOUR# from PIMS.

* o:\costrecovery\cross reference xls file

** o:\costrecovery\sourlist xls file

SOURCE TYPE (circle): (IU) / Dead IU / SD

INDUSTRY ID: 21120596-00

Sample Point: No. Assigned: 815 Description: 15% used ethylene glycol soln. from Bldg. 250 chiller system

Normal WW flow from premise? N/A _____ ccf/month 2,992,101 GPD, _____ GPH.

@ SP010

REGULATORY STATUS

Is waste a Hazardous Waste? (N) / Y

Categorical standards apply? (N) / Y

Contain PCB/ asbestos/ radioactive/ dioxin/ used oil? (N) / Y

Regulatory Agency Oversight? (N) / Y

DISCHARGE CONSIDERATIONS At MSD's connection:

Ordinance Limits (12559, p32) exceeded? (N) / Y

Ordinance other limits exceeded (dye, flash pt <140F, temp >140F, obstruction, nuisance foaming/odor, corrosion causing): (N) / Y

Water Quality Standard exceeded? (N) / Y

Fumes in sewer exceed PEL/TLV limits? (N) / Y

Vapors in sewer exceed 10% of LEL? (N) / Y

RECOMMENDATION: (APPROVE) / DENY (cc WWTP Mgr for timed discharge)

APPROVAL CONDITIONS:

Timed Discharge (COD/BOD/WQ/foam): N / (Y) Limit = 1,200 gal/hour

Require Treatment before Discharge? (N) / Y

Laboratory analysis fee due? (N) / Y $_____

SMR required? (N) / Y Frequency/analysis: _____

SMR log: (N/A) / Remediation.xls / Nonremediation.xls

Volume Billing applies (water unmetered or credited)? (N) / Y

Bill High Strength? N / (Y) Yes, If use >60,000 gal/month water ✓ and, > norm WW strgth

Surcharge calculation attached: N/A / N / (Y)

Expiration log updated: (N/A) / N / Y

O:\CostRecovery\Special Discharge\C1a.Checklist doc

On-Site Special Discharge High Strength Flow Rate and Surcharge Calculator

1 GENERAL INFORMATION:

Date: 05/04/12
Calculated by: Steve Grace
Source name: MALLINCKRODT LLC [2112059600]
Waste material: Used ethylene glycol solution from building 250 chiller system
Discharge volume: 3,200 gallons

2 STRENGTH INFORMATION:

Sample BOD =	0	mg/l =	0	lbs BOD to be discharged
Sample COD =	150,000	mg/l =	4003	lbs COD to be discharged
Sample TSS =	0	mg/l =	for surcharge calculation only	

3 PLANT DATA: 2010

Treatment area: Bissell

	Flow (MGD)	BOD (mg/L)	COD (mg/L)	BOD (lb/hr)	COD (lb/hr)	Max Loading = 10% BOD (lb/hr)	COD (lb/hr)
Bissell	**140**	**146**	**292**	**7,113**	**14,227**	**711**	**1,423**
Coldwater	26	188	377	1,704	3,408	170	341
Fenton	5	388	776	679	1,357	68	136
Grand Glaize	16	129	405	708	2,218	71	222
Lemay	131	78	210	3,531	9,584	353	958
Lower Meramec	13	124	409	543	1,785	54	179
Missouri River	27	280	559	2,671	5,341	267	534

4 MINIMUM REQUIRED FLOW RATE:

	BOD (hours)	BOD (gpm)	COD (hours)	COD (gpm)
Bissell	**0.00**	**0**	**2.81**	**19**
Coldwater	0.00	0	11.75	5
Fenton	0.00	0	29.49	2
Grand Glaize	0.00	0	18.05	3
Lemay	0.00	0	4.18	13
Lower Meramec	0.00	0	22.43	2
Missouri River	0.00	0	7.50	7

5 SURCHARGE AND VOLUME BILLING

Is volume subject to billing? no (yes/no)
Ratio of BOD/COD = 0.00

(Sample BOD) - 300 = 0 mg/l subject to surcharge
(sample COD) - 600 = 149400 mg/l subject to surcharge
(sample TSS) - 300 = 0 mg/l subject to surcharge

If BOD/COD ratio <= 0.35, the following calculations use the COD value. Otherwise they use the BOD value

Current rates under Ordinance: 13021

Volume =	$ 2.11	/CcF	
BOD =	$ 620.14	/ton	
COD =	$ 310.07	/ton	
TSS =	$ 231.35	/ton	
Flow charge =	$ -	based on volume =	4.3 CcF
BOD surcharge =	$ -		
COD surcharge =	$ 618.32		
TSS surcharge =	$ -		
Total discharge charge =	$ 618.32		
Customer charge =	**$ 618.32**	DEC charges special discharge customers for total charges > $20.00	
Approximate charge/gallon =	$ 0.19		

Comments

require volume report for billing purposes. Smg

Metropolitan St. Louis Sewer District
2350 Market Street
St. Louis, MO 63103

APPLICATION FOR SPECIAL DISCHARGE APPROVAL

I. WASTEWATER SOURCE IDENTIFICATION:

Site Name: Mallinckrodt
Premise Address: 3600 N. 2nd St.
City: St. Louis State: MO Zip: 63147
Owner: Mallinckrodt
Contact Person: Amber Crouch
Title: EHS
Phone: 314-654-0127 Fax: 314-654-1251

II. APPLICANT (mailing information):

Applicant Name: Amber Crouch
Title: EHS
Company Name: Mallinckrodt
Mailing Address: 3600 N. 2nd St.
City: St. Louis State: MO Zip: 63147
Phone: 314-654-0127 Fax: 314-654-1251

III. A. MATERIAL TO BE DISCHARGED (check all applicable boxes):

1. Wastewater description/location: Ethylene Glycol 15%
2. Process/activity generating wastewater: cleanout of glycol cooling system
3. Physical and chemical composition: List all constituents, and known or potentially present regulated contaminants below.
   ☐ See separate listing enclosed, and/or ☐ See analytical results enclosed, and/or ☑ Material Safety Data Sheet enclosed.

DESCRIPTION	RANGE	UNIT
ethylene glycol	15	%
water	85	%

DESCRIPTION *(continued)*	RANGE	UNIT

4. Is this wastewater from a process subject to EPA's categorical standards in 40 CFR Subchapter N? ☐ Yes ☑ No
   a. If yes, the applicable standards are in: 40 CFR Part _____, Subpart _____ ☐ Existing source ☐ New source
5. Does this wastewater contain polychlorinated biphenyls, asbestos or radioactive material? ☐ Yes ☑ No
   a. If yes, describe: _____
6. Representative sample: ☐ Laboratory results attached, and/or ☐ Sample provided (1/2 gallon minimum, clear container)
   a. Sample collection point/location: _____ Collection method: _____
   b. Sampler's name/Co.: _____ Sample date/time: _____
   c. Attach chain of custody as available
7. Discharge will occur over the following time period: ☑ < 30 days ☐ ≥ Two years ☐ Other: _____
   a. Expected total volume of wastewater to be discharged over the time period above: 3200 Gallons
   b. Proposed discharge volume: _____ Gallons, at a frequency of: ☒ One time ☐ Daily ☐ Weekly ☐ Monthly ☐ Once/three months ☐ Once/six months ☐ Other: _____
8. Pretreatment of wastewater prior to discharge: ☐ None ☑ Yes, describe: pH adjust at main outfall
   a. If yes, attach site plan, pretreatment system schematic, and design specifications.
9. Wastewater from a remediation project under: ☐ Superfund/CERCLA ☐ RCRA ☐ Voluntary program ☐ UST ☒ Not applicable
   a. If from a remediation project, briefly describe the past and present utilization of the property: _____

III.B. MATERIAL FROM UNDERGROUND STORAGE TANK SOURCE

☒ Not applicable (go to Section IV)

Please answer the following questions if you are requesting to discharge wastewater associated with an underground storage tank system.

1. a. Wastewater from: ☐ Inside UST(s) ☐ UST system pit ☐ Excavation outside UST system pit ☐ Monitoring well ☐ Groundwater remediation system

   b. UST project involves wastewater from: ☐ UST(s) closed in place ☐ UST(s) removed ☐ Remediation ☐ Upgrade ☐ Maintenance activities ☐ Well monitoring ☐ Other, explain: _____

   c. If wastewater is from a closure project, how long has UST(s) been out of service: _____ years

2. a. State assigned UST site identification number: _____ ☐ Not applicable

   b. Number of USTs affected: _____ ☐ Unknown

   c. For the UST(s) involved, their state identification number(s): _____ ☐ Not applicable

   d. Service Station Identification Number, as applicable: _____

3. Tank contents/former contents: ☐ Gasoline ☐ #2 diesel ☐ Used oil ☐ Unknown ☐ Other: _____

IV. DISCHARGE LOCATION

1. ☒ On-site. Describe proposed point of entry to sewer and the discharge rate (must be a sanitary or combined sewer): _____
   Plant sewer to main outfall SP010 Note: Range of discharge must not surcharge sewer line.

2. ☐ Haul to MSD Bissell Point Hauled Waste Receiving Station at 10 E. Grand, St. Louis, MO.

   a. Transporters Name: _____ and MSD Hauler ID Number: _____

   b. Hazardous Waste Certification:

   For wastewater which is hauled to MSD's Bissell Point Hauled Waste Receiving Station, I hereby certify that to the best of my knowledge and belief, the above hauled waste is not classified as a RCRA "hazardous waste" as defined by the MDNR in 10 CSR 25 or USEPA in 40 CFR Part 261.

   Applicant Name (print): _____

   Signature: _____ **Date:** _____

ADDITIONAL INFORMATION:

_____

V. APPLICANT SIGNATURE AND CERTIFICATION

This application must be signed by the applicant: either the source contact, or a contractor or agent directly responsible for site activities.

I hereby certify that I am directly responsible for activities at the site regarding the wastewater to be discharged, and to the best of my knowledge and belief, based on appropriate inquiry, the information in this application is true, complete, and accurate. The samples or analyses submitted are representative of the materials to be discharged. If granted approval to discharge, I agree to abide by the MSD Ordinances, and all applicable federal, state and local regulations. I agree to pay the costs of any pre-approval analyses performed by MSD and to pay any applicable disposal charges for the volume and strength of the wastes discharged.

Applicant Name (print): Amber Crouch

Signature: Amber Crouch **Date:** 5/2/2012

FOR MSD USE ONLY:

File Name: Mallinckrodt Inc. ID No. 21120596-00 Sample Point No. 815

MSD

COVIDIEN

April 18th, 2012

03
6-13

Mr. Doug Mendoza
Metropolitan St. Louis Sewer District
Department of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147

Re: 2012 1st Quarter Self-Monitoring Report for Permit No. 21120596 – 3.1

Dear Mr. Mendoza,

Please find enclosed the 2012 1st Quarter Self Monitoring report for Mallinckrodt Inc.

The following sample points received no pharmaceutical process water flow during the second quarter: SP008, SP930, SP933 and SP935.

CT Excavation activities continued during the first quarter 2012 and there were multiple discharges under the Special Discharge Permit issued for wastewater generated from CT remediation activities. A summary of the discharges is provided in the Industrial User Radioactive Discharge Report included in this submittal.

A planned shutdown occurred on February 6, 2012. The lift station outfall SP011 overflowed directly to MSD during this time. Samples were taken and analyzed and are included in this report. The pH readings for February 6, 2012 are also included in this report.

If you have any questions or require more detailed information, please contact me at 314-654-0127.

Sincerely,

Amber Crouch

Amber Crouch
Sr. Environmental Specialist

ENCLOSURES

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APR 30 2012
DIVISION OF
ENVIRONMENTAL COMPLIANCE

COVIDIEN/MALLINCKRODT
3600 NORTH SECOND STREET
ST. LOUIS, MO 63147

TELEPHONE: 314-654-2000
FAX: 314-654-1251

METROPOLITAN ST. LOUIS SEWER DISTRICT
INDUSTRIAL USER RADIOACTIVE MATERIALS DISCHARGE REPORT

PART I: IDENTIFYING INFORMATION

CB 4-30

Company Name: Mallinckrodt -

Permit No: 2112059600-3

Premise Address: 3600 N Second St. St. Louis, MO 63147

Reporting Period: ☒(JAN-MAR) ☐(APR-JUNE) ☐(JULY-SEPT) ☐(OCT-DEC)

PART II: RECORD OF DISPOSAL OF RADIOACTIVE MATERIALS TO THE SEWER SYSTEM

RADIONUCLIDE	ACTIVITY DISCHARGED (millicuries)
Ur-234	9.44×10^{-3}
Ur-235	1.22×10^{-1}
Ur-238	1.59×10^{-1}
Ra-226	8.29×10^{-1}
Ra-228	5.08×10^{-1}
Th-228	3.86×10^{-1}
Th-230	2.33×10^{-1}
Th-232	2.12×10^{-1}
TOTAL ACTIVITY DISCHARGED:	2.46

PART III: CERTIFICATION STATEMENTS

Place your initials in the box under item A.
Everyone must complete the information under items A & B and sign this report.

A. CERTIFICATION OF COMPLIANCE WITH STATE AND FEDERAL REGULATIONS

☐ I certify that to the best of my knowledge & belief, all requirements of 10 CFR Part 20.2003 and 19 CSR Part 20-10.090 governing disposal by release into sanitary sewage for material regulated by the Nuclear Regulatory Commission and the Missouri Department of Health, respectively, have been met for the period covered by this report.

B. RADIOACTIVE MATERIALS DISCHARGE REPORT CERTIFICATION

I certify under penalty of Law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

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Print/type name of signing official: James Walter

Title: Sr Director of Manufacturing Telephone: 314-654-1600

Signature: Date: 4/27/12

radrpt.doc 2/00

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 05-01-2011 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: _X____(JAN-MAR) ____(APR-JUNE) ____(JULY-SEPT) _____(OCT-DEC)

Samples Collected By: Mallinckrodt Inc

Analysis Performed By: Teklab

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->>		**001**					
DATES ON WHICH SAMPLES WERE COLLECTED	----->>		NA					
TIMES AT WHICH SAMPLES WERE COLLECTED	----->>							
PARAMETER	LIMIT	**RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW** G=grab,C=composite,M=measured flow,E=estimated flo						UNITS
FLOW		E	1,000					gal/day
NO MONITORING REQUIRED (Sanitary Only)								
There have been no change in the character of the wastes discharged since the last report.								

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ENVIRONMENTAL COMPLIANCE

Scott Rehmer

SR
VDW

From: Crouch, Amber <Amber.Crouch@Covidien.com>
Sent: Wednesday, June 20, 2012 3:37 PM
To: Scott Rehmer
Subject: RE: Mallinckrodt Permit 2112059600-3.1

Scott,

This is planned to start in mid-July 2012 and as mentioned below it would be on occasion.

Thanks,

PIMS has been updated, 6-21-12. SR

Amber Crouch
Senior HSE Engineer
Covidien
3600 North Second Street
St. Louis, MO 63147
USA

(314) 654-0127 office
(314) 253-2213 pager
(314) 654-1251 fax

www.covidien.com

This information may be confidential and/or privileged. Use of this information by anyone other than the intended recipient is prohibited. If you receive this in error, please inform the sender and remove any record of this message.

From: Crouch, Amber
Sent: Wednesday, June 20, 2012 1:52 PM
To: 'Scott Rehmer'
Subject: Mallinckrodt Permit 2112059600-3.1

Scott,

As we discussed on the phone, we would like to increase the average wastewater flow from sample point 930. The current, average wastewater flow is 650 GPD. This is referenced on page 21 in our permit. In the future, on occasion we may have up to 1800 GPD from this sample point.

Please let me know if you need any additional information.

Thanks,

Amber Crouch
Senior EHS Engineer
Covidien
3600 North Second Street
St. Louis, MO 63147
USA

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 05-01-2011 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: __X___(JAN-MAR) ____(APR-JUNE) ____(JULY-SEPT) __(OCT-DEC)

Samples Collected By: Mallinckrodt Inc

Analysis Performed By: Teklab

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->		**002**					
DATES ON WHICH SAMPLES WERE COLLECTED	----->		NA					
TIMES AT WHICH SAMPLES WERE COLLECTED	----->							
PARAMETER	LIMIT	**RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW** G=grab,C=composite,M=measured flow,E=estimated flo						UNITS
FLOW		E	2,200					gal/day
NO MONITORING REQUIRED (Sanitary Only)								
There have been no change in the character of the wastes discharged since the last report.								

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DIVISION OF
ENVIRONMENTAL COMPLIANCE

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 05-01-2011 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: ____(JAN-MAR) ____(APR-JUNE) ____(JULY-SEPT) __X__(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->	003		009		099		
DATES ON WHICH SAMPLES WERE COLLECTED	----->	2/9/2012		2/9/2012		calculated		
TIMES AT WHICH SAMPLES WERE COLLECTED	----->	0710, 0810, 0910, 1010		0735, 0835, 0935, 1035		n/a		
PARAMETER	LIMIT	RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW G=grab,C=composite,M=measured flow,E=estimated flow						UNITS
FLOW		M	77,587	M	48,816	E	28,771	gal/day
Oil & Grease	200	G	21	G	3	E	52	mg/l
Biochemical Oxygen Demand	****	C	156	C	507	E	0*	mg/l
Chemical Oxygen Demand	****	C	353	C	1220	E	0*	mg/l
Total Suspended Solids	****	C	31	C	128	E	0*	mg/l
Temperature	****	G	21	G	15.5	E	30	deg C
pH	****	G	6.5	G	5.5	E	8.2	S.U.
Lab Dilution Factor			1		1			

**** No limits for SP003 or SP009;
monitoring requirement only for calculation at SP099

* Calculated value was less than zero.

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DIVISION OF
ENVIRONMENTAL COMPLIANCE

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 06-01-2010 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: ___X__(JAN-MAR) ____(APR-JUNE) ____(JULY-SEPT) ___(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS					---->		003		009		099	
DATES ON WHICH SAMPLES WERE COLLECTED					---->		2/9/2012		2/9/2012		calculated	
TIMES AT WHICH SAMPLES WERE COLLECTED					---->		0710, 0810, 0910, 1010		0735, 0835, 0935, 1035			
PARAMETER				LIMIT		RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW G=grab,C=composite,M=measured flow,E=estimated flo						UNITS
FLOW				****		M	77,587	M	48,816		28,771	gal/day
1,1,1-Trichloroethane				****		G	<0.005	G	<0.005		0.005	mg/l
1,1,2,2-Tetrachloroethane				****		G	<0.005	G	<0.005		0.005	mg/l
1,1,2-Trichloroethane				****		G	<0.005	G	<0.005		0.005	mg/l
1,1-Dichloroethane				****		G	0.0039	G	<0.005		0*	mg/l
1,1-Dichloroethene				****		G	0.0024	G	<0.005		0*	mg/l
1,2-Dichlorobenzene				****		G	<0.005	G	<0.005		0.005	mg/l
1,2-Dichloroethane				****		G	<0.005	G	<0.005		0.005	mg/l
1,2-Dichloropropane				****		G	<0.005	G	<0.005		0.005	mg/l
1,3-Dichlorobenzene				****		G	<0.005	G	<0.005		0.005	mg/l
1,4-Dichlorobenzene				****		G	<0.005	G	<0.005		0.005	mg/l
2-Chloroethylvinylether				****		G	<0.020	G	<0.020		0.020	mg/l
Acrolein				****		G	<0.1	G	<0.1		0.100	mg/l
Acrylonitrile				****		G	<0.005	G	<0.005		0.005	mg/l
Benzene				****		G	<0.002	G	<0.002		0.002	mg/l
Bromodichloromethane				****		G	<0.005	G	<0.005 ~~0.0015~~		<0.005 0.012	mg/l
Bromoform				****		G	<0.005	G	<0.005		0.005	mg/l
Bromomethane				****		G	<0.010	G	<0.010		0.010	mg/l
Carbon Tetrachloride				****		G	<0.005	G	<0.005		0.005	mg/l
Chlorobenzene				****		G	<0.005	G	<0.005		0.005	mg/l
Chloroethane				****		G	<0.010	G	<0.010		0.010	mg/l
Chloroform				****		G	0.003	G	0.0073		0.008 0*	mg/l
Chloromethane				****		G	<0.010	G	<0.010		0.010	mg/l
cis-1,3-Dicholropropene				****		G	<0.005	G	<0.005		0.005	mg/l
Dibromochloromethane				****		G	<0.005	G	<0.005		0.005	mg/l
Ethylbenzene				****		G	<0.005	G	<0.005		0.005	mg/l
Methylene Chloride				****		G	<0.005	G	<0.005		0.005	mg/l
Tetrachloroethene				****		G	<0.005	G	<0.005		0.005	mg/l
Toluene				****		G	<0.002	G	<0.002		0.002	mg/l
1,2-Dichloroethene				****		G	<0.005	G	<0.005		0.005	mg/l
trans-1,3-Dichloropropene				****		G	<0.005	G	<0.005		0.005	mg/l
Trichloroethene				****		G	0.0072	G	<0.005		0.010	mg/l
Vinyl Chloride				****		G	0.0035	G	<0.002		0.005	mg/l
1,2,4-Trichlorobenzene				****		G	<0.008	G	<0.008		0.008	mg/l
2,4,6-Trichlorophenol				****		G	<0.008	G	<0.008		0.008	mg/l
2,4-Dichlorophenol				****		G	<0.008	G	<0.008		0.008	mg/l
2,4-Dimethylphenol				****		G	<0.008	G	<0.008		0.008	mg/l
2,4-Dinitrophenol				****		G	<0.016	G	<0.016		0.016	mg/l
2,4-Dinitrotoluene				****		G	<0.008	G	<0.008		0.008	mg/l
2,6-Dinitrotoluene				****		G	<0.008	G	<0.008		0.008	mg/l
2-Chloronapthalene				****		G	<0.008	G	<0.008		0.008	mg/l
2-Chlorophenol				****		G	<0.008	G	<0.008		0.008	mg/l
2-Nitrophenol				****		G	<0.016	G	<0.016		0.016	mg/l
3,3-Dichlorobenzidine				****		G	<0.008	G	<0.008		0.008	mg/l
2-Methyl-4,6-dinitrophenol				****		G	<0.016	G	<0.016		0.016	mg/l
4-Bromophenyl-phenylether				****		G	<0.008	G	<0.008		0.008	mg/l
4-Chloro-3-methylphenol				****		G	<0.016	G	<0.016		0.016	mg/l
4-Chlorophenyl-phenylether				****		G	<0.008	G	<0.008		0.008	mg/l
4-Nitrophenol				****		G	<0.016	G	<0.016		0.016	mg/l
Acenapthene				****		G	<0.008	G	<0.008		0.008	mg/l
Acenaphthylene				****		G	<0.008	G	<0.008		0.008	mg/l
Anthracene				****		G	<0.008	G	<0.008		0.008	mg/l
Benzidine				****		G	<0.032	G	<0.031		0.034	mg/l

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METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 06-01-2010 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: __X__(JAN-MAR) ____(APR-JUNE) ____(JULY-SEPT) ___(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->		003		009		099	
DATES ON WHICH SAMPLES WERE COLLECTED	----->		2/9/2012		2/9/2012		calculated	
TIMES AT WHICH SAMPLES WERE COLLECTED	----->		0710, 0810, 0910, 1010		0735, 0835, 0935, 1035			
PARAMETER	LIMIT	RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW G=grab,C=composite,M=measured flow,E=estimated flo						UNITS
FLOW	****	M	77,587	M	48,816		28,771	gal/day
Benzo(a)anthracene	****	G	<0.008	G	<0.008		0.008	mg/l
Benzo(a)pyrene	****	G	<0.008	G	<0.008		0.008	mg/l
Benzo(b)fluoranthene	****	G	<0.008	G	<0.008		0.008	mg/l
Benzo(g,h,i)perylene	****	G	<0.008	G	<0.008		0.008	mg/l
Benzo(k)fluoranthene	****	G	<0.008	G	<0.008		0.008	mg/l
Bis(2-chloroethoxy)methane	****	G	<0.008	G	<0.008		0.008	mg/l
Bis(2-chloroethyl)ether	****	G	<0.008	G	<0.008		0.008	mg/l
Bis(2-chloroisopropyl)ether	****	G	<0.008	G	<0.008		0.008	mg/l
Bis(2-ethylhexyl)phthalate	****	G	<0.005	G	<0.005		0.005	mg/l
Butyl benzyl phthalate	****	G	<0.008	G	<0.008		0.008	mg/l
Chrysene	****	G	<0.008	G	<0.008		0.008	mg/l
Dibenzo(a,h)anthracene	****	G	<0.008	G	<0.008		0.008	mg/l
Diethyl phthalate	****	G	<0.008 ~~0.002~~	G	<0.008		<0.008 0*	mg/l
Dimethyl phthalate	****	G	<0.008	G	<0.008		0.008	mg/l
Di-n-butyl phthalate	****	G	<0.008	G	<0.008		0.008	mg/l
Di-n-octyl-phthalate	****	G	<0.008	G	<0.008		0.008	mg/l
Fluorene	****	G	<0.008	G	<0.008		0.008	mg/l
Fluoranthene	****	G	<0.008	G	<0.008		0.008	mg/l
Hexachlorobenzene	****	G	<0.008	G	<0.008		0.008	mg/l
Hexachlorobutadiene	****	G	<0.008 ~~0.001~~	G	<0.008		<0.008 0*	mg/l
Hexachlorocyclopentadiene	****	G	<0.016	G	<0.016		0.016	mg/l
Hexachloroethane	****	G	<0.008	G	<0.008		0.008	mg/l
Ideno(1,2,3-cd)pyrene	****	G	<0.008	G	<0.008		0.008	mg/l
Isophorone	****	G	<0.008	G	<0.008		0.008	mg/l
Naphthalene	****	G	<0.008	G	<0.008		0.008	mg/l
Nitrobenzene	****	G	<0.008	G	<0.008		0.008	mg/l
N-nitrosodimethylamine	****	G	<0.016	G	<0.016		0.016	mg/l
N-nitrosodi-n-propylamine	****	G	<0.008	G	<0.008		0.008	mg/l
N-nitrosodiphenylamine	****	G	<0.008	G	<0.008		0.008	mg/l
Pentachlorophenol	****	G	<0.016	G	<0.016		0.016	mg/l
Phenanthrene	****	G	<0.008	G	<0.008		0.008	mg/l
Phenol	****	G	<0.004	G	<0.004		0.004	mg/l
Pyrene	****	G	<0.008	G	<0.008		0.008	mg/l
1,2-Diphenylhydrazine	****	G	<0.008	G	<0.008		0.008	mg/l
* If calculated number was negative, it was reported as 0.								
Total Toxic Organics	****	--	0.783	--	0.786	--	0.775	mg/l
**** No limits for SP003 or SP009; monitoring requirement only for calculation at SP099								
Lab Dilution Factor			1, 2		1			

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METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 06-01-2010 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: __X___(JAN-MAR) _____(APR-JUNE) _____(JULY-SEPT) _____(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->		**005**						
DATES ON WHICH SAMPLES WERE COLLECTED	----->		2/9/2012.						
TIMES AT WHICH SAMPLES WERE COLLECTED	----->		0720, 0820, 0920, 1020						
PARAMETER	LIMIT	**RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW** G=grab,C=composite,M=measured flow,E=estimated flo							UNITS
FLOW		E	32,000						gal/day
Oil & Grease	200	G	2						mg/l
Biochemical Oxygen Demand	****	C	65						mg/l
Chemical Oxygen Demand	****	C	134						mg/l
Total Suspended Solids	****	C	6						mg/l
Temperature	60	G	32.2						deg C
pH	5.5 - 11.5	G	6.2						S.U.
Lab Dilution Factor			1						

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Monitoring Period: __X__(JAN-MAR) ____(APR-JUNE) ____(JULY-SEPT) ____(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->		005					
DATES ON WHICH SAMPLES WERE COLLECTED	----->		2/9/2012.					
TIMES AT WHICH SAMPLES WERE COLLECTED	----->		0720, 0820, 0920, 1020					
PARAMETER	LIMIT	RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW G=grab,C=composite,M=measured flow,E=estimated flo						UNITS
FLOW		E	32,000					gal/day
1,1,1-Trichloroethane		G	<0.005					mg/l
1,1,2,2-Tetrachloroethane		G	<0.005					mg/l
1,1,2-Trichloroethane		G	<0.005					mg/l
1,1-Dichloroethane		G	<0.005					mg/l
1,1-Dichloroethene		G	<0.005					mg/l
1,2-Dichlorobenzene		G	<0.005					mg/l
1,2-Dichloroethane		G	<0.005					mg/l
1,2-Dichloropropane		G	<0.005					mg/l
1,3-Dichlorobenzene		G	<0.005					mg/l
1,4-Dichlorobenzene		G	<0.005					mg/l
2-Chloroethylvinylether		G	<0.020					mg/l
Acrolein		G	<0.100					mg/l
Acrylonitrile		G	<0.005					mg/l
Benzene		G	<0.002					mg/l
Bromodichloromethane		G	0.0013					mg/l
Bromoform		G	<0.005					mg/l
Bromomethane		G	<0.010					mg/l
Carbon Tetrachloride		G	<0.005					mg/l
Chlorobenzene		G	<0.005					mg/l
Chloroethane		G	<0.010					mg/l
Chloroform		G	0.0079					mg/l
Chloromethane		G	<0.010					mg/l
cis-1,3-Dicholropropene		G	<0.005					mg/l
Dibromochloromethane		G	<0.005					mg/l
Ethylbenzene		G	<0.005					mg/l
Methylene Chloride		G	<0.005					mg/l
Tetrachloroethene		G	<0.005					mg/l
Toluene		G	0.0012					mg/l
trans-1,2-Dichloroethene		G	<0.005					mg/l
trans-1,3-Dichloropropene		G	<0.005					mg/l
Trichloroethene		G	<0.005					mg/l
Vinyl Chloride		G	<0.002					mg/l
1,2,4-Trichlorobenzene		G	<0.008					mg/l
2,4,6-Trichlorophenol		G	<0.008					mg/l
2,4-Dichlorophenol		G	<0.008					mg/l
2,4-Dimethylphenol		G	<0.008					mg/l
2,4-Dinitrophenol		G	<0.016					mg/l
2,4-Dinitrotoluene		G	<0.008					mg/l
2,6-Dinitrotoluene		G	<0.008					mg/l
2-Chloronapthalene		G	<0.008					mg/l
2-Chlorophenol		G	<0.008					mg/l
2-Nitrophenol		G	<0.016					mg/l
3,3-Dichlorobenzidine		G	<0.008					mg/l
2-Methyl-4,6-dinitrophenol		G	<0.016					mg/l
4-Bromophenyl-phenylether		G	<0.008					mg/l
4-Chloro-3-methylphenol		G	<0.016					mg/l
4-Chlorophenyl-phenylether		G	<0.008					mg/l
4-Nitrophenol		G	<0.016					mg/l
Acenapthene		G	<0.008					mg/l
Acenaphthylene		G	<0.008					mg/l
Anthracene		G	<0.008					mg/l
Benzidine		G	<0.031					mg/l

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METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 06-01-2010 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: __X__(JAN-MAR) ____(APR-JUNE) ____(JULY-SEPT) ____(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	------>		005					
DATES ON WHICH SAMPLES WERE COLLECTED	------>		2/9/2012.					
TIMES AT WHICH SAMPLES WERE COLLECTED	------>		0720, 0820, 0920, 1020					
PARAMETER	LIMIT	**RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW** G=grab,C=composite,M=measured flow,E=estimated flo						UNITS
FLOW		E	32,000					gal/day
Benzo(a)anthracene		G	<0.008					mg/l
Benzo(a)pyrene		G	/ <0.008					mg/l
Benzo(b)fluoranthene		G	<0.008					mg/l
Benzo(g,h,i)perylene		G	<0.008					mg/l
Benzo(k)fluoranthene		G	<0.008					mg/l
Bis(2-chloroethoxy)methane		G	<0.008					mg/l
Bis(2-chloroethyl)ether		G	<0.008					mg/l
Bis(2-chloroisopropyl)ether		G	<0.008					mg/l
Bis(2-ethylhexyl)phthalate		G	/ <0.005					mg/l
Butyl benzyl phthalate		G	<0.008					mg/l
Chrysene		G	<0.008					mg/l
Dibenzo(a,h)anthracene		G	<0.008					mg/l
Diethyl phthalate		G	/ <0.008					mg/l
Dimethyl phthalate		G	/ <0.008					mg/l
Di-n-butyl phthalate		G	<0.008					mg/l
Di-n-octyl-phthalate		G	<0.008					mg/l
Fluoranthene		G	<0.008					mg/l
Fluorene		G	<0.008					mg/l
Hexachlorobenzene		G	<0.008					mg/l
Hexachlorobutadiene		G	/ <0.008					mg/l
Hexachlorocyclopentadiene		G	/ <0.016					mg/l
Hexachloroethane		G	/ <0.008					mg/l
Ideno(1,2,3-cd)pyrene		G	<0.008					mg/l
Isophorone		G	<0.008					mg/l
Naphthalene		G	<0.008					mg/l
Nitrobenzene		G	/ <0.008					mg/l
N-nitrosodimethylamine		G	/ <0.016					mg/l
N-nitrosodi-n-propylamine		G	<0.008					mg/l
N-nitrosodiphenylamine		G	<0.008					mg/l
Pentachlorophenol		G	<0.016					mg/l
Phenanthrene		G	/ <0.008					mg/l
Phenol		G	/ <0.008					mg/l
Pyrene		G	<0.008					mg/l
1,2-Diphenylhydrazine		G	<0.008					mg/l
Total Toxic Organics	5.844	--	0.792					mg/l
Lab Dilution Factor			1					

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METROPOLITAN ST. LOUIS SEWER DISTRICT
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Monitoring Period: __X__(JAN-MAR) _____(APR-JUNE) _____(JULY-SEPT) _____(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->		**008**					
DATES ON WHICH SAMPLES WERE COLLECTED	----->							
TIMES AT WHICH SAMPLES WERE COLLECTED	----->							
PARAMETER	LIMIT	**RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW** G=grab,C=composite,M=measured flow,E=estimated flow						UNITS
FLOW		E	*					gal/day
Oil & Grease	200	G	*					mg/l
Biochemical Oxygen Demand	****	G	*					mg/l
Chemical Oxygen Demand	****	G	*					mg/l
Temperature	60	G	*					deg C
Total Suspended Solids	****	G	*					mg/L
pH	5.5 - 11.5	G	*					S.U.
* No flow this quarter								
Lab Dilution Factor								

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Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->		**010**					
DATES ON WHICH SAMPLES WERE COLLECTED	----->		2/9/2012					
TIMES AT WHICH SAMPLES WERE COLLECTED	----->		0745, 0845, 0945, 1045					
PARAMETER	LIMIT	**RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW** G=grab,C=composite,M=measured flow,E=estimated flo						UNITS
FLOW		E	1,142,913					gal/day
Oil & Grease	200	G	3					mg/l
Biochemical Oxygen Demand	****	C	494					mg/l
Chemical Oxygen Demand	****	C	850					mg/l
Total Suspended Solids	****	C	83					mg/l
Temperature	60	G	25.5					deg C
pH	5.5 - 11.5	G	see attached					S.U.
Chromium	5.0	C	0.008					mg/l
Copper	2.7	C	0.022					mg/l
Nickel	2.3	C	0.017					mg/l
Zinc	3.0	C	0.040					mg/l
Lab Dilution Factor			1					

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Mallinckrodt pH Monitoring for SP010: January 2012

Date / Time	pH	pH	Total for Event in Minutes
1/12/12 14:50	40	4.0	5
		January Total:	**5**

Mallinckrodt pH Monitoring for SP010: February 2012

Date / Time	pH	pH	Total for Event in Minutes
2/17/12 8:35	41	4.1	5
2/24/12 14:45	22	2.2	5
		February Total:	**10**

Mallinckrodt pH Monitoring for SP010: March 2012

Date / Time	pH	pH	Total for Event in Minutes
3/1/12 13:50	41	4.1	5
3/1/12 13:55	42	4.2	5
3/1/12 14:00	49	4.9	10
3/1/12 14:10	44	4.4	10
3/1/12 14:15	44	4.4	10
3/23/12 11:00	32	3.2	10
		March Total:	**50**

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Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	---->		010					
DATES ON WHICH SAMPLES WERE COLLECTED	---->		2/9/2012					
TIMES AT WHICH SAMPLES WERE COLLECTED	---->		0745, 0845, 0945, 1045					
PARAMETER	LIMIT	**RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW** G=grab,C=composite,M=measured flow,E=estimated flo						UNITS
FLOW		E	1,142,913	E		E		gal/day
1,1,1-Trichloroethane		G	<0.005	G		G		mg/l
1,1,2,2-Tetrachloroethane		G	<0.005	G		G		mg/l
1,1,2-Trichloroethane		G	0.003	G		G		mg/l
1,1-Dichloroethane		G	<0.005	G		G		mg/l
1,1-Dichloroethene		G	0.001	G		G		mg/l
1,2-Dichlorobenzene		G	<0.005	G		G		mg/l
1,2-Dichloroethane		G	<0.005	G		G		mg/l
1,2-Dichloropropane		G	<0.005	G		G		mg/l
1,3-Dichlorobenzene		G	<0.005	G		G		mg/l
1,4-Dichlorobenzene		G	<0.005	G		G		mg/l
2-Chloroethylvinylether		G	<0.020	G		G		mg/l
Acrolein		G	<0.100	G		G		mg/l
Acrylonitrile		G	<0.005	G		G		mg/l
Benzene		G	<0.002	G		G		mg/l
Bromodichloromethane		G	0.0017	G		G		mg/l
Bromoform		G	<0.005	G		G		mg/l
Bromomethane		G	<0.010	G		G		mg/l
Carbon Tetrachloride		G	<0.005	G		G		mg/l
Chlorobenzene		G	<0.005	G		G		mg/l
Chloroethane		G	<0.010	G		G		mg/l
Chloroform		G	0.010	G		G		mg/l
Chloromethane		G	<0.010	G		G		mg/l
cis-1,3-Dicholropropene		G	<0.005	G		G		mg/l
Dibromochloromethane		G	<0.005	G		G		mg/l
Ethylbenzene		G	<0.005	G		G		mg/l
Methylene Chloride		G	0.0019	G		G		mg/l
Tetrachloroethene		G	<0.005	G		G		mg/l
Toluene		G	0.0011	G		G		mg/l
trans-1,2-Dichloroethene		G	<0.005	G		G		mg/l
trans-1,3-Dichloropropene		G	<0.005	G		G		mg/l
Trichloroethene		G	<0.005	G		G		mg/l
Vinyl Chloride		G	<0.002	G		G		mg/l
1,2,4-Trichlorobenzene		G	<0.008	G		G		mg/l
2,4,6-Trichlorophenol		G	<0.008	G		G		mg/l
2,4-Dichlorophenol		G	<0.008	G		G		mg/l
2,4-Dimethylphenol		G	<0.008	G		G		mg/l
2,4-Dinitrophenol		G	<0.016	G		G		mg/l
2,4-Dinitrotoluene		G	<0.008	G		G		mg/l
2,6-Dinitrotoluene		G	<0.008	G		G		mg/l
2-Chloronapthalene		G	<0.008	G		G		mg/l
2-Chlorophenol		G	<0.008	G		G		mg/l
2-Nitrophenol		G	<0.016	G		G		mg/l
3,3-Dichlorobenzidine		G	<0.008	G		G		mg/l
2-Methyl-4,6-dinitrophenol		G	<0.016	G		G		mg/l
4-Bromophenyl-phenylether		G	<0.008	G		G		mg/l
4-Chloro-3-methylphenol		G	<0.016	G		G		mg/l
4-Chlorophenyl-phenylether		G	<0.008	G		G		mg/l
4-Nitrophenol		G	<0.016	G		G		mg/l
Acenapthene		G	<0.008	G		G		mg/l
Acenaphthylene		G	<0.008	G		G		mg/l
Anthracene		G	<0.008	G		G		mg/l
Benzidine		G	<0.031	G		G		mg/l

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METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 06-01-2010 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: __X__(JAN-MAR) ____(APR-JUNE) ___(JULY-SEPT) ____(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->		010					
DATES ON WHICH SAMPLES WERE COLLECTED	----->		2/9/2012					
TIMES AT WHICH SAMPLES WERE COLLECTED	----->		0745, 0845, 0945, 1045					
PARAMETER	LIMIT	**RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW** G=grab,C=composite,M=measured flow,E=estimated flo						UNITS
FLOW		E	1,142,913	E		E		gal/day
Benzo(a)anthracene		G	<0.008	G		G		mg/l
Benzo(a)pyrene		G	<0.008	G		G		mg/l
Benzo(b)fluoranthene		G	<0.008	G		G		mg/l
Benzo(g,h,i)perylene		G	<0.008	G		G		mg/l
Benzo(k)fluoranthene		G	<0.008	G		G		mg/l
Bis(2-chloroethoxy)methane		G	<0.008	G		G		mg/l
Bis(2-chloroethyl)ether		G	<0.008	G		G		mg/l
Bis(2-chloroisopropyl)ether		G	<0.008	G		G		mg/l
Bis(2-ethylhexyl)phthalate		G	<0.005	G		G		mg/l
Butyl benzyl phthalate		G	<0.008	G		G		mg/l
Chrysene		G	<0.008	G		G		mg/l
Dibenzo(a,h)anthracene		G	<0.008	G		G		mg/l
Diethyl phthalate		G	<0.008	G		G		mg/l
Dimethyl phthalate		G	<0.008	G		G		mg/l
Di-n-butyl phthalate		G	<0.008	G		G		mg/l
Di-n-octyl-phthalate		G	<0.008	G		G		mg/l
Fluoranthene		G	<0.008	G		G		mg/l
Fluorene		G	<0.008	G		G		mg/l
Hexachlorobenzene		G	<0.008	G		G		mg/l
Hexachlorobutadiene		G	<0.008	G		G		mg/l
Hexachlorocyclopentadiene		G	<0.016	G		G		mg/l
Hexachloroethane		G	<0.008	G		G		mg/l
Ideno(1,2,3-cd)pyrene		G	<0.008	G		G		mg/l
Isophorone		G	<0.008	G		G		mg/l
Naphthalene		G	<0.008	G		G		mg/l
Nitrobenzene		G	<0.008	G		G		mg/l
N-nitrosodimethylamine		G	<0.016	G		G		mg/l
N-nitrosodi-n-propylamine		G	<0.008	G		G		mg/l
N-nitrosodiphenylamine		G	<0.008	G		G		mg/l
Pentachlorophenol		G	<0.016	G		G		mg/l
Phenanthrene		G	<0.008	G		G		mg/l
Phenol		G	<0.004	G		G		mg/l
Pyrene		G	<0.008	G		G		mg/l
1,2-Diphenylhydrazine		G	<0.008	G		G		mg/l
Total Toxic Organics	5.844	--	1.051					mg/l
Lab Dilution Factor			1					

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METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 05-01-2011 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: _X__(JAN-MAR) ____(APR-JUNE) ____(JULY-SEPT) ____(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->		**011**					
DATES ON WHICH SAMPLES WERE COLLECTED	----->		2/6/2012					
TIMES AT WHICH SAMPLES WERE COLLECTED	----->		8:30					
PARAMETER	LIMIT	**RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW** G=grab,C=composite,M=measured flow,E=estimated flow						UNITS
FLOW		E	2,000					gal/day
Oil & Grease	200	G	2					mg/l
Biochemical Oxygen Demand	****	G	27					mg/l
Chemical Oxygen Demand	****	G	617					mg/l
Total Suspended Solids	****	G	6					mg/l
Temperature	60	G	22					deg C
pH	5.5 - 11.5	G	See attached					S.U.
* No flow during this reporting period.								
Lab Dilution Factor			1					

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Date	Monday, February 06, 2012
Sample Point	SP011
Time	**pH**
0830	8.5
0900	9
0930	7.8
1000	7.6
1030	8
1100	9.7
1130	10.3
1200	9.3
1230	7.9
1300	5.7

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METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 05-01-2011 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: _X___(JAN-MAR) _____(APR-JUNE) _____(JULY-SEPT) _____(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->		011					
DATES ON WHICH SAMPLES WERE COLLECTED	----->		2/6/2012					
TIMES AT WHICH SAMPLES WERE COLLECTED	----->		8:30					
PARAMETER	LIMIT	RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW G=grab,C=composite,M=measured flow,E=estimated flo						UNITS
FLOW		E	14,000					gal/day
1,1,1-Trichloroethane		G	<0.005					mg/l
1,1,2,2-Tetrachloroethane		G	<0.005					mg/l
1,1,2-Trichloroethane		G	<0.005					mg/l
1,1-Dichloroethane		G	<0.005					mg/l
1,1-Dichloroethene		G	<0.005					mg/l
1,2-Dichlorobenzene		G	<0.005					mg/l
1,2-Dichloroethane		G	<0.005					mg/l
1,2-Dichloropropane		G	<0.005					mg/l
1,3-Dichlorobenzene		G	<0.005					mg/l
1,4-Dichlorobenzene		G	<0.005					mg/l
2-Chloroethylvinylether		G	<0.020					mg/l
Acrolein		G	<0.100					mg/l
Acrylonitrile		G	<0.005					mg/l
Benzene		G	<0.002					mg/l
Bromodichloromethane		G	0.0024					mg/l
Bromoform		G	<0.005					mg/l
Bromomethane		G	<0.010					mg/l
Carbon Tetrachloride		G	<0.005					mg/l
Chlorobenzene		G	<0.005					mg/l
Chloroethane		G	<0.010					mg/l
Chloroform		G	0.0076					mg/l
Chloromethane		G	<0.010					mg/l
cis-1,3-Dicholropropene		G	<0.005					mg/l
Dibromochloromethane		G	<0.005					mg/l
Ethylbenzene		G	<0.005					mg/l
Methylene Chloride		G	<0.005					mg/l
Tetrachloroethene		G	<0.005					mg/l
Toluene		G	0.0017					mg/l
trans-1,2-Dichloroethene		G	<0.005					mg/l
trans-1,3-Dichloropropene		G	<0.005					mg/l
Trichloroethene		G	<0.005					mg/l
Vinyl Chloride		G	<0.002					mg/l
1,2,4-Trichlorobenzene		G	<0.008					mg/l
2,4,6-Trichlorophenol		G	<0.008					mg/l
2,4-Dichlorophenol		G	<0.008					mg/l
2,4-Dimethylphenol		G	<0.008					mg/l
2,4-Dinitrophenol		G	<0.016					mg/l
2,4-Dinitrotoluene		G	<0.008					mg/l
2,6-Dinitrotoluene		G	<0.008					mg/l
2-Chloronapthalene		G	<0.008					mg/l
2-Chlorophenol		G	<0.008					mg/l
2-Nitrophenol		G	<0.016					mg/l
3,3-Dichlorobenzidine		G	<0.008					mg/l
2-Methyl-4,6-dinitrophenol		G	<0.016					mg/l
4-Bromophenyl-phenylether		G	<0.008					mg/l
4-Chloro-3-methylphenol		G	<0.016					mg/l
4-Chlorophenyl-phenylether		G	<0.008					mg/l
4-Nitrophenol		G	<0.016					mg/l
Acenapthene		G	<0.008					mg/l
Acenaphthylene		G	<0.008					mg/l
Anthracene		G	<0.008					mg/l
Benzidine		G	<0.032					mg/l
Benzo(a)anthracene		G	<0.008					mg/l

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METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 05-01-2011 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: _X___(JAN-MAR) _____(APR-JUNE) ____(JULY-SEPT) ____(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->		**011**					
DATES ON WHICH SAMPLES WERE COLLECTED	----->		2/6/2012					
TIMES AT WHICH SAMPLES WERE COLLECTED	----->		8:30					
PARAMETER	LIMIT	**RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW** G=grab,C=composite,M=measured flow,E=estimated flo						UNITS
FLOW		E	14,000					gal/day
Benzo(a)pyrene		G	<0.008					mg/l
Benzo(b)fluoranthene		G	<0.008					mg/l
Benzo(g,h,i)perylene		G	<0.008					mg/l
Benzo(k)fluoranthene		G	<0.008					mg/l
Bis(2-chloroethoxy)methane		G	<0.008					mg/l
Bis(2-chloroethyl)ether		G	<0.008					mg/l
Bis(2-chloroisopropyl)ether		G	<0.008					mg/l
Bis(2-ethylhexyl)phthalate		G	<0.005					mg/l
Butyl benzyl phthalate		G	<0.008					mg/l
Chrysene		G	<0.008					mg/l
Dibenzo(a,h)anthracene		G	<0.008					mg/l
Diethyl phthalate		G	<0.008					mg/l
Dimethyl phthalate		G	<0.008					mg/l
Di-n-butyl phthalate		G	<0.008					mg/l
Di-n-octyl-phthalate		G	<0.008					mg/l
Fluoranthene		G	<0.008					mg/l
Fluorene		G	<0.008					mg/l
Hexachlorobenzene		G	<0.008					mg/l
Hexachlorobutadiene		G	<0.008					mg/l
Hexachlorocyclopentadiene		G	<0.016					mg/l
Hexachloroethane		G	<0.008					mg/l
Ideno(1,2,3-cd)pyrene		G	<0.008					mg/l
Isophorone		G	<0.008					mg/l
Naphthalene		G	<0.008					mg/l
Nitrobenzene		G	<0.008					mg/l
N-nitrosodimethylamine		G	<0.016					mg/l
N-nitrosodi-n-propylamine		G	<0.008					mg/l
N-nitrosodiphenylamine		G	<0.008					mg/l
Pentachlorophenol		G	<0.016					mg/l
Phenanthrene		G	<0.008					mg/l
Phenol		G	<0.004					mg/l
Pyrene		G	<0.008					mg/l
1,2-Diphenylhydrazine		G	<0.008					mg/l
Total Toxic Organics	5.844	--	0.787					mg/l
Lab Dilution Factor			1					

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METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3.1 Effective Date: 05-01-2011 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: __X___(JAN-MAR) ___(APR-JUN) ____(JULY-SEP) _____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS					**080**						
DATES ON WHICH SAMPLES WERE COLLECTED					1/10/2012						
TIMES AT WHICH SAMPLES WERE COLLECTED					925, 1025, 1125, 1225						
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS** G=Grab, C-composite, M=measured flow, E=estimated							UNITS
FLOW				E	3,500						gal/day
Acetone	524.2	20.70	8.20	G	<1.000						mg/L
n-Amyl Acetate	1666	20.70	8.20	G	<0.100						mg/L
Benzene	524.2	3.00	0.70	G	0.103						mg/L
n-Butyl acetate	1666	20.70	8.20	G	<0.100						mg/L
Chlorobenzene	524.2	3.00	0.70	G	<0.100						mg/L
Chloroform	524.2	0.10	0.03	G	0.011						mg/L
1,2-Dichlorobenzene	524.2	20.70	8.20	G	<0.100						mg/L
1,2-Dichloroethane	524.2	20.70	8.20	G	<0.100						mg/L
Diethyl amine	1671	255.00	100.00	G	<50						mg/L
Ethyl Acetate	1666	20.70	8.20	G	<0.200						mg/L
n-Heptane	1666	3.00	0.70	G	<0.200						mg/L
n-Hexane	1666	3.00	0.70	G	<0.200						mg/L
Isobutyraldehyde	1666	20.70	8.20	G	<0.200						mg/L
Isopropyl acetate	1666	20.70	8.20	G	<0.100						mg/L
Isopropyl ether	1666	20.70	8.20	G	<0.100						mg/L
Methylene chloride	524.2	3.00	0.70	G	<0.100						mg/L
Methyl formate	1666	20.70	8.20	G	<1.000						mg/L
4-Methyl-2-pentanone	1666	20.70	8.20	G	<0.200						mg/L
Tetrahydrofuran	1666	9.20	3.40	G	<0.400						mg/L
Toluene	524.2	0.30	0.20	G	<0.100						mg/L
Triethyl amine	1671	255.00	100.00	G	<20						mg/L
Xylenes	1666	3.00	0.70	G	<0.100						mg/L
Oil & Grease	1664	200		G	5						mg/L
Biochemical Oxygen Demand		****		C	14.000						mg/L
Chemical Oxygen Demand		****		C	21						mg/L
Total Suspended Solids		****		C	59						mg/L
Temperature		60		G	8.7						deg C
pH		5.5 - 11.5		G	7.7						S.U.
Dilution by lab					1,20						

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2011 INDUSTRIAL USER SELF MONITORING REPORT

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Permit No.: 2112059600 - 3.1 Effective Date: 06-01-2010 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: _X___(JAN-MAR) ____(APR-JUNE) ___ (JULY-SEPT) ___(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->>		**080**					
DATES ON WHICH SAMPLES WERE COLLECTED	----->>		1/10/2012					
TIMES AT WHICH SAMPLES WERE COLLECTED	----->>		925, 1025, 1125, 1225					
PARAMETER	LIMIT	**RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW** G=grab,C=composite,M=measured flow,E=						UNITS
FLOW		E	3,500					gal/day
1,1,1-Trichloroethane		G	<0.005					mg/l
1,1,2,2-Tetrachloroethane		G	<0.005					mg/l
1,1,2-Trichloroethane		G	<0.005					mg/l
1,1-Dichloroethane		G	<0.005					mg/l
1,1-Dichloroethene		G	<0.005					mg/l
1,2-Dichlorobenzene		G	<0.005					mg/l
1,2-Dichloroethane		G	<0.005					mg/l
1,2-Dichloropropane		G	<0.005					mg/l
1,3-Dichlorobenzene		G	<0.005					mg/l
1,4-Dichlorobenzene		G	<0.005					mg/l
2-Chloroethylvinylether		G	<0.02					mg/l
Acrolein		G	<0.1					mg/l
Acrylonitrile		G	<0.005					mg/l
Benzene		G	0.126					mg/l
Bromodichloromethane		G	0.0045					mg/l
Bromoform		G	<0.005					mg/l
Bromomethane		G	<0.01					mg/l
Carbon Tetrachloride		G	<0.005					mg/l
Chlorobenzene		G	<0.005					mg/l
Chloroethane		G	<0.01					mg/l
Chloroform		G	0.0126					mg/l
Chloromethane		G	<0.01					mg/l
cis-1,3-Dicholropropene		G	<0.005					mg/l
Dibromochloromethane		G	0.0011					mg/l
Ethylbenzene		G	<0.005					mg/l
Methylene Chloride		G	<0.005					mg/l
Tetrachloroethene		G	<0.005					mg/l
Toluene		G	<0.002					mg/l
trans-1,2-Dichloroethene		G	<0.005					mg/l
trans-1,3-Dichloropropene		G	<0.005					mg/l
Trichloroethene		G	<0.005					mg/l
Vinyl Chloride		G	<0.002					mg/l
1,2,4-Trichlorobenzene		G	<0.008					mg/l
2,4,6-Trichlorophenol		G	<0.008					mg/l
2,4-Dichlorophenol		G	<0.008					mg/l
2,4-Dimethylphenol		G	<0.008					mg/l
2,4-Dinitrophenol		G	<0.016					mg/l
2,4-Dinitrotoluene		G	<0.008					mg/l
2,6-Dinitrotoluene		G	<0.008					mg/l
2-Chloronapthalene		G	<0.008					mg/l
2-Chlorophenol		G	<0.008					mg/l
2-Nitrophenol		G	<0.016					mg/l
3,3-Dichlorobenzidine		G	<0.008					mg/l
2-Methyl-4,6-dinitrophenol		G	<0.016					mg/l
4-Bromophenyl-phenylether		G	<0.008					mg/l
4-Chloro-3-methylphenol		G	<0.016					mg/l
4-Chlorophenyl-phenylether		G	<0.008					mg/l
4-Nitrophenol		G	<0.016					mg/l
Acenapthene		G	<0.008					mg/l
Acenaphthylene		G	<0.008					mg/l
Anthracene		G	<0.008					mg/l
Benzidine		G	<0.032					mg/l
Benzo(a)anthracene		G	<0.008					mg/l
Benzo(a)pyrene		G	<0.008					mg/l
Benzo(b)fluoranthene		G	<0.008					mg/l
Benzo(g,h,i)perylene		G	<0.008					mg/l
Benzo(k)fluoranthene		G	<0.008					mg/l
Bis(2-chloroethoxy)methane		G	<0.008					mg/l
Bis(2-chloroethyl)ether		G	<0.008					mg/l
Bis(2-chloroisopropyl)ether		G	<0.008					mg/l

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METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3.1 Effective Date: 06-01-2010 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: _X___(JAN-MAR) ____(APR-JUNE) ___ (JULY-SEPT) ___(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->>		**080**					
DATES ON WHICH SAMPLES WERE COLLECTED	----->>		1/10/2012					
TIMES AT WHICH SAMPLES WERE COLLECTED	----->>		925, 1025, 1125, 1225					
PARAMETER	LIMIT	**RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW** G=grab,C=composite,M=measured flow,E=						UNITS
FLOW		E	3,500					gal/day
Bis(2-ethylhexyl)phthalate		G	<0.005					mg/l
Butyl benzyl phthalate		G	<0.008					mg/l
Chrysene		G	<0.008					mg/l
Dibenzo(a,h)anthracene		G	<0.008					mg/l
Diethyl phthalate		G	<0.008					mg/l
Dimethyl phthalate		G	<0.008					mg/l
Di-n-butyl phthalate		G	<0.008					mg/l
Di-n-octyl-phthalate		G	<0.008					mg/l
Fluoranthene		G	<0.008					mg/l
Fluorene		G	<0.008					mg/l
Hexachlorobenzene		G	<0.008					mg/l
Hexachlorobutadiene		G	<0.008					mg/l
Hexachlorocyclopentadiene		G	<0.016					mg/l
Hexachloroethane		G	<0.008					mg/l
Ideno(1,2,3-cd)pyrene		G	<0.008					mg/l
Isophorone		G	<0.008					mg/l
Naphthalene		G	<0.008					mg/l
Nitrobenzene		G	<0.008					mg/l
N-nitrosodimethylamine		G	<0.016					mg/l
N-nitrosodi-n-propylamine		G	<0.008					mg/l
N-nitrosodiphenylamine		G	<0.008					mg/l
Pentachlorophenol		G	<0.016					mg/l
Phenanthrene		G	<0.008					mg/l
Phenol		G	<0.004					mg/l
Pyrene		G	<0.008					mg/l
1,2-Diphenylhydrazine		G	<0.008					mg/l
Total Toxic Organics	5.844	--	0.822					mg/l
			1,20					

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METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 06-01-2010 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147 _____

Monitoring Period: _X___(JAN-MAI _____ (APR-JUNE) _____(JULY-SEPT) ____(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS		---->		**905**			
DATES ON WHICH SAMPLES WERE COLLECTED		---->		1/10/2012			
TIMES AT WHICH SAMPLES WERE COLLECTED		---->		1250			
	MONTHLY LIMIT (ave)	DAILY MAX LIMIT	**RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW** G=grab,C=composite,M=measured flow,E=estimated flow				
PARAMETER	(gm/day)	(gm/day)			Lab results mg/L		UNITS
FLOW			M	246024			gal/day
1,2,4-Trichlorobenzene	74	301	G	9.31	0.010	✓	gm/day
1,2-Dichlorobenzene	74	301	G	4.66	0.005	✓	gm/day
1,3-Dichlorobenzene	54	144	G	4.66	0.005	✓	gm/day
1,4-Dichlorobenzene	54	144	G	4.66	0.005	✓	gm/day
2-Nitrophenol	25	87	G	18.62	0.020	✓	gm/day
2-Methyl-4,6-dinitrophenol	30	105	G	18.62	0.020	✓	gm/day
4-Nitrophenol	61	218	G	18.62	0.020	✓	gm/day
Acenapthene	7	18	G	9.31	0.010	✓	gm/day
Anthracene	7	18	G	9.31	0.010	✓	gm/day
Bis(2-ethylhexyl)phthalate	36	98	G	5.59	0.006	✓	gm/day
Diethyl phthalate	17	43	G	9.31	0.010	✓	gm/day
Dimethyl phthalate	7	18	G	9.31	0.010	✓	gm/day
Di-n-butyl phthalate	8	16	G	9.31	0.010	✓	gm/day
Fluoranthene	8	20	G	9.31	0.010	✓	gm/day
Fluorene	7	18	G	9.31	0.010	✓	gm/day
Hexachlorobenzene	74	301	G	9.31	0.010	✓	gm/day
Hexachlorobutadiene	54	144	G	9.31	0.010	✓	gm/day
Hexachloroethane	74	301	G	9.31	0.010	✓	gm/day
Naphthalene	7	18	G	9.31	0.010	✓	gm/day
Phenanthrene	7	18	G	9.31	0.010	✓	gm/day
Pyrene	8	18	G	9.31	0.010	✓	gm/day
1,1,1-Trichloroethane	8	22	G	4.66	0.005	✓	gm/day
1,1,2-Trichloroethane	12	48	G	4.66	0.005	✓	gm/day
1,1-Dichloroethane	8	22	G	4.66	0.005	✓	gm/day
1,1-Dichloroethene	8	23	G	4.66	0.005	✓	gm/day
1,2-Dichloroethane	74	301	G	4.66	0.005	✓	gm/day
1,2-Dichloropropane	74	301	G	4.66	0.005	✓	gm/day
Benzene	22	51	G	1.86	0.002	✓	gm/day
Carbon Tetrachloride	54	144	G	4.66	0.005	✓	gm/day
Chlorobenzene	54	144	G	4.66	0.005	✓	gm/day
Chloroethane	42	112	G	9.31	0.010	✓	gm/day
Chloroform	42	123	G	2.42	0.003	✓	gm/day
Chloromethane	42	112	G	9.31	0.010	✓	gm/day
cis-1,3-Dichloropropene	74	301	G	4.66	0.005	✓	gm/day
Ethylbenzene	54	144	G	4.66	0.005	✓	gm/day
Methylene Chloride	14	64	G	4.66	0.005	✓	gm/day
Nitrobenzene	847	2423	G	9.31	0.010	✓	gm/day
Tetrachloroethene	20	62	G	4.66	0.005	✓	gm/day
Toluene	11	28	G	4.66	0.005	✓	gm/day
trans-1,2-Dichloroethene	9	25	G	4.66	0.005	✓	gm/day
trans-1,3-Dichloropropene	74	301	G	4.66	0.005	✓	gm/day
Trichloroethene	10	26	G	4.66	0.005	✓	gm/day
Vinyl Chloride	37	65	G	1.86	0.002	✓	gm/day
Shaded values represent detection limits							
Lab Dilution Factor				1			

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METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 06-01-2010 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: __X___(JAN-MAR) _____(APR-JUNE) _____(JULY-SEPT) _____(OCT-DEC)

Samples Collected By: Mallinckrodt Inc

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->		912		912		912	
DATES ON WHICH SAMPLES WERE COLLECTED	----->		1/9/2012		2/6/2012		3/2/2012	
TIMES AT WHICH SAMPLES WERE COLLECTED	----->		800		800		1155	
PARAMETER	LIMIT	RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW G=grab,C=composite,M=measured flow,E=estimated flo						UNITS
FLOW		M	40754	M	57151	M	62298	gal/day
DMAC (daily max)	7091	C	218	C	825	C	952	lb/day
DMAC (monthly average)	5459	C	630	C	1700	C	1800	lb/day
DMAC			1853		3565		3463	mg/L CB
# lbs / day / gal / day	x 453590	mg/lb		x 0.2642	gal/gal	= # x 119828		mg/L
Lab Dilution Factor			1		1		1	

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METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **MALLINCKRODT INC.**
Permit No.: 2112059600 - 3 Effective Date: 06-01-2010 Expiration Date: 05-31-2015
Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: __X__(JAN-MAR) ____(APR-JUN) ____(JULY-SEP) ____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->		**915**					
DATES ON WHICH SAMPLES WERE COLLECTED			---->		1/17/2012					
TIMES AT WHICH SAMPLES WERE COLLECTED			---->		1610					
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW** G=Grab, C-composite, M=measured flow, E=estimated flow						UNITS
FLOW				E	2,700					gal/day
Acetone	524.2	20.70	8.20	G	<1.000					mg/L
n-Amyl acetate	1666	20.70	8.20	G	<0.100					mg/L
Benzene	524.2	3.00	0.70	G	<0.100					mg/L
n-Butyl acetate	1666	20.70	8.20	G	<0.100					mg/L
Chlorobenzene	524.2	3.00	0.70	G	<0.100					mg/L
Chloroform	524.2	0.10	0.03	G	<0.020					mg/L
1,2-Dichlorobenzene	524.2	20.70	8.20	G	<0.100					mg/L
1,2-Dichloroethane	524.2	20.70	8.20	G	<0.100					mg/L
Diethyl amine*	1671	255.00	100.00	G	<0.500					mg/L
Ethyl Acetate	1666	20.70	8.20	G	<0.200					mg/L
n-Heptane	1666	3.00	0.70	G	<0.200					mg/L
n-Hexane	1666	3.00	0.70	G	<0.200					mg/L
Isobutyraldehyde	1666	20.70	8.20	G	0.028					mg/L
Isopropyl acetate	1666	20.70	8.20	G	<0.100					mg/L
Isopropyl ether	1666	20.70	8.20	G	<0.100					mg/L
Methylene chloride	524.2	3.00	0.70	G	<0.100					mg/L
Methyl formate	1666	20.70	8.20	G	<1					mg/L
4-Methyl-2-pentanone	1666	20.70	8.20	G	<0.200					mg/L
Tetrahydrofuran	1666	9.20	3.40	G	<0.400					mg/L
Toluene	524.2	0.30	0.20	G	<0.100					mg/L
Triethyl amine*	1671	255.00	100.00	G	<0.200					mg/L
Xylenes	1666	3.00	0.70	G	0.16					mg/L
** Annual monitoring requirement*										
Dilution by lab					20					

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METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **MALLINCKRODT INC.**
Permit No.: 2112059600 - 3 Effective Date: 06-01-2010 Expiration Date: 05-31-2015
Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: _X___(JAN-MAR) ____(APR-JUN) ____(JULY-SEP) ____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS ---->					920							
DATES ON WHICH SAMPLES WERE COLLECTED ---->					2/10/2012							
TIMES AT WHICH SAMPLES WERE COLLECTED ---->					1120							
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW G=Grab, C-composite, M=measured flow, E=estimated flow								UNITS
FLOW				E	13,000	E						gal/day
Tetrahydrofuran	1666	9.20	3.40	G	<0.400	G						mg/L
Toluene	524.2	0.30	0.20	G	<0.100	G						mg/L
Dilution by lab					20							

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METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **MALLINCKRODT INC.**
Permit No.: 2112059600 - 3 Effective Date: 06-01-2010 Expiration Date: 05-31-2015
Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: _X___(JAN-MAR) ____(APR-JUN) ____(JULY-SEP) ____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->		**927**							
DATES ON WHICH SAMPLES WERE COLLECTED			---->		1/17/2012							
TIMES AT WHICH SAMPLES WERE COLLECTED			---->		0750							
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW** G=Grab, C-composite, M=measured flow, E=estimated flow								UNITS
FLOW				E	2,700							gal/day
Acetone	524.2	20.70	8.20	G	<1							mg/L
n-Amyl acetate	1666	20.70	8.20	G	<0.100							mg/L
Ethyl Acetate	1666	20.70	8.20	G	<0.200							mg/L
Isopropyl acetate	1666	20.70	8.20	G	<0.100							mg/L
Methylene chloride	524.2	3.00	0.70	G	<0.100							mg/L
Dilution by lab					20							

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PLEASE READ THE INSTRUCTIONS BEFORE COMPLETING THIS REPORT

PART I: IDENTIFYING INFORMATION

Company Name: Mallinckrodt Inc.
Permit No.: 2112059600 - 3
Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: _X___(JAN-MAR) ____(APR-JUN) ____(JULY-SEP) ____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TekLab

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->			930						
DATES ON WHICH SAMPLES WERE COLLECTED			---->			NA						
TIMES AT WHICH SAMPLES WERE COLLECTED			---->			NA						
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW** G=Grab, C-composite, M=measured flow, E=estimated flow							UNITS	Permit
FLOW				E	*						gal/day	Avg Flow
Acetone	524.2	20.70	8.20	G	*						mg/L	
Ethyl Acetate	1666	20.70	8.20	G	*						mg/L	
Isopropyl acetate	1666	20.70	8.20	G	*						mg/L	
Methylene chloride	524.2	3.00	0.70	G	*						mg/L	
n-Amyl acetate	1666	20.70	8.20	G	*						mg/L	
* No flow during this reporting period.												
Dilution by lab					20							

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Monitoring Period: __X__(JAN-MAR) ____(APR-JUN) ____(JULY-SEP) __X__(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TekLab

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			----->		933							
DATES ON WHICH SAMPLES WERE COLLECTED			----->		NA							
TIMES AT WHICH SAMPLES WERE COLLECTED			----->		NA							
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW** G=Grab, C-composite, M=measured flow, E=estimated flow								UNITS
FLOW				E	*							gal/day
Acetone	524.2	20.70	8.20	G	*							mg/L
n-Amyl acetate	1666	20.70	8.20	G	*							mg/L
Ethyl Acetate	1666	20.70	8.20	G	*							mg/L
Isopropyl acetate	1666	20.70	8.20	G	*							mg/L
Methylene chloride	524.2	3.00	0.70	G	*							mg/L
* No flow during this reporting period.												
Dilution by lab					20							

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

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PART I: IDENTIFYING INFORMATION

Company Name: Mallinckrodt Inc.
Permit No.: 2112059600 - 3
Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: _X__(JAN-MAR) ____(APR-JUN) ____(JULY-SEP) ____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By:

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->			935						
DATES ON WHICH SAMPLES WERE COLLECTED			---->			NA						
TIMES AT WHICH SAMPLES WERE COLLECTED			---->			NA						
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW** G=Grab, C-composite, M=measured flow, E=estimated flow								UNITS
FLOW				E	0							gal/day
Acetone	524.2	20.70	8.20	G	*							mg/L
Benzene	524.2	3.00	0.70	G	*							mg/L
Chlorobenzene	524.2	3.00	0.70	G	*							mg/L
Chloroform	524.2	0.10	0.03	G	*							mg/L
1,2-Dichlorobenzene	524.2	20.70	8.20	G	*							mg/L
1,2-Dichloroethane	524.2	20.70	8.20	G	*							mg/L
Ethyl Acetate	1666	20.70	8.20	G	*							mg/L
n-Hexane	1666	3.00	0.70	G	*							mg/L
Methylene chloride	524.2	3.00	0.70	G	*							mg/L
4-Methyl-2-pentanone	1666	20.70	8.20	G	*							mg/L
Tetrahydrofuran	1666	9.20	3.40	G	*							mg/L
Toluene	524.2	0.30	0.20	G	*							mg/L
Xylenes	1666	3.00	0.70	G	*							mg/L
Isobutyraldehyde	1666	20.70	8.20	G	*							mg/L
n-Amyl acetate	1666	20.70	8.20	G	*							mg/L
n-Butyl acetate	1666	20.70	8.20	G	*							mg/L
Isopropyl acetate	1666	20.70	8.20	G	*							mg/L
Isopropyl ether	1666	20.70	8.20	G	*							mg/L
n-Heptane	1666	3.00	0.70	G	*							mg/L
Methyl formate	1666	20.70	8.20	G	*							mg/L
Diethyl amine	1671	255.00	100.00	G	*							mg/L
Triethyl amine	1671	255.00	100.00	G	*							mg/L
**** No PEG flow this quarter***												
Dilution by lab												

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PART I: IDENTIFYING INFORMATION

Company Name: Mallinckrodt Inc.
Permit No.: 2112059600 - 3
Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: _X___(JAN-MAR) _____(APR-JUN) ____(JULY-SEP) ____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS ----->					**936**						
DATES ON WHICH SAMPLES WERE COLLECTED ----->					1/12/2012						
TIMES AT WHICH SAMPLES WERE COLLECTED ----->					1000						
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS** G=Grab, C-composite, M=measured flow, E=estimated flow							UNITS
FLOW				E	16,500						gal/day
Acetone	524.2	20.70	8.20	G	<1						mg/L
n-Amyl acetate	1666	20.70	8.20	G	<0.100						mg/L
Benzene	524.2	3.00	0.70	G	<0.100						mg/L
n-Butyl acetate	1666	20.70	8.20	G	<0.100						mg/L
Chlorobenzene	524.2	3.00	0.70	G	<0.100						mg/L
Chloroform*	524.2	0.10	0.03	G	<0.020						mg/L
1,2-Dichlorobenzene	524.2	20.70	8.20	G	<0.100						mg/L
1,2-Dichloroethane	524.2	20.70	8.20	G	<0.100						mg/L
Diethyl amine**	1671	255.00	100.00	G	<50						mg/L
Ethyl Acetate	1666	20.70	8.20	G	<0.200						mg/L
n-Heptane	1666	3.00	0.70	G	<0.200						mg/L
n-Hexane	1666	3.00	0.70	G	<0.200						mg/L
Isobutyraldehyde	1666	20.70	8.20	G	<0.200						mg/L
Isopropyl acetate	1666	20.70	8.20	G	<0.100						mg/L
Isopropyl ether	1666	20.70	8.20	G	<0.100						mg/L
Methylene chloride	524.2	3.00	0.70	G	<0.100						mg/L
Methyl formate	1666	20.70	8.20	G	<1						mg/L
4-Methyl-2-pentanone	1666	20.70	8.20	G	<0.200						mg/L
Tetrahydrofuran	1666	9.20	3.40	G	<0.400						mg/L
Toluene	524.2	0.30	0.20	G	0.028						mg/L
Triethyl amine**	1671	255.00	100.00	G	<20						mg/L
Xylenes	1666	3.00	0.70	G	<0.100						mg/L
* Chloroform Results	Raw Water	SP936									
1/12/2012	<0.020 mg/l	<0.020 mg/l									
Results above reported as the difference between SP936 and Raw Water.											
*** Annual sampling requirement*											
Dilution by lab					20						

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2012 1Q SP9XX PEG.xlsx

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PLEASE READ THE INSTRUCTIONS BEFORE COMPLETING THIS REPORT

PART I: IDENTIFYING INFORMATION

Company Name: Mallinckrodt Inc.
Permit No.: 2112059600 - 3
Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: _X___(JAN-MAR) ____(APR-JUN) ____(JULY-SEP) ____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->			937						
DATES ON WHICH SAMPLES WERE COLLECTED			---->			1/10/2012						
TIMES AT WHICH SAMPLES WERE COLLECTED			---->			1445						
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW** G=Grab, C-composite, M=measured flow, E=estimated flow								UNITS
FLOW					E	23,000						gal/day
Tetrahydrofuran	524.2	9.20	3.40		G	<0.400						mg/L
Toluene	524.2	0.30	0.20		G	<0.100						mg/L
Dilution by lab						20						

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METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PLEASE READ THE INSTRUCTIONS BEFORE COMPLETING THIS REPORT

PART I: IDENTIFYING INFORMATION

Company Name: Mallinckrodt Inc.
Permit No.: 2112059600 - 3
Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: _X__(JAN-MAR) ____(APR-JUN) ____(JULY-SEP) ____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TekLab

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->		**938**						
DATES ON WHICH SAMPLES WERE COLLECTED			---->		2/23/2012						
TIMES AT WHICH SAMPLES WERE COLLECTED			---->		1100						
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW** G=Grab, C-composite, M=measured flow, E=estimated flow							UNITS
FLOW				E	71						gal/day
Acetone	524.2	20.70	8.20	G	<1						mg/L
n-Amyl acetate	1666	20.70	8.20	G	<0.100						mg/L
Ethyl Acetate	1666	20.70	8.20	G	<0.200						mg/L
Isopropyl acetate	1666	20.70	8.20	G	<0.100						mg/L
Methylene chloride	524.2	3.00	0.70	G	<0.100						mg/L
Dilution by lab					20						

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PART III: SPECIAL CERTIFICATION STATEMENTS

Based on the special conditions contained in your discharge permit you may be required to certify the following. Please review your permit and **PLACE YOUR INITIALS ON THE LINES NEXT TO THE CERTIFICATIONS.**

A	NO CHANGE IN WASTEWATER DISCHARGE AT SAMPLE POINTS WITH NO MONITORING REQUIRED
	For permit special conditions that waive monitoring at any sample point(s) specified in your permit, you are required to make the following certification for each report in which monitoring is waived: _____ I certify, since the last discharge monitoring report, there has been no change in the character of the wastes discharged at sample points 001 and 002. _____ I certify, since the last discharge monitoring report, there has been no discharge from sample points 008 and 011.
B	NO CHANGE IN WASTEWATER DISCHARGE AT ACTIVE CONNECTIONS WITHOUT SAMPLE POINTS
	For permit special conditions that waive monitoring at active connection points which are not specified as sample points in your permit, you are required to make the following certification: _____ I certify, since the last discharge monitoring report, there has been no change in the character of wastes discharged at those active connection points which are not specified in my permit.
E	NO DISCHARGE OF CATEGORICAL WASTE
	For permit special conditions that prohibit discharge of wastes which are subject to certain categorical pretreatment standards, you are required to make the following certification: _____ I certify, since the last discharge monitoring report, there has been no discharge of wastes which are subject to pretreatment standards in 40 CFR 414 (except for those wastes conveyed by SP 905).
F	CYANIDE NOT USED OR GENERATED IN 40 CFR 439 OPERATIONS
	Discharges subject to Pharmaceutical Categorical Standards (40 CFR 439) can be exempted from limitations and monitoring for Total Cyanide at the Pharmaceutical sample points 080, 915, 920, 935, 936, and 937, subject to the following certification: _____ I certify, since the last discharge monitoring report, cyanide has not been used or generated in any pharmaceutical manufacturing process subject to Categorical Standards in 40 CFR 439.
H	PHARMACEUTICAL POLLUTANTS NOT USED OR GENERATED IN 40 CFR 439 OPERATIONS
	Discharges subject to Pharmaceutical Categorical Standards (40 CFR 439) can be exempted from monitoring for certain 40 CFR 439-regulated pollutants at the Pharmaceutical sample points 915, 935, and 936, subject to the following certification: _____ I certify, since the last discharge monitoring report, the 40 CFR 439-regulated pollutants, as determined in permittee's report dated April 5, 2010, have not been used or generated in any pharmaceutical manufacturing process subject to Categorical Standards in 40 CFR 439. In addition, the above-referenced report remains valid.
I	SURROGATE MONITORING ALLOWED FOR 40 CFR 439 OPERATIONS
	Discharges subject to Pharmaceutical Categorical Standards (40 CFR 439) can be exempted from monitoring for certain 40 CFR 439-regulated pollutants, and replaced by monitoring for surrogate pollutant(s), at the Pharmaceutical sample points 920 and 937 subject to the following certification: _____ I certify, since the last discharge monitoring report, the 40 CFR 439-regulated pollutants, as determined in permittee's report dated April 5, 2010, continue to receive the same degree of treatment as the surrogate pollutant(s). In addition, the above-referenced report remains valid.

PART IV: GENERAL CERTIFICATION STATEMENTS

B	DISCHARGE MONITORING REPORT CERTIFICATION
	All permittees must sign and complete the information below: I certify under penalty of Law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. Print or type name of signing official: James A. Walter Title: Senior Director of Manufacturing Telephone: 314-654-1300 Signature: _____ Date: 4/27/12

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APR 30 2012
DIVISION OF ENVIRONMENTAL COMPLIANCE

Metropolitan St. Louis Sewer District
Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

April 30, 2012

Julie Summers
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Re: Wastewater User Charge Billing for Special Discharge

Dear Ms. Summers:

This is to advise you of the wastewater user charges applicable to an on-site special discharge approved in our original letter to you dated January 21, 2011, and extension dated January 13, 2012. The discharge dates and quantities are from information submitted by you in an email dated April 27, 2012.

Our Finance Department will bill you by invoice for the charges described below. These charges are based on the rates in MSD Wastewater User Charge Ordinance 13021.

PARTY TO BILL: Addressee

BILLING IS FOR: On-Site Special Discharge

DISCHARGE PERIOD: February 1 – 29, 2012

SOURCE OF WASTE: 34 batches of treated rainwater and groundwater from the remediation of the Columbium-Tantalum (CT) decommissioning project at the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri.

Discharge Period	Billing Item	Quantity	Units	Rate	Charge
February 1-29, 2011	Volume	1,755	CcF	$2.11	$3,703.05
Totals:	------	1,715	CcF	-----	$3,703.05

Please do not pay until you receive our invoice. If you have any questions, please contact me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

pc Chris Verplancke - Finance Dept.
Becky Bartholomew – Finance Dept.
Laura Joiner – Finance Dept.
Doug Mendoza
Brian Gibson

File: IU, MALLINCKRODT INC [2112059600], 3600 North Second Street, St. Louis, Missouri

MSD

TO: Chris Verplancke - Finance Department

FROM: Steven M. Grace – DEC SMG

DATE: April 26, 2012

RE: **Wastewater User Charge Billing for Special Discharge**

Please bill, by invoice, the following charges applicable to an on-site special discharge approved in our letter dated October 30, 1998, as modified in letters dated November 20, 1998, July 19, 1999, March 28, 2001, October 13, 2004, June 19, 2006, and May 22, 2008. The discharge dates and quantity are from information submitted by Sharon Cotner, Corps of Engineers, in a letter dated April 26, 2012. Please note that, as of July 1, 2011, the volume charge of $2.11 per 100 cubic feet of wastewater became effective.

This charge is based on the rates in MSD Wastewater User Charge Ordinance 13021.

PARTY TO BILL: Larry Joellenbeck
The Shaw Group Inc.
1 Angelrodt Street
St. Louis, MO 63147

BILLING IS FOR: On-Site Special Discharge

DISCHARGE PERIOD: January through March 2012

SOURCE OF WASTE: Treated construction water from the St. Louis Downtown FUSRAP Site located at Mallinckrodt, Inc., 3600 N. Second Street, St. Louis, Missouri.

Discharge Period	Billing Item	Quantity	Units	Rate	Charge
1/1/12 - 3/31/12	Volume	330	CcF	$2.11	$696.30
Totals:	---	330	CcF	---	$696.30

If you have any questions, please call me on extension 8755.

bv

pc: Becky Bartholomew – Finance Dept.
Laura Joiner – Finance Dept.
Brian Gibson
Doug Mendoza
Larry Joellenbeck, The Shaw Group Inc., 1 Angelrodt St., St. Louis, MO 63147

File: IU, MALLINCKRODT INC [2112059600]

Metropolitan St. Louis Sewer District
Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

April 17, 2012

Amber Crouch
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Dear Ms. Crouch:

We have reviewed your application dated April 16, 2012 requesting approval to discharge 400 gallons of wastewater to the Metropolitan St. Louis Sewer District for treatment. This wastewater is 45% ethylene glycol solution at the Building 97 Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri. We understand that the wastewater will be discharged through sampling point 010.

Based on the information you provided, this wastewater meets MSD Ordinance 12559 standards and is approved for discharge into a sanitary sewer on site. The discharge into the sewer must be controlled at a rate that will not surcharge the lines in the area. **This approval is valid for 30 days from the date of this letter.**

You must be certain the waste is discharged into a sanitary or combined sewer inlet only. This letter does not authorize any discharge to a separate storm sewer, or to any watercourse, as any such discharge would be in violation of state and federal laws. **Please notify me at the number below when the discharge is to commence, and please ensure the onsite personnel discharging the wastewater in question are provided with a copy of this letter.**

For billing purposes associated with this high COD wastewater, you must confirm the volume of this wastewater discharged to us, in writing, at the completion of the discharge. This report is due no later than 28 days after this approval expires. Please refer to this letter and include the date of the discharge when providing that figure. Under the provisions of Ordinance 13021, you will be billed by invoice at the billing rate in effect at the time of discharge. The current rate contained in MSD Ordinance 13021 is $310.07 per ton for COD over 600 mg/L. Using the assumed COD concentration based on the percent of ethylene glycol contained in the wastewater in question, and the proposed discharge volume provided in your application, it is estimated that you will be discharging under one ton of COD over 600 mg/L. (Our quantitative estimate is 0.75 tons COD times $310.07.) Please do not pay this amount until you receive our invoice.

This discharge has been approved based upon the information and sample analysis you provided, and is subject to the conditions stated above. This approval may be revoked by the District at any time if any of the information is found to be incorrect, or if the conditions of this approval are violated. Also, if the discharge causes any operational or maintenance problem within the District's collection or treatment system, or results in violations of any conditions of the District's NPDES permit, Mallinckrodt will be considered responsible for damages. If you have any questions, please call me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

pc: Brian Gibson
Doug Mendoza

File: IU, MALLINCKRODT INC [2112059600]

C1A

SD EVALUATION CHECKLIST - ON SITE

APPLICATION INFORMATION

Source Name: Mallinckrodt, LLC

Premise Address: 3600 N. 2nd St.

Send approval letter to applicant

Evaluated by: SMG

Date: 4/17/12

Application Dated: 4/16/12 Received: 4/16/12 All Requested Info. Received: 4/16/12

SOURCE FILING/DESCRIPTION

1 - Source in PIMS? (Y) / N
2 - If No, on IU Cross-Ref list? * Y / N
3 - If No, MSD Account # from E-CIS? Y / N
4 - If none, on "Source" list (pre-IMS)? ** Y / N
5 - If No, assigned SOUR# from PIMS.

* o:\costrecovery\cross reference xls file

** o:\costrecovery\sourlist xls file

SOURCE TYPE (circle): (IU) / Dead IU / SD

INDUSTRY ID: 21120592-00

Sample Point: No. Assigned: 8 14 Description: 45% ethylene glycol soln. @ Bldg. 97

Normal WW flow from premise? N/A _____ ccf/month, 2,992,101 GPD, _____ GPH. @ SP010

REGULATORY STATUS

Is waste a Hazardous Waste? (N) / Y

Categorical standards apply? (N) / Y

Contain PCB/ asbestos/ radioactive/ dioxin/ used oil? (N) Y

Regulatory Agency Oversight? (N) / Y

DISCHARGE CONSIDERATIONS At MSD's connection:

Ordinance Limits (12559, p32) exceeded? (N) / Y

Ordinance other limits exceeded (dye, flash pt <140F, temp >140F, obstruction, nuisance foaming/odor, corrosion causing): (N) / Y

Water Quality Standard exceeded? (N) / Y

Fumes in sewer exceed PEL/TLV limits? (N) / Y

Vapors in sewer exceed 10% of LEL? (N) / Y

RECOMMENDATION: (APPROVE) / DENY (cc WWTP Mgr for timed discharge)

APPROVAL CONDITIONS:

Timed Discharge (COD/BOD/WQ/foam): (N) / Y Limit = _____ gal/hour

Require Treatment before Discharge? (N) / Y

Laboratory analysis fee due? (N) / Y $_____

SMR required? (N) / Y Frequency/analysis: _____

SMR log: (N/A) / Remediation.xls / Nonremediation.xls

Volume Billing applies (water unmetered or credited)? (N) / Y

Bill High Strength? N / (Y) Yes, If use >60,000 gal/month water ✓ and, > norm WW strgth

Surcharge calculation attached: N/A / N / (Y)

Expiration log updated: (N/A) N / Y

O:\CostRecovery\Special Discharge\C1a.Checklist.doc

On-Site Special Discharge High Strength Flow Rate and Surcharge Calculator

1 GENERAL INFORMATION:

Date: 04/17/12
Calculated by: Steve Grace
Source name: MALLINCKRODT LLC [2112059600]
Waste material: used ethylene glycol coolant solution from Building 97
Discharge volume: 400 gallons

2 STRENGTH INFORMATION:

Sample BOD =	0	mg/l =	0	lbs BOD to be discharged
Sample COD =	450,000	mg/l =	1501	lbs COD to be discharged
Sample TSS =	0	mg/l =	for surcharge calculation only	

3 PLANT DATA: 2010

Treatment area: Bissell

Max Loading = 10%

	Flow (MGD)	BOD (mg/L)	COD (mg/L)	BOD (lb/hr)	COD (lb/hr)	BOD (lb/hr)	COD (lb/hr)
Bissell	**140**	**146**	**292**	**7,113**	**14,227**	**711**	**1,423**
Coldwater	26	188	377	1,704	3,408	170	341
Fenton	5	388	776	679	1,357	68	136
Grand Glaize	16	129	405	708	2,218	71	222
Lemay	131	78	210	3,531	9,584	353	958
Lower Meramec	13	124	409	543	1,785	54	179
Missouri River	27	280	559	2,671	5,341	267	534

4 MINIMUM REQUIRED FLOW RATE:

	BOD (hours)	BOD (gpm)	COD (hours)	COD (gpm)
Bissell	**0.00**	**0**	**1.06**	**6**
Coldwater	0.00	0	4.41	2
Fenton	0.00	0	11.06	1
Grand Glaize	0.00	0	6.77	1
Lemay	0.00	0	1.57	4
Lower Meramec	0.00	0	8.41	1
Missouri River	0.00	0	2.81	2

5 SURCHARGE AND VOLUME BILLING

Is volume subject to billing? no (yes/no)
Ratio of BOD/COD = 0.00

(Sample BOD) - 300 = 0 mg/l subject to surcharge
(sample COD) - 600 = 449400 mg/l subject to surcharge
(sample TSS) - 300 = 0 mg/l subject to surcharge

If BOD/COD ratio <= 0.35, the following calculations use the COD value. Otherwise they use the BOD value

Current rates under Ordinance: 13021

Volume =	$	2.11	/CcF
BOD =	$	620.14	/ton
COD =	$	310.07	/ton
TSS =	$	231.35	/ton

Flow charge =	$	-	based on volume =	0.5	CcF
BOD surcharge =	$	-			
COD surcharge =	$	232.49			
TSS surcharge =	$	-			
Total discharge charge =	$	232.49			
Customer charge =	**$**	**232.49**	DEC charges special discharge customers for total charges > $20.00		
Approximate charge/gallon =	$	0.58			

Comments

require volume report for billing purposes. Smg

Metropolitan St. Louis Sewer District
2350 Market Street
St. Louis, MO 63103

APPLICATION FOR SPECIAL DISCHARGE APPROVAL

I. WASTEWATER SOURCE IDENTIFICATION:

Site Name: Mallinckrodt
Premise Address: 3600 N. 2nd St.
City: St. Louis State: MO Zip: 63147
Owner: Mallinckrodt
Contact Person: Amber Crouch
Title: EHS
Phone: 314-654-0127 Fax: 314-654-1251

II. APPLICANT (mailing information):

Applicant Name: Amber Crouch
Title: EHS
Company Name: Mallinckrodt
Mailing Address: 3600 N. 2nd St.
City: St. Louis State: MO Zip: 63147
Phone: 314-654-0127 Fax: 314-654-1251

III. A. MATERIAL TO BE DISCHARGED (check all applicable boxes):

1. Wastewater description/location: ethylene glycol + water
2. Process/activity generating wastewater: bldg. 97 chiller
3. Physical and chemical composition: List all constituents, and known or potentially present regulated contaminants below.
   ☐ See separate listing enclosed, and/or ☐ See analytical results enclosed, and/or ☑ Material Safety Data Sheet enclosed.

DESCRIPTION	RANGE	UNIT
ethylene glycol	45	%
water	55	%

DESCRIPTION *(continued)*	RANGE	UNIT

4. Is this wastewater from a process subject to EPA's categorical standards in 40 CFR Subchapter N? ☐ Yes ☑ No
   a. If yes, the applicable standards are in: 40 CFR Part _____, Subpart _____ ☐ Existing source ☐ New source
5. Does this wastewater contain polychlorinated biphenyls, asbestos or radioactive material? ☐ Yes ☑ No
   a. If yes, describe: _____
6. Representative sample: ☐ Laboratory results attached, and/or ☐ Sample provided (1/2 gallon minimum, clear container)
   a. Sample collection point/location: _____ Collection method: _____
   b. Sampler's name/Co.: _____ Sample date/time: _____
   c. Attach chain of custody as available
7. Discharge will occur over the following time period: ☑ < 30 days ☐ ≥ Two years ☐ Other: _____
   a. Expected total volume of wastewater to be discharged over the time period above: _____ Gallons
   b. Proposed discharge volume: 400 Gallons, at a frequency of: ☒ One time ☐ Daily ☐ Weekly ☐ Monthly ☐ Once/three months ☐ Once/six months ☐ Other: _____
8. Pretreatment of wastewater prior to discharge: ☐ None ☒ Yes, describe: pH adjust at main plant outfall
   a. If yes, attach site plan, pretreatment system schematic, and design specifications.
9. Wastewater from a remediation project under: ☐ Superfund/CERCLA ☐ RCRA ☐ Voluntary program ☐ UST ☑ Not applicable
   a. If from a remediation project, briefly describe the past and present utilization of the property: _____

III.B. MATERIAL FROM UNDERGROUND STORAGE TANK SOURCE

☑ Not applicable (go to Section IV)

Please answer the following questions if you are requesting to discharge wastewater associated with an underground storage tank system.

1. a. Wastewater from: ☐ Inside UST(s) ☐ UST system pit ☐ Excavation outside UST system pit ☐ Monitoring well ☐ Groundwater remediation system

   b. UST project involves wastewater from: ☐ UST(s) closed in place ☐ UST(s) removed ☐ Remediation ☐ Upgrade ☐ Maintenance activities ☐ Well monitoring ☐ Other, explain: _____

   c. If wastewater is from a closure project, how long has UST(s) been out of service: _____ years

2. a. State assigned UST site identification number: _____ ☐ Not applicable

   b. Number of USTs affected: _____ ☐ Unknown

   c. For the UST(s) involved, their state identification number(s): _____ ☐ Not applicable

   d. Service Station Identification Number, as applicable: _____

3. Tank contents/former contents: ☐ Gasoline ☐ #2 diesel ☐ Used oil ☐ Unknown ☐ Other: _____

IV. DISCHARGE LOCATION

1. ☑ On-site. Describe proposed point of entry to sewer and the discharge rate (must be a sanitary or combined sewer): _____
   Plant sewer to main outfall SP010 Note: Range of discharge must not surcharge sewer line.

2. ☐ Haul to MSD Bissell Point Hauled Waste Receiving Station at 10 E. Grand, St. Louis, MO.

   a. Transporters Name: _____ and MSD Hauler ID Number: _____

   b. Hazardous Waste Certification:

   For wastewater which is hauled to MSD's Bissell Point Hauled Waste Receiving Station, I hereby certify that to the best of my knowledge and belief, the above hauled waste is not classified as a RCRA "hazardous waste" as defined by the MDNR in 10 CSR 25 or USEPA in 40 CFR Part 261.

   Applicant Name (print): _____

   Signature: _____ **Date:** _____

ADDITIONAL INFORMATION:

_____

V. APPLICANT SIGNATURE AND CERTIFICATION

This application must be signed by the applicant: either the source contact, or a contractor or agent directly responsible for site activities.

I hereby certify that I am directly responsible for activities at the site regarding the wastewater to be discharged, and to the best of my knowledge and belief, based on appropriate inquiry, the information in this application is true, complete, and accurate. The samples or analyses submitted are representative of the materials to be discharged. If granted approval to discharge, I agree to abide by the MSD Ordinances, and all applicable federal, state and local regulations. I agree to pay the costs of any pre-approval analyses performed by MSD and to pay any applicable disposal charges for the volume and strength of the wastes discharged.

Applicant Name (print): Amber Crouch

Signature: Amber Crouch **Date:** 4/16/12

FOR MSD USE ONLY:

File Name: Mallinckrodt LLC ID No. 2112D592-00 Sample Point No. 814

Metropolitan St. Louis Sewer District
Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

April 4, 2012

Amber Crouch
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Dear Ms. Crouch:

We have reviewed your application dated April 3, 2012 requesting approval to discharge 200 gallons of wastewater to the Metropolitan St. Louis Sewer District for treatment. This wastewater is unused 100% ethylene glycol from Building 5 of the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri. We understand that the wastewater will be discharged through sampling point 010.

Based on the information you provided, this wastewater meets MSD Ordinance 12559 standards and is approved for discharge into a sanitary sewer on site. This approval is valid for 30 days from the date of this letter.

You must be certain the waste is discharged into a sanitary or combined sewer inlet only. This letter does not authorize any discharge to a separate storm sewer, or to any watercourse, as any such discharge would be in violation of state and federal laws. **Please notify me at the number below when the discharge is to commence, and please ensure the onsite personnel discharging the wastewater in question are provided with a copy of this letter.**

For billing purposes associated with this high strength wastewater, you must confirm the volume of this wastewater discharged to us, in writing, at the completion of the discharge. This report is due no later than 28 days after this approval expires. Please refer to this letter and include the date of the discharge when providing that figure. Under the provisions of Ordinance 13021, you will be billed by invoice at the billing rate in effect at the time of discharge. The current rate contained in MSD Ordinance 13021 is $298.36 per ton for COD over 600 mg/L. Using the assumed COD concentration based on the percent of ethylene glycol contained in the wastewater in question, and the proposed discharge volume provided in your application, it is estimated that you will be discharging just under one ton of COD over 600 mg/L. (Our quantitative estimate is 0.83 tons COD times $298.36.) Please do not pay this amount until you receive our invoice.

This discharge has been approved based upon the information and sample analysis you provided and is subject to the conditions stated above. This approval may be revoked by the District at any time if any of the information is found to be incorrect, or if the conditions of this approval are violated. Also, if the discharge causes any operational or maintenance problem within the District's collection or treatment system, or results in violations of any conditions of the District's NPDES permit, Mallinckrodt will be considered responsible for damages.

If you have any questions, please call me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

pc: Brian Gibson
Doug Mendoza

File: IU, MALLINCKRODT INC [2112059600]

C1A

SD EVALUATION CHECKLIST - ON SITE

APPLICATION INFORMATION

Source Name: Mallinckrodt Inc.

Premise Address: 3600 N. 2nd St.

Send approval letter to applicant

Evaluated by: SMG

Date: 4/5/12

Application Dated: 4/3/12 Received: 4/3/12 All Requested Info. Received: 4/4/12

SOURCE FILING/DESCRIPTION

1 - Source in PIMS? (Y) / N
2 - If No, on IU Cross-Ref list? * Y / N
3 - If No, MSD Account # from E-CIS? Y / N
4 - If none, on "Source" list (pre-IMS)? ** Y / N
5 - If No, assigned SOUR# from PIMS.

* o:\costrecovery\cross reference xls file

** o:\costrecovery\sourlist xls file

SOURCE TYPE (circle): (IU) / Dead IU / SD

INDUSTRY ID: 21120596-00

Sample Point: No. Assigned: 854 Description: unused 100% ethylene glycol from Bldg. 5

Normal WW flow from premise? (N/A) _____ ccf/month, _____ GPD, _____ GPH.

REGULATORY STATUS

Is waste a Hazardous Waste? (N) / Y

Categorical standards apply? (N) / Y

Contain PCB/ asbestos/ radioactive/ dioxin/ used oil? (N) / Y

Regulatory Agency Oversight? (N) / Y

DISCHARGE CONSIDERATIONS At MSD's connection:

Ordinance Limits (12559, p32) exceeded? (N) / Y

Ordinance other limits exceeded (dye, flash pt <140F, temp >140F, obstruction, nuisance foaming/odor, corrosion causing): (N) / Y

Water Quality Standard exceeded? (N) / Y

Fumes in sewer exceed PEL/TLV limits? (N) / Y

Vapors in sewer exceed 10% of LEL? (N) / Y

RECOMMENDATION: (APPROVE) / DENY (cc WWTP Mgr for timed discharge)

APPROVAL CONDITIONS:

Timed Discharge (COD/BOD/WQ/foam): (N) / Y Limit = _____ gal/hour

Require Treatment before Discharge? (N) / Y

Laboratory analysis fee due? (N) / Y $_____

SMR required? (N) / Y Frequency/analysis: _____

SMR log: (N/A) / Remediation.xls / Nonremediation.xls

Volume Billing applies (water unmetered or credited)? (N) / Y

Bill High Strength? N / (Y) Yes, If use >60,000 gal/month water ✓ and, > norm WW strgth

Surcharge calculation attached: N/A / N / (Y)

Expiration log updated: (N/A) / N / Y

O:\CostRecovery\Special Discharge\C1a.Checklist.doc

On-Site Special Discharge High Strength Flow Rate and Surcharge Calculator

1 GENERAL INFORMATION:

Date: 04/04/12
Calculated by: Steve Grace
Source name: MALLINCKRODT LLC [2112059600]
Waste material: unused ethylene glycol from Building 5
Discharge volume: 200 gallons

2 STRENGTH INFORMATION:

Sample BOD =	0	mg/l =	0	lbs BOD to be discharged
Sample COD =	1,000,000	mg/l =	1668	lbs COD to be discharged
Sample TSS =	0	mg/l =	for surcharge calculation only	

3 PLANT DATA: 2010

Treatment area: Bissell

	Flow (MGD)	BOD (mg/L)	COD (mg/L)	BOD (lb/hr)	COD (lb/hr)	Max Loading = 10% BOD (lb/hr)	COD (lb/hr)
Bissell	140	146	292	7,113	14,227	711	1,423
Coldwater	26	188	377	1,704	3,408	170	341
Fenton	5	388	776	679	1,357	68	136
Grand Glaize	16	129	405	708	2,218	71	222
Lemay	131	78	210	3,531	9,584	353	958
Lower Meramec	13	124	409	543	1,785	54	179
Missouri River	27	280	559	2,671	5,341	267	534

4 MINIMUM REQUIRED FLOW RATE:

	BOD (hours	BOD (gpm)	COD (hours)	COD (gpm)
Bissell	0.00	0	1.17	3
Coldwater	0.00	0	4.89	1
Fenton	0.00	0	12.29	0
Grand Glaize	0.00	0	7.52	0
Lemay	0.00	0	1.74	2
Lower Meramec	0.00	0	9.34	0
Missouri River	0.00	0	3.12	1

5 SURCHARGE AND VOLUME BILLING

Is volume subject to billing? no (yes/no)
Ratio of BOD/COD = 0.00

(Sample BOD) - 300 = 0 mg/l subject to surcharge
(sample COD) - 600 = 999400 mg/l subject to surcharge
(sample TSS) - 300 = 0 mg/l subject to surcharge

If BOD/COD ratio <= 0.35, the following calculations use the COD value. Otherwise they use the BOD value

Current rates under Ordinance: 13021

Volume = $ 2.11 /CcF
BOD = $ 620.14 /ton
COD = $ 310.07 /ton
TSS = $ 231.35 /ton

Flow charge = $ - based on volume = 0.3 CcF
BOD surcharge = $ -
COD surcharge = $ 258.51
TSS surcharge = $ -
Total discharge charge = $ 258.51
Customer charge = $ 258.51 DEC charges special discharge customers for total charges > $20.00
Approximate charge/gallon = $ 1.29

Comments

require volume report for billing purposes. Smg

Steve Grace

From: Crouch, Amber <Amber.Crouch@Covidien.com>
Sent: Wednesday, April 04, 2012 8:38 AM
To: Steve Grace
Subject: RE: Mallinckrodt Ethylene Glycol Permit Application

Sorry, it is unused raw material from bldg. 5 (and that is where it is currently stored). Can you attach this to the application or do you want me to revise the application and resend?

Thanks,
Amber

From: Steve Grace [mailto:sgrace@stlmsd.com]
Sent: Tuesday, April 03, 2012 4:23 PM
To: Crouch, Amber
Subject: RE: Mallinckrodt Ethylene Glycol Permit Application

Hello Amber,

Is this off-spec or expired ethylene glycol? Or is it from a chiller system being drained? Is it from a particular building...or where is it currently stored? The application says it's ethylene glycol only...we would need some additional information.

Thanks,
Steve

From: Crouch, Amber [mailto:Amber.Crouch@Covidien.com]
Sent: Tuesday, April 03, 2012 2:41 PM
To: Steve Grace
Subject: Mallinckrodt Ethylene Glycol Permit Application

Steve,

See attached permit application for ethylene glycol and also the MSDS. Please let me know if you have any questions.

Thanks,

Amber Crouch
Senior HSE Engineer
Covidien
3600 North Second Street
St. Louis, MO 63147
USA

(314) 654-0127 office
(314) 253-2213 pager
(314) 654-1251 fax

www.covidien.com

Metropolitan St. Louis Sewer District
2350 Market Street
St. Louis, MO 63103

APPLICATION FOR SPECIAL DISCHARGE APPROVAL

I. WASTEWATER SOURCE IDENTIFICATION:

Site Name: Mallinckrodt
Premise Address: 3600 N. 2nd St.
City: St. Louis State: MO Zip: 63147
Owner: Mallinckrodt
Contact Person: Amber Crouch
Title: EHS
Phone: 314-654-0127 Fax: 314-654-1251

II. APPLICANT (mailing information):

Applicant Name: Amber Crouch
Title: EHS
Company Name: Mallinckrodt
Mailing Address: 3600 N. 2nd St.
City: St. Louis State: MO Zip: 63147
Phone: 314-654-0127 Fax: 314-654-1251

III. A. MATERIAL TO BE DISCHARGED (check all applicable boxes):

1. Wastewater description/location: ethylene glycol
2. Process/activity generating wastewater:
3. Physical and chemical composition: List all constituents, and known or potentially present regulated contaminants below.
   ☐ See separate listing enclosed, and/or ☐ See analytical results enclosed, and/or ☑ Material Safety Data Sheet enclosed.

DESCRIPTION	RANGE	UNIT
ethylene glycol	100	%

DESCRIPTION *(continued)*	RANGE	UNIT

4. Is this wastewater from a process subject to EPA's categorical standards in 40 CFR Subchapter N? ☐ Yes ☑ No
   a. If yes, the applicable standards are in: 40 CFR Part _____, Subpart _____ ☐ Existing source ☐ New source
5. Does this wastewater contain polychlorinated biphenyls, asbestos or radioactive material? ☐ Yes ☑ No
   a. If yes, describe:
6. Representative sample: ☐ Laboratory results attached, and/or ☐ Sample provided (1/2 gallon minimum, clear container)
   a. Sample collection point/location: _____ Collection method: _____
   b. Sampler's name/Co.: _____ Sample date/time: _____
   c. Attach chain of custody as available
7. Discharge will occur over the following time period: ☑ < 30 days ☐ ≥ Two years ☐ Other:
   a. Expected total volume of wastewater to be discharged over the time period above: 200 Gallons
   b. Proposed discharge volume: _____ Gallons, at a frequency of: ☒ One time ☐ Daily ☐ Weekly ☐ Monthly ☐ Once/three months ☐ Once/six months ☐ Other:
8. Pretreatment of wastewater prior to discharge: ☐ None ☒ Yes, describe: pH adjust at main plant outfall
   a. If yes, attach site plan, pretreatment system schematic, and design specifications.
9. Wastewater from a remediation project under: ☐ Superfund/CERCLA ☐ RCRA ☐ Voluntary program ☐ UST ☑ Not applicable
   a. If from a remediation project, briefly describe the past and present utilization of the property:

III.B. MATERIAL FROM UNDERGROUND STORAGE TANK SOURCE

☑ Not applicable (go to Section IV)

Please answer the following questions if you are requesting to discharge wastewater associated with an underground storage tank system.

1. a. Wastewater from: ☐ Inside UST(s) ☐ UST system pit ☐ Excavation outside UST system pit ☐ Monitoring well ☐ Groundwater remediation system

   b. UST project involves wastewater from: ☐ UST(s) closed in place ☐ UST(s) removed ☐ Remediation ☐ Upgrade ☐ Maintenance activities ☐ Well monitoring ☐ Other, explain: _____

   c. If wastewater is from a closure project, how long has UST(s) been out of service: _____ years

2. a. State assigned UST site identification number: _____ ☐ Not applicable

   b. Number of USTs affected: _____ ☐ Unknown

   c. For the UST(s) involved, their state identification number(s): _____ ☐ Not applicable

   d. Service Station Identification Number, as applicable: _____

3. Tank contents/former contents: ☐ Gasoline ☐ #2 diesel ☐ Used oil ☐ Unknown ☐ Other: _____

IV. DISCHARGE LOCATION

1. ☑ On-site. Describe proposed point of entry to sewer and the discharge rate (must be a sanitary or combined sewer): _____
Plant sewer to main outfall SP010 Note: Range of discharge must not surcharge sewer line.

2. ☐ Haul to MSD Bissell Point Hauled Waste Receiving Station at 10 E. Grand, St. Louis, MO.

   a. Transporters Name: _____ and MSD Hauler ID Number: _____

   b. Hazardous Waste Certification:

   For wastewater which is hauled to MSD's Bissell Point Hauled Waste Receiving Station, I hereby certify that to the best of my knowledge and belief, the above hauled waste is not classified as a RCRA "hazardous waste" as defined by the MDNR in 10 CSR 25 or USEPA in 40 CFR Part 261.

   Applicant Name (print): _____

   Signature: _____ **Date:** _____

ADDITIONAL INFORMATION:

_____

V. APPLICANT SIGNATURE AND CERTIFICATION

This application must be signed by the applicant: either the source contact, or a contractor or agent directly responsible for site activities.

I hereby certify that I am directly responsible for activities at the site regarding the wastewater to be discharged, and to the best of my knowledge and belief, based on appropriate inquiry, the information in this application is true, complete, and accurate. The samples or analyses submitted are representative of the materials to be discharged. If granted approval to discharge, I agree to abide by the MSD Ordinances, and all applicable federal, state and local regulations. I agree to pay the costs of any pre-approval analyses performed by MSD and to pay any applicable disposal charges for the volume and strength of the wastes discharged.

Applicant Name (print): Amber Crouch

Signature: Amber Crouch **Date:** 4/3/2012

FOR MSD USE ONLY:

File Name: Mallinckrodt LLC ID No. 21120596-00 Sample Point No. 854

MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Material name	ETHYLENE GLYCOL
Version #	02
Revision date	08-26-2011
CAS #	107-21-1
Product Codes	J.T.Baker: 5387, 5845, 9298, 9300, 9346, 9356, L715 Macron: 5001, 5037
Synonym(s)	1,2-Ethanediol; glycol; 1,2-Dihydroxyethane; Ethylene Alcohol; Ethulene Dihydrate
Manufacturer	Avantor Performance Materials, Inc.
Address	3477 Corporate Parkway Suite #200 Center Valley, PA 18034 US
Customer Service	855-282-6867
24 Hour Emergency	908-859-2151
Chemtrec	800-424-9300

2. Hazards Identification

Emergency overview	WARNING Harmful if swallowed. Causes eye irritation. Can cause kidney damage. Causes central nervous system effects. May cause reproductive effects.
OSHA regulatory status	This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).
Potential health effects	
Routes of exposure	Inhalation. Ingestion. Skin contact. Eye contact.
Eyes	Causes eye irritation.
Skin	May cause skin irritation in susceptible persons.
Inhalation	High mist concentrations may cause irritation of respiratory tract.
Ingestion	Harmful if swallowed. Ingestion of ethylene glycol may result in nausea, vomiting, abdominal cramps, blindness, liver damage, irritation, reproductive effects, nerve damage, convulsions, edema of the lung, cardiopulmonary effects (metabolic acidosis), pneumonia and kidney failure which could result in death. The single lethal dose for humans is about 100 ml. Inhalation of high levels of vapors or mists for prolonged periods of time may also result in toxic effects.
Target organs	Eyes. Central nervous system. Kidney. Reproductive organs.
Chronic effects	Can cause kidney damage. Causes central nervous system effects. May cause adverse reproductive effects - such as birth defects, miscarriages, or infertility based on animal data.
Potential environmental effects	The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

3. Composition / Information on Ingredients

Components	CAS #	Percent
ETHYLENE GLYCOL	107-21-1	99 - 100

4. First Aid Measures

First aid procedures	
Eye contact	Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention.

Skin contact	Wash skin with soap and water. Get medical attention if irritation develops or persists.
Inhalation	Move to fresh air. Treat symptomatically. Get medical attention, if needed.
Ingestion	Call a physician or poison control center immediately. Only induce vomiting at the instruction of medical personnel. Never give anything by mouth to an unconscious person. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs.
Notes to physician	Keep victim under observation. Treat symptomatically. Symptoms may be delayed.
General advice	In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

5. Fire Fighting Measures

Flammable properties	This product is not flammable. May burn, but does not ignite readily.
Extinguishing media	
Suitable extinguishing media	Water. Carbon dioxide (CO_2). Dry chemical powder. Foam.
Unsuitable extinguishing media	None known.
Protection of firefighters	
Specific hazards arising from the chemical	Fire may produce irritating, corrosive and/or toxic gases.
Protective equipment and precautions for firefighters	Use water spray to cool unopened containers. Self-contained breathing apparatus and full protective clothing must be worn in case of fire. Cool containers exposed to flames with water until well after the fire is out.
Special protective equipment for fire-fighters	Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask. Wear self-contained breathing apparatus with a full facepiece operated in the positive pressure demand mode when fighting fires.
Specific methods	In the event of fire and/or explosion do not breathe fumes.
Hazardous combustion products	Carbon monoxide and carbon dioxide.

6. Accidental Release Measures

Personal precautions	Wear appropriate protective equipment and clothing during clean-up. Keep upwind. Keep out of low areas. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained.
Environmental precautions	Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.
Methods for containment	Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Prevent entry into waterways, sewer, basements or confined areas.
Methods for cleaning up	Large Spills: Dike far ahead of spill for later disposal. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills in original containers for re-use. Clean up in accordance with all applicable regulations. Collect in a non-combustible container for prompt disposal.

7. Handling and Storage

Handling	Wear appropriate personal protective equipment. Avoid breathing mist or vapor. Avoid contact with eyes, skin, and clothing. Do not taste or swallow. Wash thoroughly after handling. See Section 8 of the MSDS for Personal Protective Equipment.
Storage	Keep container tightly closed.

8. Exposure Controls / Personal Protection

ACGIH

Material	Type	Value	Form
ETHYLENE GLYCOL (107-21-1)	TWA	100.0000 mg/m3	Aerosol.

Engineering controls	Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.
Personal protective equipment	
Eye / face protection	Wear safety glasses with side shields (or goggles).
Skin protection	Wear appropriate chemical resistant clothing. Wear appropriate chemical resistant gloves.
Respiratory protection	If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Respirator type: Chemical respirator with organic vapor cartridge, full facepiece, dust and mist filter.
General hygeine considerations	Provide eyewash station and safety shower. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.
General	Wear chemical protective equipment that is specifically recommended by the manufacturer. Launder contaminated clothing before reuse.

9. Physical & Chemical Properties

Appearance	Clear.
Color	Colorless.
Odor	Odorless.
Odor threshold	Not available.
Physical state	Liquid.
Form	Liquid.
pH	Not available.
Melting point	8.6 °F (-13 °C)
Freezing point	8.6 °F (-13 °C)
Boiling point	386.6 °F (197.3 °C)
Flash point	231.8 °F (111 °C) Closed Cup
Evaporation rate	Not available.
Flammability limits in air, upper, % by volume	15.3
Flammability limits in air, lower, % by volume	3.2
Vapor pressure	0.012265 kPa at 25°C
Vapor density	2.14
Specific gravity	1.1135 @20°C
Relative density	Not available.
Solubility (water)	Miscible
Partition coefficient (n-octanol/water)	-1.36
Auto-ignition temperature	748 °F (397.8 °C)
Decomposition temperature	Not available.
Molecular weight	62.07 g/mol

Molecular formula	C2-H6-O2

10. Chemical Stability & Reactivity Information

Chemical stability	Stable under normal temperature conditions.
Conditions to avoid	Excessive heat.
Incompatible materials	Strong oxidizing agents. Acids.
Hazardous decomposition products	At thermal decomposition temperatures, carbon monoxide and carbon dioxide.
Possibility of hazardous reactions	Hazardous polymerization does not occur.

11. Toxicological Information

Toxicological data

Product	Test Results
ETHYLENE GLYCOL (107-21-1)	Acute Dermal LD50 Rabbit: 9530 mg/kg Acute Oral LD50 Rat: 5.89 g/kg

Sensitization	Not a skin sensitizer.
Acute effects	Harmful if swallowed. Can cause kidney damage. Causes central nervous system effects.
Local effects	Causes eye irritation.
Chronic effects	Prolonged exposure may cause chronic effects. Can cause kidney damage. Causes central nervous system effects.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

ACGIH Carcinogens

ETHYLENE GLYCOL (CAS 107-21-1)	A4 Not classifiable as a human carcinogen.

Skin corrosion/irritation	Defatting, drying and cracking of skin.
Epidemiology	No epidemiological data is available for this product.
Mutagenicity	Not classified.
Neurological effects	Central and/or peripheral nervous system damage. High vapor/aerosol concentrations (attainable only at elevated temperatures) may cause central nervous system effects such as dizziness, drowsiness or headaches.
Reproductive effects	Suspected of damaging the unborn child.
Teratogenicity	Components in this product have been shown to cause birth defects and reproductive disorders in laboratory animals.
Symptoms and target organs	Irritant effects. Drowsiness and dizziness. Decrease in motor functions. Unconsciousness. Birth defects. Renal injury.
Further information	Ingestion of ethylene glycol may result in nausea, vomiting, abdominal cramps, blindness, liver damage, irritation, reproductive effects, nerve damage, convulsions, edema of the lung, cardiopulmonary effects (metabolic acidosis), pneumonia and kidney failure which could result in death. The single lethal dose for humans is about 100 ml. Inhalation of high levels of vapors or mists for prolonged periods of time may also result in toxic effects.

12. Ecological Information

Ecotoxicological data

Product	Test Results
ETHYLENE GLYCOL (107-21-1)	LC50 Fathead minnow (Pimephales promelas): 8050 mg/l 96.00 hours

Ecotoxicity	This product has no known eco-toxicological effects. Not expected to be harmful to aquatic organisms.
Environmental effects	Ecological injuries are not known or expected under normal use. An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Aquatic toxicity	The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.
Persistence and degradability	The product is expected to be biodegradable.
Partition coefficient (n-octanol/water)	-1.36

13. Disposal Considerations

Disposal instructions	Dispose of contents/container in accordance with local/regional/national/international regulations. Incinerate the material under controlled conditions in an approved incinerator.
Contaminated packaging	Offer rinsed packaging material to local recycling facilities. Since emptied containers retain product residue, follow label warnings even after container is emptied.

14. Transport Information

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

15. Regulatory Information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: De minimis concentration

ETHYLENE GLYCOL (CAS 107-21-1) 1.0 %

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: Listed substance

ETHYLENE GLYCOL (CAS 107-21-1) Listed.

CERCLA (Superfund) reportable quantity

ETHYLENE GLYCOL: 5000.0000

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - Yes Delayed Hazard - Yes Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No
Section 311 hazardous chemical	Yes

Clean Air Act (CAA) HAPS list

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes

Country(s) or region	Inventory name	On inventory (yes/no)*
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

State regulations This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

US - New Jersey Community RTK (EHS Survey): Reportable threshold

ETHYLENE GLYCOL (CAS 107-21-1) 500 LBS

US - Pennsylvania RTK - Hazardous Substances: Listed substance

ETHYLENE GLYCOL (CAS 107-21-1) Listed.

Saf-T-Data

Health: 2 - Moderate (Life)
Flammability: 1 - Slight
Reactivity: 1 - Slight
Contact: 2 - Moderate
Lab Protective Equip: B - GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES
Storage Color Code: G - Green (General Storage)

16. Labeling Info

Label Hazard Warning

WARNING

Harmful if swallowed. Causes eye irritation. Can cause kidney damage. Causes central nervous system effects. May cause reproductive effects.

Label Precautions

Avoid breathing dust/fume/gas/mist/vapors/spray. Avoid contact with eyes, skin, and clothing. Do not taste or swallow. Use only with adequate ventilation. Wash thoroughly after handling. Keep container closed.

Label First Aid

Immediately flush eyes with plenty of water for at least 15 minutes. Flush skin thoroughly with water. If gas/fume/vapor/dust/mist from the material is inhaled, remove the affected person immediately to fresh air. Get medical attention if irritation develops or persists. IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Do not induce vomiting without advice from poison control center. Do not use mouth-to-mouth method if victim ingested the substance. Never give anything by mouth to a victim who is unconscious or is having convulsions.

17. Other Information

NFPA ratings

Health: 2
Flammability: 1
Instability: 0

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Issue date	08-26-2011

Metropolitan St. Louis Sewer District
Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

April 3, 2012

Amber Crouch
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Re: Wastewater User Charge Billing for Special Discharge

Dear Ms. Crouch:

This is to advise you of the wastewater user charges applicable to an on-site special discharge approved in our letter to you dated February 3, 2012, and extended in our email correspondence dated March 3, 2012. You were advised of the extra-strength surcharges as part of the original approval letter. That charge was determined using the COD and TSS concentrations contained in the previously provided laboratory analytical report dated August 22, 2011. The discharge date and quantity are from information submitted by you in an email dated April 3, 2012.

Our Finance Department will bill you by invoice for the charges described below. These charges are based on the rates in MSD Wastewater User Charge Ordinance 13021. For your convenience, using the volume and strength of the waste discharged, the ordinance rates have been converted to a per-gallon basis.

PARTY TO BILL: Addressee

BILLING IS FOR: On-Site Special Discharge

DISCHARGE PERIOD: March 31, 2012

SOURCE OF WASTE: MP104 reworked wastewater from building 507 at the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri.

Discharge Period	Billing Item	Quantity	Units	Rate	Charge
3/31/12	Extra-Strength Surcharge	1,375	Gal	$0.27	$371.25
Total:	------	**1,375**	Gal	-----	**$371.25**

Please do not pay until you receive our invoice. If you have any questions, please contact me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

copies: Chris Verplancke - Finance Dept.
Becky Bartholomew – Finance Dept.
Laura Joiner – Finance Dept.
Doug Mendoza
Brian Gibson
File: IU, MALLINCKRODT INC [2112059600], 3600 North Second Street

Steve Grace

From: Crouch, Amber <Amber.Crouch@Covidien.com>
Sent: Tuesday, April 03, 2012 10:33 AM
To: Steve Grace
Subject: RE: MP104 Special Discharge - Mallinckrodt

Steve,

This material has been discharged. See below.

Date discharged – 3/31/12
Time discharged – 0830 through 1715
Total amount – 1375 gallons

Let me know if you need any additional information.

Thanks,

Amber Crouch
Senior HSE Engineer
Covidien
3600 North Second Street
St. Louis, MO 63147
USA

(314) 654-0127 office
(314) 253-2213 pager
(314) 654-1251 fax

www.covidien.com

This information may be confidential and/or privileged. Use of this information by anyone other than the intended recipient is prohibited. If you receive this in error, please inform the sender and remove any record of this message.

From: Crouch, Amber
Sent: Friday, March 02, 2012 8:49 AM
To: 'Steve Grace'
Subject: RE: MP104 Special Discharge - Mallinckrodt

Thanks!

From: Steve Grace [mailto:sgrace@stlmsd.com]
Sent: Friday, March 02, 2012 8:39 AM
To: Crouch, Amber
Subject: RE: MP104 Special Discharge - Mallinckrodt

Hello Amber,

Based on the information provided below, your request for a 30 day extension is granted. The new expiration date for this wastewater is April 3, 2012.

Thank you,

Metropolitan St. Louis Sewer District
Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

March 14, 2012

SP820

Amber Crouch
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Re: Wastewater User Charge Billing for Special Discharge

Dear Ms. Crouch:

This is to advise you of the wastewater user charges applicable to an on-site special discharge approved in our letter to you dated February 22, 2012. That charge was determined using the ethylene glycol concentration in your application for special discharge. The discharge date and quantity are from information submitted by you in an email dated March 14, 2012.

Our Finance Department will bill you by invoice for the charges described below. These charges are based on the rates in MSD Wastewater User Charge Ordinance 13021. For your convenience, using the volume and strength of the waste discharged, the ordinance rates have been converted to a per-gallon basis.

PARTY TO BILL: Addressee

BILLING IS FOR: On-Site Special Discharge

DISCHARGE PERIOD: March 12, 2012

SOURCE OF WASTE: 40% ethylene glycol solution from the chiller system located west of the boiler house of the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri.

Discharge Period	Billing Item	Quantity	Units	Rate	Charge
3/12/12	Extra-Strength Surcharge	550	Gal	$0.52	$286.00
Total:	------	**550**	Gal	-----	**$286.00**

Please do not pay until you receive our invoice. If you have any questions, please contact me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

pc Chris Verplancke - Finance Dept.
Becky Bartholomew – Finance Dept.
Laura Joiner – Finance Dept.
Doug Mendoza
Brian Gibson

File: IU, MALLINCKRODT INC [2112059600], 3600 North Second Street

Steve Grace

From: Crouch, Amber [Amber.Crouch@Covidien.com]
Sent: Wednesday, March 14, 2012 2:45 PM
To: Steve Grace
Subject: RE: Ethylene Glycol Special Discharge Permit Follow Up - Mallinckrodt

Steve,

The following information is being provided in regards to the Special Discharge permit issued by MSD dated February 22, 2012 for Ethylene Glycol and Water from the Boiler house rental chiller at the Mallinckrodt, St. Louis Plant. This is for the 2nd (and final) discharge under this permit.

Date discharged: March 12, 2012
Start/End Time: start 1030; end 2130
Volume: 550 gallons

Please let me know if you have any questions or need additional information.

Thanks,
Amber Crouch
Senior HSE Engineer
Covidien
3600 North Second Street
St. Louis, MO 63147
USA
(314) 654-0127 office
(314) 253-2213 pager
(314) 654-1251 fax
www.covidien.com
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From: Steve Grace [mailto:sgrace@stlmsd.com]
Sent: Monday, February 27, 2012 3:34 PM
To: Crouch, Amber
Subject: RE: Ethylene Glycol Special Discharge Permit Follow Up - Mallinckrodt

Hello Amber,

The current approval is good for 30 days, so it won't expire until March 22. You can discharge the additional 500 gallons under this approval...all I'd need is the same sort of volume documentation as you provided in an earlier email.

Thanks,
Steve

From: Crouch, Amber [mailto:Amber.Crouch@Covidien.com]
Sent: Monday, February 27, 2012 3:17 PM
To: Steve Grace
Subject: RE: Ethylene Glycol Special Discharge Permit Follow Up - Mallinckrodt

Steve,

We would like to discharge another 500 gallons of the same ethylene glycol/ water as below (same building same process). They have another rental chiller to drain and get rid of.

Can I leave the below permit open and change the volume to a max 1000 gallons? Or do you want me to submit another permit application?

Thanks,
Amber

From: Crouch, Amber
Sent: Monday, February 27, 2012 2:43 PM
To: 'Steve Grace'
Subject: Ethylene Glycol Special Discharge Permit Follow Up - Mallinckrodt

Steve,

The following information is being provided in regards to the Special Discharge permit issued by MSD dated February 22, 2012 for Ethylene Glycol and Water from the Boiler house rental chiller at the Mallinckrodt, St. Louis Plant.

Date discharged: February 24, 2012
Start/End Time: start 0900; end 1130
Volume: 375 gallons

Please let me know if you have any questions or need additional information.

Amber Crouch
Senior HSE Engineer
Covidien
3600 North Second Street
St. Louis, MO 63147
USA

(314) 654-0127 office
(314) 253-2213 pager
(314) 654-1251 fax

www.covidien.com

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✓JAG
CB
✓AR

MSD

COVIDIEN

March 14, 2012

Mr. Doug Mendoza
Manager, Environmental Compliance
St. Louis Metropolitan Sewer District
10 East Grand Ave
St. Louis, MO 63147

RE: Follow-up to the Propylene Glycol Release from Building 200W at the St. Louis Plant
PERMIT NO. 2112059600-3

Dear Mr. Mendoza:

This letter is a follow-up to an unplanned release of approximately 140 gallons of a 50% propylene glycol and water solution from Building 200W at the Mallinckrodt St. Louis Plant as reported via phone call to you on March 8, 2011 by Covidien employee Julie Summers.

At approximately 1320 on March 8, 2012, an operator in Building 200W noticed propylene glycol being discharged to a building sump that has an automatic pump out to the wastewater neutralization system and then to the plant sewers. Upon discovery the operator closed the by-pass valve to stop the release. It was calculated that approximately 140 gallons of the 50% propylene glycol solution was released to the sewer.

Upon investigation, it was discovered that the release was due to a steam condensate bypass line being left open from previous trouble shooting activities associated with steam application to the tank. A lock has been placed on the steam condensate bypass line to prevent opening without Supervisor's authorization. The propylene glycol and water solution was discharged to a plant sewer and to MSD through the plant's main outfall, SP010.

Please call me at 314-654-1969 if you have any questions or need additional information.

Sincerely,

Julie Summers

Julie Summers
Environmental Manager

MALLINCKRODT
3600 NORTH SECOND STREET
ST. LOUIS, MO
63147

314-654-2000 [T]
314-654-1251 [F]

RECEIVED
MAR 15 2012
DIVISION OF
ENVIRONMENTAL COMPLIANCE

MSD

Mallenckrodt # 21120596-00

MISSOURI WATER ENVIRONMENT ASSOCIATION

Member of the
Water Environment Federation

SM

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HYDRO-KINETICS
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St. Louis, MO 63110
(913) 344-1079

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Chesterfield, MO 63017
(636) 532-1051 x102

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410 East Elm Street
O'Fallon, MO 63366
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Wastewater Treatment Plant
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Jefferson City, MO 65101
(573) 634-6566

Treasurer
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St. Louis, MO 63102
(314) 588-9764 ext 311

PWOD
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Chillicothe Municipal Utilities
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Chillicothe, MO 64601
(660) 646-6373

Delegate
Trent Stober
GEOSYNTEC CONSULTING
1123 Wilkes Blvd. Suite 400
Columbia, MO 65201
(573) 443-4100

Delegate
Ken Gambaro
MSD-ST. LOUIS
3455 Creve Coeur Mill Rd
St. Louis, MO 63146
(314) 646-2431

March 12, 2012

RE: MWEA Industrial Pretreatment Awards 'Silver'

Dear Pretreatment Coordinator:

Thank you for participating in the awards program. The industries will appreciate the performance recognition. I hope to see you at the Annual Meeting at Tan-Tar-A.

In order to communicate expeditiously to the awardees, I would appreciate your help in forwarding or communicating an invitation to the each industry (receiving a pretreatment award) to attend the awards luncheon at the Annual Meeting on March 26, 2012. If any of the industries intend to attend the awards luncheon, please have them send me an email with the name(s) of the person(s) attending the awards luncheon by March 19.

I need to send the names of the industry representatives to the Annual Meeting's registration committee. Please remind the industries that they will be responsible to purchase a luncheon ticket ($25). If the awardees do not attend the awards luncheon, we will mail their award certificate(s) to them sometime following the completion of the Annual Meeting.

Feel free to forward this letter to your awardees. If you have any questions or comments regarding the pretreatment award program, please feel free to call me at (816) 822-3031 or e-mail bmcallister@burnsmcd.com.

If you would be interested in joining the Industrial Waste Committee, we would love to have you! For more information or to sign up for the committee, contact the Chairman, Bill McAllister, at (816) 822-3031 or e-mail bmcallister@burnsmcd.com.

Sincerely,

William C. McAllister

Bill McAllister
Industrial Wastewater Committee

Annual Meeting
March 24 – March 28, 2012
Visit our Web Site www.MWEA.org

PIMS - Pretreatment Information Management System [PIMS St. Louis (PIMS)]

File Edit Records Worklists Reports/Letters Tools Window Help

General Info | Sample Points | Metering | Monitoring | Permits | Results | Compliance | Enforcement | Water Use | Spec Dischrg

Facility ID: 2112059600 Name: MALLINCKRODT LLC [2112059600] SIU: ☑ Class: Significant Industrial User All Facilities

Results

Start Date: 01/01/2010 End Date: Apply

Events | Inspections | Sampling | Limit Comp | Violations | SMDE | Gen Rpts | **Notifications** | Surcharge | Surcharge Export

Notification Type	Date
Problem Discharge - Immediate Notice	03/08/2012
Problem Discharge - 5 Day Written Follow Up	11/23/2011
Problem Discharge - Immediate Notice	11/20/2011
Problem Discharge - 5 Day Written Follow Up	09/22/2011
Problem Discharge - Immediate Notice	09/20/2011
Self-Mon Discharge Viol - 30 Day Written Follo	12/29/2010
Problem Discharge - 5 Day Written Follow Up	12/23/2010
Self-Mon Discharge Viol - 1 Day Notice	12/23/2010
Problem Discharge - Immediate Notice	12/18/2010
Problem Discharge - 5 Day Written Follow Up	11/04/2010
Problem Discharge - Immediate Notice	10/30/2010
Problem Discharge - 5 Day Written Follow Up	10/21/2010
Problem Discharge - Immediate Notice	10/16/2010
Problem Discharge - 5 Day Written Follow Up	08/17/2010

Text

Julie Summers left Doug Mendoza a phone message that they had about 140 gallons of 50% propylene glycol release from bldg 200 west and make it to sewer through SP010. Happened about 2 pm. Still investigating cause. Will follow up with 5 day letter.

Ready | Mar 09, 2012 7:27:34 AM

start | Inbox - Mailbox - ... | Permit Files - Lase... | Notification Detail... | Absence Report - ... | Adobe Acrobat Pr... | PIMS - Pretreatme... | 7:27 AM

MSD

IU - Mallinckrodt LLC (2112[redacted]6-00)
3600 N. 2nd St. SP829

Steve Grace MSD

From: Steve Grace
Sent: Friday, March 02, 2012 8:39 AM
To: 'Crouch, Amber'
Subject: RE: MP104 Special Discharge - Mallinckrodt

Hello Amber,

Based on the information provided below, your request for a 30 day extension is granted. The new expiration date for this wastewater is April 3, 2012.

Thank you,
Steve Grace

From: Crouch, Amber [mailto:Amber.Crouch@Covidien.com]
Sent: Friday, March 02, 2012 8:20 AM
To: Steve Grace
Subject: MP104 Special Discharge - Mallinckrodt

Steve,

The purpose of this email is to request a 30 day extension of the MP104 special discharge permit that was issued on 2/3/2012. This is the same material that we received a special discharge for in August of 2011. At that time analytical results were submitted. Those analytical results are representative of the MP104 we want to discharge now.

Let me know if you need any additional information.

Thanks,
Amber Crouch
Senior HSE Engineer
Covidien
3600 North Second Street
St. Louis, MO 63147
USA
(314) 654-0127 office
(314) 253-2213 pager
(314) 654-1251 fax
www.covidien.com
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From: Steve Grace [mailto:sgrace@stlmsd.com]
Sent: Thursday, March 01, 2012 2:22 PM
To: Crouch, Amber
Subject: RE: MP104 Special Discharge - Mallinckrodt

Hello Amber,

Yes it is. All I would need is something in writing (an email will work) requesting a 30 day extension...containing wording that indicates the analytical results submitted previously are still representative. Once I get that, we can extend you another 30 days.

Steve

3/2/2012

21120596-00

MSD

From: Crouch, Amber [mailto:Amber.Crouch@Covidien.com]
Sent: Thursday, March 01, 2012 11:25 AM
To: Steve Grace
Subject: MP104 Special Discharge - Mallinckrodt

Steve,

See attached permit dated 2/3/2012 for MP104. This permit is set to expire and we have not yet discharged this material. Is it possible to get a 30 day extension on this permit?

Thanks,

Amber Crouch
Senior HSE Engineer
Covidien
3600 North Second Street
St. Louis, MO 63147
USA

(314) 654-0127 office
(314) 253-2213 pager
(314) 654-1251 fax

www.covidien.com

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Metropolitan St. Louis Sewer District

Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

March 1, 2012

Amber Crouch
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Dear Ms. Crouch:

We have reviewed your application dated February 7, 2012 requesting approval to discharge 156 gallons of wastewater to the Metropolitan St. Louis Sewer District for treatment. This wastewater is an off-specification batch of iothalmic acid resulting from a process upset in Building 200 of the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri. We understand that the wastewater will be discharged through sampling point 010.

Based on the information and laboratory analytical report you provided, this wastewater meets MSD Ordinance 12559 standards and is approved for discharge into a sanitary sewer on site. This approval is valid for 30 days from the date of this letter.

You must be certain the waste is discharged into a sanitary or combined sewer inlet only. This letter does not authorize any discharge to a separate storm sewer, or to any watercourse, as any such discharge would be in violation of state and federal laws. **Please notify me at the number below when the discharge is to commence, and please ensure the onsite personnel discharging the wastewater in question are provided with a copy of this letter.**

For billing purposes associated with this high strength wastewater, you must confirm the volume of this wastewater discharged to us, in writing, at the completion of the discharge. This report is due no later than 28 days after this approval expires. Please refer to this letter and include the date of the discharge when providing that figure. Under the provisions of Ordinance 13021, you will be billed by invoice at the billing rate in effect at the time of discharge. The current rate contained in MSD Ordinance 13021 is $310.07 per ton for COD over 600 mg/L. Using the COD concentration contained in the laboratory analytical report, and the proposed discharge volume provided in your application, it is estimated that you will be discharging under one ton of COD over 600 mg/L. (Our quantitative estimate is 0.17 tons COD times $310.07.) Please do not pay this amount until you receive our invoice.

This discharge has been approved based upon the information and sample analysis you provided and is subject to the conditions stated above. This approval may be revoked by the District at any time if any of the information is found to be incorrect, or if the conditions of this approval are violated. Also, if the discharge causes any operational or maintenance problem within the District's collection or treatment system, or results in violations of any conditions of the District's NPDES permit, Mallinckrodt will be considered responsible for damages.

If you have any questions, please call me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace
Steve Grace
Environmental Assistant Engineer

bv
pc: Brian Gibson
Doug Mendoza
File: IU, MALLINCKRODT INC [2112059600]

C1A

SD EVALUATION CHECKLIST - ON SITE

APPLICATION INFORMATION

Source Name: Mallinckrodt, LLC

Premise Address: 3600 N. 2nd St.

Send approval letter to applicant

Evaluated by: SMG

Date: 3/1/12

Application Dated: 2/7/12 Received: 2/7/12 All Requested Info. Received: 3/1/12

SOURCE FILING/DESCRIPTION

1 - Source in PIMS? (Y) / N
2 - If No, on IU Cross-Ref list? * Y / N
3 - If No, MSD Account # from E-CIS? Y / N
4 - If none, on "Source" list (pre-IMS)? ** Y / N
5 - If No, assigned SOUR# from PIMS.

* o:\costrecovery\cross reference xls file

** o:\costrecovery\sourlist xls file

SOURCE TYPE (circle): (IU) / Dead IU / SD

INDUSTRY ID: 21120596-00

Sample Point: No. Assigned: 853 Description: off-spec. batch of iothalmic acid resulting from a process upset

Normal WW flow from premise? N/A _____ ccf/month, 2,992,101 GPD, _____ GPH.

REGULATORY STATUS

Is waste a Hazardous Waste? (N) / Y

Categorical standards apply? (N) / Y

Contain PCB/ asbestos/ radioactive/ dioxin/ used oil? (N) / Y

Regulatory Agency Oversight? (N) / Y

DISCHARGE CONSIDERATIONS At MSD's connection:

Ordinance Limits (12559, p32) exceeded? (N) / Y

Ordinance other limits exceeded (dye, flash pt <140F, temp >140F, obstruction, nuisance foaming/odor, corrosion causing): (N) / Y

Water Quality Standard exceeded? (N) / Y

Fumes in sewer exceed PEL/TLV limits? (N) / Y

Vapors in sewer exceed 10% of LEL? (N) / Y

RECOMMENDATION: (APPROVE) / DENY (cc WWTP Mgr for timed discharge)

APPROVAL CONDITIONS:

Timed Discharge (COD/BOD/WQ/foam): (N) / Y Limit = _____ gal/hour

Require Treatment before Discharge? (N) / Y

Laboratory analysis fee due? (N) / Y $_____

SMR required? (N) / Y Frequency/analysis: _____

SMR log: (N/A) / Remediation.xls / Nonremediation.xls

Volume Billing applies (water unmetered or credited)? (N) / Y

Bill High Strength? N / (Y) Yes, If use >60,000 gal/month water ✓ and, > norm WW strgth

Surcharge calculation attached: N/A / N / (Y)

Expiration log updated: (N/A) / N / Y

O:\CostRecovery\Special Discharge\C1a.Checklist.doc

On-Site Special Discharge High Strength Flow Rate and Surcharge Calculator

1 GENERAL INFORMATION:

Date: 03/01/12
Calculated by: Steve Grace
Source name: MALLINCKRODT LLC [2112059600]
Waste material: off-spec batch of lothalmic acid (process upset) from Building 200
Discharge volume: 156 gallons

2 STRENGTH INFORMATION:

Sample BOD =	0	mg/l =	0	lbs BOD to be discharged
Sample COD =	260,000	mg/l =	338	lbs COD to be discharged
Sample TSS =	32	mg/l =	for surcharge calculation only	

3 PLANT DATA: 2010

Treatment area: Bissell

	Flow (MGD)	BOD (mg/L)	COD (mg/L)	BOD (lb/hr)	COD (lb/hr)	Max Loading = 10% BOD (lb/hr)	COD (lb/hr)
Bissell	140	146	292	7,113	14,227	711	1,423
Coldwater	26	188	377	1,704	3,408	170	341
Fenton	5	388	776	679	1,357	68	136
Grand Glaize	16	129	405	708	2,218	71	222
Lemay	131	78	210	3,531	9,584	353	958
Lower Meramec	13	124	409	543	1,785	54	179
Missouri River	27	280	559	2,671	5,341	267	534

4 MINIMUM REQUIRED FLOW RATE:

	BOD (hours	BOD (gpm)	COD (hours)	COD (gpm)
Bissell	0.00	0	0.24	11
Coldwater	0.00	0	0.99	3
Fenton	0.00	0	2.49	1
Grand Glaize	0.00	0	1.53	2
Lemay	0.00	0	0.35	7
Lower Meramec	0.00	0	1.90	1
Missouri River	0.00	0	0.63	4

5 SURCHARGE AND VOLUME BILLING

Is volume subject to billing? no (yes/no)
Ratio of BOD/COD = 0.00

(Sample BOD) - 300 = 0 mg/l subject to surcharge
(sample COD) - 600 = 259400 mg/l subject to surcharge
(sample TSS) - 300 = 0 mg/l subject to surcharge

If BOD/COD ratio <= 0.35, the following calculations use the COD value. Otherwise they use the BOD value

Current rates under Ordinance: 13021

Volume = $ 2.11 /CcF
BOD = $ 620.14 /ton
COD = $ 310.07 /ton
TSS = $ 231.35 /ton

Flow charge = $ - based on volume = 0.2 CcF
BOD surcharge = $ -
COD surcharge = $ 52.34
TSS surcharge = $ -
Total discharge charge = $ 52.34
Customer charge = $ 52.34 DEC charges special discharge customers for total charges > $20.00
Approximate charge/gallon = $ 0.34

Comments

require volume report for billing purposes. Smg

Metropolitan St. Louis Sewer District
2350 Market Street
St. Louis, MO 63103

APPLICATION FOR SPECIAL DISCHARGE APPROVAL

I. WASTEWATER SOURCE IDENTIFICATION:

Site Name: Mallinckrodt
Premise Address: 3600 N. 2nd St.
City: St. Louis State: MO Zip: 63147
Owner: Mallinckrodt
Contact Person: Amber Crouch
Title: EHS
Phone: 314-654-0127 Fax: 314-654-1251

II. APPLICANT (mailing information):

Applicant Name: Amber Crouch
Title: EHS
Company Name: Mallinckrodt
Mailing Address: 3600 N. 2nd St.
City: St. Louis State: MO Zip: 63147
Phone: 314-654-0127 Fax: 314-654-1251

III. A. MATERIAL TO BE DISCHARGED (check all applicable boxes):

1. Wastewater description/location: iothalmic acid / water Bldg. 200
2. Process/activity generating wastewater: process upset
3. Physical and chemical composition: List all constituents, and known or potentially present regulated contaminants below.
   ☐ See separate listing enclosed, and/or ☐ See analytical results enclosed, and/or ☒ Material Safety Data Sheet enclosed.

DESCRIPTION	RANGE	UNIT
iothalamic acid	20-25	%
water	75-80	%

DESCRIPTION *(continued)*	RANGE	UNIT

4. Is this wastewater from a process subject to EPA's categorical standards in 40 CFR Subchapter N? ☐ Yes ☒ No
   a. If yes, the applicable standards are in: 40 CFR Part _____, Subpart _____ ☐ Existing source ☐ New source
5. Does this wastewater contain polychlorinated biphenyls, asbestos or radioactive material? ☐ Yes ☒ No
   a. If yes, describe: _____
6. Representative sample: ☐ Laboratory results attached, and/or ☐ Sample provided (1/2 gallon minimum, clear container)
   a. Sample collection point/location: _____ Collection method: _____
   b. Sampler's name/Co.: _____ Sample date/time: _____
   c. Attach chain of custody as available
7. Discharge will occur over the following time period: ☒ < 30 days ☐ ≥ Two years ☐ Other: _____
   a. Expected total volume of wastewater to be discharged over the time period above: _____ Gallons
   b. Proposed discharge volume: 156 Gallons, at a frequency of: ☒ One time ☐ Daily ☐ Weekly ☐ Monthly ☐ Once/three months ☐ Once/six months ☐ Other: _____
8. Pretreatment of wastewater prior to discharge: ☐ None ☒ Yes, describe: pH adjust at main outfall
   a. If yes, attach site plan, pretreatment system schematic, and design specifications.
9. Wastewater from a remediation project under: ☐ Superfund/CERCLA ☐ RCRA ☐ Voluntary program ☐ UST ☒ Not applicable
   a. If from a remediation project, briefly describe the past and present utilization of the property: _____

III.B. MATERIAL FROM UNDERGROUND STORAGE TANK SOURCE

☒ **Not applicable (go to Section IV)**

Please answer the following questions if you are requesting to discharge wastewater associated with an underground storage tank system.

1. a. Wastewater from: ☐ Inside UST(s) ☐ UST system pit ☐ Excavation outside UST system pit ☐ Monitoring well ☐ Groundwater remediation system

   b. UST project involves wastewater from: ☐ UST(s) closed in place ☐ UST(s) removed ☐ Remediation ☐ Upgrade ☐ Maintenance activities ☐ Well monitoring ☐ Other, explain: _____

   c. If wastewater is from a closure project, how long has UST(s) been out of service: _____ years

2. a. State assigned UST site identification number: _____ ☐ Not applicable

   b. Number of USTs affected: _____ ☐ Unknown

   c. For the UST(s) involved, their state identification number(s): _____ ☐ Not applicable

   d. Service Station Identification Number, as applicable: _____

3. Tank contents/former contents: ☐ Gasoline ☐ #2 diesel ☐ Used oil ☐ Unknown ☐ Other: _____

IV. DISCHARGE LOCATION

1. ☒ On-site. Describe proposed point of entry to sewer and the discharge rate (must be a sanitary or combined sewer): _____
   Bldg. 200 to plant sewer @ SP 010 Note: Range of discharge must not surcharge sewer line.

2. ☐ Haul to MSD Bissell Point Hauled Waste Receiving Station at 10 E. Grand, St. Louis, MO.

   a. Transporters Name: _____ and MSD Hauler ID Number: _____

   b. Hazardous Waste Certification:

   For wastewater which is hauled to MSD's Bissell Point Hauled Waste Receiving Station, I hereby certify that to the best of my knowledge and belief, the above hauled waste is not classified as a RCRA "hazardous waste" as defined by the MDNR in 10 CSR 25 or USEPA in 40 CFR Part 261.

   Applicant Name (print): _____

   Signature: _____ **Date:** _____

ADDITIONAL INFORMATION:

_____

V. APPLICANT SIGNATURE AND CERTIFICATION

This application must be signed by the applicant: either the source contact, or a contractor or agent directly responsible for site activities.

I hereby certify that I am directly responsible for activities at the site regarding the wastewater to be discharged, and to the best of my knowledge and belief, based on appropriate inquiry, the information in this application is true, complete, and accurate. The samples or analyses submitted are representative of the materials to be discharged. If granted approval to discharge, I agree to abide by the MSD Ordinances, and all applicable federal, state and local regulations. I agree to pay the costs of any pre-approval analyses performed by MSD and to pay any applicable disposal charges for the volume and strength of the wastes discharged.

Applicant Name (print): Amber Crouch

Signature: Amber Crouch **Date:** 2/7/2012

FOR MSD USE ONLY:

File Name: Mallinckrodt LLC ID No. 21120596-00 Sample Point No. 853

February 29, 2012

Amber Crouch
Mallinckrodt Inc.
3600 N. 2nd St.
St. Louis, MO 63147
TEL: (314) 654-0127
FAX: (314) 654-1251

RE: Iothalmic Acid Soln. **WorkOrder:** 12021022

Dear Amber Crouch:

TEKLAB, INC received 1 sample on 2/23/2012 1:42:00 PM for the analysis presented in the following report.

Samples are analyzed on an as received basis unless otherwise requested and documented. The sample results contained in this report relate only to the requested analytes of interest as directed on the chain of custody. NELAP accredited fields of testing are indicated by the letters NELAP under the Certification column. All tests are performed in the Collinsville, IL laboratory unless otherwise noted in the Case Narrative.

All quality control criteria applicable to the test methods employed for this project have been satisfactorily met and are in accordance with NELAP except where noted. The following report shall not be reproduced, except in full, without the written approval of Teklab, Inc.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Deborah L Taylor

Deborah L. Taylor
Project Manager
(618)344-1004 ex 18
dtaylor@teklabinc.com

Definitions

Client: Mallinckrodt Inc. **Work Order:** 12021022

Client Project: Iothalmic Acid Soln. **Report Date:** 29-Feb-12

Abbr Definition

CCV	Continuing calibration verification is a check of a standard to determine the state of calibration of an instrument between recalibration.
DF	Dilution factor is the dilution performed during analysis only and does not take into account any dilutions made during sample preparation. The reported result is final and includes all dilutions factors.
DNI	Did not ignite
DUP	Laboratory duplicate is an aliquot of a sample taken from the same container under laboratory conditions for independent processing and analysis independently of the original aliquot.
ICV	Initial calibration verification is a check of a standard to determine the state of calibration of an instrument before sample analysis is initiated.
IDPH	IL Dept. of Public Health
LCS	Laboratory control sample, spiked with verified known amounts of analytes, is analyzed exactly like a sample to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system. The acceptable recovery range is in the QC Package (provided upon request).
LCSD	Laboratory control sample duplicate is a replicate laboratory control sample that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MB	Method blank is a sample of a matrix similar to the batch of associated sample (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences should present at concentrations that impact the analytical results for sample analyses.
MDL	Method detection limit means the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.
MS	Matrix spike is an aliquot of matrix fortified (spiked) with known quantities of specific analytes that is subjected to the entire analytical procedures in order to determine the effect of the matrix on an approved test method's recovery system. The acceptable recovery range is listed in the QC Package (provided upon request).
MSD	Matrix spike duplicate means a replicate matrix spike that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MW	Molecular weight
ND	Not Detected at the Reporting Limit
NELAP	NELAP Accredited
PQL	Practical quantitation limit means the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operation conditions. The acceptable recovery range is listed in the QC Package (provided upon request).
RL	The reporting limit the lowest level that the data is displayed in the final report. The reporting limit may vary according to customer request or sample dilution. The reporting limit may not be less than the MDL.
RPD	Relative percent difference is a calculated difference between two recoveries (ie. MS/MSD). The acceptable recovery limit is listed in the QC Package (provided upon request).
SPK	The spike is a known mass of target analyte added to a blank sample or sub-sample; used to determine recovery deficiency or for other quality control purposes.
Surr	Surrogates are compounds which are similar to the analytes of interest in chemical composition and behavior in the analytical process, but which are not normally found in environmental samples.
TNTC	Too numerous to count (> 200 CFU)

Qualifiers

# - Unknown hydrocarbon	B - Analyte detected in associated Method Blank
E - Value above quantitation range	H - Holding times exceeded
J - Analyte detected below quantitation limits	M - Manual Integration used to determine area response
ND - Not Detected at the Reporting Limit	R - RPD outside accepted recovery limits
S - Spike Recovery outside recovery limits	X - Value exceeds Maximum Contaminant Level

Case Narrative

Client: Mallinckrodt Inc.
Client Project: Iothalmic Acid Soln.

Work Order: 12021022
Report Date: 29-Feb-12

Cooler Receipt Temp: 5.8 °C

Locations and Accreditations

Collinsville		Springfield		Kansas City	
Address	5445 Horseshoe Lake Road Collinsville, IL 62234-7425	Address	3920 Pintail Dr Springfield, IL 62711-9415	Address	8421 Nieman Road Lenexa, KS 66214
Phone	(618) 344-1004	Phone	(217) 698-1004	Phone	(913) 541-1998
Fax	(618) 344-1005	Fax	(217) 698-1005	Fax	(913) 541-1998
Email	jhriley@teklabinc.com	Email	kmcclain@teklabinc.com	Email	dthompson@teklabinc.com

State	Dept	Cert #	NELAP	Exp Date	Lab
Illinois	IEPA	100226	NELAP	1/31/2013	Collinsville
Kansas	KDHE	E-10374	NELAP	1/31/2013	Collinsville
Louisiana	LDEQ	166493	NELAP	6/30/2012	Collinsville
Louisiana	LDEQ	166578	NELAP	6/30/2012	Springfield
Arkansas	ADEQ	88-0966		3/14/2012	Collinsville
Illinois	IDPH	17584		4/30/2012	Collinsville
Kentucky	UST	0073		5/26/2012	Collinsville
Missouri	MDNR	00930		4/13/2013	Collinsville
Oklahoma	ODEQ	9978		8/31/2012	Collinsville

Teklab, Inc.
Environmental Laboratory

Laboratory Results

http://www.teklabinc.com/

Client: Mallinckrodt Inc.
Work Order: 12021022
Client Project: Iothalmic Acid Soln.
Report Date: 29-Feb-12
Lab ID: 12021022-001
Client Sample ID: Iothalmic Acid Solution
Matrix: AQUEOUS
Collection Date: 02/23/2012 9:00

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 410.4								
Chemical Oxygen Demand	NELAP	12500		**260000**	mg/L	250	02/24/2012 15:13	R160363
STANDARD METHOD 18TH ED. 4500-H B, LABORATORY ANALYZED								
Lab pH	NELAP	1.00		**7.23**		1	02/24/2012 12:36	R160332
STANDARD METHODS 18TH ED. 2540 D								
Total Suspended Solids	NELAP	6		**32**	mg/L	1	02/25/2012 10:36	R160389

Teklab, Inc.
Environmental Laboratory

Receiving Check List

http://www.teklabinc.com/

Client: Mallinckrodt Inc.
Client Project: Iothalmic Acid Soln.

Work Order: 12021022
Report Date: 29-Feb-12

Carrier: Dawn Brantley

Received By: SRH

Completed by: Heather L. Riley
On: 23-Feb-12

Reviewed by: Deborah L. Taylor
On: 23-Feb-12

Pages to follow: **Chain of custody** 1 **Extra pages included** 0

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐	Temp °C	5.8	
Type of thermal preservation?	None ☐	Ice ☑	Blue Ice ☐	Dry Ice	☐	
Chain of custody present?	Yes ☑	No ☐				
Chain of custody signed when relinquished and received?	Yes ☑	No ☐				
Chain of custody agrees with sample labels?	Yes ☑	No ☐				
Samples in proper container/bottle?	Yes ☑	No ☐				
Sample containers intact?	Yes ☑	No ☐				
Sufficient sample volume for indicated test?	Yes ☑	No ☐				
All samples received within holding time?	Yes ☑	No ☐				
Reported field parameters measured:	Field ☐	Lab ☐	NA ☑			
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐				
When thermal preservation is required, samples are compliant with a temperature between 0.1°C - 6.0°C, or when samples are received on ice the same day as collected.						
Water – at least one vial per sample has zero headspace?	Yes ☐	No ☐	No VOA vials ☑			
Water - TOX containers have zero headspace?	Yes ☐	No ☐	No TOX containers ☑			
Water - pH acceptable upon receipt?	Yes ☑	No ☐				

Any No responses must be detailed below or on the COC.

CHAIN OF CUSTODY

pg. 1 of 1 Work Order # 12021022

TEKLAB, INC. 5445 Horseshoe Lake Road ~ Collinsville, IL 62234 ~ Phone: (618) 344-1004 ~ Fax: (618) 344-1005

Client: Mallinckrodt
Address: 3600 N. 2nd St.
City / State / Zip: St. Louis, MO 63147
Contact: Amber Crouch Phone: 314-654-0127
E-Mail: Fax: 314-654-1251

Samples on: ☒ Ice ☐ Blue Ice ☐ No Ice 5.8 °C
Preserved In: ☐ Lab ☒ Field FOR LAB USE ONLY
Lab Notes:
Comments: Teklab Inc. Counter Pick Up

- Are these samples known to be involved in litigation? If yes, a surcharge will apply. ☐ Yes ☒ No
- Are these samples known to be hazardous? ☐ Yes ☒ No
- Are there any required reporting limits to be met on the requested analysis? If yes, please provide limits in comment section. ☐ Yes ☐ No

Project Name / Number: Iothalmic Acid Soln.
Sample Collector's Name:
Results Requested: ☒ Standard ☐ 1-2 Day (100% Surcharge) ☐ Other_____ ☐ 3 Day (50% Surcharge)
Billing Instructions:

Lab Use Only	Sample Identification	Date/Time Sampled	# and Type of Containers: UNPRES	HNO_3	NaOH	H_2SO_4	HCL	MeOH	$NaHSO_4$	Other	MATRIX: Water	Drinking Water	Soil	Sludge	Sp. Waste	INDICATE ANALYSIS REQUESTED: TSS	pH	COD
12021022-01	Iothalmic Acid soln.	02-23-12/0900	2			1										X	X	X
			1															

Relinquished By	Date / Time	Received By	Date / Time
Amber Crouch	2/23/12 1250	[signature]	2/23/12 1250
[signature]	2/23/12 1342	Stephanie Haynes	2/23/12 13:42

The individual signing this agreement on behalf of client acknowledges that he/she has read and understands the terms and conditions of this agreement, on the reverse side, and that he/she has the authority to sign on behalf of client.

WHITE & YELLOW – LAB PINK – SAMPLER'S COPY

MSDS Material Safety Data Sheet

From: Mallinckrodt Inc.
675 McDonnell Blvd.
St. Louis, MO 63042

MALLINCKRODT

24 Hour Emergency Telephone: 314-654-1600
CHEMTREC: 1-800-424-9300
National Response in Canada
CANUTEC: 613-996-6666
Outside U.S. And Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

IOTHALAMIC ACID

1. Product Identification

Synonyms: 5-Acetamido-2,4,6-triiodo-N-methylisophthalamic acid; 3-(acetylamino)-2,4,6-triiodo-5-[(methylamino)carbonyl]-ben zoic acid
CAS No.: 2276-90-6
Molecular Weight: 613.92
Chemical Formula: C11H9O4N2I3
Product Codes: 1083, 1183

Not scanned

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Iothalamic Acid	2276-90-6	100%	Yes

3. Hazards Identification

Emergency Overview

As part of good industrial and personal hygiene and safety procedure, avoid all unnecessary exposure to the chemical substance and ensure prompt removal from skin, eyes and clothing.

Potential Health Effects

Inhalation:
Can cause coughing, sneezing and possible breathing difficulty if inhaled in large amounts.
Ingestion:
Information on ingestion toxicity of the acid is limited but is believed to be low (sodium salt is an intravenous x-ray contrast medium). Large amounts may cause moderate gastrointestinal distress through digestive disassociation of the compound, so normal precautions against ingestion should be observed.
Skin Contact:
No adverse effects expected.
Eye Contact:
No adverse effects expected but dust may cause mechanical irritation.

Chronic Exposure:
No information found.
Aggravation of Pre-existing Conditions:
No adverse health effects expected.

4. First Aid Measures

Inhalation:
Remove to fresh air. Get medical attention for any breathing difficulty.
Ingestion:
If large amounts were swallowed, give water to drink and get medical advice.
Skin Contact:
Wash exposed area with soap and water. Get medical advice if irritation develops.
Eye Contact:
Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

5. Fire Fighting Measures

Fire:
Not considered to be a fire hazard.
Explosion:
No information found.
Fire Extinguishing Media:
Dry chemical, foam or carbon dioxide.
Special Information:
In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Sweep up and containerize for reclamation or disposal. Vacuuming or wet sweeping may be used to avoid dust dispersal.

7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:
None established.
Ventilation System:
In general, dilution ventilation is a satisfactory health hazard control for this substance. However, if conditions of use create discomfort to the worker, a local exhaust system should be considered.
Personal Respirators (NIOSH Approved):
For conditions of use where exposure to the dust or mist is apparent, a half-face dust/mist respirator may be worn. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.
Skin Protection:
Gloves and lab coat, apron or coveralls.

Eye Protection:
Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:
White powder.
Odor:
Odorless.
Solubility:
Insoluble in water.
Density:
ca. 1.
pH:
No information found.
% Volatiles by volume @ 21C (70F):
No information found.
Boiling Point:
Not applicable.
Melting Point:
ca. 285C (ca. 545F)
Vapor Density (Air=1):
No information found.
Vapor Pressure (mm Hg):
No information found.
Evaporation Rate (BuAc=1):
No information found.

10. Stability and Reactivity

Stability:
Stable under ordinary conditions of use and storage.
Hazardous Decomposition Products:
Nitrogen oxides, oxides of carbon as well as ionic or oxidized halogen.
Hazardous Polymerization:
Will not occur.
Incompatibilities:
Strong oxidizers.
Conditions to Avoid:
No information found.

11. Toxicological Information

No LD50/LC50 information found relating to normal routes of occupational exposure.

--------\Cancer Lists\----------

Ingredient	---NTP Carcinogen--- Known	Anticipated	IARC Category
Iothalamic Acid (2276-90-6)	No	No	None

12. Ecological Information

Environmental Fate:
No information found.
Environmental Toxicity:
No information found.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Not regulated.

15. Regulatory Information

--------\Chemical Inventory Status - Part 1\--------

Ingredient	TSCA	EC	Japan	Australia
Iothalamic Acid (2276-90-6)	Exempt	Yes	Yes	Yes

--------\Chemical Inventory Status - Part 2\--------

Ingredient	Korea	--Canada-- DSL	NDSL	Phil.
Iothalamic Acid (2276-90-6)	No	Yes	No	No

--------\Federal, State & International Regulations - Part 1\--------

Ingredient	-SARA 302- RQ	TPQ	------SARA 313------ List	Chemical Catg.
Iothalamic Acid (2276-90-6)	No	No	No	No

--------\Federal, State & International Regulations - Part 2\--------

Ingredient	CERCLA	-RCRA- 261.33	-TSCA- 8(d)
Iothalamic Acid (2276-90-6)	No	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: No Chronic: No Fire: No Pressure: No
Reactivity: No (Pure / Solid)

Australian Hazchem Code: None allocated.
Poison Schedule: None allocated.
WHMIS:
This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and

the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: **0** Flammability: **0** Reactivity: **0**
Label Hazard Warning:
As part of good industrial and personal hygiene and safety procedure, avoid all unnecessary exposure to the chemical substance and ensure prompt removal from skin, eyes and clothing.
Label Precautions:
None.
Label First Aid:
Not applicable.
Product Use:
Bulk Drug. Contrast media. Intended for FDA regulated use or Research and Development only.
Revision Information:
MSDS Section(s) changed since last revision of document include: 5.
Disclaimer:
****
Mallinckrodt provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose. MALLINCKRODT MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE INFORMATION SET FORTH HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS. ACCORDINGLY, MALLINCKRODT WILL NOT BE RESPONSIBLE FOR DAMAGES RESULTING FROM USE OF OR RELIANCE UPON THIS INFORMATION.
****
Prepared by: Environmental Health & Safety
Phone Number: (314) 654-1600 (U.S.A.)

Metropolitan St. Louis Sewer District
Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

February 27, 2012

Amber Crouch
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Re: Wastewater User Charge Billing for Special Discharge

Dear Ms. Crouch:

This is to advise you of the wastewater user charges applicable to an on-site special discharge approved in our letter to you dated February 22, 2012. That charge was determined using the ethylene glycol concentration in your application for special discharge. The discharge date and quantity are from information submitted by you in an email dated February 27, 2012.

Our Finance Department will bill you by invoice for the charges described below. These charges are based on the rates in MSD Wastewater User Charge Ordinance 13021. For your convenience, using the volume and strength of the waste discharged, the ordinance rates have been converted to a per-gallon basis.

PARTY TO BILL: Addressee

BILLING IS FOR: On-Site Special Discharge

DISCHARGE PERIOD: February 24, 2012

SOURCE OF WASTE: 40% ethylene glycol solution from the chiller system located west of the boiler house of the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri.

Discharge Period	Billing Item	Quantity	Units	Rate	Charge
2/24/12	Extra-Strength Surcharge	375	Gal	$0.52	$195.00
Total:	------	**375**	Gal	-----	**$195.00**

Please do not pay until you receive our invoice. If you have any questions, please contact me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

pc Chris Verplancke - Finance Dept.
Becky Bartholomew – Finance Dept.
Laura Joiner – Finance Dept.
Doug Mendoza
Brian Gibson
File: IU; MALLINCKRODT INC [2112059600], 3600 North Second Street

Steve Grace

From: Crouch, Amber [Amber.Crouch@Covidien.com]
Sent: Monday, February 27, 2012 2:43 PM
To: Steve Grace
Subject: Ethylene Glycol Special Discharge Permit Follow Up - Mallinckrodt

Steve,

The following information is being provided in regards to the Special Discharge permit issued by MSD dated February 22, 2012 for Ethylene Glycol and Water from the Boiler house rental chiller at the Mallinckrodt, St. Louis Plant.

Date discharged: February 24, 2012
Start/End Time: start 0900; end 1130
Volume: 375 gallons

Please let me know if you have any questions or need additional information.

Amber Crouch
Senior HSE Engineer
Covidien
3600 North Second Street
St. Louis, MO 63147
USA

(314) 654-0127 office
(314) 253-2213 pager
(314) 654-1251 fax

www.covidien.com

This information may be confidential and/or privileged. Use of this information by anyone other than the intended recipient is prohibited. If you receive this in error, please inform the sender and remove any record of this message.

Metropolitan St. Louis Sewer District
Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

February 27, 2012

Julie Summers
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Re: Wastewater User Charge Billing for Special Discharge

Dear Ms. Summers:

This is to advise you of the wastewater user charges applicable to an on-site special discharge approved in our original letter to you dated January 21, 2011, and extension dated January 13, 2012. The discharge dates and quantities are from information submitted by you in an email dated February 27, 2012.

Our Finance Department will bill you by invoice for the charges described below. These charges are based on the rates in MSD Wastewater User Charge Ordinance 13021.

PARTY TO BILL: Addressee

BILLING IS FOR: On-Site Special Discharge

DISCHARGE PERIOD: January 1 – 31, 2012

SOURCE OF WASTE: 36 batches of treated rainwater and groundwater from the remediation of the Columbium-Tantalum (CT) decommissioning project at the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri.

Discharge Period	Billing Item	Quantity	Units	Rate	Charge
December 6-31, 2011	Volume	1,888	CcF	$2.11	$3,983.68
Totals:	------	1,888	Gal	-----	$3,983.68

Please do not pay until you receive our invoice. If you have any questions, please contact me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

pc Chris Verplancke - Finance Dept.
Becky Bartholomew – Finance Dept.
Laura Joiner – Finance Dept.
Doug Mendoza
Brian Gibson

File: IU, MALLINCKRODT INC [2112059600], 3600 North Second Street, St. Louis, Missouri

Metropolitan St. Louis Sewer District

Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

February 24, 2012

Keith Edwards
MALLINCKRODT LLC
2703 Wagner Place
Maryland Heights, MO 63043

Dear Mr. Edwards:

We have reviewed your application dated August 15, 2011 requesting approval to discharge 1,100 gallons of wastewater to the Metropolitan St. Louis Sewer District for treatment. The wastewater is pharmaceutical production byproduct material from chemistry lab processes at the Mallinckrodt facility located at 2703 Wagner Place, Maryland Heights, Missouri. Information provided on the application indicates the waste stream in question is stored in 20 55-gallon drums, and identified as follows:

Acids + Organics – one drum
Ammonium Hydroxide + Organics – 15 drums
Sodium Hydroxide + Hydrazine – three drums
Thorium Waste – one drum

Additional information provided on the application indicates each drum will be metered separately into a 2,200 gallon holding tank containing the facility's wastewater. Information provided on the application indicates each 2,200 gallon "batch" of combined wastewater will contain only one drum of the waste stream in question. After mixing completely, the wastewater will be discharged through sampling point 006. In a letter from the District dated June 24, 2011, it was verified that this facility no longer performs operations subject to federal categorical pretreatment standards as outlined in 40 CFR 439.

Based on the information you provided, this wastewater meets MSD Ordinance 12559 standards and is approved for discharge into a sanitary sewer on site. Please note the waste stream associated with the Acids + Organics, Ammonium Hydroxide + Organics, and Sodium Hydroxide + Hydrazine drums are subject to neutralization to pH level of 5.5 to 11.5 in accordance with Ordinance 12559. This approval is valid for 30 days from the date of this letter.

Based on the analytical results, the waste stream associated with Ammonium Hydroxide + Organics exhibits an elevated copper concentration. However, when this wastewater is mixed with the facility's normal discharge at a rate of 120 gallons per hour or less, the concentration of copper is the total flow is expected to be below the MSD ordinance limit. This assumes there is no appreciable contribution of copper from other wastewater sources within the facility. Provided there are no other significant sources of copper, which could cause a violation of the ordinance limit for the total wastewater flow, this wastewater is approved for discharge into a sanitary sewer on site.

Based on the analytical results, the waste stream associated with Sodium Hydroxide + Organics exhibits hydrazine concentrations that exceed the screening levels that indicate a potential for generation of gases, fumes, or vapors at toxic levels in the sewer. However, when this wastewater is mixed with the facility's normal discharge at a rate 230 gallons per hour or less, the concentration of hydrazine in the total flow is expected to be below the MSD prohibition limit. This assumes there are no appreciable contributions of hydrazine from other wastewater sources within the facility. Provided there are no other significant sources of hydrazine, which could cause a violation of the ordinance limit for the total wastewater flow, this wastewater is approved for discharge into a sanitary sewer on site.

You must be certain the waste is discharged into a sanitary or combined sewer inlet only. This letter does not authorize any discharge to a separate storm sewer, or to any watercourse, as any such discharge would be in violation of state and federal laws. **Please notify me at the number below when the discharge is to commence, and please ensure the onsite personnel discharging the wastewater in question are provided with a copy of the letter.**

This discharge has been approved based upon the information and sample analysis you provided and is subject to the conditions stated above. This approval may be revoked by the by the District at any time if any of the information is found to be incorrect, or if the conditions of this approval are violated. Also, if the discharge causes any operational or maintenance problem within the District's collection or treatment system, or results in violations of any conditions of the District's NPDES permit, Mallinckrodt LLC will be considered responsible for damages.

If you have any questions, please call me at 314-436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

pc: Brian Gibson
Doug Mendoza

File: IU MALLINCKRODT LLC (0611-8505-00) 2703 WAGNER PLACE MARYLAND HEIGHTS

C1A

SD EVALUATION CHECKLIST - ON SITE

APPLICATION INFORMATION

Source Name: Mallinckrodt LLC Evaluated by: SMG

Premise Address: 2703 Wagner Place Date: 2/24/12

Send approval letter to applicant

Application Dated: 8/15/11 Received: 8/17/11 All Requested Info. Received: 2/23/12

SOURCE FILING/DESCRIPTION

1 - Source in PIMS? (Y) N
2 - If No, on IU Cross-Ref list? * Y / N
3 - If No, MSD Account # from E-CIS? Y / N
4 - If none, on "Source" list (pre-IMS)? ** Y / N
5 - If No, assigned SOUR# from PIMS.

* o:\costrecovery\cross reference xls file
** o:\costrecovery\sourlist xls file

SOURCE TYPE (circle): (IU) / Dead IU / SD

INDUSTRY ID: 06118505-00

Sample Point: No. Assigned: 804 Description: pharmaceutical production byproduct matl. from chemistry lab process

Normal WW flow from premise? N/A _____ ccf/month, _____ GPD, 938 GPH. @ SP006

REGULATORY STATUS

Is waste a Hazardous Waste? (N) / Y
Categorical standards apply? (N) / Y per 6/24/11 letter
Contain PCB/ asbestos/ radioactive/ dioxin/ used oil? (N) / Y
Regulatory Agency Oversight? (N) / Y

DISCHARGE CONSIDERATIONS At MSD's connection:

Ordinance Limits (12559, p32) exceeded? N / (Y) Cu concs. exceed 12559 limits; discharge rate imposed (120 gph)
Ordinance other limits exceeded (dye, flash pt <140F, temp >140F, obstruction, nuisance foaming/odor, corrosion causing): (N) / Y
Water Quality Standard exceeded? (N) / Y
Fumes in sewer exceed PEL/TLV limits? N / (Y) FI for hydrazine exceeded; discharge rate imposed (230 gph)
Vapors in sewer exceed 10% of LEL? (N) / Y

RECOMMENDATION: (APPROVE) / DENY (cc WWTP Mgr for timed discharge)

APPROVAL CONDITIONS:

Timed Discharge (COD/BOD/WQ/foam): N / (Y) Limit = 120 gph for Cu, 230 gph for hydrazine gal/hour
Require Treatment before Discharge? N / (Y) require pH neutralization before discharge
Laboratory analysis fee due? (N) / Y $_____
SMR required? (N) / Y Frequency/analysis: _____
SMR log: (N/A) / Remediation.xls / Nonremediation.xls
Volume Billing applies (water unmetered or credited)? (N) / Y
Bill High Strength? (N) / Y Yes, If use >60,000 gal/month water ___and, > norm WW strgth
Surcharge calculation attached: N/A / (N) / Y
Expiration log updated: (N/A) / N / Y

O:\CostRecovery\Special Discharge\C1a.Checklist.doc

Metropolitan St. Louis Sewer District
2350 Market Street
St. Louis, MO 63103

APPLICATION FOR SPECIAL DISCHARGE APPROVAL

I. WASTEWATER SOURCE IDENTIFICATION:

Site Name: Mallinckrodt LLC
Premise Address: 2703 Wagner Place
City: Maryland Heights State: MO Zip: 63043
Owner: Mallinckrodt LLC
Contact Person: Keith Edwards
Title: Environmental Compliance Supervisor
Phone: 314-654-7494 Fax: 314-654-7588

II. APPLICANT (mailing information):

Applicant Name: Keith Edwards
Title: Environmental Compliance Supervisor
Company Name: Mallinckrodt LLC
Mailing Address: 2703 Wagner Place
City: Maryland Heights State: MO Zip: 63043
Phone: 314-654-7494 Fax: 314-654-7588

III. A. MATERIAL TO BE DISCHARGED (check all applicable boxes):

1. Wastewater description/location: Process generated
2. Process/activity generating wastewater: Manufacturing chemistry process

Additional info. provided in 2/23/12 email from customer SMG

3. Physical and chemical composition: List all constituents, and known or potentially present regulated contaminants below.
   ☐ See separate listing enclosed, and/or ☒ See analytical results enclosed, and/or ☐ Material Safety Data Sheet enclosed.

DESCRIPTION	RANGE	UNIT

DESCRIPTION *(continued)*	RANGE	UNIT

4. Is this wastewater from a process subject to EPA's categorical standards in 40 CFR Subchapter N? ☐ Yes ☒ No
   a. If yes, the applicable standards are in: 40 CFR Part _____, Subpart _____ ☐ Existing source ☐ New source
5. Does this wastewater contain polychlorinated biphenyls, asbestos or radioactive material? ☒ Yes ☐ No
   a. If yes, describe: Radioactive isotopes and activities attached. Isotopes generated from cyclotron operations
6. Representative sample: ☒ Laboratory results attached, and/or ☐ Sample provided (1/2 gallon minimum, clear container)
   a. Sample collection point/location: _____ Collection method: _____
   b. Sampler's name/Co.: _____ Sample date/time: _____
   c. Attach chain of custody as available
7. Discharge will occur over the following time period: ☐ < 30 days ☐ ≥ Two years ☒ Other: < 6 months
   a. Expected total volume of wastewater to be discharged over the time period above: 1100 Gallons
   b. Proposed discharge volume: 55 Gallons, at a frequency of: ☐ One time ☐ Daily ☒ Weekly ☐ Monthly ☐ Once/three months ☐ Once/six months ☐ Other: _____
8. Pretreatment of wastewater prior to discharge: ☒ None ☐ Yes, describe: _____
   a. If yes, attach site plan, pretreatment system schematic, and design specifications.
9. Wastewater from a remediation project under: ☐ Superfund/CERCLA ☐ RCRA ☐ Voluntary program ☐ UST ☒ Not applicable
   a. If from a remediation project, briefly describe the past and present utilization of the property: _____

III.B. MATERIAL FROM UNDERGROUND STORAGE TANK SOURCE

☒ **Not applicable (go to Section IV)**

Please answer the following questions if you are requesting to discharge wastewater associated with an underground storage tank system.

1. a. Wastewater from: ☐ Inside UST(s) ☐ UST system pit ☐ Excavation outside UST system pit ☐ Monitoring well ☐ Groundwater remediation system

   b. UST project involves wastewater from: ☐ UST(s) closed in place ☐ UST(s) removed ☐ Remediation ☐ Upgrade ☐ Maintenance activities ☐ Well monitoring ☐ Other, explain: _____

   c. If wastewater is from a closure project, how long has UST(s) been out of service: _____ years

2. a. State assigned UST site identification number: _____ ☐ Not applicable

   b. Number of USTs affected: _____ ☐ Unknown

   c. For the UST(s) involved, their state identification number(s): _____ ☐ Not applicable

   d. Service Station Identification Number, as applicable: _____

3. Tank contents/former contents: ☐ Gasoline ☐ #2 diesel ☐ Used oil ☐ Unknown ☐ Other: _____

IV. DISCHARGE LOCATION

1. ☒ On-site. Describe proposed point of entry to sewer and the discharge rate (must be a sanitary or combined sewer): Sanitary See additional information Below Note: Range of discharge must not surcharge sewer line.

2. ☐ Haul to MSD Bissell Point Hauled Waste Receiving Station at 10 E. Grand, St. Louis, MO.

   a. Transporters Name: _____ and MSD Hauler ID Number: _____

   b. Hazardous Waste Certification:

   For wastewater which is hauled to MSD's Bissell Point Hauled Waste Receiving Station, I hereby certify that to the best of my knowledge and belief, the above hauled waste is not classified as a RCRA "hazardous waste" as defined by the MDNR in 10 CSR 25 or USEPA in 40 CFR Part 261.

   Applicant Name (print): _____

   Signature: _____ **Date:** _____

ADDITIONAL INFORMATION:

55 gal drums will be metered in to the 2200 gal storage tanks at a rate of .25-1 gal/min. Only 1 55 gal drum will be pumped into each 2200 gal tank. The 2200 gal tank will be sampled for radioactivity and released to the sanitary sewer.

V. APPLICANT SIGNATURE AND CERTIFICATION

This application must be signed by the applicant: either the source contact, or a contractor or agent directly responsible for site activities.

I hereby certify that I am directly responsible for activities at the site regarding the wastewater to be discharged, and to the best of my knowledge and belief, based on appropriate inquiry, the information in this application is true, complete, and accurate. The samples or analyses submitted are representative of the materials to be discharged. If granted approval to discharge, I agree to abide by the MSD Ordinances, and all applicable federal, state and local regulations. I agree to pay the costs of any pre-approval analyses performed by MSD and to pay any applicable disposal charges for the volume and strength of the wastes discharged.

Applicant Name (print): KEITH A. EDWARDS / Dale Eyman 15 AUG 11

Signature: Keith A. Edwards / Dale Eyman **Date:** 08 AUG 11

FOR MSD USE ONLY:

File Name: Mallinckrodt LLC ID No. 06118505-00 Sample Point No. 804

Steve Grace

From: Winch, Brian W [Brian.Winch@Covidien.com]
Sent: Thursday, February 23, 2012 3:29 PM
To: Steve Grace
Subject: RE: Covidien/Mallinckrodt

Steve,

No, the manufacturing process which generated these particular wastewaters is still on-going at our facility. It is a pharmaceutical production byproduct material form a chemistry lab process.

Thanks

Brian Winch

From: Steve Grace [sgrace@stlmsd.com]
Sent: Thursday, February 23, 2012 3:18 PM
To: Winch, Brian W
Subject: RE: Covidien/Mallinckrodt

Hello Brian,

Can you refresh my memory regarding this waste stream? Do these drums contain wastewater from manufacturing processes that are no longer occurring at your facility? The application only states "process generated" from "manufacturing chemistry process".

Thanks,
Steve Grace

From: Winch, Brian W [mailto:Brian.Winch@Covidien.com]
Sent: Wednesday, February 01, 2012 8:55 AM
To: Steve Grace
Subject: Covidien/Mallinckrodt

Steve,

I was wanting to check-in and see if you had any further questions or needed and further information in regards to our special discharge permit? If you do please do not hesitate to contact me.

Thank You

Brian Winch
Safety and Environmental Coordinator
Covidien
Maryland Heights, MO 63043
Desk: 314-654-7628
Cell: 314-985-9392

This information may be confidential and/or privileged. Use of this information by anyone other than the intended recipient is prohibited. If you receive this in error, please inform the sender and remove any record of this message.

Metropolitan St. Louis Sewer District

Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

June 24, 2011

Mitzi Pennington
Site Director
MALLINCKRODT INC
2703 Wagner Place
Maryland Heights, MO 63043

Re: Discharge Permit No: 0611850500 - 2
For premise at: 2703 Wagner Place
Maryland Heights, MO 63043

Dear Ms. Pennington:

The Metropolitan St. Louis Sewer District has terminated the Industrial Wastewater Discharge Permit for the above premise, as allowed under Ordinance 12559, Article VI, Section 3.B.2. The permit effective date was January 01, 2008.

On June 13, 2011, an MSD inspector verified that this facility does not perform operations subject to federal categorical standards (including 40 CFR 439).

Therefore, this premise no longer meets the classification as a Significant Industrial User under federal regulation 40 CFR 403.3(t). MSD issues permits only to SIUs.

You must continue to provide any reports required by MSD under Ordinance 12559, Article VIII, including the quarterly Industrial User Radioactive Materials Discharge Report. MSD may determine in the future that a new permit is required, based on these reports, or based on information obtained through other reports, samplings, or investigations. You then must submit an application for a new permit.

We appreciate your cooperation and support in helping us to comply with federal regulations. Please contact me at 314.436.8756, if you have any questions.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

SM Rehmer

Scott M. Rehmer
Assistant Engineer

cc: Doug Mendoza
Martin Blecha

On-Site Special Discharge Flow Rate Calculator

This calculator does not consider attributable concentrations from normal flow

1 GENERAL INFORMATION:

Date:	11/17/11
Calculated by:	Steve Grace
Source name:	MALLINCKRODT LLC [0611850500]
Waste material:	SP804
Discharge volume:	2,200 gallons

2 PLANT DATA (as needed): FY07

Treatment area: Missouri River

	Flow (MGD)
Bissell	119
Coldwater	23
Fenton	5
Grand Glaize	16
Lemay	122
Lower Meramec	10
Missouri River	28

3 MINIMUM REQUIRED FLOW RATE:

SD Concentration =	21.6	mg/L	
SD Limit =	2.7	mg/L	Define the SD limit here = Ord Onsite Limit - Copper
Normal Flow Rate =	938	GPH	Use normal flow, RF, upstream flow and plant flow, as applicable
Safety Factor =	10%	default is 10%, apply more as neccessary	
SD Flow Rate =	**121**	**GPH**	
SD Flow Rate =	**2**	**GPM**	
Total discharge time =	**18**	**Hours**	

Comments:

Flow Rate at SP006 used for hourly Normal Flow Rate above. Smg

On-Site Special Discharge Flow Rate Calculator

This calculator does not consider attributable concentrations from normal flow

1 GENERAL INFORMATION:

Date:	11/17/11
Calculated by:	Steve Grace
Source name:	MALLINCKRODT LLC [0611850500]
Waste material:	SP804
Discharge volume:	2,200 gallons

2 PLANT DATA (as needed): FY07

Treatment area: Missouri River

	Flow (MGD)
Bissell	119
Coldwater	23
Fenton	5
Grand Glaize	16
Lemay	122
Lower Meramec	10
Missouri River	28

3 MINIMUM REQUIRED FLOW RATE:

SD Concentration =	245	mg/L	
SD Limit =	52.12	mg/L	Define the SD limit here = Ord Prohibition - FT (Hydrazine)
Normal Flow Rate =	938	GPH	Use normal flow, RF, upstream flow and plant flow, as applicable
Safety Factor =	10%	default is 10%, apply more as neccessary	
SD Flow Rate =	**228**	**GPH**	
SD Flow Rate =	**4**	**GPM**	
Total discharge time =	**10**	**Hours**	

Comments:

Flow Rate at SP006 used for hourly Normal Flow Rate above. Smg

All Data in Units of µg/L unless otherwise specified.

Waste Category	Drum No.	pH	Flash Point (°F)	Silver	Arsenic	Barium	Cadmium	Chromium	Copper	Sodium	Lead	Selenium	Mercury	VOCs		SVOCs	Tot CN	Sulfide	Bromide	Chloride	Fluoride	Nitrite N	Nitrate N	Sulfate	Iodide	Ammonia N	Iso Th	Hydrazine
Acids + Organics	MW-21	0.3 (1)	> 140	ND	ND	196	426	60.1	14.3 mg/L	560 mg/L	4.03 mg/L (3)	ND		Chloromethane ~~Methylene Chloride~~ Bromodichloromethane Bromoform	110 (8) 250 120 (9) 8900 (6)	ND	ND	ND	2040 mg/L	1.77%	ND	ND	2.67%	1560 mg/L	ND	NA	NA	NA
Ammonium Hydroxide + Organics	NW-02	11.0	> 140	ND	ND	ND	ND	ND	266 mg/L	ND	274	ND	ND	Acetone	290	ND	428	ND	ND	160	ND	30.7	3.60%	1140 mg/L	2320 mg/L	6.75%	NA	NA
	MW-11	10.0	> 140	ND	ND	167	248	48	46.9 mg/L	44.8 mg/L	1.51 mg/L	ND	ND	ND		ND	ND	ND	1210 mg/L	895 mg/L	ND	22	3.32%	290 mg/L	79.8 mg/L	4.88%	NA	NA
	MW-26	11.0	> 140	ND	ND	160	ND	35.3	18.5 mg/L	ND	146	ND	4.4	Acetone Methylene Chloride Benzene	240 5.8 4.3	ND	ND	ND	ND	213 mg/L	ND	ND	3.99%	174 mg/ L	ND	6.26%	NA	NA
	MW-07	12.0	> 140	ND	ND	ND	ND	ND	464 mg/L	ND	464	250	ND	Acetone	470	ND	ND	368 mg/L	ND	105 mg/L	ND	40.3 mg/L	2.15%	1990 mg/L	5130 mg/L	6.71%	NA	NA
	MW-09	11.0	> 140	ND	ND	ND	ND	ND	434 mg/L	ND	ND	ND	ND	ND		ND	ND	ND	ND	40.5 mg/L	ND	15.8 mg/L	0.77%	3800 mg/L	7110 mg/L	7.78%	NA	NA
	MW-19A	12.0	> 140	ND	ND	ND	ND	ND	853 mg/L	ND	87.5	322	ND	Acetone	120	ND	ND	ND	ND	60.1 mg/L	ND	51.4 mg/L	0.93%	4080 mg/L	7650 mg/L	7.10%	NA	NA
	MW-12	12.0	> 140	ND	ND	ND	ND	ND	863 mg/L (2)	ND	217	ND	ND	Bromomethane Acetone	12 98	ND ND	ND	ND	ND	50.5 mg/L	ND	29.9 mg/L	0.86%	4330 mg/L	8360 mg/L	6.49%	NA	NA
	MW-13	12.0	> 140	ND	ND	ND	ND	ND	790 mg/L	ND	ND	ND	ND	ND		ND	ND	ND	ND	50.7 mg/L	ND	4.2 mg/L	0.90%	3990 mg/L	7100 mg/L	7.30%	NA	NA
	MW-14	12.0	> 140	ND	ND	ND	ND	ND	79.9 mg/L	5450 mg/L	84.5	258	ND	Benzene	2.6	ND	ND	ND	ND	25.0 mg/L	ND	13.3 mg/L	0.41%	4410 mg/L	7660 mg/L	7.12%	NA	NA
	MW-17	12.0	> 140	ND	ND	ND	ND	266	664 mg/L	3810 mg/L	ND	290	ND	Acetone	100	ND	ND	ND	ND	66.7 mg/L	ND	24.6 mg/L	0.79%	5390 mg/L	8660 mg/L	7.22%	NA	NA
	MW-23	12.0	> 140	ND	ND	ND	53	ND	483 mg/L	ND	ND	ND	ND	Acetone	93	ND	ND	ND	ND	46.6 mg/L	ND	14.6 mg/L	0.92%	4850 mg/L	7250 mg/L	6.97%	NA	NA
	MW-29	12.0	> 140	ND	ND	ND	ND	ND	276 mg/L	17.2 mg/L	71.0	411	ND	ND		ND	ND	616 mg/L	ND	40.2 mg/L	ND	NA	0.57%	4150 mg/L	8030 mg/L	6.76%	NA	NA
	MW-30	12.0	> 140	ND	ND	ND	ND	ND	447 mg/	ND	72.5	390	ND	ND		ND	ND	608 mg/L	ND	40.4 mg/L	ND	NA	0.51%	4660 mg/L	9700 mg/L	5.56%	NA	NA
	MW-32	12.0	> 140	ND	200	ND	ND	ND	183 mg/L	233 mg/L	128	ND	ND	Acetone	170	ND	381	600 mg/L	ND	36.7 mg/L	ND	NA	0.46%	4260 mg/L	7600 mg/L	6.38%	NA	NA
	MW-33	11.0	> 140	ND	ND	ND	ND	ND	341 mg/L	80.7 mg/L	71.0	792 (4)	ND	Acetone	91	ND	ND	608 mg/L	ND	57.8 mg/L	ND	NA	0.68%	4450 mg/L	8350 mg/L	6.81%	NA	NA
Sodium Hydroxide + Hydrazine	MW-06	11.0	> 140	ND	ND	ND	ND	ND	ND	2.74%	110	ND	ND	Chloromethane	10	ND	788	656 mg/L	89.4 mg/L	103 mg/L	ND	3.9 mg/L	14.9 mg/L	7250 mg/L	964 mg/L	NA	NA	7100 mg/L
	MW-16	12.0	> 140	70.4	ND	15.2	6.8	26.2	61.6	3.22%	1120	14.2	ND	Methylene Chloride	12	ND	ND	432 mg/L	ND	37.1 mg/L	ND	1.2 mg/L	5.5 mg/L	33	98.8 mg/L	NA	NA	9800 mg/L
	MW-24	11.0	> 140	ND	ND	ND	ND	ND	ND	4.16%	244	ND	ND	Chloromethane Bromomethane Acetone Methylene Chloride	4.9 7.1 48 12	ND	1170	1880 mg/L	ND	19.4 mg/L	ND	NA	2.1 mg/L	1.67%	ND	NA	NA	7900 mg/L
Thorium Waste	MW-03	7.2	> 140	84.2	ND	ND	40.7	ND	28.4	288 mg/L	ND	ND	ND	ND		ND	ND	120 mg/L	ND	327 mg/L	ND	ND	44.7 mg/L	ND	ND	NA	Th-232 5.64 nCi/L Th-230 1.01 nCi/L Th-228 2.97 nCi/L	NA

52.1 (5)

9.62 mg/L

(4) 0.002 (0.975) = 0.002
0.792 (0.025) = 0.02
0.022 O.K.

(8) 0.01 (0.975) = 0.01
0.11 (0.025) = 0.003
0.013 O.K.

0 9.41 @ 2145 = (0.975) = 9.18
0.3 @ 55 = (0.025) = 0.0075
9.19 O.K.

(5) 9800 (0.025) = 245

(2) 0.03 @ 2145 = (0.975) = 0.029
863 @ 55 = (0.025) = 21.6
21.6

(6) 0.01 (0.975) = 0.01
8.9 (0.025) = 0.22
0.23 O.K.

(3) 0.05 (0.975) = 0.049
4.03 (0.025) = 0.101
0.15 O.K.

(7) 0.01 (0.975) = 0.01
0.12 (0.025) = 0.003
0.013 O.K.

Steve Grace

From: Winch, Brian W [Brian.Winch@Covidien.com]
Sent: Tuesday, January 03, 2012 12:46 PM
To: Steve Grace
Cc: Edwards, Keith A
Subject: RE: Covidien (Mallinckrodt) Maryland Heights

Steve,

I apologize for the delayed response things have been sort of hectic around here with the holidays. After thumbing through the full report it does not appear that a standard testing method was used for hydrazine analysis, but instead a laboratory Standard Operating Procedure was used. The report shows the detection limits as 500,000 µg/L. If you have any further questions or concerns please do not hesitate to contact us.

Thanks

Brian Winch

From: Steve Grace [mailto:sgrace@stlmsd.com]
Sent: Thursday, November 17, 2011 12:04 PM
To: Edwards, Keith A
Subject: RE: Covidien (Mallinckrodt) Maryland Heights

Hello Keith,

One last (hopefully, lol) follow-up question. What approved laboratory analytical method was used for the hydrazine analysis? In addition, what is the method detection limit for the analytical method used for the hydrazine analysis?

Thank you,
Steve Grace

From: Edwards, Keith A [mailto:Keith.Edwards@Covidien.com]
Sent: Wednesday, November 16, 2011 2:40 PM
To: Steve Grace; Winch, Brian W
Subject: RE: Covidien (Mallinckrodt) Maryland Heights

Steve, there are actually 8 compartments that hold the 2200 gallons each and are located in building 500A. The MSD sampling point is #6 located directly outside of the building on the west side.

Please let us know of any other assistance you need.

Thank you for your help.

Keith.

From: Steve Grace [mailto:sgrace@stlmsd.com]
Sent: Wednesday, November 16, 2011 11:53 AM
To: Winch, Brian W
Cc: Edwards, Keith A
Subject: RE: Covidien (Mallinckrodt) Maryland Heights

Hello,

I have a follow-up question to our conference call last week. Where on the facility property is this 2,200 gallon storage tank located? I'm trying to determine where the nearest MSD sample point (SP) is located in relation to this storage tank.

Thank you,
Steve Grace

From: Winch, Brian W [mailto:Brian.Winch@Covidien.com]
Sent: Wednesday, November 16, 2011 3:50 AM
To: Steve Grace
Subject: RE: Covidien (Mallinckrodt) Maryland Heights

Steve,

Please try this version, I saved it in an older version format. Please let me know if there is any additional information or issues I can help with.

Thanks

Brian Winch

From: Steve Grace [mailto:sgrace@stlmsd.com]
Sent: Tuesday, November 15, 2011 3:58 PM
To: Winch, Brian W
Subject: RE: Covidien (Mallinckrodt) Maryland Heights

Hello Brian,

This spreadsheet is in an Excel format that I don't have here at my company. Would it be possible to resend with an older version of Excel?

Thanks,
Steve Grace

From: Winch, Brian W [mailto:Brian.Winch@Covidien.com]
Sent: Tuesday, November 08, 2011 2:35 PM
To: Steve Grace
Cc: Edwards, Keith A
Subject: Covidien (Mallinckrodt) Maryland Heights
Importance: High

Steve,

Please see the attached spreadsheet, which contains the analytical data from the report we had sent you. All of the drums will have the pH adjusted to within a range of 6-9 prior to discharge. If there is any additional information please do not hesitate to ask.

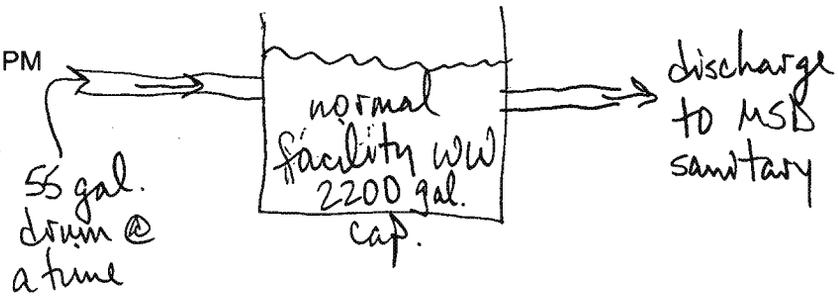
Thanks

Brian Winch

This information may be confidential and/or privileged. Use of this information by anyone other than the intended recipient is prohibited. If you receive this in error, please inform the sender and remove any record of this message.

Steve Grace

From: Steve Grace
Sent: Thursday, August 25, 2011 2:58 PM
To: 'keith.edwards@covidien.com'
Subject: FW: Message from KMBT_C353
Attachments: SKMBT_C35311082513450.pdf



Hello Keith,

I did receive the information you shipped to my attention, thank you. I do have a few questions I'm hoping you can help me with:

1. What exactly is this waste stream? The application simply states "manufacturing chemistry process" and that it's "process generated".
2. It appears that there are ~~30~~ 20 drums (monitoring wells?), and each was sampled for various parameters. If I'm following the information provided correctly, there will be a total of ~~30~~ 20 drums and 1,100 gallons of wastewater. Does each drum contain the same amount of wastewater?
3. You provided analytical results for hydrazine. I'll need to look up what exactly that is.
4. You provided radiochemistry laboratory analytical results for only three of the drums. Are those the only drums containing radioactive wastewater? MW-03, MW-04, MW-25 - isotopic thorium
5. If so, I'm unsure what exactly the attached spreadsheet is in reference too.
6. Under "Additional Information" on the 2nd page of the application, you indicate each drum will be emptied into a 2,200 gal. storage tank. Will this tank in question be empty, or will it already be filled with other wastewater?

Thanks,
Steve Grace

From: reokmbs353@stlmsd.com [mailto:reokmbs353@stlmsd.com]
Sent: Thursday, August 25, 2011 2:45 PM
To: Steve Grace
Subject: Message from KMBT_C353

analytical report from 12/10... samples collected in 11/10 - not representative?
hydrazine is used in some of their onsite processes
each drum has radioactive constituents
→ radioactive constituents per barrel is what's on the spreadsheet, analysis was based on their radioactive isotope screening done onsite
drums that were analyzed for hydrazine were the ones that mostly contained that process wastewater

		gamma		gamma		gamma		gamma		gamma		gamma		gamma		gamma		
		Co-60	µCi/gal	Na-22	µCi/55gal	Zn-65	µCi/55gal	Ag-108m	µCi/55gal	Cd-109	µCi/55gal	Tl-202	µCi/55gal	Co-57	µCi/55gal	Mn-54	µCi/55gal	Comments
MW-02	55	7.45E-06	1.55E+00	4.30E-05	8.95E+00	1.97E-04	4.10E+01	3.08E-07	6.41E-02			3.33E-05	6.93E+00	4.98E-07	1.04E-01			
MW-03	55											6.66E-08	1.39E-02					
MW-06	55			1.47E-07	3.06E-02	2.55E-05	5.31E+00					1.16E-04	2.42E+01					
MW-07	55	1.67E-05	3.48E+00	8.75E-05	1.82E+01	5.75E-04	1.20E+02					9.87E-06	2.05E+00	5.53E-07	1.15E-01			
MW-09	55	1.70E-05	3.54E+00	2.65E-04	5.52E+01	7.11E-03	1.48E+03					8.02E-06	1.67E+00					
MW-11	55	3.09E-06	6.43E-01	5.72E-06	1.19E+00	4.58E-03	9.54E+02			8.35E-02	1.74E+04	1.52E-03	3.16E+02					
MW-12	55	2.56E-05	5.33E+00	2.09E-04	4.35E+01	6.32E-03	1.32E+03					1.56E-05	3.25E+00					
MW-13	55	2.46E-05	5.12E+00	1.02E-04	2.12E+01	3.10E-03	6.45E+02					1.07E-05	2.23E+00					
MW-14	55	3.70E-06	7.70E-01	6.81E-05	1.42E+01	6.84E-03	1.42E+03											
MW-16	55					4.63E-06	9.64E-01	6.25E-07	1.30E-01			9.65E-05	2.01E+01					
MW-17	55	2.08E-05	4.33E+00	1.51E-04	3.14E+01	6.43E-03	1.34E+03					9.68E-06	2.02E+00					
MW-19A	55	2.39E-05	4.98E+00	8.50E-05	1.77E+01	2.41E-03	5.02E+02					9.28E-06	1.93E+00					
MW-21	30	9.92E-06	1.13E+00	5.58E-05	6.34E+00	3.64E-05	4.13E+00	5.35E-05	6.08E+00			4.82E-03	5.47E+02	5.12E-06	5.81E-01			
MW-23	30	1.93E-05	2.19E+00	1.83E-04	2.08E+01	4.79E-03	5.44E+02					8.70E-06	9.88E-01					
MW-24	30					3.65E-04	4.15E+01					4.98E-04	5.66E+01			2.98E-06	3.38E-01	
MW-26	30	1.39E-06	1.58E-01	1.29E-06	1.46E-01	1.89E-04	2.15E+01					4.03E-05	4.58E+00					
MW-29	55	2.36E-05	4.91E+00	2.47E-04	5.14E+01	1.40E-02	2.91E+03											
MW-30	30	2.99E-05	3.40E+00	3.62E-04	4.11E+01	2.36E-02	2.68E+03					1.78E-05	2.02E+00					
MW-32	55	1.48E-05	3.08E+00	4.05E-04	8.43E+01	1.79E-02	3.73E+03					1.21E-05	2.52E+00					
MW-33	55	2.13E-05	4.43E+00	2.52E-04	5.25E+01	1.42E-02	2.96E+03					2.73E-05	5.68E+00					

Activites represented on this document are all in microcuries (µCi)

0.206 uCi = 0.000206 mCi

1000 uCi = 1 mCi

1 curie = 1000 mCi

2.06×10^{-7} Curies

1,000 nCi = 1 uCi

9.62 nCi = 0.00962 uCi

Metropolitan St. Louis Sewer District

Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

February 22, 2012

Amber Crouch
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Dear Ms. Crouch:

We have reviewed your application dated February 17, 2012 requesting approval to discharge 500 gallons of wastewater to the Metropolitan St. Louis Sewer District for treatment. This wastewater is a 40% ethylene glycol solution from the chiller system located west of the boiler house of the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri. We understand that the wastewater will be discharged through sampling point 010.

Based on the information you provided, this wastewater meets MSD Ordinance 12559 standards and is approved for discharge into a sanitary sewer on site. Due to the high ethylene glycol concentration, the discharge is limited to 420 gallons per hour. This approval is valid for 30 days from the date of this letter.

You must be certain the waste is discharged into a sanitary or combined sewer inlet only. This letter does not authorize any discharge to a separate storm sewer, or to any watercourse, as any such discharge would be in violation of state and federal laws. **Please notify me at the number below when the discharge is to commence, and please ensure the onsite personnel discharging the wastewater in question are provided with a copy of this letter.**

For billing purposes associated with this high strength wastewater, you must confirm the volume of this wastewater discharged to us, in writing, at the completion of the discharge. This report is due no later than 28 days after this approval expires. Please refer to this letter and include the date of the discharge when providing that figure. Under the provisions of Ordinance 13021, you will be billed by invoice at the billing rate in effect at the time of discharge. The current rate contained in MSD Ordinance 13021 is $298.36 per ton for COD over 600 mg/L. Using the assumed COD concentration based on the percent of ethylene glycol contained in the wastewater in question, and the proposed discharge volume provided in your application, it is estimated that you will be discharging just under one ton of COD over 600 mg/L. (Our quantitative estimate is 0.83 tons COD times $298.36.) Please do not pay this amount until you receive our invoice.

This discharge has been approved based upon the information and sample analysis you provided and is subject to the conditions stated above. This approval may be revoked by the District at any time if any of the information is found to be incorrect, or if the conditions of this approval are violated. Also, if the discharge causes any operational or maintenance problem within the District's collection or treatment system, or results in violations of any conditions of the District's NPDES permit, Mallinckrodt will be considered responsible for damages.

If you have any questions, please call me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv
pc: Brian Gibson
Doug Mendoza
File: IU, MALLINCKRODT INC [2112059600]

C1A

SD EVALUATION CHECKLIST - ON SITE

APPLICATION INFORMATION

Source Name: Mallinckrodt, LLC

Premise Address: 3600 N. 2nd St.

Send approval letter to applicant

Evaluated by: SMG

Date: 2/22/12

Application Dated: 2/17/12 Received: 2/21/12 All Requested Info. Received: 2/21/12

SOURCE FILING/DESCRIPTION

1 - Source in PIMS? (Y) / N
2 - If No, on IU Cross-Ref list? * Y / N
3 - If No, MSD Account # from E-CIS? Y / N
4 - If none, on "Source" list (pre-IMS)? ** Y / N
5 - If No, assigned SOUR# from PIMS.

* o:\costrecovery\cross reference xls file

** o:\costrecovery\sourlist xls file

SOURCE TYPE (circle): (IU) / Dead IU / SD

INDUSTRY ID: 21120596-00

Sample Point: No. Assigned: 820 Description: 40% ethylene glycol solution from the chiller system located west of boiler house

Normal WW flow from premise? N/A _____ ccf/month, 2,992,101 GPD, _____ GPH.
@ SP010

REGULATORY STATUS

Is waste a Hazardous Waste? (N) / Y

Categorical standards apply? (N) / Y

Contain PCB/ asbestos/ radioactive/ dioxin/ used oil? (N) / Y

Regulatory Agency Oversight? (N) / Y

DISCHARGE CONSIDERATIONS At MSD's connection:

Ordinance Limits (12559, p32) exceeded? (N) / Y

Ordinance other limits exceeded (dye, flash pt <140F, temp >140F, obstruction, nuisance foaming/odor, corrosion causing): (N) / Y

Water Quality Standard exceeded? (N) / Y

Fumes in sewer exceed PEL/TLV limits? (N) / Y

Vapors in sewer exceed 10% of LEL? (N) / Y

RECOMMENDATION: (APPROVE) / DENY (cc WWTP Mgr for timed discharge)

APPROVAL CONDITIONS:

Timed Discharge (COD/BOD/WQ/foam): N / (Y) Limit = 420 gal/hour

Require Treatment before Discharge? (N) / Y

Laboratory analysis fee due? (N) / Y $_____

SMR required? (N) / Y Frequency/analysis: _____

SMR log: (N/A) / Remediation.xls / Nonremediation.xls

Volume Billing applies (water unmetered or credited)? (N) / Y

Bill High Strength? N / (Y) Yes, If use >60,000 gal/month water ✓ and, > norm WW strgth

Surcharge calculation attached: N/A / N / (Y)

Expiration log updated: (N/A) / N / Y

O:\CostRecovery\Special Discharge\C1a.Checklist.doc

On-Site Special Discharge High Strength Flow Rate and Surcharge Calculator

1 GENERAL INFORMATION:

Date: 02/22/12
Calculated by: Steve Grace
Source name: MALLINCKRODT INC, SP820
Waste material: 40% ethylene glycol soultion at Boiler house
Discharge volume: 500 gallons

2 STRENGTH INFORMATION:

Sample BOD =	0	mg/l =	0	lbs BOD to be discharged
Sample COD =	400,000	mg/l =	1668	lbs COD to be discharged
Sample TSS =	0	mg/l =	for surcharge calculation only	

3 PLANT DATA: 2010

Treatment area: Bissell

	Flow (MGD)	BOD (mg/L)	COD (mg/L)	BOD (lb/hr)	COD (lb/hr)	Max Loading = 10% BOD (lb/hr)	COD (lb/hr)
Bissell	**140**	**146**	**292**	**7,113**	**14,227**	**711**	**1,423**
Coldwater	26	188	377	1,704	3,408	170	341
Fenton	5	388	776	679	1,357	68	136
Grand Glaize	16	129	405	708	2,218	71	222
Lemay	131	78	210	3,531	9,584	353	958
Lower Meramec	13	124	409	543	1,785	54	179
Missouri River	27	280	559	2,671	5,341	267	534

4 MINIMUM REQUIRED FLOW RATE:

	BOD (hours	BOD (gpm)	COD (hours)	COD (gpm)
Bissell	**0.00**	**0**	**1.17**	**7**
Coldwater	0.00	0	4.89	2
Fenton	0.00	0	12.29	1
Grand Glaize	0.00	0	7.52	1
Lemay	0.00	0	1.74	5
Lower Meramec	0.00	0	9.34	1
Missouri River	0.00	0	3.12	3

5 SURCHARGE AND VOLUME BILLING

Is volume subject to billing? no (yes/no)
Ratio of BOD/COD = 0.00

(Sample BOD) - 300 = 0 mg/l subject to surcharge
(sample COD) - 600 = 399400 mg/l subject to surcharge
(sample TSS) - 300 = 0 mg/l subject to surcharge

If BOD/COD ratio <= 0.35, the following calculations use the COD value. Otherwise they use the BOD value

Current rates under Ordinance: 13021

Volume = $ 2.02 /CcF
BOD = $ 596.72 /ton
COD = $ 298.36 /ton
TSS = $ 222.62 /ton

Flow charge = $ - based on volume = 0.7 CcF
BOD surcharge = $ -
COD surcharge = $ 248.53
TSS surcharge = $ -
Total discharge charge = $ 248.53
Customer charge = $ 248.53 DEC charges special discharge customers for total charges > $20.00
Approximate charge/gallon = $ 0.50

Comments

require volume report for billing purposes. Smg

Metropolitan St. Louis Sewer District
2350 Market Street
St. Louis, MO 63103

APPLICATION FOR SPECIAL DISCHARGE APPROVAL

I. WASTEWATER SOURCE IDENTIFICATION:

Site Name: Mallinckrodt
Premise Address: 3600 N 2nd St
City: St Louis State: MO Zip: 63147
Owner: Mallinckrodt
Contact Person: Amber Crouch
Title: EHS
Phone: 314-654-0127 Fax: 314-654-1251

II. APPLICANT (mailing information):

Applicant Name: Amber Crouch
Title: EHS
Company Name: Mallinckrodt
Mailing Address: 3600 N 2nd St
City: St Louis State: MO Zip: 63147
Phone: 314-654-0127 Fax: 314-654-1251

III. A. MATERIAL TO BE DISCHARGED (check all applicable boxes):

1. Wastewater description/location: Ethylene glycol & water (
2. Process/activity generating wastewater: Boilerhouse rental chiller
3. Physical and chemical composition: List all constituents, and known or potentially present regulated contaminants below.
   ☐ See separate listing enclosed, and/or ☐ See analytical results enclosed, and/or ☑ Material Safety Data Sheet enclosed.

DESCRIPTION	RANGE	UNIT
Ethylene Glycol	40	%
Water	60	%

DESCRIPTION *(continued)*	RANGE	UNIT

4. Is this wastewater from a process subject to EPA's categorical standards in 40 CFR Subchapter N? ☐ Yes ☑ No
   a. If yes, the applicable standards are in: 40 CFR Part _____, Subpart _____ ☐ Existing source ☐ New source
5. Does this wastewater contain polychlorinated biphenyls, asbestos or radioactive material? ☐ Yes ☑ No
   a. If yes, describe: _____
6. Representative sample: ☐ Laboratory results attached, and/or ☐ Sample provided (1/2 gallon minimum, clear container)
   a. Sample collection point/location: _____ Collection method: _____
   b. Sampler's name/Co.: _____ Sample date/time: _____
   c. Attach chain of custody as available
7. Discharge will occur over the following time period: ☒ < 30 days ☐ ≥ Two years ☐ Other: _____
   a. Expected total volume of wastewater to be discharged over the time period above: _____ Gallons
   b. Proposed discharge volume: 500 Gallons, at a frequency of: ☒ One time ☐ Daily ☐ Weekly ☐ Monthly ☐ Once/three months ☐ Once/six months ☐ Other: _____
8. Pretreatment of wastewater prior to discharge: ☐ None ☒ Yes, describe: pH adjust at main plant outfall
   a. If yes, attach site plan, pretreatment system schematic, and design specifications.
9. Wastewater from a remediation project under: ☐ Superfund/CERCLA ☐ RCRA ☐ Voluntary program ☐ UST ☑ Not applicable
   a. If from a remediation project, briefly describe the past and present utilization of the property: _____

III.B. MATERIAL FROM UNDERGROUND STORAGE TANK SOURCE

☑ Not applicable (go to Section IV)

Please answer the following questions if you are requesting to discharge wastewater associated with an underground storage tank system.

1. a. Wastewater from: ☐ Inside UST(s) ☐ UST system pit ☐ Excavation outside UST system pit ☐ Monitoring well ☐ Groundwater remediation system

   b. UST project involves wastewater from: ☐ UST(s) closed in place ☐ UST(s) removed ☐ Remediation ☐ Upgrade ☐ Maintenance activities ☐ Well monitoring ☐ Other, explain: _____

   c. If wastewater is from a closure project, how long has UST(s) been out of service: _____ years

2. a. State assigned UST site identification number: _____ ☐ Not applicable

   b. Number of USTs affected: _____ ☐ Unknown

   c. For the UST(s) involved, their state identification number(s): _____ ☐ Not applicable

   d. Service Station Identification Number, as applicable: _____

3. Tank contents/former contents: ☐ Gasoline ☐ #2 diesel ☐ Used oil ☐ Unknown ☐ Other: _____

IV. DISCHARGE LOCATION

1. ☑ On-site. Describe proposed point of entry to sewer and the discharge rate (must be a sanitary or combined sewer): _____

   Plant sewer to main outfall SP010 Note: Range of discharge must not surcharge sewer line.

2. ☐ Haul to MSD Bissell Point Hauled Waste Receiving Station at 10 E. Grand, St. Louis, MO.

   a. Transporters Name: _____ and MSD Hauler ID Number: _____

   b. Hazardous Waste Certification:

   For wastewater which is hauled to MSD's Bissell Point Hauled Waste Receiving Station, I hereby certify that to the best of my knowledge and belief, the above hauled waste is not classified as a RCRA "hazardous waste" as defined by the MDNR in 10 CSR 25 or USEPA in 40 CFR Part 261.

   Applicant Name (print): _____

   Signature: _____ **Date:** _____

ADDITIONAL INFORMATION:

_____

V. APPLICANT SIGNATURE AND CERTIFICATION

This application must be signed by the applicant: either the source contact, or a contractor or agent directly responsible for site activities.

I hereby certify that I am directly responsible for activities at the site regarding the wastewater to be discharged, and to the best of my knowledge and belief, based on appropriate inquiry, the information in this application is true, complete, and accurate. The samples or analyses submitted are representative of the materials to be discharged. If granted approval to discharge, I agree to abide by the MSD Ordinances, and all applicable federal, state and local regulations. I agree to pay the costs of any pre-approval analyses performed by MSD and to pay any applicable disposal charges for the volume and strength of the wastes discharged.

Applicant Name (print): Amber Crouch

Signature: Amber Crouch **Date:** 2/17/12

FOR MSD USE ONLY:

File Name: Mallinckrodt LLC ID No. 21120596-00 Sample Point No. 820

MSDS Material Safety Data Sheet

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865

Mallinckrodt CHEMICALS J.T.Baker

24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300

National Response in Canada
CANUTEC: 613-996-6666

Outside U.S. and Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assist

Not Scanned

ETHYLENE GLYCOL

1. Product Identification

Synonyms: 1,2-Ethanediol; glycol; 1,2-Dihydroxyethane; Ethylene Alcohol; Eth
CAS No.: 107-21-1
Molecular Weight: 62.07
Chemical Formula: CH2OHCH2OH
Product Codes:
J.T. Baker: 5387, 5845, 9140, 9298, 9300, 9346, 9356, L715
Mallinckrodt: 5001, 5037

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Ethylene Glycol	107-21-1	99 - 100%	Yes

3. Hazards Identification

Emergency Overview

WARNING! HARMFUL OR FATAL IF SWALLOWED. HARMFUL IF INHALED OR ABSORBED THROUGH SKIN. MAY CAUSE ALLERGIC SKIN REACTION. MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT. AFFECTS CENTRAL NERVOUS SYSTEM.

SAF-T-DATA(tm) Ratings (Provided here for your convenience)

Health Rating: 2 - Moderate (Life)
Flammability Rating: 1 - Slight
Reactivity Rating: 1 - Slight
Contact Rating: 3 - Severe (Life)
Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES
Storage Color Code: Green (General Storage)

Potential Health Effects

Inhalation:
Vapor inhalation is generally not a problem unless heated or misted. Exposure to vapors over an extended time period has caused throat irritation and headache. May cause nausea, vomiting, dizziness and drowsiness. Pulmonary edema and central nervous system depression may also develop. When heated or misted, has produced rapid, involuntary eye movement and coma.
Ingestion:
Initial symptoms in massive dosage parallel alcohol intoxication, progressing to CNS depression, vomiting, headache, rapid respiratory and heart rate, lowered blood pressure, stupor, collapse, and unconsciousness with convulsions. Death from respiratory arrest or cardiovascular collapse may follow. Lethal dose in humans: 100 ml (3-4 ounces).
Skin Contact:
Minor skin irritation and penetration may occur.
Eye Contact:
Splashes may cause irritation, pain, eye damage.
Chronic Exposure:
Repeated small exposures by any route can cause severe kidney problems. Brain damage may also occur. Skin allergy can develop. May damage the developing fetus.
Aggravation of Pre-existing Conditions:
Persons with pre-existing skin disorders, eye problems, or impaired liver, kidney, or respiratory function may be more susceptible to the effects of this substance.

4. First Aid Measures

Inhalation:
Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
Ingestion:
Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.
Skin Contact:
Remove any contaminated clothing. Wash skin with soap and water for at least 15 minutes. Get medical attention if irritation develops or persists.
Eye Contact:
Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

Note to Physician:
Give sodium bicarbonate intravenously to treat acidosis. Urinalysis may show low specific gravity, proteinuria, pyuria, cylindruria, hematuria, calcium oxide, and hippuric acid crystals. Ethanol can be used in antidotal treatment but monitor blood glucose when administering ethanol because it can cause hypoglycemia. Consider infusion of a diuretic such as mannitol to help prevent or control brain edema and hemodialysis to remove ethylene glycol from circulation.

5. Fire Fighting Measures

Fire:
Flash point: 111C (232F) CC
Autoignition temperature: 398C (748F)
Flammable limits in air % by volume:
lel: 3.2; uel: 15.3
Slight to moderate fire hazard when exposed to heat or flame.

Explosion:
Above flash point, vapor-air mixtures are explosive within flammable limits noted above. Containers may explode when involved in a fire.
Fire Extinguishing Media:
Dry chemical, foam or carbon dioxide. Water or foam may cause frothing. Water spray may be used to extinguish surrounding fire and cool exposed containers. Water spray will also reduce fume and irritant gases.
Special Information:
In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Toxic gases and vapors may be released if involved in a fire.

6. Accidental Release Measures

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Separate from acids and oxidizing materials. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:
Ethylene Glycol [107-21-1]:

-ACGIH Short-Term Exposure Limit (STEL):
100 mg/m3 Ceiling (aerosol only)
Ventilation System:
A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.
Personal Respirators (NIOSH Approved):
If the exposure limit is exceeded, a half-face respirator with an organic vapor cartridge and particulate filter (NIOSH type P95 or R95 filter) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece respirator with an organic vapor cartridge and particulate filter (NIOSH P100 or R100 filter) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. Please note that N series filters are not recommended for this material. For emergencies or instances where the exposure levels are not known, use a full-face piece positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.
Skin Protection:
Wear protective gloves and clean body-covering clothing.
Eye Protection:

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:
Clear oily liquid.
Odor:
Odorless.
Solubility:
Miscible in water.
Specific Gravity:
1.1 @20C/4C
pH:
No information found.
% Volatiles by volume @ 21C (70F):
100
Boiling Point:
197.6C (388F)
Melting Point:
-13C (9F)
Vapor Density (Air=1):
2.14
Vapor Pressure (mm Hg):
0.06 @ 20C (68F)
Evaporation Rate (BuAc=1):
No information found.

10. Stability and Reactivity

Stability:
Stable under ordinary conditions of use and storage.
Hazardous Decomposition Products:
Carbon dioxide and carbon monoxide may form when heated to decomposition. May produce acrid smoke and irritating fumes when heated to decomposition.
Hazardous Polymerization:
Will not occur.
Incompatibilities:
Strong oxidizing agents. Reacts violently with chlorosulfonic acid, oleum, sulfuric acid, perchloric acid. Causes ignition at room temperature with chromium trioxide, potassium permanganate and sodium peroxide; causes ignition at 212F(100C) with ammonium dichromate, silver chlorate, sodium chloride and uranyl nitrate.
Conditions to Avoid:
Heat, flames, ignition sources, water (absorbs readily) and incompatibles.

11. Toxicological Information

Toxicological Data:
Oral rat LD50: 4700 mg/kg; skin rabbit LD50: 9530 mg/kg.
Irritation - skin rabbit: 555 mg(open), mild; eye rabbit: 500mg/24H, mild.
Investigated as a tumorigen, mutagen, reproductive effector.
Reproductive Toxicity:
Has shown teratogenic effects in laboratory animals.

```
--------\Cancer Lists\-----------------------------------------------------
                                          ---NTP Carcinogen---
```

Ingredient	Known	Anticipated	IARC Category
Ethylene Glycol (107-21-1)	No	No	None

12. Ecological Information

Environmental Fate:
When released into the soil, this material is expected to readily biodegrade. When released into the soil, this material is expected to leach into groundwater. When released into the soil, this material is not expected to evaporate significantly. When released into water, this material is expected to readily biodegrade. When released into the water, this material is expected to have a half-life between 1 and 10 days. This material is not expected to significantly bioaccumulate. This material has a log octanol-water partition coefficient of less than 3.0. When released into water, this material is not expected to evaporate significantly. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material is expected to have a half-life between 1 and 10 days.
Environmental Toxicity:
The LC50/96-hour values for fish are over 100 mg/l.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Not regulated.

15. Regulatory Information

--------\Chemical Inventory Status - Part 1\--------

Ingredient	TSCA	EC	Japan	Australia
Ethylene Glycol (107-21-1)	Yes	Yes	Yes	Yes

--------\Chemical Inventory Status - Part 2\--------

Ingredient	Korea	--Canada-- DSL	NDSL	Phil.
Ethylene Glycol (107-21-1)	Yes	Yes	No	Yes

--------\Federal, State & International Regulations - Part 1\--------

Ingredient	-SARA 302- RQ	TPQ	------SARA 313------ List	Chemical Catg.
Ethylene Glycol (107-21-1)	No	No	Yes	No

--------\Federal, State & International Regulations - Part 2\--------

Ingredient	CERCLA	-RCRA- 261.33	-TSCA- 8(d)
Ethylene Glycol (107-21-1)	5000	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No
Reactivity:. No (Pure / Liquid)

Australian Hazchem Code: None allocated.
Poison Schedule: None allocated.
WHMIS:
This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: 1 Flammability: 1 Reactivity: 0
Label Hazard Warning:
WARNING! HARMFUL OR FATAL IF SWALLOWED. HARMFUL IF INHALED OR ABSORBED THROUGH SKIN. MAY CAUSE ALLERGIC SKIN REACTION. MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT. AFFECTS CENTRAL NERVOUS SYSTEM.
Label Precautions:
Do not breathe vapor or mist.
Use only with adequate ventilation.
Keep container closed.
Avoid contact with eyes, skin and clothing.
Wash thoroughly after handling.
Label First Aid:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes. Call a physician if irritation develops or persists. If swallowed, give water or milk to drink and induce vomiting. Never give anything by mouth to an unconscious person. In all cases call a physician.
Product Use:
Laboratory Reagent.
Revision Information:
No Changes.
Disclaimer:
****
Mallinckrodt Baker, Inc. provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose. MALLINCKRODT BAKER, INC. MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE INFORMATION SET FORTH HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS. ACCORDINGLY, MALLINCKRODT BAKER, INC. WILL NOT BE RESPONSIBLE FOR DAMAGES RESULTING FROM USE OF OR RELIANCE UPON THIS INFORMATION.
****
Prepared by: Environmental Health & Safety
Phone Number: (314) 654-1600 (U.S.A.)

Metropolitan St. Louis Sewer District
Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

February 10, 2012

Amber Crouch
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Dear Ms. Crouch:

We have reviewed your application dated February 9, 2012 requesting approval to discharge 2,000 gallons of wastewater to the Metropolitan St. Louis Sewer District for treatment. This wastewater consists of an off specification calcium chloride solution at the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri. We understand that the wastewater will be discharged through sampling point 010. Additional information contained in the application indicated the calcium chloride solution process upset occurred in Building X.

Based on the information you provided, this wastewater meets MSD Ordinance 12559 standards and is approved for discharge into a sanitary sewer on site. The discharge into the sewer must be controlled at a rate that will not surcharge the lines in the area. This approval is valid for 30 days from the date of this letter.

You must be certain the waste is discharged into a sanitary or combined sewer inlet only. This letter does not authorize any discharge to a separate storm sewer, or to any watercourse, as any such discharge would be in violation of state and federal laws. **Please notify me at the number below when the discharge is to commence, and please ensure the onsite personnel discharging the wastewater in question are provided with a copy of this letter.**

This discharge has been approved based upon the information and sample analysis you provided, and is subject to the conditions stated above. This approval may be revoked by the District at any time if any of the information is found to be incorrect, or if the conditions of this approval are violated. Also, if the discharge causes any operational or maintenance problem within the District's collection or treatment system, or results in violations of any conditions of the District's NPDES permit, Mallinckrodt will be considered responsible for damages. If you have any questions, please call me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace
Steve Grace
Environmental Assistant Engineer

By

pc: Brian Gibson
Doug Mendoza

File: IU_MALLINCKRODT INC [2112059600]

C1A

SD EVALUATION CHECKLIST - ON SITE

APPLICATION INFORMATION

Source Name: Mallinckrodt, LLC Evaluated by: SMG

Premise Address: 3600 N. 2nd St. Date: 2/10/12

Send approval letter to applicant

Application Dated: 2/9/12 Received: 2/9/12 All Requested Info. Received: 2/10/12

SOURCE FILING/DESCRIPTION

1 - Source in PIMS? (Y) / N
2 - If No, on IU Cross-Ref list? * Y / N
3 - If No, MSD Account # from E-CIS? Y / N
4 - If none, on "Source" list (pre-IMS)? ** Y / N
5 - If No, assigned SOUR# from PIMS.

* o:\costrecovery\cross reference xls file

** o:\costrecovery\sourlist xls file

SOURCE TYPE (circle): (IU) / Dead IU / SD

INDUSTRY ID: 21120596-00

Sample Point: No. Assigned: 818 Description: off spec. CaCl solution (28-42%)

Normal WW flow from premise? (N/A) _____ ccf/month, _____ GPD, _____ GPH.

REGULATORY STATUS

Is waste a Hazardous Waste? (N) / Y

Categorical standards apply? (N) / Y

Contain PCB/ asbestos/ radioactive/ dioxin/ used oil? (N) Y

Regulatory Agency Oversight? (N) / Y

DISCHARGE CONSIDERATIONS At MSD's connection:

Ordinance Limits (12559, p32) exceeded? (N) / Y

Ordinance other limits exceeded (dye, flash pt <140F, temp >140F, obstruction, nuisance foaming/odor, corrosion causing): (N) / Y

Water Quality Standard exceeded? (N) / Y

Fumes in sewer exceed PEL/TLV limits? (N) / Y

Vapors in sewer exceed 10% of LEL? (N) / Y

RECOMMENDATION: (APPROVE) / DENY (cc WWTP Mgr for timed discharge)

APPROVAL CONDITIONS:

Timed Discharge (COD/BOD/WQ/foam): (N) / Y Limit = _____ gal/hour

Require Treatment before Discharge? (N) / Y

Laboratory analysis fee due? (N) / Y $_____

SMR required? (N) / Y Frequency/analysis: _____

SMR log: (N/A) / Remediation.xls / Nonremediation.xls

Volume Billing applies (water unmetered or credited)? (N) / Y

Bill High Strength? (N) / Y Yes, If use >60,000 gal/month water ___and, > norm WW strgth

Surcharge calculation attached: N/A / (N) / Y

Expiration log updated: (N/A) / N / Y

O:\CostRecovery\Special Discharge\C1a.Checklist.doc

Metropolitan St. Louis Sewer District
2350 Market Street
St. Louis, MO 63103

APPLICATION FOR SPECIAL DISCHARGE APPROVAL

I. WASTEWATER SOURCE IDENTIFICATION:

Site Name: Mallinckrodt
Premise Address: 3600 N. 2nd St.
City: St. Louis State: MO Zip: 63147
Owner: Mallinckrodt
Contact Person: Amber Crouch
Title: Sr. Env. Specialist
Phone: 314-654-0127 Fax: 314-654-1251

II. APPLICANT (mailing information):

Applicant Name: Amber Crouch
Title: EHS
Company Name: Mallinckrodt
Mailing Address: 3600 N. 2nd Street
City: St. Louis State: MO Zip: 63147
Phone: 314-654-0127 Fax: 314-654-1251

III. A. MATERIAL TO BE DISCHARGED (check all applicable boxes):

1. Wastewater description/location: Calcium Chloride Solution (salt water)
2. Process/activity generating wastewater: process upset in bldg. X - extra raw material unable to process
3. Physical and chemical composition: List all constituents, and known or potentially present regulated contaminants below.
   ☐ See separate listing enclosed, and/or ☐ See analytical results enclosed, and/or ☒ Material Safety Data Sheet enclosed.

DESCRIPTION	RANGE	UNIT
Calcium Chloride	28-42	%
Water	53-72	%
Potassium Chloride	0-3	%
Sodium Chloride	0-2	%

DESCRIPTION *(continued)*	RANGE	UNIT

4. Is this wastewater from a process subject to EPA's categorical standards in 40 CFR Subchapter N? ☐ Yes ☒ No
   a. If yes, the applicable standards are in: 40 CFR Part _____, Subpart _____ ☐ Existing source ☐ New source
5. Does this wastewater contain polychlorinated biphenyls, asbestos or radioactive material? ☐ Yes ☒ No
   a. If yes, describe: _____
6. Representative sample: ☐ Laboratory results attached, and/or ☐ Sample provided (1/2 gallon minimum, clear container)
   a. Sample collection point/location: _____ Collection method: _____
   b. Sampler's name/Co.: _____ Sample date/time: _____
   c. Attach chain of custody as available
7. Discharge will occur over the following time period: ☒ < 30 days ☐ ≥ Two years ☐ Other: _____
   a. Expected total volume of wastewater to be discharged over the time period above: _____ Gallons
   b. Proposed discharge volume: 2000 Gallons, at a frequency of: ☒ One time ☐ Daily ☐ Weekly ☐ Monthly ☐ Once/three months ☐ Once/six months ☐ Other: _____
8. Pretreatment of wastewater prior to discharge: ☐ None ☒ Yes, describe: pH adjust at main outfall
   a. If yes, attach site plan, pretreatment system schematic, and design specifications.
9. Wastewater from a remediation project under: ☐ Superfund/CERCLA ☐ RCRA ☐ Voluntary program ☐ UST ☒ Not applicable
   a. If from a remediation project, briefly describe the past and present utilization of the property: _____

III.B. MATERIAL FROM UNDERGROUND STORAGE TANK SOURCE

☒ **Not applicable (go to Section IV)**

Please answer the following questions if you are requesting to discharge wastewater associated with an underground storage tank system.

1. a. Wastewater from: ☐ Inside UST(s) ☐ UST system pit ☐ Excavation outside UST system pit ☐ Monitoring well ☐ Groundwater remediation system

   b. UST project involves wastewater from: ☐ UST(s) closed in place ☐ UST(s) removed ☐ Remediation ☐ Upgrade ☐ Maintenance activities ☐ Well monitoring ☐ Other, explain: _____

   c. If wastewater is from a closure project, how long has UST(s) been out of service: _____ years

2. a. State assigned UST site identification number: _____ ☐ Not applicable

   b. Number of USTs affected: _____ ☐ Unknown

   c. For the UST(s) involved, their state identification number(s): _____ ☐ Not applicable

   d. Service Station Identification Number, as applicable: _____

3. Tank contents/former contents: ☐ Gasoline ☐ #2 diesel ☐ Used oil ☐ Unknown ☐ Other: _____

IV. DISCHARGE LOCATION

1. ☒ On-site. Describe proposed point of entry to sewer and the discharge rate (must be a sanitary or combined sewer): _____
   Bldg. X to plant sewer to SP 010 _____ Note: Range of discharge must not surcharge sewer line.

2. ☐ Haul to MSD Bissell Point Hauled Waste Receiving Station at 10 E. Grand, St. Louis, MO.

   a. Transporters Name: _____ and MSD Hauler ID Number: _____

   b. Hazardous Waste Certification:

   For wastewater which is hauled to MSD's Bissell Point Hauled Waste Receiving Station, I hereby certify that to the best of my knowledge and belief, the above hauled waste is not classified as a RCRA "hazardous waste" as defined by the MDNR in 10 CSR 25 or USEPA in 40 CFR Part 261.

   Applicant Name (print): _____

   Signature: _____ **Date:** _____

ADDITIONAL INFORMATION:

_____

V. APPLICANT SIGNATURE AND CERTIFICATION

This application must be signed by the applicant: either the source contact, or a contractor or agent directly responsible for site activities.

I hereby certify that I am directly responsible for activities at the site regarding the wastewater to be discharged, and to the best of my knowledge and belief, based on appropriate inquiry, the information in this application is true, complete, and accurate. The samples or analyses submitted are representative of the materials to be discharged. If granted approval to discharge, I agree to abide by the MSD Ordinances, and all applicable federal, state and local regulations. I agree to pay the costs of any pre-approval analyses performed by MSD and to pay any applicable disposal charges for the volume and strength of the wastes discharged.

Applicant Name (print): Amber Crouch

Signature: Amber Crouch **Date:** 2/9/12

FOR MSD USE ONLY:

File Name: Mallinckrodt LLC ID No. 21120596-00 Sample Point No. 818

Material Safety Data Sheet
The Dow Chemical Company

Product Name: LIQUIDOW* Technical Grade Calcium Chloride Solution

Issue Date: 01/02/2007

Print Date: 05 /

Not Scanned

The Dow Chemical Company encourages and expects you to read and underst as there is important information throughout the document. We expect you to identified in this document unless your use conditions would necessitate oth actions.

1. Product and Company Identification

Product Name
LIQUIDOW* Technical Grade Calcium Chloride Solution

COMPANY IDENTIFICATION
The Dow Chemical Company
2030 Willard H. Dow Center
Midland, MI 48674
USA

Customer Information Number: 800-258-2436

EMERGENCY TELEPHONE NUMBER
24-Hour Emergency Contact: 989-636-4400
Local Emergency Contact: 989-636-4400

2. Hazards Identification

Emergency Overview
Color: Clear
Physical State: Liquid
Odor: Odorless
Hazards of product:

WARNING! Causes eye irritation. Prolonged exposure may cause skin burns. Slipping hazard. Isolate area.

OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Potential Health Effects
Eye Contact: May cause severe eye irritation. May cause slight corneal injury. Effects may be slow to heal.
Skin Contact: Brief contact is essentially nonirritating to skin. May cause more severe response if skin is abraded (scratched or cut). May cause more severe response on covered skin (under clothing,

* Indicates a Trademark

gloves). Prolonged contact may cause skin burns. Symptoms may include pain, severe local redness, swelling, and tissue damage.
Skin Absorption: Prolonged skin contact is unlikely to result in absorption of harmful amounts.
Inhalation: Mist may cause irritation of upper respiratory tract (nose and throat).
Ingestion: Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury. Swallowing may result in gastrointestinal irritation.

3. Composition Information

Component	CAS #	Amount
Calcium chloride	10043-52-4	28.0 - 42.0 %
Potassium chloride	7447-40-7	0.0 - 3.0 %
Sodium chloride	7647-14-5	0.0 - 2.0 %
Water	7732-18-5	53.0 - 72.0 %

4. First-aid measures

Eye Contact: Immediately flush eyes with water; remove contact lenses, if present, after the first 5 minutes, then continue flushing eyes for at least 15 minutes. Obtain medical attention without delay, preferably from an ophthalmologist.
Skin Contact: Wash skin with plenty of water.
Inhalation: Move person to fresh air; if effects occur, consult a physician.
Ingestion: If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.
Notes to Physician: If burn is present, treat as any thermal burn, after decontamination. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

5. Fire Fighting Measures

Extinguishing Media: This material does not burn. If exposed to fire from another source, use suitable extinguishing agent for that fire.
Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. This material does not burn. Fight fire for other material that is burning. Water should be applied in large quantities as fine spray.
Special Protective Equipment for Firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-contained breathing apparatus and fight fire from a remote location. For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.
Unusual Fire and Explosion Hazards: Not applicable.
Hazardous Combustion Products: Not applicable

6. Accidental Release Measures

Steps to be Taken if Material is Released or Spilled: Small and large spills: Contain spilled material if possible. Absorb with materials such as: Sand. Collect in suitable and properly labeled containers. Flush residue with plenty of water. See Section 13, Disposal Considerations, for additional information.

Personal Precautions: Spilled material may cause a slipping hazard. Isolate area. Keep unnecessary and unprotected personnel from entering the area. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.
Environmental Precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

7. Handling and Storage

Handling
General Handling: Product shipped/handled hot can cause thermal burns. Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.

Storage
Keep container closed. Protect from atmospheric moisture. Product may become a solid at temperatures below 0°C (32°F) (concentrations above 36% calcium chloride).

8. Exposure Controls / Personal Protection

Exposure Limits

Component	List	Type	Value
Calcium chloride	Dow IHG	TWA	10 mg/m3
Sodium chloride	Dow IHG	TWA	10 mg/m3

Personal Protection
Eye/Face Protection: Use chemical goggles.
Skin Protection: Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task. Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before reuse or dispose of properly.

> **Hand protection:** Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Polyethylene. Neoprene. Natural rubber ("latex"). Polyvinyl chloride ("PVC" or "vinyl"). Nitrile/butadiene rubber ("nitrile" or "NBR"). Ethyl vinyl alcohol laminate ("EVAL"). Avoid gloves made of: Polyvinyl alcohol ("PVA"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Respiratory Protection: Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required for certain operations, use an approved air-purifying respirator. In dusty or misty atmospheres, use an approved particulate respirator. The following should be effective types of air-purifying respirators: Particulate filter.
Ingestion: Use good personal hygiene. Do not consume or store food in the work area. Wash hands before smoking or eating.

Engineering Controls
Ventilation: Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines.

9. Physical and Chemical Properties

Physical State	Liquid
Color	Clear
Odor	Odorless
Flash Point - Closed Cup	Not applicable
Flammable Limits In Air	**Lower:** Not applicable **Upper:** Not applicable
Autoignition Temperature	Not applicable
Vapor Pressure	9 - 15 mmHg @ 25 °C *Literature*
Boiling Point (760 mmHg)	110 - 122 °C (230 - 252 °F) *Literature* .
Vapor Density (air = 1)	*Literature* same as water
Specific Gravity (H2O = 1)	1.275 - 1.439 *Literature*
Freezing Point	Varies
Melting Point	Not applicable
Solubility In Water (by weight)	*Literature* completely miscible with water
pH	9.2 *Estimated* (10% dilution in water)
Kinematic Viscosity	2.6 cSt @ 25 °C *Estimated*

10. Stability and Reactivity

Stability/Instability

Stable.

Conditions to Avoid: None known.

Incompatible Materials: Avoid contact with: Sulfuric acid. Corrosive to some metals. Avoid contact with metals such as: Brass. Ferrous metals. Mild steel. Flammable hydrogen may be generated from contact with metals such as: Zinc. Sodium. Reaction of bromide impurity with oxidizing materials may generate trace levels of impurities such as bromate.

Hazardous Polymerization

Will not occur.

Thermal Decomposition

Does not decompose.

11. Toxicological Information

Acute Toxicity

Ingestion

For the major component(s): LD50, Rat 900 - 2,100 mg/kg

Skin Absorption

For the major component(s): LD50, Rabbit > 5,000 mg/kg

Genetic Toxicology

The data presented are for the following material: Calcium chloride or $CaCl_2$. In vitro genetic toxicity studies were negative. The data presented are for the following material Potassium chloride. In vitro genetic toxicity studies were positive. However, the relevance of this to humans is unknown.

12. Ecological Information

CHEMICAL FATE

Data for Component: **Calcium chloride**

Movement & Partitioning
No bioconcentration is expected because of the relatively high water solubility. Partitioning from water to n-octanol is not applicable.

Persistence and Degradability
Biodegradation is not applicable.

Data for Component: **Potassium chloride**

Movement & Partitioning
Partitioning from water to n-octanol is not applicable.

Persistence and Degradability
Biodegradation is not applicable.

Data for Component: **Sodium chloride**

Movement & Partitioning
No bioconcentration is expected because of the relatively high water solubility. Potential for mobility in soil is very high (Koc between 0 and 50). Partitioning from water to n-octanol is not applicable.

Persistence and Degradability
Biodegradation is not applicable.

ECOTOXICITY

Data for Component: **Calcium chloride**

Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50 >100 mg/L in the most sensitive species tested).

Fish Acute & Prolonged Toxicity
LC50, bluegill (Lepomis macrochirus): 8,350 - 10,650 mg/l
Aquatic Invertebrate Acute Toxicity
LC50, water flea Daphnia magna: 759 - 3,005 mg/l
Toxicity to Micro-organisms
EC50; activated sludge, respiration inhibition: > 1,000 mg/l

Data for Component: **Potassium chloride**

Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50 >100 mg/L in the most sensitive species tested).

Fish Acute & Prolonged Toxicity
LC50, rainbow trout (Oncorhynchus mykiss), 96 h: 4,236 mg/l
Aquatic Invertebrate Acute Toxicity
EC50, water flea Daphnia magna, 24 h, immobilization: 590 mg/l
LC50, water flea Ceriodaphnia dubia, 96 h: 3,470 mg/l

Data for Component: **Sodium chloride**

Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50 >100 mg/L in the most sensitive species tested).

Fish Acute & Prolonged Toxicity
LC50, fathead minnow (Pimephales promelas): 10,610 mg/l
Aquatic Invertebrate Acute Toxicity
LC50, water flea Daphnia magna: 4,571 mg/l
Toxicity to Micro-organisms
IC50, OECD 209 Test; activated sludge, respiration inhibition: > 1,000 mg/l

13. Disposal Considerations

All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. DOW HAS NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION: Composition Information. FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: Reclaimer. Waste water treatment system. As a service to its customers, Dow can provide names of information resources to help identify waste management companies and other facilities which recycle, reprocess or manage chemicals or plastics, and that manage used drums. Telephone Dow's Customer Information Group at 1-800-258-2436 or 1-989-832-1556 (U.S.), or 1-800-331-6451 (Canada) for further details.

14. Transport Information

DOT Non-Bulk
NOT REGULATED

DOT Bulk
NOT REGULATED

IMDG
NOT REGULATED

ICAO/IATA
NOT REGULATED

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. Regulatory Information

OSHA Hazard Communication Standard
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312

Immediate (Acute) Health Hazard	Yes
Delayed (Chronic) Health Hazard	No
Fire Hazard	No
Reactive Hazard	No
Sudden Release of Pressure Hazard	No

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List:
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Special Hazardous Substances List:
To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)
This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)
WARNING: This product (when used in aqueous formulations with a chemical oxidizer such as ozone) contains a chemical known to the State of California to cause cancer.

US. Toxic Substances Control Act
All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30
CEPA - Domestic Substances List (DSL)
All substances contained in this product are listed on the Canadian Domestic Substances List (DSL) or are not required to be listed.

16. Other Information

Recommended Uses and Restrictions
A calcium chloride product - Dust Control De-icing fluid. For industrial use. Dow recommends that you use this product in a manner consistent with the listed use. If your intended use is not consistent with Dow's stated use, please contact Dow's Customer Information Group.

Revision
Identification Number: 81498 / 0000 / Issue Date 01/02/2007 / Version: 3.0
Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

Legend

N/A	Not available
W/W	Weight/Weight
OEL	Occupational Exposure Limit
STEL	Short Term Exposure Limit
TWA	Time Weighted Average
ACGIH	American Conference of Governmental Industrial Hygienists, Inc.
DOW IHG	Dow Industrial Hygiene Guideline
WEEL	Workplace Environmental Exposure Level
HAZ_DES	Hazard Designation
Action Level	A value set by OSHA that is lower than the PEL which will trigger the need for activities such as exposure monitoring and medical surveillance if exceeded.

The Dow Chemical Company urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his activities comply with

all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.

MSD

TO: Chris Verplancke - Finance Department

FROM: Steven M. Grace – DEC

DATE: February 8, 2012 SMG

RE: **Wastewater User Charge Billing for Special Discharge**

Please bill, by invoice, the following charges applicable to an on-site special discharge approved in our letter dated October 30, 1998, as modified in letters dated November 20, 1998, July 19, 1999, March 28, 2001, October 13, 2004, June 19, 2006, and May 22, 2008. The discharge dates and quantity are from information submitted by Sharon Cotner, Corps of Engineers, in a letter dated October 31, 2011. Please note that, as of July 1, 2011, the volume charge of $2.11 per 100 cubic feet of wastewater became effective.

This charge is based on the rates in MSD Wastewater User Charge Ordinance 13021.

PARTY TO BILL: Larry Joellenbeck
The Shaw Group Inc.
1 Angelrodt Street
St. Louis, MO 63147

BILLING IS FOR: On-Site Special Discharge

DISCHARGE PERIOD: October through December 2011

SOURCE OF WASTE: Treated construction water from the St. Louis Downtown FUSRAP Site located at Mallinckrodt, Inc., 3600 N. Second Street, St. Louis, Missouri.

Discharge Period	Billing Item	Quantity	Units	Rate	Charge
10/1/11 - 12/31/11	Volume	435	CcF	$2.11	$917.85
Totals:	---	435	CcF	---	$917.85

If you have any questions, please call me on extension 8755.

bv

pc: Becky Bartholomew – Finance Dept.
Laura Joiner – Finance Dept.
Brian Gibson
Doug Mendoza
Larry Joellenbeck, The Shaw Group Inc., 1 Angelrodt St., St. Louis, MO 63147

File: IU, MALLINCKRODT INC [2112059600]

Metropolitan St. Louis Sewer District
Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

February 3, 2012

Amber Crouch
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Dear Ms. Crouch:

We have reviewed your application dated February 2, 2012 requesting approval to discharge 1,400 gallons of wastewater to the Metropolitan St. Louis Sewer District for treatment. This wastewater consists of MP104 reworked wastewater from building 507 at the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri. We understand that the wastewater will be discharged through sampling point 010.

In an email dated February 3, 2012, you indicated that the analytical data contained in the previously submitted laboratory analytical report dated August 22, 2011 is representative of this wastewater. Based on the information you provided, this wastewater meets MSD Ordinance 12559 standards and is approved for discharge into a sanitary sewer on site. The discharge into the sewer must be controlled at a rate that will not surcharge the lines in the area. This approval is valid for 30 days from the date of this letter.

You must be certain the waste is discharged into a sanitary or combined sewer inlet only. This letter does not authorize any discharge to a separate storm sewer, or to any watercourse, as any such discharge would be in violation of state and federal laws. **Please notify me at the number below when the discharge is to commence, and please ensure the onsite personnel discharging the wastewater in question are provided with a copy of this letter.**

For billing purposes associated with this high chemical oxygen demand (COD) and total suspended solids (TSS) wastewater, you must confirm the volume of this wastewater discharged to us, in writing, at the completion of the discharge. This report is due no later than 28 days after this approval expires. Please refer to this letter and include the date of the discharge when providing that figure. Under the provisions of Ordinance 13021, you will be billed by invoice at the billing rate in effect at the time of discharge. The current rate contained in MSD Ordinance 13021 is $310.07 per ton for COD over 600 mg/L, and $231.35 per ton for TSS over 300 mg/L. Using the assumed COD and TSS concentrations contained in the August 22, 2011 laboratory analytical report, and the proposed discharge volume provided in your application, it is estimated that you will be discharging just under 0.7 tons of COD over 600 mg/L (our quantitative estimate is 0.69 tons COD times $310.07), and just over 0.7 tons of TSS over 300 mg/L (our quantitative estimate is 0.73 tons TSS times $231.35). Please do not pay this amount until you receive our invoice.

This discharge has been approved based upon the information and sample analysis you provided, and is subject to the conditions stated above. This approval may be revoked by the District at any time if any of the information is found to be incorrect, or if the conditions of this approval are violated. Also, if the discharge causes any operational or maintenance problem within the District's collection or treatment system, or results in violations of any conditions of the District's NPDES permit, Mallinckrodt will be considered responsible for damages. If you have any questions, please call me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace
Steve Grace
Environmental Assistant Engineer

bv
pc: Brian Gibson
Doug Mendoza
File: IU, MALLINCKRODT INC [2112059600]

PRIORITIES PERFORMANCE SERVICE

C1A

SD EVALUATION CHECKLIST - ON SITE

APPLICATION INFORMATION

Source Name: Mallinckrodt Inc.

Evaluated by: SMG

Premise Address: 3600 N. 2nd St.

Date: 2/3/12

Send approval letter to applicant

Application Dated: 2/2/12 Received: 2/2/12 All Requested Info. Received: 2/3/12

SOURCE FILING/DESCRIPTION

1 - Source in PIMS? (Y) / N
2 - If No, on IU Cross-Ref list? * Y / N
3 - If No, MSD Account # from E-CIS? Y / N
4 - If none, on "Source" list (pre-IMS)? ** Y / N
5 - If No, assigned SOUR# from PIMS.

* o:\costrecovery\cross reference xls file
** o:\costrecovery\sourlist xls file

SOURCE TYPE (circle): (IU) / Dead IU / SD

INDUSTRY ID: 2112059 6-00

Sample Point: No. Assigned: 829 Description: MP104 reworked wastewater from Bldg. 507

Normal WW flow from premise? N/A _____ ccf/month, 2,992,101 GPD, _____ GPH. from SP010

REGULATORY STATUS

Is waste a Hazardous Waste? (N) / Y
Categorical standards apply? (N) / Y
Contain PCB/ asbestos/ radioactive/ dioxin/ used oil? (N) / Y
Regulatory Agency Oversight? (N) / Y

DISCHARGE CONSIDERATIONS At MSD's connection:

Ordinance Limits (12559, p32) exceeded? (N) / Y
Ordinance other limits exceeded (dye, flash pt <140F, temp >140F, obstruction, nuisance foaming/odor, corrosion causing): (N) / Y
Water Quality Standard exceeded? (N) / Y
Fumes in sewer exceed PEL/TLV limits? (N) / Y
Vapors in sewer exceed 10% of LEL? (N) / Y

RECOMMENDATION: (APPROVE) / DENY (cc WWTP Mgr for timed discharge)

APPROVAL CONDITIONS:

Timed Discharge (COD/BOD/WQ/foam): (N) / Y Limit = _____ gal/hour
Require Treatment before Discharge? (N) / Y
Laboratory analysis fee due? (N) / Y $_____
SMR required? (N) / Y Frequency/analysis:
SMR log: (N/A) / Remediation.xls / Nonremediation.xls
Volume Billing applies (water unmetered or credited)? (N) / Y
Bill High Strength? N / (Y) Yes, If use >60,000 gal/month water ✓ and, > norm WW strgth
Surcharge calculation attached: N/A / N / (Y)
Expiration log updated: (N/A) / N / Y

O:\CostRecovery\Special Discharge\C1a.Checklist.doc

Steve Grace

From: Crouch, Amber [Amber.Crouch@Covidien.com]
Sent: Friday, February 03, 2012 9:37 AM
To: Steve Grace
Subject: RE: B507 Special Discharge Permit Request

Yes, it is.

From: Steve Grace [mailto:sgrace@stlmsd.com]
Sent: Friday, February 03, 2012 8:54 AM
To: Crouch, Amber
Subject: RE: B507 Special Discharge Permit Request

Hello Amber,

I have one quick question...is the analytical data submitted in conjunction with the August 2011 application for this waste stream considered representative of what you're looking to discharge in this batch?

Thanks,
Steve Grace

From: Crouch, Amber [mailto:Amber.Crouch@Covidien.com]
Sent: Thursday, February 02, 2012 11:04 AM
To: Steve Grace
Subject: B507 Special Discharge Permit Request

Steve,

Attached is a Special Discharge Permit for a mixture of MP-104 and water from Building 507 at the St. Louis Plant. The reason for the discharge is a bad batch resulting from a process upset. A permit was issued for a similar discharge in August 2011.

Please call me if you have any questions or need additional information.

Thanks,
Amber Crouch
Senior HSE Engineer
Covidien
3600 North Second Street
St. Louis, MO 63147
USA
(314) 654-0127 office
(314) 253-2213 pager
(314) 654-1251 fax
www.covidien.com
This information may be confidential and/or privileged. Use of this information by anyone other than the intended recipient is prohibited. If you receive this in error, please inform the sender and remove any record of this message.

On-Site Special Discharge High Strength Flow Rate and Surcharge Calculator

1 GENERAL INFORMATION:

Date: 02/03/12
Calculated by: Steve Grace
Source name: Mallinckrodt, Inc.
Waste material: MP104 rework wastewater from building 507
Discharge volume: 1,400 gallons

2 STRENGTH INFORMATION:

Sample BOD =	0	mg/l =	0	lbs BOD to be discharged
Sample COD =	119,000	mg/l =	1389	lbs COD to be discharged
Sample TSS =	126,000	mg/l =	for surcharge calculation only	

3 PLANT DATA: 2010

Treatment area: Bissell

	Flow (MGD)	BOD (mg/L)	COD (mg/L)	BOD (lb/hr)	COD (lb/hr)	Max Loading = 10% BOD (lb/hr)	COD (lb/hr)
Bissell	**140**	**146**	**292**	**7,113**	**14,227**	**711**	**1,423**
Coldwater	26	188	377	1,704	3,408	170	341
Fenton	5	388	776	679	1,357	68	136
Grand Glaize	16	129	405	708	2,218	71	222
Lemay	131	78	210	3,531	9,584	353	958
Lower Meramec	13	124	409	543	1,785	54	179
Missouri River	27	280	559	2,671	5,341	267	534

4 MINIMUM REQUIRED FLOW RATE:

	BOD (hours	BOD (gpm)	COD (hours)	COD (gpm)
Bissell	**0.00**	**0**	**0.98**	**24**
Coldwater	0.00	0	4.08	6
Fenton	0.00	0	10.24	2
Grand Glaize	0.00	0	6.27	4
Lemay	0.00	0	1.45	16
Lower Meramec	0.00	0	7.78	3
Missouri River	0.00	0	2.60	9

5 SURCHARGE AND VOLUME BILLING

Is volume subject to billing? no (yes/no)
Ratio of BOD/COD = 0.00

(Sample BOD) - 300 = 0 mg/l subject to surcharge
(sample COD) - 600 = 118400 mg/l subject to surcharge
(sample TSS) - 300 = 125700 mg/l subject to surcharge

If BOD/COD ratio <= 0.35, the following calculations use the COD value. Otherwise they use the BOD value

Current rates under Ordinance: 13021

Volume = $ 2.11 /CcF
BOD = $ 620.14 /ton
COD = $ 310.07 /ton
TSS = $ 231.35 /ton

Flow charge = $ - based on volume = 1.9 CcF
BOD surcharge = $ -
COD surcharge = $ 214.38
TSS surcharge = $ 169.82
Total discharge charge = $ 384.20
Customer charge = $ 384.20 DEC charges special discharge customers for total charges > $20.00
Approximate charge/gallon = $ 0.27

Comments

require volume report for billing purposes. Smg
as discharge time is < 1 hour, discharge rate does not apply. Smg

Metropolitan St. Louis Sewer District
2350 Market Street
St. Louis, MO 63103

APPLICATION FOR SPECIAL DISCHARGE APPROVAL

I. WASTEWATER SOURCE IDENTIFICATION:

Site Name: Mallinckrodt
Premise Address: 3600 N. 2nd St.
City: St. Louis State: MO Zip: 63147
Owner: Mallinckrodt
Contact Person: Amber Crouch
Title: EHS
Phone: 314-654-0127 Fax: 314-654-1251

II. APPLICANT (mailing information):

Applicant Name: Amber Crouch
Title: EHS
Company Name: Mallinckrodt
Mailing Address: 3600 N. 2nd St.
City: St. Louis State: MO Zip: 63147
Phone: 314-654-0127 Fax: 314-654-1251

III. A. MATERIAL TO BE DISCHARGED (check all applicable boxes):

1. Wastewater description/location: MP-104
2. Process/activity generating wastewater:
3. Physical and chemical composition: List all constituents, and known or potentially present regulated contaminants below.
   ☐ See separate listing enclosed, and/or ☐ See analytical results enclosed, and/or ☒ Material Safety Data Sheet enclosed.

DESCRIPTION	RANGE	UNIT
MP104	22	%
Water	88	%

DESCRIPTION *(continued)*	RANGE	UNIT

4. Is this wastewater from a process subject to EPA's categorical standards in 40 CFR Subchapter N? ☐ Yes ☒ No
   a. If yes, the applicable standards are in: 40 CFR Part _____, Subpart _____ ☐ Existing source ☐ New source
5. Does this wastewater contain polychlorinated biphenyls, asbestos or radioactive material? ☐ Yes ☒ No
   a. If yes, describe:
6. Representative sample: ☐ Laboratory results attached, and/or ☐ Sample provided (1/2 gallon minimum, clear container)
   a. Sample collection point/location: _____ Collection method: _____
   b. Sampler's name/Co.: _____ Sample date/time: _____
   c. Attach chain of custody as available
7. Discharge will occur over the following time period: ☒ < 30 days ☐ ≥ Two years ☐ Other: _____
   a. Expected total volume of wastewater to be discharged over the time period above: _____ Gallons
   b. Proposed discharge volume: 1400 Gallons, at a frequency of: ☒ One time ☐ Daily ☐ Weekly ☐ Monthly ☐ Once/three months ☐ Once/six months ☐ Other: _____
8. Pretreatment of wastewater prior to discharge: ☐ None ☒ Yes, describe: pH adjust at main outfall
   a. If yes, attach site plan, pretreatment system schematic, and design specifications.
9. Wastewater from a remediation project under: ☐ Superfund/CERCLA ☐ RCRA ☐ Voluntary program ☐ UST ☒ Not applicable
   a. If from a remediation project, briefly describe the past and present utilization of the property:

IIIB. MATERIAL FROM UNDERGROUND STORAGE TANK SOURCE

☒ **Not applicable (go to Section IV)**

Please answer the following questions if you are requesting to discharge wastewater associated with an underground storage tank system.

1. a. Wastewater from: ☐ Inside UST(s) ☐ UST system pit ☐ Excavation outside UST system pit ☐ Monitoring well ☐ Groundwater remediation system

   b. UST project involves wastewater from: ☐ UST(s) closed in place ☐ UST(s) removed ☐ Remediation ☐ Upgrade ☐ Maintenance activities ☐ Well monitoring ☐ Other, explain: _____

   c. If wastewater is from a closure project, how long has UST(s) been out of service: _____ years

2. a. State assigned UST site identification number: _____ ☐ Not applicable

   b. Number of USTs affected: _____ ☐ Unknown

   c. For the UST(s) involved, their state identification number(s): _____ ☐ Not applicable

   d. Service Station Identification Number, as applicable: _____

3. Tank contents/former contents: ☐ Gasoline ☐ #2 diesel ☐ Used oil ☐ Unknown ☐ Other: _____

IV. DISCHARGE LOCATION

1. ☒ On-site. Describe proposed point of entry to sewer and the discharge rate (must be a sanitary or combined sewer): _____
Bldg. 507 to plant sewer @ SP010 Note: Range of discharge must not surcharge sewer line.

2. ☐ Haul to MSD Bissell Point Hauled Waste Receiving Station at 10 E. Grand, St. Louis, MO.

   a. Transporters Name: _____ and MSD Hauler ID Number: _____

   b. Hazardous Waste Certification:

   For wastewater which is hauled to MSD's Bissell Point Hauled Waste Receiving Station, I hereby certify that to the best of my knowledge and belief, the above hauled waste is not classified as a RCRA "hazardous waste" as defined by the MDNR in 10 CSR 25 or USEPA in 40 CFR Part 261.

   Applicant Name (print): _____

   Signature: _____ **Date:** _____

ADDITIONAL INFORMATION:

_____

V. APPLICANT SIGNATURE AND CERTIFICATION

This application must be signed by the applicant: either the source contact, or a contractor or agent directly responsible for site activities.

I hereby certify that I am directly responsible for activities at the site regarding the wastewater to be discharged, and to the best of my knowledge and belief, based on appropriate inquiry, the information in this application is true, complete, and accurate. The samples or analyses submitted are representative of the materials to be discharged. If granted approval to discharge, I agree to abide by the MSD Ordinances, and all applicable federal, state and local regulations. I agree to pay the costs of any pre-approval analyses performed by MSD and to pay any applicable disposal charges for the volume and strength of the wastes discharged.

Applicant Name (print): Amber Crouch

Signature: Amber Crouch **Date:** 2/2/12

FOR MSD USE ONLY:

File Name: Mallinckrodt, Inc. ID No. 2120596-00 Sample Point No. 829

MSDS Number: **MP104** * * * * * *Effective Date: 02/19/97*

MSDS Material Safety Data Sheet

From: Mallinckrodt Inc.
675 McDonnell Blvd.
St. Louis, MO 63042

MALLINCKRODT

24 Hour Emergency Telephone: 314-654-1600
CHEMTREC: 1-800-424-9300
National Response in Canada
CANUTEC: 613-996-6666
Outside U.S. And Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

MP-104

1. Product Identification

Synonyms: 5-Amino-N,N'-bis(2,3-dihydroxypropyl)-2,4,6-triiodoisophtha lamide
CAS No.: 76801-93-9
Molecular Weight: 705.04
Chemical Formula: C14H18I3N3O6
Product Codes: 5831

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
5-Amino-N,N'-bis(2,3-dihydroxypropyl)-2,4,6-triiodoisophthalamide (MP-104)	76801-93-9	100%	Yes

3. Hazards Identification

Emergency Overview

As part of good industrial and personal hygiene and safety procedure, avoid all unnecessary exposure to the chemical substance and ensure prompt removal from skin, eyes and clothing.

Potential Health Effects

Inhalation:
Inhalation of large amounts of dust may cause breathing discomfort.
Ingestion:
No information found.
Skin Contact:
No adverse affects expected.
Eye Contact:
No adverse effects expected but dust may cause mechanical irritation.
Chronic Exposure:
No information found.

Aggravation of Pre-existing Conditions:
No information found.

4. First Aid Measures

Inhalation:
Remove to fresh air. Get medical attention for any breathing difficulty.
Ingestion:
If large amounts were swallowed, give water to drink and get medical advice.
Skin Contact:
Wash exposed area with soap and water. Get medical advice if irritation develops.
Eye Contact:
Wash thoroughly with running water. Get medical advice if irritation develops.

5. Fire Fighting Measures

Fire:
Not considered to be a fire hazard.
Explosion:
Not considered to be an explosion hazard.
Fire Extinguishing Media:
Use any means suitable for extinguishing surrounding fire.
Special Information:
In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Sweep up and containerize for reclamation or disposal. Vacuuming or wet sweeping may be used to avoid dust dispersal.

7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:
- OSHA Permissible Exposure Limit (PEL):
15 mg/m3 total dust, 5 mg/m3 respirable fraction for nuisance dusts.
- ACGIH Threshold Limit Value (TLV):
10 mg/m3 total dust containing no asbestos and < 1% crystalline silica for Particulates Not Otherwise Classified (PNOC).
Ventilation System:
A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.
Personal Respirators (NIOSH Approved):
If the exposure limit is exceeded, a half-face dust/mist respirator may be worn for up to ten times the exposure

limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece dust/mist respirator may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:
Gloves and lab coat, apron or coveralls.

Eye Protection:
Safety glasses. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:
Off-white granules.

Odor:
Odorless.

Solubility:
Approximately 1% w/v in water.

Specific Gravity:
0.8-1.0

pH:
No information found.

% Volatiles by volume @ 21C (70F):
No information found.

Boiling Point:
Not applicable.

Melting Point:
185 - 187C (365 - 369F) Decomposes.

Vapor Density (Air=1):
No information found.

Vapor Pressure (mm Hg):
No information found.

Evaporation Rate (BuAc=1):
No information found.

10. Stability and Reactivity

Stability:
Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:
Oxides of carbon as well as ionic or oxidized iodine if heated to decomposition.

Hazardous Polymerization:
Will not occur.

Incompatibilities:
No information found.

Conditions to Avoid:
No information found.

11. Toxicological Information

Unpublished studies: No toxicity observed in mice at i. v. doses below 400 mg/kg. Not mutagenic based on Ames test.

--------\Cancer Lists\----------

Ingredient	---NTP Carcinogen--- Known	Anticipated	IARC Category
5-Amino-N,N'-bis(2,3-dihydroxypropyl)-2,4,6-triiodoisophthalamide (MP-104) (76801-93-9)	No	No	None

12. Ecological Information

Environmental Fate:
No information found.
Environmental Toxicity:
No information found.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Not regulated.

15. Regulatory Information

--------\Chemical Inventory Status - Part 1\----------

Ingredient	TSCA	EC	Japan	Australia
5-Amino-N,N'-bis(2,3-dihydroxypropyl)-2,4,6-triiodoisophthalamide (MP-104) (76801-93-9)	Exempt	No	No	No

--------\Chemical Inventory Status - Part 2\----------

Ingredient	Korea	--Canada-- DSL	NDSL	Phil.
5-Amino-N,N'-bis(2,3-dihydroxypropyl)-2,4,6-triiodoisophthalamide (MP-104) (76801-93-9)	No	No	No	No

--------\Federal, State & International Regulations - Part 1\----------

Ingredient	-SARA 302- RQ	TPQ	------SARA 313------ List	Chemical Catg.
5-Amino-N,N'-bis(2,3-dihydroxypropyl)-2,4,6-triiodoisophthalamide (MP-104) (76801-93-9)	No	No	No	No

--------\Federal, State & International Regulations - Part 2\----------

Ingredient	CERCLA	-RCRA- 261.33	-TSCA- 8(d)
5-Amino-N,N'-bis(2,3-dihydroxypropyl)-2,4,6-triiodoisophthalamide (MP-104)	No	No	No

(76801-93-9)

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: No Chronic: No Fire: No Pressure: No
Reactivity: No (Pure / Solid)

Australian Hazchem Code: No information found.
Poison Schedule: No information found.
WHMIS:
This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: 0 Flammability: 0 Reactivity: 0
Label Hazard Warning:
As part of good industrial and personal hygiene and safety procedure, avoid all unnecessary exposure to the chemical substance and ensure prompt removal from skin, eyes and clothing.
Label Precautions:
None.
Label First Aid:
Not applicable.
Product Use:
Drug manufacturing intermediate.
Revision Information:
New 16 section MSDS format, all sections have been revised.
Disclaimer:
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Prepared by: Strategic Services Division
Phone Number: (314) 539-1600 (U.S.A.)

Metropolitan St. Louis Sewer District
Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

January 25, 2012

Julie Summers
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Re: Wastewater User Charge Billing for Special Discharge

Dear Ms. Summers:

This is to advise you of the wastewater user charges applicable to an on-site special discharge approved in our original letter to you dated January 21, 2011, and extension dated January 13, 2012. The discharge dates and quantities are from information submitted by you in an email dated January 24, 2012.

Our Finance Department will bill you by invoice for the charges described below. These charges are based on the rates in MSD Wastewater User Charge Ordinance 13021.

PARTY TO BILL: Addressee

BILLING IS FOR: On-Site Special Discharge

DISCHARGE PERIOD: December 6 – December 31, 2011

SOURCE OF WASTE: 14 batches of treated rainwater and groundwater from the remediation of the Columbium-Tantalum (CT) decommissioning project at the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri.

Discharge Period	Billing Item	Quantity	Units	Rate	Charge
December 6-31, 2011	Volume	749	CcF	$2.11	$1,580.39
Totals:	------	749	Gal	-----	$1,580.39

Please do not pay until you receive our invoice. If you have any questions, please contact me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

pc Chris Verplancke - Finance Dept.
Becky Bartholomew – Finance Dept.
Laura Joiner – Finance Dept.
Doug Mendoza
Brian Gibson

File: IU, MALLINCKRODT INC [2112059600], 3600 North Second Street, St. Louis, Missouri

21120896-00 3600 N. 2nd St.

MSD

Summary of CT Excavation Wastewater Discharges

Mallinckrodt St. Louis Plant

SP850

	Date of Discharge	Start Time	End Time	Volume Discharged (gallons)
Discharge 119	12/15/2011	820	1210	40,000
Discharge 121	12/6/2011	1300	1730	40,000
Discharge 122	12/12/2011	0900	1300	40,000
Discharge 123	12/15/2011	1210	1620	40,000
Discharge 124	12/20/2011	815	1130	40,000
Discharge 125	12/19/2011	1045	1515	40,000
Discharge 126	12/20/2011	1245	1700	40,000
Discharge 127	12/20/2011	2215	0215	40,000
Discharge 128	12/21/2011	1530	[illegible]	40,000
Discharge 129	12/21/2011	2215	[illegible]	40,000
Discharge 130	12/28/2011	1330	[illegible]	40,000
Discharge 131	12/29/2011	1305	[illegible]	40,000
Discharge 132	12/30/2011	1405	[illegible]	40,000
Discharge 133	12/31/2011	1445	[illegible]	40,000

Mallinckrodt
3600 N. 2nd St.
SP850 WSD
IU acct # date?

Date 12-31-11

Wastewater Discharge 119 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8111 — Original Sample — Sample Date: 14 Nov 2011

Sample ID: 60162412-SMP-PL5-WW-OTH-8117 — Resample Frac Tank 238938 — Sample Date: 23 Nov 2011

Sample ID: 60162412-SMP-PL5-WW-OTH-8118 — Resample Frac Tank 256419 — Sample Date: 23 Nov 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		0.0022	
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.052*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	
Copper	mg/L	2.7	< 0.025	
Iron	mg/L	150	1.99	
Nickel	mg/L	2.3	0.042	
Lead	mg/L	0.4	< 0.01	
Zinc	mg/L	3	0.204	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	6.9	
COD	mg/L	600	207	
TSS	mg/L	300	24.0	
Radionuclides				
Gross Alpha	pCi/L	3,000	22	see note (3)
Gross Beta	pCi/L	50	28.45	see note (3)
Ra-226	pCi/L	10	0.995	see note (3)
Ra-228	pCi/L	30	0.4	see note (3)
Th-228	pCi/L	2,000	1.05	see note (3)
Th-230	pCi/L	1,000	0.785	see note (3)
Th-232	pCi/L	300	0.685	see note (3)
U-234	pCi/L		0.285	see note (3)
U-235/6	pCi/L		0.103	see note (3)
U-238	pCi/L		0.189	see note (3)
Total Uranium	*pCi/L*	*3,000*	*< 0.5765*	

10 CFR 20 Appendix B Table 3 Values[2]

Analyte	Units	Regulatory Limit	Undiluted Concentration	Release Fraction
Ra-226	pCi/L	600	0.995	0.002
Ra-228	pCi/L	600	0.4	0.001
Th-228	pCi/L	2,000	1.05	0.001
Th-230	pCi/L	1,000	0.785	0.001
Th-232	pCi/L	300	0.685	0.002
U-234	pCi/L	3,000	0.285	0.000
U-235/6	pCi/L	3,000	0.1025	0.000
U-238	pCi/L	3,000	0.189	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.006*

Discharge Volume (gals) = 40,000

Analyte	Units	Annual Limit	Discharge Activity	Year-to-Date Activity
Gross Radioactivity	Ci	1	7.6E-06	8.190E-04

Notes:

(1) 'B' indicates estimated value; 'U' result less than sample detection limit; 'ND' not detected; 'NR' not reported. 'J' method blank contamination. 'E' matrix interference

(2) assumes undiluted concentration for comparison with regulatory limit only

(3) On 11/23/11 resampled the Frac Tanks due to high total Beta of 56 pci/l (11/14/11). Radionuclide results listed are the average from the resampling evolution.

BAH 12/9/2011

Discharge Log for Plant 5 Water Processing Frac Tanks

CT Covidien Plant	Discharge 119
Contractor:	AECOM
Date Discharge Started:	12/15/2011
Date Discharged Completed:	12/15/2011

Annalytical Results:

Various:		Total Metals:	
pH:	See Results In Monthly Summary	Cadmium:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary	Chromium:	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary	Copper:	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary	Iron:	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary	Lead:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary	Nickel:	See Results In Monthly Summary
		Zinc:	See Results In Monthly Summary

Isotopic	
U-235	See Results In Monthly Summary
U-238	See Results In Monthly Summary
Ra-226	See Results In Monthly Summary
Ra-228	See Results In Monthly Summary
Th-230	See Results In Monthly Summary
Th-232	See Results In Monthly Summary

			Start		Stop	
Signurature	Frac Tank ID#	Date	Time	Gallons	Time	Gallons
R Benn	238938	12/15/2011	0820	20000	XXX	XXX
	238938	12/15/2011	XXX	XXX	1210	0
R. Benn	256419	12/15/2011	0820	20000	XXX	XXX
	256419	12/15/2011	XXX	XXX	1210	0
					XXX	XXX
			XXX	XXX		
					XXX	XXX
			XXX	XXX		

Total Time:	3.83	Hours
Total Volume	40000	Gallons

QA/QC: William L. Ebbets

Date: 12/16/11

Wastewater Discharge 121 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8113

Sample Date: 22 Nov 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	ND
Iron	mg/L	150	< 0.1	
Nickel	mg/L	2.3	< 0.04	ND
Lead	mg/L	0.4	< 0.01	
Zinc	mg/L	3	< 0.02	ND

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.1	
COD	mg/L	600	54	
TSS	mg/L	300	< 4.0	
Radionuclides				
Gross Alpha	pCi/L	3,000	< 12	
Gross Beta	pCi/L	50	< 8.1	
Ra-226	pCi/L	10	< 0.2	
Ra-228	pCi/L	30	< 0.41	
Th-228	pCi/L	2,000	< 0.27	
Th-230	pCi/L	1,000	< 0.23	
Th-232	pCi/L	300	< 0.18	
U-234	pCi/L		0.12	
U-235/6	pCi/L		< 0.072	
U-238	pCi/L		< 0.087	
Total Uranium	*pCi/L*	*3,000*	*< 0.279*	

10 CFR 20 Appendix B Table 3 Values[2]

Analyte	Units	Regulatory Limit	Undiluted Concentration	Release Fraction
Ra-226	pCi/L	600	0.2	0.000
Ra-228	pCi/L	600	0.41	0.001
Th-228	pCi/L	2,000	0.27	0.000
Th-230	pCi/L	1,000	0.23	0.000
Th-232	pCi/L	300	0.18	0.001
U-234	pCi/L	3,000	0.12	0.000
U-235/6	pCi/L	3,000	0.072	0.000
U-238	pCi/L	3,000	0.087	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.002*

Discharge Volume (gals) = 40,000

Analyte	Units	Annual Limit	Discharge Activity	Year-to-Date Activity
Gross Radioactivity	Ci	1	3.0E-06	8.037E-04

Notes:

(1) 'B' indicates estimated value; 'U' result less than sample detection limit; 'ND' not detected; 'NR' not reported. 'J' method blank contamination. 'E' matrix interference

(2) assumes undiluted concentration for comparison with regulatory limit only

OK
12/5/11

Discharge Log for Plant 5 Water Processing Frac Tanks

CT Covidien Plant	Discharge 121
Contractor:	AECOM
Date Discharge Started:	12/6/2011
Date Discharged Completed:	12/6/2011

Annalytical Results:			
Various:		Total Metals:	
pH:	See Results In Monthly Summary	Cadmium:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary	Chromium:	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary	Copper:	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary	Iron:	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary	Lead:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary	Nickel:	See Results In Monthly Summary
		Zinc:	See Results In Monthly Summary
Isotopic			
U-235	See Results In Monthly Summary		
U-238	See Results In Monthly Summary		
Ra-226	See Results In Monthly Summary		
Ra-228	See Results In Monthly Summary		
Th-230	See Results In Monthly Summary		
Th-232	See Results In Monthly Summary		

			Start		Stop	
Signurature	Frac Tank ID#	Date	Time	Gallons	Time	Gallons
	239653	12/6/2011	1300	20000	xxx	xxx
	239653	12/6/2011	xxx	xxx	1730	0
	256563	12/6/2011	1300	20000	xxx	xxx
	256563	12/6/2011	xxx	xxx	1730	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time:	4.5	Hours
Total Volume	40000	Gallons

QA/QC: _____ Date: 12/7/11

Wastewater Discharge 122 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8119

Sample Date: 01 DEC 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	ND
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	ND
Iron	mg/L	150	< 0.1	ND
Nickel	mg/L	2.3	< 0.04	ND
Lead	mg/L	0.4	< 0.01	ND
Zinc	mg/L	3	< 0.02	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	8.0	
COD	mg/L	600	125	
TSS	mg/L	300	6.0	
Radionuclides				
Gross Alpha	pCi/L	3,000	< 12	
Gross Beta	pCi/L	50	38.4	
Ra-226	pCi/L	10	< 0.17	
Ra-228	pCi/L	30	< 0.44	
Th-228	pCi/L	2,000	< 0.25	
Th-230	pCi/L	1,000	0.19	
Th-232	pCi/L	300	< 0.079	
U-234	pCi/L		0.18	
U-235/6	pCi/L		< 0.068	
U-238	pCi/L		< 0.14	
Total Uranium	*pCi/L*	*3,000*	*< 0.388*	

10 CFR 20 Appendix B Table 3 Values[2]

Analyte	Units	Regulatory Limit	Undiluted Concentration	Release Fraction
Ra-226	pCi/L	600	0.17	0.000
Ra-228	pCi/L	600	0.44	0.001
Th-228	pCi/L	2,000	0.25	0.000
Th-230	pCi/L	1,000	0.19	0.000
Th-232	pCi/L	300	0.079	0.000
U-234	pCi/L	3,000	0.18	0.000
U-235/6	pCi/L	3,000	0.068	0.000
U-238	pCi/L	3,000	0.14	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.002*

Discharge Volume (gals) = 40,000

Analyte	Units	Annual Limit	Discharge Activity	Year-to-Date Activity
Gross Radioactivity	Ci	1	7.6E-06	8.114E-04

Notes:

(1) 'B' indicates estimated value; 'U' result less than sample detection limit; 'ND' not detected; 'NR' not reported. 'J' method blank contamination. 'E' matrix interference

(2) assumes undiluted concentration for comparison with regulatory limit only

12/9/2011

Discharge Log for Plant 5 Water Processing Frac Tanks

CT Covidien Plant — Discharge 122

Contractor: AECOM

Date Discharge Started: 12/12/2011

Date Discharged Completed: 12/12/2011

Annalytical Results:			
Various:		Total Metals:	
pH:	See Results In Monthly Summary	Cadmium:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary	Chromium:	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary	Copper:	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary	Iron:	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary	Lead:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary	Nickel:	See Results In Monthly Summary
		Zinc:	See Results In Monthly Summary
Isotopic			
U-235	See Results In Monthly Summary		
U-238	See Results In Monthly Summary		
Ra-226	See Results In Monthly Summary		
Ra-228	See Results In Monthly Summary		
Th-230	See Results In Monthly Summary		
Th-232	See Results In Monthly Summary		

			Start		Stop	
Signurature	Frac Tank ID#	Date	Time	Gallons	Time	Gallons
	255824	12/12/2011	0900	20000	xxx	xxx
	255824	12/12/2011	xxx	xxx	1300	0
	239801	12/12/2011	0900	20000	xxx	xxx
	239801	12/12/2011	xxx	xxx	1300	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time: 4 Hours

Total Volume 40000 Gallons

QA/QC: Yaude WWCS Date: 12/13/11

Wastewater Discharge 123 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8122

Sample Date: 07 DEC 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	ND
Iron	mg/L	150	< 0.1	ND
Nickel	mg/L	2.3	< 0.04	
Lead	mg/L	0.4	< 0.01	ND
Zinc	mg/L	3	< 0.02	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.8	
COD	mg/L	600	28	
TSS	mg/L	300	6.0	
Radionuclides				
Gross Alpha	pCi/L	3,000	< 15	
Gross Beta	pCi/L	50	30	
Ra-226	pCi/L	10	0.183	
Ra-228	pCi/L	30	< 0.52	
Th-228	pCi/L	2,000	< 0.27	
Th-230	pCi/L	1,000	< 0.16	
Th-232	pCi/L	300	< 0.11	
U-234	pCi/L		0.14	
U-235/6	pCi/L		< 0.130	
U-238	pCi/L		0.108	
Total Uranium	*pCi/L*	*3,000*	*< 0.378*	

10 CFR 20 Appendix B Table 3 Values[2]

Analyte	Units	Regulatory Limit	Undiluted Concentration	Release Fraction
Ra-226	pCi/L	600	0.183	0.000
Ra-228	pCi/L	600	0.52	0.001
Th-228	pCi/L	2,000	0.27	0.000
Th-230	pCi/L	1,000	0.16	0.000
Th-232	pCi/L	300	0.11	0.000
U-234	pCi/L	3,000	0.14	0.000
U-235/6	pCi/L	3,000	0.13	0.000
U-238	pCi/L	3,000	0.108	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.002*

Discharge Volume (gals) = 40,000

Analyte	Units	Annual Limit	Discharge Activity	Year-to-Date Activity
Gross Radioactivity	Ci	1	6.8E-06	8.258E-04

Notes:

(1) 'B' indicates estimated value; 'U' result less than sample detection limit; 'ND' not detected; 'NR' not reported. 'J' method blank contamination. 'E' matrix interference

(2) assumes undiluted concentration for comparison with regulatory limit only

OK
William L. Eason
12/15/11

Discharge Log for Plant 5 Water Processing Frac Tanks

CT Covidien Plant — Discharge 123

Contractor: AECOM

Date Discharge Started: 12/15/2011

Date Discharged Completed: 12/15/2011

Annalytical Results:			
Various:		Total Metals:	
pH:	See Results In Monthly Summary	Cadmium:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary	Chromium:	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary	Copper:	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary	Iron:	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary	Lead:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary	Nickel:	See Results In Monthly Summary
		Zinc:	See Results In Monthly Summary
Isotopic			
U-235	See Results In Monthly Summary		
U-238	See Results In Monthly Summary		
Ra-226	See Results In Monthly Summary		
Ra-228	See Results In Monthly Summary		
Th-230	See Results In Monthly Summary		
Th-232	See Results In Monthly Summary		

			Start		Stop	
Signurature	Frac Tank ID#	Date	Time	Gallons	Time	Gallons
[illegible]	256563	12/15/2011	1210	20000	xxx	xxx
R Bean	256563	12/15/2011	xxx	xxx	1620	0
[illegible]	239653	12/15/2011	1210	20000	xxx	xxx
R Bean	239653	12/15/2011	xxx	xxx	1620	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time: 4.17 Hours

Total Volume 40000 Gallons

QA/QC: [illegible] William L. Evans

Date: 12/16/11

Wastewater Discharge 124 - Analytical Results Summary

Sample ID: 60162412-SMP-PLS-WW-OTH-8125

Sample Date: 12 DEC 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND ✓
Acrylonitrile	mg/L		< 0.01	ND ✓
Benzene	mg/L		< 0.001	ND ✓
Bromoform	mg/L		< 0.001	ND ✓
Bromomethane	mg/L		< 0.002	ND ✓
Carbon tetrachloride	mg/L		< 0.001	ND ✓
Chlorobenzene	mg/L		< 0.001	ND ✓
Chlorodibromomethane	mg/L		< 0.001	ND ✓
Chloroethane	mg/L		< 0.002	ND ✓
Chloroform	mg/L		< 0.001	ND ✓
Chloromethane	mg/L		< 0.002	ND ✓
Dichlorobromomethane	mg/L		< 0.001	ND ✓
1,1- Dichloroethane	mg/L		< 0.001	ND ✓
1,2- Dichloroethane	mg/L		< 0.001	ND ✓
1,1- Dichloroethene	mg/L		< 0.001	ND ✓
1,2- Dichloroethane	mg/L		< 0.002	ND ✓
1,2- Dichloropropane	mg/L		< 0.001	ND ✓
cis-1,3-Dichloropropene	mg/L		< 0.001	ND ✓
trans-1,3-Dichloropropene	mg/L		< 0.001	ND ✓
Ethylbenzene	mg/L		< 0.001	ND ✓
Methylene Chloride	mg/L		< 0.001	
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND ✓
Tetra chloroethene	mg/L		< 0.001	ND ✓
Toluene	mg/L		< 0.001	ND ✓
1,1,1- Trichloroethane	mg/L		< 0.001	ND ✓
1,1,2- Trichloroethane	mg/L		< 0.001	ND ✓
Trichloroethene	mg/L		< 0.001	ND ✓
Vinyl Chloride	mg/L		< 0.002	ND ✓
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND ✓
Chromium	mg/L	5	< 0.01	ND ✓
Copper	mg/L	2.7	< 0.025	ND ✓
Iron	mg/L	150	< 0.1	ND ✓
Nickel	mg/L	2.3	< 0.04	
Lead	mg/L	0.4	< 0.01	ND ✓
Zinc	mg/L	3	< 0.02	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.7 ✓	
COD	mg/L	600	17 ✓	
TSS	mg/L	300	ND ✓	
Radionuclides				
Gross Alpha	pCi/L	3,000	< 11 ✓	
Gross Beta	pCi/L	50	20.2 ✓	
Ra-226	pCi/L	10	0.36 ✓	
Ra-228	pCi/L	30	< 0.49 ✓	
Th-228	pCi/L	2,000	< 0.40 ✓	
Th-230	pCi/L	1,000	< 0.3 ✓	
Th-232	pCi/L	300	< 0.2 ✓	
U-234	pCi/L		0.2 ✓	
U-235/6	pCi/L		< 0.160 ✓	
U-238	pCi/L		0.16 ✓	
Total Uranium	*pCi/L*	*3,000*	*< 0.52* ✓	

10 CFR 20 Appendix B Table 3 Values[2]

Analyte	Units	Regulatory Limit	Undiluted Concentration	Release Fraction
Ra-226	pCi/L	600	0.36 ✓	0.001
Ra-228	pCi/L	600	0.49 ✓	0.001
Th-228	pCi/L	2,000	0.4 ✓	0.000
Th-230	pCi/L	1,000	0.3 ✓	0.000
Th-232	pCi/L	300	0.2 ✓	0.001
U-234	pCi/L	3,000	0.2 ✓	0.000
U-235/6	pCi/L	3,000	0.16 ✓	0.000
U-238	pCi/L	3,000	0.16 ✓	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.003*

Discharge Volume (gals) = 40,000

Analyte	Units	Annual Limit	Discharge Activity	Year-to-Date Activity
Gross Radioactivity	Ci	1	4.7E-06	8.306E-04

Notes:

(1) 'B' indicates estimated value; 'U' result less than sample detection limit; 'ND' not detected; 'NR' not reported. 'J' method blank contamination. 'E' matrix interference

(2) assumes undiluted concentration for comparison with regulatory limit only

12/27/2011

Discharge Log for Plant 5 Water Processing Frac Tanks

CT Covidien Plant — Discharge 124

Contractor: AECOM

Date Discharge Started: 12/20/2011

Date Discharged Completed: 12/20/2011

Annalytical Results:			
Various:		Total Metals:	
pH:	See Results In Monthly Summary	Cadmium:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary	Chromium:	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary	Copper:	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary	Iron:	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary	Lead:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary	Nickel:	See Results In Monthly Summary
		Zinc:	See Results In Monthly Summary
Isotopic			
U-235	See Results In Monthly Summary		
U-238	See Results In Monthly Summary		
Ra-226	See Results In Monthly Summary		
Ra-228	See Results In Monthly Summary		
Th-230	See Results In Monthly Summary		
Th-232	See Results In Monthly Summary		

			Start		Stop	
Signurature	Frac Tank ID#	Date	Time	Gallons	Time	Gallons
Dont have	255824	12/20/2011	0815	20000	xxx	xxx
Dont have	255824	12/20/2011	xxx	xxx	1130	0
Dont have	239801	12/20/2011	0815	20000	xxx	xxx
Dont have	239801	12/20/2011	xxx	xxx	1130	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time: 3.25 Hours

Total Volume 40000 Gallons

QA/QC: [illegible] Date: 12/21/11

Wastewater Discharge 125 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8128

Sample Date: 16 DEC 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethene	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	ND
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	ND
Iron	mg/L	150	< 0.1	ND
Nickel	mg/L	2.3	< 0.04	
Lead	mg/L	0.4	< 0.01	ND
Zinc	mg/L	3	0.0334	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.4	
COD	mg/L	600	51	
TSS	mg/L	300	ND	
Radionuclides				
Gross Alpha	pCi/L	3,000	< 11	
Gross Beta	pCi/L	50	25.5	
Ra-226	pCi/L	10	0.5	
Ra-228	pCi/L	30	< 0.5	
Th-228	pCi/L	2,000	< 0.33	
Th-230	pCi/L	1,000	< 0.23	
Th-232	pCi/L	300	< 0.14	
U-234	pCi/L		< 0.14	
U-235/6	pCi/L		< 0.130	
U-238	pCi/L		0.12	
Total Uranium	*pCi/L*	*3,000*	*< 0.39*	

10 CFR 20 Appendix B Table 3 Values[2]

Analyte	Units	Regulatory Limit	Undiluted Concentration	Release Fraction
Ra-226	pCi/L	600	0.5	0.001
Ra-228	pCi/L	600	0.5	0.001
Th-228	pCi/L	2,000	0.33	0.000
Th-230	pCi/L	1,000	0.23	0.000
Th-232	pCi/L	300	0.14	0.000
U-234	pCi/L	3,000	0.14	0.000
U-235/6	pCi/L	3,000	0.13	0.000
U-238	pCi/L	3,000	0.12	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.003*

Discharge Volume (gals) = 40,000

Analyte	Units	Annual Limit	Discharge Activity	Year-to-Date Activity
Gross Radioactivity	Ci	1	5.5E-06	8.361E-04

Notes:

(1) 'B' indicates estimated value; 'U' result less than sample detection limit; 'ND' not detected; 'NR' not reported. 'J' method blank contamination. 'E' matrix interference

(2) assumes undiluted concentration for comparison with regulatory limit only

12/27/2011

TR

Discharge Log for Plant 5 Water Processing Frac Tanks

CT Covidien Plant	Discharge 125
Contractor:	AECOM
Date Discharge Started:	12/19/2011
Date Discharged Completed:	12/19/2011

Annalytical Results:			
Various:		Total Metals:	
pH:	See Results In Monthly Summary	Cadmium:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary	Chromium:	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary	Copper:	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary	Iron:	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary	Lead:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary	Nickel:	See Results In Monthly Summary
		Zinc:	See Results In Monthly Summary
Isotopic			
U-235	See Results In Monthly Summary		
U-238	See Results In Monthly Summary		
Ra-226	See Results In Monthly Summary		
Ra-228	See Results In Monthly Summary		
Th-230	See Results In Monthly Summary		
Th-232	See Results In Monthly Summary		

			Start		Stop	
Signurature	Frac Tank ID#	Date	Time	Gallons	Time	Gallons
	238938	12/19/2011	1045	20000	xxx	xxx
	238938	12/19/2011	xxx	xxx	1515	0
	256419	12/19/2011	1045	20000	xxx	xxx
	256419	12/19/2011	xxx	xxx	1515	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time:	4.5	Hours
Total Volume	40000	Gallons

QA/QC: _____ Date: 12/21/11

Wastewater Discharge 126 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8131

Sample Date: 17 DEC 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	
Iron	mg/L	150	< 0.1	ND
Nickel	mg/L	2.3	< 0.04	
Lead	mg/L	0.4	< 0.01	ND
Zinc	mg/L	3	0.154	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.3	
COD	mg/L	600	36	
TSS	mg/L	300	ND	
Radionuclides				
Gross Alpha	pCi/L	3,000	< 11	
Gross Beta	pCi/L	50	15	
Ra-226	pCi/L	10	0.62	
Ra-228	pCi/L	30	< 0.37	
Th-228	pCi/L	2,000	< 0.18	
Th-230	pCi/L	1,000	0.22	
Th-232	pCi/L	300	< 0.14	
U-234	pCi/L		0.15	
U-235/6	pCi/L		< 0.150	
U-238	pCi/L		0.11	
Total Uranium	*pCi/L*	*3,000*	*< 0.41*	

10 CFR 20 Appendix B Table 3 Values[2]

Analyte	Units	Regulatory Limit	Undiluted Concentration	Release Fraction
Ra-226	pCi/L	600	0.62	0.001
Ra-228	pCi/L	600	0.37	0.001
Th-228	pCi/L	2,000	0.18	0.000
Th-230	pCi/L	1,000	0.22	0.000
Th-232	pCi/L	300	0.14	0.000
U-234	pCi/L	3,000	0.15	0.000
U-235/6	pCi/L	3,000	0.15	0.000
U-238	pCi/L	3,000	0.11	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.003*

Discharge Volume (gals) = 40,000

Analyte	Units	Annual Limit	Discharge Activity	Year-to-Date Activity
Gross Radioactivity	Ci	1	3.9E-06	8.400E-04

Notes:

(1) 'B' indicates estimated value; 'U' result less than sample detection limit; 'ND' not detected; 'NR' not reported. 'J' method blank contamination. 'E' matrix interference

(2) assumes undiluted concentration for comparison with regulatory limit only

12/28/2011

Discharge Log for Plant 5 Water Processing Frac Tanks

CT Covidien Plant	Discharge 126
Contractor:	AECOM
Date Discharge Started:	12/20/2011
Date Discharged Completed:	12/20/2011

Annalytical Results:

Various:		Total Metals:	
pH:	See Results In Monthly Summary	Cadmium:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary	Chromium:	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary	Copper:	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary	Iron:	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary	Lead:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary	Nickel:	See Results In Monthly Summary
		Zinc:	See Results In Monthly Summary

Isotopic	
U-235	See Results In Monthly Summary
U-238	See Results In Monthly Summary
Ra-226	See Results In Monthly Summary
Ra-228	See Results In Monthly Summary
Th-230	See Results In Monthly Summary
Th-232	See Results In Monthly Summary

			Start		Stop	
Signuratyre	Frac Tank ID#	Date	Time	Gallons	Time	Gallons
[illegible]	239653	12/20/2011	1245	20000	XXX	XXX
[illegible]	239653	12/20/2011	XXX	XXX	1700	0
[illegible]	256563	12/20/2011	1245	20000	XXX	XXX
[illegible]	256563	12/20/2011	XXX	XXX	1700	0
					XXX	XXX
			XXX	XXX		
					XXX	XXX
			XXX	XXX		

Total Time:	4.25	Hours
Total Volume	40000	Gallons

QA/QC: [illegible] Date: 12/21/11

Wastewater Discharge 127 - Analytical Results Summary

Sample ID: 60162412-SMP-PLS-WW-OTH-8134

Sample Date: 20 DEC 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND ✓
Acrylonitrile	mg/L		< 0.01	ND ✓
Benzene	mg/L		< 0.001	ND ✓
Bromoform	mg/L		< 0.001	ND ✓
Bromomethane	mg/L		< 0.002	ND ✓
Carbon tetrachloride	mg/L		< 0.001	ND ✓
Chlorobenzene	mg/L		< 0.001	ND ✓
Chlorodibromomethane	mg/L		< 0.001	ND ✓
Chloroethane	mg/L		< 0.002	ND ✓
Chloroform	mg/L		< 0.001	ND ✓
Chloromethane	mg/L		< 0.002	ND ✓
Dichlorobromomethane	mg/L		< 0.001	ND ✓
1,1- Dichloroethane	mg/L		< 0.001	ND ✓
1,2- Dichloroethane	mg/L		< 0.001	ND ✓
1,1- Dichloroethene	mg/L		< 0.001	ND ✓
1,2- Dichloroethane	mg/L		< 0.002	ND ✓
1,2- Dichloropropane	mg/L		< 0.001	ND ✓
cis-1,3-Dichloropropene	mg/L		< 0.001	ND ✓
trans-1,3-Dichloropropene	mg/L		< 0.001	ND ✓
Ethylbenzene	mg/L		< 0.001	ND ✓
Methylene Chloride	mg/L		< 0.001	✓
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND ✓
Tetra chloroethene	mg/L		< 0.001	ND ✓
Toluene	mg/L		< 0.001	ND ✓
1,1,1- Trichloroethane	mg/L		< 0.001	ND ✓
1,1,2- Trichloroethane	mg/L		< 0.001	ND ✓
Trichloroethene	mg/L		< 0.001	ND ✓
Vinyl Chloride	mg/L		< 0.002	ND ✓
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND ✓
Chromium	mg/L	5	< 0.01	ND ✓
Copper	mg/L	2.7	< 0.025	✓
Iron	mg/L	150	< 0.1	ND ✓
Nickel	mg/L	2.3	< 0.04	✓
Lead	mg/L	0.4	< 0.01	ND ✓
Zinc	mg/L	3	0.242	✓

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.2 ✓	
COD	mg/L	600	49 ✓	
TSS	mg/L	300	2.0 ✓	B
Radionuclides				
Gross Alpha	pCi/L	3,000	< 10 ✓	
Gross Beta	pCi/L	50	24.9 ✓	
Ra-226	pCi/L	10	0.95 ✓	
Ra-228	pCi/L	30	0.56 ✓	
Th-228	pCi/L	2,000	< 0.23 ✓	
Th-230	pCi/L	1,000	< 0.18 ✓	
Th-232	pCi/L	300	< 0.26 ✓	
U-234	pCi/L		0.17 ✓	
U-235/6	pCi/L		< 0.150 ✓	
U-238	pCi/L		0.13 ✓	
Total Uranium	*pCi/L*	*3,000*	*< 0.45* ✓	

10 CFR 20 Appendix B Table 3 Values[2]

Analyte	Units	Regulatory Limit	Undiluted Concentration	Release Fraction
Ra-226	pCi/L	600	0.95 ✓	0.002
Ra-228	pCi/L	600	0.56 ✓	0.001
Th-228	pCi/L	2,000	0.23 ✓	0.000
Th-230	pCi/L	1,000	0.18 ✓	0.000
Th-232	pCi/L	300	0.26 ✓	0.001
U-234	pCi/L	3,000	0.17 ✓	0.000
U-235/6	pCi/L	3,000	0.15 ✓	0.000
U-238	pCi/L	3,000	0.13 ✓	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.004*

Discharge Volume (gals) = 40,000

Analyte	Units	Annual Limit	Discharge Activity	Year-to-Date Activity
Gross Radioactivity	Ci	1	5.3E-06	8.453E-04 ✓

Notes:

(1) 'B' indicates estimated value; 'U' result less than sample detection limit; 'ND' not detected; 'NR' not reported. 'J' method blank contamination. 'E' matrix interference

(2) assumes undiluted concentration for comparison with regulatory limit only

1/3/2012

Discharge Log for Plant 5 Water Processing Frac Tanks

CT Covidien Plant — Discharge 127

Contractor: AECOM

Date Discharge Started: 12/20/2011

Date Discharged Completed: 12/21/2011

Annalytical Results:			
Various:		Total Metals:	
pH:	See Results In Monthly Summary	Cadmium:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary	Chromium:	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary	Copper:	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary	Iron:	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary	Lead:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary	Nickel:	See Results In Monthly Summary
		Zinc:	See Results In Monthly Summary
Isotopic			
U-235	See Results In Monthly Summary		
U-238	See Results In Monthly Summary		
Ra-226	See Results In Monthly Summary		
Ra-228	See Results In Monthly Summary		
Th-230	See Results In Monthly Summary		
Th-232	See Results In Monthly Summary		

			Start		Stop	
Signurature	Frac Tank ID#	Date	Time	Gallons	Time	Gallons
	255824	12/20/2011	2215	20000	xxx	xxx
	255824	12/21/2011	xxx	xxx	0215	0
	239801	12/20/2011	2215	20000	xxx	xxx
	239801	12/21/2011	xxx	xxx	0215	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time: 4 Hours

Total Volume 40000 Gallons

QA/QC: _____ Date: 12/21/11

Wastewater Discharge 128 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8138

Sample Date: 21 DEC 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethene	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	< *0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	
Iron	mg/L	150	< 0.1	ND
Nickel	mg/L	2.3	< 0.04	
Lead	mg/L	0.4	< 0.01	ND
Zinc	mg/L	3	0.275	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.2	
COD	mg/L	600	49	
TSS	mg/L	300	2.0	B
Radionuclides				
Gross Alpha	pCi/L	3,000	< 8.9	
Gross Beta	pCi/L	50	24.7	
Ra-226	pCi/L	10	1.15	
Ra-228	pCi/L	30	0.5	
Th-228	pCi/L	2,000	< 0.20	
Th-230	pCi/L	1,000	< 0.26	
Th-232	pCi/L	300	< 0.22	
U-234	pCi/L		0.17	
U-235/6	pCi/L		< 0.130	
U-238	pCi/L		0.19	
Total Uranium	*pCi/L*	*3,000*	< *0.49*	

10 CFR 20 Appendix B Table 3 Values[2]

Analyte	Units	Regulatory Limit	Undiluted Concentration	Release Fraction
Ra-226	pCi/L	600	1.15	0.002
Ra-228	pCi/L	600	0.5	0.001
Th-228	pCi/L	2,000	0.2	0.000
Th-230	pCi/L	1,000	0.26	0.000
Th-232	pCi/L	300	0.22	0.001
U-234	pCi/L	3,000	0.17	0.000
U-235/6	pCi/L	3,000	0.13	0.000
U-238	pCi/L	3,000	0.19	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.004*

Discharge Volume (gals) = 40,000

Analyte	Units	Annual Limit	Discharge Activity	Year-to-Date Activity
Gross Radioactivity	Ci	1	5.1E-06	8.504E-04

Notes:

(1) 'B' indicates estimated value; 'U' result less than sample detection limit; 'ND' not detected; 'NR' not reported. 'J' method blank contamination. 'E' matrix interference

(2) assumes undiluted concentration for comparison with regulatory limit only

12/29/2011

Discharge Log for Plant 5 Water Processing Frac Tanks

CT Covidien Plant	Discharge 128
Contractor:	AECOM
Date Discharge Started:	12/21/2011
Date Discharged Completed:	12/21/2011

Annalytical Results:			
Various:		Total Metals:	
pH:	See Results In Monthly Summary	Cadmium:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary	Chromium:	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary	Copper:	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary	Iron:	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary	Lead:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary	Nickel:	See Results In Monthly Summary
		Zinc:	See Results In Monthly Summary
Isotopic			
U-235	See Results In Monthly Summary		
U-238	See Results In Monthly Summary		
Ra-226	See Results In Monthly Summary		
Ra-228	See Results In Monthly Summary		
Th-230	See Results In Monthly Summary		
Th-232	See Results In Monthly Summary		

			Start		Stop	
Signurature	Frac Tank ID#	Date	Time	Gallons	Time	Gallons
	239653	12/21/2011	1530	20000		
	239653	12/21/2011			2000	0
	256563	12/21/2011	1530	20000		
	256563	12/21/2011			2000	0

Total Time:	4.5	Hours
Total Volume	40000	Gallons

QA/QC: _____ Date: 12/22/11

Wastewater Discharge 129 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8142

Sample Date: 21 DEC 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	
Iron	mg/L	150	< 0.1	ND
Nickel	mg/L	2.3	< 0.04	
Lead	mg/L	0.4	< 0.01	ND
Zinc	mg/L	3	0.358	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.2	
COD	mg/L	600	59	
TSS	mg/L	300	1.0	B
Radionuclides				
Gross Alpha	pCi/L	3,000	< 15.7	
Gross Beta	pCi/L	50	26.2	
Ra-226	pCi/L	10	1.06	
Ra-228	pCi/L	30	< 0.37	
Th-228	pCi/L	2,000	< 0.23	
Th-230	pCi/L	1,000	< 0.1	
Th-232	pCi/L	300	< 0.17	
U-234	pCi/L		0.17	
U-235/6	pCi/L		< 0.120	
U-238	pCi/L		0.13	
Total Uranium	*pCi/L*	*3,000*	*< 0.42*	

10 CFR 20 Appendix B Table 3 Values[2]

Analyte	Units	Regulatory Limit	Undiluted Concentration	Release Fraction
Ra-226	pCi/L	600	1.06	0.002
Ra-228	pCi/L	600	0.37	0.001
Th-228	pCi/L	2,000	0.23	0.000
Th-230	pCi/L	1,000	0.1	0.000
Th-232	pCi/L	300	0.17	0.001
U-234	pCi/L	3,000	0.17	0.000
U-235/6	pCi/L	3,000	0.12	0.000
U-238	pCi/L	3,000	0.13	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.003*

Discharge Volume (gals) = 40,000

Analyte	Units	Annual Limit	Discharge Activity	Year-to-Date Activity
Gross Radioactivity	Ci	1	6.3E-06	8.567E-04

Notes:

(1) 'B' indicates estimated value; 'U' result less than sample detection limit; 'ND' not detected; 'NR' not reported. 'J' method blank contamination. 'E' matrix interference

(2) assumes undiluted concentration for comparison with regulatory limit only

OK
08/05/12

Discharge Log for Plant 5 Water Processing Frac Tanks

CT Covidien Plant	Discharge 129
Contractor:	AECOM
Date Discharge Started:	12/21/2011
Date Discharged Completed:	12/22/2011

Annalytical Results:

Various:		Total Metals:	
pH:	See Results In Monthly Summary	Cadmium:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary	Chromium:	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary	Copper:	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary	Iron:	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary	Lead:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary	Nickel:	See Results In Monthly Summary
		Zinc:	See Results In Monthly Summary

Isotopic	
U-235	See Results In Monthly Summary
U-238	See Results In Monthly Summary
Ra-226	See Results In Monthly Summary
Ra-228	See Results In Monthly Summary
Th-230	See Results In Monthly Summary
Th-232	See Results In Monthly Summary

			Start		Stop	
Signurature	Frac Tank ID#	Date	Time	Gallons	Time	Gallons
	255824	12/21/2011	2215	20000		
	255824	12/22/2011			0245	0
	239801	12/21/2011	2215	20000		
	239801	12/22/2011			0245	0

Total Time:	4.5	Hours
Total Volume	40000	Gallons

QA/QC: _____ Date: 12/23/11

Wastewater Discharge 130 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8149

Sample Date: 28 DEC 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	ND
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	
Iron	mg/L	150	< 0.1	ND
Nickel	mg/L	2.3	< 0.04	
Lead	mg/L	0.4	< 0.01	ND
Zinc	mg/L	3	0.38	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.3	
COD	mg/L	600	38	
TSS	mg/L	300	ND	
Radionuclides				
Gross Alpha	pCi/L	3,000	< 9.6	
Gross Beta	pCi/L	50	20.1	
Ra-226	pCi/L	10	1.32	
Ra-228	pCi/L	30	< 0.44	
Th-228	pCi/L	2,000	< 0.20	
Th-230	pCi/L	1,000	< 0.17	
Th-232	pCi/L	300	< 0.091	
U-234	pCi/L		< 0.13	
U-235/6	pCi/L		< 0.120	
U-238	pCi/L		0.12	
Total Uranium	*pCi/L*	*3,000*	*< 0.37*	

10 CFR 20 Appendix B Table 3 Values[2]

Analyte	Units	Regulatory Limit	Undiluted Concentration	Release Fraction
Ra-226	pCi/L	600	1.32	0.002
Ra-228	pCi/L	600	0.44	0.001
Th-228	pCi/L	2,000	0.2	0.000
Th-230	pCi/L	1,000	0.17	0.000
Th-232	pCi/L	300	0.091	0.000
U-234	pCi/L	3,000	0.13	0.000
U-235/6	pCi/L	3,000	0.12	0.000
U-238	pCi/L	3,000	0.12	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.004*

Discharge Volume (gals) = 40,000

Analyte	Units	Annual Limit	Discharge Activity	Year-to-Date Activity
Gross Radioactivity	Ci	1	4.5E-06	8.612E-04

Notes:

(1) 'B' indicates estimated value; 'U' result less than sample detection limit; 'ND' not detected; 'NR' not reported. 'J' method blank contamination. 'E' matrix interference

(2) assumes undiluted concentration for comparison with regulatory limit only

OK
01/04/12

Discharge Log for Plant 5 Water Processing Frac Tanks

CT Covidien Plant — Discharge 130

Contractor: AECOM

Date Discharge Started: 12/28/2011

Date Discharged Completed: 12/29/2011

Annalytical Results:			
Various:		Total Metals:	
pH:	See Results In Monthly Summary	Cadmium:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary	Chromium:	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary	Copper:	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary	Iron:	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary	Lead:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary	Nickel:	See Results In Monthly Summary
		Zinc:	See Results In Monthly Summary
Isotopic			
U-235	See Results In Monthly Summary		
U-238	See Results In Monthly Summary		
Ra-226	See Results In Monthly Summary		
Ra-228	See Results In Monthly Summary		
Th-230	See Results In Monthly Summary		
Th-232	See Results In Monthly Summary		

			Start		Stop	
Signurature	Frac Tank ID#	Date	Time	Gallons	Time	Gallons
	256563	12/28/2011	1330	20000	XXX	XXX
	256563	12/29/2011	XXX	XXX	0730	0
	239653	12/28/2011	1330	20000	XXX	XXX
	239653	12/29/2011	XXX	XXX	0730	0
					XXX	XXX
			XXX	XXX		
					XXX	XXX
			XXX	XXX		

Total Time: 18 Hours

Total Volume 40000 Gallons

QA/QC: _____ Date: 1/1/12

Wastewater Discharge 131 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8153

Sample Date: 29 DEC 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	
Iron	mg/L	150	< 0.1	ND
Nickel	mg/L	2.3	< 0.04	
Lead	mg/L	0.4	< 0.01	ND
Zinc	mg/L	3	0.338	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.2	
COD	mg/L	600	49	
TSS	mg/L	300	ND	
Radionuclides				
Gross Alpha	pCi/L	3,000	< 12	
Gross Beta	pCi/L	50	22.2	
Ra-226	pCi/L	10	1.3	
Ra-228	pCi/L	30	< 0.43	
Th-228	pCi/L	2,000	< 0.38	
Th-230	pCi/L	1,000	< 0.21	
Th-232	pCi/L	300	< 0.14	
U-234	pCi/L		0.2	
U-235/6	pCi/L		< 0.078	
U-238	pCi/L		< 0.12	
Total Uranium	*pCi/L*	*3,000*	*< 0.398*	

10 CFR 20 Appendix B Table 3 Values[2]

Analyte	Units	Regulatory Limit	Undiluted Concentration	Release Fraction
Ra-226	pCi/L	600	1.3	0.002
Ra-228	pCi/L	600	0.43	0.001
Th-228	pCi/L	2,000	0.38	0.000
Th-230	pCi/L	1,000	0.21	0.000
Th-232	pCi/L	300	0.14	0.000
U-234	pCi/L	3,000	0.2	0.000
U-235/6	pCi/L	3,000	0.078	0.000
U-238	pCi/L	3,000	0.12	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.004*

Discharge Volume (gals) = 40,000

Analyte	Units	Annual Limit	Discharge Activity	Year-to-Date Activity
Gross Radioactivity	Ci	1	5.2E-06	8.664E-04

Notes:

(1) 'B' indicates estimated value; 'U' result less than sample detection limit; 'ND' not detected; 'NR' not reported. 'J' method blank contamination. 'E' matrix interference

(2) assumes undiluted concentration for comparison with regulatory limit only

ok
01/07/12

Discharge Log for Plant 5 Water Processing Frac Tanks

CT Covidien Plant	Discharge 131
Contractor:	AECOM
Date Discharge Started:	12/29/2011
Date Discharged Completed:	12/29/2011

Annalytical Results:			
Various:		Total Metals:	
pH:	See Results In Monthly Summary	Cadmium:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary	Chromium:	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary	Copper:	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary	Iron:	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary	Lead:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary	Nickel:	See Results In Monthly Summary
		Zinc:	See Results In Monthly Summary
Isotopic			
U-235	See Results In Monthly Summary		
U-238	See Results In Monthly Summary		
Ra-226	See Results In Monthly Summary		
Ra-228	See Results In Monthly Summary		
Th-230	See Results In Monthly Summary		
Th-232	See Results In Monthly Summary		

			Start		Stop	
Signurature	Frac Tank ID#	Date	Time	Gallons	Time	Gallons
	239801	12/29/2011	1305	20000		
	239801	12/29/2011			1735	0
	255824	12/29/2011	1305	20000		
	255824	12/29/2011			1735	0

Total Time:	4.5	Hours
Total Volume	40000	Gallons

QA/QC: _____ Date: 1/1/12

Wastewater Discharge 132 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8157

Sample Date: 30 DEC 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	
Iron	mg/L	150	< 0.1	ND
Nickel	mg/L	2.3	< 0.04	
Lead	mg/L	0.4	< 0.01	ND
Zinc	mg/L	3	0.285	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.2	
COD	mg/L	600	53	
TSS	mg/L	300	ND	
Radionuclides				
Gross Alpha	pCi/L	3,000	< 12	
Gross Beta	pCi/L	50	29.1	
Ra-226	pCi/L	10	1.69	
Ra-228	pCi/L	30	< 0.67	
Th-228	pCi/L	2,000	< 0.14	
Th-230	pCi/L	1,000	0.17	
Th-232	pCi/L	300	< 0.063	
U-234	pCi/L		0.15	
U-235/6	pCi/L		< 0.068	
U-238	pCi/L		< 0.12	
Total Uranium	*pCi/L*	*3,000*	*< 0.338*	

10 CFR 20 Appendix B Table 3 Values[2]

Analyte	Units	Regulatory Limit	Undiluted Concentration	Release Fraction
Ra-226	pCi/L	600	1.69	0.003
Ra-228	pCi/L	600	0.67	0.001
Th-228	pCi/L	2,000	0.14	0.000
Th-230	pCi/L	1,000	0.17	0.000
Th-232	pCi/L	300	0.063	0.000
U-234	pCi/L	3,000	0.15	0.000
U-235/6	pCi/L	3,000	0.068	0.000
U-238	pCi/L	3,000	0.12	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.004*

Discharge Volume (gals) = 40,000

Analyte	Units	Annual Limit	Discharge Activity	Year-to-Date Activity
Gross Radioactivity	Ci	1	6.2E-06	8.726E-04

Notes:

(1) 'B' indicates estimated value; 'U' result less than sample detection limit; 'ND' not detected; 'NR' not reported. 'J' method blank contamination. 'E' matrix interference

(2) assumes undiluted concentration for comparison with regulatory limit only

ok
NW
1/12/12

Discharge Log for Plant 5 Water Processing Frac Tanks

CT Covidien Plant — Discharge #132

Contractor: AECOM

Date Discharge Started: 12-30-11

Date Discharged Completed: 12/30/11

Annalytical Results:			
Various:		Total Metals:	
pH:	See Results In Monthly Summary	Cadmium:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary	Chromium:	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary	Copper:	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary	Iron:	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary	Lead:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary	Nickel:	See Results In Monthly Summary
		Zinc:	See Results In Monthly Summary
Isotopic			
U-235	See Results In Monthly Summary		
U-238	See Results In Monthly Summary		
Ra-226	See Results In Monthly Summary		
Ra-228	See Results In Monthly Summary		
Th-230	See Results In Monthly Summary		
Th-232	See Results In Monthly Summary		

			Start		Stop	
Name	Frac Tank ID#	Date	Time	Gallons	Time	Gallons
Terry Richey	239653	12-30-11	14:05	20000	XXX	XXX
↓	239653	↓	XXX	XXX	18:35	0
Terry Richey	256563	12-30-11	14:05	20000	XXX	XXX
↓	256563	↓	XXX	XXX	18:35	0
					XXX	XXX
			XXX	XXX		
					XXX	XXX
			XXX	XXX		

Total Time: 4.5 Hours

Total Volume 40000 Gallons

QCi [signature] — name

1/1/12 — date

[illegible]

Wastewater Discharge 133 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8161

Sample Date: 31 DEC 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	ND
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	
Iron	mg/L	150	< 0.1	ND
Nickel	mg/L	2.3	< 0.04	
Lead	mg/L	0.4	< 0.01	ND
Zinc	mg/L	3	0.276	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.3	
COD	mg/L	600	32	
TSS	mg/L	300	ND	
Radionuclides				
Gross Alpha	pCi/L	3,000	< 11	
Gross Beta	pCi/L	50	19.3	
Ra-226	pCi/L	10	1.42	
Ra-228	pCi/L	30	0.52	
Th-228	pCi/L	2,000	< 0.22	
Th-230	pCi/L	1,000	0.23	
Th-232	pCi/L	300	< 0.073	
U-234	pCi/L		0.16	
U-235/6	pCi/L		< 0.077	
U-238	pCi/L		0.11	
Total Uranium	*pCi/L*	*3,000*	*< 0.347*	

10 CFR 20 Appendix B Table 3 Values[2]

Analyte	Units	Regulatory Limit	Undiluted Concentration	Release Fraction
Ra-226	pCi/L	600	1.42	0.002
Ra-228	pCi/L	600	0.52	0.001
Th-228	pCi/L	2,000	0.22	0.000
Th-230	pCi/L	1,000	0.23	0.000
Th-232	pCi/L	300	0.073	0.000
U-234	pCi/L	3,000	0.16	0.000
U-235/6	pCi/L	3,000	0.077	0.000
U-238	pCi/L	3,000	0.11	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.004*

Discharge Volume (gals) = 40,000

Analyte	Units	Annual Limit	Discharge Activity	Year-to-Date Activity
Gross Radioactivity	Ci	1	4.6E-06	8.772E-04

Notes:

(1) 'B' indicates estimated value; 'U' result less than sample detection limit; 'ND' not detected; 'NR' not reported. 'J' method blank contamination. 'E' matrix interference

(2) assumes undiluted concentration for comparison with regulatory limit only

OK
1/10/12

Discharge Log for Plant 5 Water Processing Frac Tanks

CT Covidien Plant — Discharge # 133

Contractor: AECOM

Date Discharge Started: 12-31-11

Date Discharged Completed: 12-31-11

Annalytical Results:			
Various:		Total Metals:	
pH:	See Results In Monthly Summary	Cadmium:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary	Chromium:	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary	Copper:	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary	Iron:	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary	Lead:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary	Nickel:	See Results In Monthly Summary
		Zinc:	See Results In Monthly Summary
Isotopic			
U-235	See Results In Monthly Summary		
U-238	See Results In Monthly Summary		
Ra-226	See Results In Monthly Summary		
Ra-228	See Results In Monthly Summary		
Th-230	See Results In Monthly Summary		
Th-232	See Results In Monthly Summary		

			Start		Stop	
Name	Frac Tank ID#	Date	Time	Gallons	Time	Gallons
Terry Richey	239801	12-31-11	14:45	20000	XXX	XXX
	239801		XXX	XXX	19:15	0
	255824		14:45	20000	XXX	XXX
	255824		XXX	XXX	19:15	0
					XXX	XXX
			XXX	XXX		
					XXX	XXX
			XXX	XXX		

Total Time: 4:5 Hours

Total Volume 40000 Gallons

Reviewed 1/1/12

MSD

COVIDIEN

January 20, 2012

CB 3-29

Mr. Doug Mendoza
Metropolitan St. Louis Sewer District
Department of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147

Re: 2011 4th Quarter Self-Monitoring Report for Permit No. 21120596 – 3.1

21120596-1600

Dear Mr. Mendoza,

Please find enclosed the 2011 4th Quarter Self Monitoring report for Mallinckrodt Inc.

The following sample points received no pharmaceutical process water flow during the second quarter: SP930 and SP935.

CT Excavation activities continued during the fourth quarter and there were multiple discharges under the Special Discharge Permit issued for wastewater generated from CT remediation activities. A summary of the discharges is provided in the Industrial User Radioactive Discharge Report included in this submittal.

The planned electric shutdown occurred on September 30– October 3, 2011. As was stated in our letter to you dated September 9, 2011, the two lift station outfalls SP008 and SP011 overflowed directly to MSD during this time. Samples were taken and analyzed and were included in the 3rd Quarter 2011 report. The pH readings for October 1-3, 2011 are included in this report.

If you have any questions or require more detailed information, please contact me at 314-654-0127.

Sincerely,

Amber Crouch

Amber Crouch
Sr. Environmental Specialist

ENCLOSURES

RECEIVED
JAN 30 2012
DIVISION OF
ENVIRONMENTAL COMPLIANCE

COVIDIEN/MALLINCKRODT
3600 NORTH SECOND STREET
ST. LOUIS, MO 63147

TELEPHONE: 314-654-2000
FAX: 314-654-1251

PART III: SPECIAL CERTIFICATION STATEMENTS

Based on the special conditions contained in your discharge permit you may be required to certify the following. Please review your permit and **PLACE YOUR INITIALS ON THE LINES NEXT TO THE CERTIFICATIONS.**

A	NO CHANGE IN WASTEWATER DISCHARGE AT SAMPLE POINTS WITH NO MONITORING REQUIRED
	For permit special conditions that waive monitoring at any sample point(s) specified in your permit, you are required to make the following certification for each report in which monitoring is waived: ____ I certify, since the last discharge monitoring report, there has been no change in the character of the wastes discharged at sample points 001 and 002. AC I certify, since the last discharge monitoring report, there has been no discharge from sample points 008 and 011.
B	NO CHANGE IN WASTEWATER DISCHARGE AT ACTIVE CONNECTIONS WITHOUT SAMPLE POINTS
	For permit special conditions that waive monitoring at active connection points which are not specified as sample points in your permit, you are required to make the following certification: ____ I certify, since the last discharge monitoring report, there has been no change in the character of wastes discharged at those active connection points which are not specified in my permit.
E	NO DISCHARGE OF CATEGORICAL WASTE
	For permit special conditions that prohibit discharge of wastes which are subject to certain categorical pretreatment standards, you are required to make the following certification: ____ I certify, since the last discharge monitoring report, there has been no discharge of wastes which are subject to pretreatment standards in 40 CFR 414 (except for those wastes conveyed by SP 905).
F	CYANIDE NOT USED OR GENERATED IN 40 CFR 439 OPERATIONS
	Discharges subject to Pharmaceutical Categorical Standards (40 CFR 439) can be exempted from limitations and monitoring for Total Cyanide at the Pharmaceutical sample points 080, 915, 920, 935, 936, and 937, subject to the following certification: ____ I certify, since the last discharge monitoring report, cyanide has not been used or generated in any pharmaceutical manufacturing process subject to Categorical Standards in 40 CFR 439.
H	PHARMACEUTICAL POLLUTANTS NOT USED OR GENERATED IN 40 CFR 439 OPERATIONS
	Discharges subject to Pharmaceutical Categorical Standards (40 CFR 439) can be exempted from monitoring for certain 40 CFR 439-regulated pollutants at the Pharmaceutical sample points 915, 935, and 936, subject to the following certification: ____ I certify, since the last discharge monitoring report, the 40 CFR 439-regulated pollutants, as determined in permittee's report dated April 5, 2010, have not been used or generated in any pharmaceutical manufacturing process subject to Categorical Standards in 40 CFR 439. In addition, the above-referenced report remains valid.
I	SURROGATE MONITORING ALLOWED FOR 40 CFR 439 OPERATIONS
	Discharges subject to Pharmaceutical Categorical Standards (40 CFR 439) can be exempted from monitoring for certain 40 CFR 439-regulated pollutants, and replaced by monitoring for surrogate pollutant(s), at the Pharmaceutical sample points 920 and 937 subject to the following certification: ____ I certify, since the last discharge monitoring report, the 40 CFR 439-regulated pollutants, as determined in permittee's report dated April 5, 2010, continue to receive the same degree of treatment as the surrogate pollutant(s). In addition, the above-referenced report remains valid.

PART IV: GENERAL CERTIFICATION STATEMENTS

B	DISCHARGE MONITORING REPORT CERTIFICATION
	All permittees must sign and complete the information below: I certify under penalty of Law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. Print or type name of signing official: James A. Walter Title: Senior Director of Manufacturing Telephone: 314-654-1300 Signature: ____ Date: 1/27/12

RECEIVED

JAN 30 2012

DIVISION OF ENVIRONMENTAL COMPLIANCE

METROPOLITAN ST. LOUIS SEWER DISTRICT
INDUSTRIAL USER RADIOACTIVE MATERIALS DISCHARGE REPORT

PART I: IDENTIFYING INFORMATION

Company Name: Mallinckrodt -

Permit No: 2112059600-3

Premise Address: 3600 N Second St. St. Louis, MO 63147

Reporting Period: ☐(JAN-MAR) ☐(APR-JUNE) ☐(JULY-SEPT) ☒(OCT-DEC)

PART II: RECORD OF DISPOSAL OF RADIOACTIVE MATERIALS TO THE SEWER SYSTEM

RADIONUCLIDE	ACTIVITY DISCHARGED (millicuries)
Ur-234	4.03×10^{-4}
Ur-235	4.93×10^{-1}
Ur-238	11.3
Ra-226	11.5
Ra-228	4.34
Th-228	0.242
Th-230	0.132
Th-232	0.0731
TOTAL ACTIVITY DISCHARGED:	28.18 millicuries

PART III: CERTIFICATION STATEMENTS

Place your initials in the box under item A.
Everyone must complete the information under items A & B and sign this report.

A. CERTIFICATION OF COMPLIANCE WITH STATE AND FEDERAL REGULATIONS

JW I certify that to the best of my knowledge & belief, all requirements of 10 CFR Part 20.2003 and 19 CSR Part 20-10.090 governing disposal by release into sanitary sewage for material regulated by the Nuclear Regulatory Commission and the Missouri Department of Health, respectively, have been met for the period covered by this report.

B. RADIOACTIVE MATERIALS DISCHARGE REPORT CERTIFICATION

I certify under penalty of Law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

RECEIVED
JAN 30 2012
DIVISION OF ENVIRONMENTAL CONTROL

Print/type name of signing official: James Walter

Title: Sr Director of Manufacturing Telephone: 314-654-1600

Signature: [signature] Date: 1/27/12

radrpt.doc 2/00

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 **Effective Date:** 05-01-2011 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: _____(JAN-MAR) ____(APR-JUNE) ____(JULY-SEPT) __X___(OCT-DEC)

Samples Collected By: Mallinckrodt Inc

Analysis Performed By: Teklab

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->	001						
DATES ON WHICH SAMPLES WERE COLLECTED	----->	NA						
TIMES AT WHICH SAMPLES WERE COLLECTED	----->							
PARAMETER	LIMIT	RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW G=grab,C=composite,M=measured flow,E=estimated flo						UNITS
FLOW		E	1,000					gal/day
NO MONITORING REQUIRED (Sanitary Only)								
There have been no change in the character of the wastes discharged since the last report.								

RECEIVED
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DIVISION OF
ENVIRONMENTAL COMPLIANCE

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 05-01-2011 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: _____(JAN-MAR) ____(APR-JUNE) ____(JULY-SEPT) __X__(OCT-DEC)

Samples Collected By: Mallinckrodt Inc

Analysis Performed By: Teklab

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->	002						
DATES ON WHICH SAMPLES WERE COLLECTED	----->	NA						
TIMES AT WHICH SAMPLES WERE COLLECTED	----->							
PARAMETER	LIMIT	RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW G=grab,C=composite,M=measured flow,E=estimated flo						UNITS
FLOW		E	2,200					gal/day
NO MONITORING REQUIRED (Sanitary Only)								
There have been no change in the character of the wastes discharged since the last report.								

RECEIVED
JAN 30 2012
DIVISION OF
ENVIRONMENTAL COMPLIANCE

M[illegible]OPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 05-01-2011 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: ____(JAN-MAR) ____(APR-JUNE) ____(JULY-SEPT) __X__(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->	003		009		099		
DATES ON WHICH SAMPLES WERE COLLECTED	----->	11/15/2011		11/15/2011		calculated		
TIMES AT WHICH SAMPLES WERE COLLECTED	----->	0710, 0810, 0910, 1010		0730, 0830, 0930, 1030		n/a		
PARAMETER	LIMIT	RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW G=grab,C=composite,M=measured flow,E=estimated flow						UNITS
FLOW		M	81,302	M	67,046	E	14,256	gal/day
Oil & Grease	200	G	3	G	5	E	0*	mg/l
Biochemical Oxygen Demand	****	C	18	C	9	E	60	mg/l
Chemical Oxygen Demand	****	C	23	C	50	E	0*	mg/l
Total Suspended Solids	****	C	7	C	6	E	12	mg/l
Temperature	****	G	15	G	13.3	E	23	deg C
pH	****	G	8.0	G	8.0	E	8.0	S.U.
Lab Dilution Factor			1		1			

**** No limits for SP003 or SP009;
monitoring requirement only for calculation at SP099

* Calculated value was less than zero.

RECEIVED

JAN 30 2012

DIVISION OF
ENVIRONMENTAL COMPLIANCE

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 06-01-2010 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: _____(JAN-MAR) ____(APR-JUNE) ____(JULY-SEPT) __X__(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->		005						
DATES ON WHICH SAMPLES WERE COLLECTED	----->		11/15/2011						
TIMES AT WHICH SAMPLES WERE COLLECTED	----->		0720, 0820, 0920, 1020						
PARAMETER	LIMIT	RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW G=grab,C=composite,M=measured flow,E=estimated flo							UNITS
FLOW		E	32,000						gal/day
Oil & Grease	200	G	5						mg/l
Biochemical Oxygen Demand	****	C	84						mg/l
Chemical Oxygen Demand	****	C	230						mg/l
Total Suspended Solids	****	C	5						mg/l
Temperature	60	G	21.1						deg C
pH	5.5 - 11.5	G	7.0						S.U.
Lab Dilution Factor			1						

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DIVISION OF
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METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 05-01-2011 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: ____(JAN-MAR) ____(APR-JUNE) __X__(JULY-SEPT) ____(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->		008					
DATES ON WHICH SAMPLES WERE COLLECTED	----->		9/30/2011					
TIMES AT WHICH SAMPLES WERE COLLECTED	----->		9:00					
PARAMETER	LIMIT	RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW G=grab,C=composite,M=measured flow,E=estimated flow						UNITS
FLOW		E	2,000					gal/day
Oil & Grease	200	G	Analytical results					mg/l
Biochemical Oxygen Demand	****	G	from overflow					mg/l
Chemical Oxygen Demand	****	G	event reported in					mg/l
Temperature	60	G	CY11 3rd Quarter					deg C
Total Suspended Solids	****	G	Report					mg/L
pH	5.5 - 11.5	G	See attached					S.U.
Lab Dilution Factor								

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ENVIRONMENTAL COMPLIANCE

Electrical Shutdown Manual pH Monitoring

Date	Saturday, October 01, 2011		
Sample Point:	SP008		
Time	**pH**	**Time**	**pH**
10/1/11 0:00	8.35	10/1/12 12:00	8.66
10/1/12 0:30	8.20	10/1/12 12:30	8.46
10/1/12 1:00	8.43	10/1/12 13:00	8.82
10/1/12 1:30	8.50	10/1/12 13:30	8.72
10/1/12 2:00	8.40	10/1/12 14:00	8.93
10/1/12 2:30	8.35	10/1/12 14:30	9.04
10/1/12 3:00	8.54	10/1/12 15:00	9.10
10/1/12 3:30	8.55	10/1/12 15:30	9.17
10/1/12 4:00	8.45	10/1/12 16:00	9.11
10/1/12 4:30	8.44	10/1/12 16:30	9.09
10/1/12 5:00	8.71	10/1/12 17:00	8.57
10/1/12 5:30	8.40	10/1/12 17:30	9.05
10/1/12 6:00	8.54	10/1/12 18:00	9.03
10/1/12 6:30	8.53	10/1/12 18:30	9.00
10/1/12 7:00	8.55	10/1/12 19:00	9.00
10/1/12 7:30	8.36	10/1/12 19:30	9.00
10/1/12 8:00	8.51	10/1/12 20:00	8.96
10/1/12 8:30	8.20	10/1/12 20:30	8.91
10/1/12 9:00	8.29	10/1/12 21:00	8.89
10/1/12 9:30	8.50	10/1/12 21:30	8.83
10/1/12 10:00	8.54	10/1/12 22:00	8.78
10/1/12 10:30	8.46	10/1/12 22:30	8.72
10/1/12 11:00	8.48	10/1/12 23:00	8.64
10/1/12 11:30	8.53	10/1/12 23:30	8.61

Date	Sunday, October 02, 2011		
Sample Point:	SP008		
Time	**pH**	**Time**	**pH**
10/2/11 0:00	8.63	10/2/12 12:00	8.49
10/2/12 0:30	8.64	10/2/12 12:30	8.52
10/2/12 1:00	8.61	10/2/12 13:00	8.46
10/2/12 1:30	8.58	10/2/12 13:30	8.50
10/2/12 2:00	8.56	10/2/12 14:00	8.58
10/2/12 2:30	8.55	10/2/12 14:30	8.55
10/2/12 3:00	8.58	10/2/12 15:00	8.55
10/2/12 3:30	8.56	10/2/12 15:30	8.54
10/2/12 4:00	8.53	10/2/12 16:00	8.41
10/2/12 4:30	8.51	10/2/12 16:30	8.49
10/2/12 5:00	8.57	10/2/12 17:00	8.56
10/2/12 5:30	8.49	10/2/12 17:30	8.56
10/2/12 6:00	8.45	10/2/12 18:00	8.48
10/2/12 6:30	8.48	10/2/12 18:30	8.50
10/2/12 7:00	8.44	10/2/12 19:00	8.54
10/2/12 7:30	8.47	10/2/12 19:30	8.52
10/2/12 8:00	8.47	10/2/12 20:00	8.55
10/2/12 8:30	8.44	10/2/12 20:30	8.57
10/2/12 9:00	8.39	10/2/12 21:00	8.31
10/2/12 9:30	8.44	10/2/12 21:30	8.23
10/2/12 10:00	8.21	10/2/12 22:00	8.16
10/2/12 10:30	8.59	10/2/12 22:30	8.17
10/2/12 11:00	8.43	10/2/12 23:00	7.92
10/2/12 11:30	8.52	10/2/12 23:30	7.64

Date	Monday, October 03, 2011
Sample Point:	SP008
Time	**pH**
10/3/11 0:00	8.38
10/3/12 0:30	7.96
10/3/12 1:00	7.56
10/3/12 1:30	8.13
10/3/12 2:00	7.74
10/3/12 2:30	7.69
10/3/12 3:00	7.71
10/3/12 3:30	No Flow

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METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 06-01-2010 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: ____(JAN-MAR) ____(APR-JUNE) ____(JULY-SEPT) __X__(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->	010						
DATES ON WHICH SAMPLES WERE COLLECTED	----->	11/15/2011						
TIMES AT WHICH SAMPLES WERE COLLECTED	----->	0740, 0840, 0940, 1040						
PARAMETER	LIMIT	RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW G=grab,C=composite,M=measured flow,E=estimated flo						UNITS
FLOW		E	1,142,913					gal/day
Oil & Grease	200	G	19					mg/l
Biochemical Oxygen Demand	****	C	1310					mg/l
Chemical Oxygen Demand	****	C	1640					mg/l
Total Suspended Solids	****	C	456					mg/l
Temperature	60	G	27.8					deg C
pH	5.5 - 11.5	G	see attached					S.U.
Chromium	5.0	C	0.012					mg/l
Copper	2.7	C	0.027					mg/l
Nickel	2.3	C	0.012					mg/l
Zinc	3.0	C	0.026					mg/l
Lab Dilution Factor			1					

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Mallinckrodt pH Monitoring for SP010: October 2011			
Date / Time	**pH**	**pH**	**Total for Event in Minutes**
10/7/11 13:25	42	4.2	5
10/13/11 15:05	53	5.3	5
10/27/11 10:55	40	4.0	5
		October Total:	**15**
Mallinckrodt pH Monitoring for SP010: November 2011			
Date / Time	**pH**	**pH**	**Total for Event in Minutes**
11/3/11 11:15	40	4.0	5
11/7/11 13:15	42	4.2	5
		November Total:	**10**
Mallinckrodt pH Monitoring for SP010: December 2011			
Date / Time	**pH**	**pH**	**Total for Event in Minutes**
12/1/11 14:25	36	3.6	5
12/21/11 9:50	41	4.1	5
12/26/11 4:55	44	4.4	45
12/26/11 5:00	38	3.8	
12/26/11 5:05	34	3.4	
12/26/11 5:10	38	3.8	
12/26/11 5:15	43	4.3	
12/26/11 5:20	48	4.8	
12/30/11 17:20	36	3.6	21
12/30/11 17:25	23	2.3	
12/30/11 17:45	116	11.6	
12/30/11 17:50	115	11.5	
12/31/11 0:10	44	4.4	5
		December Total:	**81**

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METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 05-01-2011 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: ___(JAN-MAR) ____(APR-JUNE) ____(JULY-SEPT) __X__(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->		011					
DATES ON WHICH SAMPLES WERE COLLECTED	----->		9/30/2011					
TIMES AT WHICH SAMPLES WERE COLLECTED	----->		7:45					
PARAMETER	LIMIT	RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW G=grab,C=composite,M=measured flow,E=estimated flow						UNITS
FLOW		E	2,000					gal/day
Oil & Grease	200	G	Analytical results					mg/l
Biochemical Oxygen Demand	****	G	from overflow					mg/l
Chemical Oxygen Demand	****	G	event reported in					mg/l
Total Suspended Solids	****	G	CY11 3rd Quarter					mg/l
Temperature	60	G	Report					deg C
pH	5.5 - 11.5	G	See attached					S.U.
* No flow during this reporting period.								
Lab Dilution Factor			1					

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ENVIRONMENTAL COMPLIANCE

Electrical Shutdown Manual pH Monitoring

Date	Saturday, October 01, 2011		
Sample Point:	SP011		
Time	**pH**	**Time**	**pH**
10/1/11 0:15	7.98	10/1/12 12:15	9.11
10/1/12 0:45	8.00	10/1/12 12:45	8.35
10/1/12 1:15	7.96	10/1/12 13:15	7.75
10/1/12 1:45	7.95	10/1/12 13:45	7.74
10/1/12 2:15	7.92	10/1/12 14:15	7.75
10/1/12 2:45	7.88	10/1/12 14:45	7.76
10/1/12 3:15	7.85	10/1/12 15:15	8.06
10/1/12 3:45	7.79	10/1/12 15:45	7.77
10/1/12 4:15	7.77	10/1/12 16:15	7.77
10/1/12 4:45	7.80	10/1/12 16:45	7.76
10/1/12 5:15	7.86	10/1/12 17:15	7.76
10/1/12 5:45	7.87	10/1/12 17:45	7.76
10/1/12 6:15	8.24	10/1/12 18:15	7.76
10/1/12 6:45	8.96	10/1/12 18:45	7.82
10/1/12 7:15	9.06	10/1/12 19:15	7.90
10/1/12 7:45	9.09	10/1/12 19:45	7.95
10/1/12 8:15	9.12	10/1/12 20:15	7.89
10/1/12 8:45	9.02	10/1/12 20:45	7.89
10/1/12 9:15	9.04	10/1/12 21:15	7.87
10/1/12 9:45	9.03	10/1/12 21:45	7.82
10/1/12 10:15	9.04	10/1/12 22:15	7.74
10/1/12 10:45	9.09	10/1/12 22:45	7.74
10/1/12 11:15	9.13	10/1/12 23:15	8.60
10/1/12 11:45	9.14	10/1/12 23:45	8.85

Date	Sunday, October 02, 2011		
Sample Point:	SP011		
Time	**pH**	**Time**	**pH**
10/2/11 0:15	8.98	10/2/12 12:15	8.91
10/2/12 0:45	9.02	10/2/12 12:45	8.88
10/2/12 1:15	9.04	10/2/12 13:15	8.89
10/2/12 1:45	9.03	10/2/12 13:45	8.88
10/2/12 2:15	9.03	10/2/12 14:15	8.01
10/2/12 2:45	9.03	10/2/12 14:45	7.68
10/2/12 3:15	9.03	10/2/12 15:15	7.65
10/2/12 3:45	9.02	10/2/12 15:45	7.68
10/2/12 4:15	9.02	10/2/12 16:15	7.68
10/2/12 4:45	9.01	10/2/12 16:45	7.70
10/2/12 5:15	8.99	10/2/12 17:15	7.70
10/2/12 5:45	9.00	10/2/12 17:45	7.71
10/2/12 6:15	8.97	10/2/12 18:15	7.70
10/2/12 6:45	8.86	10/2/12 18:45	7.71
10/2/12 7:15	8.95	10/2/12 19:15	7.70
10/2/12 7:45	8.93	10/2/12 19:45	7.69
10/2/12 8:15	8.94	10/2/12 20:15	7.68
10/2/12 8:45	8.92	10/2/12 20:45	8.74
10/2/12 9:15	8.90	10/2/12 21:15	8.44
10/2/12 9:45	9.21	10/2/12 21:45	9.80
10/2/12 10:15	8.91	10/2/12 22:15	8.86
10/2/12 10:45	8.90	10/2/12 22:45	8.70
10/2/12 11:15	8.89	10/2/12 23:15	8.56
10/2/12 11:45	8.90	10/2/12 23:45	8.61

Date	Monday, October 03, 2011
Sample Point:	SP011
Time	**pH**
10/3/11 0:15	9.45
10/3/11 0:45	9.46
10/3/11 1:15	9.22
10/3/11 1:45	9.25
10/3/11 2:15	9.12
10/3/11 2:45	9.02
10/3/11 3:15	8.98
10/3/11 3:45	5.24

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METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3.1 Effective Date: 05-01-2011 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: ____(JAN-MAR) ___(APR-JUN) ____(JULY-SEP) __X__(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS					**080**						
DATES ON WHICH SAMPLES WERE COLLECTED					10/10/2011						
TIMES AT WHICH SAMPLES WERE COLLECTED					935, 1035, 1135, 1235						
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY		**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS** G=Grab, C-composite, M=measured flow, E=estimated						UNITS
FLOW				E	3,500						gal/day
Acetone	524.2	20.70	8.20	G	<1.000						mg/L
n-Amyl Acetate	1666	20.70	8.20	G	<0.100						mg/L
Benzene	524.2	3.00	0.70	G	0.039						mg/L
n-Butyl acetate	1666	20.70	8.20	G	<0.100						mg/L
Chlorobenzene	524.2	3.00	0.70	G	<0.100						mg/L
Chloroform	524.2	0.10	0.03	G	0.007						mg/L
1,2-Dichlorobenzene	524.2	20.70	8.20	G	<0.100						mg/L
1,2-Dichloroethane	524.2	20.70	8.20	G	<0.100						mg/L
Diethyl amine	1671	255.00	100.00	G	<50						mg/L
Ethyl Acetate	1666	20.70	8.20	G	<0.200						mg/L
n-Heptane	1666	3.00	0.70	G	<0.200						mg/L
n-Hexane	1666	3.00	0.70	G	<0.200						mg/L
Isobutyraldehyde	1666	20.70	8.20	G	<0.200						mg/L
Isopropyl acetate	1666	20.70	8.20	G	<0.100						mg/L
Isopropyl ether	1666	20.70	8.20	G	<0.100						mg/L
Methylene chloride	524.2	3.00	0.70	G	<0.100						mg/L
Methyl formate	1666	20.70	8.20	G	<1.000						mg/L
4-Methyl-2-pentanone	1666	20.70	8.20	G	<0.200						mg/L
Tetrahydrofuran	1666	9.20	3.40	G	<0.400						mg/L
Toluene	524.2	0.30	0.20	G	<0.100						mg/L
Triethyl amine	1671	255.00	100.00	G	<20						mg/L
Xylenes	1666	3.00	0.70	G	<0.100						mg/L
Oil & Grease	1664	200		G	3						mg/L
Biochemical Oxygen Demand		****		C	<5						mg/L
Chemical Oxygen Demand		****		C	<50						mg/L
Total Suspended Solids		****		C	5						mg/L
Temperature		60		G	21.8						deg C
pH		5.5 - 11.5		G	6.7						S.U.
Dilution by lab					1,20						

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2011 INDUSTRIAL USER SELF MONITORING REPORT

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Company Name: **Mallinckrodt Inc.**

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Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: ____(JAN-MAR) ____(APR-JUNE) ___ (JULY-SEPT) _X__(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS ---->			080					
DATES ON WHICH SAMPLES WERE COLLECTED ---->			10/10/2011					
TIMES AT WHICH SAMPLES WERE COLLECTED ---->			935, 1035, 1135, 1235					
PARAMETER	LIMIT	RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW G=grab,C=composite,M=measured flow,E=						UNITS
FLOW		E	3,500					gal/day
1,1,1-Trichloroethane		G	<0.005					mg/l
1,1,2,2-Tetrachloroethane		G	<0.005					mg/l
1,1,2-Trichloroethane		G	<0.005					mg/l
1,1-Dichloroethane		G	<0.005					mg/l
1,1-Dichloroethene		G	<0.005					mg/l
1,2-Dichlorobenzene		G	<0.005					mg/l
1,2-Dichloroethane		G	<0.005					mg/l
1,2-Dichloropropane		G	<0.005					mg/l
1,3-Dichlorobenzene		G	<0.005					mg/l
1,4-Dichlorobenzene		G	<0.005					mg/l
2-Chloroethylvinylether		G	<0.02					mg/l
Acrolein		G	<0.1					mg/l
Acrylonitrile		G	<0.005					mg/l
Benzene		G	0.0387					mg/l
Bromodichloromethane		G	0.0016					mg/l
Bromoform		G	<0.005					mg/l
Bromomethane		G	<0.01					mg/l
Carbon Tetrachloride		G	<0.005					mg/l
Chlorobenzene		G	<0.005					mg/l
Chloroethane		G	<0.01					mg/l
Chloroform		G	0.0067					mg/l
Chloromethane		G	<0.01					mg/l
cis-1,3-Dicholropropene		G	<0.005					mg/l
Dibromochloromethane		G	<0.005					mg/l
Ethylbenzene		G	<0.005					mg/l
Methylene Chloride		G	<0.005					mg/l
Tetrachloroethene		G	<0.005					mg/l
Toluene		G	<0.002					mg/l
trans-1,2-Dichloroethene		G	<0.005					mg/l
trans-1,3-Dichloropropene		G	<0.005					mg/l
Trichloroethene		G	<0.005					mg/l
Vinyl Chloride		G	<0.002					mg/l
1,2,4-Trichlorobenzene		G	<0.008					mg/l
2,4,6-Trichlorophenol		G	<0.008					mg/l
2,4-Dichlorophenol		G	<0.008					mg/l
2,4-Dimethylphenol		G	<0.008					mg/l
2,4-Dinitrophenol		G	<0.016					mg/l
2,4-Dinitrotoluene		G	<0.008					mg/l
2,6-Dinitrotoluene		G	<0.008					mg/l
2-Chloronapthalene		G	<0.008					mg/l
2-Chlorophenol		G	<0.008					mg/l
2-Nitrophenol		G	<0.016					mg/l
3,3-Dichlorobenzidine		G	<0.008					mg/l
2-Methyl-4,6-dinitrophenol		G	<0.016					mg/l
4-Bromophenyl-phenylether		G	<0.008					mg/l
4-Chloro-3-methylphenol		G	<0.016					mg/l
4-Chlorophenyl-phenylether		G	<0.008					mg/l
4-Nitrophenol		G	<0.016					mg/l
Acenapthene		G	<0.008					mg/l
Acenaphthylene		G	<0.008					mg/l
Anthracene		G	<0.008					mg/l
Benzidine		G	<0.032					mg/l
Benzo(a)anthracene		G	<0.008					mg/l
Benzo(a)pyrene		G	<0.008					mg/l
Benzo(b)fluoranthene		G	<0.008					mg/l
Benzo(g,h,i)perylene		G	<0.008					mg/l
Benzo(k)fluoranthene		G	<0.008					mg/l
Bis(2-chloroethoxy)methane		G	<0.008					mg/l
Bis(2-chloroethyl)ether		G	<0.008					mg/l
Bis(2-chloroisopropyl)ether		G	<0.008					mg/l

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METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3.1 Effective Date: 06-01-2010 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: ____(JAN-MAR) ____(APR-JUNE) ___ (JULY-SEPT) _X__(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS		---->		**080**				
DATES ON WHICH SAMPLES WERE COLLECTED		---->		10/10/2011				
TIMES AT WHICH SAMPLES WERE COLLECTED		---->		935, 1035, 1135, 1235				
PARAMETER	LIMIT	**RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW** G=grab,C=composite,M=measured flow,E=						UNITS
FLOW		E		3,500				gal/day
Bis(2-ethylhexyl)phthalate		G		<0.005				mg/l
Butyl benzyl phthalate		G		<0.008				mg/l
Chrysene		G		<0.008				mg/l
Dibenzo(a,h)anthracene		G		<0.008				mg/l
Diethyl phthalate		G		<0.008				mg/l
Dimethyl phthalate		G		<0.008				mg/l
Di-n-butyl phthalate		G		<0.008				mg/l
Di-n-octyl-phthalate		G		<0.008				mg/l
Fluoranthene		G		<0.008				mg/l
Fluorene		G		<0.008				mg/l
Hexachlorobenzene		G		<0.008				mg/l
Hexachlorobutadiene		G		<0.008				mg/l
Hexachlorocyclopentadiene		G		<0.016				mg/l
Hexachloroethane		G		<0.008				mg/l
Ideno(1,2,3-cd)pyrene		G		<0.008				mg/l
Isophorone		G		<0.008				mg/l
Naphthalene		G		<0.008				mg/l
Nitrobenzene		G		<0.008				mg/l
N-nitrosodimethylamine		G		<0.016				mg/l
N-nitrosodi-n-propylamine		G		<0.008				mg/l
N-nitrosodiphenylamine		G		<0.008				mg/l
Pentachlorophenol		G		<0.016				mg/l
Phenanthrene		G		<0.008				mg/l
Phenol		G		<0.004				mg/l
Pyrene		G		<0.008				mg/l
1,2-Diphenylhydrazine		G		<0.008				mg/l
Total Toxic Organics	5.844	--		0.822				mg/l
				1,20				

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 06-01-2010 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: ____(JAN-MAR) _____ (APR-JUNE) _____(JULY-SEPT) __X__(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS		------>		905			
DATES ON WHICH SAMPLES WERE COLLECTED		------>		11/8/2011			
TIMES AT WHICH SAMPLES WERE COLLECTED		------>		1311			
	MONTHLY LIMIT (ave)	DAILY MAX LIMIT	RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW G=grab,C=composite,M=measured flow,E=estimated flow				
PARAMETER	(gm/day)	(gm/day)			Lab results mg/L		UNITS
FLOW			M	98400			gal/day
1,2,4-Trichlorobenzene	74	301	G	3.72	0.010		gm/day
1,2-Dichlorobenzene	74	301	G	1.86	0.005		gm/day
1,3-Dichlorobenzene	54	144	G	1.86	0.005		gm/day
1,4-Dichlorobenzene	54	144	G	1.86	0.005		gm/day
2-Nitrophenol	25	87	G	7.45	0.020		gm/day
2-Methyl-4,6-dinitrophenol	30	105	G	7.45	0.020		gm/day
4-Nitrophenol	61	218	G	7.45	0.020		gm/day
Acenapthene	7	18	G	3.72	0.010		gm/day
Anthracene	7	18	G	3.72	0.010		gm/day
Bis(2-ethylhexyl)phthalate	36	98	G	2.23	0.006		gm/day
Diethyl phthalate	17	43	G	3.72	0.010		gm/day
Dimethyl phthalate	7	18	G	3.72	0.010		gm/day
Di-n-butyl phthalate	8	16	G	3.72	0.010		gm/day
Fluoranthene	8	20	G	3.72	0.010		gm/day
Fluorene	7	18	G	3.72	0.010		gm/day
Hexachlorobenzene	74	301	G	3.72	0.010		gm/day
Hexachlorobutadiene	54	144	G	3.72	0.010		gm/day
Hexachloroethane	74	301	G	3.72	0.010		gm/day
Naphthalene	7	18	G	3.72	0.010		gm/day
Phenanthrene	7	18	G	3.72	0.010		gm/day
Pyrene	8	18	G	3.72	0.010		gm/day
1,1,1-Trichloroethane	8	22	G	1.86	0.005		gm/day
1,1,2-Trichloroethane	12	48	G	1.86	0.005		gm/day
1,1-Dichloroethane	8	22	G	1.86	0.005		gm/day
1,1-Dichloroethene	8	23	G	1.86	0.005		gm/day
1,2-Dichloroethane	74	301	G	1.86	0.005		gm/day
1,2-Dichloropropane	74	301	G	1.86	0.005		gm/day
Benzene	22	51	G	0.74	0.002		gm/day
Carbon Tetrachloride	54	144	G	1.86	0.005		gm/day
Chlorobenzene	54	144	G	1.86	0.005		gm/day
Chloroethane	42	112	G	3.72	0.010		gm/day
Chloroform	42	123	G	1.71	0.005		gm/day
Chloromethane	42	112	G	3.72	0.010		gm/day
cis-1,3-Dichloropropene	74	301	G	1.86	0.005		gm/day
Ethylbenzene	54	144	G	1.86	0.005		gm/day
Methylene Chloride	14	64	G	1.86	0.005		gm/day
Nitrobenzene	847	2423	G	3.72	0.010		gm/day
Tetrachloroethene	20	62	G	1.86	0.005		gm/day
Toluene	11	28	G	1.86	0.005		gm/day
trans-1,2-Dichloroethene	9	25	G	1.86	0.005		gm/day
trans-1,3-Dichloropropene	74	301	G	1.86	0.005		gm/day
Trichloroethene	10	26	G	1.86	0.005		gm/day
Vinyl Chloride	37	65	G	0.74	0.002		gm/day
Shaded values represent detection limits							
Lab Dilution Factor				1			

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METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 06-01-2010 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: _____(JAN-MAR) _____(APR-JUNE) _____(JULY-SEPT) __X__(OCT-DEC)

Samples Collected By: Mallinckrodt Inc

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->		912		912		912	
DATES ON WHICH SAMPLES WERE COLLECTED	----->		10/3/2011		11/8/2011		12/12/2011	
TIMES AT WHICH SAMPLES WERE COLLECTED	----->		800		800		1332	
PARAMETER	LIMIT	RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW G=grab,C=composite,M=measured flow,E=estimated flo						UNITS
FLOW		M	27613	M	71974	M	61007	gal/day
DMAC (daily max)	7091	C	399	C	1039	C	1243	lb/day
DMAC (monthly average)	5459	C	399	C	1039	C	1243	lb/day
DMAC			1737		~~7519~~ 1734		2997	mg/L CB.
Lab Dilution Factor			1		1		1	

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METROPOLITAN ST. LOUIS SEWER DISTRICT
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Company Name: **MALLINCKRODT INC.**
Permit No.: 2112059600 - 3 Effective Date: 06-01-2010 Expiration Date: 05-31-2015
Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: ____(JAN-MAR) ____(APR-JUN) ____(JULY-SEP) _X__(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->		915						
DATES ON WHICH SAMPLES WERE COLLECTED			---->		10/14/2011						
TIMES AT WHICH SAMPLES WERE COLLECTED			---->		10:30						
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW G=Grab, C-composite, M=measured flow, E=estimated flow							UNITS
FLOW				E	2,700						gal/day
Acetone	524.2	20.70	8.20	G	0.320						mg/L
n-Amyl acetate	1666	20.70	8.20	G	<0.100						mg/L
Benzene	524.2	3.00	0.70	G	<0.100						mg/L
n-Butyl acetate	1666	20.70	8.20	G	<0.100						mg/L
Chlorobenzene	524.2	3.00	0.70	G	<0.100						mg/L
Chloroform	524.2	0.10	0.03	G	<0.020						mg/L
1,2-Dichlorobenzene	524.2	20.70	8.20	G	<0.100						mg/L
1,2-Dichloroethane	524.2	20.70	8.20	G	<0.100						mg/L
Diethyl amine*	1671	255.00	100.00	G	--						mg/L
Ethyl Acetate	1666	20.70	8.20	G	<0.200						mg/L
n-Heptane	1666	3.00	0.70	G	<0.200						mg/L
n-Hexane	1666	3.00	0.70	G	<0.200						mg/L
Isobutyraldehyde	1666	20.70	8.20	G	0.022						mg/L
Isopropyl acetate	1666	20.70	8.20	G	<0.100						mg/L
Isopropyl ether	1666	20.70	8.20	G	<0.100						mg/L
Methylene chloride	524.2	3.00	0.70	G	<0.100						mg/L
Methyl formate	1666	20.70	8.20	G	<1						mg/L
4-Methyl-2-pentanone	1666	20.70	8.20	G	<0.200						mg/L
Tetrahydrofuran	1666	9.20	3.40	G	<0.400						mg/L
Toluene	524.2	0.30	0.20	G	<0.100						mg/L
Triethyl amine*	1671	255.00	100.00	G	--						mg/L
Xylenes	1666	3.00	0.70	G	<0.100						mg/L
** Annual monitoring requirement last sampled CY2011 Q2.*											
Dilution by lab					20						

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METROPOLITAN ST. LOUIS SEWER DISTRICT
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PART I: IDENTIFYING INFORMATION

Company Name: **MALLINCKRODT INC.**
Permit No.: 2112059600 - 3 Effective Date: 06-01-2010 Expiration Date: 05-31-2015
Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: ____(JAN-MAR) ____(APR-JUN) ____(JULY-SEP) __X__(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->		920							
DATES ON WHICH SAMPLES WERE COLLECTED			---->		11/15/2011							
TIMES AT WHICH SAMPLES WERE COLLECTED			---->		8:20							
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW G=Grab, C-composite, M=measured flow, E=estimated flow								UNITS
FLOW				E	13,000	E						gal/day
Tetrahydrofuran	1666	9.20	3.40	G	<0.400	G						mg/L
Toluene	524.2	0.30	0.20	G	0.024	G						mg/L
Dilution by lab					20							

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Monitoring Period: ____(JAN-MAR) ____(APR-JUN) ____(JULY-SEP) _X_(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS ----->					927						
DATES ON WHICH SAMPLES WERE COLLECTED ----->					10/5/2011						
TIMES AT WHICH SAMPLES WERE COLLECTED ----->					15:00						
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW G=Grab, C-composite, M=measured flow, E=estimated flow							UNITS
FLOW				E	2,700						gal/day
Acetone	524.2	20.70	8.20	G	<1						mg/L
n-Amyl acetate	1666	20.70	8.20	G	<0.100						mg/L
Ethyl Acetate	1666	20.70	8.20	G	<0.200						mg/L
Isopropyl acetate	1666	20.70	8.20	G	<0.100						mg/L
Methylene chloride	524.2	3.00	0.70	G	<0.100						mg/L
Dilution by lab					20						

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METROPOLITAN ST. LOUIS SEWER DISTRICT
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PART I: IDENTIFYING INFORMATION

Company Name: Mallinckrodt Inc.
Permit No.: 2112059600 - 3
Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: ____(JAN-MAR) ____(APR-JUN) ____(JULY-SEP) _X__(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TekLab

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS					930						
DATES ON WHICH SAMPLES WERE COLLECTED					NA						
TIMES AT WHICH SAMPLES WERE COLLECTED					NA						
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW G=Grab, C-composite, M=measured flow, E=estimated flow						UNITS	Permit
FLOW				E	*					gal/day	Avg Flow
Acetone	524.2	20.70	8.20	G	*					mg/L	
Ethyl Acetate	1666	20.70	8.20	G	*					mg/L	
Isopropyl acetate	1666	20.70	8.20	G	*					mg/L	
Methylene chloride	524.2	3.00	0.70	G	*					mg/L	
n-Amyl acetate	1666	20.70	8.20	G	*					mg/L	
* No flow during this reporting period.											
Dilution by lab					20						

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Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TekLab

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->		**933**							
DATES ON WHICH SAMPLES WERE COLLECTED			---->		10/12/2011							
TIMES AT WHICH SAMPLES WERE COLLECTED			---->		08:15							
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW** G=Grab, C-composite, M=measured flow, E=estimated flow								**UNITS**
FLOW				E	100							gal/day
Acetone	524.2	20.70	8.20	G	0.320							mg/L
n-Amyl acetate	1666	20.70	8.20	G	<0.1							mg/L
Ethyl Acetate	1666	20.70	8.20	G	<0.2							mg/L
Isopropyl acetate	1666	20.70	8.20	G	<0.1							mg/L
Methylene chloride	524.2	3.00	0.70	G	<0.1							mg/L
Dilution by lab					20							

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Samples Collected By: Mallinckrodt Inc
Analysis Performed By:

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->		935							
DATES ON WHICH SAMPLES WERE COLLECTED			---->		NA							
TIMES AT WHICH SAMPLES WERE COLLECTED			---->		NA							
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW G=Grab, C-composite, M=measured flow, E=estimated flow								UNITS
FLOW				E	0							gal/day
Acetone	524.2	20.70	8.20	G	*							mg/L
Benzene	524.2	3.00	0.70	G	*							mg/L
Chlorobenzene	524.2	3.00	0.70	G	*							mg/L
Chloroform	524.2	0.10	0.03	G	*							mg/L
1,2-Dichlorobenzene	524.2	20.70	8.20	G	*							mg/L
1,2-Dichloroethane	524.2	20.70	8.20	G	*							mg/L
Ethyl Acetate	1666	20.70	8.20	G	*							mg/L
n-Hexane	1666	3.00	0.70	G	*							mg/L
Methylene chloride	524.2	3.00	0.70	G	*							mg/L
4-Methyl-2-pentanone	1666	20.70	8.20	G	*							mg/L
Tetrahydrofuran	1666	9.20	3.40	G	*							mg/L
Toluene	524.2	0.30	0.20	G	*							mg/L
Xylenes	1666	3.00	0.70	G	*							mg/L
Isobutyraldehyde	1666	20.70	8.20	G	*							mg/L
n-Amyl acetate	1666	20.70	8.20	G	*							mg/L
n-Butyl acetate	1666	20.70	8.20	G	*							mg/L
Isopropyl acetate	1666	20.70	8.20	G	*							mg/L
Isopropyl ether	1666	20.70	8.20	G	*							mg/L
n-Heptane	1666	3.00	0.70	G	*							mg/L
Methyl formate	1666	20.70	8.20	G	*							mg/L
Diethyl amine	1671	255.00	100.00	G	*							mg/L
Triethyl amine	1671	255.00	100.00	G	*							mg/L
** No PEG flow this quarter*												
Dilution by lab												

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METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

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PART I: IDENTIFYING INFORMATION

Company Name: Mallinckrodt Inc.
Permit No.: 2112059600 - 3
Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: ____(JAN-MAR) _____(APR-JUN) ____(JULY-SEP) __X__(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS ----->					**936**							
DATES ON WHICH SAMPLES WERE COLLECTED ----->					10/10/2011							
TIMES AT WHICH SAMPLES WERE COLLECTED ----->					12:30							
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS** G=Grab, C-composite, M=measured flow, E=estimated flow								UNITS
FLOW				E	16,500							gal/day
Acetone	524.2	20.70	8.20	G	<1							mg/L
n-Amyl acetate	1666	20.70	8.20	G	<0.100							mg/L
Benzene	524.2	3.00	0.70	G	<0.100							mg/L
n-Butyl acetate	1666	20.70	8.20	G	<0.100							mg/L
Chlorobenzene	524.2	3.00	0.70	G	<0.100							mg/L
Chloroform*	524.2	0.10	0.03	G	<0.020							mg/L
1,2-Dichlorobenzene	524.2	20.70	8.20	G	<0.100							mg/L
1,2-Dichloroethane	524.2	20.70	8.20	G	<0.100							mg/L
Diethyl amine**	1671	255.00	100.00	G	<50							mg/L
Ethyl Acetate	1666	20.70	8.20	G	<0.200							mg/L
n-Heptane	1666	3.00	0.70	G	<0.200							mg/L
n-Hexane	1666	3.00	0.70	G	<0.200							mg/L
Isobutyraldehyde	1666	20.70	8.20	G	<0.200							mg/L
Isopropyl acetate	1666	20.70	8.20	G	<0.100							mg/L
Isopropyl ether	1666	20.70	8.20	G	<0.100							mg/L
Methylene chloride	524.2	3.00	0.70	G	<0.100							mg/L
Methyl formate	1666	20.70	8.20	G	<1							mg/L
4-Methyl-2-pentanone	1666	20.70	8.20	G	<0.200							mg/L
Tetrahydrofuran	1666	9.20	3.40	G	<0.400							mg/L
Toluene	524.2	0.30	0.20	G	<0.100							mg/L
Triethyl amine**	1671	255.00	100.00	G	<20							mg/L
Xylenes	1666	3.00	0.70	G	<0.100							mg/L
* Chloroform Results	Raw Water	SP936										
10/10/2011	<0.020 mg/l	<0.020 mg/l										
Results above reported as the difference between SP936 and Raw Water.												
*** Annual sampling requirement*												
Dilution by lab					20							

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2011 4Q SP9XX PEG.xlsx

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PLEASE READ THE INSTRUCTIONS BEFORE COMPLETING THIS REPORT

PART I: IDENTIFYING INFORMATION

Company Name: Mallinckrodt Inc.
Permit No.: 2112059600 - 3
Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: ____(JAN-MAR) ____(APR-JUN) ____(JULY-SEP) __X__(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->		937							
DATES ON WHICH SAMPLES WERE COLLECTED			---->		11/14/2011							
TIMES AT WHICH SAMPLES WERE COLLECTED			---->		10:00							
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW** G=Grab, C-composite, M=measured flow, E=estimated flow								UNITS
FLOW				E	23,000							gal/day
Tetrahydrofuran	524.2	9.20	3.40	G	<0.400							mg/L
Toluene	524.2	0.30	0.20	G	<0.100							mg/L
Dilution by lab					20							

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Analysis Performed By: TekLab

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->		**938**							
DATES ON WHICH SAMPLES WERE COLLECTED			---->		10/6/2011							
TIMES AT WHICH SAMPLES WERE COLLECTED			---->		07:00							
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW G=Grab, C-composite, M=measured flow, E=estimated flow**								UNITS
FLOW				E	71							gal/day
Acetone	524.2	20.70	8.20	G	<1							mg/L
n-Amyl acetate	1666	20.70	8.20	G	<0.100							mg/L
Ethyl Acetate	1666	20.70	8.20	G	<0.200							mg/L
Isopropyl acetate	1666	20.70	8.20	G	<0.100							mg/L
Methylene chloride	524.2	3.00	0.70	G	<0.100							mg/L
Dilution by lab					20							

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DIVISION OF
ENVIRONMENTAL COMPLIANCE

Metropolitan St. Louis Sewer District
Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

January 13, 2012

Julie Summers
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Dear Ms. Summers:

We have reviewed your request dated January 9, 2012 for extension of a special discharge originally approved on January 21, 2011 with revisions outlined in the letter dated June 24, 2011. The approval was for treated rainwater and groundwater from the remediation of the Columbium-Tantalum (CT) decommissioning project at the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri.

Based on the information provided, your request for an extension is granted. This approval will expire on July 21, 2012. As a condition of this approval, you must notify us of any changes which would affect the characteristics of this discharge. All other conditions of the June 24, 2011 revision letter approval remain in effect.

Please contact me at (314) 436-8755 with questions or comments.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

pc: Brian Gibson
Doug Mendoza

File: IU, MALLINCKRODT INC [2112059600]

IU-Mallinckrodt Inc. - 2[redacted]20596-00
SPBSO

Steve Grace

MSD

From: Summers, Julie [Julie.Summers@Covidien.com]
Sent: Monday, January 09, 2012 8:52 AM
To: Steve Grace
Cc: Crouch, Amber
Subject: Extension Request CT Excavation Special Discharge Permit Dated January 21, 2011

Steve,

The Special Discharge Permit for wastewater generated from the CT Excavation activities dated January 21, 2011 and modified by your June 24, 2011 letter is due to expire on January 21, 2012. We are requesting an extension of this permit for 6 months to July 21, 2012. There are no changes in the source or characteristics of the wastewater since the discharge was originally approved.

Thanks and let me know if you have any questions or request additional information.

Julie Summers
Environmental Manager
Covidien/Mallinckrodt
3600 North 2nd Street
St. Louis, MO 63147
314-654-1969 Phone
314-654-1251 Fax

MSD

METROPOLITAN ST. LOUIS SEWER DISTRICT
INDUSTRIAL FACILITY REINSPECTION REPORT

Company: Mallinckrodt, Inc. Account #: 2112059600
Premise Address: 3600 N. 2nd St. Zip Code: 63147
MSD Classes: SIU ☒ CIU ☒ Surch ☒ Potential Toxic Waste ☒ Non-Toxic Proc Waste ☐
No Process Flow ☐ Multi-User ☐ Special Handling/Billing ☐
Company Representative: Julie Summers
Title: Environmental Manager Phone#: 314-654-1969
Inspector: Jason Gill
Others Present: Amber Crouch - Senior HSE Engineer
Inspection Date: 12/28/11 Time: From 8:40 AM To 1:30 PM (Last Insp. 11/23/10)

NOTE: ALL ITEMS ARE TO BE COMPLETED BASED ON EVENTS SINCE LAST INSPECTION. ANSWERS ARE BASED ON INFORMATION OBTAINED OR PROVIDED BY COMPANY DURING INSPECTION, AS WELL AS INFORMATION IN FILE.

***** DATABASE ALSO UPDATED WITH APPROPRIATE CHANGES - see attached database reports *****

1. A. ARE THERE ADDITIONAL NON-STORMWATER ACCOUNT NUMBERS? Yes☐ No☒
   List them, note any changes: _____
   B. Did all acct no's have water usage on PIMS? Yes☒ No☐
   C. If no to B, explain: _____

2. PROCESSES & CLEANUP/WASHDOWN:

	Cont/ Batch		Water Used?	Frequency of discharge	Sample pt.
Chemical synthesis & extraction of pharmaceutical drugs	Batch		Yes	Daily	Multiple SP's
Stearate mfg.	Batch		Yes	Daily	905
Imaging compound mfg.	Batch		Yes	Daily	912
Inorganic compound mfg.	Batch		Yes	Daily	010
Pharmaceutical dosage mfg.	Batch		Yes	Daily	938
	(None)		N/A		

3. PRETREATMENT (other than grease traps) - describe:

	Sample pt.
pH adjustment	010, 005, 080, 912, 930, 933
Steam stripping (PEG systems 1 & 2), methanol stripping	920, 935, 937
Oil interceptor	010, 003

4. DOES COMPANY HAVE ANY GREASE TRAPS? Yes☐ No☒
If yes: A. List sample points: _____
B. What is the frequency for cleaning & maintenance? _____
C. Are any additives used in traps? Yes☐ No☐
D. If yes to C, was co. warned MSD will bill them for blockages they cause? Yes☐ No☐
E. Was co. informed that MSD performs separate grease trap inspections? Yes☐ No☐

5. HAS COMPANY CONSTRUCTED NEW BLDGS/ADDITIONS WITH SEWERS SINCE LAST INSP? Yes☒ No☐
If yes: A. Ask company: Did they notify MSD's Plan Review group? Unknown☐ Yes☒ No☐
B. If no or unknown, has inspector notified Plan Review group? Yes☐ No☐
C. Comments: They are building a brand new stand alone boiler house, which will be Building 530. The project # is P-0028720-01. The discharge will tie into existing SP010, the main discharge point for the facility. The characteristics of the wastewater discharge will remain unchanged. The existing boiler house will be decommisioned.

6. HAS COMPANY BEGUN DISCHARGING ANY NEW POLLUTANTS SINCE THE LAST INSP? Yes☐ No☒

If yes: A. List pollutants & process: _____

B. Will MSD STP exceed existing NPDES discharge limit(s)? Yes☐ No☐

C. Will MSD STP's discharge exceed 0.1 mg/l for any new pollutant? Yes☐ No☐

(MSD must notify MDNR if B or C is yes and discharge will continue.)

D. Comments: _____

7. ARE THERE ANY FEDERALLY REGULATED (40 CFR 405-471) OPERATIONS? Yes☒ No☐

If yes: A. List reg. & describe (including any discharge):

40 CFR 439 Sub B,C,&D [Sub E NA (no stds)] PSES - pharmaceutical mfg., discharge to sewer or PEG treatment system; 414 Sub G&H PSES - stearates, discharge to sewer; 415 Sub B&K PSES (no stds) - zinc sulfate process (inactive)

8. DOES CATEGORICAL WASTEWATER COMBINE WITH NON-CAT. WW PRIOR TO SAMPLING? Yes☐ No☒

If yes: A. At which points? _____

B. Current applied factor: _____ Is it correct? Yes☐ No☐

C. If no, list correct factor/explain? _____

9. IS ANY WASTEWATER SUBJECT TO PRODUCTION OR MASS BASED STANDARDS? Yes☒ No☐

If yes: A. At which points? 905 & 912

B. Since calculation of the current limits, has the long term avg production rate or discharge volume changed by 20% or more? Yes☐ No☒

C. If yes to B, explain: _____

10. ARE ANY RADIOACTIVE MATERIALS HANDLED? Yes☒ No☐

If yes: A. Describe operations & disposal: Soil remediation (FUSRAP); CT remediation - on-site process that has resulted in soil contamination from Columbium and Tantium ore. This clean-up operation is temporary (~ 6 mos.) - the rain runoff that has come in contact with the contaminated soil is being treated with a series of sand filtration, carbon filtration, and resin beds (now two instead of one).

B. Does company have MSD authorization for disposal to sewer? NA☐ Yes☒ No☐

C. Most recent authorization date: 7/8/94

D. Amount discharged in most recent complete calendar year: 0.0111 MCI

11. DOES PROCESS or P&E WASHDOWN WATER USE APPEAR EXCESSIVE? Yes☐ No☒

A. Explain how use was verified & any needed changes:

Overall water use is high simply due to sheer size of this manufacturing facility. Water is used in various pharmaceutical extraction and systhesis processes both in the products themselves and for equipment washdown. No excessive usage was observed during the walkthrough.

12. BASED ON OBSERVATIONS DURING INSPECTION, DOES COMPANY APPEAR TO HAVE SOME WATER THAT IS NOT DISCHARGED TO SEWER? Yes☒ No☐

If yes: A. Describe: Evaporative loss from process and HVAC systems; water in product. They are currently participating in the RF program.

B. Was "Return Factor Program" brochure given to company? Yes☒ No☐

(regardless of whether some water is not discharged to sewer)

13. HAS COMPANY EXCEEDED ORDINANCE DISCHARGE LIMITS SINCE LAST INSPECTION OR WITHIN THE LAST 12 MONTHS (if last insp <12 months ago)? Yes☒ No☐

If yes: A.

Pollutant	When	Sample Points	Is problem resolved? Y/N	Describe
Ra-226	9/20/11 - 10/24/11	18D1-395C	Yes	They have installed a second resin bed for treating the on-site Columbium & Tantium ore soil contamination. There was already a sand filter, a carbon filter, and a resin bed in place, but the second resin bed that was added seems to have fixed the problem.
Gross Beta	9/20/11 - 10/24/11	18D1-395C	Yes	"
			N/A	
			N/A	
			N/A	

B. Comments: _____

14. HAS COMPANY EXCEEDED CATEGORICAL PRETREATMENT LIMITS SINCE THE LAST INSPECTION OR WITHIN LAST 12 MONTHS (if last insp <12 months ago)? NA☐ Yes☒ No☐

If yes: A.

Pollutant	When	Sample Points	Is problem resolved? Y/N	Describe
Chloroform	6/22/11	937	N/A	These were violations from an MSD sample,
Methylene chloride	6/22/11	937	N/A	but a violation notice was never sent due to an oversight;
Toluene	6/22/11	937	N/A	PIMS was apparently having issues at that
Xylene	6/22/11	937	N/A	time.
			N/A	

B. Comments: _____

15. HAVE THERE BEEN ANY PROBLEM DISCHARGES SINCE LAST INSPECTION? Yes☒ No☐

If yes: A. Upsets? ☐ Bypasses of pretreatment facilities?☐
Spills? ☒ Slug discharges? ☐ Other? _____

B. Explain any marked: 12/18/10 - 5 gal. caustic spill; 9/20/11 - Ioversol spill, pump seal failure; 11/20/11 - 5 gal. spill of ethyl glycol

16. COULD SPILLS OR LEAKS OF PROCESS TANKS, STORED WASTES, OR STORED CHEMICALS EASILY REACH SANITARY SEWERS OR STORM DRAINS? Yes☐ No☒

If yes: A. What needs to be done?

_____

If no: B. How are they controlled?
All hazardous waste is stored with secondary containment at a central collection area at Building 103. There are spill kits located throughout the entire facility. 24-Hr. emergency response team is on-call for spill situations.

17. BASED ON OBSERVATIONS DURING INSPECTION, ARE THERE ANY AREAS WHERE COMPANY ACTIVITIES APPEAR TO IMPAIR STORMWATER RUNOFF? Yes☐ No☒

If yes: A. Describe: _____
B. What needs to be done? _____
C. Was "Illicit Stormwater Discharges" brochure given to company? (regardless of whether there are any problem areas) Yes☒ No☐

18. DOES COMPANY HAVE ANY SPILL CONTROL OR SLUG DISCHARGE CONTROL PLANS? Yes☒ No☐

If yes: A.

	Title	Last Update	Update needed? Explain if yes
1.	SPCCP	3/1/10	No
2.			N/A

B. Are any Plans needed (in addition to those listed in Part A)? (If yes, write company and request) Yes☐ No☒

19. DOES COMPANY HAVE ANY MAINTENANCE SHOP PARTS WASHERS? Yes☒ No☐

If yes: A. Parts washer solvent name: Crystal Clean parts washing solvent

B. Priority pollutants (or "none"): Typically BTEX

C. How is spent solvent disposed? Hauled off site by Crystal Clean

(Parts washer solvents are not included in database's priority pollutants list, nor monitored for unless conditions show potential discharges)

20. ARE ANY ORGANICS OR SOLVENTS USED (OTHER THAN IN PARTS WASHERS)? Yes☒ No☐

If yes: A.

Solvent name/ components	Used for?	413/433/469 Process?	How disposed?	Priority Pollutant?
(see attached solvent list)	Extraction & synthesis processes	Yes☐ No☒	Hauled off site or destroyed in PEG air strippers	Yes☒ No☐
		Yes☐ No☐		Yes☐ No☐
		Yes☐ No☐		Yes☐ No☐
		Yes☐ No☐		Yes☐ No☐
		Yes☐ No☐		Yes☐ No☐
		Yes☐ No☐		Yes☐ No☐

21. DOES COMPANY HAVE A 413/433/469-REGULATORY "SOLVENT MANAGEMENT PLAN"? Yes☐ No☒

(only applies if company uses solvents in 413/433/469 processes)

If yes: A. Is it part of a Spill/Slug Control Plan listed above? Yes[1.☐ 2.☐] No☐

B. If no to A, date of last update for SMP: _____

C. Is there a copy of the Spill/Slug Plan or SMP in the files? Yes☐ No☐

D. Does SMP address all 413/433/469 solvents? Yes☐ No☐

(If no to C or D, write company and require submittal and/or update)

22. ARE EMERGENCY NOTIFICATION PROCEDURES POSTED THAT INCLUDE MSD CONTACTS? Yes☒ No☐

A. Was company provided notification cards & told to post where emergency response personnel can locate them? Yes☒ No☐

(Must post if co. generates process wastewater or stores chemicals of concern)

23. IS COMPANY REQUIRED TO SELF-MONITOR ANY OF THEIR DISCHARGES? Yes☒ No☐

If yes: A. Is requirement contained in permit ☒ or other document ☐.

B. If other document, date & description: _____

C. How frequently is sampling required? Quarterly, 912 monthly

D. How frequently are reports required? Quarterly

E. Have reports been on-time, complete & signed by proper person? Yes☒ No☐

F. If no, explain: _____

24. DOES COMPANY SELF-MONITOR ITS WASTEWATER DISCHARGE? Yes☒ No☐

If yes: A. Is the self-monitoring required by MSD? Yes☒ No☐

B. Does sample collection time period match co's production shifts? Yes☒ No☐

C. Are representative grab/comp samples collected? Yes☒ No☐

D. Are EPA-approved 40 CFR 136 wastewater test methods used? Yes☒ No☐

E. If no to B, C, or D, _____ explain needed changes:

25. DOES CO. CONTINUOUSLY MONITOR AT SAMPLE POINT AND KEEP A PERMANENT RECORD FOR: pH ☒, TEMP ☐, LEL ☐? Yes☒ No☐

If yes: A. At which SPs? SP010

B. Does company submit quarterly summaries? Yes☒ No☐

C. If no, explain: _____

26. DOES MSD SPLIT SAMPLES WITH THE COMPANY? Yes☐ No☒

If yes: A. Is company having the samples analyzed Yes☐ No☐

B. How does company insure proper preservation, holding times & analytical methods? _____

C. Has company submitted results of all split sample analyses since the last insp? Yes☐ No☐

D. Have results been submitted within 28 days of the collection's calendar quarter? Yes☐ No☐

E. If no to C, or D, explain: _____

F. Does company still want to split samples? Yes☐ No☐

G. Comments: _____

27. IS COMPANY UNDER ANY ENVIRONMENTAL ENFORCEMENT ORDERS OR REQUIREMENTS TO SUBMIT COMPLIANCE SCHEDULE REPORTS? Yes☐ No☒

If yes: A. Type and date: _____

B. Have the reports & actions been on-time & complete? Yes☐ No☐

C. If no, explain: _____

28. ASK COMPANY: IS CO. IN COMPLIANCE W/APPLICABLE NESHAP REGS FOR WW DISCHARGES? Yes☒ No☐

[Some MDNR-issued Title V air permits for specific processes allow pre-approved WW discharge.] [City/County-issued air permits are not NESHAP permits.]

If no: A. Describe: _____

B. Was MDNR Air Pollution Control informed? (must be done) Yes☐ No☐

29. DOES COMPANY RETAIN ALL WASTEWATER RECORDS FOR AT LEAST 5 YEARS? Yes☒ No☐

If no: A. How long does company retain records? _____

B. Was company told to retain for at least 5 years, per ordinance? Yes☐ No☐

C. Where are they kept? HSE Library, Bldg Z, 4th floor

30. DO MSD CLASSIFICATIONS NEED TO BE REVISED? Yes☐ No☒

If yes: A. Indicate correct classifications:

SIU ☐ CIU ☐ Surch. ☐ Potential Toxic Waste ☐ Non-Toxic Proc Waste ☐

No Process Discharge ☐ Multi-User ☐ Special Handling/Billing ☐

B. Explain changes: _____

31. IS COMPANY CLASSIFIED AS "Multi-User"? Yes☐ No☒

If yes: A. Is company's discharge segregated from other tenants' discharge? Yes☐ No☐

B. If no to A, does the company own the bldg/receive the MSD bills? Yes☐ No☐

C. If yes to B, was company informed it is responsible for total discharge, or else must provide segregated sample points? Yes☐ No☐

D. If no to B, are any Process/P&E Wash-type wastes discharged? Yes☐ No☐

E. If yes to D, are the wastes completely innocuous? Yes☐ No☐

(Explain why: _____)

F. If yes to D, and no to E, company must accept responsibility or provide segregated SP. Acceptance letter date: _____ Or write co. w/requirement ☐

G. If no to D or yes to E, are limits "alert only" on PIMS? Yes☐ No☐

H. Comments: _____

32. IS COMPANY CLASSIFIED AS "Special Handling/Billing"? Yes☐ No☒

If yes: A. Why? _____

B. Are any changes needed to reasons/details? Yes☐ No☐

C. If yes, explain: _____

D. Were company records reviewed & verified for special handling/billing reports? NA☐ Yes☐ No☐

33. SAMPLE POINTS DJ(y/n)

SP #		Fed.Reg.		Components:	(refer to list on IDS attached to report)	N/A
SP #		Fed.Reg.		Components:		N/A
SP #		Fed.Reg.		Components:		N/A
SP #		Fed.Reg.		Components:		N/A
SP #		Fed.Reg.		Components:		N/A

34. ARE ANY SAMPLE POINTS TRAPPED VENTS? Yes☐ No☒
If yes: A. List SPs: _____
B. Was co. informed that T-vents are preferred, and told why? Yes☐ No☐

35. ARE DISCHARGES AT ANY SPs SMALL/IRREGULAR ENOUGH TO ALLOW GRAB SAMPLES? Yes☒ No☐
If yes: A. List SPs and reasons: SP001 - low flow from sanitary only source

36. ARE THERE ANY UNSAMPLED DISCHARGES? (list each lateral separately) Yes☒ No☐

Dummy SP #	099	Components:	Difference between upstream 009 & downstream 003
Dummy SP #		Components:	

37. DO ANY SAMPLE POINTS (including Unsampled/Dummy SPs) RECEIVE STORMWATER? Yes☒ No☐
If yes: A. List Sample Points: 001, 003, 008, 009, 010, 011, 080, 099

38. WERE ALL SAMPLE POINTS (except Dummy SPs) OPENED & INSPECTED? No SPs☐ Yes☐ No☒
A. If any SPs cannot be located or opened, explain: A truck was parked on top of the SP003 MH, and SP935 could not be identified because the tag was missing. The tag will be replaced.
B. If any SP descript's need to be changed, explain: _____
C. Was ANY grease or other problem/debris observed in any SP? Yes☐ No☒
D. If yes to C, list SPs & describe: _____
E. If yes to C, was company directed to take corrective actions? Yes☐ No☐

39. REVIEW THE SAMPLE POINT MAP! Last map revision date: 5/17/11
A. Is the map correct and accurate in all its details? Yes☒ No☐
B If no, what changes are needed: _____

40. DO INSTRUCTIONS FOR "Contact Prior to Sampling" OR FIELD VISIT "Special Instructions" NEED REVISION? Yes☐ No☒
If yes: A. List needed changes: _____

USE THIS SPACE FOR ANY OTHER COMMENTS/OBSERVATIONS PERTINENT TO YOUR INSPECTION OF THIS SITE.
Mallinckrodt has recently implemented new water conservation practices through using recirculating cooling systems instead of once-through. This should result in slightly less water consumption overall.

Building 101 is set to be torn down sometime in 2012.

Covidien/ Mallinckrodt
St. Louis Plant
MSD Permit No. 2112059600-3

2011/2012 List of Solvents, Acids and Bases

ACETIC ACID GLACIAL (FOR FTY)	DICHLOROMETHANE AR(R) (ACS)
ACETIC ANHYDRIDE BULK FOR FTY	AMMONIUM CHLORIDE SPECIAL F.F.
ACETONITRILE A.R.	PROPYL ACETATE (FOR FTY.)
AMMONIA SOLUTION STRONG 29%	N,N-DIMETHYLFORMAMIDE A.R.
METHYL BROMIDE (FOR FTY.)	ETHYL ACETATE A.R.
ALCOHOL DENATURED 3A ANHYDROUS	ETHYLENEDIAMINE (FOR FTY)
AMYL ALCOHOL PRIMARY FOR FTY	DIPHENYLACETONITRILE
HYDROBROMIC ACID48% AR(R)(ACS)	PROPIONYL CHLORIDE 98% (FTY)
SODIUM ALUMINATE, LIQUID (FF).	HEPTANE A.R.
ETHYL ETHER ANHYD.AR CRUDE F.F	HEXANES AR(R) (ACS)
HYDRIODIC ACID 55-57%(FOR FTY)	HYDROGEN CHLORIDE ANHY. (FTY)
ISOPROPYL ACETATE	HYDROGEN PEROXIDE 35%ALBONE-35
N,N-DIMETHYLFORMAMIDE	CHLOROBENZENE FOR FTY
ACETIC ACID GLACIAL(BULK-200W)	PARAFORMALDEHYDE(FTY)PRILLED
PROPIONITRILE	2-PHENYL-2-PYRIDYLACETONITRILE
METHYL VINYL KETONE (FOR FTY)	POTASSIUM T-BUTOXIDE 1.0M SOL.
1,2-DIBROMOETHANE	FORMIC ACID, 96% (FF)
PHENYLACETONE (FOR FTY)	FORMIC ACID, 96% (FF)
2-CHLOROETHANOL (FF)	HYD BROMIDE-33% IN ACETIC ACID
N,N-DIMETHYLACETAMIDE	PHOSPHORUS TRICHLORIDE (FTY)
TRIFLUOROETHANOL (FF)	PHOSPHORUS TRICHLORIDE (FTY)
ASCORBIC ACID U.S.P.	CYCLOPROPYLMETHYL BROMIDE (FTY
TRIETHYLAMINE OR(R)	TETRABUTYL AMMONIUM BROMIDE(FF
ETHYLAMINE (FOR FACTORY)	METHYL ISOBUTYL KETONE A.R.
ALLYL CHLORIDE	METHYL ISOBUTYL KETONE FOR FTY
METHYLCHLOROACETATE	MONOMETHYLAMINE 40% SOLUTION
3-CHLORO-1,2-PROPANEDIOL (CPD)	MONOMETHYLAMINE 40% SOLUTION
2,4-DIMETHYLBENZOIC ACID	CYCLOPROPYLMETHYLBROMIDE(PURE)
ACETIC ANHYDRIDE AR(R)(ACS)	5-NITROISOPHTHALIC ACID
ACETONE AR (ACS)	3-AMINO-1,2-PROPANEDIOL(DIMER)
ACETYL CHLORIDE (FOR FTY.)	DIETHYLENETRIAM PENTAACET ACID
ACETIC ACID GLACIAL USP (ACS)	PROPIONIC ANHYDRIDE (FOR FTY.)
SOD.METHOXIDE 25% IN METH (FF)	POTASSIUM HYDROXIDE TECH SOLN
S(+) MANDELIC ACID	POTASSIUM HYDROXIDE TECH SOLN
CARBONIC ACID LIQUID	POTASSIUM HYDROXIDE TECH SOLN
ETHYLENEDINIT)TETRAACE ACID AR	POTASSIUM HYDROXIDE SOLN (FTY)
FORMIC ACID A.R. 88%	POTASSIUM HYDROXIDE SOLN (FTY)
HYDROCHLORIC ACID NF	POTASSIUM T-BUTOXIDE (FOR FTY)
NITRIC ACID TECHNICAL 56%	POTASSIUM T-BUTOXIDE (FOR FTY)
OXALIC ACID AR (CRYST.) (ACS)	POTASSIUM T-BUTOXIDE (FOR FTY)
PHOSPHORIC ACID 85% AR@ (ACS)	METHANE SULFONIC ACID 70% (FF)
FORMIC ACID 88% (FOR FTY.)	PYRIDINE AR(R)
ACETONITRILE CHROMAR	PYRIDINE AR(R)
SULFURIC ACID AR(R) (ACS)	POLYPHOSPHORIC ACID 115% (FTY)
ACETIC ACID DILUTED (FF)	SODIUM HYPOCHLORITE SOL. A.R.
SULFUROUS ACID 6% AR(R) (ACS)	1-METHLYPYRROLIDONE
HYDROCHLORIC ACID AR ACS (FTY)	METHYL ACETATE
ALCOHOL U 190	2-(2-THIENYL) ETHANOL(FTY.)
ALCOHOL DEN 3A	FORMIC ACID 90% (FOR FTY.)
ALCOHOL DEN 2B	SODIUM HYD. TECH SOLN 50% FF

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FEB 03 2012
DEPT. OF ENVIRONMENTAL COMPLIANCE

Mallinckrodt, LLC 21120596-00

ETHYL ALCOHOL ABS 200 PROOF	SODIUM HYDROXIDE SOL. 50% AR
BUTYL ALCOHOL NOR AR(R) (ACS)	SODIUM HYDROXIDE SOL. 50% AR
METHYL ALCOHOL ANHY AR(ABS)ACS	SODIUM HYDROXIDE SOL. 50% AR
ISOPROPYL ALCOHOL AR FF SUBDIV	SODIUM HYDROXIDE SOL. 50% AR
TRIMETHYL ORTHOFORMATE (FF)	SODIUM HYD SOLN 50% AR TANK
METHYL ALCOHOL CHROMAR(R)(ACS)	SOD.HYDROXIDE 50% LOW POT.(FF)
HEPTANE (FOR FTY.)	CYCLOBUTANECARBOXALDEHYDE
ISOBUTYL BROMIDE	TRIMETHYL PHENYL AMM. CHLORIDE
SODIUM HYDRIDE 95% (FOR FTY.)	TRIMETHYL PHENYL AMM. CHLORIDE
AMMONIA SOLUTION STRONG NF 27%	TETRAHYDROFURAN (FOR FTY.)
AMMONIUM HYDROXIDE A.R.	TETRAHYDROFURAN (FOR FTY.)
1-PHENETHYL-4-PIPERIDONE(FTY)	PARAFORMALDEHYDE (FOR FTY.)
ETHYL CHLOROFORMATE	TETRAHYDRFURAN ANHYDROUS (FF)
ETHYL BROMIDE AR(R)	TETRAHYDROFURAN AR@ (STAB)
HYDROFLUORIC ACID ANHY.(FF)	TETRAHYDROFURAN AR@ (STAB)
BROMO-DIPHENYLBUTYRONITRILE	THIONYL CHLORIDE
TERT-BUTYL METHYL ETHER (FTY)	THIONYL CHLORIDE
PIPERIDINE (FOR FTY.)	TOLUENE PURIFIED FOR FTY
MALIC ACID (FOR FTY.)	TOLUENE PURIFIED FOR FTY
BENZYLTRIETHYAMMON CHLORIDE(FF	TOLUENE PURIFIED FOR FTY
ANILINE A.R.	TOLUENE PURIFIED FOR FTY
METHANE SULFONIC ACID ANHY(FF)	TOLUENE PURIFIED FOR FTY
PHOSPHORIC ACID PWA 75% (FTY)	TOLUENE AR(R) (ACS)
CYCLOHEXANONE (FOR FTY)	TRIETHYLAMINE FOR FTY
4-DIMETHYLAMINOPYRIDINE (FF)	TRIETHYLAMINE FOR FTY
PROPIONIC ACID (FF)	XYLENES AR
N-PROPYL ALCOHOL (FOR FTY.)	N-CARBETHOXY-4-PIPERIDONE(FTY)
3-AMINO-1,2-PROPANEDIOL (FTY)	PHOSPHORIC ACID 75% FG (FTY)
HYDROGEN PEROXIDE SOLUTION 50%	PHOSPHORIC ACID 75% FG (FTY)
MALONIC ACID	SODIUM HYDROXIDE 50% MEM GRADE
CYCLOBUTANE CARBONYL CHLOR(FF)	SODIUM HYDROXIDE 50% MEM GRADE
ETHYL FORMATE (FOR FTY.)	SODIUM HYDROXIDE 50% MEM GRADE
BENZOYL CHLORIDE (FF)	ACETONE AR(ACS)(LOW BENZENE)
CHLORINE LIQUID BULK (FOR FTY)	IPA AR (ACS)(LOW BENZENE)
2-METHOXYETHYLAMINE (FOR FTY.)	METHANOL AR/ACS (LOW BENZENE)
CHLOROFORM AR (ACS)	METHYL TERT-BUTYL-ETHER
N,N-DIISOPROPYLETHYLAMINE(FTY)	TERT-BUTYL ALCOHOL
SODIUM HYDRIDE 60% (FOR FTY.)	TERT-BUTYL ALCOHOL
CYCLOHEXANE 99%	HIGH PURITY TERT-BUTYL ALCOHOL

RECEIVED
FEB 03 2012
DEPT. OF ENVIRONMENTAL COMPLIANCE

METROPOLITAN ST. LOUIS SEWER DISTRICT
INDUSTRIAL DATA SHEET - FACILITY INFORMATION

INDUSTRY NAME **MALLINCKRODT LLC**
PRIMARY MSD ACCOUNT NO. **2112059600**

Premise Address 3600 N 2nd St
St. Louis MO. 63147

INDUSTRIAL USER CLASSIFICATIONS

03/06/1997	SIU
03/06/1997	CIU
03/06/1997	SCH
03/06/1997	PTW

WUNNENBERG INFO.

Base Map 17D4
Wun: St. Louis City & Co.
Grid: E 18 Page 27

SIU CRITERIA

CAT Process subject to Cat Stds under 40 CFR 40
PR25 Process Disch => 25,000 GPD

GENERAL INFORMATION

Office Mailing Address
3600 N. 2nd Street
St. Louis, MO. 63147

Billing Address
3600 N. 2nd St.
St. Louis, MO. 63147

INSPECTION INFORMATION

Next Due	Insp Rslt	
12/28/2011	RIN	Jason Gill

PERMIT INFORMATION

Issue Date:	06/01/2010
Expire Date:	05/31/2015
Extended Date:	04/30/2011
Writer	Scott Rehmer
Issue Date:	05/01/2011
Expire Date:	05/31/2015
Extended Date:	
Writer	Scott Rehmer

IUQ INFORMATION

IUQ Recvd Date:	08/31/1999
Reviewer:	Fabian Grabski
IUQ Recvd Date:	10/04/2004
Reviewer:	Jason Gill
IUQ Recvd Date:	12/01/2009
Reviewer:	Jason Gill

CONTACTS

BILL	Amber Crouch	Senior HSE Engineer	OFF	(314) 654-0127 Ext.
FLD1	Amber Crouch	Senior HSE Engineer	FAX	(314) 654-1251 Ext.
	Amber Crouch	Senior HSE Engineer	SWR	(314) 654-2000 Ext.
	Amber Crouch	Senior HSE Engineer	OFF	(314) 654-0127 Ext.
FLD2	Julie Summers	Environmental Manager	OFF	(314) 654-1969 Ext.
	Julie Summers	Environmental Manager	CELL	(314) 486-3767 Ext.
OFF1	Amber Crouch	Senior HS&E Engineer	OFF	(314) 654-0127 Ext.
OFF2	Julie Summers	Environmental Manager	OFF	(314) 654-1294 Ext.
	Julie Summers	Environmental Manager	CELL	(314) 486-3767 Ext.

OPERATIONAL INFORMATION

Work Days: 7

				S	M	T	W	T	F	S
1	660	07:00AM	8.0	Y	Y	Y	Y	Y	Y	Y
2	70	03:20PM	8.0	Y	Y	Y	Y	Y	Y	Y
3	70	11:10PM	8.0	Y	Y	Y	Y	Y	Y	Y

Total Emp: 800 **Hrs:** 24.0

OTHER AGENCIES INFORMATION

11/18/1996	MDNR - Hazardous Waste Program	01029
11/19/1996	EPA - Hazardous Waste Program	MOD096726484
11/01/1997	Nuclear Regulatory Commission	24-05804-02
09/28/2005	MSD - Billing Account Number	00118821

NON-SEWERED WASTE

On-Site Storage Y **On-Site Disposal** N **Off-Site Disposal** Y

12/01/2009	Solvents/Thinners	1,109,000	LBS
12/01/2009	Paints or Paint Sludges	1,400	LBS
12/01/2009	Equipment Oils and/or Grease	16,000	LBS
12/01/2009	Acids and/or Alkalies	1,428,000	LBS
12/01/2009	Infectious Waste	600	LBS
12/01/2009	Kitchen/Food Service Grease	1,000	LBS
12/01/2009	Organic Compounds	781,600	LBS

COMMENTS

RAW MATERIALS

EFF DATE	MATERIAL_DESCRIPTION	QUANTITY	UNIT

SIC INFORMATION

SIC	DESCRIPTION
2816	Inorganic Pigments
2819	Industrial Inorganic Chemicals, N.E.C.
2833	Medicinal Chemicals & Botanical Products
2834	Pharmaceutical Preparations
2835	In Vitro & In Vivo Diagnostic Substances
2869	Industrial Organic Chemicals, N.E. C.

Report No. PIMS012A 01/30/2012 12:58:46 pm
Data Date & Time: 01/30/2012 12:58:46 pm

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PRODUCTS

EFF DATE	DESCRIPTION	UNIT	AVG_PROD	MAX_PROD
05/07/2004	Industrial chemicals			
05/07/2004	FDA drugs			

SEWER ACCOUNTS

Sewer Accounts
2112059600

WATER CONSUMPTION AND WASTEWATER DISCHARGE

Start Date = 01/01/2011 12:00:00AM **End Date =** 01/01/2012 12:59:59PM **Wdays** **Cdays**

Acct. No.			Consumption					Discharge	
2112059600			**CCF's**	**Gallons**				**Gal/ Wday**	**Gal/ Cday**
2112059600	12/30/2010	03/15/2011	109,324	109,324	A	76	76	76	
2112059600	03/16/2011	06/29/2011	114,993	224,317		106	106	182	
2112059600	06/30/2011	09/27/2011	148,688	373,005		90	90	272	
RF	0.96	**Acct. Total**	373,005	279,027,136		272	272	984,802	984,802
		Facility Total	373,005						

METROPOLITAN ST. LOUIS SEWER DISTRICT
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PRIMARY MSD ACCOUNT NO. **2112059600**

Premise Address 3600 N 2nd St
St. Louis MO. 63147

CONNECTION and SAMPLE POINT INFORMATION

LATERAL NO.	Lateral Type	DSMH	Treatment Area	Bissell Point
01	Sanitary Or Combined	17D3 028C	Trunk Sewer	Salisbury

Description Multiple lines from buildings in Plant 6E, East into 12" line

Sewer Route Discharge to Destrehan St and to Salisbury trunk

SAMPLE POINT NO. 001 Ordinance **NPDES Outfall No.**

Description MH (Gatewell) at foot of Destrahan 100' E of RR

Discharge Components	Process Description	Avg Flow	Unit	Max Flow	Unit	RUD	Effective Date
Sanitary		1,000	GPD		GPD	D	12/1/09
Storm Water		0	GPD		GPD	D	12/1/09
	Total Flow Avg =	1,000		Max =			

CONNECTION and SAMPLE POINT INFORMATION

LATERAL NO.	Lateral Type	DSMH	Treatment Area	Bissell Point
02	Sanitary Or Combined	17D4 072C	Trunk Sewer	Salisbury

Description 6" line SW from Building 96 to Salisbury St

Sewer Route East on Salisbury across Hall St. in 5' brick sewer to trunk, N to treatment plant

SAMPLE POINT NO. 002 Ordinance **NPDES Outfall No.**

Description MH 5' S of bldg #96, 30' E of SP 003, (6" pipe from NE, 3' down)

Discharge Components	Process Description	Avg Flow	Unit	Max Flow	Unit	RUD	Effective Date
Sanitary		2,200	GPD		GPD	D	12/1/09
	Total Flow Avg =	2,200		Max =			

CONNECTION and SAMPLE POINT INFORMATION

LATERAL NO.	Lateral Type	DSMH	Treatment Area	Bissell Point
04	Sanitary Or Combined	17D4 086C	Trunk Sewer	Salisbury

Description 6" line West from Bldg 98 to Broadway

Sewer Route South on Broadway in 27" pipe to Salisbury, E across Hall St. in 5' brick sewer to trunk, N to treatment plant

SAMPLE POINT NO. 080 Combined (Ord/Cat) **NPDES Outfall No.**

Description Inlet to sump (double MH) N of building #98

Discharge Components	Process Description	Avg Flow	Unit	Max Flow	Unit	RUD	Effective Date
Categorical	439 Sub C PSES (CN-no, NH3 exempt) (CWF-no)	2,500	GPD		GPD	R	12/1/09
Laboratory Waste		1,000	GPD		GPD	U	12/1/09
Storm Water		0	GPD		GPD	D	11/23/10
	Total Flow Avg =	3,500		Max =			

CONNECTION and SAMPLE POINT INFORMATION

LATERAL NO.	Lateral Type	DSMH	Treatment Area	Bissell Point
05	Sanitary Or Combined	17D4 071C	Trunk Sewer	Salisbury

Description 8" pipe South from Bldg 96 to Salisbury

Sewer Route East on Salisbury across Hall St. in 5' brick sewer to trunk, N to treatment plant

SAMPLE POINT NO. 005 Ordinance **NPDES Outfall No.**

Description MH 5' S of building #96, 30' E of SP 003 (Center pipe, 8" dia., 3' down)

Discharge Components	Process Description	Avg Flow	Unit	Max Flow	Unit	RUD	Effective Date
Non Contact Cooling Water		1,000	GPD		GPD	D	12/1/09
Laboratory Waste	R&D waste (including 439 from bldg 96)	31,000	GPD		GPD	D	12/1/09
	Total Flow Avg =	32,000		Max =			

METROPOLITAN ST. LOUIS SEWER DISTRICT
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PRIMARY MSD ACCOUNT NO. **2112059600**

Premise Address 3600 N 2nd St
St. Louis MO. 63147

CONNECTION and SAMPLE POINT INFORMATION

LATERAL NO.	Lateral Type	DSMH	Treatment Area	Bissell Point
06	Sanitary Or Combined	17D4 066C	Trunk Sewer	Salisbury

Description 15" line from Pump St overflow chamber North to Salisbury

Sewer Route East on Salisbury across Hall St. in 5' brick sewer to trunk, N to treatment plant

SAMPLE POINT NO. 008 Ordinance **NPDES Outfall No.**

Description Oveflow chamber on N side of pump station on W side of building T

Discharge Components	Process Description	Avg Flow	Unit	Max Flow	Unit	RUD	Effective Date
Storm Water		0	GPD		GPD	D	12/1/09
Emergency Bypass	Pump station bypass to Salisbury trunk	0	GPD	1,440,000	GPD	D	12/1/09
	Total Flow Avg =	**0**		**Max =**	**1,440,000**		

CONNECTION and SAMPLE POINT INFORMATION

LATERAL NO.	Lateral Type	DSMH	Treatment Area	Bissell Point
10	Sanitary Or Combined	17D4 436C	Trunk Sewer	Interceptor Tunnel

Description 18" line North from neutralization system

Sewer Route E to Interceptor Tunnel, N to treatment plant

SAMPLE POINT NO. 010 Ordinance **NPDES Outfall No.**

Description MH w/square lid 50' N of neutralization control building at Hall & Salisbury

Discharge Components	Process Description	Avg Flow	Unit	Max Flow	Unit	RUD	Effective Date
Categorical	SP's 905,912,915,920,927,930,933,935,936,937,938	184,721	GPD		GPD	R	12/1/09
Non Categorical Process Waste		441,792	GPD		GPD	D	12/1/09
Sanitary		75,000	GPD		GPD	D	12/1/09
Kitchen Waste		2,500	GPD		GPD	D	12/1/09
Plant & Equipment Washdown		50,000	GPD		GPD	D	12/1/09
Boiler Blowdown		85,000	GPD		GPD	D	12/1/09
Laboratory Waste		68,000	GPD		GPD	D	12/1/09
Non Contact Cooling Water		149,000	GPD		GPD	D	12/1/09
Storm Water		0	GPD		GPD	D	12/1/09
Regeneration/Reject Water		86,900	GPD		GPD	D	12/1/09
	Total Flow Avg =	**1,142,913**		**Max =**			

SAMPLE POINT NO. 905 Categorical **NPDES Outfall No.**

Description MH inside building X, 12' W, 5' S of W door (Total flow out)

Discharge Components	Process Description	Avg Flow	Unit	Max Flow	Unit	RUD	Effective Date
Categorical	414 Sub G & H PSES (App A-no)	100,000	GPD		GPD	R	12/1/09
	Total Flow Avg =	**100,000**		**Max =**			

SAMPLE POINT NO. 912 Ordinance **NPDES Outfall No.**

Description Valve on discharge line from outdoor Tank #450 on SE corner of Building 504

Discharge Components	Process Description	Avg Flow	Unit	Max Flow	Unit	RUD	Effective Date
Non Categorical Process Waste	process waste from bldgs 504/505	150,000	GPD		GPD	D	12/1/09
	Total Flow Avg =	**150,000**		**Max =**			

SAMPLE POINT NO. 915 Categorical **NPDES Outfall No.**

Description Valve on E side of T-315 at inside NE corner of bldg 6

Discharge Components	Process Description	Avg Flow	Unit	Max Flow	Unit	RUD	Effective Date
Categorical	439 Sub C PSES (CN-no, MH3 exempt)	2,700	GPD		GPD	R	12/1/09
	Total Flow Avg =	**2,700**		**Max =**			

METROPOLITAN ST. LOUIS SEWER DISTRICT
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Premise Address 3600 N 2nd St
St. Louis MO. 63147

SAMPLE POINT NO. 920 Categorical **NPDES Outfall No.**

Description Valve on discharge line, outside SW corner of diked area E of bldg 512

Discharge Components	Process Description	Avg Flow	Unit	Max Flow	Unit	RUD	Effective Date
Categorical	439 Sub C PSES (CN-no,NH3 exempt) - with SP937	13,000	GPD		GPD	R	12/1/09
	Total Flow Avg =	**13,000**		**Max =**			

SAMPLE POINT NO. 927 Categorical **NPDES Outfall No.**

Description Tank 308 (acid press tank) in bldg 6

Discharge Components	Process Description	Avg Flow	Unit	Max Flow	Unit	RUD	Effective Date
Categorical	439 Sub B PSES	2,700	GPD		GPD	R	12/1/09
	Total Flow Avg =	**2,700**		**Max =**			

SAMPLE POINT NO. 930 Categorical **NPDES Outfall No.**

Description Valve on 4" PVC line inside NW corner of Bldg. 222S, only when sump is discharging from tanks 300 and 355

Discharge Components	Process Description	Avg Flow	Unit	Max Flow	Unit	RUD	Effective Date
Categorical	439 Sub B PSES	650	GPD		GPD	R	12/1/09
	Total Flow Avg =	**650**		**Max =**			

SAMPLE POINT NO. 933 Categorical **NPDES Outfall No.**

Description Valve on Tank #1 10' NW of SE corner of Bldg. 200W - only when disch. 439 waste

Discharge Components	Process Description	Avg Flow	Unit	Max Flow	Unit	RUD	Effective Date
Categorical	439 Sub B PSES	100	GPD		GPD	R	12/1/09
	Total Flow Avg =	**100**		**Max =**			

SAMPLE POINT NO. 935 Categorical **NPDES Outfall No.**

Description 1/2" steel pipe on inside of concrete wall S of North stairs - Bldg 512

Discharge Components	Process Description	Avg Flow	Unit	Max Flow	Unit	RUD	Effective Date
Categorical	Cat. 439 Sub C PSES (CN-no, NH3 exempt)	26,000	GPD		GPD	R	12/1/09
	Total Flow Avg =	**26,000**		**Max =**			

SAMPLE POINT NO. 936 Categorical **NPDES Outfall No.**

Description Valve on 1/2" line 1' from hydrogenerator bldg 8' from S wall in SE corner of bldg 260

Discharge Components	Process Description	Avg Flow	Unit	Max Flow	Unit	RUD	Effective Date
Categorical	439 Sub C PSES (CN-no, NH3 exempt)	16,500	GPD		GPD	R	12/1/09
	Total Flow Avg =	**16,500**		**Max =**			

SAMPLE POINT NO. 937 Categorical **NPDES Outfall No.**

Description Valve on 2nd level on W side near pipe bridge N of bldg 501

Discharge Components	Process Description	Avg Flow	Unit	Max Flow	Unit	RUD	Effective Date
Categorical	439 Sub C PSES (CN-no,NH3 exempt) - with SP937	23,000	GPD		GPD	R	12/1/09
	Total Flow Avg =	**23,000**		**Max =**			

SAMPLE POINT NO. 938 Categorical **NPDES Outfall No.**

Description 6" floor drain in far SW corner of room in Building 5, Room 406

Discharge Components	Process Description	Avg Flow	Unit	Max Flow	Unit	RUD	Effective Date
Categorical	439 Sub D PSNS	71	GPD		GPD	R	12/1/09
	Total Flow Avg =	**71**		**Max =**			

CONNECTION and SAMPLE POINT INFORMATION

LATERAL NO.	Lateral Type	DSMH		Treatment Area	Bissell Point
12	Sanitary Or Combined	17D3	016C	Trunk Sewer	Salisbury

Description Line flowing NE under bldg 223 to pump station (Plant 5 overflow)

Sewer Route NE, parallel to Destrehan Street under bldg 223, across Hall Street to pump station, N along Hall St. to STP

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SAMPLE POINT NO. 011 Ordinance **NPDES Outfall No.**

Description MH with square lid 18' S from NW corner of bldg 223 under iron ladder

Discharge Components	Process Description	Avg Flow	Unit	Max Flow	Unit	RUD	Effective Date
Storm Water		0	GPD		GPD	D	12/1/09
Emergency Bypass	Overflow from Plant 5	0	GPD	14,000	GPD	D	12/1/09
	Total Flow Avg =	**0**		**Max =**	**14,000**		

CONNECTION and SAMPLE POINT INFORMATION

LATERAL NO.	Lateral Type	DSMH		Treatment Area	Bissell Point
99	Sanitary Or Combined	17D4	080C	Trunk Sewer	Salisbury

Description Multiple lines from buildings located West of N 2nd St to Salisbury

Sewer Route East on Salisbury across Hall St. in 5' brick sewer to trunk, N to treatment plant

SAMPLE POINT NO. 003 Ordinance **NPDES Outfall No.**

Description MH in alley at Salisbury, 12' W, 3' S of NW corner of building 91

Discharge Components	Process Description	Avg Flow	Unit	Max Flow	Unit	RUD	Effective Date
Sanitary		5,000	GPD		GPD	D	12/1/09
Laboratory Waste	439 Sub E NA (No Stds) & non-439 R&D	9,000	GPD		GPD	D	12/1/09
Non Categorical Process Waste	Machine shop, painting, parts washing	4,142	GPD		GPD	D	12/1/09
Flow From Upstream Sample Pt 009		11,000	GPD		GPD	D	12/1/09
Storm Water		0	GPD		GPD	D	11/23/10
	Total Flow Avg =	**29,142**		**Max =**			

SAMPLE POINT NO. 009 Ordinance **NPDES Outfall No.**

Description MH in Mallinckrodt St 27' E of Broadway, 4' from S curb

Discharge Components	Process Description	Avg Flow	Unit	Max Flow	Unit	RUD	Effective Date
Flow From Offsite	Offsite W of Broadway	11,000	GPD		GPD	D	12/1/09
Storm Water		0	GPD		GPD	D	11/23/10
	Total Flow Avg =	**11,000**		**Max =**			

SAMPLE POINT NO. 099 Dummy Point **NPDES Outfall No.**

Description No sample point available (Represents WW contributions between upstream SP 009 & downstream SP 003)

Discharge Components	Process Description	Avg Flow	Unit	Max Flow	Unit	RUD	Effective Date
Laboratory Waste		9,000	GPD		GPD	D	12/1/09
Non Categorical Process Waste		4,142	GPD		GPD	D	12/1/09
Sanitary		5,000	GPD		GPD	D	12/1/09
Storm Water		0	GPD		GPD	D	11/23/10
	Total Flow Avg =	**18,142**		**Max =**			

PRETREATMENT TYPES

SP	EFF_DATE	TYPE	DESCRIPTION
003	12/01/2009	DC35	Oil/Water Interceptor
005	11/05/1998	DC37	pH Adjustment/Neutralization
010	11/05/1998	DC37	pH Adjustment/Neutralization
010	11/21/2008	DC35	Oil/Water Interceptor
080	11/05/1998	DC37	pH Adjustment/Neutralization
809	10/16/1998	DC5	Carbon Absorption
809	10/16/1998	DC9	Clarification/Settling
809	10/16/1998	DC43	Ultrafiltration
809	10/16/1998	DC7	Chemical Precipitation
912	12/01/2009	DC37	pH Adjustment/Neutralization
920	02/28/2002	DC42	Steam Stripping
930	12/01/2009	DC37	pH Adjustment/Neutralization
933	12/01/2009	DC37	pH Adjustment/Neutralization
935	04/18/2006	DC42	Steam Stripping
937	06/26/2007	DC42	Steam Stripping

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Premise Address 3600 N 2nd St
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PRIORITY POLLUTANTS

Pollutant Description	Status	Pollutant Description	Status	Pollutant Description	Status
2,4-Dimethylphenol	SP	2,4-Dinitrotoluene	SP	2,4-Dichlorophenol	SP
2-Nitrophenol	SP	Phenanthrene	SP	N-Nitrosodimethylamine	SP
Hexachloroethane	SP	Hexachlorobutadiene	SP	Diethyl Phthalate	SP
Dieldrin	SP	Bis (2-EthylHexyl) Phthalate	KP	Dibromochloromethane	SP
Bromodichloromethane	SP	1,2-Dichlorobenzene	SP	Trichloroethene	KP
Ethylbenzene	KP	Acrylonitrile	SP	1,4-Dichlorobenzene	SP
1,1,2,2-Tetrachloroethane	KP	Cyanide (Total)	KP	Asbestos (Fibrous)	KP
Antimony (Total)	SP	Silver (Total)	SP	Copper (Total)	KP
Cadmium (Total)	KP	Zinc (Total)	KP	Nickel (Total)	KP
Mercury (Total)	KP	Lead (Total)	KP	Chromium (Total)	KP
Arsenic (Total)	SP	Phenol	KP	Dimethyl Phthalate	KP
4-Nitrophenol	SP	2,4-Dinitrophenol	SP	2-Chlorophenol	SP
Nitrobenzene	SP	Hexachlorocyclopentadiene	SP	Benzo (A) Pyrene	SP
Benzidine	SP	Acrolein	SP	Toluene	KP
Methylene Chloride	KP	Chloromethane	KP	Chlorobenzene	KP
1,3-Dichlorobenzene	SP	1,1,1-Trichloroethane	KP	Vinyl Chloride	KP
Tetrachloroethene	KP	Chloroform	KP	Carbon Tetrachloride	KP
Bromomethane	SP	Benzene	KP	1,2-Dichloroethane	SP
1,1,2-Trichloroethane	KP				

EXTRA STRENGTH SURCHARGE INFORMATION

07/21/2011	BOD	415
07/21/2011	COD	825
07/21/2011	TSS	68

PIMS FACILITY CONTACTS

For Account Number Selected **2112059600 MALLINCKRODT LLC**
Located at 3600 N 2nd St
St. Louis MO 63147

Address Type

Contact Type	Contact Name		Contact Title	Phone Type	Number	Ext.
Billing Address						
Billing Contact	Amber	Crouch	Senior HSE Engineer	OFF	(314)654-0127	
Office Mailing Address						
Office Contact - Primary	Amber	Crouch	Senior HS&E Engineer	OFF	(314)654-0127	
Office Contact 1st Alt	Julie	Summers	Environmental Manager	CELL	(314)486-3767	
Office Contact 1st Alt	Julie	Summers	Environmental Manager	OFF	(314)654-1294	
Premise Address						
Field Contact - Primary	Amber	Crouch	Senior HSE Engineer	FAX	(314)654-1251	
Field Contact - Primary	Amber	Crouch	Senior HSE Engineer	OFF	(314)654-0127	
Field Contact - Primary	Amber	Crouch	Senior HSE Engineer	SWR	(314)654-2000	
Field Contact 1st Alt	Julie	Summers	Environmental Manager	CELL	(314)486-3767	
Field Contact 1st Alt	Julie	Summers	Environmental Manager	OFF	(314)654-1969	

PIMS
REPORT OF FIELD SAMPLING REQUIREMENTS
MALLINCKRODT LLC

Account No Entered 2112059600

SPN	PREMISE ADDRESS	CITY	ST	ZIP
	3600 N 2nd St	St. Louis	MO	63147

001 Project Code: IM= IPD - Company - MSD

Pollutant Group	Poll Code	Pollutant Description	Frequency	Sample Type	End Date
	T208000	Biochemical Oxygen Demand (5 Day)	Once/3 mo	Grab (Auth in lieu of composite)	03/31/2012
	T213000	Chemical Oxygen Demand	Once/3 mo	Grab (Auth in lieu of composite)	03/31/2012
	T237000	pH	Once/3 mo	Grab	03/31/2012
	T247000	Temperature	Once/3 mo	Grab	03/31/2012
	T256000	Total Suspended Solids	Once/3 mo	Grab (Auth in lieu of composite)	03/31/2012

002 Project Code: IM= IPD - Company - MSD

Pollutant Group	Poll Code	Pollutant Description	Frequency	Sample Type	End Date
	T208000	Biochemical Oxygen Demand (5 Day)	Once/3 mo	Comp-Time 04 Hrs	03/31/2012
	T213000	Chemical Oxygen Demand	Once/3 mo	Comp-Time 04 Hrs	03/31/2012
	T225000	Iron (Total)	Once/3 mo	Comp-Time 04 Hrs	03/31/2012
	T237000	pH	Once/3 mo	Grab	03/31/2012
	T247000	Temperature	Once/3 mo	Grab	03/31/2012
	T256000	Total Suspended Solids	Once/3 mo	Comp-Time 04 Hrs	03/31/2012

003 Project Code: IM= IPD - Company - MSD

Pollutant Group	Poll Code	Pollutant Description	Frequency	Sample Type	End Date
	T208000	Biochemical Oxygen Demand (5 Day)	Once/3 mo	Comp-Time 04 Hrs	03/31/2012
	T213000	Chemical Oxygen Demand	Once/3 mo	Comp-Time 04 Hrs	03/31/2012
	T234000	Oil and Grease (Total)	Once/3 mo	Grab	03/31/2012
	T237000	pH	Once/3 mo	Grab	03/31/2012
	T247000	Temperature	Once/3 mo	Grab	03/31/2012
	T256000	Total Suspended Solids	Once/3 mo	Comp-Time 04 Hrs	03/31/2012
	T299000	Acrolein	Once/year	Grab	06/30/2012
	T300000	Acrylonitrile	Once/year	Grab	06/30/2012
Pesticide Organics	T993000	Pesticide Organics	Once/year	Comp-Time 04 Hrs	06/30/2012
Semi-Volatile Organics - Base/Neutrals	T994000	Semi-Volatile Organics - Base/Neutrals	Once/year	Comp-Time 04 Hrs	06/30/2012
Semi-Volatile Organics - Acids	T995000	Semi-Volatile Organics - Acids	Once/year	Comp-Time 04 Hrs	06/30/2012
Volatile Organics	T996000	Volatile Organics	Once/year	Grab	06/30/2012

005 Project Code: IM= IPD - Company - MSD

Pollutant Group	Poll Code	Pollutant Description	Frequency	Sample Type	End Date
	T208000	Biochemical Oxygen Demand (5 Day)	Once/3 mo	Comp-Time 04 Hrs	03/31/2012
	T213000	Chemical Oxygen Demand	Once/3 mo	Comp-Time 04 Hrs	03/31/2012
	T237000	pH	Once/3 mo	Grab	03/31/2012
	T247000	Temperature	Once/3 mo	Grab	03/31/2012
	T256000	Total Suspended Solids	Once/3 mo	Comp-Time 04 Hrs	03/31/2012
	T340000	Cyanide Amenable to Chlorination	Once/3 mo	Grab	03/31/2012
	T299000	Acrolein	Once/year	Grab	06/30/2012
	T300000	Acrylonitrile	Once/year	Grab	06/30/2012
Pesticide Organics	T993000	Pesticide Organics	Once/year	Comp-Time 04 Hrs	06/30/2012
Semi-Volatile Organics - Base/Neutrals	T994000	Semi-Volatile Organics - Base/Neutrals	Once/year	Comp-Time 04 Hrs	06/30/2012
Semi-Volatile Organics - Acids	T995000	Semi-Volatile Organics - Acids	Once/year	Comp-Time 04 Hrs	06/30/2012
Volatile Organics	T996000	Volatile Organics	Once/year	Grab	06/30/2012

008 Project Code: IM= IPD - Company - MSD

Pollutant Group	Poll Code	Pollutant Description	Frequency	Sample Type	End Date
	T208000	Biochemical Oxygen Demand (5 Day)	Once/3 mo	Comp-Time 04 Hrs	03/31/2012

Account No Entered **2112059600**

SPN	PREMISE ADDRESS	CITY	ST	ZIP

	T213000	Chemical Oxygen Demand	Once/3 mo	Comp-Time 04 Hrs	03/31/2012
	T234000	Oil and Grease (Total)	Once/3 mo	Grab	03/31/2012
	T237000	pH	Once/3 mo	Grab	03/31/2012
	T247000	Temperature	Once/3 mo	Grab	03/31/2012
	T256000	Total Suspended Solids	Once/3 mo	Comp-Time 04 Hrs	03/31/2012

009 Project Code: IM= IPD - Company - MSD

Pollutant Group	Poll Code	Pollutant Description	Frequency	Sample Type	End Date
	T208000	Biochemical Oxygen Demand (5 Day)	Once/3 mo	Comp-Time 04 Hrs	03/31/2012
	T213000	Chemical Oxygen Demand	Once/3 mo	Comp-Time 04 Hrs	03/31/2012
	T234000	Oil and Grease (Total)	Once/3 mo	Grab	03/31/2012
	T237000	pH	Once/3 mo	Grab	03/31/2012
	T247000	Temperature	Once/3 mo	Grab	03/31/2012
	T256000	Total Suspended Solids	Once/3 mo	Comp-Time 04 Hrs	03/31/2012
	T299000	Acrolein	Once/year	Grab	06/30/2012
	T300000	Acrylonitrile	Once/year	Grab	06/30/2012
Pesticide Organics	T993000	Pesticide Organics	Once/year	Comp-Time 04 Hrs	06/30/2012
Semi-Volatile Organics - Base/Neutrals	T994000	Semi-Volatile Organics - Base/Neutrals	Once/year	Comp-Time 04 Hrs	06/30/2012
Semi-Volatile Organics - Acids	T995000	Semi-Volatile Organics - Acids	Once/year	Comp-Time 04 Hrs	06/30/2012
Volatile Organics	T996000	Volatile Organics	Once/year	Grab	06/30/2012

010 Project Code: IM= IPD - Company - MSD

Pollutant Group	Poll Code	Pollutant Description	Frequency	Sample Type	End Date
	T208000	Biochemical Oxygen Demand (5 Day)	Once/3 mo	Comp-Time 04 Hrs	03/31/2012
	T213000	Chemical Oxygen Demand	Once/3 mo	Comp-Time 04 Hrs	03/31/2012
	T234000	Oil and Grease (Total)	Once/3 mo	Grab	03/31/2012
	T237000	pH	Once/3 mo	Grab	03/31/2012
	T247000	Temperature	Once/3 mo	Grab	03/31/2012
	T256000	Total Suspended Solids	Once/3 mo	Comp-Time 04 Hrs	03/31/2012
	T299000	Acrolein	Once/year	Grab	06/30/2012
	T300000	Acrylonitrile	Once/year	Grab	06/30/2012
	T335000	Chromium (Total)	Once/year	Comp-Time 04 Hrs	06/30/2012
	T339000	Copper (Total)	Once/year	Comp-Time 04 Hrs	06/30/2012
	T377000	Nickel (Total)	Once/year	Comp-Time 04 Hrs	06/30/2012
	T403000	Zinc (Total)	Once/year	Comp-Time 04 Hrs	06/30/2012
Pesticide Organics	T993000	Pesticide Organics	Once/year	Comp-Time 04 Hrs	06/30/2012
Semi-Volatile Organics - Base/Neutrals	T994000	Semi-Volatile Organics - Base/Neutrals	Once/year	Comp-Time 04 Hrs	06/30/2012
Semi-Volatile Organics - Acids	T995000	Semi-Volatile Organics - Acids	Once/year	Comp-Time 04 Hrs	06/30/2012
Volatile Organics	T996000	Volatile Organics	Once/year	Grab	06/30/2012

011 Project Code: IM= IPD - Company - MSD

Pollutant Group	Poll Code	Pollutant Description	Frequency	Sample Type	End Date
	T208000	Biochemical Oxygen Demand (5 Day)	Once/3 mo	Comp-Time 04 Hrs	03/31/2012
	T213000	Chemical Oxygen Demand	Once/3 mo	Comp-Time 04 Hrs	03/31/2012
	T234000	Oil and Grease (Total)	Once/3 mo	Grab	03/31/2012
	T237000	pH	Once/3 mo	Grab	03/31/2012
	T247000	Temperature	Once/3 mo	Grab	03/31/2012
	T256000	Total Suspended Solids	Once/3 mo	Comp-Time 04 Hrs	03/31/2012

080 Project Code: IM= IPD - Company - MSD

Pollutant Group	Poll Code	Pollutant Description	Frequency	Sample Type	End Date
	T208000	Biochemical Oxygen Demand (5 Day)	Once/3 mo	Comp-Time 04 Hrs	03/31/2012

Account No Entered **2112059600**

SPN	PREMISE ADDRESS		CITY	ST	ZIP
	T213000	Chemical Oxygen Demand	Once/3 mo	Comp-Time 04 Hrs	03/31/2012
	T234000	Oil and Grease (Total)	Once/3 mo	Grab	03/31/2012
	T237000	pH	Once/3 mo	Grab	03/31/2012
	T247000	Temperature	Once/3 mo	Grab	03/31/2012
	T256000	Total Suspended Solids	Once/3 mo	Comp-Time 04 Hrs	03/31/2012
	T269000	1,2-Dichlorobenzene	Once/year	Grab	06/30/2012
	T270000	1,2-Dichloroethane	Once/year	Grab	06/30/2012
	T299000	Acrolein	Once/year	Grab	06/30/2012
	T300000	Acrylonitrile	Once/year	Grab	06/30/2012
	T309000	Benzene	Once/year	Grab	06/30/2012
	T330000	Chlorobenzene	Once/year	Grab	06/30/2012
	T332000	Chloroform	Once/year	Grab	06/30/2012
	T340000	Cyanide Amenable to Chlorination	Once/year	Grab	06/30/2012
	T341000	Cyanide (Total)	Once/year	Grab	06/30/2012
	T371000	Methylene Chloride	Once/year	Grab	06/30/2012
	T397000	Toluene	Once/year	Grab	06/30/2012
	T430000	Acetone	Once/year	Grab	06/30/2012
	T435000	Xylene	Once/year	Grab	06/30/2012
	T437000	4-Methyl-2-Pentanone	Once/year	Grab	06/30/2012
	T438000	Isobutyraldehyde	Once/year	Grab	06/30/2012
	T439000	n-Amyl Acetate	Once/year	Grab	06/30/2012
	T440000	n-Butyl Acetate	Once/year	Grab	06/30/2012
	T441000	Ethyl Acetate	Once/year	Grab	06/30/2012
	T442000	Isopropyl Acetate	Once/year	Grab	06/30/2012
	T443000	Methyl Formate	Once/year	Grab	06/30/2012
	T445000	Isopropyl Ether	Once/year	Grab	06/30/2012
	T446000	Tetrahydrofuran	Once/year	Grab	06/30/2012
	T447000	n-Hexane	Once/year	Grab	06/30/2012
	T448000	n-Heptane	Once/year	Grab	06/30/2012
	T449000	Diethylamine	Once/year	Grab	06/30/2012
	T550000	Triethylamine	Once/year	Grab	06/30/2012
Pesticide Organics	T993000	Pesticide Organics	Once/year	Comp-Time 04 Hrs	06/30/2012
Semi-Volatile Organics - Base/Neutrals	T994000	Semi-Volatile Organics - Base/Neutrals	Once/year	Comp-Time 04 Hrs	06/30/2012
Semi-Volatile Organics - Acids	T995000	Semi-Volatile Organics - Acids	Once/year	Comp-Time 04 Hrs	06/30/2012
Volatile Organics	T996000	Volatile Organics	Once/year	Grab	06/30/2012

905 Project Code: IM = IPD - Company - MSD

Pollutant Group	Poll Code	Pollutant Description	Frequency	Sample Type	End Date
	T247000	Temperature	Once/year	Grab	06/30/2012
	T263000	(cis & trans) 1,3-Dichloropropene	Once/year	Grab	06/30/2012
	T264000	1,1-Dichloroethane	Once/year	Grab	06/30/2012
	T265000	1,1-Dichloroethene	Once/year	Grab	06/30/2012
	T266000	1,1,1-Trichloroethane	Once/year	Grab	06/30/2012
	T267000	1,1,2-Trichloroethane	Once/year	Grab	06/30/2012
	T269000	1,2-Dichlorobenzene	Once/year	Grab	06/30/2012
	T270000	1,2-Dichloroethane	Once/year	Grab	06/30/2012
	T271000	1,2-Dichloropropane	Once/year	Grab	06/30/2012
	T273000	1,2,4-Trichlorobenzene	Once/year	Grab	06/30/2012
	T274000	1,3-Dichlorobenzene	Once/year	Grab	06/30/2012
	T275000	1,4-Dichlorobenzene	Once/year	Grab	06/30/2012
	T276000	2-Nitrophenol	Once/year	Grab	06/30/2012
	T288000	4-Nitrophenol	Once/year	Grab	06/30/2012
	T295000	4,6-Dinitro-2-Methylphenol	Once/year	Grab	06/30/2012
	T297000	Acenaphthene	Once/year	Grab	06/30/2012
	T302000	Anthracene	Once/year	Grab	06/30/2012
	T309000	Benzene	Once/year	Grab	06/30/2012

Account No Entered **2112059600**

SPN	PREMISE ADDRESS	CITY	ST	ZIP

T310000	Benzidine	Once/year	Grab	06/30/2012
T321000	Bis (2-EthylHexyl) Phthalate	Once/year	Grab	06/30/2012
T328000	Carbon Tetrachloride	Once/year	Grab	06/30/2012
T330000	Chlorobenzene	Once/year	Grab	06/30/2012
T331000	Chloroethane	Once/year	Grab	06/30/2012
T332000	Chloroform	Once/year	Grab	06/30/2012
T333000	Chloromethane	Once/year	Grab	06/30/2012
T343000	Di-n-butyl Phthalate	Once/year	Grab	06/30/2012
T348000	Diethyl Phthalate	Once/year	Grab	06/30/2012
T349000	Dimethyl Phthalate	Once/year	Grab	06/30/2012
T355000	Ethylbenzene	Once/year	Grab	06/30/2012
T356000	Fluoranthene	Once/year	Grab	06/30/2012
T357000	Fluorene	Once/year	Grab	06/30/2012
T361000	Hexachlorobenzene	Once/year	Grab	06/30/2012
T362000	Hexachlorobutadiene	Once/year	Grab	06/30/2012
T364000	Hexachloroethane	Once/year	Grab	06/30/2012
T371000	Methylene Chloride	Once/year	Grab	06/30/2012
T375000	Naphthalene	Once/year	Grab	06/30/2012
T378000	Nitrobenzene	Once/year	Grab	06/30/2012
T387000	Phenanthrene	Once/year	Grab	06/30/2012
T389000	Pyrene	Once/year	Grab	06/30/2012
T394000	Tetrachloroethene	Once/year	Grab	06/30/2012
T397000	Toluene	Once/year	Grab	06/30/2012
T399000	Trans-1,2-Dichloroethene	Once/year	Grab	06/30/2012
T400000	Trichloroethene	Once/year	Grab	06/30/2012
T401000	Vinyl Chloride	Once/year	Grab	06/30/2012

912 Project Code: IM= IPD - Company - MSD

Pollutant Group	Poll Code	Pollutant Description	Frequency	Sample Type	End Date
	T247000	Temperature	Once/year	Grab	06/30/2012
	T553000	N,N-Dimethyl Acetamide	Once/year	Grab	06/30/2012

915 Project Code: IM= IPD - Company - MSD

Pollutant Group	Poll Code	Pollutant Description	Frequency	Sample Type	End Date
	T247000	Temperature	Once/year	Grab	06/30/2012
	T269000	1,2-Dichlorobenzene	Once/year	Grab	06/30/2012
	T270000	1,2-Dichloroethane	Once/year	Grab	06/30/2012
	T309000	Benzene	Once/year	Grab	06/30/2012
	T330000	Chlorobenzene	Once/year	Grab	06/30/2012
	T332000	Chloroform	Once/year	Grab	06/30/2012
	T371000	Methylene Chloride	Once/year	Grab	06/30/2012
	T397000	Toluene	Once/year	Grab	06/30/2012
	T430000	Acetone	Once/year	Grab	06/30/2012
	T435000	Xylene	Once/year	Grab	06/30/2012
	T437000	4-Methyl-2-Pentanone	Once/year	Grab	06/30/2012
	T438000	Isobutyraldehyde	Once/year	Grab	06/30/2012
	T439000	n-Amyl Acetate	Once/year	Grab	06/30/2012
	T440000	n-Butyl Acetate	Once/year	Grab	06/30/2012
	T441000	Ethyl Acetate	Once/year	Grab	06/30/2012
	T442000	Isopropyl Acetate	Once/year	Grab	06/30/2012
	T443000	Methyl Formate	Once/year	Grab	06/30/2012
	T445000	Isopropyl Ether	Once/year	Grab	06/30/2012
	T446000	Tetrahydrofuran	Once/year	Grab	06/30/2012
	T447000	n-Hexane	Once/year	Grab	06/30/2012
	T448000	n-Heptane	Once/year	Grab	06/30/2012
	T449000	Diethylamine	Once/year	Grab	06/30/2012

Account No Entered **2112059600**

SPN	PREMISE ADDRESS	CITY	ST	ZIP

	T550000	Triethylamine	Once/year	Grab	06/30/2012

920 Project Code: IM= IPD - Company - MSD

Pollutant Group	Poll Code	Pollutant Description	Frequency	Sample Type	End Date
	T247000	Temperature	Once/year	Grab	06/30/2012
	T269000	1,2-Dichlorobenzene	Once/year	Grab	06/30/2012
	T270000	1,2-Dichloroethane	Once/year	Grab	06/30/2012
	T309000	Benzene	Once/year	Grab	06/30/2012
	T330000	Chlorobenzene	Once/year	Grab	06/30/2012
	T332000	Chloroform	Once/year	Grab	06/30/2012
	T371000	Methylene Chloride	Once/year	Grab	06/30/2012
	T397000	Toluene	Once/year	Grab	06/30/2012
	T430000	Acetone	Once/year	Grab	06/30/2012
	T435000	Xylene	Once/year	Grab	06/30/2012
	T437000	4-Methyl-2-Pentanone	Once/year	Grab	06/30/2012
	T438000	Isobutyraldehyde	Once/year	Grab	06/30/2012
	T439000	n-Amyl Acetate	Once/year	Grab	06/30/2012
	T440000	n-Butyl Acetate	Once/year	Grab	06/30/2012
	T441000	Ethyl Acetate	Once/year	Grab	06/30/2012
	T442000	Isopropyl Acetate	Once/year	Grab	06/30/2012
	T443000	Methyl Formate	Once/year	Grab	06/30/2012
	T445000	Isopropyl Ether	Once/year	Grab	06/30/2012
	T446000	Tetrahydrofuran	Once/year	Grab	06/30/2012
	T447000	n-Hexane	Once/year	Grab	06/30/2012
	T448000	n-Heptane	Once/year	Grab	06/30/2012
	T449000	Diethylamine	Once/year	Grab	06/30/2012
	T550000	Triethylamine	Once/year	Grab	06/30/2012

927 Project Code: IM= IPD - Company - MSD

Pollutant Group	Poll Code	Pollutant Description	Frequency	Sample Type	End Date
	T247000	Temperature	Once/year	Grab	06/30/2012
	T371000	Methylene Chloride	Once/year	Grab	06/30/2012
	T430000	Acetone	Once/year	Grab	06/30/2012
	T439000	n-Amyl Acetate	Once/year	Grab	06/30/2012
	T441000	Ethyl Acetate	Once/year	Grab	06/30/2012
	T442000	Isopropyl Acetate	Once/year	Grab	06/30/2012

930 Project Code: IM= IPD - Company - MSD

Pollutant Group	Poll Code	Pollutant Description	Frequency	Sample Type	End Date
	T247000	Temperature	Once/year	Grab	06/30/2012
	T371000	Methylene Chloride	Once/year	Grab	06/30/2012
	T430000	Acetone	Once/year	Grab	06/30/2012
	T439000	n-Amyl Acetate	Once/year	Grab	06/30/2012
	T441000	Ethyl Acetate	Once/year	Grab	06/30/2012
	T442000	Isopropyl Acetate	Once/year	Grab	06/30/2012

933 Project Code: IM= IPD - Company - MSD

Pollutant Group	Poll Code	Pollutant Description	Frequency	Sample Type	End Date
	T247000	Temperature	Once/year	Grab	06/30/2012
	T371000	Methylene Chloride	Once/year	Grab	06/30/2012
	T430000	Acetone	Once/year	Grab	06/30/2012
	T439000	n-Amyl Acetate	Once/year	Grab	06/30/2012
	T441000	Ethyl Acetate	Once/year	Grab	06/30/2012
	T442000	Isopropyl Acetate	Once/year	Grab	06/30/2012

Account No Entered **2112059600**

SPN	PREMISE ADDRESS	CITY	ST	ZIP

935 Project Code: IM= IPD - Company - MSD

Pollutant Group	Poll Code	Pollutant Description	Frequency	Sample Type	End Date
	T247000	Temperature	Once/year	Grab	06/30/2012
	T269000	1,2-Dichlorobenzene	Once/year	Grab	06/30/2012
	T270000	1,2-Dichloroethane	Once/year	Grab	06/30/2012
	T309000	Benzene	Once/year	Grab	06/30/2012
	T330000	Chlorobenzene	Once/year	Grab	06/30/2012
	T332000	Chloroform	Once/year	Grab	06/30/2012
	T371000	Methylene Chloride	Once/year	Grab	06/30/2012
	T397000	Toluene	Once/year	Grab	06/30/2012
	T430000	Acetone	Once/year	Grab	06/30/2012
	T435000	Xylene	Once/year	Grab	06/30/2012
	T437000	4-Methyl-2-Pentanone	Once/year	Grab	06/30/2012
	T438000	Isobutyraldehyde	Once/year	Grab	06/30/2012
	T439000	n-Amyl Acetate	Once/year	Grab	06/30/2012
	T440000	n-Butyl Acetate	Once/year	Grab	06/30/2012
	T441000	Ethyl Acetate	Once/year	Grab	06/30/2012
	T442000	Isopropyl Acetate	Once/year	Grab	06/30/2012
	T443000	Methyl Formate	Once/year	Grab	06/30/2012
	T445000	Isopropyl Ether	Once/year	Grab	06/30/2012
	T446000	Tetrahydrofuran	Once/year	Grab	06/30/2012
	T447000	n-Hexane	Once/year	Grab	06/30/2012
	T448000	n-Heptane	Once/year	Grab	06/30/2012
	T449000	Diethylamine	Once/year	Grab	06/30/2012
	T550000	Triethylamine	Once/year	Grab	06/30/2012

936 Project Code: IM= IPD - Company - MSD

Pollutant Group	Poll Code	Pollutant Description	Frequency	Sample Type	End Date
	T247000	Temperature	Once/year	Grab	06/30/2012
	T269000	1,2-Dichlorobenzene	Once/year	Grab	06/30/2012
	T270000	1,2-Dichloroethane	Once/year	Grab	06/30/2012
	T309000	Benzene	Once/year	Grab	06/30/2012
	T330000	Chlorobenzene	Once/year	Grab	06/30/2012
	T332000	Chloroform	Once/year	Grab	06/30/2012
	T371000	Methylene Chloride	Once/year	Grab	06/30/2012
	T397000	Toluene	Once/year	Grab	06/30/2012
	T430000	Acetone	Once/year	Grab	06/30/2012
	T435000	Xylene	Once/year	Grab	06/30/2012
	T437000	4-Methyl-2-Pentanone	Once/year	Grab	06/30/2012
	T438000	Isobutyraldehyde	Once/year	Grab	06/30/2012
	T439000	n-Amyl Acetate	Once/year	Grab	06/30/2012
	T440000	n-Butyl Acetate	Once/year	Grab	06/30/2012
	T441000	Ethyl Acetate	Once/year	Grab	06/30/2012
	T442000	Isopropyl Acetate	Once/year	Grab	06/30/2012
	T443000	Methyl Formate	Once/year	Grab	06/30/2012
	T445000	Isopropyl Ether	Once/year	Grab	06/30/2012
	T446000	Tetrahydrofuran	Once/year	Grab	06/30/2012
	T447000	n-Hexane	Once/year	Grab	06/30/2012
	T448000	n-Heptane	Once/year	Grab	06/30/2012
	T449000	Diethylamine	Once/year	Grab	06/30/2012
	T550000	Triethylamine	Once/year	Grab	06/30/2012

937 Project Code: IM= IPD - Company - MSD

Pollutant Group	Poll Code	Pollutant Description	Frequency	Sample Type	End Date

Account No Entered **2112059600**

SPN	PREMISE ADDRESS	CITY	ST	ZIP

T247000	Temperature	Once/year	Grab	06/30/2012
T269000	1,2-Dichlorobenzene	Once/year	Grab	06/30/2012
T270000	1,2-Dichloroethane	Once/year	Grab	06/30/2012
T309000	Benzene	Once/year	Grab	06/30/2012
T330000	Chlorobenzene	Once/year	Grab	06/30/2012
T332000	Chloroform	Once/year	Grab	06/30/2012
T341000	Cyanide (Total)	Once/year	Grab	06/30/2012
T371000	Methylene Chloride	Once/year	Grab	06/30/2012
T397000	Toluene	Once/year	Grab	06/30/2012
T430000	Acetone	Once/year	Grab	06/30/2012
T435000	Xylene	Once/year	Grab	06/30/2012
T437000	4-Methyl-2-Pentanone	Once/year	Grab	06/30/2012
T438000	Isobutyraldehyde	Once/year	Grab	06/30/2012
T439000	n-Amyl Acetate	Once/year	Grab	06/30/2012
T440000	n-Butyl Acetate	Once/year	Grab	06/30/2012
T441000	Ethyl Acetate	Once/year	Grab	06/30/2012
T442000	Isopropyl Acetate	Once/year	Grab	06/30/2012
T443000	Methyl Formate	Once/year	Grab	06/30/2012
T445000	Isopropyl Ether	Once/year	Grab	06/30/2012
T446000	Tetrahydrofuran	Once/year	Grab	06/30/2012
T447000	n-Hexane	Once/year	Grab	06/30/2012
T448000	n-Heptane	Once/year	Grab	06/30/2012
T449000	Diethylamine	Once/year	Grab	06/30/2012
T550000	Triethylamine	Once/year	Grab	06/30/2012

938 Project Code: IM = IPD - Company - MSD

Pollutant Group	Poll Code	Pollutant Description	Frequency	Sample Type	End Date
	T247000	Temperature	Once/year	Grab	06/30/2012
	T371000	Methylene Chloride	Once/year	Grab	06/30/2012
	T430000	Acetone	Once/year	Grab	06/30/2012
	T439000	n-Amyl Acetate	Once/year	Grab	06/30/2012
	T441000	Ethyl Acetate	Once/year	Grab	06/30/2012
	T442000	Isopropyl Acetate	Once/year	Grab	06/30/2012

RECEIVED

DEC 19 2011

DIVISION OF
ENVIRONMENTAL COMPLIANCE

MSD

COVIDIEN

SG ✓
DM ✓
BG ✓

December 20, 2011

Mr. Steve Grace
Metropolitan St. Louis Sewer District
Department of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147

Re: Notice of Violations Dated December 9, 2011
Mallinckrodt, St. Louis Plant

Dear Mr. Grace,

As requested in the NOV issued on December 9, 2011, enclosed is a summary of the investigation findings and corrective actions involving the CT Special Discharge Permit Exceedances. As stated in the summary, additional controls and oversight have been added to the process to prevent recurrence of the exceedances.

Karen Burke and I would like to schedule a meeting with you in early January to discuss the effects of Potassium-40 on the Gross Beta results on historical and future wastewater analyses. Specifically, we would like to discuss the option of excluding the results from Potassium-40 from the Gross Beta results used to demonstrate compliance with the Special Discharge Permit. The last paragraph in the Incident Investigation Summary provides background information on the basis of this request including reference to EPA guidance on excluding Potassium-40.

If you have any questions or require more detailed information, please contact me at 314-654-1969.

Sincerely,

Julie Summers

Julie Summers
Environmental Manager

ENCLOSURES

MALLINCKRODT
3600 NORTH SECOND STREET
ST. LOUIS, MO
63147

314-654-2000 [T]
314-654-1251 [F]

AECOM

AECOM-Environment
8005 Outer Circle Road
Brooks City-Base, TX 78235
Phone 210.271.0925/Fax 210.271.3061

DATE: 16 December 2011

TO: Ms. Karen Burke
C-T Project Manager
Covidien, Inc.
675 McDonnell Blvd. 10-3-S
Hazelwood, MO 63042

FROM: Kevin Martilla, AECOM C-T Project Manager Kevin Martilla

SUBJECT: ***Wastewater Discharge Incident Investigation Summary***

RE: AECOM Letter dated 2 November 2011, *Potential Wastewater Discharge Limit Exceedances;* Master Environmental Services Agreement, Amendment 1, *Decommissioning Land, Foundations, and Sewers Affected by the Former Columbium-Tantalum (C-T) Plant, Mallinckrodt Downtown St. Louis Plant* (AECOM Project Number 60162412)

This letter summarizes the final results of AECOM's internal investigation into the wastewater discharges exceeding the limits established in the Metropolitan St. Louis Sewer District (MSD) special discharge permit for our wastewater treatment operations associated with Mallinckrodt Plant 5 remediation activities.

AECOM has concluded an incident investigation in accordance with AECOM Safety, Health, and Environment (SH&E) Standard Operating Procedure S3NA-603-PR, *Incident Investigation Review.* The final incident investigation was overseen by AECOM South Region and Environmental Business Line operations and SH&E senior management. The final incident investigation report was reviewed and approved by the same senior management.

The incident investigation identified two critical factors that led to the discharge of treated water exceeding special discharge permit limits:

- Critical Factor 1: Significant changes at the site not evaluated for their potential impacts on both process and project performance.
- Critical Factor 2: The water treatment system failed.

The following root causes leading to this incident were identified:

- Immediate Cause: Inadequate Equipment
- System Cause 1: Inadequate Evaluation and/or Documentation of Change
- System Cause 2: Inadequate Development of Work Rules/Policies/Standards/Procedures

The primary root cause was the inadequate evaluation of significant changes affecting the water treatment process. Initial water treatment procedures and system design were instituted based the initial site conditions. Initially, the water treatment requirement associated with Plant 5 excavation activities was relatively small (~100,000 gallons per month). At the time, permit conditions required prior MSD approval for batch discharges following submittal of treated water sample results. Significant personnel changes, increase in the water discharge volume requirement, and the switch to self-monitored discharges occurred in the months of August and September 2011. The water treatment design and procedures were not adjusted to accommodate the increased risks associated with these changes.

Upon discovery of the discharges exceeding limits, AECOM instituted an immediate corrective action plan. The immediate corrective actions address most of the issues described in the incident investigation report, including redesign of the water treatment system and update of the water treatment standard operating procedure. The standard operating procedures ensure key operations and maintenance activities address most, if not all potential system failures. In addition, the water treatment system design has been updated to include redundant radiological treatment capability, which will have the greatest impact in reducing the probability and associated risk of water treatment system failure.

In addition to the previously identified corrective actions, the incident investigation report also specifies corrective action to address the root cause associated with change management. AECOM has elevated this project to its highest risk category. Corporate project reviews will be overseen by AECOM-North America Office of Risk Management, with increased focus on project risk and change management. In addition, office and project level reviews have been expanded to ensure robust and frequent risk management reviews.

The following table lists the corrective actions and their current status resultant from this incident:

Corrective Action	**Status**
Change-out of current wastewater treatment system filter media (sand filter, charcoal filter, resins). STATUS: Complete.	Complete (17 Nov 11)
Provide isotopic specific analytical results for beta-emitters from discharge results exceeding MSD gross beta discharge limits.	Complete (16 Dec 11)
Design water treatment system to incorporate redundant (primary and secondary) ion-exchange treatment capability.	Complete (18 Nov 11)
Install newly designed water treatment system.	Complete (21 Nov 11)
Update wastewater treatment and discharge project procedures to incorporate new system operations/maintenance; sample review; and daily reporting requirements.	Complete (16 Dec 11)
Train personnel on updated wastewater treatment and discharge operations, review, and reporting requirements.	Complete (16 Dec 11)
Verify new wastewater treatment system operation.	Complete (6 Dec 11) First batch of water treated with the updated system (Discharge 121) was treated on 22 November 2011. Sample results were received from Test America on 5 December 2011. Covidien authorized discharge of the treated water in Discharge 121 on 6 December 2011.
Conduct program audits and incident investigation to identify root-cause and management level issues for correction. Publish final incident investigation report.	Complete (16 Dec 11)
Implement increase scope management reviews	ECD: 19 Dec 11 and monthly thereafter

Finally, we have investigated the radionuclide specific radionuclide contributions to the beta activity in discharged water exceeding the MSD special discharge permit limits. Our analysis has indicated a significant contribution from potassium-40 beta emissions, with estimated potassium-40 beta concentrations consistently

> 50 pCi/L. The practice of measuring the gross beta particle activity minus the naturally occurring K-40 beta particle activity is an industry standard reinforced by EPA's Implementation Guidance for Radionuclides (EPA 816-F-00-002, March 2002). Contributions from naturally occurring potassium-40 are not specifically subtracted in our reported discharges under the current Covidien special discharge permit conditions for AECOM's plant 5 excavation water discharges. We recommend that Covidien seek modification to the current special discharge permit to allow subtraction of beta activity from naturally occuring potassium-40 beta emissions when determining treated water discharge gross beta activities.

Please do not hesitate to contact me at (210) 265-9732 with any questions regarding our incident investigation conclusions and corrective actions.

cc: PROJECT FILE
P. Banks (AECOM)
D. Schriber (AECOM)
H. Royston (AECOM)
M. Lovejoy (AECOM)
B. Dawson (AECOM)
C. Forbes (AECOM)
D. Schillings (AECOM)
R. Larrabee (AECOM)
J. Cooper (AECOM)
W. Hoak (AECOM)
J. Snow (AECOM)

Mallinckrodt - 21120596-00
3600 N. 2nd St. - SP850

MSD

Steve Grace

From: Steve Grace.
Sent: Wednesday, December 14, 2011 3:31 PM
To: 'Summers, Julie'
Subject: RE: Wastewater Discharge 119

Hello Julie,

Sorry for the delay. A review of the laboratory analytical data for Discharge 119 from the C-T Phase II decommissioning activities indicated this batch meets MSD Ordinance 12559 standards along with those outlined in 10 CFR Part 20, Appendix B, Table 3, and is approved for discharge into a combined sewer identified on MSD's base map as Inlet 18D1-395C. As a general reminder, the discharge into the sewer must be controlled at a rate that will not surcharge the lines in that area. In addition, the volume of this batch of wastewater must be confirmed in writing no later than 28 days after the date of this discharge. The approval for Discharge 119 is valid for 30 days from the date of this email.

Please contact me should you have any questions or require additional information.

Thank you,
Steve Grace

From: Summers, Julie [mailto:Julie.Summers@Covidien.com]
Sent: Wednesday, December 14, 2011 7:52 AM
To: Steve Grace
Subject: Wastewater Discharge 119

Steve,

Mallinckrodt requests permission to discharge 40,000 gallons of treated rainwater and groundwater collected as part of the C-T Phase II decommissioning activities. This water was processed following the change-out of the resin beds. The wastewater discharge will be identified as Discharge 119. The laboratory analytical results demonstrate that the discharge will comply with the requirements of the Metropolitan St. Louis Sewer District as set forth in their letter to Covidien dated January 21, 2011. In addition, the discharge meets the monthly average concentrations for release to sanitary sewers per the requirements of 10 CFR 20.2003. Both a discharge summary and the detailed laboratory analytical results are attached for your information.

This request to release Discharge 119 is out of sequence. This 40,000 gallon batch of water was processed and initially sampled on November 14, 2011. Laboratory results reported an elevated level of gross beta radioactivity (56 pCi/L). Consequently, the batch of water was resampled November 23, 2011. Two additional samples were collected. The radionuclide results reported on the discharge summary are the average of the two resamples.

This will be the last set of analytical I will be submitting for approval prior to discharge. This point forward we will be discharging as agreed upon in your June 2011 letter. As mentioned in my previous email I will be forwarding you the report regarding the previous exceedances as soon as we receive it from our contractor.

Thanks,

Julie Summers
Environmental Manager
Covidien/Mallinckrodt
3600 North 2nd Street
St. Louis, MO 63147
314-654-1969 Phone

12/14/2011

Wastewater Discharge 119 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8111 — Original Sample — Sample Date: 14 Nov 2011

Sample ID: 60162412-SMP-PL5-WW-OTH-8117 — Resample Frac Tank 238938 — Sample Date: 23 Nov 2011

Sample ID: 60162412-SMP-PL5-WW-OTH-8118 — Resample Frac Tank 256419 — Sample Date: 23 Nov 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		0.0022	
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.052*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	
Copper	mg/L	2.7	< 0.025	
Iron	mg/L	150	1.99	
Nickel	mg/L	2.3	0.042	
Lead	mg/L	0.4	< 0.01	
Zinc	mg/L	3	0.204	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	6.9	
COD	mg/L	600	207	
TSS	mg/L	300	24.0	
Radionuclides				
Gross Alpha	pCi/L	3,000	22	see note (3)
Gross Beta	pCi/L	50	28.45	see note (3)
Ra-226	pCi/L	10	0.995	see note (3)
Ra-228	pCi/L	30	0.4	see note (3)
Th-228	pCi/L	2,000	1.05	see note (3)
Th-230	pCi/L	1,000	0.785	see note (3)
Th-232	pCi/L	300	0.685	see note (3)
U-234	pCi/L		0.285	see note (3)
U-235/6	pCi/L		0.103	see note (3)
U-238	pCi/L		0.189	see note (3)
Total Uranium	*pCi/L*	*3,000*	*< 0.5765*	

10 CFR 20 Appendix B Table 3 Values[2]

Analyte	Units	Regulatory Limit	Undiluted Concentration	Release Fraction
Ra-226	pCi/L	600	0.995	0.002
Ra-228	pCi/L	600	0.4	0.001
Th-228	pCi/L	2,000	1.05	0.001
Th-230	pCi/L	1,000	0.785	0.001
Th-232	pCi/L	300	0.685	0.002
U-234	pCi/L	3,000	0.285	0.000
U-235/6	pCi/L	3,000	0.1025	0.000
U-238	pCi/L	3,000	0.189	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.006*

Discharge Volume (gals) = 40,000

Analyte	Units	Annual Limit	Discharge Activity	Year-to-Date Activity
Gross Radioactivity	Ci	1	7.6E-06	8.190E-04

Notes:

(1) 'B' indicates estimated value; 'U' result less than sample detection limit; 'ND' not detected; 'NR' not reported. 'J' method blank contamination. 'E' matrix interference

(2) assumes undiluted concentration for comparison with regulatory limit only

(3) On 11/23/11 resampled the Frac Tanks due to high total Beta of 56 pci/l (11/14/11). Radionuclide results listed are the average from the resampling evolution.

RAH 12/9/2011

Sample ID: 60162412-SMP-PL5-WW-OTH-8117

Radionuclides					
Gross Alpha	pCi/L	3,000	<	22 ✓	
Gross Beta	pCi/L	50		29.8 ✓	
Ra-226	pCi/L	10		0.69 ✓	
Ra-228	pCi/L	30	<	0.4 ✓	
Th-228	pCi/L	2,000	<	1.00 ✓	
Th-230	pCi/L	1,000	<	0.87 ✓	
Th-232	pCi/L	300	<	0.69 ✓	
U-234	pCi/L			0.22 ✓	
U-235/6	pCi/L		<	0.075 ✓	
U-238	pCi/L			0.088 ✓	
Total Uranium	*pCi/L*	*3,000*	<	*0.383* ✓	

Sample ID: 60162412-SMP-PL5-WW-OTH-8118

Radionuclides					
Gross Alpha	pCi/L	3,000	<	22 ✓	
Gross Beta	pCi/L	50		27.1 ✓	
Ra-226	pCi/L	10		1.3 ✓	
Ra-228	pCi/L	30	<	0.4 ✓	
Th-228	pCi/L	2,000	<	1.10 ✓	
Th-230	pCi/L	1,000	<	0.7 ✓	
Th-232	pCi/L	300	<	0.68 ✓	
U-234	pCi/L			0.35 ✓	
U-235/6	pCi/L		<	0.130 ✓	
U-238	pCi/L			0.29 ✓	
Total Uranium	*pCi/L*	*3,000*	<	*0.77* ✓	

12/9/2011

Mallinckrodt - 21120596-00

SP850

Steve Grace

From: Steve Grace
Sent: Monday, December 12, 2011 1:55 PM
To: 'Summers, Julie'
Subject: RE: Wastewater Discharge 122

Hello Julie,

A review of the laboratory analytical data for Discharge 122 from the C-T Phase II decommissioning activities indicated this batch meets MSD Ordinance 12559 standards along with those outlined in 10 CFR Part 20, Appendix B, Table 3, and is approved for discharge into a combined sewer identified on MSD's base map as Inlet 18D1-395C. As a general reminder, the discharge into the sewer must be controlled at a rate that will not surcharge the lines in that area. In addition, the volume of this batch of wastewater must be confirmed in writing no later than 28 days after the date of this discharge. The approval for Discharge 122 is valid for 30 days from the date of this email.

Please contact me should you have any questions or require additional information.

Thank you,
Steve Grace

From: Summers, Julie [mailto:Julie.Summers@Covidien.com]
Sent: Monday, December 12, 2011 8:22 AM
To: Steve Grace
Subject: FW: Wastewater Discharge 122

Steve,

Mallinckrodt requests permission to discharge 40,000 gallons of treated rainwater and groundwater collected as part of the C-T Phase II decommissioning activities. This water was processed following the change-out of the resin beds. The wastewater discharge will be identified as Discharge 122. The laboratory analytical results demonstrate that the discharge will comply with the requirements of the Metropolitan St. Louis Sewer District as set forth in their letter to Covidien dated January 21, 2011. In addition, the discharge meets the monthly average concentrations for release to sanitary sewers per the requirements of 10 CFR 20.2003. Both a discharge summary and the detailed laboratory analytical results are attached for your information.

I believe our contractor finalized their report regarding the discharge exceedance and presented it to their management. We expect a finalized report from them this week and I will forward it on to you.

Thanks,

Julie Summers
Environmental Manager
Covidien/Mallinckrodt
3600 North 2nd Street
St. Louis, MO 63147
314-654-1969 Phone
314-654-1251 Fax

Wastewater Discharge 122 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8119

Sample Date: 01 DEC 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND ✓
Acrylonitrile	mg/L		< 0.01	ND ✓
Benzene	mg/L		< 0.001	ND ✓
Bromoform	mg/L		< 0.001	ND ✓
Bromomethane	mg/L		< 0.002	ND ✓
Carbon tetrachloride	mg/L		< 0.001	ND ✓
Chlorobenzene	mg/L		< 0.001	ND ✓
Chlorodibromomethane	mg/L		< 0.001	ND ✓
Chloroethane	mg/L		< 0.002	ND ✓
Chloroform	mg/L		< 0.001	ND ✓
Chloromethane	mg/L		< 0.002	ND ✓
Dichlorobromomethane	mg/L		< 0.001	ND ✓
1,1- Dichloroethane	mg/L		< 0.001	ND ✓
1,2- Dichloroethane	mg/L		< 0.001	ND ✓
1,1- Dichloroethene	mg/L		< 0.001	ND ✓
1,2- Dichloroethane	mg/L		< 0.002	ND ✓
1,2- Dichloropropane	mg/L		< 0.001	ND ✓
cis-1,3-Dichloropropene	mg/L		< 0.001	ND ✓
trans-1,3-Dichloropropene	mg/L		< 0.001	ND ✓
Ethylbenzene	mg/L		< 0.001	ND ✓
Methylene Chloride	mg/L		< 0.001	ND ✓
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND ✓
Tetra chloroethene	mg/L		< 0.001	ND ✓
Toluene	mg/L		< 0.001	ND ✓
1,1,1- Trichloroethane	mg/L		< 0.001	ND ✓
1,1,2- Trichloroethane	mg/L		< 0.001	ND ✓
Trichloroethene	mg/L		< 0.001	ND ✓
Vinyl Chloride	mg/L		< 0.002	ND ✓
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	✓
Metals				
Cadmium	mg/L	0.7	< 0.005	ND ✓
Chromium	mg/L	5	< 0.01	ND ✓
Copper	mg/L	2.7	< 0.025	ND ✓
Iron	mg/L	150	< 0.1	ND ✓
Nickel	mg/L	2.3	< 0.04	ND ✓
Lead	mg/L	0.4	< 0.01	ND ✓
Zinc	mg/L	3	< 0.02	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	8.0 ✓	
COD	mg/L	600	125 ✓	
TSS	mg/L	300	6.0 ✓	
Radionuclides				
Gross Alpha	pCi/L	3,000	< 12 ✓	
Gross Beta	pCi/L	50	38.4 ✓	
Ra-226	pCi/L	10	< 0.17 ✓	
Ra-228	pCi/L	30	< 0.44 ✓	
Th-228	pCi/L	2,000	< 0.25 ✓	
Th-230	pCi/L	1,000	0.19 ✓	
Th-232	pCi/L	300	< 0.079 ✓	
U-234	pCi/L		0.18 ✓	
U-235/6	pCi/L		< 0.068 ✓	
U-238	pCi/L		< 0.14 ✓	
Total Uranium	*pCi/L*	*3,000*	*< 0.388* ✓	

10 CFR 20 Appendix B Table 3 Values[2]

Analyte	Units	Regulatory Limit	Undiluted Concentration	Release Fraction
Ra-226	pCi/L	600	0.17	0.000
Ra-228	pCi/L	600	0.44	0.001
Th-228	pCi/L	2,000	0.25	0.000
Th-230	pCi/L	1,000	0.19	0.000
Th-232	pCi/L	300	0.079	0.000
U-234	pCi/L	3,000	0.18	0.000
U-235/6	pCi/L	3,000	0.068	0.000
U-238	pCi/L	3,000	0.14	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.002*

Discharge Volume (gals) = 40,000

Analyte	Units	Annual Limit	Discharge Activity	Year-to-Date Activity
Gross Radioactivity	Ci	1	7.6E-06	8.114E-04

Notes:

(1) 'B' indicates estimated value; 'U' result less than sample detection limit; 'ND' not detected; 'NR' not reported. 'J' method blank contamination. 'E' matrix interference

(2) assumes undiluted concentration for comparison with regulatory limit only

12/9/2011

Metropolitan St. Louis Sewer District
Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

21120596-00

December 9, 2011

Julie Summers
Environmental Manager
MALLINCKRODT INC.
3600 N. 2nd St.
St. Louis, MO 63147

RE: NOTICE OF VIOLATIONS – SEWER USE ORDINANCE NO. 12559
For premise at: 3600 N. 2nd St., St. Louis, MO 63147

Dear Ms. Summers:

Thank you for your November 3, 2011 telephone call and November 10, 2011 meeting advising us of the results of recent wastewater discharge sampling. Unfortunately, your telephone call and meeting identified the following violations:

VIOLATIONS OF DISCHARGE LIMITATIONS:

DISCHARGE DATES	DISCHARGE POINT	RADIOISOTOPE	DISCHARGE LIMIT	HIGHEST CONCENTRATION DISCHARGED	NUMBER OF DISCHARGES
Sept 20-Oct 24	Inlet 18D1-395C	Ra-226	10 pCi/L	13 pCi/L	23
Sept 20-Oct 24	Inlet 18D1-395C	Gross Beta	50 pCi/L	78 pCi/L	16

pCi/L = picoCuries per Liter

REQUIRED ACTION/RESPONSE:

As you indicated during our meeting, Mallinckrodt ceased discharge of further treated batches, installed new and additional treatment system components, reprocessed held batch water, and instituted other internal controls. Therefore, all that remains is to provide MSD with a copy of the final report from your investigation regarding the violations.

Thank you for helping us comply with federal and state regulations. If you have any questions, please contact me at 314.436.8717.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Douglas M. Mendoza, P.E.
Manager of Industrial Pretreatment

cc: Steve Grace

Metropolitan St. Louis Sewer District
Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

December 6, 2011

Julie Summers
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Re: Wastewater User Charge Billing for Special Discharge

Dear Ms. Summers:

This is to advise you of the wastewater user charges applicable to an on-site special discharge approved in our letter to you dated January 21, 2011. The discharge date and quantity are from information submitted by you and received by the District on December 5, 2011.

Our Finance Department will bill you by invoice for the charges described below. These charges are based on the rates in MSD Wastewater User Charge Ordinance 13021.

PARTY TO BILL: Addressee

BILLING IS FOR: On-Site Special Discharge

DISCHARGE PERIOD: November 1 – November 30, 2011

SOURCE OF WASTE: Four batches of treated rainwater and groundwater from the remediation of the Columbium-Tantalum (CT) decommissioning project at the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri.

Discharge Period	Billing Item	Quantity	Units	Rate	Charge
November 1-30, 2011	Volume	214	CcF	$2.11	$451.54
Totals:	------	214	Gal	-----	$451.54

Please do not pay until you receive our invoice. If you have any questions, please contact me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

pc Chris Verplancke - Finance Dept.
Doug Mendoza
Brian Gibson

File: IU, MALLINCKRODT INC [2112059600], 3600 North Second Street, St. Louis, Missouri

Metropolitan St. Louis Sewer District
Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

MSD

December 6, 2011

Julie Summers
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Dear Ms. Summers:

In a letter dated January 21, 2011, we approved of the discharge to the Metropolitan St. Louis Sewer District of treated rainwater and groundwater from the remediation of the Columbium-Tantalum (CT) decommissioning project at the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri. This approval expires on January 21, 2012. If you wish to continue to discharge this material, you will need to obtain an extension of your special discharge approval within the next 30 days to maintain your approval.

Since we require monthly self-monitoring reports for each discharge event, you need only to submit a request for an extension of up to two years for this special discharge. When requesting an extension, please identify any changes in the source or characteristics of this wastewater since this special discharge was originally approved.

Please contact me at (314) 436-8755 with questions or comments.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

pc: Brian Gibson
Doug Mendoza

File: IU-MALLINCKRODT INC [2112059600]

MSD

PIMS - Pretreatment Information Management System [PIMS St. Louis (PIMS)]

File Edit Records Worklists Reports/Letters Tools Window Help

General Info | Sample Points | Metering | Monitoring | Permits | Results | Compliance | Enforcement | Water Use | Spec Dischrg

Facility ID: 2112059600 Name: MALLINCKRODT LLC [2112059600] SIU: ☑ Class: Categorical Industrial User

Results

Start Date: 01/01/2010 End Date: Apply

Events | Inspections | Sampling | Limit Comp | Violations | SMDE | Gen Rpts | **Notifications** | Surcharge | Surcharge Export

Notification Type	Date
Problem Discharge - 5 Day Written Follow Up	12/23/2010
Self-Mon Discharge Viol - 1 Day Notice	12/23/2010
Problem Discharge - Immediate Notice	12/18/2010
Problem Discharge - 5 Day Written Follow Up	11/04/2010
Problem Discharge - Immediate Notice	10/30/2010
Problem Discharge - 5 Day Written Follow Up	10/21/2010
Problem Discharge - Immediate Notice	10/16/2010
Problem Discharge - 5 Day Written Follow Up	08/17/2010
Problem Discharge - Immediate Notice	08/10/2010
Problem Discharge - 5 Day Written Follow Up	05/27/2010
Problem Discharge - Immediate Notice	05/23/2010
Problem Discharge - 5 Day Written Follow Up	05/18/2010
Problem Discharge - Immediate Notice	05/13/2010
Problem Discharge - Immediate Notice	11/20/2011

Text

5 gallons of 50% ethylene glycol solution leaked to sewer in bldg 97. MSD Dispatcher notified by Mallinckrodt.

Save Successful. Nov 29, 2011 6:58:09 AM

start | Inbox - Microsoft Out... | PIMS - Pretreatment ... | Crystal Report Viewe... | 6:58 AM

ACCOUNT NUMBER: **21120596-00**

COMPANY NAME: **MALLINCKRODT INC**

CORRESPONDENCE

FROM 05-02-11 THRU 11-30-11

X	CORRESPONDANCE LOCATED IN ARCHIVE FILE CABINET

Metropolitan St. Louis Sewer District

Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

November 30, 2011

Julie Summers
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Re: Wastewater User Charge Billing for Special Discharge

Dear Ms. Summers:

This is to advise you of the wastewater user charges applicable to an on-site special discharge approved in our letter to you dated January 21, 2011. The discharge date and quantity are from information submitted by you and received by the District on November 28, 2011.

Our Finance Department will bill you by invoice for the charges described below. These charges are based on the rates in MSD Wastewater User Charge Ordinance 13021.

PARTY TO BILL: Addressee

BILLING IS FOR: On-Site Special Discharge

DISCHARGE PERIOD: September 8 – October 31, 2011

SOURCE OF WASTE: 60 batches of treated rainwater and groundwater from the remediation of the Columbium-Tantalum (CT) decommissioning project at the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri.

Discharge Period	Billing Item	Quantity	Units	Rate	Charge
September 8-30, 2011	Volume	1,537	CcF	$2.11	$3,243.07
October 1-31, 2011	Volume	1,658	CcF	$2.11	$3,498.38
Totals:	------	3,195	Gal	-----	$6,741.45

Please do not pay until you receive our invoice. If you have any questions, please contact me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

pc Chris Verplancke - Finance Dept.
Doug Mendoza
Brian Gibson

File: IU, MALLINCKRODT INC [2112059600], 3600 North Second Street, St. Louis, Missouri

IU-Mallinckrodt Inc.
21120596-00 SP850

Steve Grace

From: Steve Grace
Sent: Tuesday, November 29, 2011 4:39 PM
To: 'Summers, Julie'
Cc: Burke, Karen
Subject: RE: Wastewater Discharge 120

Hello Julie,

A review of the laboratory analytical data for Discharge 120 from the C-T Phase II decommissioning activities indicated this batch meets MSD Ordinance 12559 standards along with those outlined in 10 CFR Part 20, Appendix B, Table 3, and is approved for discharge into a combined sewer identified on MSD's base map as Inlet 18D1-395C. As a general reminder, the discharge into the sewer must be controlled at a rate that will not surcharge the lines in that area. In addition, the volume of this batch of wastewater must be confirmed in writing no later than 28 days after the date of this discharge. The approval for Discharge 120 is valid for 30 days from the date of this email.

Please contact me should you have any questions or require additional information.

Thank you,
Steve Grace

From: Summers, Julie [mailto:Julie.Summers@Covidien.com]
Sent: Tuesday, November 29, 2011 9:45 AM
To: Steve Grace
Cc: Burke, Karen
Subject: Wastewater Discharge 120

Steve,

Mallinckrodt requests permission to discharge 40,000 gallons of treated rainwater and groundwater collected as part of the C-T Phase II decommissioning activities. This water was processed following the change-out of the resin beds. The wastewater discharge will be identified as Discharge 120. The laboratory analytical results demonstrate that the discharge will comply with the requirements of the Metropolitan St. Louis Sewer District as set forth in their letter to Covidien dated January 21, 2011. In addition, the discharge meets the monthly average concentrations for release to sanitary sewers per the requirements of 10 CFR 20.2003. Both a discharge summary and the detailed laboratory analytical results are attached for your information.

Also, for your information, a 40,000 gallon batch of wastewater internally designated as Discharge 119 is being held pending receipt of follow-up laboratory analytical results.

Thanks,

Julie Summers
Environmental Manager
Covidien/Mallinckrodt
3600 North 2nd Street
St. Louis, MO 63147
314-654-1969 Phone
314-654-1251 Fax

Wastewater Discharge 120 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8112

Sample Date: 16 Nov 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	
Copper	mg/L	2.7	< 0.025	ND
Iron	mg/L	150	0.192	
Nickel	mg/L	2.3	< 0.04	
Lead	mg/L	0.4	< 0.01	
Zinc	mg/L	3	0.0759	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.1	
COD	mg/L	600	127	
TSS	mg/L	300	5.0	
Radionuclides				
Gross Alpha	pCi/L	3,000	< 19	
Gross Beta	pCi/L	50	35.2	
Ra-226	pCi/L	10	0.76	J
Ra-228	pCi/L	30	< 0.49	
Th-228	pCi/L	2,000	< 0.38	
Th-230	pCi/L	1,000	0.3	
Th-232	pCi/L	300	< 0.13	
U-234	pCi/L		0.39	
U-235/6	pCi/L		< 0.072	
U-238	pCi/L		0.25	
Total Uranium	*pCi/L*	*3,000*	*< 0.712*	

10 CFR 20 Appendix B Table 3 Values[2]

Analyte	Units	Regulatory Limit	Undiluted Concentration	Release Fraction
Ra-226	pCi/L	600	0.76	0.001
Ra-228	pCi/L	600	0.49	0.001
Th-228	pCi/L	2,000	0.38	0.000
Th-230	pCi/L	1,000	0.3	0.000
Th-232	pCi/L	300	0.13	0.000
U-234	pCi/L	3,000	0.39	0.000
U-235/6	pCi/L	3,000	0.072	0.000
U-238	pCi/L	3,000	0.25	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.003*

Discharge Volume (gals) = 40,000

Analyte	Units	Annual Limit	Discharge Activity	Year-to-Date Activity
Gross Radioactivity	Ci	1	8.2E-06	8.007E-04

Notes:

(1) 'B' indicates estimated value; 'U' result less than sample detection limit; 'ND' not detected; 'NR' not reported. 'J' method blank contamination. 'E' matrix interference

(2) assumes undiluted concentration for comparison with regulatory limit only

OK
11/29/11

MSD 012715

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

ANALYTICAL REPORT

Mallinckrodt St. Louis Plant

Lot #: F1K160482

Kevin Martilla

AECOM Technical Services Inc.
8005 Outer Circle Road
Brooks Air Force Bas, TX 78235

TESTAMERICA LABORATORIES, INC.

Jayna Awalt
Project Manager

November 28, 2011

Case Narrative
LOT NUMBER: **F1K160482**

This report contains the analytical results for the two samples received under chain of custody by TestAmerica St. Louis on November 16, 2011. These samples are associated with your Mallinckrodt St. Louis Plant project.

The analytical results included in this report meet all applicable quality control procedure requirements except as noted in the following case narrative.

The test results in this report meet all NELAP requirements for parameters in which accreditations are held by TestAmerica St. Louis. Any exceptions to NELAP requirements are noted in the case narrative. The case narrative is an integral part of this report.

All chemical analysis results are based upon sample as received, wet weight, unless noted otherwise. All radiochemistry results are based upon sample as dried and ground with the exception of tritium, unless requested wet weight by the client.

Observations/Nonconformances
Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

Volatile Organics Method 624
Batch: 1325262

The ICV recovery is outside the lower QC limit (greater than 20% D) for Acrolein indicating a potential low bias for this analyte in the sample associated with this ICV. There was insufficient sample volume remaining to perform re-preparation/reanalysis. The results are provided with this narrative.
Affected Samples:
F1K160482 (2): VOC BLANKS

Batch: 1325264

The LCS/LCSD recoveries for Acrolein are outside the upper QC limits, indicating a potential positive bias for this analyte. This analyte was not detected above the reporting limit in the associated sample; therefore the sample data was not adversely affected by this excursion. The original sample results are provided.
Affected Samples:
F1K160482 (1): 60162412-SMP-PL5-WW-OTH-8112

There was insufficient sample volume remaining to perform an MS/MSD on this re-analysis. An LCS/LCSD was performed to demonstrate accuracy and replicate precision.
Affected Samples:
F1K160482 (1): 60162412-SMP-PL5-WW-OTH-8112

COD Method 410.4
Batch: 1326270

The matrix spike recovery is outside the method QC limits of 90%-110%. In accordance with the method (section 9.4.3), if the LCS is within 90%-110%, the laboratory performance is shown to be in control. The recovery problem encountered is judged to be either matrix or solution related and not system related. Results are provided with this narrative.
Affected Samples:
F1K160482 (1): 60162412-SMP-PL5-WW-OTH-8112

Total Suspended Solids Method 160.2
Batch: 1320190

The RPD value for TSS is outside stated limits. RPD determinations are not applicable to values near the reporting limit. Precision criteria for concentrations near the reporting limit is +/- the reporting limit.
Affected Samples:
F1K160482 (1): 60162412-SMP-PL5-WW-OTH-8112

Gross Alpha/Beta Method 9310 MOD
Batch: 1322148

The Gross Alpha and Beta reporting limit was not met due to a reduction of sample size attributed to the sample's high residual mass. The analytical results are reported.
Affected Samples:
F1K160482 (1): 60162412-SMP-PL5-WW-OTH-8112

Isotopic Thorium Method DOE A-01-R MOD
Batch: 1327011

The Thorium sample duplicate has a tracer recovery below the QC limit of 30% indicating a potential high bias in the sample results. Thorium was not detected in the sample. The associated sample has an acceptable tracer recovery and the RPD/RER results are acceptable. Results are provided with this narrative.
Affected Samples:
F1K160482 (1): 60162412-SMP-PL5-WW-OTH-8112

There are no other observations or non-conformances associated with the analyses contained in this report.

METHODS SUMMARY

F1K160482

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
pH Aqueous	SW846 9040	SW846 9040
Chemical Oxygen Demand	MCAWW 410.4	MCAWW 410.4
Gross Alpha/Beta by GFPC	SW846 9310 MOD	
Isotopic Thorium by Alpha Spectroscopy	EML A-01-R MOD	
Isotopic Uranium by Alpha Spectroscopy	EML A-01-R MOD	
Non-Filterable Residue (TSS)	MCAWW 160.2	MCAWW 160.2
Purgeables	CFR136A 624	SW846 5030B
Radium-226 by GFPC	EPA 903.0 MOD	
Radium-228 by GFPC	EPA 904 MOD	
Trace Inductively Coupled Plasma (ICP) Metals	SW846 6010B	

References:

CFR136A "Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EML "ENVIRONMENTAL MEASUREMENTS LABORATORY PROCEDURES MANUAL" HASL-300 28TH EDITION, VOLUME I and II DEPARTMENT OF ENERGY

EPA "EASTERN ENVIRONMENTAL RADIATION FACILITY RADIOCHEMISTRY PROCEDURES MANUAL" US EPA EPA 520/5-84-006 AUGUST 1984

MCAWW "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

SAMPLE SUMMARY

F1K160482

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
MN3EL	001	60162412-SMP-PL5-WW-OTH-8112	11/16/11	12:00
MN3EM	002	VOC BLANKS	11/16/11	

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

AECOM Technical Services Inc.

Client Sample ID: 60162412-SMP-PL5-WW-OTH-8112

GC/MS Volatiles

Lot-Sample #...: F1K160482-001 Work Order #...: MN3EL1AM Matrix.....: WATER
Date Sampled...: 11/16/11 12:00 Date Received..: 11/16/11
Prep Date.....: 11/17/11 Analysis Date..: 11/18/11
Prep Batch #...: 1325262 Analysis Time..: 01:15
Dilution Factor: 1

Method.....: CFR136A 624

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acrylonitrile	ND	10	ug/L
Benzene	ND	1.0	ug/L
Bromoform	ND	1.0	ug/L
Bromomethane	ND	2.0	ug/L
Carbon tetrachloride	ND	1.0	ug/L
Chlorobenzene	ND	1.0	ug/L
Chlorodibromomethane	ND	1.0	ug/L
Chloroethane	ND	2.0	ug/L
Chloroform	ND	1.0	ug/L
Chloromethane	ND	2.0	ug/L
Dichlorobromomethane	ND	1.0	ug/L
1,1-Dichloroethane	ND	1.0	ug/L
1,2-Dichloroethane	ND	1.0	ug/L
1,1-Dichloroethene	ND	1.0	ug/L
1,2-Dichloroethene (total)	ND	2.0	ug/L
1,2-Dichloropropane	ND	1.0	ug/L
cis-1,3-Dichloropropene	ND	1.0	ug/L
trans-1,3-Dichloropropene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Methylene chloride	**0.17 J**	**1.0**	**ug/L**
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L
Tetrachloroethene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
1,1,1-Trichloroethane	ND	1.0	ug/L
1,1,2-Trichloroethane	ND	1.0	ug/L
Trichloroethene	ND	1.0	ug/L
Vinyl chloride	ND	2.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	91	(51 - 137)
Toluene-d8	97	(67 - 122)
4-Bromofluorobenzene	94	(64 - 126)

NOTE(S):

J Estimated result. Result is less than RL.

AECOM Technical Services Inc.

Client Sample ID: 60162412-SMP-PL5-WW-OTH-8112

GC/MS Volatiles

Lot-Sample #...: F1K160482-001 Work Order #...: MN3EL2AM Matrix.....: WATER
Date Sampled...: 11/16/11 12:00 Date Received..: 11/16/11
Prep Date.....: 11/21/11 Analysis Date..: 11/22/11
Prep Batch #...: 1325264 Analysis Time..: 03:27
Dilution Factor: 1

Method.....: CFR136A 624

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acrolein	ND	10	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	97	(51 - 137)
Toluene-d8	102	(67 - 122)
4-Bromofluorobenzene	97	(64 - 126)

AECOM Technical Services Inc.

Client Sample ID: VOC BLANKS

GC/MS Volatiles

Lot-Sample #...: F1K160482-002
Date Sampled...: 11/16/11
Prep Date.....: 11/17/11
Prep Batch #...: 1325262
Dilution Factor: 1

Work Order #...: MN3EM1AA
Date Received..: 11/16/11
Analysis Date..: 11/18/11
Analysis Time..: 00:51

Matrix.....: WATER

Method.....: CFR136A 624

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acrolein	ND CV	10	ug/L
Acrylonitrile	ND	10	ug/L
Benzene	ND	1.0	ug/L
Bromoform	ND	1.0	ug/L
Bromomethane	ND	2.0	ug/L
Carbon tetrachloride	ND	1.0	ug/L
Chlorobenzene	ND	1.0	ug/L
Chlorodibromomethane	ND	1.0	ug/L
Chloroethane	ND	2.0	ug/L
Chloroform	ND	1.0	ug/L
Chloromethane	ND	2.0	ug/L
Dichlorobromomethane	ND	1.0	ug/L
1,1-Dichloroethane	ND	1.0	ug/L
1,2-Dichloroethane	ND	1.0	ug/L
1,1-Dichloroethene	ND	1.0	ug/L
1,2-Dichloroethene (total)	ND	2.0	ug/L
1,2-Dichloropropane	ND	1.0	ug/L
cis-1,3-Dichloropropene	ND	1.0	ug/L
trans-1,3-Dichloropropene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Methylene chloride	**0.46 J**	**1.0**	**ug/L**
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L
Tetrachloroethene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
1,1,1-Trichloroethane	ND	1.0	ug/L
1,1,2-Trichloroethane	ND	1.0	ug/L
Trichloroethene	ND	1.0	ug/L
Vinyl chloride	ND	2.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	84	(51 - 137)
Toluene-d8	98	(67 - 122)
4-Bromofluorobenzene	92	(64 - 126)

NOTE(S):

CV Quality control criteria failed (CCV)

J Estimated result. Result is less than RL.

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: F1K160482
MB Lot-Sample #: F1K210000-262
Work Order #...: MN61K1AA
Matrix.....: WATER
Prep Date.....: 11/17/11
Analysis Time..: 17:53
Analysis Date..: 11/17/11
Prep Batch #...: 1325262
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acrolein	ND	10	ug/L	CFR136A 624
Acrylonitrile	ND	10	ug/L	CFR136A 624
Benzene	ND	1.0	ug/L	CFR136A 624
Bromoform	ND	1.0	ug/L	CFR136A 624
Bromomethane	ND	2.0	ug/L	CFR136A 624
Carbon tetrachloride	ND	1.0	ug/L	CFR136A 624
Chlorobenzene	ND	1.0	ug/L	CFR136A 624
Chlorodibromomethane	ND	1.0	ug/L	CFR136A 624
Chloroethane	ND	2.0	ug/L	CFR136A 624
Chloroform	ND	1.0	ug/L	CFR136A 624
Chloromethane	ND	2.0	ug/L	CFR136A 624
Dichlorobromomethane	ND	1.0	ug/L	CFR136A 624
1,1-Dichloroethane	ND	1.0	ug/L	CFR136A 624
1,2-Dichloroethane	ND	1.0	ug/L	CFR136A 624
1,1-Dichloroethene	ND	1.0	ug/L	CFR136A 624
1,2-Dichloroethene (total)	ND	2.0	ug/L	CFR136A 624
1,2-Dichloropropane	ND	1.0	ug/L	CFR136A 624
cis-1,3-Dichloropropene	ND	1.0	ug/L	CFR136A 624
trans-1,3-Dichloropropene	ND	1.0	ug/L	CFR136A 624
Ethylbenzene	ND	1.0	ug/L	CFR136A 624
Methylene chloride	ND	1.0	ug/L	CFR136A 624
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	CFR136A 624
Tetrachloroethene	ND	1.0	ug/L	CFR136A 624
Toluene	ND	1.0	ug/L	CFR136A 624
1,1,1-Trichloroethane	ND	1.0	ug/L	CFR136A 624
1,1,2-Trichloroethane	ND	1.0	ug/L	CFR136A 624
Trichloroethene	ND	1.0	ug/L	CFR136A 624
Vinyl chloride	ND	2.0	ug/L	CFR136A 624

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	96	(51 - 137)
Toluene-d8	98	(67 - 122)
4-Bromofluorobenzene	93	(64 - 126)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: F1K160482
MB Lot-Sample #: F1K210000-264
Work Order #...: MN8KL1AA
Matrix.....: WATER
Prep Date.....: 11/21/11
Analysis Time..: 21:31
Analysis Date..: 11/21/11
Prep Batch #...: 1325264
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acrolein	ND	10	ug/L	CFR136A 624

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	103	(51 - 137)
Toluene-d8	105	(67 - 122)
4-Bromofluorobenzene	99	(64 - 126)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: F1K160482 Work Order #...: MN61K1AC Matrix.....: WATER
LCS Lot-Sample#: F1K210000-262
Prep Date.....: 11/17/11 Analysis Date..: 11/17/11
Prep Batch #...: 1325262 Analysis Time..: 17:06
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Acrolein	47	(40 - 140)	CFR136A 624
Acrylonitrile	95	(60 - 140)	CFR136A 624
Benzene	92	(74 - 130)	CFR136A 624
Bromoform	94	(59 - 140)	CFR136A 624
Bromomethane	94	(48 - 140)	CFR136A 624
Carbon tetrachloride	98	(70 - 140)	CFR136A 624
Chlorobenzene	90	(76 - 122)	CFR136A 624
Chlorodibromomethane	98	(72 - 132)	CFR136A 624
Chloroethane	96	(55 - 131)	CFR136A 624
Chloroform	94	(74 - 129)	CFR136A 624
Chloromethane	97	(55 - 140)	CFR136A 624
Dichlorobromomethane	97	(74 - 131)	CFR136A 624
1,1-Dichloroethane	94	(73 - 129)	CFR136A 624
1,2-Dichloroethane	91	(68 - 128)	CFR136A 624
1,1-Dichloroethene	99	(72 - 132)	CFR136A 624
1,2-Dichloroethene (total)	95	(73 - 125)	CFR136A 624
1,2-Dichloropropane	91	(71 - 131)	CFR136A 624
cis-1,3-Dichloropropene	97	(60 - 140)	CFR136A 624
trans-1,3-Dichloropropene	100	(64 - 132)	CFR136A 624
Ethylbenzene	97	(75 - 126)	CFR136A 624
Methylene chloride	95	(66 - 130)	CFR136A 624
1,1,2,2-Tetrachloroethane	85	(57 - 135)	CFR136A 624
Tetrachloroethene	96	(64 - 140)	CFR136A 624
Toluene	90	(73 - 129)	CFR136A 624
1,1,1-Trichloroethane	98	(74 - 129)	CFR136A 624
1,1,2-Trichloroethane	92	(72 - 124)	CFR136A 624
Trichloroethene	92	(71 - 140)	CFR136A 624
Vinyl chloride	104	(57 - 123)	CFR136A 624

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	95	(60 - 124)
Toluene-d8	95	(74 - 121)

(Continued on next page)

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: F1K160482 **Work Order #...:** MN61K1AC **Matrix.....:** WATER
LCS Lot-Sample#: F1K210000-262

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	93	(73 - 125)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: F1K160482
LCS Lot-Sample#: F1K210000-264
Prep Date.....: 11/21/11
Prep Batch #...: 1325264
Dilution Factor: 1

Work Order #...: MN8KL1AC-LCS
MN8KL1AD-LCSD
Analysis Date..: 11/21/11
Analysis Time..: 19:55

Matrix.....: WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Acrolein	**183 a**	**(40 - 140)**			**CFR136A 624**
	164 a	**(40 - 140)**	**11**	**(0-20)**	**CFR136A 624**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	102	(60 - 124)
	95	(60 - 124)
Toluene-d8	102	(74 - 121)
	101	(74 - 121)
4-Bromofluorobenzene	102	(73 - 125)
	97	(73 - 125)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

a Spiked analyte recovery is outside stated control limits.

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: F1K160482 Work Order #...: MN3EL1CF-MS Matrix.....: WATER
MS Lot-Sample #: F1K160482-001 MN3EL1CG-MSD
Date Sampled...: 11/16/11 12:00 Date Received..: 11/16/11
Prep Date.....: 11/17/11 Analysis Date..: 11/18/11
Prep Batch #...: 1325262 Analysis Time..: 01:39
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Acrylonitrile	105	(23 - 150)			CFR136A 624
	102	(23 - 150)	2.8	(0-20)	CFR136A 624
Benzene	100	(57 - 139)			CFR136A 624
	99	(57 - 139)	1.2	(0-20)	CFR136A 624
Bromoform	97	(45 - 150)			CFR136A 624
	96	(45 - 150)	0.97	(0-20)	CFR136A 624
Bromomethane	89	(31 - 131)			CFR136A 624
	92	(31 - 131)	3.3	(0-20)	CFR136A 624
Carbon tetrachloride	101	(70 - 140)			CFR136A 624
	103	(70 - 140)	2.4	(0-20)	CFR136A 624
Chlorobenzene	97	(57 - 131)			CFR136A 624
	98	(57 - 131)	0.74	(0-20)	CFR136A 624
Chlorodibromomethane	103	(53 - 149)			CFR136A 624
	101	(53 - 149)	2.4	(0-20)	CFR136A 624
Chloroethane	90	(35 - 139)			CFR136A 624
	92	(35 - 139)	3.2	(0-20)	CFR136A 624
Chloroform	106	(55 - 138)			CFR136A 624
	105	(55 - 138)	0.56	(0-20)	CFR136A 624
Chloromethane	88	(41 - 140)			CFR136A 624
	90	(41 - 140)	2.2	(0-20)	CFR136A 624
Dichlorobromomethane	102	(38 - 150)			CFR136A 624
	101	(38 - 150)	0.88	(0-20)	CFR136A 624
1,1-Dichloroethane	99	(59 - 148)			CFR136A 624
	100	(59 - 148)	1.1	(0-20)	CFR136A 624
1,2-Dichloroethane	96	(49 - 150)			CFR136A 624
	93	(49 - 150)	3.8	(0-20)	CFR136A 624
1,1-Dichloroethene	97	(37 - 146)			CFR136A 624
	97	(37 - 146)	0.17	(0-20)	CFR136A 624
1,2-Dichloroethene (total)	100	(38 - 143)			CFR136A 624
	101	(38 - 143)	1.6	(0-20)	CFR136A 624
1,2-Dichloropropane	98	(42 - 150)			CFR136A 624
	97	(42 - 150)	1.9	(0-20)	CFR136A 624
cis-1,3-Dichloropropene	104	(50 - 150)			CFR136A 624
	100	(50 - 150)	4.0	(0-20)	CFR136A 624
trans-1,3-Dichloropropene	101	(28 - 150)			CFR136A 624
	99	(28 - 150)	2.1	(0-20)	CFR136A 624
Ethylbenzene	102	(53 - 135)			CFR136A 624
	105	(53 - 135)	3.3	(0-20)	CFR136A 624

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MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: F1K160482 **Work Order #...:** MN3EL1CF-MS **Matrix.....:** WATER
MS Lot-Sample #: F1K160482-001 MN3EL1CG-MSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Methylene chloride	**96**	**(42 - 143)**			**CFR136A 624**
	97	**(42 - 143)**	**0.95**	**(0-20)**	**CFR136A 624**
1,1,2,2-Tetrachloroethane	**91**	**(46 - 150)**			**CFR136A 624**
	91	**(46 - 150)**	**0.14**	**(0-20)**	**CFR136A 624**
Tetrachloroethene	**99**	**(64 - 148)**			**CFR136A 624**
	101	**(64 - 148)**	**2.3**	**(0-20)**	**CFR136A 624**
Toluene	**95**	**(60 - 130)**			**CFR136A 624**
	97	**(60 - 130)**	**2.7**	**(0-20)**	**CFR136A 624**
1,1,1-Trichloroethane	**102**	**(55 - 138)**			**CFR136A 624**
	103	**(55 - 138)**	**0.87**	**(0-20)**	**CFR136A 624**
1,1,2-Trichloroethane	**96**	**(62 - 129)**			**CFR136A 624**
	95	**(62 - 129)**	**1.3**	**(0-20)**	**CFR136A 624**
Trichloroethene	**100**	**(71 - 150)**			**CFR136A 624**
	100	**(71 - 150)**	**0.14**	**(0-20)**	**CFR136A 624**
Vinyl chloride	**98**	**(40 - 128)**			**CFR136A 624**
	100	**(40 - 128)**	**1.7**	**(0-20)**	**CFR136A 624**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	90	(51 - 137)
	86	(51 - 137)
Toluene-d8	92	(67 - 122)
	94	(67 - 122)
4-Bromofluorobenzene	89	(64 - 126)
	92	(64 - 126)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

AECOM Technical Services Inc.

Client Sample ID: 60162412-SMP-PL5-WW-OTH-8112

TOTAL Metals

Lot-Sample #...: F1K160482-001 Matrix.....: WATER
Date Sampled...: 11/16/11 12:00 Date Received..: 11/16/11

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1321027						
Cadmium	ND	5	ug/L	SW846 6010B	11/17-11/20/11	MN3EL1AE
		Dilution Factor: 1		Analysis Time..: 14:26		
Chromium	4.0 B	10	ug/L	SW846 6010B	11/17-11/20/11	MN3EL1AF
		Dilution Factor: 1		Analysis Time..: 14:26		
Copper	ND	25	ug/L	SW846 6010B	11/17-11/20/11	MN3EL1AG
		Dilution Factor: 1		Analysis Time..: 14:26		
Iron	192	100	ug/L	SW846 6010B	11/17-11/20/11	MN3EL1AH
		Dilution Factor: 1		Analysis Time..: 14:26		
Nickel	38.4 B	40	ug/L	SW846 6010B	11/17-11/20/11	MN3EL1AJ
		Dilution Factor: 1		Analysis Time..: 14:26		
Lead	1.6 B	10	ug/L	SW846 6010B	11/17-11/20/11	MN3EL1AK
		Dilution Factor: 1		Analysis Time..: 14:26		
Zinc	75.9	20	ug/L	SW846 6010B	11/17-11/20/11	MN3EL1AL
		Dilution Factor: 1		Analysis Time..: 14:26		

NOTE(S):

B Estimated result. Result is less than RL.

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: F1K160482 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: F1K170000-027 **Prep Batch #...:** 1321027						
Cadmium	ND	5	ug/L	SW846 6010B	11/17-11/20/11	MN3RG1AA
		Dilution Factor: 1				
		Analysis Time..: 14:15				
Chromium	ND	10	ug/L	SW846 6010B	11/17-11/20/11	MN3RG1AC
		Dilution Factor: 1				
		Analysis Time..: 14:15				
Copper	ND	25	ug/L	SW846 6010B	11/17-11/20/11	MN3RG1AD
		Dilution Factor: 1				
		Analysis Time..: 14:15				
Iron	ND	100	ug/L	SW846 6010B	11/17-11/20/11	MN3RG1AE
		Dilution Factor: 1				
		Analysis Time..: 14:15				
Lead	ND	10	ug/L	SW846 6010B	11/17-11/20/11	MN3RG1AG
		Dilution Factor: 1				
		Analysis Time..: 14:15				
Nickel	ND	40	ug/L	SW846 6010B	11/17-11/20/11	MN3RG1AF
		Dilution Factor: 1				
		Analysis Time..: 14:15				
Zinc	ND	20	ug/L	SW846 6010B	11/17-11/20/11	MN3RG1AH
		Dilution Factor: 1				
		Analysis Time..: 14:15				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: F1K160482 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: F1K170000-027 **Prep Batch #...:** 1321027					
Cadmium	101	(80 - 120)	SW846 6010B	11/17-11/20/11	MN3RG1AJ
		Dilution Factor: 1	Analysis Time..: 14:20		
Chromium	97	(80 - 120)	SW846 6010B	11/17-11/20/11	MN3RG1AK
		Dilution Factor: 1	Analysis Time..: 14:20		
Copper	95	(80 - 120)	SW846 6010B	11/17-11/20/11	MN3RG1AL
		Dilution Factor: 1	Analysis Time..: 14:20		
Iron	98	(80 - 120)	SW846 6010B	11/17-11/20/11	MN3RG1AM
		Dilution Factor: 1	Analysis Time..: 14:20		
Nickel	98	(80 - 120)	SW846 6010B	11/17-11/20/11	MN3RG1AN
		Dilution Factor: 1	Analysis Time..: 14:20		
Lead	98	(80 - 120)	SW846 6010B	11/17-11/20/11	MN3RG1AP
		Dilution Factor: 1	Analysis Time..: 14:20		
Zinc	107	(80 - 120)	SW846 6010B	11/17-11/20/11	MN3RG1AQ
		Dilution Factor: 1	Analysis Time..: 14:20		

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: F1K160482 Matrix.....: WATER
Date Sampled...: 11/16/11 12:00 Date Received..: 11/16/11

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: F1K160482-001 Prep Batch #...: 1321027							
Cadmium	101	(75 - 125)			SW846 6010B	11/17-11/20/11	MN3EL1A0
	100	(75 - 125)	1.4	(0-20)	SW846 6010B	11/17-11/20/11	MN3EL1A1
		Dilution Factor: 1					
		Analysis Time..: 14:47					
Chromium	99	(75 - 125)			SW846 6010B	11/17-11/20/11	MN3EL1A2
	98	(75 - 125)	1.4	(0-20)	SW846 6010B	11/17-11/20/11	MN3EL1A3
		Dilution Factor: 1					
		Analysis Time..: 14:47					
Copper	109	(75 - 125)			SW846 6010B	11/17-11/20/11	MN3EL1A4
	108	(75 - 125)	1.3	(0-20)	SW846 6010B	11/17-11/20/11	MN3EL1A5
		Dilution Factor: 1					
		Analysis Time..: 14:47					
Iron	101	(75 - 125)			SW846 6010B	11/17-11/20/11	MN3EL1A6
	100	(75 - 125)	1.3	(0-20)	SW846 6010B	11/17-11/20/11	MN3EL1A7
		Dilution Factor: 1					
		Analysis Time..: 14:47					
Lead	100	(75 - 125)			SW846 6010B	11/17-11/20/11	MN3EL1CA
	99	(75 - 125)	1.7	(0-20)	SW846 6010B	11/17-11/20/11	MN3EL1CC
		Dilution Factor: 1					
		Analysis Time..: 14:47					
Nickel	102	(75 - 125)			SW846 6010B	11/17-11/20/11	MN3EL1A8
	100	(75 - 125)	1.5	(0-20)	SW846 6010B	11/17-11/20/11	MN3EL1A9
		Dilution Factor: 1					
		Analysis Time..: 14:47					
Zinc	111	(75 - 125)			SW846 6010B	11/17-11/20/11	MN3EL1CD
	110	(75 - 125)	1.0	(0-20)	SW846 6010B	11/17-11/20/11	MN3EL1CE
		Dilution Factor: 1					
		Analysis Time..: 14:47					

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

AECOM Technical Services Inc.

Client Sample ID: 60162412-SMP-PL5-WW-OTH-8112

General Chemistry

Lot-Sample #...: F1K160482-001 Work Order #...: MN3EL Matrix.....: WATER
Date Sampled...: 11/16/11 12:00 Date Received..: 11/16/11

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
pH (liquid)	7.1	0.10	No Units	SW846 9040	11/17/11	1321214
		Dilution Factor: 1		Analysis Time..: 21:45		
COD	127	20.0	mg/L	MCAWW 410.4	11/22-11/23/11	1326270
		Dilution Factor: 1		Analysis Time..: 00:00		
Total Suspended Solids	5.0	4.0	mg/L	MCAWW 160.2	11/16-11/18/11	1320190
		Dilution Factor: 1		Analysis Time..: 00:00		

METHOD BLANK REPORT

General Chemistry

Client Lot #...: F1K160482 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
COD		Work Order #: MN8NP1AA		MB Lot-Sample #:	F1K220000-270	
	ND	20.0	mg/L	MCAWW 410.4	11/22-11/23/11	1326270
		Dilution Factor: 1				
		Analysis Time..: 00:00				
Total Suspended Solids		Work Order #: MN8N01AA		MB Lot-Sample #:	F1K160000-190	
	ND	4.0	mg/L	MCAWW 160.2	11/16-11/18/11	1320190
		Dilution Factor: 1				
		Analysis Time..: 00:00				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: F1K160482 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
pH (liquid)		Work Order #: MN68G1AA	LCS Lot-Sample#: F1K170000-214		
	100	(99 - 101)	SW846 9040	11/17/11	1321214
		Dilution Factor: 1	Analysis Time..: 21:42		
COD		Work Order #: MN8NP1AC	LCS Lot-Sample#: F1K220000-270		
	101	(90 - 110)	MCAWW 410.4	11/22-11/23/11	1326270
		Dilution Factor: 1	Analysis Time..: 00:00		
Total Suspended Solids		Work Order #: MN8N01AC	LCS Lot-Sample#: F1K160000-190		
	80	(79 - 122)	MCAWW 160.2	11/16-11/18/11	1320190
		Dilution Factor: 1	Analysis Time..: 00:00		

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: F1K160482 Matrix.....: WATER
Date Sampled...: 11/16/11 12:00 Date Received..: 11/16/11

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
		Work Order #...: MN3EL1CN		MS Lot-Sample #: F1K160482-001	
COD	86 N	(90 - 110)	MCAWW 410.4	11/22-11/23/11	1326270

Dilution Factor: 1 Analysis Time..: 00:00

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

N Spiked analyte recovery is outside stated control limits.

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: F1K160482 **Work Order #...:** MNW42-SMP MNW42-DUP **Matrix.....:** WATER

Date Sampled...: 11/09/11 01:01 **Date Received..:** 11/10/11

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Suspended Solids						SD Lot-Sample #:	F1K100488-001	
	ND	ND	mg/L	0	(0-20)	MCAWW 160.2	11/16-11/18/11	1320190

Dilution Factor: 1 Analysis Time..: 00:00

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: F1K160482 **Work Order #...:** MN3EL-SMP MN3EL-DUP **Matrix.....:** WATER

Date Sampled...: 11/16/11 12:00 **Date Received..:** 11/16/11

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
pH (liquid)						SD Lot-Sample #:	F1K160482-001	
	7.1	7.1	No Units	0.56	(0-0.0)	SW846 9040	11/17/11	1321214
			Dilution Factor: 1			Analysis Time..: 21:45		
Total Suspended Solids						SD Lot-Sample #:	F1K160482-001	
	5.0	4.0	mg/L	22	(0-20)	MCAWW 160.2	11/16-11/18/11	1320190
			Dilution Factor: 1			Analysis Time..: 00:00		
COD						SD Lot-Sample #:	F1K160482-001	
	127	122	mg/L	4.0	(0-20)	MCAWW 410.4	11/22-11/23/11	1326270
			Dilution Factor: 1			Analysis Time..: 00:00		

AECOM Technical Services Inc.

Client Sample ID: 60162412-SMP-PL5-WW-OTH-8112

Radiochemistry

Lab Sample ID: F1K160482-001
Work Order: MN3EL
Matrix: WATER

Date Collected: 11/16/11 1200
Date Received: 11/16/11 1405

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	mdc	Prep Date	Analysis Date
GROSS A/B BY GFPC SW846 9310 MOD				**pCi/L**		**Batch # 1322148**	**Yld %**
Gross Alpha	10	U	12	3	19	11/18/11	11/21/11
Gross Beta	**35.2**		8.3	4.0	8.3	**11/18/11**	**11/21/11**
Iso URANIUM (SHORT CT) DOE A-01-R MOD				**pCi/L**		**Batch # 1321016**	**Yld % 81**
Uranium 234	0.39		0.19	1.00	0.12	**11/17/11**	**11/18/11**
Uranium 235/236	0.027	U	0.053	1.00	0.072	11/17/11	11/18/11
Uranium 238	**0.25**		0.16	1.00	0.15	**11/17/11**	**11/18/11**
Radium 226 by EPA 903.0 MOD				**pCi/L**		**Batch # 1320209**	**Yld % 75**
Radium (226)	**0.76**	J	0.18	1.00	0.11	**11/16/11**	**11/21/11**
Radium 228 by GFPC EPA 904 MOD				**pCi/L**		**Batch # 1320210**	**Yld % 71**
Radium 228	0.38	U	0.31	1.00	0.49	11/16/11	11/21/11
Iso THORIUM (SHORT CT) DOE A-01-R MOD				**pCi/L**		**Batch # 1327011**	**Yld % 37**
Thorium 228	0.006	U	0.15	1.00	0.38	11/23/11	11/23/11
Thorium 230	**0.30**		0.24	1.00	0.13	**11/23/11**	**11/23/11**
Thorium 232	0.0	U	0.043	1.00	0.13	11/23/11	11/23/11

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.
Bold results are greater than the MDC.

J Result is greater than sample detection limit but less than stated reporting limit.
U Result is less than the sample detection limit.

METHOD BLANK REPORT

Radiochemistry

Client Lot ID: F1K160482
Matrix: WATER

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC		Prep Date	Analysis Date	Lab Sample ID
Radium 226 by EPA 903.0 MOD			pCi/L	Batch #	1320209	Yld %	90		F1K160000-209B
Radium (226)	0.149	J	0.082	1.00	0.10		11/16/11	11/21/11	
Radium 228 by GFPC EPA 904 MOD			pCi/L	Batch #	1320210	Yld %	88		F1K160000-210B
Radium 228	0.31	U	0.24	1.00	0.38		11/16/11	11/21/11	
Iso URANIUM (SHORT CT) DOE A-01-R MOD			pCi/L	Batch #	1321016	Yld %	90		F1K170000-016B
Uranium 234	0.0	U	0.018	1.00	0.058		11/17/11	11/18/11	
Uranium 235/236	0.0	U	0.023	1.00	0.072		11/17/11	11/18/11	
Uranium 238	-0.0040	U	0.0080	1.00	0.091		11/17/11	11/18/11	
GROSS A/B BY GFPC SW846 9310 MOD			pCi/L	Batch #	1322148	Yld %			F1K180000-148B
Gross Alpha	0.11	U	0.69	3.00	1.3		11/18/11	11/22/11	
Gross Beta	0.11	U	0.60	4.00	1.1		11/18/11	11/22/11	
Iso THORIUM (SHORT CT) DOE A-01-R MOD			pCi/L	Batch #	1327011	Yld %	96		F1K230000-011B
Thorium 228	0.026	U	0.059	1.00	0.12		11/23/11	11/23/11	
Thorium 230	**0.120**		0.099	1.00	**0.055**		**11/23/11**	**11/23/11**	
Thorium 232	0.021	U	0.049	1.00	0.099		11/23/11	11/23/11	

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined using instrument performance only
Bold results are greater than the MDC.

J Result is greater than sample detection limit but less than stated reporting limit.
U Result is less than the sample detection limit.

Laboratory Control Sample Report

Radiochemistry

Client Lot ID: F1K160482
Matrix: WATER

Parameter	Spike Amount	Result	Total Uncert. (2 σ+/-)	MDC	% Yld	% Rec	Lab Sample ID / QC Control Limits
Radium 226 by EPA 903.0 MOD			pCi/L	903.0 MOD			F1K160000-209C
Radium (226)	11.3	13.6	1.4	0.1	94	121	(64 - 125)
	Batch #:	1320209		Analysis Date:	11/21/11		
Radium 228 by GFPC EPA 904 MOD			pCi/L	904 MOD			F1K160000-210C
Radium 228	5.20	4.99	0.70	0.42	79	96	(65 - 126)
	Batch #:	1320210		Analysis Date:	11/21/11		
Iso URANIUM (SHORT CT) DOE A-01-R MOD			pCi/L	A-01-R MOD			F1K170000-016C
Uranium 234	13.1	12.7	1.5	0.1	92	97	(76 - 136)
Uranium 238	13.6	12.2	1.4	0.1	92	90	(76 - 134)
	Batch #:	1321016		Analysis Date:	11/18/11		
GROSS A/B BY GFPC SW846 9310 MOD			pCi/L	9310 MOD			F1K180000-148C
Gross Alpha	54.0	52.2	7.2	1.1		97	(74 - 138)
Gross Beta	96.5	96	10	1		100	(75 - 125)
	Batch #:	1322148		Analysis Date:	11/22/11		
Iso THORIUM (SHORT CT) DOE A-01-R MOD			pCi/L	A-01-R MOD			F1K230000-011C
Thorium 230	8.64	9.4	1.2	0.09	84	108	(77 - 118)
	Batch #:	1327011		Analysis Date:	11/28/11		

NOTE(S)

MDC is determined by instrument performance only
Calculations are performed before rounding to avoid round-off error in calculated results

MATRIX SPIKE REPORT

Radiochemistry

Client Lot Id: F1K160482
Matrix: WATER

Date Sampled: 11/16/11
Date Received: 11/16/11

Parameter	Spike Amount	Spike Result	Total Uncert. (2σ +/-)	Spike Yld.	Sample Result	Total Uncert. (2 σ +/-)	QC Sample ID %YLD	QC Sample ID %REC	QC Control Limits
GROSS A/B BY GFPC SW846 9310 MOD			**pCi/L**		**9310 MOD**			**F1K160482-001**	
Gross Beta	772	894	94		35.2	8.3		111	(68-150)
	Batch #:	1322148		Analysis Date:		11/21/11			
GROSS A/B BY GFPC SW846 9310 MOD			**pCi/L**		**9310 MOD**			**F1K160482-001**	
Gross Alpha	432	380	61		10	12		86	(40-150)
	Batch #:	1322148		Analysis Date:		11/21/11			

NOTE(S)

Data are incomplete without the case narrative.

Calculations are performed before rounding to avoid round-off errors in calculated results.

DUPLICATE EVALUATION REPORT

Radiochemistry

Client Lot ID: F1K160482 Date Sampled: 11/16/11
Matrix: WATER Date Received: 11/16/11

Parameter	SAMPLE Result		Total Uncert. (2σ+/-)	% Yld	DUPLICATE Result		Total Uncert. (2 σ+/-)	% Yld	QC Sample ID Precision	
Iso URANIUM (SHORT CT) DOE A-01-R MOD				**pCi/L**	**A-01-R MOD**				**F1K160482-001**	
Uranium 234	0.39		0.19	81	0.25		0.15	80	45	%RPD
Uranium 235/236	0.027	U	0.053	81	-0.005	U	0.010	80	295	%RPD
Uranium 238	0.25		0.16	81	0.42		0.20	80	52	%RPD
		Batch #:	1321016	(Sample)	1321016	(Duplicate)				
Radium 226 by EPA 903.0 MOD				**pCi/L**	**903.0 MOD**				**F1K160482-001**	
Radium (226)	0.76	J	0.18	75	0.61	J	0.15	78	22	%RPD
		Batch #:	1320209	(Sample)	1320209	(Duplicate)				
Radium 228 by GFPC EPA 904 MOD				**pCi/L**	**904 MOD**				**F1K160482-001**	
Radium 228	0.38	U	0.31	71	0.39	U	0.36	55	4	%RPD
		Batch #:	1320210	(Sample)	1320210	(Duplicate)				
GROSS A/B BY GFPC SW846 9310 MOD				**pCi/L**	**9310 MOD**				**F1K160482-001**	
Gross Alpha	10	U	12		15	U	12		36	%RPD
Gross Beta	35.2		8.3		29.5		7.5		18	%RPD
		Batch #:	1322148	(Sample)	1322148	(Duplicate)				
Iso THORIUM (SHORT CT) DOE A-01-R MOD				**pCi/L**	**A-01-R MOD**				**F1K160482-001**	
Thorium 228	0.006	U	0.15	37	0.17	U	0.28	19	186	%RPD
Thorium 230	0.30		0.24	37	0.28	U	0.34	19	7	%RPD
Thorium 232	0.0	U	0.043	37	0.08	U	0.20	19	200	%RPD
		Batch #:	1327011	(Sample)	1327011	(Duplicate)				

NOTE(S)

Data are incomplete without the case narrative.
Calculations are performed before rounding to avoid round-off error in calculated results

J Result is greater than sample detection limit but less than stated reporting limit.
U Result is less than the sample detection limit.

F1K160482

CLIENT ANALYSIS SUMMARY

Storage Loc: R64,2-26,METS,V

Project Manager: JKA
Quote #: 87754
SDG:
Project: Mallinckrodt St. Louis Plant
PO#: 10372ACM
Report to: Kevin Martilla
Client: 404224 AECOM Technical Services Inc.

RUSH

#SMPS in LOT: 0

Date Received: 2011-11-16
Analytical Due Date: 2011-11-23
Report Due Date: 2011-11-23
Report Type: D Expanded Deliverable
EDD Code: 00

SAMPLE LOGIN: FOR MULTIPLE SAMPLES- EACH CHAIN NEEDS TO GO IN ITS OWN LOT. QC APPLIED TO ONLY ONE SAMPLE PER DAY.
Log ZHE EXTRACTION line item for TCLP VOA. Log TCLP EXTRACTION line item for TCLP analyses. RAD: Initial Gamma Spec counted as received . When complete dry/grind and prep for Gamma Ra226,TAR,Iso U and Iso Th. GAMMA SPEC. SHOULD BE COUNTED IN CLIENTS 500ML MARINELLI. RA226/228 - NO INGROWTH REQUIRED!!!
RA226/228 MUST BE PREPPED IN SEPERATE ALIQUOTS!!! DO NOT PREP TOGETHER! STANDARD QC ON CLIENT SAMPLE IS REQUIRED FOR ALL ANALYSES.

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	I
1	60162412-SMP-PL5-WW-OTH-8112			2011-11-16 / 1200	MN3EL	WATER

SAMPLE COMMENTS:

	CR	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
	CU	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
	FE	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
	NI	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
	PB	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
	CD	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
	ZN	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
	XX	DN	CFR13 6A	624	WATER, 624, VOA	25	PURGE AND TRAP - 25 mL purge (Waters)	01	STANDARD TEST SET	PROT: A	WRK LOC	06	TIC: N	
	XX	ZZ	NONE	NONE	WATER, RAD SCREEN	88	NO SAMPLE PREPARATION PERFORMED / DIRECT	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
	XX	2I	EML	A-01-R MOD	WATER, Iso URANIUM	J2	Extraction Chromatography - Sequential Actinides	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
	XX	2K	EML	A-01-R MOD	WATER, Iso THORIUM	J2	Extraction Chromatography - Sequential Actinides	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
	XX	Z4	EPA	904 MOD	WATER, 904 MOD, Ra-228 (NO INGROWTH)	N*	No Ingrowth	2X	SPECIAL PROJECTS	PROT: A	WRK LOC	06		
	XX	ZA	SW846	9310 MOD	WATER, 9310 MOD, GROSS A/B	FR	Evaporative Preparation, Total	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
	XX	ZY	EPA	903.0 MOD	WATER, 903 MOD, Ra-226 (NO INGROWTH)	N*	No Ingrowth	2X	SPECIAL PROJECTS	PROT: A	WRK LOC	06		
	XX	AL	MCAW W	160.2	WATER, 160.2, TSS	88	NO SAMPLE PREPARATION PERFORMED / DIRECT	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
	XX	FJ	SW846	9040	WATER, 9040, pH	88	NO SAMPLE PREPARATION PERFORMED / DIRECT	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
	XX	VO	MCAW W	410.4	WATER, 410.4, COD	21	DIGESTION, NON-METAL/INORGANICS	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
D	PB	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
D	NI	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
D	CD	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
D	CR	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
D	CU	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
D	ZN	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
D	FE	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
D	XX	DN	CFR13 6A	624	WATER, 624, VOA	25	PURGE AND TRAP - 25 mL purge (Waters)	01	STANDARD TEST SET	PROT: A	WRK LOC	06	TIC: N	
S	ZN	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
S	CD	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
S	CR	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
S	CU	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
S	FE	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
S	NI	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
S	PB	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
S	XX	DN	CFR13 6A	624	WATER, 624, VOA	25	PURGE AND TRAP - 25 mL purge (Waters)	01	STANDARD TEST SET	PROT: A	WRK LOC	06	TIC: N	
S	XX	ZA	SW846	9310 MOD	WATER, 9310 MOD, GROSS A/B	FR	Evaporative Preparation, Total	01	STANDARD TEST SET	PROT: A	WRK LOC	06		

F1K160482

CLIENT ANALYSIS SUMMARY

Storage Loc: R64,2-26,METS,V

Project Manager: JKA
Quote #: 87754
SDG:
Project: Mallinckrodt St. Louis Plant
PO#: 10372ACM
Report to: Kevin Martilla
Client: 404224 AECOM Technical Services Inc.

RUSH

#SMPS In LOT: 0

Date Received: 2011-11-16
Analytical Due Date: 2011-11-23
Report Due Date: 2011-11-23
Report Type: D Expanded Deliverable
EDD Code: 00

SAMPLE LOGIN: FOR MULTIPLE SAMPLES- EACH CHAIN NEEDS TO GO IN ITS OWN LOT. QC APPLIED TO ONLY ONE SAMPLE PER DAY.

Log ZHE EXTRACTION line item for TCLP VOA. Log TCLP EXTRACTION line item for TCLP analyses. RAD: Initial Gamma Spec counted as received . When complete dry/grind and prep for Gamma Ra226,TAR,Iso U and Iso Th. GAMMA SPEC. SHOULD BE COUNTED IN CLIENTS 500ML MARINELLI. RA226/228 - NO INGROWTH REQUIRED!!! RA226/228 MUST BE PREPPED IN SEPERATE ALIQUOTS!!! DO NOT PREP TOGETHER! STANDARD QC ON CLIENT SAMPLE IS REQUIRED FOR ALL ANALYSES.

S	XX	VO	MCAW W	410.4	WATER, 410.4, COD	21	DIGESTION, NON-METAL/INORGANICS	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
X	XX	2I	EML	A-01-R MOD	WATER, Iso URANIUM	J2	Extraction Chromatography - Sequential Actinides	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
X	XX	2K	EML	A-01-R MOD	WATER, Iso THORIUM	J2	Extraction Chromatography - Sequential Actinides	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
X	XX	Z4	EPA	904 MOD	WATER, 904 MOD, Ra-228 (NO INGROWTH)	N*	No Ingrowth	2X	SPECIAL PROJECTS	PROT: A	WRK LOC	06		
X	XX	ZA	SW846	9310 MOD	WATER, 9310 MOD, GROSS A/B	FR	Evaporative Preparation, Total	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
X	XX	ZY	EPA	903.0 MOD	WATER, 903 MOD, Ra-226 (NO INGROWTH)	N*	No Ingrowth	2X	SPECIAL PROJECTS	PROT: A	WRK LOC	06		
X	XX	AL	MCAW W	160.2	WATER, 160.2, TSS	88	NO SAMPLE PREPARATION PERFORMED / DIRECT	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
X	XX	FJ	SW846	9040	WATER, 9040, pH	88	NO SAMPLE PREPARATION PERFORMED / DIRECT	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
X	XX	VO	MCAW W	410.4	WATER, 410.4, COD	21	DIGESTION, NON-METAL/INORGANICS	01	STANDARD TEST SET	PROT: A	WRK LOC	06		

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	I
2	VOC BLANKS			2011-11-16 / 0	MN3EM	WATER

SAMPLE COMMENTS:

XX	DN	CFR13 6A	624	WATER, 624, VOA	25	PURGE AND TRAP - 25 mL purge (Waters)	01	STANDARD TEST SET	PROT: A	WRK LOC	06	TIC: N	

St. Louis
13715 Rider Trail North
Earth City, MO 63045
phone 314.298.8566 fax 314.298.8757

CUR 419

Chain of Custody Record

FIK160482

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.

Lot F1K160482

Client Contact	Project Manager: Kevin Martilla	Site Contact: Casey Knutesou	Date: 11/16/2011	COC No: N/A
AECOM	Tel/Fax: (618)444-5535	Lab Contact: Jayna Awold	Carrier: Test America	1 of 1 COCs
Address 8005 Outer Circle RD	Analysis Turnaround Time			Job No. 60162412
City/State/Zip Brooks City Base, TX 78235	Calendar (C) or Work Days (W) C			
(618)444-5535 Phone	TAT if different from Below			
none FAX	☐ 2 weeks			SDG No.
Project Name: Mallinckrodt C-T Decommissioning	■ 1 week			
Site: St. Louis Plant	☐ 2 days			
P O # 10372ACM	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	pH *	TSS *	COD *	ICP Metals (Cd, Cr, Cu, Fe, Pb, Ni, Zn) *	Volatile Organics (EPA Method 624) *	Gross Alpha/Beta *	Isotopic Uranium (Alpha Spectrometry) *	Radium-226 (GFPC, no decay/ingrowth) *	Radium-228 (GFPC - no decay/ingrowth) *	Isotopic Thorium (Alpha Spectrometry) *	Sample Specific Notes:
60162412-SMP-PLS-WW-OTH-8112	11/16/2011	12:00	Water	Water	12		x	x	x	x	x	x	x	x	x	x	* Further Testing if Gross Beta above 50 pci/L
VOC Blanks	n/a	n/a	n/a	n/a	1												

1 x VIAL 40

7xLP
1x500P
1x250P
3xVIAL 40

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification
■ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* *Poison B* ☐ *Unknown* ☐

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ■ *Archive For* 1 *Months*

Special Instructions/QC Requirements & Comments: Possible hazards include radiological. Sample methods to comply with MSD Ordinance 12559 standards. Please use EPA Method 9310 for gross Alpha and Beta. Discharge Number 120

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Dante Love	TTA/AECOM	11-16-11/1330	[illegible]	TA	11/16/11 1330
[illegible]	TA	11/16/11 1400	[illegible]	TA STL	11/16/11 1405

TestAmerica St. Louis

33 of 34

MSD 012748

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Lot #(s): F1K160482

CUR Form #: 4 1 9

CONDITION UPON RECEIPT FORM

Client: AECOM

Quote No: 87754

COC/RFA No: N/A

Initiated By: NVO Date: 11/16/11 Time: 1405

Shipping Information

Shipper: FedEx UPS DHL Courier Client Other: _____ Multiple Packages: Y (N)

Shipping # (s):*

1. N/A
2.
3.
4.
5.
6.
7.
8.
9.
10.

Sample Temperature (s):**

1. 4
2.
3.
4.
5.
6.
7.
8.
9.
10.

*Numbered shipping lines correspond to Numbered Sample Temp lines

**Sample must be received at 4°C ± 2°C- If not, note contents below. Temperature variance does NOT affect the following: Metals-Liquid; Rad tests- Liquid or Solids; Perchlorate

Condition (Circle "Y" for yes, "N" for no and "N/A" for not applicable):

1.	Y (N)	Are there custody seals present on the cooler?	8.	Y (N)	Are there custody seals present on bottles?
2.	Y N (N/A)	Do custody seals on cooler appear to be tampered with?	9.	Y N (N/A)	Do custody seals on bottles appear to be tampered with?
3.	(Y) N	Were contents of cooler frisked after opening, but before unpacking?	10.	(Y) N N/A	Was sample received with proper pH[1]? (If not, make note below)
4.	(Y) N	Sample received with Chain of Custody?	11.	Y N (N/A)	Containers for C-14, H-3 & I-129/131 marked with "Do Not Preserve" label?
5.	(Y) N N/A	Does the Chain of Custody match sample ID's on the container(s)?	12.	(Y) N	Sample received in proper containers?
6.	Y (N)	Was sample received broken?	13.	Y (N) N/A	Headspace in VOA or TOX liquid samples? (If Yes, note sample ID's below)
7.	(Y) N	Is sample volume sufficient for analysis?	14.	Y N (N/A)	Was Internal COC/Workshare received?

[1] For DOE-AL (Pantex, LANL, Sandia) sites, pH of ALL containers received must be verified, EXCEPT VOA, TOX, Oil & Grease and soils.

Notes:

Corrective Action:

- ☐ Client Contact Name: _____ Informed by: _____
- ☐ Sample(s) processed "as is"
- ☐ Sample(s) on hold until: _____ If released, notify: _____

Project Management Review: Jaime Hewatt Date: 11/16/11

THIS FORM MUST BE COMPLETED AT THE TIME THE ITEMS ARE BEING CHECKED IN. IF ANY ITEM IS COMPLETED BY SOMEONE OTHER THAN THE INITIATOR, THEN THAT PERSON IS REQUIRED TO APPLY THEIR INITIAL AND THE DATE NEXT TO THAT ITEM.

ADMIN-0004 rev13, REVISED 05/27/11 \\Slsvr01\QA\FORMS\ST-LOUIS\ADMIN\Admin-0004 CUR.doc

IU Mallinckrodt 21120596-00
SP 850

Discharge Log for Area 5 Processing Frac Tanks

Data for e-mail of 11-29-11 MB

CT Covidien Plant	Discharge 032	
Contractor:	~~AECOM~~	
Date Start Discharge:	8/1/2011	Notified MSD, Steve Grace, (314) 436-8755 ~~Email via~~ Karen Burke
Date Discharged Completed:	8/1/2011	Notified MSD, Steve Grace, (314) 436-8755

Annalytical Results:			
Various:		Total Metals:	
pH:	See Results In Monthly Summary	Cadmium:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary	Chromium:	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary	Copper:	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary	Iron:	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary	Lead:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary	Nickel:	See Results In Monthly Summary
		Zinc:	See Results In Monthly Summary
Isotopic			
U-235	See Results In Monthly Summary		
U-238	See Results In Monthly Summary		
Ra-226	See Results In Monthly Summary		
Ra-228	See Results In Monthly Summary		
Th-230	See Results In Monthly Summary		
Th-232	See Results In Monthly Summary		

			Start		Stop	
Signurature	Frac Tank ID#	Date	Time	Gallons	Time	Gallons
Rhedta Bean	255824	8/1/2011	0700	10000	xxx	xxx
Rhedta Bean	255824	8/1/2011	xxx	xxx	0930	0
Rhedta Bean	239801	8/1/2011	0705	10000	xxx	xxx
Rhedta Bean	239801	8/1/2011	xxx	xxx	0930	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time:	2 5	Hours
Total Volume	20000	Gallons

Wastewater Discharge 032 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8023

Sample Date: 29 Jul 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	ND
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	ND
Iron	mg/L	150	< 0.1	ND
Nickel	mg/L	2.3	< 0.04	ND
Lead	mg/L	0.4	0.0017	B
Zinc	mg/L	3	0.0475	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.1	
COD	mg/L	600	33.0	
TSS	mg/L	300	< 4.0	ND
Radionuclides				
Gross Alpha	pCi/L	3,000	< 7	U
Gross Beta	pCi/L	50	5.7	
Ra-226	pCi/L	10	3.48	
Ra-228	pCi/L	30	1.23	
Th-228	pCi/L	2,000	< 0.15	U
Th-230	pCi/L	1,000	0.18	
Th-232	pCi/L	300	< 0.12	U
U-234	pCi/L		< 0.001	NR
U-235/6	pCi/L		< 0.17	U
U-238	pCi/L		0.42	
Total Uranium	*pCi/L*	*3,000*	*< 0.591*	

10 CFR 20 Appendix B Table 3 Values

Analyte	Units	Limit	Discharge Concentration	Averaged Concentration
Ra-226	pCi/L	0.6	3.48	0.003
Ra-228	pCi/L	0.6	1.23	0.001
Th-228	pCi/L	2	0.15	0.000
Th-230	pCi/L	1	0.18	0.000
Th-232	pCi/L	0.3	0.12	0.000
U-234	pCi/L	3	0.001	0.000
U-235/6	pCi/L	3	0.17	0.000
U-238	pCi/L	3	0.42	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.010*

Discharge Volume (gals) = 20,000

Covidien averaging factor[2] = 0.001

Analyte	Units	Annual Limit	Discharge Activity	Year to Date Activity
Gross Radioactivity	Ci	1	9.6E-07	8.0E-05

Notes:

(1) 'B' indicates estimated value; 'U' indicates result less than sample detection limit; 'ND' indicates not detected; 'NR' indicates not reported.

(2) derived from discharge volume divided by a Covidien minimum average monthly volume (20,000,000 gal)

Discharge Log for Area 5 Processing Frac Tanks

CT Covidien Plant — Discharge 033

Contractor: AECOM

Date Start Discharge: 8/2/2011 — Notified MSD, Steve Grace, (314) 436-8755
Email via Karen Burke

Date Discharged Completed: 8/2/2011 — Notified MSD, Steve Grace, (314) 436-8755

Annalytical Results:			
Various:		Total Metals:	
pH:	See Results In Monthly Summary	Cadmium	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary	Chromium	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary	Copper	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary	Iron	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary	Lead	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary	Nickel	See Results In Monthly Summary
		Zinc	See Results In Monthly Summary
Isotopic			
U-235	See Results In Monthly Summary		
U-238	See Results In Monthly Summary		
Ra-226	See Results In Monthly Summary		
Ra-228	See Results In Monthly Summary		
Th-230	See Results In Monthly Summary		
Th-232	See Results In Monthly Summary		

			Start		Stop	
Signurature	Frac Tank ID#	Date	Time	Gallons	Time	Gallons
Rhodri Bean	255824	8/2/2011	0700	10000	xxx	xxx
Rhodri Bean	255824	8/2/2011	xxx	xxx	0930	0
Rhodri Bean	239801	8/2/2011	0705	10000	xxx	xxx
Rhodri Bean	239801	8/2/2011	xxx	xxx	0930	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time: 2.5 Hours
Total Volume 20000 Gallons

Wastewater Discharge 033 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8024

Sample Date: 01 Aug 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	ND
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	ND
Iron	mg/L	150	< 0.1	ND
Nickel	mg/L	2.3	< 0.04	ND
Lead	mg/L	0.4	0.0022	B
Zinc	mg/L	3	0.052	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.0	
COD	mg/L	600	17.0	B
TSS	mg/L	300	2.0	B
Radionuclides				
Gross Alpha	pCi/L	3,000	< 12	U
Gross Beta	pCi/L	50	18.3	
Ra-226	pCi/L	10	2.8	
Ra-228	pCi/L	30	1.4	
Th-228	pCi/L	2,000	< 0.18	U
Th-230	pCi/L	1,000	< 0.12	U
Th-232	pCi/L	300	< 0.12	U
U-234	pCi/L		< 0.001	NR
U-235/6	pCi/L		< 0.14	U
U-238	pCi/L		0.5	
Total Uranium	*pCi/L*	*3,000*	*< 0.641*	

10 CFR 20 Appendix B Table 3 Values

Analyte	Units	Limit	Discharge Concentration	Averaged Concentration
Ra-226	pCi/L	0.6	2.8	0.003
Ra-228	pCi/L	0.6	1.4	0.001
Th-228	pCi/L	2	0.18	0.000
Th-230	pCi/L	1	0.12	0.000
Th-232	pCi/L	0.3	0.12	0.000
U-234	pCi/L	3	0.001	0.000
U-235/6	pCi/L	3	0.14	0.000
U-238	pCi/L	3	0.5	0.001
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.009*

Discharge Volume (gals) = 20,000

Covidien averaging factor[2] = 0.001

Analyte	Units	Annual Limit	Discharge Activity	Year to Date Activity
Gross Radioactivity	Ci	1	2.3E-06	8.2E-05

Notes:

(1) 'B' indicates estimated value; 'U' indicates result less than sample detection limit; 'ND' indicates not detected; 'NR' indicates not reported.

(2) derived from discharge volume divided by a Covidien minimum average monthly volume (20,000,000 gal)

MSD 012753

Discharge Log for Area 5 Processing Frac Tanks

CT Covidien Plant — Discharge 034

Contractor: AECOM

Date Start Discharge: 8/8/2011 — Notified MSD, Steve Grace, (314) 436-8755
Email via Karen Burke

Date Discharged Completed: 8/8/2011 — Notified MSD, Steve Grace, (314) 436-8755

Annalytical Results:			
Various:		Total Metals:	
pH:	See Results In Monthly Summary	Cadmium:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary	Chromium:	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary	Copper:	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary	Iron:	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary	Lead:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary	Nickel:	See Results In Monthly Summary
		Zinc:	See Results In Monthly Summary
Isotopic			
U-235	See Results In Monthly Summary		
U-238	See Results In Monthly Summary		
Ra-226	See Results In Monthly Summary		
Ra-228	See Results In Monthly Summary		
Th-230	See Results In Monthly Summary		
Th-232	See Results In Monthly Summary		

			Start		Stop	
Signurature	Frac Tank ID#	Date	Time	Gallons	Time	Gallons
	255824	8/8/2011	0700	20000	xxx	xxx
	255824	8/8/2011	xxx	xxx	0930	0
	239801	8/8/2011	0705	20000	xxx	xxx
	239801	8/8/2011	xxx	xxx	0930	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time: 2.5 Hours
Total Volume 40000 Gallons

Wastewater Discharge 034 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8025

Sample Date: 02 Aug 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	ND
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	ND
Iron	mg/L	150	< 0.1	ND
Nickel	mg/L	2.3	< 0.04	ND
Lead	mg/L	0.4	< 0.01	ND
Zinc	mg/L	3	0.0465	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.2	
COD	mg/L	600	40.0	
TSS	mg/L	300	5.0	
Radionuclides				
Gross Alpha	pCi/L	3,000	< 9.4	U
Gross Beta	pCi/L	50	10	
Ra-226	pCi/L	10	3.44	
Ra-228	pCi/L	30	1.14	
Th-228	pCi/L	2,000	< 0.15	U
Th-230	pCi/L	1,000	0.098	
Th-232	pCi/L	300	< 0.11	U
U-234	pCi/L		< 0.001	NR
U-235/6	pCi/L		< 0.072	U
U-238	pCi/L		0.3	
Total Uranium	*pCi/L*	*3,000*	*< 0.373*	

10 CFR 20 Appendix B Table 3 Values

Analyte	Units	Limit	Discharge Concentration	Averaged Concentration
Ra-226	pCi/L	0.6	3.44	0.003
Ra-228	pCi/L	0.6	1.14	0.001
Th-228	pCi/L	2	0.15	0.000
Th-230	pCi/L	1	0.098	0.000
Th-232	pCi/L	0.3	0.11	0.000
U-234	pCi/L	3	0.001	0.000
U-235/6	pCi/L	3	0.072	0.000
U-238	pCi/L	3	0.3	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.009*

Discharge Volume (gals) = 20,000

Covidien averaging factor[2] = 0.001

Analyte	Units	Annual Limit	Discharge Activity	Year to Date Activity
Gross Radioactivity	Ci	1	1.5E-06	8.4E-05

Notes:

(1) 'B' indicates estimated value; 'U' indicates result less than sample detection limit; 'ND' indicates not detected; 'NR' indicates not reported.

(2) derived from discharge volume divided by a Covidien minimum average monthly volume (20,000,000 gal)

Discharge Log for Area 5 Processing Frac Tanks

CT Covidien Plant — Discharge 035

Contractor: AECOM

Date Start Discharge: 8/10/2011 — Notified MSD, Steve Grace, (314) 436-8755
Email via Karen Burke

Date Discharged Completed: 8/10/2011 — Notified MSD, Steve Grace, (314) 436-8755

Annalytical Results:			
Various:		Total Metals:	
pH:	See Results In Monthly Summary	Cadmium:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary	Chromium:	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary	Copper:	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary	Iron:	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary	Lead:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary	Nickel:	See Results In Monthly Summary
		Zinc:	See Results In Monthly Summary
Isotopic			
U-235	See Results In Monthly Summary		
U-238	See Results In Monthly Summary		
Ra-226	See Results In Monthly Summary		
Ra-228	See Results In Monthly Summary		
Th-230	See Results In Monthly Summary		
Th-232	See Results In Monthly Summary		

			Start		Stop	
Signurature	Frac Tank ID#	Date	Time	Gallons	Time	Gallons
Rhedta Bean	255824	8/10/2011	0700	20000	xxx	xxx
Rhedta Bean	255824	8/10/2011	xxx	xxx	0930	0
Rhedta Bean	239801	8/10/2011	0705	20000	xxx	xxx
Rhedta Bean	239801	8/10/2011	xxx	xxx	0930	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time: 2.5 Hours
Total Volume 40000 Gallons

Wastewater Discharge 035 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8026

Sample Date: 08 Aug 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	ND
Iron	mg/L	150	0.0284	B
Nickel	mg/L	2.3	< 0.002	ND
Lead	mg/L	0.4	0.0016	B
Zinc	mg/L	3	0.0466	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	6.9	
COD	mg/L	600	47.0	
TSS	mg/L	300	< 4.0	ND
Radionuclides				
Gross Alpha	pCi/L	3,000	< 8.9	U
Gross Beta	pCi/L	50	15.8	
Ra-226	pCi/L	10	2.95	
Ra-228	pCi/L	30	1.11	
Th-228	pCi/L	2,000	< 0.073	U
Th-230	pCi/L	1,000	< 0.15	U
Th-232	pCi/L	300	< 0.073	U
U-234	pCi/L		< 0.001	NR
U-235/6	pCi/L		< 0.066	U
U-238	pCi/L		0.118	
Total Uranium	*pCi/L*	*3,000*	*< 0.185*	

10 CFR 20 Appendix B Table 3 Values

Analyte	Units	Limit	Discharge Concentration	Averaged Concentration
Ra-226	pCi/L	0.6	2.95	0.006
Ra-228	pCi/L	0.6	1.11	0.002
Th-228	pCi/L	2	0.073	0.000
Th-230	pCi/L	1	0.15	0.000
Th-232	pCi/L	0.3	0.073	0.000
U-234	pCi/L	3	0.001	0.000
U-235/6	pCi/L	3	0.066	0.000
U-238	pCi/L	3	0.118	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.017*

Discharge Volume (gals) = 40,000

Covidien averaging factor[2] = 0.002

Analyte	Units	Annual Limit	Discharge Activity	Year to Date Activity
Gross Radioactivity	Ci	1	3.7E-06	8.8E-05

Notes:

(1) 'B' indicates estimated value; 'U' indicates result less than sample detection limit; 'ND' indicates not detected; 'NR' indicates not reported. 'J' less than Reporting Limit

(2) derived from discharge volume divided by a Covidien minimum average monthly volume (20,000,000 gal)

Discharge Log for Area 5 Processing Frac Tanks

CT Covidien Plant — Discharge 036

Contractor: AECOM

Date Start Discharge: 8/12/2011 — Notified MSD, Steve Grace, (314) 436-8755
Email via Karen Burke

Date Discharged Completed: 8/12/2011 — Notified MSD, Steve Grace, (314) 436-8755

Annalytical Results:			
Various:		Total Metals:	
pH:	See Results In Monthly Summary	Cadmium	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary	Chromium	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary	Copper	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary	Iron:	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary	Lead:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary	Nickel:	See Results In Monthly Summary
		Zinc:	See Results In Monthly Summary
Isotopic			
U-235	See Results In Monthly Summary		
U-238	See Results In Monthly Summary		
Ra-226	See Results In Monthly Summary		
Ra-228	See Results In Monthly Summary		
Th-230	See Results In Monthly Summary		
Th-232	See Results In Monthly Summary		

			Start		Stop	
Signurature	Frac Tank ID#	Date	Time	Gallons	Time	Gallons
	255824	8/12/2011	0700	20000	xxx	xxx
	255824	8/12/2011	xxx	xxx	0930	0
	239801	8/12/2011	0705	20000	xxx	xxx
	239801	8/12/2011	xxx	xxx	0930	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time: 2.5 Hours
Total Volume 40000 Gallons

Wastewater Discharge 036 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8027

Sample Date: 11 Aug 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	ND
Iron	mg/L	150	< 0.1	ND
Nickel	mg/L	2.3	< 0.04	ND
Lead	mg/L	0.4	< 0.01	ND
Zinc	mg/L	3	0.054	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.2	
COD	mg/L	600	53.0	
TSS	mg/L	300	< 4.0	
Radionuclides				
Gross Alpha	pCi/L	3,000	< 7.1	U
Gross Beta	pCi/L	50	14.8	
Ra-226	pCi/L	10	2.38	
Ra-228	pCi/L	30	1.19	
Th-228	pCi/L	2,000	< 0.17	U
Th-230	pCi/L	1,000	< 0.079	U
Th-232	pCi/L	300	< 0.079	U
U-234	pCi/L		< 0.001	NR
U-235/6	pCi/L		< 0.068	U
U-238	pCi/L		0.26	
Total Uranium	*pCi/L*	*3,000*	*< 0.329*	

10 CFR 20 Appendix B Table 3 Values

Analyte	Units	Limit	Discharge Concentration	Averaged Concentration
Ra-226	pCi/L	0.6	2.38	0.005
Ra-228	pCi/L	0.6	1.19	0.002
Th-228	pCi/L	2	0.17	0.000
Th-230	pCi/L	1	0.079	0.000
Th-232	pCi/L	0.3	0.079	0.000
U-234	pCi/L	3	0.001	0.000
U-235/6	pCi/L	3	0.068	0.000
U-238	pCi/L	3	0.26	0.001
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.015*

Discharge Volume (gals) = 40,000

Covidien averaging factor[2] = 0.002

Analyte	Units	Annual Limit	Discharge Activity	Year to Date Activity
Gross Radioactivity	Ci	1	3.3E-06	9.1E-05

Notes:

(1) 'B' indicates estimated value; 'U' indicates result less than sample detection limit; 'ND' indicates not detected; 'NR' indicates not reported. 'J' less than Reporting Limit

(2) derived from discharge volume divided by a Covidien minimum average monthly volume (20,000,000 gal)

Discharge Log for Area 5 Processing Frac Tanks

CT Covidien Plant — Discharge 037

Contractor: AECOM

Date Start Discharge: 8/15/2011 — Notified MSD, Steve Grace, (314) 436-8755
Email via Karen Burke

Date Discharged Completed: 8/15/2011 — Notified MSD, Steve Grace, (314) 436-8755

Annalytical Results:

Various:		Total Metals:	
pH:	See Results In Monthly Summary	Cadmium:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary	Chromium:	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary	Copper:	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary	Iron:	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary	Lead:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary	Nickel:	See Results In Monthly Summary
		Zinc:	See Results In Monthly Summary

Isotopic	
U-235	See Results In Monthly Summary
U-238	See Results In Monthly Summary
Ra-226	See Results In Monthly Summary
Ra-228	See Results In Monthly Summary
Th-230	See Results In Monthly Summary
Th-232	See Results In Monthly Summary

			Start		Stop	
Signurature	Frac Tank ID#	Date	Time	Gallons	Time	Gallons
	255824	8/15/2011	0700	20000	xxx	xxx
	255824	8/15/2011	xxx	xxx	0930	0
	239801	8/15/2011	0705	20000	xxx	xxx
	239801	8/15/2011	xxx	xxx	0930	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time: 2.5 Hours
Total Volume 40000 Gallons

Wastewater Discharge 037 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8028

Sample Date: 12 Aug 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	ND
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	ND
Iron	mg/L	150	< 0.1	ND
Nickel	mg/L	2.3	< 0.04	ND
Lead	mg/L	0.4	< 0.01	ND
Zinc	mg/L	3	0.0376	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	6.9	
COD	mg/L	600	65.0	
TSS	mg/L	300	< 4.0	
Radionuclides				
Gross Alpha	pCi/L	3,000	< 7	U
Gross Beta	pCi/L	50	19	
Ra-226	pCi/L	10	1.87	
Ra-228	pCi/L	30	0.97	J (RL 1.0)
Th-228	pCi/L	2,000	< 0.23	U
Th-230	pCi/L	1,000	< 0.09	U
Th-232	pCi/L	300	< 0.14	U
U-234	pCi/L		< 0.001	NR
U-235/6	pCi/L		< 0.15	U
U-238	pCi/L		0.22	
Total Uranium	*pCi/L*	*3,000*	*< 0.371*	

10 CFR 20 Appendix B Table 3 Values

Analyte	Units	Limit	Discharge Concentration	Averaged Concentration
Ra-226	pCi/L	0.6	1.87	0.004
Ra-228	pCi/L	0.6	0.97	0.002
Th-228	pCi/L	2	0.23	0.000
Th-230	pCi/L	1	0.09	0.000
Th-232	pCi/L	0.3	0.14	0.000
U-234	pCi/L	3	0.001	0.000
U-235/6	pCi/L	3	0.15	0.000
U-238	pCi/L	3	0.22	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.013*

Discharge Volume (gals) = 40,000

Covidien averaging factor[2] = 0.002

Analyte	Units	Annual Limit	Discharge Activity	Year to Date Activity
Gross Radioactivity	Ci	1	3.9E-06	9.5E-05

Notes:

(1) 'B' indicates estimated value; 'U' indicates result less than sample detection limit; 'ND' indicates not detected; 'NR' indicates not reported. 'J' less than Reporting Limit

(2) derived from discharge volume divided by a Covidien minimum average monthly volume (20,000,000 gal)

Discharge Log for Area 5 Processing Frac Tanks

CT Covidien Plant — Discharge 038

Contractor: AECOM

Date Start Discharge: 8/16/2011 — Notified MSD, Steve Grace, (314) 436-8755
Email via Karen Burke

Date Discharged Completed: 8/16/2011 — Notified MSD, Steve Grace, (314) 436-8755

Annalytical Results:			
Various:		Total Metals:	
pH:	See Results In Monthly Summary	Cadmium:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary	Chromium:	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary	Copper:	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary	Iron:	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary	Lead:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary	Nickel:	See Results In Monthly Summary
		Zinc:	See Results In Monthly Summary
Isotopic			
U-235	See Results In Monthly Summary		
U-238	See Results In Monthly Summary		
Ra-226	See Results In Monthly Summary		
Ra-228	See Results In Monthly Summary		
Th-230	See Results In Monthly Summary		
Th-232	See Results In Monthly Summary		

			Start		Stop	
Signurature	Frac Tank ID#	Date	Time	Gallons	Time	Gallons
	255824	8/16/2011	0700	20000	xxx	xxx
	255824	8/16/2011	xxx	xxx	0930	0
	239801	8/16/2011	0705	20000	xxx	xxx
	239801	8/16/2011	xxx	xxx	0930	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time: 2.5 Hours
Total Volume 40000 Gallons

Wastewater Discharge 038 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8029

Sample Date: 15 Aug 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	ND
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	ND
Iron	mg/L	150	< 0.1	
Nickel	mg/L	2.3	< 0.04	ND
Lead	mg/L	0.4	< 0.01	ND
Zinc	mg/L	3	0.0597	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	6.8	
COD	mg/L	600	39.0	
TSS	mg/L	300	< 4.0	
Radionuclides				
Gross Alpha	pCi/L	3,000	< 11	U
Gross Beta	pCi/L	50	19.3	
Ra-226	pCi/L	10	2.42	
Ra-228	pCi/L	30	1.1	
Th-228	pCi/L	2,000	< 0.14	U
Th-230	pCi/L	1,000	0.27	
Th-232	pCi/L	300	< 0.074	U
U-234	pCi/L		< 0.001	NR
U-235/6	pCi/L		< 0.14	U
U-238	pCi/L		< 0.15	U
Total Uranium	*pCi/L*	*3,000*	*< 0.291*	

10 CFR 20 Appendix B Table 3 Values

Analyte	Units	Limit	Discharge Concentration	Averaged Concentration
Ra-226	pCi/L	0.6	2.42	0.005
Ra-228	pCi/L	0.6	1.1	0.002
Th-228	pCi/L	2	0.14	0.000
Th-230	pCi/L	1	0.27	0.001
Th-232	pCi/L	0.3	0.074	0.000
U-234	pCi/L	3	0.001	0.000
U-235/6	pCi/L	3	0.14	0.000
U-238	pCi/L	3	0.15	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.015*

Discharge Volume (gals) = 40,000

Covidien averaging factor[2] = 0.002

Analyte	Units	Annual Limit	Discharge Activity	Year to Date Activity
Gross Radioactivity	Ci	1	4.6E-06	9.95E-05

Notes:

(1) 'B' indicates estimated value; 'U' indicates result less than sample detection limit; 'ND' indicates not detected; 'NR' indicates not reported. 'J' less than Reporting Limit

(2) derived from discharge volume divided by a Covidien minimum average monthly volume (20,000,000 gal)

Discharge Log for Area 5 Processing Frac Tanks

CT Covidien Plant — Discharge 039

Contractor: AECOM

Date Start Discharge: 8/18/2011 — Notified MSD, Steve Grace, (314) 436-8755
Email via Karen Burke

Date Discharged Completed: 8/18/2011 — Notified MSD, Steve Grace, (314) 436-8755

Annalytical Results:			
Various:		Total Metals:	
pH:	See Results In Monthly Summary	Cadmium	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary	Chromium	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary	Copper	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary	Iron	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary	Lead:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary	Nickel	See Results In Monthly Summary
		Zinc	See Results In Monthly Summary
Isotopic			
U-235	See Results In Monthly Summary		
U-238	See Results In Monthly Summary		
Ra-226	See Results In Monthly Summary		
Ra-228	See Results In Monthly Summary		
Th-230	See Results In Monthly Summary		
Th-232	See Results In Monthly Summary		

			Start		Stop	
Signurature	Frac Tank ID#	Date	Time	Gallons	Time	Gallons
[illegible]	255824	8/18/2011	0700	20000	xxx	xxx
[illegible]	255824	8/18/2011	xxx	xxx	0930	0
[illegible]	239801	8/18/2011	0705	20000	xxx	xxx
[illegible]	239801	8/18/2011	xxx	xxx	0930	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time: 2.5 Hours
Total Volume 40000 Gallons

Wastewater Discharge 039 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8030

Sample Date: 16 Aug 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	ND
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	ND
Iron	mg/L	150	< 0.1	
Nickel	mg/L	2.3	< 0.04	ND
Lead	mg/L	0.4	< 0.01	ND
Zinc	mg/L	3	0.0399	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.0	
COD	mg/L	600	49.0	
TSS	mg/L	300	< 4.0	
Radionuclides				
Gross Alpha	pCi/L	3,000	< 10	U
Gross Beta	pCi/L	50	19.3	
Ra-226	pCi/L	10	2.72	
Ra-228	pCi/L	30	0.86	J
Th-228	pCi/L	2,000	< 0.22	U
Th-230	pCi/L	1,000	< 0.083	U
Th-232	pCi/L	300	< 0.15	U
U-234	pCi/L		< 0.001	NR
U-235/6	pCi/L		< 0.13	U
U-238	pCi/L		0.29	
Total Uranium	*pCi/L*	*3,000*	*< 0.421*	

10 CFR 20 Appendix B Table 3 Values

Analyte	Units	Limit	Discharge Concentration	Averaged Concentration
Ra-226	pCi/L	0.6	2.72	0.005
Ra-228	pCi/L	0.6	0.86	0.002
Th-228	pCi/L	2	0.22	0.000
Th-230	pCi/L	1	0.083	0.000
Th-232	pCi/L	0.3	0.15	0.000
U-234	pCi/L	3	0.001	0.000
U-235/6	pCi/L	3	0.13	0.000
U-238	pCi/L	3	0.29	0.001
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.016*

Discharge Volume (gals) = 40,000

Covidien averaging factor[2] = 0.002

Analyte	Units	Annual Limit	Discharge Activity	Year to Date Activity
Gross Radioactivity	Ci	1	4.4E-06	1.039E-04

Notes:

(1) 'B' indicates estimated value; 'U' indicates result less than sample detection limit; 'ND' indicates not detected; 'NR' indicates not reported. 'J' less than Reporting Limit

(2) derived from discharge volume divided by a Covidien minimum average monthly volume (20,000,000 gal)

Discharge Log for Area 5 Processing Frac Tanks

CT Covidien Plant — Discharge 040

Contractor: AECOM

Date Start Discharge: 8/23/2011 — Notified MSD, Steve Grace, (314) 436-8755
Email via Karen Burke

Date Discharged Completed: 8/23/2011 — Notified MSD, Steve Grace, (314) 436-8755

Annalytical Results:

Various:	
pH:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary

Total Metals:	
Cadmium:	See Results In Monthly Summary
Chromium:	See Results In Monthly Summary
Copper:	See Results In Monthly Summary
Iron:	See Results In Monthly Summary
Lead:	See Results In Monthly Summary
Nickel:	See Results In Monthly Summary
Zinc:	See Results In Monthly Summary

Isotopic	
U-235	See Results In Monthly Summary
U-238	See Results In Monthly Summary
Ra-226	See Results In Monthly Summary
Ra-228	See Results In Monthly Summary
Th-230	See Results In Monthly Summary
Th-232	See Results In Monthly Summary

			Start		Stop	
Signuraturc	Frac Tank ID#	Date	Time	Gallons	Time	Gallons
	255824	8/23/2011	0700	20000	xxx	xxx
	255824	8/23/2011	xxx	xxx	0930	0
	239801	8/23/2011	0705	20000	xxx	xxx
	239801	8/23/2011	xxx	xxx	0930	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time: 2.5 Hours
Total Volume 40000 Gallons

Wastewater Discharge 040 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8031

Sample Date: 18 Aug 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	ND
Iron	mg/L	150	< 0.1	
Nickel	mg/L	2.3	< 0.04	ND
Lead	mg/L	0.4	< 0.01	ND
Zinc	mg/L	3	0.0383	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.0	
COD	mg/L	600	54.0	
TSS	mg/L	300	< 4.0	
Radionuclides				
Gross Alpha	pCi/L	3,000	< 8.8	U
Gross Beta	pCi/L	50	15.9	
Ra-226	pCi/L	10	2.83	
Ra-228	pCi/L	30	0.76	J
Th-228	pCi/L	2,000	< 0.15	U
Th-230	pCi/L	1,000	0.11	
Th-232	pCi/L	300	< 0.075	U
U-234	pCi/L		< 0.001	NR
U-235/6	pCi/L		< 0.12	U
U-238	pCi/L		0.24	
Total Uranium	*pCi/L*	*3,000*	*< 0.361*	

10 CFR 20 Appendix B Table 3 Values

Analyte	Units	Limit	Discharge Concentration	Averaged Concentration
Ra-226	pCi/L	0.6	2.83	0.006
Ra-228	pCi/L	0.6	0.76	0.002
Th-228	pCi/L	2	0.15	0.000
Th-230	pCi/L	1	0.11	0.000
Th-232	pCi/L	0.3	0.075	0.000
U-234	pCi/L	3	0.001	0.000
U-235/6	pCi/L	3	0.12	0.000
U-238	pCi/L	3	0.24	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.015*

Discharge Volume (gals) = 40,000

Covidien averaging factor[2] = 0.002

Analyte	Units	Annual Limit	Discharge Activity	Year to Date Activity
Gross Radioactivity	Ci	1	3.7E-06	1.077E-04

Notes:

(1) 'B' indicates estimated value; 'U' indicates result less than sample detection limit; 'ND' indicates not detected; 'NR' indicates not reported. 'J' less than Reporting Limit

(2) derived from discharge volume divided by a Covidien minimum average monthly volume (20,000,000 gal)

Discharge Log for Area 5 Processing Frac Tanks

CT Covidien Plant — Discharge 041

Contractor: AECOM

Date Start Discharge: 8/24/2011 — Notified MSD, Steve Grace, (314) 436-8755
Email via Karen Burke

Date Discharged Completed: 8/24/2011 — Notified MSD, Steve Grace, (314) 436-8755

Annalytical Results.			
Various:		Total Metals:	
pH:	See Results In Monthly Summary	Cadmium:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary	Chromium:	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary	Copper:	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary	Iron:	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary	Lead:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary	Nickel:	See Results In Monthly Summary
		Zinc:	See Results In Monthly Summary
Isotopic			
U-235	See Results In Monthly Summary		
U-238	See Results In Monthly Summary		
Ra-226	See Results In Monthly Summary		
Ra-228	See Results In Monthly Summary		
Th-230	See Results In Monthly Summary		
Th-232	See Results In Monthly Summary		

			Start		Stop	
Signurature	Frac Tank ID#	Date	Time	Gallons	Time	Gallons
	255824	8/24/2011	0700	10000	xxx	xxx
	255824	8/24/2011	xxx	xxx	0930	0
	239801	8/24/2011	0705	20000	xxx	xxx
	239801	8/24/2011	xxx	xxx	0930	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time: 2.5 Hours
Total Volume 30000 Gallons

Wastewater Discharge 041 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8032

Sample Date: 23 Aug 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	ND
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	ND
Iron	mg/L	150	< 0.1	
Nickel	mg/L	2.3	< 0.04	
Lead	mg/L	0.4	< 0.01	ND
Zinc	mg/L	3	0.0454	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.5	
COD	mg/L	600	47.0	
TSS	mg/L	300	< 4.0	
Radionuclides				
Gross Alpha	pCi/L	3,000	< 10	U
Gross Beta	pCi/L	50	18.7	
Ra-226	pCi/L	10	2.26	
Ra-228	pCi/L	30	1.37	
Th-228	pCi/L	2,000	< 0.13	U
Th-230	pCi/L	1,000	< 0.13	U
Th-232	pCi/L	300	< 0.12	U
U-234	pCi/L		< 0.001	NR
U-235/6	pCi/L		< 0.09	U
U-238	pCi/L		0.24	
Total Uranium	*pCi/L*	*3,000*	*< 0.331*	

10 CFR 20 Appendix B Table 3 Values

Analyte	Units	Limit	Discharge Concentration	Averaged Concentration
Ra-226	pCi/L	0.6	2.26	0.003
Ra-228	pCi/L	0.6	1.37	0.002
Th-228	pCi/L	2	0.13	0.000
Th-230	pCi/L	1	0.13	0.000
Th-232	pCi/L	0.3	0.12	0.000
U-234	pCi/L	3	0.001	0.000
U-235/6	pCi/L	3	0.09	0.000
U-238	pCi/L	3	0.24	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.012*

Discharge Volume (gals) = 30,000

Covidien averaging factor[2] = 0.002

Analyte	Units	Annual Limit	Discharge Activity	Year to Date Activity
Gross Radioactivity	Ci	1	3.3E-06	1.109E-04

Notes:

(1) 'B' indicates estimated value; 'U' indicates result less than sample detection limit; 'ND' indicates not detected; 'NR' indicates not reported. 'J' less than Reporting Limit

(2) derived from discharge volume divided by a Covidien minimum average monthly volume (20,000,000 gal)

Discharge Log for Area 5 Processing Frac Tanks

CT Covidien Plant — Discharge 042

Contractor: AECOM

Date Start Discharge: 8/26/2011 — Notified MSD, Steve Grace, (314) 436-8755
Email via Karen Burke

Date Discharged Completed: 8/26/2011 — Notified MSD, Steve Grace, (314) 436-8755

Annalytical Results:			
Various:		Total Metals:	
pH:	See Results In Monthly Summary	Cadmium:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary	Chromium	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary	Copper:	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary	Iron	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary	Lead	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary	Nickel	See Results In Monthly Summary
		Zinc	See Results In Monthly Summary
Isotopic			
U-235	See Results In Monthly Summary		
U-238	See Results In Monthly Summary		
Ra-226	See Results In Monthly Summary		
Ra-228	See Results In Monthly Summary		
Th-230	See Results In Monthly Summary		
Th-232	See Results In Monthly Summary		

			Start		Stop	
Signurature	Frac Tank ID#	Date	Time	Gallons	Time	Gallons
	255824	8/26/2011	0700	10000	xxx	xxx
	255824	8/26/2011	xxx	xxx	0930	0
	239801	8/26/2011	0705	20000	xxx	xxx
	239801	8/26/2011	xxx	xxx	0930	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time: 2.5 Hours
Total Volume: 30000 Gallons

Wastewater Discharge 042 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8033

Sample Date: 24 Aug 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	ND
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	
Iron	mg/L	150	< 0.1	
Nickel	mg/L	2.3	< 0.04	ND
Lead	mg/L	0.4	< 0.01	ND
Zinc	mg/L	3	0.051	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.2	
COD	mg/L	600	54.0	
TSS	mg/L	300	< 4.0	
Radionuclides				
Gross Alpha	pCi/L	3,000	< 13	U
Gross Beta	pCi/L	50	22.5	
Ra-226	pCi/L	10	3.2	
Ra-228	pCi/L	30	0.98	J (RL 1.0)
Th-228	pCi/L	2,000	< 0.091	U
Th-230	pCi/L	1,000	< 0.16	U
Th-232	pCi/L	300	< 0.14	U
U-234	pCi/L		< 0.001	NR
U-235/6	pCi/L		< 0.24	U
U-238	pCi/L		0.56	
Total Uranium	*pCi/L*	*3,000*	*< 0.801*	

10 CFR 20 Appendix B Table 3 Values

Analyte	Units	Limit	Discharge Concentration	Averaged Concentration
Ra-226	pCi/L	0.6	3.2	0.005
Ra-228	pCi/L	0.6	0.98	0.001
Th-228	pCi/L	2	0.091	0.000
Th-230	pCi/L	1	0.16	0.000
Th-232	pCi/L	0.3	0.14	0.000
U-234	pCi/L	3	0.001	0.000
U-235/6	pCi/L	3	0.24	0.000
U-238	pCi/L	3	0.56	0.001
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.013*

Discharge Volume (gals) = 30,000

Covidien averaging factor[2] = 0.002

Analyte	Units	Annual Limit	Discharge Activity	Year to Date Activity
Gross Radioactivity	Ci	1	4.0E-06	1.150E-04

Notes:

(1) 'B' indicates estimated value; 'U' indicates result less than sample detection limit; 'ND' indicates not detected; 'NR' indicates not reported. 'J' less than Reporting Limit

(2) derived from discharge volume divided by a Covidien minimum average monthly volume (20,000,000 gal)

Discharge Log for Area 5 Processing Frac Tanks

CT Covidien Plant — Discharge 043

Contractor: AECOM

Date Start Discharge: 8/29/2011 — Notified MSD, Steve Grace, (314) 436-8755
Email via Karen Burke

Date Discharged Completed: 8/29/2011 — Notified MSD, Steve Grace, (314) 436-8755

Annalytical Results:			
Various:		Total Metals:	
pH:	See Results In Monthly Summary	Cadmium	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary	Chromium	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary	Copper	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary	Iron	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary	Lead:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary	Nickel	See Results In Monthly Summary
		Zinc:	See Results In Monthly Summary
Isotopic			
U-235	See Results In Monthly Summary		
U-238	See Results In Monthly Summary		
Ra-226	See Results In Monthly Summary		
Ra-228	See Results In Monthly Summary		
Th-230	See Results In Monthly Summary		
Th-232	See Results In Monthly Summary		

			Start		Stop	
Signurature	Frac Tank ID#	Date	Time	Gallons	Time	Gallons
[illegible]	255824	8/29/2011	0700	20000	xxx	xxx
[illegible]	255824	8/29/2011	xxx	xxx	0930	0
[illegible]	239801	8/29/2011	0705	20000	xxx	xxx
[illegible]	239801	8/29/2011	xxx	xxx	0930	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time: 7.5 Hours
Total Volume: 40000 Gallons

Wastewater Discharge 043 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8034

Sample Date: 26 Aug 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	ND
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	ND
Iron	mg/L	150	< 0.1	ND
Nickel	mg/L	2.3	< 0.04	ND
Lead	mg/L	0.4	< 0.01	ND
Zinc	mg/L	3	0.0399	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.4	
COD	mg/L	600	57.0	
TSS	mg/L	300	< 4.0	ND
Radionuclides				
Gross Alpha	pCi/L	3,000	9.4	
Gross Beta	pCi/L	50	13.8	
Ra-226	pCi/L	10	2.65	
Ra-228	pCi/L	30	0.96	J (RL 1.0)
Th-228	pCi/L	2,000	< 0.22	U
Th-230	pCi/L	1,000	< 0.13	U
Th-232	pCi/L	300	< 0.15	U
U-234	pCi/L		< 0.001	NR
U-235/6	pCi/L		< 0.12	U
U-238	pCi/L		0.22	
Total Uranium	*pCi/L*	*3,000*	*< 0.341*	

10 CFR 20 Appendix B Table 3 Values

Analyte	Units	Limit	Discharge Concentration	Averaged Concentration
Ra-226	pCi/L	0.6	2.65	0.005
Ra-228	pCi/L	0.6	0.96	0.002
Th-228	pCi/L	2	0.22	0.000
Th-230	pCi/L	1	0.13	0.000
Th-232	pCi/L	0.3	0.15	0.000
U-234	pCi/L	3	0.001	0.000
U-235/6	pCi/L	3	0.12	0.000
U-238	pCi/L	3	0.22	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.016*

Discharge Volume (gals) = 40,000

Covidien averaging factor[2] = 0.002

Analyte	Units	Annual Limit	Discharge Activity	Year to Date Activity
Gross Radioactivity	Ci	1	3.5E-06	1.185E-04

Notes:

(1) 'B' indicates estimated value; 'U' indicates result less than sample detection limit; 'ND' indicates not detected; 'NR' indicates not reported. 'J' less than Reporting Limit

(2) derived from discharge volume divided by a Covidien minimum average monthly volume (20,000,000 gal)

Discharge Log for Plant 5 Water Processing Frac Tanks

CT Covidien Plant — Discharge 044

Contractor: AECOM

Date Discharge Started: 8/29/2011 *Notified MSD, Steve Grace, (314) 436-8755*
Email via Karen Burke

Date Discharged Completed: 8/29/2011 *Notified MSD, Steve Grace, (314) 436-8755*

Annalytical Results:

Various:	
pH:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary

Total Metals:	
Cadmium:	See Results In Monthly Summary
Chromium:	See Results In Monthly Summary
Copper:	See Results In Monthly Summary
Iron:	See Results In Monthly Summary
Lead:	See Results In Monthly Summary
Nickel:	See Results In Monthly Summary
Zinc:	See Results In Monthly Summary

Isotopic	
U-235	See Results In Monthly Summary
U-238	See Results In Monthly Summary
Ra-226	See Results In Monthly Summary
Ra-228	See Results In Monthly Summary
Th-230	See Results In Monthly Summary
Th-232	See Results In Monthly Summary

			Start		Stop	
Signurature	Frac Tank ID#	Date	Time	Gallons	Time	Gallons
[signature]	255824	8/29/2011	700	20000	xxx	xxx
[signature]	255824	8/29/2011	xxx	xxx	1100	0
[signature]	239801	8/29/2011	700	20000	xxx	xxx
[signature]	239801	8/29/2011	xxx	xxx	1100	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time: 4 Hours
Total Volume 40000 Gallons

Wastewater Discharge 044 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8035

Sample Date: 26 Aug 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	ND
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	ND
Iron	mg/L	150	< 0.1	ND
Nickel	mg/L	2.3	< 0.04	ND
Lead	mg/L	0.4	< 0.01	ND
Zinc	mg/L	3	0.0447	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.4	
COD	mg/L	600	51.0	
TSS	mg/L	300	< 4.0	ND
Radionuclides				
Gross Alpha	pCi/L	3,000	< 11	U
Gross Beta	pCi/L	50	10.3	
Ra-226	pCi/L	10	3.17	
Ra-228	pCi/L	30	0.72	J (RL 1.0)
Th-228	pCi/L	2,000	< 0.21	U
Th-230	pCi/L	1,000	< 0.13	U
Th-232	pCi/L	300	< 0.071	U
U-234	pCi/L		< 0.001	NR
U-235/6	pCi/L		< 0.092	U
U-238	pCi/L		0.6	
Total Uranium	*pCi/L*	*3,000*	*< 0.693*	

10 CFR 20 Appendix B Table 3 Values

Analyte	Units	Limit	Discharge Concentration	Averaged Concentration
Ra-226	pCi/L	0.6	3.17	0.006
Ra-228	pCi/L	0.6	0.72	0.001
Th-228	pCi/L	2	0.21	0.000
Th-230	pCi/L	1	0.13	0.000
Th-232	pCi/L	0.3	0.071	0.000
U-234	pCi/L	3	0.001	0.000
U-235/6	pCi/L	3	0.092	0.000
U-238	pCi/L	3	0.6	0.001
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.016*

Discharge Volume (gals) = 40,000

Covidien averaging factor[2] = 0.002

Analyte	Units	Annual Limit	Discharge Activity	Year to Date Activity
Gross Radioactivity	Ci	1	3.2E-06	1.217E-04

Notes:

(1) 'B' indicates estimated value; 'U' indicates result less than sample detection limit; 'ND' indicates not detected; 'NR' indicates not reported. 'J' less than Reporting Limit

(2) derived from discharge volume divided by a Covidien minimum average monthly volume (20,000,000 gal)

Discharge Log for Area 5 Processing Frac Tanks

CT Covidien Plant — Discharge 45

Contractor: AECOM

Date Start Discharge: 8/30/11 — Notified MSD, Steve Grace, (314) 436-8755
Email via Karen Burke

Date Discharged Completed: 8/30/11 — Notified MSD, Steve Grace, (314) 436-8755

Annalytical Results:

Various:	
pH:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary

Total Metals:	
Cadmium:	See Results In Monthly Summary
Chromium:	See Results In Monthly Summary
Copper:	See Results In Monthly Summary
Iron:	See Results In Monthly Summary
Lead:	See Results In Monthly Summary
Nickel:	See Results In Monthly Summary
Zinc:	See Results In Monthly Summary

Isotopic	
U-235	See Results In Monthly Summary
U-238	See Results In Monthly Summary
Ra-226	See Results In Monthly Summary
Ra-228	See Results In Monthly Summary
Th-230	See Results In Monthly Summary
Th-232	See Results In Monthly Summary

Signurature	Frac Tank ID#	Date	Start		Stop	
			Time	Gallons	Time	Gallons
[illegible]	255824	8/30/11	1100	20000	xxx	xxx
[illegible]	255824	8/30/11	xxx	xxx	1500	0
[illegible]	239801	8/30/11	1100	20,000	xxx	xxx
[illegible]	239801	8/30/11	xxx	xxx	1500	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time: 4 Hours
Total Volume 40,000 Gallons

Wastewater Discharge 045 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8036

Sample Date: 30 Aug 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	ND
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	ND
Iron	mg/L	150	< 0.1	ND
Nickel	mg/L	2.3	< 0.04	ND
Lead	mg/L	0.4	< 0.01	ND
Zinc	mg/L	3	0.0385	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.4	
COD	mg/L	600	64.0	
TSS	mg/L	300	< 4.0	
Radionuclides				
Gross Alpha	pCi/L	3,000	< 14	U
Gross Beta	pCi/L	50	15.6	
Ra-226	pCi/L	10	2.58	
Ra-228	pCi/L	30	0.57	J (RL 1.0)
Th-228	pCi/L	2,000	< 0.18	U
Th-230	pCi/L	1,000	< 0.18	U
Th-232	pCi/L	300	< 0.16	U
U-234	pCi/L		< 0.001	NR
U-235/6	pCi/L		< 0.08	U
U-238	pCi/L		0.61	
Total Uranium	*pCi/L*	*3,000*	*< 0.691*	

10 CFR 20 Appendix B Table 3 Values

Analyte	Units	Limit	Discharge Concentration	Averaged Concentration
Ra-226	pCi/L	0.6	2.58	0.005
Ra-228	pCi/L	0.6	0.57	0.001
Th-228	pCi/L	2	0.18	0.000
Th-230	pCi/L	1	0.18	0.000
Th-232	pCi/L	0.3	0.16	0.000
U-234	pCi/L	3	0.001	0.000
U-235/6	pCi/L	3	0.08	0.000
U-238	pCi/L	3	0.61	0.001
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.015*

Discharge Volume (gals) = 40,000

Covidien averaging factor[2] = 0.002

Analyte	Units	Annual Limit	Discharge Activity	Year to Date Activity
Gross Radioactivity	Ci	1	4.5E-06	1.262E-04

Notes:

(1) 'B' indicates estimated value; 'U' indicates result less than sample detection limit; 'ND' indicates not detected; 'NR' indicates not reported. 'J' less than Reporting Limit

(2) derived from discharge volume divided by a Covidien minimum average monthly volume (20,000,000 gal)

Discharge Log for Area 5 Processing Frac Tanks

CT Covidien Plant — Discharge 4a

Contractor: AECOM

Date Start Discharge: 8/31/11 — Notified MSD, Steve Grace, (314) 436-8755
Email via Karen Burke

Date Discharged Completed: 8/31/11 — Notified MSD, Steve Grace, (314) 436-8755

Annalytical Results:

Various:	
pH:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary

Total Metals:	
Cadmium:	See Results In Monthly Summary
Chromium:	See Results In Monthly Summary
Copper:	See Results In Monthly Summary
Iron:	See Results In Monthly Summary
Lead:	See Results In Monthly Summary
Nickel:	See Results In Monthly Summary
Zinc:	See Results In Monthly Summary

Isotopic	
U-235	See Results In Monthly Summary
U-238	See Results In Monthly Summary
Ra-226	See Results In Monthly Summary
Ra-228	See Results In Monthly Summary
Th-230	See Results In Monthly Summary
Th-232	See Results In Monthly Summary

Signurature	Frac Tank ID#	Date	Start Time	Start Gallons	Stop Time	Stop Gallons
[illegible]	255824	8/31/11	800	20,000	xxx	xxx
[illegible]	255824	9/31/11	xxx	xxx	1200	0
[illegible]	239801	8/31/11	800	20,000	xxx	xxx
[illegible]	239801	9/31/11	xxx	xxx	1200	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time: 4 Hours
Total Volume 40,000 Gallons

Wastewater Discharge 046 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8037

Sample Date: 31 Aug 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	ND
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	ND
Iron	mg/L	150	< 0.1	ND
Nickel	mg/L	2.3	< 0.04	ND
Lead	mg/L	0.4	< 0.01	ND
Zinc	mg/L	3	0.05	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.3	
COD	mg/L	600	50.0	
TSS	mg/L	300	< 4.0	
Radionuclides				
Gross Alpha	pCi/L	3,000	< 17	U
Gross Beta	pCi/L	50	18.9	
Ra-226	pCi/L	10	3.01	
Ra-228	pCi/L	30	0.82	J (RL 1.0)
Th-228	pCi/L	2,000	< 0.48	U
Th-230	pCi/L	1,000	0.25	
Th-232	pCi/L	300	< 0.31	U
U-234	pCi/L		< 0.001	NR
U-235/6	pCi/L		< 0.23	U
U-238	pCi/L		0.47	
Total Uranium	*pCi/L*	*3,000*	*< 0.701*	

10 CFR 20 Appendix B Table 3 Values

Analyte	Units	Limit	Discharge Concentration	Averaged Concentration
Ra-226	pCi/L	0.6	3.01	0.006
Ra-228	pCi/L	0.6	0.82	0.002
Th-228	pCi/L	2	0.48	0.001
Th-230	pCi/L	1	0.25	0.001
Th-232	pCi/L	0.3	0.31	0.001
U-234	pCi/L	3	0.001	0.000
U-235/6	pCi/L	3	0.23	0.000
U-238	pCi/L	3	0.47	0.001
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.018*

Discharge Volume (gals) = 40,000

Covidien averaging factor[2] = 0.002

Analyte	Units	Annual Limit	Discharge Activity	Year to Date Activity
Gross Radioactivity	Ci	1	5.4E-06	1.316E-04

Notes:

(1) 'B' indicates estimated value; 'U' indicates result less than sample detection limit; 'ND' indicates not detected; 'NR' indicates not reported. 'J' less than Reporting Limit

(2) derived from discharge volume divided by a Covidien minimum average monthly volume (20,000,000 gal)

IU - Mallinckrodt Inc.
21120596-00 SPB52

Steve Grace

From: Steve Grace
Sent: Tuesday, November 29, 2011 1:43 PM
To: 'Crouch, Amber'
Subject: RE: Discharge of Wastewater from Spill Tanks Under Special Discharge Permit Dated 10/24/11

Hello Amber,

As no wastewater was discharged onsite, no billing invoice will be required. I will go ahead and change to status of this approval to "closed"...nothing more needs to be done on your part.

Thanks for submitting this update!

Steve Grace

From: Crouch, Amber [mailto:Amber.Crouch@Covidien.com]
Sent: Tuesday, November 29, 2011 12:19 PM
To: Steve Grace
Subject: Discharge of Wastewater from Spill Tanks Under Special Discharge Permit Dated 10/24/11

Steve,

On October 24th, 2011, approval was received from MSD to discharge up to 8500 gallons of wastewater from two tank clean outs. On November 3rd, 2011 the first tank was cleaned out. No water was discharged on site. Approximately 3000 gallons of material was sent to MSD on hauled waste receipt 082088.

On November 16th, 2011 the second tank was cleaned out. No water was discharged on site. Approximately 3000 gallons of material was sent to MSD on hauled waste receipt 082076.

Please call me if you have any questions or need additional information.

Thanks,

Amber Crouch
Senior HSE Engineer
Covidien
3600 North Second Street
St. Louis, MO 63147
USA
(314) 654-0127 office
(314) 253-2213 pager
(314) 654-1251 fax
www.covidien.com
This information may be confidential and/or privileged. Use of this information by anyone other than the intended recipient is prohibited. If you receive this in error, please inform the sender and remove any record of this message.

Steve Grace

From: Crouch, Amber [Amber.Crouch@Covidien.com]
Sent: Tuesday, November 29, 2011 12:19 PM
To: Steve Grace
Subject: Discharge of Wastewater from Spill Tanks Under Special Discharge Permit Dated 10/24/11

Steve,

On October 24th, 2011, approval was received from MSD to discharge up to 8500 gallons of wastewater from two tank clean outs. On November 3rd, 2011 the first tank was cleaned out. No water was discharged on site. Approximately 3000 gallons of material was sent to MSD on hauled waste receipt 082088.

On November 16th, 2011 the second tank was cleaned out. No water was discharged on site. Approximately 3000 gallons of material was sent to MSD on hauled waste receipt 082076.

Please call me if you have any questions or need additional information.

Thanks,

Amber Crouch
Senior HSE Engineer
Covidien
3600 North Second Street
St. Louis, MO 63147
USA
(314) 654-0127 office
(314) 253-2213 pager
(314) 654-1251 fax
www.covidien.com
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MALLINCKRODT
2112059700

COVIDIEN

November 23, 2011

Mr. Doug Mendoza
Manager, Environmental Compliance
St. Louis Metropolitan Sewer District
10 East Grand Ave
St. Louis, MO 63147

RE: Follow-up to the Ethylene Glycol Release from Building 97 at the St. Louis Plant
PERMIT NO. 2112059600-3

Dear Mr. Mendoza:

This letter is a follow-up to an unplanned release of approximately 5 gallons of a 50% ethylene glycol and water solution from Building 97 at the Mallinckrodt St. Louis Plant as reported via phone call to MSD dispatch on November 20, 2011 by Covidien employee Ken Coffey.

At approximately 1215 on November 20, 2011, an employee was walking by the Hotwell Glycol Storage Tank (T-3017) outside Building 97 and noticed glycol leaking from the tank. Discharge valves from T-3017 were immediately closed to prevent additional discharge. It is estimated that 5 gallons of 50% glycol/ 50% water solution was discharged to the sewer. Approximately 100 gallons of the same solution was sent to the onsite PEG wastewater treatment system.

Upon investigation, it was discovered that the release was due to a hole in the glycol transfer line. Maintenance personnel replaced the pipe and the unit was put back into service. The ethylene glycol and water solution was discharged to a plant sewer and to MSD through the plant's main outfall, SP010.

Please call me at 314-654-1969 if you have any questions or need additional information.

Sincerely,

Julie Summers

Julie Summers
Environmental Manager

MALLINCKRODT
3600 NORTH SECOND STREET
ST. LOUIS, MO
63147

314-654-2000 [T]
314-654-1251 [F]

RECEIVED
NOV 28 2011
DIVISION OF
ENVIRONMENTAL COMPLIANCE

PIMS - Pretreatment Information Management System [PIMS St. Louis (PIMS)]

File Edit Records Worklists Reports/Letters Tools Window Help

General Info | Sample Points | Metering | Monitoring | Permits | Results | Compliance | Enforcement | Water Use | Spec Dischrg

Facility ID: 2112059600 Name: MALLINCKRODT LLC [2112059600] SIU: ☑ Class: Categorical Industrial User

Results

Start Date: 01/01/2010 End Date: Apply

Events | Inspections | Sampling | Limit Comp | Violations | SMDE | Gen Rpts | **Notifications** | Surcharge | Surcharge Export

Notification Type	Date
Problem Discharge - 5 Day Written Follow Up	12/23/2010
Self-Mon Discharge Viol - 1 Day Notice	12/23/2010
Problem Discharge - Immediate Notice	12/18/2010
Problem Discharge - 5 Day Written Follow Up	11/04/2010
Problem Discharge - Immediate Notice	10/30/2010
Problem Discharge - 5 Day Written Follow Up	10/21/2010
Problem Discharge - Immediate Notice	10/16/2010
Problem Discharge - 5 Day Written Follow Up	08/17/2010
Problem Discharge - Immediate Notice	08/10/2010
Problem Discharge - 5 Day Written Follow Up	05/27/2010
Problem Discharge - Immediate Notice	05/23/2010
Problem Discharge - 5 Day Written Follow Up	05/18/2010
Problem Discharge - Immediate Notice	05/13/2010
Problem Discharge - Immediate Notice	11/20/2011

Text

5 gallons of 50% ethylene glycol solution leaked to sewer in bldg 97. MSD Dispatcher notified by Mallinckrodt.

Save Successful

Nov 29, 2011 6:58:09 AM

start | Inbox - Microsoft Out... | PIMS - Pretreatment ... | Crystal Report Viewe... | 6:58 AM

Steve Grace

IU - Mallinckrodt Inc.
21120596-00 SP850

From: Steve Grace
Sent: Friday, November 18, 2011 4:35 PM
To: 'Burke, Karen'
Cc: Summers, Julie
Subject: RE: Wastewater Discharge 118

Hello Karen,

A review of the laboratory analytical data for Discharge 118 from the C-T Phase II decommissioning activities indicated this batch meets MSD Ordinance 12559 standards along with those outlined in 10 CFR Part 20, Appendix B, Table 3, and is approved for discharge into a combined sewer identified on MSD's base map as Inlet 18D1-395C. As a general reminder, the discharge into the sewer must be controlled at a rate that will not surcharge the lines in that area. In addition, the volume of this batch of wastewater must be confirmed in writing no later than 28 days after the date of this discharge. The approval for Discharge 118 is valid for 30 days from the date of this email.

Please contact me should you have any questions or require additional information.

Thank you,
Steve Grace

From: Burke, Karen [mailto:Karen.Burke@Covidien.com]
Sent: Friday, November 18, 2011 3:05 PM
To: Steve Grace
Cc: Summers, Julie
Subject: FW: Wastewater Discharge 118

Steve – The second Resin bed took longer to be delivered than what we thought. It arrived today and will be installed tomorrow. The final process design for the new system is attached for your review. In the meantime we will have water that was processed through the single new Resin bed, this batch (118) and two more batches (119 & 120) that will need review for discharge. After that we should have our first batch through the new redundant system (see attached process flow diagram) for your review prior to returning to direct discharging.

Discharge 118 analytical data is attached. Please review for discharge approval.

Karen

From: Cooper, Jerry [mailto:Jerry.Cooper@aecom.com]
Sent: Friday, November 18, 2011 1:37 PM
To: Burke, Karen; Summers, Julie
Cc: Martilla, Kevin; Larrabee, Robert; Matt Cushman; timmy Mock
Subject: Wastewater Discharge 118

Karen/Julie,
AECOM requests permission to discharge 40,000 gallons of treated rainwater and groundwater collected as part of the C-T Phase II decommissioning activities. This water was processed following the change-out of the resin beds. The wastewater discharge will be identified as Discharge 118. The laboratory analytical results demonstrate that the discharge will comply with the requirements of the Metropolitan St. Louis Sewer District as set forth in their letter to Lisa Meyer dated January 21, 2011. In addition, the discharge meets the monthly average concentrations for release to sanitary sewers per the requirements of 10 CFR 20.2003. Both a discharge summary and the detailed laboratory analytical results are attached for your information.

Jerry

Jerry Cooper, CHP PMP
Health Physics/Radiological Services

11/18/2011

D 210-253-7555 C 210-413-9891
jerry.cooper@aecom.com

AECOM
8005 Outer Circle Rd, Brooks-City Base, TX 78235
T 210-271-0925 F 210-271-3061
www.aecom.com

11/18/2011

Wastewater Discharge 118 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8110

Sample Date: 09 Nov 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	
Iron	mg/L	150	0.219	
Nickel	mg/L	2.3	< 0.04	ND
Lead	mg/L	0.4	< 0.01	
Zinc	mg/L	3	0.0313	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.2	
COD	mg/L	600	25	
TSS	mg/L	300	< 4.0	
Radionuclides				
Gross Alpha	pCi/L	3,000	< 12	
Gross Beta	pCi/L	50	18.5	
Ra-226	pCi/L	10	0.38	
Ra-228	pCi/L	30	< 0.37	
Th-228	pCi/L	2,000	< 0.18	
Th-230	pCi/L	1,000	0.33	
Th-232	pCi/L	300	< 0.14	
U-234	pCi/L		< 0.001	NR
U-235/6	pCi/L		< 0.066	
U-238	pCi/L		< 0.084	
Total Uranium	*pCi/L*	*3,000*	*< 0.151*	

10 CFR 20 Appendix B Table 3 Values[2]

Analyte	Units	Regulatory Limit	Undiluted Concentration	Release Fraction
Ra-226	pCi/L	600	0.38	0.001
Ra-228	pCi/L	600	0.37	0.001
Th-228	pCi/L	2,000	0.18	0.000
Th-230	pCi/L	1,000	0.33	0.000
Th-232	pCi/L	300	0.14	0.000
U-234	pCi/L	3,000	0.001	0.000
U-235/6	pCi/L	3,000	0.066	0.000
U-238	pCi/L	3,000	0.084	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.002*

Discharge Volume (gals) = 40,000

Analyte	Units	Annual Limit	Discharge Activity	Year-to-Date Activity
Gross Radioactivity	Ci	1	4.6E-06	7.925E-04

Notes:

(1) 'B' indicates estimated value; 'U' result less than sample detection limit; 'ND' not detected; 'NR' not reported. 'J' method blank contamination. 'E' matrix interference

(2) assumes undiluted concentration for comparison with regulatory limit only

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

ANALYTICAL REPORT

Mallinckrodt St. Louis Plant

Lot #: F1K100451

Kevin Martilla

AECOM Technical Services Inc.
8005 Outer Circle Road
Brooks Air Force Bas, TX 78235

TESTAMERICA LABORATORIES, INC.

Jayna Awalt
Project Manager

November 18, 2011

Case Narrative
LOT NUMBER: **F1K100451**

This report contains the analytical results for the two samples received under chain of custody by TestAmerica St. Louis on November 10, 2011. These samples are associated with your Mallinckrodt St. Louis Plant project.

The analytical results included in this report meet all applicable quality control procedure requirements except as noted in the following case narrative.

The test results in this report meet all NELAP requirements for parameters in which accreditations are held by TestAmerica St. Louis. Any exceptions to NELAP requirements are noted in the case narrative. The case narrative is an integral part of this report.

All chemical analysis results are based upon sample as received, wet weight, unless noted otherwise. All radiochemistry results are based upon sample as dried and ground with the exception of tritium, unless requested wet weight by the client.

Observations/Nonconformances
Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

Volatile Organics Method 624
Batch: 1318194

The CCV recovery is outside the upper QC limit (greater than 20% D) for Acrolein, indicating a potential positive bias for this analyte in the samples associated with this CCV. This analyte was not detected above the reporting limit in the associated samples.
Affected Samples:
F1K100451 (1): 60162412-SMP-PL5-WW-OTH-8110
F1K100451 (2): VOC BLANKS

COD Method 410.4
Batch: 1319201

The matrix spike recovery for COD is outside the method QC limits of 90%-110%. In accordance with the method (section 9.4.3), if the LCS is within 90%-110%, the laboratory performance is shown to be in control. The recovery problem encountered is judged to be either matrix or solution related and not system related. Results are provided with this narrative.
Affected Samples:
F1K100451 (1): 60162412-SMP-PL5-WW-OTH-8110

Gross Alpha/Beta Method 9310 MOD
Batch: 1318152

The Gross Alpha matrix spike recovery is outside the upper QC limit due to possible matrix interference. The Gross Alpha LCS recovery is within QC limits demonstrating acceptable batch extraction. The sample results are reported for your review.
Affected Samples:
F1K100451 (1): 60162412-SMP-PL5-WW-OTH-8110

The Gross Alpha and Beta reporting limit was not met due to a reduction of sample size attributed to the sample's high residual mass. The analytical results are reported.
Affected Samples:
F1K100451 (1): 60162412-SMP-PL5-WW-OTH-8110

There are no other observations or non-conformances associated with the analyses contained in this report.

METHODS SUMMARY

F1K100451

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
pH Aqueous	SW846 9040	SW846 9040
Chemical Oxygen Demand	MCAWW 410.4	MCAWW 410.4
Gross Alpha/Beta by GFPC	SW846 9310 MOD	
Isotopic Thorium by Alpha Spectroscopy	EML A-01-R MOD	
Isotopic Uranium by Alpha Spectroscopy	EML A-01-R MOD	
Non-Filterable Residue (TSS)	MCAWW 160.2	MCAWW 160.2
Purgeables	CFR136A 624	SW846 5030B
Radium-226 by GFPC	EPA 903.0 MOD	
Radium-228 by GFPC	EPA 904 MOD	
Trace Inductively Coupled Plasma (ICP) Metals	SW846 6010B	

References:

CFR136A "Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EML "ENVIRONMENTAL MEASUREMENTS LABORATORY PROCEDURES MANUAL" HASL-300 28TH EDITION, VOLUME I and II DEPARTMENT OF ENERGY

EPA "EASTERN ENVIRONMENTAL RADIATION FACILITY RADIOCHEMISTRY PROCEDURES MANUAL" US EPA EPA 520/5-84-006 AUGUST 1984

MCAWW "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

SAMPLE SUMMARY

F1K100451

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
MNWW6	001	60162412-SMP-PL5-WW-OTH-8110	11/09/11	13:15
MNWXD	002	VOC BLANKS	11/09/11	

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

AECOM Technical Services Inc.

Client Sample ID: 60162412-SMP-PL5-WW-OTH-8110

GC/MS Volatiles

Lot-Sample #...: F1K100451-001 Work Order #...: MNWW61AM Matrix.....: WATER
Date Sampled...: 11/09/11 13:15 Date Received..: 11/10/11
Prep Date.....: 11/10/11 Analysis Date..: 11/11/11
Prep Batch #...: 1318194 Analysis Time..: 01:43
Dilution Factor: 1

Method.....: CFR136A 624

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acrolein	ND	10	ug/L
Acrylonitrile	ND	10	ug/L
Benzene	ND	1.0	ug/L
Bromoform	ND	1.0	ug/L
Bromomethane	ND	2.0	ug/L
Carbon tetrachloride	ND	1.0	ug/L
Chlorobenzene	ND	1.0	ug/L
Chlorodibromomethane	ND	1.0	ug/L
Chloroethane	ND	2.0	ug/L
Chloroform	ND	1.0	ug/L
Chloromethane	ND	2.0	ug/L
Dichlorobromomethane	ND	1.0	ug/L
1,1-Dichloroethane	ND	1.0	ug/L
1,2-Dichloroethane	ND	1.0	ug/L
1,1-Dichloroethene	ND	1.0	ug/L
1,2-Dichloroethene (total)	ND	2.0	ug/L
1,2-Dichloropropane	ND	1.0	ug/L
cis-1,3-Dichloropropene	ND	1.0	ug/L
trans-1,3-Dichloropropene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Methylene chloride	**0.29 J**	**1.0**	**ug/L**
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L
Tetrachloroethene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
1,1,1-Trichloroethane	ND	1.0	ug/L
1,1,2-Trichloroethane	ND	1.0	ug/L
Trichloroethene	ND	1.0	ug/L
Vinyl chloride	ND	2.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	95	(51 - 137)
Toluene-d8	95	(67 - 122)
4-Bromofluorobenzene	102	(64 - 126)

NOTE(S):

J Estimated result. Result is less than RL.

AECOM Technical Services Inc.

Client Sample ID: VOC BLANKS

GC/MS Volatiles

Lot-Sample #...: F1K100451-002 **Work Order #...:** MNWXD1AA **Matrix.....:** WATER
Date Sampled...: 11/09/11 **Date Received..:** 11/10/11
Prep Date.....: 11/10/11 **Analysis Date..:** 11/11/11
Prep Batch #...: 1318194 **Analysis Time..:** 01:20
Dilution Factor: 1

Method.....: CFR136A 624

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acrolein	ND	10	ug/L
Acrylonitrile	ND	10	ug/L
Benzene	ND	1.0	ug/L
Bromoform	ND	1.0	ug/L
Bromomethane	ND	2.0	ug/L
Carbon tetrachloride	ND	1.0	ug/L
Chlorobenzene	ND	1.0	ug/L
Chlorodibromomethane	ND	1.0	ug/L
Chloroethane	ND	2.0	ug/L
Chloroform	ND	1.0	ug/L
Chloromethane	ND	2.0	ug/L
Dichlorobromomethane	ND	1.0	ug/L
1,1-Dichloroethane	ND	1.0	ug/L
1,2-Dichloroethane	ND	1.0	ug/L
1,1-Dichloroethene	ND	1.0	ug/L
1,2-Dichloroethene (total)	ND	2.0	ug/L
1,2-Dichloropropane	ND	1.0	ug/L
cis-1,3-Dichloropropene	ND	1.0	ug/L
trans-1,3-Dichloropropene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Methylene chloride	**0.21 J**	**1.0**	**ug/L**
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L
Tetrachloroethene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
1,1,1-Trichloroethane	ND	1.0	ug/L
1,1,2-Trichloroethane	ND	1.0	ug/L
Trichloroethene	ND	1.0	ug/L
Vinyl chloride	ND	2.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	92	(51 - 137)
Toluene-d8	96	(67 - 122)
4-Bromofluorobenzene	101	(64 - 126)

NOTE(S):

J Estimated result. Result is less than RL.

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: F1K100451
MB Lot-Sample #: F1K140000-194
Work Order #...: MN2JL1AA
Matrix.....: WATER
Prep Date.....: 11/10/11
Analysis Time..: 17:20
Analysis Date..: 11/10/11
Prep Batch #...: 1318194
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acrolein	ND	10	ug/L	CFR136A 624
Acrylonitrile	ND	10	ug/L	CFR136A 624
Benzene	ND	1.0	ug/L	CFR136A 624
Bromoform	ND	1.0	ug/L	CFR136A 624
Bromomethane	ND	2.0	ug/L	CFR136A 624
Carbon tetrachloride	ND	1.0	ug/L	CFR136A 624
Chlorobenzene	ND	1.0	ug/L	CFR136A 624
Chlorodibromomethane	ND	1.0	ug/L	CFR136A 624
Chloroethane	ND	2.0	ug/L	CFR136A 624
Chloroform	ND	1.0	ug/L	CFR136A 624
Chloromethane	ND	2.0	ug/L	CFR136A 624
Dichlorobromomethane	ND	1.0	ug/L	CFR136A 624
1,1-Dichloroethane	ND	1.0	ug/L	CFR136A 624
1,2-Dichloroethane	ND	1.0	ug/L	CFR136A 624
1,1-Dichloroethene	ND	1.0	ug/L	CFR136A 624
1,2-Dichloroethene (total)	ND	2.0	ug/L	CFR136A 624
1,2-Dichloropropane	ND	1.0	ug/L	CFR136A 624
cis-1,3-Dichloropropene	ND	1.0	ug/L	CFR136A 624
trans-1,3-Dichloropropene	ND	1.0	ug/L	CFR136A 624
Ethylbenzene	ND	1.0	ug/L	CFR136A 624
Methylene chloride	ND	1.0	ug/L	CFR136A 624
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	CFR136A 624
Tetrachloroethene	ND	1.0	ug/L	CFR136A 624
Toluene	ND	1.0	ug/L	CFR136A 624
1,1,1-Trichloroethane	ND	1.0	ug/L	CFR136A 624
1,1,2-Trichloroethane	ND	1.0	ug/L	CFR136A 624
Trichloroethene	ND	1.0	ug/L	CFR136A 624
Vinyl chloride	ND	2.0	ug/L	CFR136A 624

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	92	(51 - 137)
Toluene-d8	94	(67 - 122)
4-Bromofluorobenzene	95	(64 - 126)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: F1K100451 Work Order #...: MN2JL1AC Matrix.....: WATER
LCS Lot-Sample#: F1K140000-194
Prep Date.....: 11/10/11 Analysis Date..: 11/10/11
Prep Batch #...: 1318194 Analysis Time..: 16:33
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Acrolein	76	(40 - 140)	CFR136A 624
Acrylonitrile	83	(60 - 140)	CFR136A 624
Benzene	98	(74 - 130)	CFR136A 624
Bromoform	110	(59 - 140)	CFR136A 624
Bromomethane	102	(48 - 140)	CFR136A 624
Carbon tetrachloride	103	(70 - 140)	CFR136A 624
Chlorobenzene	101	(76 - 122)	CFR136A 624
Chlorodibromomethane	99	(72 - 132)	CFR136A 624
Chloroethane	97	(55 - 131)	CFR136A 624
Chloroform	100	(74 - 129)	CFR136A 624
Chloromethane	96	(55 - 140)	CFR136A 624
Dichlorobromomethane	101	(74 - 131)	CFR136A 624
1,1-Dichloroethane	102	(73 - 129)	CFR136A 624
1,2-Dichloroethane	95	(68 - 128)	CFR136A 624
1,1-Dichloroethene	101	(72 - 132)	CFR136A 624
1,2-Dichloroethene (total)	98	(73 - 125)	CFR136A 624
1,2-Dichloropropane	96	(71 - 131)	CFR136A 624
cis-1,3-Dichloropropene	99	(60 - 140)	CFR136A 624
trans-1,3-Dichloropropene	98	(64 - 132)	CFR136A 624
Ethylbenzene	99	(75 - 126)	CFR136A 624
Methylene chloride	91	(66 - 130)	CFR136A 624
1,1,2,2-Tetrachloroethane	84	(57 - 135)	CFR136A 624
Tetrachloroethene	106	(64 - 140)	CFR136A 624
Toluene	92	(73 - 129)	CFR136A 624
1,1,1-Trichloroethane	104	(74 - 129)	CFR136A 624
1,1,2-Trichloroethane	89	(72 - 124)	CFR136A 624
Trichloroethene	99	(71 - 140)	CFR136A 624
Vinyl chloride	102	(57 - 123)	CFR136A 624

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	92	(60 - 124)
Toluene-d8	93	(74 - 121)

(Continued on next page)

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: F1K100451 **Work Order #...:** MN2JL1AC **Matrix.....:** WATER
LCS Lot-Sample#: F1K140000-194

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	100	(73 - 125)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: F1K100451 Work Order #...: MNWW61CF-MS Matrix.....: WATER
MS Lot-Sample #: F1K100451-001 MNWW61CG-MSD
Date Sampled...: 11/09/11 13:15 Date Received..: 11/10/11
Prep Date.....: 11/10/11 Analysis Date..: 11/11/11
Prep Batch #...: 1318194 Analysis Time..: 00:09
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Acrolein	64	(50 - 150)			CFR136A 624
	68	(50 - 150)	6.5	(0-20)	CFR136A 624
Acrylonitrile	84	(23 - 150)			CFR136A 624
	93	(23 - 150)	11	(0-20)	CFR136A 624
Benzene	95	(57 - 139)			CFR136A 624
	96	(57 - 139)	0.96	(0-20)	CFR136A 624
Bromoform	109	(45 - 150)			CFR136A 624
	111	(45 - 150)	1.5	(0-20)	CFR136A 624
Bromomethane	96	(31 - 131)			CFR136A 624
	96	(31 - 131)	0.15	(0-20)	CFR136A 624
Carbon tetrachloride	98	(70 - 140)			CFR136A 624
	100	(70 - 140)	2.1	(0-20)	CFR136A 624
Chlorobenzene	99	(57 - 131)			CFR136A 624
	99	(57 - 131)	0.19	(0-20)	CFR136A 624
Chlorodibromomethane	96	(53 - 149)			CFR136A 624
	98	(53 - 149)	2.1	(0-20)	CFR136A 624
Chloroethane	88	(35 - 139)			CFR136A 624
	88	(35 - 139)	0.78	(0-20)	CFR136A 624
Chloroform	93	(55 - 138)			CFR136A 624
	96	(55 - 138)	2.5	(0-20)	CFR136A 624
Chloromethane	80	(41 - 140)			CFR136A 624
	76	(41 - 140)	4.7	(0-20)	CFR136A 624
Dichlorobromomethane	100	(38 - 150)			CFR136A 624
	100	(38 - 150)	0.37	(0-20)	CFR136A 624
1,1-Dichloroethane	96	(59 - 148)			CFR136A 624
	96	(59 - 148)	0.59	(0-20)	CFR136A 624
1,2-Dichloroethane	90	(49 - 150)			CFR136A 624
	92	(49 - 150)	1.6	(0-20)	CFR136A 624
1,1-Dichloroethene	92	(37 - 146)			CFR136A 624
	93	(37 - 146)	1.0	(0-20)	CFR136A 624
1,2-Dichloroethene (total)	92	(38 - 143)			CFR136A 624
	94	(38 - 143)	1.2	(0-20)	CFR136A 624
1,2-Dichloropropane	90	(42 - 150)			CFR136A 624
	90	(42 - 150)	0.91	(0-20)	CFR136A 624
cis-1,3-Dichloropropene	95	(50 - 150)			CFR136A 624
	96	(50 - 150)	1.8	(0-20)	CFR136A 624
trans-1,3-Dichloropropene	97	(28 - 150)			CFR136A 624
	95	(28 - 150)	1.4	(0-20)	CFR136A 624

(Continued on next page)

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: F1K100451 Work Order #...: MNWW61CF-MS Matrix.....: WATER
MS Lot-Sample #: F1K100451-001 MNWW61CG-MSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Ethylbenzene	96	(53 - 135)			CFR136A 624
	96	(53 - 135)	1.0	(0-20)	CFR136A 624
Methylene chloride	86	(42 - 143)			CFR136A 624
	88	(42 - 143)	2.0	(0-20)	CFR136A 624
1,1,2,2-Tetrachloroethane	85	(46 - 150)			CFR136A 624
	87	(46 - 150)	2.0	(0-20)	CFR136A 624
Tetrachloroethene	100	(64 - 148)			CFR136A 624
	101	(64 - 148)	1.2	(0-20)	CFR136A 624
Toluene	90	(60 - 130)			CFR136A 624
	90	(60 - 130)	0.11	(0-20)	CFR136A 624
1,1,1-Trichloroethane	98	(55 - 138)			CFR136A 624
	97	(55 - 138)	0.98	(0-20)	CFR136A 624
1,1,2-Trichloroethane	88	(62 - 129)			CFR136A 624
	88	(62 - 129)	0.23	(0-20)	CFR136A 624
Trichloroethene	97	(71 - 150)			CFR136A 624
	96	(71 - 150)	0.91	(0-20)	CFR136A 624
Vinyl chloride	90	(40 - 128)			CFR136A 624
	90	(40 - 128)	0.24	(0-20)	CFR136A 624

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	89	(51 - 137)
	90	(51 - 137)
Toluene-d8	93	(67 - 122)
	93	(67 - 122)
4-Bromofluorobenzene	100	(64 - 126)
	101	(64 - 126)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

AECOM Technical Services Inc.

Client Sample ID: 60162412-SMP-PL5-WW-OTH-8110

TOTAL Metals

Lot-Sample #...: F1K100451-001 **Matrix.....:** WATER
Date Sampled...: 11/09/11 13:15 **Date Received..:** 11/10/11

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1315084						
Cadmium	ND	5	ug/L	SW846 6010B	11/11-11/16/11	MNWW61AE
		Dilution Factor: 1		Analysis Time..: 16:11		
Chromium	ND	10	ug/L	SW846 6010B	11/11-11/16/11	MNWW61AF
		Dilution Factor: 1		Analysis Time..: 16:11		
Copper	**7.3 B**	**25**	**ug/L**	**SW846 6010B**	**11/11-11/16/11**	**MNWW61AG**
		Dilution Factor: 1		Analysis Time..: 16:11		
Iron	**219**	**100**	**ug/L**	**SW846 6010B**	**11/11-11/16/11**	**MNWW61AH**
		Dilution Factor: 1		Analysis Time..: 16:11		
Nickel	ND	40	ug/L	SW846 6010B	11/11-11/16/11	MNWW61AJ
		Dilution Factor: 1		Analysis Time..: 16:11		
Lead	**3.8 B**	**10**	**ug/L**	**SW846 6010B**	**11/11-11/16/11**	**MNWW61AK**
		Dilution Factor: 1		Analysis Time..: 16:11		
Zinc	**31.3**	**20**	**ug/L**	**SW846 6010B**	**11/11-11/16/11**	**MNWW61AL**
		Dilution Factor: 1		Analysis Time..: 16:11		

NOTE(S):

B Estimated result. Result is less than RL.

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: F1K100451 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: F1K110000-084 **Prep Batch #...:** 1315084						
Cadmium	ND	5	ug/L	SW846 6010B	11/11-11/16/11	MNXK61AA
		Dilution Factor: 1				
		Analysis Time..: 16:00				
Chromium	ND	10	ug/L	SW846 6010B	11/11-11/16/11	MNXK61AC
		Dilution Factor: 1				
		Analysis Time..: 16:00				
Copper	ND	25	ug/L	SW846 6010B	11/11-11/16/11	MNXK61AD
		Dilution Factor: 1				
		Analysis Time..: 16:00				
Iron	ND	100	ug/L	SW846 6010B	11/11-11/16/11	MNXK61AE
		Dilution Factor: 1				
		Analysis Time..: 16:00				
Lead	ND	10	ug/L	SW846 6010B	11/11-11/16/11	MNXK61AG
		Dilution Factor: 1				
		Analysis Time..: 16:00				
Nickel	ND	40	ug/L	SW846 6010B	11/11-11/16/11	MNXK61AF
		Dilution Factor: 1				
		Analysis Time..: 16:00				
Zinc	ND	20	ug/L	SW846 6010B	11/11-11/16/11	MNXK61AH
		Dilution Factor: 1				
		Analysis Time..: 16:00				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: F1K100451 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: F1K110000-084 **Prep Batch #...:** 1315084					
Cadmium	108	(80 - 120)	SW846 6010B	11/11-11/16/11	MNXK61AJ
		Dilution Factor: 1	Analysis Time..: 16:06		
Chromium	107	(80 - 120)	SW846 6010B	11/11-11/16/11	MNXK61AK
		Dilution Factor: 1	Analysis Time..: 16:06		
Copper	105	(80 - 120)	SW846 6010B	11/11-11/16/11	MNXK61AL
		Dilution Factor: 1	Analysis Time..: 16:06		
Iron	105	(80 - 120)	SW846 6010B	11/11-11/16/11	MNXK61AM
		Dilution Factor: 1	Analysis Time..: 16:06		
Nickel	106	(80 - 120)	SW846 6010B	11/11-11/16/11	MNXK61AN
		Dilution Factor: 1	Analysis Time..: 16:06		
Lead	103	(80 - 120)	SW846 6010B	11/11-11/16/11	MNXK61AP
		Dilution Factor: 1	Analysis Time..: 16:06		
Zinc	113	(80 - 120)	SW846 6010B	11/11-11/16/11	MNXK61AQ
		Dilution Factor: 1	Analysis Time..: 16:06		

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: F1K100451 **Matrix.....:** WATER
Date Sampled...: 11/09/11 13:15 **Date Received..:** 11/10/11

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: F1K100451-001 **Prep Batch #...:** 1315084							
Cadmium	110	(75 - 125)			SW846 6010B	11/11-11/16/11	MNWW61A0
	111	(75 - 125)	0.59	(0-20)	SW846 6010B	11/11-11/16/11	MNWW61A1
		Dilution Factor: 1					
		Analysis Time..: 16:22					
Chromium	108	(75 - 125)			SW846 6010B	11/11-11/16/11	MNWW61A2
	109	(75 - 125)	0.47	(0-20)	SW846 6010B	11/11-11/16/11	MNWW61A3
		Dilution Factor: 1					
		Analysis Time..: 16:22					
Copper	115	(75 - 125)			SW846 6010B	11/11-11/16/11	MNWW61A4
	116	(75 - 125)	0.45	(0-20)	SW846 6010B	11/11-11/16/11	MNWW61A5
		Dilution Factor: 1					
		Analysis Time..: 16:22					
Iron	108	(75 - 125)			SW846 6010B	11/11-11/16/11	MNWW61A6
	108	(75 - 125)	0.34	(0-20)	SW846 6010B	11/11-11/16/11	MNWW61A7
		Dilution Factor: 1					
		Analysis Time..: 16:22					
Lead	109	(75 - 125)			SW846 6010B	11/11-11/16/11	MNWW61CA
	109	(75 - 125)	0.43	(0-20)	SW846 6010B	11/11-11/16/11	MNWW61CC
		Dilution Factor: 1					
		Analysis Time..: 16:22					
Nickel	111	(75 - 125)			SW846 6010B	11/11-11/16/11	MNWW61A8
	111	(75 - 125)	0.44	(0-20)	SW846 6010B	11/11-11/16/11	MNWW61A9
		Dilution Factor: 1					
		Analysis Time..: 16:22					
Zinc	117	(75 - 125)			SW846 6010B	11/11-11/16/11	MNWW61CD
	119	(75 - 125)	1.9	(0-20)	SW846 6010B	11/11-11/16/11	MNWW61CE
		Dilution Factor: 1					
		Analysis Time..: 16:22					

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

AECOM Technical Services Inc.

Client Sample ID: 60162412-SMP-PL5-WW-OTH-8110

General Chemistry

Lot-Sample #...: F1K100451-001 Work Order #...: MNWW6 Matrix.....: WATER
Date Sampled...: 11/09/11 13:15 Date Received..: 11/10/11

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
pH (liquid)	7.2	0.10	No Units	SW846 9040	11/10/11	1314210
		Dilution Factor: 1		Analysis Time..: 18:39		
COD	25.0	20.0	mg/L	MCAWW 410.4	11/15-11/16/11	1319201
		Dilution Factor: 1		Analysis Time..: 00:00		
Total Suspended Solids	2.0 B	4.0	mg/L	MCAWW 160.2	11/14-11/15/11	1318171
		Dilution Factor: 1		Analysis Time..: 00:00		

NOTE(S):

RL Reporting Limit

B Estimated result. Result is less than RL.

METHOD BLANK REPORT

General Chemistry

Client Lot #...: F1K100451 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
COD		Work Order #: MN25Q1AA		MB Lot-Sample #:	F1K150000-201	
	ND	20.0	mg/L	MCAWW 410.4	11/15-11/16/11	1319201
		Dilution Factor: 1				
		Analysis Time..: 00:00				
Total Suspended Solids		Work Order #: MN33D1AA		MB Lot-Sample #:	F1K140000-171	
	ND	4.0	mg/L	MCAWW 160.2	11/14-11/15/11	1318171
		Dilution Factor: 1				
		Analysis Time..: 00:00				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: F1K100451 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
pH (liquid)		Work Order #: MN32C1AA	LCS Lot-Sample#: F1K100000-210		
	100	(99 - 101)	SW846 9040	11/10/11	1314210
		Dilution Factor: 1	Analysis Time..: 18:36		
COD		Work Order #: MN25Q1AC	LCS Lot-Sample#: F1K150000-201		
	96	(90 - 110)	MCAWW 410.4	11/15-11/16/11	1319201
		Dilution Factor: 1	Analysis Time..: 00:00		
Total Suspended Solids		Work Order #: MN33D1AC	LCS Lot-Sample#: F1K140000-171		
	80	(79 - 122)	MCAWW 160.2	11/14-11/15/11	1318171
		Dilution Factor: 1	Analysis Time..: 00:00		

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: F1K100451 **Matrix.....:** WATER
Date Sampled...: 11/09/11 13:15 **Date Received..:** 11/10/11

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
COD		Work Order #...: MNWW61CN		MS Lot-Sample #: F1K100451-001	
	87 N	(90 - 110)	MCAWW 410.4	11/15-11/16/11	1319201

Dilution Factor: 1 Analysis Time..: 00:00

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

N Spiked analyte recovery is outside stated control limits.

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: F1K100451 **Work Order #...:** MNWW6-SMP MNWW6-DUP **Matrix.....:** WATER

Date Sampled...: 11/09/11 13:15 **Date Received..:** 11/10/11

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
pH (liquid)						SD Lot-Sample #:	F1K100451-001	
	7.2	7.3	No Units	0.55	(0-0.0)	SW846 9040	11/10/11	1314210
		Dilution Factor: 1				Analysis Time..: 18:39		
COD						SD Lot-Sample #:	F1K100451-001	
	25.0	24.0	mg/L	4.1	(0-20)	MCAWW 410.4	11/15-11/16/11	1319201
		Dilution Factor: 1				Analysis Time..: 00:00		

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: F1K100451 **Work Order #...:** MN1FR-SMP MN1FR-DUP **Matrix.....:** WATER

Date Sampled...: 11/14/11 09:30 **Date Received..:** 11/14/11

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Suspended Solids						SD Lot-Sample #:	F1K140452-001	
	24.0	20.0	mg/L	18	(0-20)	MCAWW 160.2	11/14-11/15/11	1318171

Dilution Factor: 1 Analysis Time..: 00:00

AECOM Technical Services Inc.

Client Sample ID: 60162412-SMP-PL5-WW-OTH-8110

Radiochemistry

Lab Sample ID: F1K100451-001
Work Order: MNWW6
Matrix: WATER

Date Collected: 11/09/11 1315
Date Received: 11/10/11 1300

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	mdc	Prep Date	Analysis Date
GROSS A/B BY GFPC SW846 9310 MOD				**pCi/L**		**Batch # 1318152**	**Yld %**
Gross Alpha	-0.3	U	5.6	3.0	12	11/14/11	11/16/11
Gross Beta	**18.5**		**5.1**	4.0	**5.8**	**11/14/11**	**11/16/11**
Iso THORIUM (SHORT CT) DOE A-01-R MOD				**pCi/L**		**Batch # 1318021**	**Yld % 58**
Thorium 228	0.11	U	0.13	1.00	0.18	11/14/11	11/14/11
Thorium 230	**0.33**		**0.21**	1.00	**0.09**	**11/14/11**	**11/14/11**
Thorium 232	0.12	U	0.13	1.00	0.14	11/14/11	11/14/11
Iso URANIUM (SHORT CT) DOE A-01-R MOD				**pCi/L**		**Batch # 1318022**	**Yld % 91**
Uranium 235/236	0.0	U	0.021	1.00	0.066	11/14/11	11/16/11
Uranium 238	0.075	U	0.079	1.00	0.084	11/14/11	11/16/11
Radium 226 by EPA 903.0 MOD				**pCi/L**		**Batch # 1314186**	**Yld % 85**
Radium (226)	**0.38**	J	**0.19**	1.00	**0.23**	**11/10/11**	**11/11/11**
Radium 228 by GFPC EPA 904 MOD				**pCi/L**		**Batch # 1314185**	**Yld % 89**
Radium 228	0.11	U	0.22	1.00	0.37	11/10/11	11/14/11

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.
Bold results are greater than the MDC.

J Result is greater than sample detection limit but less than stated reporting limit.
U Result is less than the sample detection limit.

METHOD BLANK REPORT

Radiochemistry

Client Lot ID: F1K100451
Matrix: WATER

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC		Prep Date	Analysis Date	Lab Sample ID
Iso THORIUM (SHORT CT) DOE A-01-R MOD			pCi/L	Batch # 1318021		Yld % 86			F1K140000-021B
Thorium 228	0.020	U	0.077	1.00	0.16		11/14/11	11/14/11	
Thorium 230	**0.21**		**0.13**	1.00	**0.06**		**11/14/11**	**11/14/11**	
Thorium 232	-0.0039	U	0.0079	1.00	0.089		11/14/11	11/14/11	
Iso URANIUM (SHORT CT) DOE A-01-R MOD			pCi/L	Batch # 1318022		Yld % 93			F1K140000-022B
Uranium 235/236	0.0	U	0.021	1.00	0.065		11/14/11	11/14/11	
Uranium 238	0.054	U	0.067	1.00	0.082		11/14/11	11/14/11	
GROSS A/B BY GFPC SW846 9310 MOD			pCi/L	Batch # 1318152		Yld %			F1K140000-152B
Gross Alpha	0.46	U	0.74	3.00	1.3		11/14/11	11/16/11	
Gross Beta	0.16	U	0.60	4.00	1.0		11/14/11	11/16/11	
Radium 228 by GFPC EPA 904 MOD			pCi/L	Batch # 1314185		Yld % 88			F1K100000-185B
Radium 228	0.12	U	0.21	1.00	0.36		11/10/11	11/14/11	
Radium 226 by EPA 903.0 MOD			pCi/L	Batch # 1314186		Yld % 85			F1K100000-186B
Radium (226)	0.0	U	0.098	1.00	0.20		11/10/11	11/11/11	

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined using instrument performance only
Bold results are greater than the MDC.

U Result is less than the sample detection limit.

Laboratory Control Sample Report

Radiochemistry

Client Lot ID: F1K100451
Matrix: WATER

Parameter	Spike Amount	Result	Total Uncert. (2 σ+/-)	MDC	% Yld	% Rec	Lab Sample ID / QC Control Limits
Radium 228 by GFPC EPA 904 MOD			pCi/L	904 MOD			F1K100000-185C
Radium 228	5.22	4.97	0.66	0.34	91	95	(65 - 126)
	Batch #:	1314185		Analysis Date:	11/14/11		
Radium 226 by EPA 903.0 MOD			pCi/L	903.0 MOD			F1K100000-186C
Radium (226)	11.3	12.9	1.4	0.2	89	114	(64 - 125)
	Batch #:	1314186		Analysis Date:	11/11/11		
Iso THORIUM (SHORT CT) DOE A-01-R MOD			pCi/L	A-01-R MOD			F1K140000-021C
Thorium 230	8.64	9.0	1.1	0.1	87	104	(77 - 118)
	Batch #:	1318021		Analysis Date:	11/14/11		
Iso URANIUM (SHORT CT) DOE A-01-R MOD			pCi/L	A-01-R MOD			F1K140000-022C
Uranium 234	13.1	13.4	1.5	0.1	92	102	(76 - 136)
Uranium 238	13.6	13.7	1.6	0.1	92	101	(76 - 134)
	Batch #:	1318022		Analysis Date:	11/14/11		
GROSS A/B BY GFPC SW846 9310 MOD			pCi/L	9310 MOD			F1K140000-152C
Gross Alpha	54.0	68.6	9.1	1.3		127	(74 - 138)
Gross Beta	96.5	97	10	0.9		101	(75 - 125)
	Batch #:	1318152		Analysis Date:	11/16/11		

NOTE(S)

MDC is determined by instrument performance only
Calculations are performed before rounding to avoid round-off error in calculated results

MATRIX SPIKE REPORT

Radiochemistry

Client Lot Id: F1K100451 Date Sampled: 11/09/11
Matrix: WATER Date Received: 11/10/11

Parameter	Spike Amount	Spike Result	Total Uncert. (2σ+/-)	Spike Yld.	Sample Result	Total Uncert. (2σ+/-)	QC Sample ID %YLD	%REC	QC Control Limits
GROSS A/B BY GFPC SW846 9310 MOD			**pCi/L**		**9310 MOD**		**F1K100451-001**		
Gross Beta	508	492	52		18.5	5.1		93	(68-150)
	Batch #:	1318152		Analysis Date:		11/16/11			
GROSS A/B BY GFPC SW846 9310 MOD			**pCi/L**		**9310 MOD**		**F1K100451-001**		
Gross Alpha	284	543	75		-0.3	5.6		191 a	(40-150)
	Batch #:	1318152		Analysis Date:		11/16/11			

NOTE(S)

Data are incomplete without the case narrative.

Calculations are performed before rounding to avoid round-off errors in calculated results.

DUPLICATE EVALUATION REPORT

Radiochemistry

Client Lot ID: F1K100451
Matrix: WATER

Date Sampled: 11/09/11
Date Received: 11/10/11

Parameter	SAMPLE Result		Total Uncert. (2σ+/-)	% Yld	DUPLICATE Result		Total Uncert. (2 σ+/-)	% Yld	QC Sample ID Precision	
Iso THORIUM (SHORT CT) DOE A-01-R MOD				**pCi/L**	**A-01-R MOD**				**F1K100451-001**	
Thorium 228	0.11	U	0.13	58	0.007	U	0.057	66	176	%RPD
Thorium 230	0.33		0.21	58	0.20		0.15	66	48	%RPD
Thorium 232	0.12	U	0.13	58	0.075	U	0.093	66	49	%RPD
	Batch #:		1318021	(Sample)	1318021		(Duplicate)			
Iso URANIUM (SHORT CT) DOE A-01-R MOD				**pCi/L**	**A-01-R MOD**				**F1K100451-001**	
Uranium 235/236	0.0	U	0.021	91	-0.005	U	0.010	84	200	%RPD
Uranium 238	0.075	U	0.079	91	0.084	U	0.088	84	11	%RPD
	Batch #:		1318022	(Sample)	1318022		(Duplicate)			
Radium 226 by EPA 903.0 MOD				**pCi/L**	**903.0 MOD**				**F1K100451-001**	
Radium (226)	0.38	J	0.19	85	0.36	J	0.17	84	5	%RPD
	Batch #:		1314186	(Sample)	1314186		(Duplicate)			
Radium 228 by GFPC EPA 904 MOD				**pCi/L**	**904 MOD**				**F1K100451-001**	
Radium 228	0.11	U	0.22	89	0.33	J	0.22	89	103	%RPD
	Batch #:		1314185	(Sample)	1314185		(Duplicate)			
GROSS A/B BY GFPC SW846 9310 MOD				**pCi/L**	**9310 MOD**				**F1K100451-001**	
Gross Alpha	-0.3	U	5.6		4.6	U	7.8		230	%RPD
Gross Beta	18.5		5.1		15.3		4.6		19	%RPD
	Batch #:		1318152	(Sample)	1318152		(Duplicate)			

NOTE(S)

Data are incomplete without the case narrative.
Calculations are performed before rounding to avoid round-off error in calculated results

J Result is greater than sample detection limit but less than stated reporting limit.
U Result is less than the sample detection limit.

F1K100451

CLIENT ANALYSIS SUMMARY

Storage Loc: R28,METS,2-4,V1

Project Manager: JKA | Quote #: 87754 | SDG:

Project: | Mallinckrodt St. Louis Plant

PO#: 10372ACM | Report to: Kevin Marillia

Client: 404224 AECOM Technical Services Inc.

RUSH

#SMPS In LOT: 0

Date Received: 2011-11-10

Analytical Due Date: 2011-11-17

Report Due Date: 2011-11-17

Report Type: D Expanded Deliverable

EDD Code: 00

SAMPLE LOGIN: FOR MULTIPLE SAMPLES- EACH CHAIN NEEDS TO GO IN ITS OWN LOT. QC APPLIED TO ONLY ONE SAMPLE PER DAY.
Log ZHE EXTRACTION line item for TCLP VOA. Log TCLP EXTRACTION line item for TCLP analyses. RAD: Initial Gamma Spec counted as received . When complete dry/grind and prep for Gamma Ra226,TAR,Iso U and Iso Th. GAMMA SPEC. SHOULD BE COUNTED IN CLIENTS 500ML MARINELLI. RA226/228 - NO INGROWTH REQUIRED!!! RA226/228 MUST BE PREPPED IN SEPERATE ALIQUOTS!!! DO NOT PREP TOGETHER! STANDARD QC ON CLIENT SAMPLE IS REQUIRED FOR ALL ANALYSES.

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	I
1	60162412-SMP-PL5-WW-OTH-8110			2011-11-09 / 1315	MNWW6	WATER

SAMPLE COMMENTS:

	CR	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
	CU	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
	FE	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
	NI	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
	PB	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
	CD	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
	ZN	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
	XX	DN	CFR13 6A	624	WATER, 624, VOA	25	PURGE AND TRAP - 25 mL purge (Waters)	01	STANDARD TEST SET	PROT: A	WRK LOC	06	TIC: N	
	XX	ZZ	NONE	NONE	WATER, RAD SCREEN	88	NO SAMPLE PREPARATION PERFORMED / DIRECT	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
	XX	2I	EML	A-01-R MOD	WATER, Iso URANIUM	J2	Extraction Chromatography - Sequential Actinides	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
	XX	2K	EML	A-01-R MOD	WATER, Iso THORIUM	J2	Extraction Chromatography - Sequential Actinides	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
	XX	Z4	EPA	904 MOD	WATER, 904 MOD, Ra-226 (NO INGROWTH)	N*	No Ingrowth	2X	SPECIAL PROJECTS	PROT: A	WRK LOC	06		
	XX	ZA	SW846	9310 MOD	WATER, 9310 MOD, GROSS A/B	FR	Evaporative Preparation, Total	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
	XX	ZY	EPA	903.0 MOD	WATER, 903 MOD, Ra-226 (NO INGROWTH)	N*	No Ingrowth	2X	SPECIAL PROJECTS	PROT: A	WRK LOC	06		
	XX	AL	MCAW W	160.2	WATER, 160.2, TSS	88	NO SAMPLE PREPARATION PERFORMED / DIRECT	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
	XX	FJ	SW846	9040	WATER, 9040, pH	88	NO SAMPLE PREPARATION PERFORMED / DIRECT	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
	XX	VO	MCAW W	410.4	WATER, 410.4, COD	21	DIGESTION, NON-METAL/INORGANICS	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
D	PB	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
D	NI	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
D	CD	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
D	CR	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
D	CU	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
D	ZN	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
D	FE	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
D	XX	DN	CFR13 6A	624	WATER, 624, VOA	25	PURGE AND TRAP - 25 mL purge (Waters)	01	STANDARD TEST SET	PROT: A	WRK LOC	06	TIC: N	
S	ZN	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
S	CD	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
S	CR	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
S	CU	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
S	FE	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
S	NI	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
S	PB	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
S	XX	DN	CFR13 6A	624	WATER, 624, VOA	25	PURGE AND TRAP - 25 mL purge (Waters)	01	STANDARD TEST SET	PROT: A	WRK LOC	06	TIC: N	
S	XX	ZA	SW846	9310 MOD	WATER, 9310 MOD, GROSS A/B	FR	Evaporative Preparation, Total	01	STANDARD TEST SET	PROT: A	WRK LOC	06		

F1K100451

CLIENT ANALYSIS SUMMARY

Storage Loc: R28,METS,2-4,V1

Project Manager: JKA Quote #: 87754 SDG:

Date Received: 2011-11-10

Project: Mallinckrodt St. Louis Plant

Analytical Due Date: 2011-11-17

PO#: 10372ACM Report to: Kevin Martilla

RUSH

Report Due Date: 2011-11-17

Client: 404224 AECOM Technical Services Inc.

#SMPS In LOT: 0

Report Type: D Expanded Deliverable

EDD Code: 00

SAMPLE LOGIN: FOR MULTIPLE SAMPLES- EACH CHAIN NEEDS TO GO IN ITS OWN LOT. QC APPLIED TO ONLY ONE SAMPLE PER DAY.
Log ZHE EXTRACTION line item for TCLP VOA. Log TCLP EXTRACTION line item for TCLP analyses. RAD: Initial Gamma Spec counted as received . When complete dry/grind and prep for Gamma Ra226,TAR,Iso U and Iso Th. GAMMA SPEC. SHOULD BE COUNTED IN CLIENTS 500ML MARINELLI. RA226/228 - NO INGROWTH REQUIRED!!! RA226/228 MUST BE PREPPED IN SEPERATE ALIQUOTS!!! DO NOT PREP TOGETHER! STANDARD QC ON CLIENT SAMPLE IS REQUIRED FOR ALL ANALYSES.

S	XX	VO	MCAW W	410.4	WATER, 410.4, COD	21	DIGESTION, NON-METAL/INORGANICS	01	STANDARD TEST SET	PROT: A	WRK LOC	06	
X	XX	2I	EML	A-01-R MOD	WATER, Iso URANIUM	J2	Extraction Chromatography - Sequential Actinides	01	STANDARD TEST SET	PROT: A	WRK LOC	06	
X	XX	2K	EML	A-01-R MOD	WATER, Iso THORIUM	J2	Extraction Chromatography - Sequential Actinides	01	STANDARD TEST SET	PROT: A	WRK LOC	06	
X	XX	Z4	EPA	904 MOD	WATER, 904 MOD, Ra-226 (NO INGROWTH)	N*	No Ingrowth	2X	SPECIAL PROJECTS	PROT: A	WRK LOC	06	
X	XX	ZA	SW846	9310 MOD	WATER, 9310 MOD, GROSS A/B	FR	Evaporative Preparation, Total	01	STANDARD TEST SET	PROT: A	WRK LOC	06	
X	XX	ZY	EPA	903.0 MOD	WATER, 903 MOD, Ra-226 (NO INGROWTH)	N*	No Ingrowth	2X	SPECIAL PROJECTS	PROT: A	WRK LOC	06	
X	XX	AL	MCAW W	160.2	WATER, 160.2, TSS	88	NO SAMPLE PREPARATION PERFORMED / DIRECT	01	STANDARD TEST SET	PROT: A	WRK LOC	06	
X	XX	FJ	SW846	9040	WATER, 9040, pH	88	NO SAMPLE PREPARATION PERFORMED / DIRECT	01	STANDARD TEST SET	PROT: A	WRK LOC	06	
X	XX	VO	MCAW W	410.4	WATER, 410.4, COD	21	DIGESTION, NON-METAL/INORGANICS	01	STANDARD TEST SET	PROT: A	WRK LOC	06	

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	
2	VOC BLANKS			2011-11-09 / 0	MNWXD	WATER

SAMPLE COMMENTS:

XX	DN	CFR13 6A	624	WATER, 624, VOA	25	PURGE AND TRAP - 25 mL purge (Waters)	01	STANDARD TEST SET	PROT: A	WRK LOC	06	TIC: N	

St. Louis
13715 Rider Trail North

Earth City, MO 63045
phone 314.298.8566 fax 314.298.8757

CUL 497

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

FIK100451

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Kevin Martilla	Site Contact: Casey Knuteson	Date: 11/9/2011	COC No: N/A
AECOM	Tel/Fax: (618)444-5535	Lab Contact: Jayna Awold ,	Carrier: Test America	1 of 1 COCs
Address 8005 Outer Circle RD	Analysis Turnaround Time			Job No. 60162412
City/State/Zip Brooks City Base, TX 78235	Calendar (C) or Work Days (W) C			SDG No.
(618)444-5535 Phone	TAT if different from Below			
none FAX	☐ 2 weeks			
Project Name: Mallinckrodt C-T Decommissioning	■ 1 week			
Site: St. Louis Plant	☐ 2 days			
P O # 10372ACM	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	FIK100451	pH *	TSS *	COD *	ICP Metals (Cd, Cr, Cu, Fe, Pb, Ni, Zn)*	Volatile Organics (SPA Method 624) *	Gross Alpha/Beta *	Isotopic Uranium (Alpha Spectrometry)	Radium-226 (GFPC, no decay/ingrowth)	Radium-228 (GFPC - no decay/ingrowth)	Isotopic Thorium (Alpha Spectrometry)	Sample Specific Notes:
60162412-SMP-PL5-WW-OTH-8110	11/9/2011	13:15	Water	Water	12		x	x	x	x	x	x	x	x	x	x	* Further Testing if Gross Beta above 50 pci/L
VOC Blanks	n/a	n/a	n/a	n/a	1												

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification
■ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* *Poison B* ☐ *Unknown* ☐

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ■ *Archive For* 1 *Months*

Special Instructions/QC Requirements & Comments: Possible hazards include radiological. Sample methods to comply with MSD Ordinance 12559 standards. Please use EPA Method 9310 for gross Alpha and Beta. Discharge Number 118.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	Aecom / TA	11-10-11 1300	[signature]	TA	11.10.11 / 1300
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

Lot F1K100451

TestAmerica - St. Louis

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Lot #(s): F1K100451

CUR Form #: 4 9 7

CONDITION UPON RECEIPT FORM

Client: Accuren

Quote No: 87754

COC/RFA No: N/A

Initiated By: BD Date: 11/10/11 Time: 1300

Shipping Information

Shipper: FedEx UPS DHL Courier Client Other: IC Multiple Packages: Y (N)

Shipping # (s):*

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Sample Temperature (s):**

1. ambient 2. 3. 4. 5. 6. 7. 8. 9. 10.

*Numbered shipping lines correspond to Numbered Sample Temp lines

**Sample must be received at 4°C ± 2°C- If not, note contents below. Temperature variance does NOT affect the following: Metals-Liquid; Rad tests- Liquid or Solids; Perchlorate

Condition (Circle "Y" for yes, "N" for no and "N/A" for not applicable):

1.	Y (N)	Are there custody seals present on the cooler?	8.	Y (N)	Are there custody seals present on bottles?
2.	Y N (N/A)	Do custody seals on cooler appear to be tampered with?	9.	Y N (N/A)	Do custody seals on bottles appear to be tampered with?
3.	(Y) N	Were contents of cooler frisked after opening, but before unpacking?	10.	(Y) N N/A	Was sample received with proper pH[1]? (If not, make note below)
4.	(Y) N	Sample received with Chain of Custody?	11.	Y N (N/A)	Containers for C-14, H-3 & I-129/131 marked with "Do Not Preserve" label?
5.	(Y) N N/A	Does the Chain of Custody match sample ID's on the container(s)?	12.	(Y) N	Sample received in proper containers?
6.	Y (N)	Was sample received broken?	13.	(Y) N N/A	Headspace in VOA or TOX liquid samples? (If Yes, note sample ID's below)
7.	(Y) N	Is sample volume sufficient for analysis?	14.	Y N (N/A)	Was Internal COC/Workshare received?

[1] For DOE-AL (Pantex, LANL, Sandia) sites, pH of ALL containers received must be verified, EXCEPT VOA, TOX, Oil & Grease and soils.

Notes: 13. pea size headspace in 2 vials for main sample

Corrective Action:

☐ Client Contact Name: Informed by:

☐ Sample(s) processed "as is"

☐ Sample(s) on hold until: If released, notify:

Project Management Review: Jaime Swalt Date: 11/14/11

THIS FORM MUST BE COMPLETED AT THE TIME THE ITEMS ARE BEING CHECKED IN. IF ANY ITEM IS COMPLETED BY SOMEONE OTHER THAN THE INITIATOR, THEN THAT PERSON IS REQUIRED TO APPLY THEIR INITIAL AND THE DATE NEXT TO THAT ITEM.

ADMIN-0004 rev13, REVISED 05/27/11 \\Slsvr01\QA\FORMS\ST-LOUIS\ADMIN\Admin-0004 CUR.doc

IU-Mallinckrodt Inc.
21120596-00 SP850

Steve Grace

From: Steve Grace
Sent: Tuesday, November 15, 2011 1:50 PM
To: 'Summers, Julie'
Subject: RE: Wastewater Discharge 117

Hello Julie,

A review of the laboratory analytical data for Discharge 117 from the C-T Phase II decommissioning activities indicated this batch meets MSD Ordinance 12559 standards along with those outlined in 10 CFR Part 20, Appendix B, Table 3, and is approved for discharge into a combined sewer identified on MSD's base map as Inlet 18D1-395C. As a general reminder, the discharge into the sewer must be controlled at a rate that will not surcharge the lines in that area. In addition, the volume of this batch of wastewater must be confirmed in writing no later than 28 days after the date of this discharge. The approval for Discharge 117 is valid for 30 days from the date of this email.

In addition, you should have been invoiced through Discharge 54 (occurred on September 8, 2011). During our visit last week, you indicated you were in the process of submitting the volume summary for the discharges to date. I'm assuming that will be for Discharge 55 forward?

Please contact me should you have any questions or require additional information.

Thank you,
Steve Grace

From: Summers, Julie [mailto:Julie.Summers@Covidien.com]
Sent: Tuesday, November 15, 2011 8:38 AM
To: Steve Grace
Subject: Wastewater Discharge 117

Steve,

Mallinckrodt requests permission to discharge 40,000 gallons of treated rainwater and groundwater collected as part of the C-T Phase II decommissioning activities. This water was processed following the change-out of the resin beds. The wastewater discharge will be identified as Discharge 117. The laboratory analytical results demonstrate that the discharge will comply with the requirements of the Metropolitan St. Louis Sewer District as set forth in their letter to Lisa Meyer dated January 21, 2011. In addition, the discharge meets the monthly average concentrations for release to sanitary sewers per the requirements of 10 CFR 20.2003. Both a discharge summary and the detailed laboratory analytical results are attached for your information.

For your information, the discharge summary has been modified to more effectively monitor 10 CFR 20.2003 monthly concentration averaging. Previously, a lower limit was conservatively applied and the reported discharge concentration was averaged using a factor derived from the discharge volume divided by a Covidien minimum average monthly volume of 20,000,000 gallons. Now the undiluted discharge concentration will be compared directly to the regulatory limit. For discharges occurring on a near daily basis, this simplified approach eliminates the time- and volume-dependent assumptions that went into the earlier monitoring method, but retains the conservatism. I can provide additional explanation as needed.

Thanks,
Julie Summers

11/15/2011

Wastewater Discharge 117 - Preliminary Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8109

Sample Date: 02 Nov 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		0.0022	
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		0.031	
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.082*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	ND
Iron	mg/L	150	0.796	
Nickel	mg/L	2.3	< 0.04	ND
Lead	mg/L	0.4	< 0.01	
Zinc	mg/L	3	0.0279	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	6.8	
COD	mg/L	600	235	
TSS	mg/L	300	4.0	
Radionuclides				
Gross Alpha	pCi/L	3,000	< 18	
Gross Beta	pCi/L	50	< 11	
Ra-226	pCi/L	10	0.85	
Ra-228	pCi/L	30	< 0.39	
Th-228	pCi/L	2,000	< 0.14	
Th-230	pCi/L	1,000	0.47	
Th-232	pCi/L	300	< 0.064	
U-234	pCi/L		< 0.001	NR
U-235/6	pCi/L		< 0.12	
U-238	pCi/L		0.11	
Total Uranium	*pCi/L*	*3,000*	*< 0.231*	

10 CFR 20 Appendix B Table 3 Values[2]

Analyte	Units	Regulatory Limit	Undiluted Concentration	Release Fraction
Ra-226	pCi/L	600	0.85	0.001
Ra-228	pCi/L	600	0.39	0.001
Th-228	pCi/L	2,000	0.14	0.000
Th-230	pCi/L	1,000	0.47	0.000
Th-232	pCi/L	300	0.064	0.000
U-234	pCi/L	3,000	0.001	0.000
U-235/6	pCi/L	3,000	0.12	0.000
U-238	pCi/L	3,000	0.11	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.003*

Discharge Volume (gals) = 40,000

Analyte	Units	Annual Limit	Discharge Activity	Year-to-Date Activity
Gross Radioactivity	Ci	1	4.4E-06	7.879E-04

Notes:

(1) 'B' indicates estimated value; 'U' result less than sample detection limit; 'ND' not detected; 'NR' not reported. 'J' method blank contamination. 'E' matrix interference

(2) assumes undiluted concentration for comparison with regulatory limit only

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

ANALYTICAL REPORT

Mallinckrodt St. Louis Plant

Lot #: F1K020465

Kevin Martilla

AECOM Technical Services Inc.
8005 Outer Circle Road
Brooks Air Force Bas, TX 78235

TESTAMERICA LABORATORIES, INC.

Jayna Awalt
Project Manager

November 10, 2011

Case Narrative
LOT NUMBER: **F1K020465**

This report contains the analytical results for the two samples received under chain of custody by TestAmerica St. Louis on November 2, 2011. These samples are associated with your Mallinckrodt St. Louis Plant project.

The analytical results included in this report meet all applicable quality control procedure requirements except as noted in the following case narrative.

The test results in this report meet all NELAP requirements for parameters in which accreditations are held by TestAmerica St. Louis. Any exceptions to NELAP requirements are noted in the case narrative. The case narrative is an integral part of this report.

All chemical analysis results are based upon sample as received, wet weight, unless noted otherwise. All radiochemistry results are based upon sample as dried and ground with the exception of tritium, unless requested wet weight by the client.

Observations/Nonconformances
Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

COD Method 410.4
Batch: 1308135

The matrix spike recovery is outside the method QC limit of 90%-110%. In accordance with the method (section 9.4.3), if the LCS is within 90%-110%, the laboratory performance is shown to be in control. The recovery problem encountered is judged to be either matrix or solution related and not system related. Results are provided with this narrative.
Affected Samples:
F1K020465 (1): 60162412-SMP-PL5-WW-OTH-8109

Gross Alpha/Beta Method 9310 MOD
Batch: 1308068

The Gross Alpha and Beta reporting limit was not met due to a reduction of sample size attributed to the sample's high residual mass. The analytical results are reported.
Affected Samples:
F1K020465 (1): 60162412-SMP-PL5-WW-OTH-8109

There are no other observations or non-conformances associated with the analyses contained in this report.

METHODS SUMMARY

F1K020465

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
pH Aqueous	SW846 9040	SW846 9040
Chemical Oxygen Demand	MCAWW 410.4	MCAWW 410.4
Gross Alpha/Beta by GFPC	SW846 9310 MOD	
Isotopic Thorium by Alpha Spectroscopy	EML A-01-R MOD	
Isotopic Uranium by Alpha Spectroscopy	EML A-01-R MOD	
Non-Filterable Residue (TSS)	MCAWW 160.2	MCAWW 160.2
Purgeables	CFR136A 624	SW846 5030B
Radium-226 by GFPC	EPA 903.0 MOD	
Radium-228 by GFPC	EPA 904 MOD	
Trace Inductively Coupled Plasma (ICP) Metals	SW846 6010B	

References:

CFR136A "Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EML "ENVIRONMENTAL MEASUREMENTS LABORATORY PROCEDURES MANUAL" HASL-300 28TH EDITION, VOLUME I and II DEPARTMENT OF ENERGY

EPA "EASTERN ENVIRONMENTAL RADIATION FACILITY RADIOCHEMISTRY PROCEDURES MANUAL" US EPA EPA 520/5-84-006 AUGUST 1984

MCAWW "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

SAMPLE SUMMARY

F1K020465

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
MNNMF	001	60162412-SMP-PL5-WW-OTH-8109	11/02/11	12:30
MNNMG	002	VOC BLANKS	11/02/11	

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

AECOM Technical Services Inc.

Client Sample ID: 60162412-SMP-PL5-WW-OTH-8109

GC/MS Volatiles

Lot-Sample #...: F1K020465-001 Work Order #...: MNNMF1AM Matrix.....: WATER
Date Sampled...: 11/02/11 12:30 Date Received..: 11/02/11
Prep Date.....: 11/03/11 Analysis Date..: 11/03/11
Prep Batch #...: 1307105 Analysis Time..: 12:43
Dilution Factor: 1

Method.....: CFR136A 624

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acrolein	ND	10	ug/L
Acrylonitrile	ND	10	ug/L
Benzene	**0.19 J**	**1.0**	**ug/L**
Bromoform	ND	1.0	ug/L
Bromomethane	ND	2.0	ug/L
Carbon tetrachloride	ND	1.0	ug/L
Chlorobenzene	ND	1.0	ug/L
Chlorodibromomethane	ND	1.0	ug/L
Chloroethane	ND	2.0	ug/L
Chloroform	**2.2**	**1.0**	**ug/L**
Chloromethane	ND	2.0	ug/L
Dichlorobromomethane	**0.39 J**	**1.0**	**ug/L**
1,1-Dichloroethane	ND	1.0	ug/L
1,2-Dichloroethane	ND	1.0	ug/L
1,1-Dichloroethene	ND	1.0	ug/L
1,2-Dichloroethene (total)	ND	2.0	ug/L
1,2-Dichloropropane	ND	1.0	ug/L
cis-1,3-Dichloropropene	ND	1.0	ug/L
trans-1,3-Dichloropropene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Methylene chloride	**31**	**1.0**	**ug/L**
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L
Tetrachloroethene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
1,1,1-Trichloroethane	ND	1.0	ug/L
1,1,2-Trichloroethane	ND	1.0	ug/L
Trichloroethene	ND	1.0	ug/L
Vinyl chloride	ND	2.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	97	(51 - 137)
Toluene-d8	111	(67 - 122)
4-Bromofluorobenzene	103	(64 - 126)

NOTE(S):

J Estimated result. Result is less than RL.

AECOM Technical Services Inc.

Client Sample ID: VOC BLANKS

GC/MS Volatiles

Lot-Sample #...: F1K020465-002
Date Sampled...: 11/02/11
Prep Date.....: 11/03/11
Prep Batch #...: 1307105
Dilution Factor: 1

Work Order #...: MNNMG1AA
Date Received..: 11/02/11
Analysis Date..: 11/03/11
Analysis Time..: 14:23

Matrix.....: WATER

Method.....: CFR136A 624

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acrolein	ND	10	ug/L
Acrylonitrile	ND	10	ug/L
Benzene	ND	1.0	ug/L
Bromoform	ND	1.0	ug/L
Bromomethane	ND	2.0	ug/L
Carbon tetrachloride	ND	1.0	ug/L
Chlorobenzene	ND	1.0	ug/L
Chlorodibromomethane	ND	1.0	ug/L
Chloroethane	ND	2.0	ug/L
Chloroform	ND	1.0	ug/L
Chloromethane	ND	2.0	ug/L
Dichlorobromomethane	ND	1.0	ug/L
1,1-Dichloroethane	ND	1.0	ug/L
1,2-Dichloroethane	ND	1.0	ug/L
1,1-Dichloroethene	ND	1.0	ug/L
1,2-Dichloroethene (total)	ND	2.0	ug/L
1,2-Dichloropropane	ND	1.0	ug/L
cis-1,3-Dichloropropene	ND	1.0	ug/L
trans-1,3-Dichloropropene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Methylene chloride	ND	1.0	ug/L
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L
Tetrachloroethene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
1,1,1-Trichloroethane	ND	1.0	ug/L
1,1,2-Trichloroethane	ND	1.0	ug/L
Trichloroethene	ND	1.0	ug/L
Vinyl chloride	ND	2.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	101	(51 - 137)
Toluene-d8	106	(67 - 122)
4-Bromofluorobenzene	101	(64 - 126)

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: F1K020465
MB Lot-Sample #: F1K030000-105
Work Order #...: MNPGX1AA
Matrix.....: WATER
Prep Date.....: 11/03/11
Analysis Time..: 12:13
Analysis Date..: 11/03/11
Prep Batch #...: 1307105
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acrolein	ND	10	ug/L	CFR136A 624
Acrylonitrile	ND	10	ug/L	CFR136A 624
Benzene	ND	1.0	ug/L	CFR136A 624
Bromoform	ND	1.0	ug/L	CFR136A 624
Bromomethane	ND	2.0	ug/L	CFR136A 624
Carbon tetrachloride	ND	1.0	ug/L	CFR136A 624
Chlorobenzene	ND	1.0	ug/L	CFR136A 624
Chlorodibromomethane	ND	1.0	ug/L	CFR136A 624
Chloroethane	ND	2.0	ug/L	CFR136A 624
Chloroform	ND	1.0	ug/L	CFR136A 624
Chloromethane	ND	2.0	ug/L	CFR136A 624
Dichlorobromomethane	ND	1.0	ug/L	CFR136A 624
1,1-Dichloroethane	ND	1.0	ug/L	CFR136A 624
1,2-Dichloroethane	ND	1.0	ug/L	CFR136A 624
1,1-Dichloroethene	ND	1.0	ug/L	CFR136A 624
1,2-Dichloroethene (total)	ND	2.0	ug/L	CFR136A 624
1,2-Dichloropropane	ND	1.0	ug/L	CFR136A 624
cis-1,3-Dichloropropene	ND	1.0	ug/L	CFR136A 624
trans-1,3-Dichloropropene	ND	1.0	ug/L	CFR136A 624
Ethylbenzene	ND	1.0	ug/L	CFR136A 624
Methylene chloride	ND	1.0	ug/L	CFR136A 624
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	CFR136A 624
Tetrachloroethene	ND	1.0	ug/L	CFR136A 624
Toluene	ND	1.0	ug/L	CFR136A 624
1,1,1-Trichloroethane	ND	1.0	ug/L	CFR136A 624
1,1,2-Trichloroethane	ND	1.0	ug/L	CFR136A 624
Trichloroethene	ND	1.0	ug/L	CFR136A 624
Vinyl chloride	ND	2.0	ug/L	CFR136A 624

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	102	(51 - 137)
Toluene-d8	107	(67 - 122)
4-Bromofluorobenzene	98	(64 - 126)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: F1K020465 Work Order #...: MNPGX1AC-LCS Matrix.....: WATER
LCS Lot-Sample#: F1K030000-105 MNPGX1AD-LCSD
Prep Date.....: 11/03/11 Analysis Date..: 11/03/11
Prep Batch #...: 1307105 Analysis Time..: 10:58
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Acrolein	68	(40 - 140)			CFR136A 624
	72	(40 - 140)	4.6	(0-20)	CFR136A 624
Acrylonitrile	93	(60 - 140)			CFR136A 624
	100	(60 - 140)	7.0	(0-20)	CFR136A 624
Benzene	99	(74 - 130)			CFR136A 624
	100	(74 - 130)	1.1	(0-20)	CFR136A 624
Bromoform	109	(59 - 140)			CFR136A 624
	108	(59 - 140)	0.36	(0-20)	CFR136A 624
Bromomethane	100	(48 - 140)			CFR136A 624
	100	(48 - 140)	0.24	(0-20)	CFR136A 624
Carbon tetrachloride	103	(70 - 140)			CFR136A 624
	105	(70 - 140)	1.8	(0-20)	CFR136A 624
Chlorobenzene	102	(76 - 122)			CFR136A 624
	100	(76 - 122)	1.4	(0-20)	CFR136A 624
Chlorodibromomethane	102	(72 - 132)			CFR136A 624
	105	(72 - 132)	3.3	(0-20)	CFR136A 624
Chloroethane	95	(55 - 131)			CFR136A 624
	93	(55 - 131)	2.1	(0-20)	CFR136A 624
Chloroform	101	(74 - 129)			CFR136A 624
	104	(74 - 129)	2.9	(0-20)	CFR136A 624
Chloromethane	102	(55 - 140)			CFR136A 624
	101	(55 - 140)	1.1	(0-20)	CFR136A 624
Dichlorobromomethane	98	(74 - 131)			CFR136A 624
	105	(74 - 131)	6.1	(0-20)	CFR136A 624
1,1-Dichloroethane	98	(73 - 129)			CFR136A 624
	99	(73 - 129)	1.2	(0-20)	CFR136A 624
1,2-Dichloroethane	93	(68 - 128)			CFR136A 624
	101	(68 - 128)	7.9	(0-20)	CFR136A 624
1,1-Dichloroethene	103	(72 - 132)			CFR136A 624
	105	(72 - 132)	1.8	(0-20)	CFR136A 624
1,2-Dichloroethene (total)	95	(73 - 125)			CFR136A 624
	98	(73 - 125)	3.4	(0-20)	CFR136A 624
1,2-Dichloropropane	96	(71 - 131)			CFR136A 624
	100	(71 - 131)	4.6	(0-20)	CFR136A 624
cis-1,3-Dichloropropene	99	(60 - 140)			CFR136A 624
	106	(60 - 140)	6.8	(0-20)	CFR136A 624
trans-1,3-Dichloropropene	100	(64 - 132)			CFR136A 624
	106	(64 - 132)	5.5	(0-20)	CFR136A 624

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LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: F1K020465 **Work Order #...:** MNPGX1AC-LCS **Matrix.....:** WATER
LCS Lot-Sample#: F1K030000-105 MNPGX1AD-LCSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Ethylbenzene	**105**	**(75 - 126)**			**CFR136A 624**
	104	**(75 - 126)**	**1.6**	**(0-20)**	**CFR136A 624**
Methylene chloride	**91**	**(66 - 130)**			**CFR136A 624**
	96	**(66 - 130)**	**5.3**	**(0-20)**	**CFR136A 624**
1,1,2,2-Tetrachloroethane	**93**	**(57 - 135)**			**CFR136A 624**
	95	**(57 - 135)**	**1.4**	**(0-20)**	**CFR136A 624**
Tetrachloroethene	**106**	**(64 - 140)**			**CFR136A 624**
	105	**(64 - 140)**	**0.37**	**(0-20)**	**CFR136A 624**
Toluene	**105**	**(73 - 129)**			**CFR136A 624**
	103	**(73 - 129)**	**1.5**	**(0-20)**	**CFR136A 624**
1,1,1-Trichloroethane	**106**	**(74 - 129)**			**CFR136A 624**
	104	**(74 - 129)**	**1.8**	**(0-20)**	**CFR136A 624**
1,1,2-Trichloroethane	**94**	**(72 - 124)**			**CFR136A 624**
	98	**(72 - 124)**	**3.7**	**(0-20)**	**CFR136A 624**
Trichloroethene	**100**	**(71 - 140)**			**CFR136A 624**
	102	**(71 - 140)**	**2.8**	**(0-20)**	**CFR136A 624**
Vinyl chloride	**108**	**(57 - 123)**			**CFR136A 624**
	107	**(57 - 123)**	**0.55**	**(0-20)**	**CFR136A 624**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	95	(60 - 124)
	100	(60 - 124)
Toluene-d8	107	(74 - 121)
	107	(74 - 121)
4-Bromofluorobenzene	96	(73 - 125)
	95	(73 - 125)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: F1K020465 Work Order #...: MNNMF1CD-MS Matrix.....: WATER
MS Lot-Sample #: F1K020465-001 MNNMF1CE-MSD
Date Sampled...: 11/02/11 12:30 Date Received..: 11/02/11
Prep Date.....: 11/03/11 Analysis Date..: 11/03/11
Prep Batch #...: 1307105 Analysis Time..: 13:08
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Acrolein	66	(50 - 150)			CFR136A 624
	70	(50 - 150)	4.9	(0-20)	CFR136A 624
Acrylonitrile	98	(23 - 150)			CFR136A 624
	103	(23 - 150)	4.9	(0-20)	CFR136A 624
Benzene	101	(57 - 139)			CFR136A 624
	102	(57 - 139)	0.58	(0-20)	CFR136A 624
Bromoform	108	(45 - 150)			CFR136A 624
	120	(45 - 150)	11	(0-20)	CFR136A 624
Bromomethane	97	(31 - 131)			CFR136A 624
	100	(31 - 131)	3.8	(0-20)	CFR136A 624
Carbon tetrachloride	103	(70 - 140)			CFR136A 624
	104	(70 - 140)	0.67	(0-20)	CFR136A 624
Chlorobenzene	103	(57 - 131)			CFR136A 624
	103	(57 - 131)	0.29	(0-20)	CFR136A 624
Chlorodibromomethane	106	(53 - 149)			CFR136A 624
	112	(53 - 149)	5.2	(0-20)	CFR136A 624
Chloroethane	96	(35 - 139)			CFR136A 624
	95	(35 - 139)	0.89	(0-20)	CFR136A 624
Chloroform	97	(55 - 138)			CFR136A 624
	101	(55 - 138)	3.2	(0-20)	CFR136A 624
Chloromethane	97	(41 - 140)			CFR136A 624
	98	(41 - 140)	1.1	(0-20)	CFR136A 624
Dichlorobromomethane	104	(38 - 150)			CFR136A 624
	108	(38 - 150)	3.6	(0-20)	CFR136A 624
1,1-Dichloroethane	99	(59 - 148)			CFR136A 624
	100	(59 - 148)	0.48	(0-20)	CFR136A 624
1,2-Dichloroethane	100	(49 - 150)			CFR136A 624
	106	(49 - 150)	5.0	(0-20)	CFR136A 624
1,1-Dichloroethene	104	(37 - 146)			CFR136A 624
	102	(37 - 146)	1.6	(0-20)	CFR136A 624
1,2-Dichloroethene (total)	97	(38 - 143)			CFR136A 624
	99	(38 - 143)	1.7	(0-20)	CFR136A 624
1,2-Dichloropropane	98	(42 - 150)			CFR136A 624
	102	(42 - 150)	3.7	(0-20)	CFR136A 624
cis-1,3-Dichloropropene	104	(50 - 150)			CFR136A 624
	110	(50 - 150)	6.4	(0-20)	CFR136A 624
trans-1,3-Dichloropropene	102	(28 - 150)			CFR136A 624
	107	(28 - 150)	4.1	(0-20)	CFR136A 624

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MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: F1K020465 **Work Order #...:** MNNMF1CD-MS **Matrix.....:** WATER
MS Lot-Sample #: F1K020465-001 MNNMF1CE-MSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Ethylbenzene	**104**	**(53 - 135)**			**CFR136A 624**
	104	**(53 - 135)**	**0.09**	**(0-20)**	**CFR136A 624**
Methylene chloride	**108**	**(42 - 143)**			**CFR136A 624**
	105	**(42 - 143)**	**0.59**	**(0-20)**	**CFR136A 624**
1,1,2,2-Tetrachloroethane	**99**	**(46 - 150)**			**CFR136A 624**
	100	**(46 - 150)**	**0.83**	**(0-20)**	**CFR136A 624**
Tetrachloroethene	**104**	**(64 - 148)**			**CFR136A 624**
	99	**(64 - 148)**	**4.2**	**(0-20)**	**CFR136A 624**
Toluene	**103**	**(60 - 130)**			**CFR136A 624**
	103	**(60 - 130)**	**0.19**	**(0-20)**	**CFR136A 624**
1,1,1-Trichloroethane	**104**	**(55 - 138)**			**CFR136A 624**
	104	**(55 - 138)**	**0.19**	**(0-20)**	**CFR136A 624**
1,1,2-Trichloroethane	**97**	**(62 - 129)**			**CFR136A 624**
	103	**(62 - 129)**	**5.5**	**(0-20)**	**CFR136A 624**
Trichloroethene	**100**	**(71 - 150)**			**CFR136A 624**
	103	**(71 - 150)**	**2.8**	**(0-20)**	**CFR136A 624**
Vinyl chloride	**102**	**(40 - 128)**			**CFR136A 624**
	106	**(40 - 128)**	**3.9**	**(0-20)**	**CFR136A 624**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	96	(51 - 137)
	104	(51 - 137)
Toluene-d8	103	(67 - 122)
	106	(67 - 122)
4-Bromofluorobenzene	94	(64 - 126)
	98	(64 - 126)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

AECOM Technical Services Inc.

Client Sample ID: 60162412-SMP-PL5-WW-OTH-8109

TOTAL Metals

Lot-Sample #...: F1K020465-001 **Matrix.....:** WATER
Date Sampled...: 11/02/11 12:30 **Date Received..:** 11/02/11

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1307111						
Cadmium	ND	5	ug/L	SW846 6010B	11/03-11/08/11	MNNMF1AE
		Dilution Factor: 1		Analysis Time..: 15:09		
Chromium	ND	10	ug/L	SW846 6010B	11/03-11/08/11	MNNMF1AF
		Dilution Factor: 1		Analysis Time..: 15:09		
Copper	ND	25	ug/L	SW846 6010B	11/03-11/08/11	MNNMF1AG
		Dilution Factor: 1		Analysis Time..: 15:09		
Iron	**796**	**100**	**ug/L**	**SW846 6010B**	**11/03-11/08/11**	**MNNMF1AH**
		Dilution Factor: 1		Analysis Time..: 15:09		
Nickel	ND	40	ug/L	SW846 6010B	11/03-11/08/11	MNNMF1AJ
		Dilution Factor: 1		Analysis Time..: 15:09		
Lead	**4.2 B**	**10**	**ug/L**	**SW846 6010B**	**11/03-11/08/11**	**MNNMF1AK**
		Dilution Factor: 1		Analysis Time..: 15:09		
Zinc	**27.9**	**20**	**ug/L**	**SW846 6010B**	**11/03-11/08/11**	**MNNMF1AL**
		Dilution Factor: 1		Analysis Time..: 15:09		

NOTE(S):

B Estimated result. Result is less than RL.

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: F1K020465 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: F1K030000-111 **Prep Batch #...:** 1307111						
Cadmium	ND	5	ug/L	SW846 6010B	11/03-11/08/11	MNPHA1AA
		Dilution Factor: 1				
		Analysis Time..: 14:58				
Chromium	ND	10	ug/L	SW846 6010B	11/03-11/08/11	MNPHA1AC
		Dilution Factor: 1				
		Analysis Time..: 14:58				
Copper	ND	25	ug/L	SW846 6010B	11/03-11/08/11	MNPHA1AD
		Dilution Factor: 1				
		Analysis Time..: 14:58				
Iron	ND	100	ug/L	SW846 6010B	11/03-11/08/11	MNPHA1AE
		Dilution Factor: 1				
		Analysis Time..: 14:58				
Lead	ND	10	ug/L	SW846 6010B	11/03-11/08/11	MNPHA1AG
		Dilution Factor: 1				
		Analysis Time..: 14:58				
Nickel	ND	40	ug/L	SW846 6010B	11/03-11/08/11	MNPHA1AF
		Dilution Factor: 1				
		Analysis Time..: 14:58				
Zinc	ND	20	ug/L	SW846 6010B	11/03-11/08/11	MNPHA1AH
		Dilution Factor: 1				
		Analysis Time..: 14:58				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: F1K020465 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: F1K030000-111 **Prep Batch #...:** 1307111					
Cadmium	102	(80 - 120)	SW846 6010B	11/03-11/08/11	MNPHA1AJ
		Dilution Factor: 1	Analysis Time..: 15:04		
Chromium	97	(80 - 120)	SW846 6010B	11/03-11/08/11	MNPHA1AK
		Dilution Factor: 1	Analysis Time..: 15:04		
Copper	95	(80 - 120)	SW846 6010B	11/03-11/08/11	MNPHA1AL
		Dilution Factor: 1	Analysis Time..: 15:04		
Iron	100	(80 - 120)	SW846 6010B	11/03-11/08/11	MNPHA1AM
		Dilution Factor: 1	Analysis Time..: 15:04		
Nickel	99	(80 - 120)	SW846 6010B	11/03-11/08/11	MNPHA1AN
		Dilution Factor: 1	Analysis Time..: 15:04		
Lead	98	(80 - 120)	SW846 6010B	11/03-11/08/11	MNPHA1AP
		Dilution Factor: 1	Analysis Time..: 15:04		
Zinc	108	(80 - 120)	SW846 6010B	11/03-11/08/11	MNPHA1AQ
		Dilution Factor: 1	Analysis Time..: 15:04		

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: F1K020465 **Matrix.....:** WATER
Date Sampled...: 11/02/11 12:30 **Date Received..:** 11/02/11

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: F1K020465-001 **Prep Batch #...:** 1307111							
Cadmium	101	(75 - 125)			SW846 6010B	11/03-11/08/11	MNNMF1AW
	102	(75 - 125)	1.4	(0-20)	SW846 6010B	11/03-11/08/11	MNNMF1AX
		Dilution Factor: 1					
		Analysis Time..: 15:20					
Chromium	97	(75 - 125)			SW846 6010B	11/03-11/08/11	MNNMF1A0
	98	(75 - 125)	0.57	(0-20)	SW846 6010B	11/03-11/08/11	MNNMF1A1
		Dilution Factor: 1					
		Analysis Time..: 15:20					
Copper	105	(75 - 125)			SW846 6010B	11/03-11/08/11	MNNMF1A2
	105	(75 - 125)	0.27	(0-20)	SW846 6010B	11/03-11/08/11	MNNMF1A3
		Dilution Factor: 1					
		Analysis Time..: 15:20					
Iron	100	(75 - 125)			SW846 6010B	11/03-11/08/11	MNNMF1A4
	101	(75 - 125)	0.84	(0-20)	SW846 6010B	11/03-11/08/11	MNNMF1A5
		Dilution Factor: 1					
		Analysis Time..: 15:20					
Lead	100	(75 - 125)			SW846 6010B	11/03-11/08/11	MNNMF1A8
	101	(75 - 125)	0.96	(0-20)	SW846 6010B	11/03-11/08/11	MNNMF1A9
		Dilution Factor: 1					
		Analysis Time..: 15:20					
Nickel	101	(75 - 125)			SW846 6010B	11/03-11/08/11	MNNMF1A6
	102	(75 - 125)	1.2	(0-20)	SW846 6010B	11/03-11/08/11	MNNMF1A7
		Dilution Factor: 1					
		Analysis Time..: 15:20					
Zinc	111	(75 - 125)			SW846 6010B	11/03-11/08/11	MNNMF1CA
	113	(75 - 125)	1.3	(0-20)	SW846 6010B	11/03-11/08/11	MNNMF1CC
		Dilution Factor: 1					
		Analysis Time..: 15:20					

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

AECOM Technical Services Inc.

Client Sample ID: 60162412-SMP-PL5-WW-OTH-8109

General Chemistry

Lot-Sample #...: F1K020465-001 Work Order #...: MNNMF Matrix.....: WATER
Date Sampled...: 11/02/11 12:30 Date Received..: 11/02/11

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
pH (liquid)	6.8	0.10	No Units	SW846 9040	11/02/11	1307095
		Dilution Factor: 1		Analysis Time..: 18:56		
COD	235	20.0	mg/L	MCAWW 410.4	11/04/11	1308135
		Dilution Factor: 1		Analysis Time..: 00:00		
Total Suspended Solids	4.0	4.0	mg/L	MCAWW 160.2	11/04-11/07/11	1311102
		Dilution Factor: 1		Analysis Time..: 00:00		

METHOD BLANK REPORT

General Chemistry

Client Lot #...: F1K020465 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
COD		Work Order #: MNQPX1AA		MB Lot-Sample #:	F1K040000-135	
	ND	20.0	mg/L	MCAWW 410.4	11/04/11	1308135
		Dilution Factor: 1				
		Analysis Time..: 00:00				
Total Suspended Solids		Work Order #: MNRTN1AA		MB Lot-Sample #:	F1K070000-102	
	ND	4.0	mg/L	MCAWW 160.2	11/04-11/07/11	1311102
		Dilution Factor: 1				
		Analysis Time..: 00:00				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: F1K020465 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
pH (liquid)		Work Order #: MNRL01AA	LCS Lot-Sample#: F1K030000-095		
	100	(99 - 101)	SW846 9040	11/02/11	1307095
		Dilution Factor: 1	Analysis Time..: 18:51		
COD		Work Order #: MNQPX1AC	LCS Lot-Sample#: F1K040000-135		
	107	(90 - 110)	MCAWW 410.4	11/04/11	1308135
		Dilution Factor: 1	Analysis Time..: 00:00		
Total Suspended Solids		Work Order #: MNRTN1AC	LCS Lot-Sample#: F1K070000-102		
	102	(79 - 122)	MCAWW 160.2	11/04-11/07/11	1311102
		Dilution Factor: 1	Analysis Time..: 00:00		

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: F1K020465 **Matrix.....:** WATER
Date Sampled...: 10/28/11 08:00 **Date Received..:** 10/28/11

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
COD		Work Order #...: MNJ5V1AV		MS Lot-Sample #: F1J280451-001	
	87 N	(90 - 110)	MCAWW 410.4	11/04/11	1308135

Dilution Factor: 1 Analysis Time..: 00:00

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

N Spiked analyte recovery is outside stated control limits.

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: F1K020465 **Work Order #...:** MNNMF-SMP MNNMF-DUP **Matrix.....:** WATER

Date Sampled...: 11/02/11 12:30 **Date Received..:** 11/02/11

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
pH (liquid)						SD Lot-Sample #:	F1K020465-001	
	6.8	6.9	No Units	0.73	(0-0.0)	SW846 9040	11/02/11	1307095
		Dilution Factor: 1				Analysis Time..: 18:56		
Total Suspended Solids						SD Lot-Sample #:	F1K020465-001	
	4.0	4.0	mg/L	0.0	(0-20)	MCAWW 160.2	11/04-11/07/11	1311102
		Dilution Factor: 1				Analysis Time..: 00:00		

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: F1K020465 **Work Order #...:** MNJ5V-SMP MNJ5V-DUP **Matrix.....:** WATER

Date Sampled...: 10/28/11 08:00 **Date Received..:** 10/28/11

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
COD						SD Lot-Sample #:	F1J280451-001	
	95.0	105	mg/L	10	(0-20)	MCAWW 410.4	11/04/11	1308135

Dilution Factor: 1 Analysis Time..: 00:00

AECOM Technical Services Inc.

Client Sample ID: 60162412-SMP-PL5-WW-OTH-8109

Radiochemistry

Lab Sample ID: F1K020465-001
Work Order: MNNMF
Matrix: WATER

Date Collected: 11/02/11 1230
Date Received: 11/02/11 1530

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	mdc	Prep Date	Analysis Date
GROSS A/B BY GFPC SW846 9310 MOD				**pCi/L**		**Batch # 1308068**	**Yld %**
Gross Alpha	7	U	11	3	18	11/04/11	11/07/11
Gross Beta	10.1	U	7.5	4.0	11	11/04/11	11/07/11
Iso THORIUM (SHORT CT) DOE A-01-R MOD				**pCi/L**		**Batch # 1307047**	**Yld % 75**
Thorium 228	0.054	U	0.085	1.00	0.14	11/03/11	11/04/11
Thorium 230	**0.47**		**0.22**	1.00	**0.06**	**11/03/11**	**11/04/11**
Thorium 232	0.048	U	0.067	1.00	0.064	11/03/11	11/04/11
Iso URANIUM (SHORT CT) DOE A-01-R MOD				**pCi/L**		**Batch # 1307048**	**Yld % 82**
Uranium 235/236	-0.005	U	0.011	1.00	0.12	11/03/11	11/04/11
Uranium 238	**0.11**		**0.10**	1.00	**0.1**	**11/03/11**	**11/04/11**
Radium 226 by EPA 903.0 MOD				**pCi/L**		**Batch # 1307022**	**Yld % 86**
Radium (226)	**0.85**	J	0.26	1.00	0.23	**11/03/11**	**11/04/11**
Radium 228 by GFPC EPA 904 MOD				**pCi/L**		**Batch # 1307023**	**Yld % 82**
Radium 228	0.21	U	0.24	1.00	0.39	11/03/11	11/07/11

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.
Bold results are greater than the MDC.

J Result is greater than sample detection limit but less than stated reporting limit.
U Result is less than the sample detection limit.

METHOD BLANK REPORT

Radiochemistry

Client Lot ID: F1K020465
Matrix: WATER

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC		Prep Date	Lab Sample ID / Analysis Date
Radium 226 by EPA 903.0 MOD			pCi/L	Batch # 1307022		Yld % 89		F1K030000-022B
Radium (226)	0.05	U	0.12	1.00	0.21		11/03/11	11/04/11
Radium 228 by GFPC EPA 904 MOD			pCi/L	Batch # 1307023		Yld % 86		F1K030000-023B
Radium 228	0.24	U	0.21	1.00	0.33		11/03/11	11/07/11
Iso THORIUM (SHORT CT) DOE A-01-R MOD			pCi/L	Batch # 1307047		Yld % 83		F1K030000-047B
Thorium 228	-0.003	U	0.047	1.00	0.14		11/03/11	11/04/11
Thorium 230	**0.15**		**0.11**	1.00	**0.06**		**11/03/11**	**11/04/11**
Thorium 232	0.015	U	0.044	1.00	0.10		11/03/11	11/04/11
Iso URANIUM (SHORT CT) DOE A-01-R MOD			pCi/L	Batch # 1307048		Yld % 95		F1K030000-048B
Uranium 235/236	0.0	U	0.020	1.00	0.064		11/03/11	11/04/11
Uranium 238	0.046	U	0.067	1.00	0.10		11/03/11	11/04/11
GROSS A/B BY GFPC SW846 9310 MOD			pCi/L	Batch # 1308068		Yld %		F1K040000-068B
Gross Alpha	-0.25	U	0.47	3.00	1.1		11/04/11	11/07/11
Gross Beta	0.34	U	0.61	4.00	1.0		11/04/11	11/07/11

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined using instrument performance only
Bold results are greater than the MDC.

U Result is less than the sample detection limit.

Laboratory Control Sample Report

Radiochemistry

Client Lot ID: F1K020465
Matrix: WATER

Parameter	Spike Amount	Result	Total Uncert. (2 σ+/-)	MDC	% Yld	% Rec	Lab Sample ID / QC Control Limits
Radium 226 by EPA 903.0 MOD			**pCi/L**	**903.0 MOD**			**F1K030000-022C**
Radium (226)	11.3	12.9	1.4	0.2	85	114	(64 - 125)
	Batch #:	1307022		**Analysis Date:**	11/04/11		
Radium 228 by GFPC EPA 904 MOD			**pCi/L**	**904 MOD**			**F1K030000-023C**
Radium 228	5.23	5.02	0.66	0.34	94	96	(65 - 126)
	Batch #:	1307023		**Analysis Date:**	11/07/11		
Iso THORIUM (SHORT CT) DOE A-01-R MOD			**pCi/L**	**A-01-R MOD**			**F1K030000-047C**
Thorium 230	9.49	10.2	1.3	0.1	77	107	(77 - 118)
	Batch #:	1307047		**Analysis Date:**	11/04/11		
Iso URANIUM (SHORT CT) DOE A-01-R MOD			**pCi/L**	**A-01-R MOD**			**F1K030000-048C**
Uranium 234	13.1	14.2	1.6	0.1	87	109	(76 - 136)
Uranium 238	13.6	13.6	1.5	0.1	87	100	(76 - 134)
	Batch #:	1307048		**Analysis Date:**	11/04/11		
GROSS A/B BY GFPC SW846 9310 MOD			**pCi/L**	**9310 MOD**			**F1K040000-068C**
Gross Alpha	54.0	42.1	6.0	1.2		78	(74 - 138)
Gross Beta	96.6	99	10	1		102	(75 - 125)
	Batch #:	1308068		**Analysis Date:**	11/07/11		

NOTE(S)

MDC is determined by instrument performance only
Calculations are performed before rounding to avoid round-off error in calculated results

MATRIX SPIKE REPORT

Radiochemistry

Client Lot Id: F1K010464
Matrix: WATER

Date Sampled: 11/01/11
Date Received: 11/01/11

Parameter	Spike Amount	Spike Result	Total Uncert. (2σ +/-)	Spike Yld.	Sample Result	Total Uncert. (2 σ +/-)	QC Sample ID %YLD	QC Sample ID %REC	QC Control Limits
GROSS A/B BY GFPC SW846 9310 MOD			**pCi/L**		**9310 MOD**			**F1K010464-001**	
Gross Alpha	635	572	86		30	17		85	(40-150)
	Batch #:	1308068		Analysis Date:		11/07/11			
GROSS A/B BY GFPC SW846 9310 MOD			**pCi/L**		**9310 MOD**			**F1K010464-001**	
Gross Beta	1140	1240	130		54	13		104	(68-150)
	Batch #:	1308068		Analysis Date:		11/07/11			

NOTE(S)

Data are incomplete without the case narrative.

Calculations are performed before rounding to avoid round-off errors in calculated results.

DUPLICATE EVALUATION REPORT

Radiochemistry

Client Lot ID: F1K020465
Matrix: WATER

Date Sampled: 11/01/11
Date Received: 11/01/11

Parameter	SAMPLE Result		Total Uncert. (2σ+/-)	% Yld	DUPLICATE Result		Total Uncert. (2σ+/-)	% Yld	QC Sample ID Precision	
GROSS A/B BY GFPC SW846 9310 MOD				**pCi/L**	**9310 MOD**				**F1K010464-001**	
Gross Alpha	30		17		35		16		15	%RPD
Gross Beta	54		13		46		13		16	%RPD
	Batch #:		1308068	(Sample)	1308068	(Duplicate)				
Iso THORIUM (SHORT CT) DOE A-01-R MOD				**pCi/L**	**A-01-R MOD**				**F1K020465-001**	
Thorium 228	0.054	U	0.085	75	0.025	U	0.069	79	73	%RPD
Thorium 230	0.47		0.22	75	0.30		0.17	79	43	%RPD
Thorium 232	0.048	U	0.067	75	0.061	U	0.082	79	25	%RPD
	Batch #:		1307047	(Sample)	1307047	(Duplicate)				
Iso URANIUM (SHORT CT) DOE A-01-R MOD				**pCi/L**	**A-01-R MOD**				**F1K020465-001**	
Uranium 235/236	-0.005	U	0.011	82	0.025	U	0.049	89	311	%RPD
Uranium 238	0.11		0.10	82	0.18		0.12	89	47	%RPD
	Batch #:		1307048	(Sample)	1307048	(Duplicate)				
Radium 226 by EPA 903.0 MOD				**pCi/L**	**903.0 MOD**				**F1K020465-001**	
Radium (226)	0.85	J	0.26	86	0.80	J	0.25	88	7	%RPD
	Batch #:		1307022	(Sample)	1307022	(Duplicate)				
Radium 228 by GFPC EPA 904 MOD				**pCi/L**	**904 MOD**				**F1K020465-001**	
Radium 228	0.21	U	0.24	82	0.11	U	0.23	87	62	%RPD
	Batch #:		1307023	(Sample)	1307023	(Duplicate)				

NOTE(S)

Data are incomplete without the case narrative.
Calculations are performed before rounding to avoid round-off error in calculated results

J Result is greater than sample detection limit but less than stated reporting limit.
U Result is less than the sample detection limit.

F1K020465

CLIENT ANALYSIS SUMMARY

Storage Loc: 1-129,R1,M,V2

Project Manager: JKA Quote #: 87754 SDG:

Date Received: 2011-11-02

Project: Mallinckrodt St. Louis Plant

Analytical Due Date: 2011-11-09

PO#: 10372ACM Report to: Kevin Martilla

RUSH

Report Due Date: 2011-11-09

Client: 404224 AECOM Technical Services Inc.

Report Type: D Expanded Deliverable

#SMPS In LOT: 2 EDD Code: 00

SAMPLE LOGIN: FOR MULTIPLE SAMPLES- EACH CHAIN NEEDS TO GO IN ITS OWN LOT. QC APPLIED TO ONLY ONE SAMPLE PER DAY.
Log ZHE EXTRACTION line item for TCLP VOA. Log TCLP EXTRACTION line item for TCLP analyses. RAD: Initial Gamma Spec counted as received . When complete dry/grind and prep for Gamma Ra226,TAR,Iso U and Iso Th. GAMMA SPEC. SHOULD BE COUNTED IN CLIENTS 500ML MARINELLI. RA226/228 - NO INGROWTH REQUIRED!!! RA226/228 MUST BE PREPPED IN SEPERATE ALIQUOTS!!! DO NOT PREP TOGETHER! STANDARD QC ON CLIENT SAMPLE IS REQUIRED FOR ALL ANALYSES.

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	I
1	60162412-SMP-PL5-WW-OTH-810			2011-11-02 / 1230	MNNMF	WATER

SAMPLE COMMENTS:

	CR	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06			
	CU	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06			
	FE	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06			
	NI	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06			
	PB	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06			
	CD	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06			
	ZN	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06			
	XX	DN	CFR13 6A	624	WATER, 624, VOA	25	PURGE AND TRAP - 25 mL purge (Waters)	01	STANDARD TEST SET	PROT: A	WRK LOC	06	TIC: N		
	XX	ZZ	NONE	NONE	WATER, RAD SCREEN	88	NO SAMPLE PREPARATION PERFORMED / DIRECT	01	STANDARD TEST SET	PROT: A	WRK LOC	06			
	XX	2I	EML	A-01-R MOD	WATER, Iso URANIUM	J2	Extraction Chromatography - Sequential Actinides	01	STANDARD TEST SET	PROT: A	WRK LOC	06			
	XX	2K	EML	A-01-R MOD	WATER, Iso THORIUM	J2	Extraction Chromatography - Sequential Actinides	01	STANDARD TEST SET	PROT: A	WRK LOC	06			
	XX	Z4	EPA	904 MOD	WATER, 904 MOD, Ra-228 (NO INGROWTH)	N*	No Ingrowth	2X	SPECIAL PROJECTS	PROT: A	WRK LOC	06			
	XX	ZA	SW846	9310 MOD	WATER, 9310 MOD, GROSS A/B	FR	Evaporative Preparation, Total	01	STANDARD TEST SET	PROT: A	WRK LOC	06			
	XX	ZY	EPA	903.0 MOD	WATER, 903 MOD, Ra-226 (NO INGROWTH)	N*	No Ingrowth	2X	SPECIAL PROJECTS	PROT: A	WRK LOC	06			
	XX	AL	MCAW W	160.2	WATER, 160.2, TSS	88	NO SAMPLE PREPARATION PERFORMED / DIRECT	01	STANDARD TEST SET	PROT: A	WRK LOC	06			
	XX	FJ	SW846	9040	WATER, 9040, pH	88	NO SAMPLE PREPARATION PERFORMED / DIRECT	01	STANDARD TEST SET	PROT: A	WRK LOC	06			
	XX	VO	MCAW W	410.4	WATER, 410.4, COD	21	DIGESTION, NON-METAL/INORGANICS	01	STANDARD TEST SET	PROT: A	WRK LOC	06			
D	PB	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06			
D	NI	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06			
D	CD	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06			
D	CR	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06			
D	CU	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06			
D	ZN	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06			
D	FE	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06			
D	XX	DN	CFR13 6A	624	WATER, 624, VOA	25	PURGE AND TRAP - 25 mL purge (Waters)	01	STANDARD TEST SET	PROT: A	WRK LOC	06	TIC: N		
S	ZN	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06			
S	CD	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06			
S	CR	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06			
S	CU	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06			
S	FE	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06			
S	NI	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06			
S	PB	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: A	WRK LOC	06			
S	XX	DN	CFR13 6A	624	WATER, 624, VOA	25	PURGE AND TRAP - 25 mL purge (Waters)	01	STANDARD TEST SET	PROT: A	WRK LOC	06	TIC: N		
S	XX	ZA	SW846	9310 MOD	WATER, 9310 MOD, GROSS A/B	FR	Evaporative Preparation, Total	01	STANDARD TEST SET	PROT: A	WRK LOC	06			

F1K020465

CLIENT ANALYSIS SUMMARY

Storage Loc: 1-129,R1,M,V2

Project Manager: JKA
Quote #: 87754
SDG:
Date Received: 2011-11-02
Analytical Due Date: 2011-11-09
Project: Mallinckrodt St. Louis Plant
Report Due Date: 2011-11-09
PO#: 10372ACM
Report to: Kevin Martilla
RUSH
Report Type: D Expanded Deliverable
Client: 404224 AECOM Technical Services Inc.
#SMPS In LOT: 2
EDD Code: 00

SAMPLE LOGIN: FOR MULTIPLE SAMPLES- EACH CHAIN NEEDS TO GO IN ITS OWN LOT. QC APPLIED TO ONLY ONE SAMPLE PER DAY.
Log ZHE EXTRACTION line item for TCLP VOA. Log TCLP EXTRACTION line item for TCLP analyses. RAD: Initial Gamma Spec counted as received . When complete dry/grind and prep for Gamma Ra226,TAR,Iso U and Iso Th. GAMMA SPEC. SHOULD BE COUNTED IN CLIENTS 500ML MARINELLI. RA226/228 - NO INGROWTH REQUIRED!!! RA226/228 MUST BE PREPPED IN SEPERATE ALIQUOTS!!! DO NOT PREP TOGETHER! STANDARD QC ON CLIENT SAMPLE IS REQUIRED FOR ALL ANALYSES.

S	XX	VO	MCAW W	410.4	WATER, 410.4, COD	21	DIGESTION, NON-METAL/INORGANICS	01	STANDARD TEST SET	PROT: A	WRK LOC	06	
X	XX	2I	EML	A-01-R MOD	WATER, Iso URANIUM	J2	Extraction Chromatography - Sequential Actinides	01	STANDARD TEST SET	PROT: A	WRK LOC	06	
X	XX	2K	EML	A-01-R MOD	WATER, Iso THORIUM	J2	Extraction Chromatography - Sequential Actinides	01	STANDARD TEST SET	PROT: A	WRK LOC	06	
X	XX	Z4	EPA	904 MOD	WATER, 904 MOD, Ra-226 (NO INGROWTH)	N*	No Ingrowth	2X	SPECIAL PROJECTS	PROT: A	WRK LOC	06	
X	XX	ZA	SW846	9310 MOD	WATER, 9310 MOD, GROSS A/B	FR	Evaporative Preparation, Total	01	STANDARD TEST SET	PROT: A	WRK LOC	06	
X	XX	ZY	EPA	903.0 MOD	WATER, 903 MOD, Ra-226 (NO INGROWTH)	N*	No Ingrowth	2X	SPECIAL PROJECTS	PROT: A	WRK LOC	06	
X	XX	AL	MCAW W	160.2	WATER, 160.2, TSS	88	NO SAMPLE PREPARATION PERFORMED / DIRECT	01	STANDARD TEST SET	PROT: A	WRK LOC	06	
X	XX	FJ	SW846	9040	WATER, 9040, pH	88	NO SAMPLE PREPARATION PERFORMED / DIRECT	01	STANDARD TEST SET	PROT: A	WRK LOC	06	
X	XX	VO	MCAW W	410.4	WATER, 410.4, COD	21	DIGESTION, NON-METAL/INORGANICS	01	STANDARD TEST SET	PROT: A	WRK LOC	06	

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	
2	VOC BLANKS			2011-11-02 / 0	MNNMG	WATER

SAMPLE COMMENTS:

XX	DN	CFR13 6A	624	WATER, 624, VOA	25	PURGE AND TRAP - 25 mL purge (Waters)	01	STANDARD TEST SET	PROT: A	WRK LOC	06	TIC: N	

St. Louis COC 444
13715 Rider Trail North
Earth City, MO 63045
phone 314.298.8566 fax 314.298.8757

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.

Lot F1K020465

Client Contact	Project Manager: Kevin Martilla	Site Contact: Casey Knuteson	Date: 11/2/2011	COC No: N/A
AECOM	Tel/Fax: (618)444-5535	Lab Contact: Jayna Awold	Carrier: Test America	1 of 1 COCs
Address 8005 Outer Circle RD	Analysis Turnaround Time			Job No. 60162412
City/State/Zip Brooks City Base, TX 78235	Calendar (C) or Work Days (W) C			
(618)444-5535 Phone	TAT if different from Below			
none FAX	☐ 2 weeks			SDG No.
Project Name: Mallinckrodt C-T Decommissioning	■ 1 week			
Site: St. Louis Plant	☐ 2 days			
P O # 10372ACM	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	pH	TSS	COD	ICP Metals (Cd, Cr, Cu, Fe, Pb, Ni, Zn)	Volatile Organics (EPA Method 624)	Gross Alpha/Beta	Isotopic Uranium (Alpha Spectrometry)	Radium-226 (GFPC, no decay/ingrowth)	Radium-228 (GFPC - no decay/ingrowth)	Isotopic Thorium (Alpha Spectrometry)	Sample Specific Notes:
60162412-SMP-PL5-WW-QTH-8109	11/2/2011	12:30	Water	Water	12		x	x	x	x	x	x	x	x	x	x	* Further Testing if Gross Beta above 50 pci/L
VOC Blanks	n/a	n/a	n/a	n/a	1												

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification
■ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* *Poison B* ☐ *Unknown* ☐

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ■ *Archive For* 1 *Months*

Special Instructions/QC Requirements & Comments: Possible hazards include radiological. Sample methods to comply with MSD Ordinance 12559 standards. Please use EPA Method 9310 for gross Alpha and Beta. Discharge Number 117.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	AeCom / TA	11/02/11 1430	[signature]	TA	11/2/11 1431
[signature]	TA	11/2/11 1530	[signature]	TA	11/2/11 1530
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

TestAmerica - St. Louis

MSD 012848

TestAmerica - St. Louis

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Lot #(s): F1J BD 11/2/11

CUR Form #: 4 4 4

F1K020465

467

CONDITION UPON RECEIPT FORM

Client: AECOM

Quote No: 87154

COC/RFA No: AECOM 20111102

Initiated By: BD Date: 11/2/11 Time: 1530

Shipping Information

Shipper: FedEx UPS DHL Courier Client Other: MS Multiple Packages: Y N

Shipping # (s):*

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

Sample Temperature (s):**

1. 18
2. Ambient
3.
4.
5.
6.
7.
8.
9.
10.

*Numbered shipping lines correspond to Numbered Sample Temp lines

**Sample must be received at 4°C ± 2°C- If not, note contents below. Temperature variance does NOT affect the following: Metals-Liquid; Rad tests- Liquid or Solids; Perchlorate

Condition (Circle "Y" for yes, "N" for no and "N/A" for not applicable):

1.	Y N	Are there custody seals present on the cooler?	8.	Y N	Are there custody seals present on bottles?
2.	Y N N/A	Do custody seals on cooler appear to be tampered with?	9.	Y N N/A	Do custody seals on bottles appear to be tampered with?
3.	Y N	Were contents of cooler frisked after opening, but before unpacking?	10.	Y N N/A	Was sample received with proper pH[1]? (If not, make note below)
4.	Y N	Sample received with Chain of Custody?	11.	Y N N/A	Containers for C-14, H-3 & I-129/131 marked with "Do Not Preserve" label?
5.	Y N N/A	Does the Chain of Custody match sample ID's on the container(s)?	12.	Y N	Sample received in proper containers?
6.	Y N	Was sample received broken?	13.	Y N N/A	Headspace in VOA or TOX liquid samples? (If Yes, note sample ID's below)
7.	Y N	Is sample volume sufficient for analysis?	14.	Y N N/A	Was Internal COC/Workshare received?

[1] For DOE-AL (Pantex, LANL, Sandia) sites, pH of ALL containers received must be verified, EXCEPT VOA, TOX, Oil & Grease and soils.

Notes: Samples for COC AECOM 20111102 all have "SV08" on sample labels. Use COC ID per JA

Samples just collected

Corrective Action:

☐ Client Contact Name: Informed by:

☐ Sample(s) processed "as is"

☐ Sample(s) on hold until: If released, notify:

Project Management Review: LMS Date: 11-3-11

THIS FORM MUST BE COMPLETED AT THE TIME THE ITEMS ARE BEING CHECKED IN. IF ANY ITEM IS COMPLETED BY SOMEONE OTHER THAN THE INITIATOR, THEN THAT PERSON IS REQUIRED TO APPLY THEIR INITIAL AND THE DATE NEXT TO THAT ITEM.

ADMIN-0004 rev13, REVISED 05/27/11 \\Slsvr01\QA\FORMS\ST-LOUIS\ADMIN\Admin-0004 CUR.doc

Wastewater Discharge 011 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8002

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	U
Acrylonitrile	mg/L		< 0.01	U
Benzene	mg/L		< 0.001	U
Bromoform	mg/L		< 0.001	U
Bromomethane	mg/L		< 0.002	U
Carbon tetrachloride	mg/L		< 0.001	U
Chlorobenzene	mg/L		< 0.001	U
Chlorodibromomethane	mg/L		< 0.001	U
Chloroethane	mg/L		< 0.002	U
Chloroform	mg/L		< 0.001	U
Chloromethane	mg/L		< 0.002	U
Dichlorobromomethane	mg/L		< 0.001	U
1,1- Dichloroethane	mg/L		< 0.001	U
1,2- Dichloroethane	mg/L		< 0.001	U
1,1- Dichloroethene	mg/L		< 0.001	U
1,2- Dichloroethane	mg/L		< 0.002	U
1,2- Dichloropropane	mg/L		< 0.001	U
cis-1,3-Dichloropropene	mg/L		< 0.001	U
trans-1,3-Dichloropropene	mg/L		< 0.001	U
Ethylbenzene	mg/L		< 0.001	U
Methylene Chloride	mg/L		< 0.001	U
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	U
Tetra chloroethene	mg/L		< 0.001	U
Toluene	mg/L		< 0.001	U
1,1,1- Trichloroethane	mg/L		< 0.001	U
1,1,2- Trichloroethane	mg/L		< 0.001	U
Trichloroethene	mg/L		< 0.001	U
Vinyl Chloride	mg/L		< 0.002	U
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	U
Chromium	mg/L	5	< 0.01	U
Copper	mg/L	2.7	< 0.025	U
Iron	mg/L	150	0.0608	B
Nickel	mg/L	2.3	< 0.04	U
Lead	mg/L	0.4	< 0.01	U
Zinc	mg/L	3	0.0381	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7	
COD	mg/L	600	60.0	
TSS	mg/L	300	1.0	B
Radionuclides				
Gross Alpha	pCi/L	3,000	< 6.6	U
Gross Beta	pCi/L	50	10.7	
Ra-226	pCi/L	10	0.87	
Ra-228	pCi/L	30	< 0.37	U
Th-228	pCi/L	2,000	< 0.18	U
Th-230	pCi/L	1,000	< 0.19	U
Th-232	pCi/L	300	< 0.11	U
U-234	pCi/L		< 0.001	ND
U-235/6	pCi/L		< 0.13	
U-238	pCi/L		0.19	
Total Uranium	*pCi/L*	*3,000*	*< 0.321*	

10 CFR 20 Appendix B Table 3 Values

Analyte	Units	Limit	Discharge Concentration	Averaged Concentration
Ra-226	pCi/L	0.6	0.87	0.002
Ra-228	pCi/L	0.6	0.37	0.001
Th-228	pCi/L	2	0.18	0.000
Th-230	pCi/L	1	0.19	0.000
Th-232	pCi/L	0.3	0.11	0.000
U-234	pCi/L	3	0.001	0.000
U-235/6	pCi/L	3	0.13	0.000
U-238	pCi/L	3	0.19	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.008*

Discharge Volume (gals) = 40,000

Covidien averaging factor[2] = 0.002

Analyte	Units	Annual Limit	Discharge Activity	Year to Date Activity
Gross Radioactivity	Ci	1	2.6E-06	2.7E-05

Notes:

(1) 'B' indicates estimated value; 'U' indicates result less than sample detection limit; 'ND' indicates radionuclide not detected.

(2) derived from discharge volume divided by a Covidien minimum average monthly volume (20,000,000 gal)

Discharge Log for Area 5 Processing Frac Tanks

CT Covidien Plant — Discharge 011

Contractor: AECOM

Date Start Discharge: 7/1/2011 — Notified MSD, Steve Grace, (314) 436-8755
Email via Karen Burke

Date Discharged Completed: 7/1/2011 — Notified MSD, Steve Grace, (314) 436-8755

Annalytical Results:			
Various:		Total Metals:	
pH:	In Monthly Summary Per MSD	Cadmium:	In Monthly Summary Per MSD
Total Suspended Solids (TSS):	In Monthly Summary Per MSD	Chromium:	In Monthly Summary Per MSD
Chemical Oxegen Demand (COD):	In Monthly Summary Per MSD	Copper:	In Monthly Summary Per MSD
Volitile Organics (Method 624):	In Monthly Summary Per MSD	Iron:	In Monthly Summary Per MSD
Gross Alpha Radioactivity:	In Monthly Summary Per MSD	Lead:	In Monthly Summary Per MSD
Gross Beta Radioactivity:	In Monthly Summary Per MSD	Nickel:	In Monthly Summary Per MSD
		Zinc:	In Monthly Summary Per MSD
Isotopic			
U-235	In Monthly Summary Per MSD		
U-238	In Monthly Summary Per MSD		
Ra-226	In Monthly Summary Per MSD		
Ra-228	In Monthly Summary Per MSD		
Th-230	In Monthly Summary Per MSD		
Th-232	In Monthly Summary Per MSD		

			Start		Stop	
Signurature	Frac Tank ID#	Date	Time	Gallons	Time	Gallons
	255824	7/1/2011	0700	20000	xxx	xxx
	255824	7/1/2011	xxx	xxx	0930	0
	239801	7/1/2011	0705	20000	xxx	xxx
	239801	7/1/2011	xxx	xxx	0930	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time: 2.5 Hours

Total Volume 40000 Gallons

Wastewater Discharge 012 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8003

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	U
Acrylonitrile	mg/L		< 0.01	U
Benzene	mg/L		< 0.001	U
Bromoform	mg/L		< 0.001	U
Bromomethane	mg/L		< 0.002	U
Carbon tetrachloride	mg/L		< 0.001	U
Chlorobenzene	mg/L		< 0.001	U
Chlorodibromomethane	mg/L		< 0.001	U
Chloroethane	mg/L		< 0.002	U
Chloroform	mg/L		< 0.001	U
Chloromethane	mg/L		< 0.002	U
Dichlorobromomethane	mg/L		< 0.001	U
1,1- Dichloroethane	mg/L		< 0.001	U
1,2- Dichloroethane	mg/L		< 0.001	U
1,1- Dichloroethene	mg/L		< 0.001	U
1,2- Dichloroethane	mg/L		< 0.002	U
1,2- Dichloropropane	mg/L		< 0.001	U
cis-1,3-Dichloropropene	mg/L		< 0.001	U
trans-1,3-Dichloropropene	mg/L		< 0.001	U
Ethylbenzene	mg/L		< 0.001	U
Methylene Chloride	mg/L		< 0.001	U
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	U
Tetra chloroethene	mg/L		< 0.001	U
Toluene	mg/L		< 0.001	U
1,1,1- Trichloroethane	mg/L		< 0.001	U
1,1,2- Trichloroethane	mg/L		< 0.001	U
Trichloroethene	mg/L		< 0.001	U
Vinyl Chloride	mg/L		< 0.002	U
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	U
Chromium	mg/L	5	< 0.01	U
Copper	mg/L	2.7	< 0.025	U
Iron	mg/L	150	< 0.1	U
Nickel	mg/L	2.3	< 0.04	U
Lead	mg/L	0.4	< 0.01	U
Zinc	mg/L	3	0.0326	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7	
COD	mg/L	600	43.0	
TSS	mg/L	300	1.0	B
Radionuclides				
Gross Alpha	pCi/L	3,000	< 8.9	U
Gross Beta	pCi/L	50	15.1	
Ra-226	pCi/L	10	0.81	
Ra-228	pCi/L	30	< 0.5	U
Th-228	pCi/L	2,000	< 0.24	U
Th-230	pCi/L	1,000	0.3	
Th-232	pCi/L	300	< 0.12	U
U-234	pCi/L		< 0.001	ND
U-235/6	pCi/L		< 0.13	
U-238	pCi/L		0.17	
Total Uranium	*pCi/L*	*3,000*	*< 0.301*	

10 CFR 20 Appendix B Table 3 Values

Analyte	Units	Limit	Discharge Concentration	Averaged Concentration
Ra-226	pCi/L	0.6	0.81	0.002
Ra-228	pCi/L	0.6	0.5	0.001
Th-228	pCi/L	2	0.24	0.000
Th-230	pCi/L	1	0.3	0.001
Th-232	pCi/L	0.3	0.12	0.000
U-234	pCi/L	3	0.001	0.000
U-235/6	pCi/L	3	0.13	0.000
U-238	pCi/L	3	0.17	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.008*

Discharge Volume (gals) = 40,000

Covidien averaging factor[2] = 0.002

Analyte	Units	Annual Limit	Discharge Activity	Year to Date Activity
Gross Radioactivity	Ci	1	3.6E-06	3.1E-05

Notes:

(1) 'B' indicates estimated value; 'U' indicates result less than sample detection limit; 'ND' indicates radionuclide not detected.

(2) derived from discharge volume divided by a Covidien minimum average monthly volume (20,000,000 gal)

Discharge Log for Area 5 Processing Frac Tanks

CT Covidien Plant

Discharge 012

Contractor: AECOM

Date Start Discharge: 7/5/2011 Notified MSD, Steve Grace, (314) 436-8755
Email via Karen Burke

Date Discharged Completed: 7/5/2011 Notified MSD, Steve Grace, (314) 436-8755

Annalytical Results:			
Various:		Total Metals:	
pH:	See Results In Monthly Summary	Cadmium:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary	Chromium:	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary	Copper:	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary	Iron:	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary	Lead:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary	Nickel:	See Results In Monthly Summary
		Zinc:	See Results In Monthly Summary
Isotopic			
U-235	See Results In Monthly Summary		
U-238	See Results In Monthly Summary		
Ra-226	See Results In Monthly Summary		
Ra-228	See Results In Monthly Summary		
Th-230	See Results In Monthly Summary		
Th-232	See Results In Monthly Summary		

			Start		Stop	
Signurature	Frac Tank ID#	Date	Time	Gallons	Time	Gallons
	255824	7/5/2011	0700	20000	xxx	xxx
	255824	7/5/2011	xxx	xxx	0930	0
	239801	7/5/2011	0705	20000	xxx	xxx
	239801	7/5/2011	xxx	xxx	0930	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time: 2.5 Hours

Total Volume 40000 Gallons

Wastewater Discharge 013 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8004

Sample Date: 05 Jul 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	U
Acrylonitrile	mg/L		< 0.01	U
Benzene	mg/L		< 0.001	U
Bromoform	mg/L		< 0.001	U
Bromomethane	mg/L		0.00026	B
Carbon tetrachloride	mg/L		< 0.001	U
Chlorobenzene	mg/L		< 0.001	U
Chlorodibromomethane	mg/L		< 0.001	U
Chloroethane	mg/L		< 0.002	U
Chloroform	mg/L		< 0.001	U
Chloromethane	mg/L		0.00014	B
Dichlorobromomethane	mg/L		< 0.001	U
1,1- Dichloroethane	mg/L		< 0.001	U
1,2- Dichloroethane	mg/L		< 0.001	U
1,1- Dichloroethene	mg/L		< 0.001	U
1,2- Dichloroethane	mg/L		< 0.002	U
1,2- Dichloropropane	mg/L		< 0.001	U
cis-1,3-Dichloropropene	mg/L		< 0.001	U
trans-1,3-Dichloropropene	mg/L		< 0.001	U
Ethylbenzene	mg/L		< 0.001	U
Methylene Chloride	mg/L		< 0.001	U
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	U
Tetra chloroethene	mg/L		< 0.001	U
Toluene	mg/L		< 0.001	U
1,1,1- Trichloroethane	mg/L		< 0.001	U
1,1,2- Trichloroethane	mg/L		< 0.001	U
Trichloroethene	mg/L		< 0.001	U
Vinyl Chloride	mg/L		< 0.002	U
Total Toxic Organics	*mg/L*	*5.844*	*< 0.047*	
Metals				
Cadmium	mg/L	0.7	< 0.005	U
Chromium	mg/L	5	< 0.01	U
Copper	mg/L	2.7	< 0.025	U
Iron	mg/L	150	0.0926	B
Nickel	mg/L	2.3	< 0.04	U
Lead	mg/L	0.4	< 0.01	U
Zinc	mg/L	3	0.0668	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.2	
COD	mg/L	600	54.0	
TSS	mg/L	300	< 4.0	U
Radionuclides				
Gross Alpha	pCi/L	3,000	< 6.3	U
Gross Beta	pCi/L	50	19.3	
Ra-226	pCi/L	10	1.29	
Ra-228	pCi/L	30	< 0.51	U
Th-228	pCi/L	2,000	< 0.21	U
Th-230	pCi/L	1,000	< 0.2	U
Th-232	pCi/L	300	< 0.11	U
U-234	pCi/L		< 0.001	ND
U-235/6	pCi/L		< 0.15	
U-238	pCi/L		< 0.13	
Total Uranium	*pCi/L*	*3,000*	*< 0.281*	

10 CFR 20 Appendix B Table 3 Values

Analyte	Units	Limit	Discharge Concentration	Averaged Concentration
Ra-226	pCi/L	0.6	1.29	0.003
Ra-228	pCi/L	0.6	0.51	0.001
Th-228	pCi/L	2	0.21	0.000
Th-230	pCi/L	1	0.2	0.000
Th-232	pCi/L	0.3	0.11	0.000
U-234	pCi/L	3	0.001	0.000
U-235/6	pCi/L	3	0.15	0.000
U-238	pCi/L	3	0.13	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.010*

Discharge Volume (gals) = 40,000

Covidien averaging factor[2] = 0.002

Analyte	Units	Annual Limit	Discharge Activity	Year to Date Activity
Gross Radioactivity	Ci	1	3.9E-06	3.5E-05

Notes:

(1) 'B' indicates estimated value; 'U' indicates result less than sample detection limit; 'ND' indicates radionuclide not detected.

(2) derived from discharge volume divided by a Covidien minimum average monthly volume (20,000,000 gal)

Discharge Log for Area 5 Processing Frac Tanks

CT Covidien Plant — Discharge 013

Contractor: AECOM

Date Start Discharge: 7/6/2011 — Notified MSD, Steve Grace, (314) 436-8755
Email via Karen Burke

Date Discharged Completed: 7/6/2011 — Notified MSD, Steve Grace, (314) 436-8755

Annalytical Results:			
Various:		Total Metals:	
pH:	See Results In Monthly Summary	Cadmium:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary	Chromium:	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary	Copper	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary	Iron:	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary	Lead:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary	Nickel:	See Results In Monthly Summary
		Zinc:	See Results In Monthly Summary
Isotopic			
U-235	See Results In Monthly Summary		
U-238	See Results In Monthly Summary		
Ra-226	See Results In Monthly Summary		
Ra-228	See Results In Monthly Summary		
Th-230	See Results In Monthly Summary		
Th-232	See Results In Monthly Summary		

			Start		Stop	
Signurature	Frac Tank ID#	Date	Time	Gallons	Time	Gallons
	255824	7/6/2011	0700	20000	xxx	xxx
	255824	7/6/2011	xxx	xxx	0930	0
	239801	7/6/2011	0705	20000	xxx	xxx
	239801	7/6/2011	xxx	xxx	0930	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time: 2.5 Hours
Total Volume 40000 Gallons

Wastewater Discharge 014 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8005

Sample Date: 06 Jul 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	U
Acrylonitrile	mg/L		< 0.01	U
Benzene	mg/L		< 0.001	U
Bromoform	mg/L		< 0.001	U
Bromomethane	mg/L		< 0.002	U
Carbon tetrachloride	mg/L		< 0.001	U
Chlorobenzene	mg/L		< 0.001	U
Chlorodibromomethane	mg/L		< 0.001	U
Chloroethane	mg/L		< 0.002	U
Chloroform	mg/L		< 0.001	U
Chloromethane	mg/L		< 0.002	U
Dichlorobromomethane	mg/L		< 0.001	U
1,1- Dichloroethane	mg/L		< 0.001	U
1,2- Dichloroethane	mg/L		< 0.001	U
1,1- Dichloroethene	mg/L		< 0.001	U
1,2- Dichloroethane	mg/L		< 0.002	U
1,2- Dichloropropane	mg/L		< 0.001	U
cis-1,3-Dichloropropene	mg/L		< 0.001	U
trans-1,3-Dichloropropene	mg/L		< 0.001	U
Ethylbenzene	mg/L		< 0.001	U
Methylene Chloride	mg/L		< 0.001	U
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	U
Tetra chloroethene	mg/L		< 0.001	U
Toluene	mg/L		< 0.001	U
1,1,1- Trichloroethane	mg/L		< 0.001	U
1,1,2- Trichloroethane	mg/L		< 0.001	U
Trichloroethene	mg/L		< 0.001	U
Vinyl Chloride	mg/L		< 0.002	U
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	U
Chromium	mg/L	5	< 0.01	U
Copper	mg/L	2.7	< 0.025	U
Iron	mg/L	150	< 0.1	U
Nickel	mg/L	2.3	< 0.04	U
Lead	mg/L	0.4	< 0.01	U
Zinc	mg/L	3	0.0533	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.2	
COD	mg/L	600	41.0	
TSS	mg/L	300	1.0	B
Radionuclides				
Gross Alpha	pCi/L	3,000	< 7.2	U
Gross Beta	pCi/L	50	19	
Ra-226	pCi/L	10	1.34	
Ra-228	pCi/L	30	0.49	
Th-228	pCi/L	2,000	< 0.22	U
Th-230	pCi/L	1,000	0.26	
Th-232	pCi/L	300	< 0.11	U
U-234	pCi/L		< 0.001	ND
U-235/6	pCi/L		< 0.18	
U-238	pCi/L		0.27	
Total Uranium	*pCi/L*	*3,000*	*< 0.451*	

10 CFR 20 Appendix B Table 3 Values

Analyte	Units	Limit	Discharge Concentration	Averaged Concentration
Ra-226	pCi/L	0.6	1.34	0.003
Ra-228	pCi/L	0.6	0.49	0.001
Th-228	pCi/L	2	0.22	0.000
Th-230	pCi/L	1	0.26	0.001
Th-232	pCi/L	0.3	0.11	0.000
U-234	pCi/L	3	0.001	0.000
U-235/6	pCi/L	3	0.18	0.000
U-238	pCi/L	3	0.27	0.001
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.010*

Discharge Volume (gals) = 40,000

Covidien averaging factor[2] = 0.002

Analyte	Units	Annual Limit	Discharge Activity	Year to Date Activity
Gross Radioactivity	Ci	1	4.0E-06	3.9E-05

Notes:

(1) 'B' indicates estimated value; 'U' indicates result less than sample detection limit; 'ND' indicates radionuclide not detected.

(2) derived from discharge volume divided by a Covidien minimum average monthly volume (20,000,000 gal)

Discharge Log for Area 5 Processing Frac Tanks

CT Covidien Plant — Discharge 014

Contractor: AECOM

Date Start Discharge: 7/7/2011 — Notified MSD, Steve Grace, (314) 436-8755
Email via Karen Burke

Date Discharged Completed: 7/7/2011 — Notified MSD, Steve Grace, (314) 436-8755

Annalytical Results:

Various:	
pH:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary

Total Metals:	
Cadmium:	See Results In Monthly Summary
Chromium	See Results In Monthly Summary
Copper:	See Results In Monthly Summary
Iron:	See Results In Monthly Summary
Lead:	See Results In Monthly Summary
Nickel:	See Results In Monthly Summary
Zinc:	See Results In Monthly Summary

Isotopic	
U-235	See Results In Monthly Summary
U-238	See Results In Monthly Summary
Ra-226	See Results In Monthly Summary
Ra-228	See Results In Monthly Summary
Th-230	See Results In Monthly Summary
Th-232	See Results In Monthly Summary

Signurature	Frac Tank ID#	Date	Start		Stop	
			Time	Gallons	Time	Gallons
[illegible]	255824	7/7/2011	0700	20000	xxx	xxx
[illegible]	255824	7/7/2011	xxx	xxx	0930	0
[illegible]	239801	7/7/2011	0705	20000	xxx	xxx
[illegible]	239801	7/7/2011	xxx	xxx	0930	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time: 2.5 Hours
Total Volume 40000 Gallons

Wastewater Discharge 015 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8006

Sample Date: 07 Jul 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	U
Acrylonitrile	mg/L		< 0.01	U
Benzene	mg/L		< 0.001	U
Bromoform	mg/L		< 0.001	U
Bromomethane	mg/L		< 0.002	U
Carbon tetrachloride	mg/L		< 0.001	U
Chlorobenzene	mg/L		< 0.001	U
Chlorodibromomethane	mg/L		< 0.001	U
Chloroethane	mg/L		< 0.002	U
Chloroform	mg/L		< 0.001	U
Chloromethane	mg/L		< 0.002	U
Dichlorobromomethane	mg/L		< 0.001	U
1,1- Dichloroethane	mg/L		< 0.001	U
1,2- Dichloroethane	mg/L		< 0.001	U
1,1- Dichloroethene	mg/L		< 0.001	U
1,2- Dichloroethane	mg/L		< 0.002	U
1,2- Dichloropropane	mg/L		< 0.001	U
cis-1,3-Dichloropropene	mg/L		< 0.001	U
trans-1,3-Dichloropropene	mg/L		< 0.001	U
Ethylbenzene	mg/L		< 0.001	U
Methylene Chloride	mg/L		< 0.001	U
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	U
Tetra chloroethene	mg/L		< 0.001	U
Toluene	mg/L		< 0.001	U
1,1,1- Trichloroethane	mg/L		< 0.001	U
1,1,2- Trichloroethane	mg/L		< 0.001	U
Trichloroethene	mg/L		< 0.001	U
Vinyl Chloride	mg/L		< 0.002	U
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	U
Chromium	mg/L	5	< 0.01	U
Copper	mg/L	2.7	< 0.025	U
Iron	mg/L	150	< 0.1	U
Nickel	mg/L	2.3	< 0.04	U
Lead	mg/L	0.4	< 0.01	U
Zinc	mg/L	3	0.0507	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.4	
COD	mg/L	600	18.0	B
TSS	mg/L	300	< 4.0	U
Radionuclides				
Gross Alpha	pCi/L	3,000	5.9	
Gross Beta	pCi/L	50	15.5	
Ra-226	pCi/L	10	1.76	
Ra-228	pCi/L	30	0.67	
Th-228	pCi/L	2,000	< 0.19	U
Th-230	pCi/L	1,000	< 0.13	U
Th-232	pCi/L	300	< 0.12	U
U-234	pCi/L		< 0.001	ND
U-235/6	pCi/L		< 0.17	U
U-238	pCi/L		< 0.18	U
Total Uranium	*pCi/L*	*3,000*	*< 0.351*	

10 CFR 20 Appendix B Table 3 Values

Analyte	Units	Limit	Discharge Concentration	Averaged Concentration
Ra-226	pCi/L	0.6	1.76	0.004
Ra-228	pCi/L	0.6	0.67	0.001
Th-228	pCi/L	2	0.19	0.000
Th-230	pCi/L	1	0.13	0.000
Th-232	pCi/L	0.3	0.12	0.000
U-234	pCi/L	3	0.001	0.000
U-235/6	pCi/L	3	0.17	0.000
U-238	pCi/L	3	0.18	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.012*

Discharge Volume (gals) = 40,000

Covidien averaging factor[2] = 0.002

Analyte	Units	Annual Limit	Discharge Activity	Year to Date Activity
Gross Radioactivity	Ci	1	3.2E-06	4.2E-05

Notes:

(1) 'B' indicates estimated value; 'U' indicates result less than sample detection limit; 'ND' indicates radionuclide not detected.

(2) derived from discharge volume divided by a Covidien minimum average monthly volume (20,000,000 gal)

Discharge Log for Area 5 Processing Frac Tanks

CT Covidien Plant — Discharge 015

Contractor: AECOM

Date Start Discharge: 7/8/2011 — Notified MSD, Steve Grace, (314) 436-8755
Email via Karen Burke

Date Discharged Completed: 7/8/2011 — Notified MSD, Steve Grace, (314) 436-8755

Annalytical Results:

Various:	
pH:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary

Total Metals:	
Cadmium:	See Results In Monthly Summary
Chromium:	See Results In Monthly Summary
Copper	See Results In Monthly Summary
Iron:	See Results In Monthly Summary
Lead:	See Results In Monthly Summary
Nickel:	See Results In Monthly Summary
Zinc:	See Results In Monthly Summary

Isotopic	
U-235	See Results In Monthly Summary
U-238	See Results In Monthly Summary
Ra-226	See Results In Monthly Summary
Ra-228	See Results In Monthly Summary
Th-230	See Results In Monthly Summary
Th-232	See Results In Monthly Summary

Signurature	Frac Tank ID#	Date	Start		Stop	
			Time	Gallons	Time	Gallons
	255824	7/8/2011	0700	20000	xxx	xxx
	255824	7/8/2011	xxx	xxx	0930	0
	239801	7/8/2011	0705	20000	xxx	xxx
	239801	7/8/2011	xxx	xxx	0930	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time: 2.5 Hours
Total Volume 40000 Gallons

Wastewater Discharge 016 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8007

Sample Date: 08 Jul 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	ND
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		0.00014	B
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.050*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	ND
Iron	mg/L	150	< 0.1	ND
Nickel	mg/L	2.3	< 0.04	ND
Lead	mg/L	0.4	< 0.01	ND
Zinc	mg/L	3	0.0435	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.0	
COD	mg/L	600	29.0	
TSS	mg/L	300	< 4.0	ND
Radionuclides				
Gross Alpha	pCi/L	3,000	6.3	
Gross Beta	pCi/L	50	11.1	
Ra-226	pCi/L	10	1.81	
Ra-228	pCi/L	30	< 0.48	U
Th-228	pCi/L	2,000	< 0.24	U
Th-230	pCi/L	1,000	0.38	
Th-232	pCi/L	300	< 0.12	U
U-234	pCi/L		< 0.001	NR
U-235/6	pCi/L		< 0.13	U
U-238	pCi/L		< 0.12	U
Total Uranium	*pCi/L*	*3,000*	*< 0.251*	

10 CFR 20 Appendix B Table 3 Values

Analyte	Units	Limit	Discharge Concentration	Averaged Concentration
Ra-226	pCi/L	0.6	1.81	0.004
Ra-228	pCi/L	0.6	0.48	0.001
Th-228	pCi/L	2	0.24	0.000
Th-230	pCi/L	1	0.38	0.001
Th-232	pCi/L	0.3	0.12	0.000
U-234	pCi/L	3	0.001	0.000
U-235/6	pCi/L	3	0.13	0.000
U-238	pCi/L	3	0.12	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.012*

Discharge Volume (gals) = 40,000

Covidien averaging factor[2] = 0.002

Analyte	Units	Annual Limit	Discharge Activity	Year to Date Activity
Gross Radioactivity	Ci	1	2.6E-06	4.5E-05

Notes:

(1) 'B' indicates estimated value; 'U' indicates result less than sample detection limit; 'ND' indicates not detected; 'NR' indicates not reported.

(2) derived from discharge volume divided by a Covidien minimum average monthly volume (20,000,000 gal)

Discharge Log for Area 5 Processing Frac Tanks

CT Covidien Plant — Discharge 016

Contractor: AECOM

Date Start Discharge: 7/9/2011 — Notified MSD, Steve Grace, (314) 436-8755
Email via Karen Burke

Date Discharged Completed: 7/9/2011 — Notified MSD, Steve Grace, (314) 436-8755

Annalytical Results:

Various:	
pH:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary

Total Metals:	
Cadmium:	See Results In Monthly Summary
Chromium:	See Results In Monthly Summary
Copper:	See Results In Monthly Summary
Iron:	See Results In Monthly Summary
Lead:	See Results In Monthly Summary
Nickel:	See Results In Monthly Summary
Zinc:	See Results In Monthly Summary

Isotopic	
U-235	See Results In Monthly Summary
U-238	See Results In Monthly Summary
Ra-226	See Results In Monthly Summary
Ra-228	See Results In Monthly Summary
Th-230	See Results In Monthly Summary
Th-232	See Results In Monthly Summary

Signurature	Frac Tank ID#	Date	Start		Stop	
			Time	Gallons	Time	Gallons
	255824	7/9/2011	0700	20000	xxx	xxx
	255824	7/9/2011	xxx	xxx	0930	0
	239801	7/9/2011	0705	20000	xxx	xxx
	239801	7/9/2011	xxx	xxx	0930	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time: 2.5 Hours
Total Volume 40000 Gallons

Metropolitan St. Louis Sewer District

Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

November 1, 2011

Amber Crouch
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Re: Wastewater User Charge Billing for Special Discharge

Dear Ms. Summers:

This is to advise you of the wastewater user charges applicable to an on-site special discharge approved in our letter to you dated August 11, 2011, with extensions dated September 8, 2011, and October 11, 2011. That charge was determined using the ethylene glycol concentration in your application for special discharge. The discharge date and quantity are from information submitted by you in an email dated November 1, 2011.

Our Finance Department will bill you by invoice for the charges described below. These charges are based on the rates in MSD Wastewater User Charge Ordinance 13021. For your convenience, using the volume and strength of the waste discharged, the ordinance rates have been converted to a per-gallon basis.

PARTY TO BILL: Addressee

BILLING IS FOR: On-Site Special Discharge

DISCHARGE PERIOD: October 25, 2011

SOURCE OF WASTE: 30% ethylene glycol solution from Building 25 at the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri.

Discharge Period	Billing Item	Quantity	Units	Rate	Charge
10/25/11	Extra-Strength Surcharge	300	Gal	$0.39	$117.00
Total:	------	**300**	Gal	-----	**$117.00**

Please do not pay until you receive our invoice. If you have any questions, please contact me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

pc Chris Verplancke - Finance Dept.
Doug Mendoza
Brian Gibson

File: IU, MALLINCKRODT INC [2112059600], 3600 North Second Street

Wastewater Discharge 017 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8008

Sample Date: 09 Jul 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	ND
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	ND
Iron	mg/L	150	< 0.1	ND
Nickel	mg/L	2.3	< 0.04	ND
Lead	mg/L	0.4	< 0.01	ND
Zinc	mg/L	3	0.0458	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.2	
COD	mg/L	600	23.0	
TSS	mg/L	300	< 4.0	ND
Radionuclides				
Gross Alpha	pCi/L	3,000	< 8.3	U
Gross Beta	pCi/L	50	12.1	
Ra-226	pCi/L	10	2.21	
Ra-228	pCi/L	30	0.46	
Th-228	pCi/L	2,000	< 0.13	U
Th-230	pCi/L	1,000	0.12	U
Th-232	pCi/L	300	< 0.074	U
U-234	pCi/L		< 0.001	NR
U-235/6	pCi/L		< 0.14	U
U-238	pCi/L		< 0.12	U
Total Uranium	*pCi/L*	*3,000*	*< 0.261*	

10 CFR 20 Appendix B Table 3 Values

Analyte	Units	Limit	Discharge Concentration	Averaged Concentration
Ra-226	pCi/L	0.6	2.21	0.004
Ra-228	pCi/L	0.6	0.46	0.001
Th-228	pCi/L	2	0.13	0.000
Th-230	pCi/L	1	0.12	0.000
Th-232	pCi/L	0.3	0.074	0.000
U-234	pCi/L	3	0.001	0.000
U-235/6	pCi/L	3	0.14	0.000
U-238	pCi/L	3	0.12	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.012*

Discharge Volume (gals) = 40,000

Covidien averaging factor[2] = 0.002

Analyte	Units	Annual Limit	Discharge Activity	Year to Date Activity
Gross Radioactivity	Ci	1	3.1E-06	4.8E-05

Notes:

(1) 'B' indicates estimated value; 'U' indicates result less than sample detection limit; 'ND' indicates not detected; 'NR' indicates not reported.

(2) derived from discharge volume divided by a Covidien minimum average monthly volume (20,000,000 gal)

Discharge Log for Area 5 Processing Frac Tanks

CT Covidien Plant

Discharge 017

Contractor: AECOM

Date Start Discharge: 7/11/2011 Notified MSD, Steve Grace, (314) 436-8755
Email via Karen Burke

Date Discharged Completed: 7/11/2011 Notified MSD, Steve Grace, (314) 436-8755

Annalytical Results:			
Various:		Total Metals:	
pH:	See Results In Monthly Summary	Cadmium:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary	Chromium:	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary	Copper:	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary	Iron:	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary	Lead:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary	Nickel:	See Results In Monthly Summary
		Zinc:	See Results In Monthly Summary
Isotopic			
U-235	See Results In Monthly Summary		
U-238	See Results In Monthly Summary		
Ra-226	See Results In Monthly Summary		
Ra-228	See Results In Monthly Summary		
Th-230	See Results In Monthly Summary		
Th-232	See Results In Monthly Summary		

			Start		Stop	
Signuratur	Frac Tank ID#	Date	Time	Gallons	Time	Gallons
	255824	7/11/2011	0700	20000	xxx	xxx
	255824	7/11/2011	xxx	xxx	0930	0
	239801	7/11/2011	0705	20000	xxx	xxx
	239801	7/11/2011	xxx	xxx	0930	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time: 2 5 Hours

Total Volume 40000 Gallons

Wastewater Discharge 018 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8009

Sample Date: 11 Jul 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	ND
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	ND
Iron	mg/L	150	< 0.1	ND
Nickel	mg/L	2.3	< 0.04	ND
Lead	mg/L	0.4	< 0.01	ND
Zinc	mg/L	3	0.114	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.4	
COD	mg/L	600	15.0	B
TSS	mg/L	300	1.0	B
Radionuclides				
Gross Alpha	pCi/L	3,000	< 4.5	U
Gross Beta	pCi/L	50	7.1	
Ra-226	pCi/L	10	3.04	
Ra-228	pCi/L	30	0.55	
Th-228	pCi/L	2,000	< 0.11	U
Th-230	pCi/L	1,000	0.16	
Th-232	pCi/L	300	< 0.07	U
U-234	pCi/L		< 0.001	NR
U-235/6	pCi/L		< 0.14	U
U-238	pCi/L		< 0.13	U
Total Uranium	*pCi/L*	*3,000*	*< 0.271*	

10 CFR 20 Appendix B Table 3 Values

Analyte	Units	Limit	Discharge Concentration	Averaged Concentration
Ra-226	pCi/L	0.6	3.04	0.006
Ra-228	pCi/L	0.6	0.55	0.001
Th-228	pCi/L	2	0.11	0.000
Th-230	pCi/L	1	0.16	0.000
Th-232	pCi/L	0.3	0.07	0.000
U-234	pCi/L	3	0.001	0.000
U-235/6	pCi/L	3	0.14	0.000
U-238	pCi/L	3	0.13	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.015*

Discharge Volume (gals) = 40,000

Covidien averaging factor[2] = 0.002

Analyte	Units	Annual Limit	Discharge Activity	Year to Date Activity
Gross Radioactivity	Ci	1	1.8E-06	5.0E-05

Notes:

(1) 'B' indicates estimated value; 'U' indicates result less than sample detection limit; 'ND' indicates not detected; 'NR' indicates not reported.

(2) derived from discharge volume divided by a Covidien minimum average monthly volume (20,000,000 gal)

Discharge Log for Area 5 Processing Frac Tanks

CT Covidien Plant

Discharge 018

Contractor: AECOM

Date Start Discharge: 7/12/2011 Notified MSD, Steve Grace, (314) 436-8755
Email via Karen Burke

Date Discharged Completed: 7/12/2011 Notified MSD, Steve Grace, (314) 436-8755

Annalytical Results:

Various:	
pH:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary

Total Metals:	
Cadmium:	See Results In Monthly Summary
Chromium:	See Results In Monthly Summary
Copper	See Results In Monthly Summary
Iron:	See Results In Monthly Summary
Lead:	See Results In Monthly Summary
Nickel:	See Results In Monthly Summary
Zinc:	See Results In Monthly Summary

Isotopic	
U-235	See Results In Monthly Summary
U-238	See Results In Monthly Summary
Ra-226	See Results In Monthly Summary
Ra-228	See Results In Monthly Summary
Th-230	See Results In Monthly Summary
Th-232	See Results In Monthly Summary

			Start		Stop	
Signurature	Frac Tank ID#	Date	Time	Gallons	Time	Gallons
	255824	7/12/2011	0700	20000	xxx	xxx
	255824	7/12/2011	xxx	xxx	0930	0
	239801	7/12/2011	0705	20000	xxx	xxx
	239801	7/12/2011	xxx	xxx	0930	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time: 2.5 Hours

Total Volume 40000 Gallons

Wastewater Discharge 019 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8010

Sample Date: 12 Jul 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	ND
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	ND
Iron	mg/L	150	< 0.1	ND
Nickel	mg/L	2.3	< 0.04	ND
Lead	mg/L	0.4	< 0.01	ND
Zinc	mg/L	3	0.0641	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.0	
COD	mg/L	600	46.0	
TSS	mg/L	300	1.0	B
Radionuclides				
Gross Alpha	pCi/L	3,000	8.3	
Gross Beta	pCi/L	50	14.2	
Ra-226	pCi/L	10	3.9	
Ra-228	pCi/L	30	0.7	
Th-228	pCi/L	2,000	< 0.17	U
Th-230	pCi/L	1,000	0.11	
Th-232	pCi/L	300	< 0.076	U
U-234	pCi/L		< 0.001	NR
U-235/6	pCi/L		< 0.14	U
U-238	pCi/L		0.2	
Total Uranium	*pCi/L*	*3,000*	*< 0.341*	

10 CFR 20 Appendix B Table 3 Values

Analyte	Units	Limit	Discharge Concentration	Averaged Concentration
Ra-226	pCi/L	0.6	3.9	0.004
Ra-228	pCi/L	0.6	0.7	0.001
Th-228	pCi/L	2	0.17	0.000
Th-230	pCi/L	1	0.11	0.000
Th-232	pCi/L	0.3	0.076	0.000
U-234	pCi/L	3	0.001	0.000
U-235/6	pCi/L	3	0.14	0.000
U-238	pCi/L	3	0.2	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.009*

Discharge Volume (gals) = 20,000

Covidien averaging factor[2] = 0.001

Analyte	Units	Annual Limit	Discharge Activity	Year to Date Activity
Gross Radioactivity	Ci	1	1.7E-06	5.1E-05

Notes:

(1) 'B' indicates estimated value; 'U' indicates result less than sample detection limit; 'ND' indicates not detected; 'NR' indicates not reported.

(2) derived from discharge volume divided by a Covidien minimum average monthly volume (20,000,000 gal)

Discharge Log for Area 5 Processing Frac Tanks

CT Covidien Plant — Discharge 019

Contractor: AECOM

Date Start Discharge: 7/13/2011 — Notified MSD, Steve Grace, (314) 436-8755
Email via Karen Burke

Date Discharged Completed: 7/13/2011 — Notified MSD, Steve Grace, (314) 436-8755

Annalytical Results:

Various:	
pH:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary

Total Metals:	
Cadmium:	See Results In Monthly Summary
Chromium:	See Results In Monthly Summary
Copper	See Results In Monthly Summary
Iron:	See Results In Monthly Summary
Lead:	See Results In Monthly Summary
Nickel:	See Results In Monthly Summary
Zinc:	See Results In Monthly Summary

Isotopic	
U-235	See Results In Monthly Summary
U-238	See Results In Monthly Summary
Ra-226	See Results In Monthly Summary
Ra-228	See Results In Monthly Summary
Th-230	See Results In Monthly Summary
Th-232	See Results In Monthly Summary

Signurature	Frac Tank ID#	Date	Start		Stop	
			Time	Gallons	Time	Gallons
	255824	7/13/2011	0700	10000	xxx	xxx
	255824	7/13/2011	xxx	xxx	0930	0
	239801	7/13/2011	0705	10000	xxx	xxx
	239801	7/13/2011	xxx	xxx	0930	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time: 7 Hours
Total Volume 20000 Gallons

Wastewater Discharge 020 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8011

Sample Date: 13 Jul 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	ND
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	ND
Iron	mg/L	150	< 0.1	ND
Nickel	mg/L	2.3	< 0.04	ND
Lead	mg/L	0.4	< 0.01	ND
Zinc	mg/L	3	0.0531	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.1	
COD	mg/L	600	51.0	
TSS	mg/L	300	< 4.0	ND
Radionuclides				
Gross Alpha	pCi/L	3,000	< 8.8	U
Gross Beta	pCi/L	50	16.7	
Ra-226	pCi/L	10	3.28	
Ra-228	pCi/L	30	0.9	
Th-228	pCi/L	2,000	< 0.1	U
Th-230	pCi/L	1,000	0.14	
Th-232	pCi/L	300	< 0.1	U
U-234	pCi/L		< 0.001	NR
U-235/6	pCi/L		< 0.16	U
U-238	pCi/L		0.13	
Total Uranium	*pCi/L*	*3,000*	*< 0.291*	

10 CFR 20 Appendix B Table 3 Values

Analyte	Units	Limit	Discharge Concentration	Averaged Concentration
Ra-226	pCi/L	0.6	3.28	0.003
Ra-228	pCi/L	0.6	0.9	0.001
Th-228	pCi/L	2	0.1	0.000
Th-230	pCi/L	1	0.14	0.000
Th-232	pCi/L	0.3	0.1	0.000
U-234	pCi/L	3	0.001	0.000
U-235/6	pCi/L	3	0.16	0.000
U-238	pCi/L	3	0.13	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.009*

Discharge Volume (gals) = 20,000

Covidien averaging factor[2] = 0.001

Analyte	Units	Annual Limit	Discharge Activity	Year to Date Activity
Gross Radioactivity	Ci	1	1.9E-06	5.3E-05

Notes:

(1) 'B' indicates estimated value; 'U' indicates result less than sample detection limit; 'ND' indicates not detected; 'NR' indicates not reported.

(2) derived from discharge volume divided by a Covidien minimum average monthly volume (20,000,000 gal)

Discharge Log for Area 5 Processing Frac Tanks

CT Covidien Plant	Discharge 020	
Contractor:	AECOM	
Date Start Discharge:	7/14/2011	Notified MSD, Steve Grace, (314) 436-8755 *Email via Karen Burke*
Date Discharged Completed:	7/14/2011	Notified MSD, Steve Grace, (314) 436-8755

Annalytical Results:

Various:	
pH:	See Results in Monthly Summary
Total Suspended Solids (TSS):	See Results in Monthly Summary
Chemical Ouagen Demand (COD):	See Results in Monthly Summary
Volitile Organics (Method 624):	See Results in Monthly Summary
Gross Alpha Radioactivity:	See Results in Monthly Summary
Gross Beta Radioactivity:	See Results in Monthly Summary

Total Metals:	
Cadmium:	See Results in Monthly Summary
Chromium:	See Results in Monthly Summary
Copper:	See Results in Monthly Summary
Iron:	See Results in Monthly Summary
Lead:	See Results in Monthly Summary
Nickel:	See Results in Monthly Summary
Zinc:	See Results in Monthly Summary

Isotopic	
U-235	See Results in Monthly Summary
U-238	See Results in Monthly Summary
Ra-226	See Results in Monthly Summary
Ra-228	See Results in Monthly Summary
Th-230	See Results in Monthly Summary
Th-232	See Results in Monthly Summary

Signurature	Frac Tank ID#	Date	Start		Stop	
			Time	Gallons	Time	Gallons
	255824	7/14/2011	0700	20000	xxx	xxx
	255824	7/14/2011	xxx	xxx	0930	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time:	2	Hours
Total Volume	20000	Gallons

Wastewater Discharge 021 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8012

Sample Date: 14 Jul 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	ND
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	ND
Iron	mg/L	150	< 0.1	ND
Nickel	mg/L	2.3	< 0.04	ND
Lead	mg/L	0.4	< 0.01	ND
Zinc	mg/L	3	0.0548	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	6.9	
COD	mg/L	600	57.0	
TSS	mg/L	300	< 4.0	ND
Radionuclides				
Gross Alpha	pCi/L	3,000	< 9.9	U
Gross Beta	pCi/L	50	11.3	
Ra-226	pCi/L	10	3.5	
Ra-228	pCi/L	30	1.38	
Th-228	pCi/L	2,000	< 0.25	U
Th-230	pCi/L	1,000	0.2	
Th-232	pCi/L	300	< 0.1	U
U-234	pCi/L		< 0.001	NR
U-235/6	pCi/L		< 0.17	U
U-238	pCi/L		0.17	
Total Uranium	*pCi/L*	*3,000*	*< 0.341*	

10 CFR 20 Appendix B Table 3 Values

Analyte	Units	Limit	Discharge Concentration	Averaged Concentration
Ra-226	pCi/L	0.6	3.5	0.004
Ra-228	pCi/L	0.6	1.38	0.001
Th-228	pCi/L	2	0.25	0.000
Th-230	pCi/L	1	0.2	0.000
Th-232	pCi/L	0.3	0.1	0.000
U-234	pCi/L	3	0.001	0.000
U-235/6	pCi/L	3	0.17	0.000
U-238	pCi/L	3	0.17	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.010*

Discharge Volume (gals) = 20,000

Covidien averaging factor[2] = 0.001

Analyte	Units	Annual Limit	Discharge Activity	Year to Date Activity
Gross Radioactivity	Ci	1	1.6E-06	5.5E-05

Notes:

(1) 'B' indicates estimated value; 'U' indicates result less than sample detection limit; 'ND' indicates not detected; 'NR' indicates not reported.

(2) derived from discharge volume divided by a Covidien minimum average monthly volume (20,000,000 gal)

Discharge Log for Area 5 Processing Frac Tanks

CT Covidien Plant — Discharge 021

Contractor: AECOM

Date Start Discharge: 7/15/2011 — Notified MSD, Steve Grace, (314) 436-8755
Email via Karen Burke

Date Discharged Completed: 7/15/2011 — Notified MSD, Steve Grace, (314) 436-8755

Annalytical Results:

Various:	
pH:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary

Total Metals:	
Cadmium:	See Results In Monthly Summary
Chromium	See Results In Monthly Summary
Copper:	See Results In Monthly Summary
Iron:	See Results In Monthly Summary
Lead:	See Results In Monthly Summary
Nickel:	See Results In Monthly Summary
Zinc:	See Results In Monthly Summary

Isotopic	
U-235	See Results In Monthly Summary
U-238	See Results In Monthly Summary
Ra-226	See Results In Monthly Summary
Ra-228	See Results In Monthly Summary
Th-230	See Results In Monthly Summary
Th 232	See Results In Monthly Summary

Signurature	Frac Tank ID#	Date	Start		Stop	
			Time	Gallons	Time	Gallons
	255824	7/15/2011	0700	10000	xxx	xxx
	255824	7/15/2011	xxx	xxx	0930	0
	239801	7/15/2011	0705	10000	xxx	xxx
	239801	7/15/2011	xxx	xxx	0930	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time: 2.5 Hours
Total Volume 20000 Gallons

Wastewater Discharge 022 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8013

Sample Date: 15 Jul 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		0.0001	B
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	ND
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.049*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	ND
Iron	mg/L	150	< 0.1	ND
Nickel	mg/L	2.3	< 0.04	ND
Lead	mg/L	0.4	< 0.01	ND
Zinc	mg/L	3	0.0505	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.0	
COD	mg/L	600	49.0	
TSS	mg/L	300	< 4.0	ND
Radionuclides				
Gross Alpha	pCi/L	3,000	10	
Gross Beta	pCi/L	50	17.3	
Ra-226	pCi/L	10	3.35	
Ra-228	pCi/L	30	1.19	
Th-228	pCi/L	2,000	< 0.27	U
Th-230	pCi/L	1,000	< 0.18	U
Th-232	pCi/L	300	< 0.15	U
U-234	pCi/L		< 0.001	NR
U-235/6	pCi/L		< 0.13	U
U-238	pCi/L		0.14	
Total Uranium	*pCi/L*	*3,000*	*< 0.271*	

10 CFR 20 Appendix B Table 3 Values

Analyte	Units	Limit	Discharge Concentration	Averaged Concentration
Ra-226	pCi/L	0.6	3.35	0.003
Ra-228	pCi/L	0.6	1.19	0.001
Th-228	pCi/L	2	0.27	0.000
Th-230	pCi/L	1	0.18	0.000
Th-232	pCi/L	0.3	0.15	0.000
U-234	pCi/L	3	0.001	0.000
U-235/6	pCi/L	3	0.13	0.000
U-238	pCi/L	3	0.14	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.009*

Discharge Volume (gals) = 20,000

Covidien averaging factor[2] = 0.001

Analyte	Units	Annual Limit	Discharge Activity	Year to Date Activity
Gross Radioactivity	Ci	1	2.1E-06	5.7E-05

Notes:

(1) 'B' indicates estimated value; 'U' indicates result less than sample detection limit; 'ND' indicates not detected; 'NR' indicates not reported.

(2) derived from discharge volume divided by a Covidien minimum average monthly volume (20,000,000 gal)

Discharge Log for Area 5 Processing Frac Tanks

CT Covidien Plant — Discharge 022

Contractor: AECOM

Date Start Discharge: 7/18/2011 — Notified MSD, Steve Grace, (314) 436-8755
Email via Karen Burke

Date Discharged Completed: 7/18/2011 — Notified MSD, Steve Grace, (314) 436-8755

Annalytical Results:

Various:	
pH:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary

Total Metals:	
Cadmium:	See Results In Monthly Summary
Chromium:	See Results In Monthly Summary
Copper:	See Results In Monthly Summary
Iron	See Results In Monthly Summary
Lead:	See Results In Monthly Summary
Nickel:	See Results In Monthly Summary
Zinc:	See Results In Monthly Summary

Isotopic	
U-235	See Results In Monthly Summary
U-238	See Results In Monthly Summary
Ra-226	See Results In Monthly Summary
Ra-228	See Results In Monthly Summary
Th-230	See Results In Monthly Summary
Th-232	See Results In Monthly Summary

			Start		Stop	
Signurature	Frac Tank ID#	Date	Time	Gallons	Time	Gallons
	255824	7/18/2011	0700	10000	xxx	xxx
	255824	7/18/2011	xxx	xxx	0930	0
	239801	7/18/2011	0705	10000	xxx	xxx
	239801	7/18/2011	xxx	xxx	0930	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time: 2.5 Hours
Total Volume 20000 Gallons

Wastewater Discharge 023 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8014

Sample Date: 18 Jul 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	ND
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	ND
Iron	mg/L	150	< 0.1	ND
Nickel	mg/L	2.3	< 0.04	ND
Lead	mg/L	0.4	< 0.01	ND
Zinc	mg/L	3	0.0491	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	6.9	
COD	mg/L	600	19.0	B
TSS	mg/L	300	< 4.0	ND
Radionuclides				
Gross Alpha	pCi/L	3,000	8.2	
Gross Beta	pCi/L	50	15.7	
Ra-226	pCi/L	10	3.41	
Ra-228	pCi/L	30	1.02	
Th-228	pCi/L	2,000	< 0.16	U
Th-230	pCi/L	1,000	0.2	
Th-232	pCi/L	300	< 0.14	U
U-234	pCi/L		< 0.001	NR
U-235/6	pCi/L		< 0.15	U
U-238	pCi/L		0.16	
Total Uranium	*pCi/L*	*3,000*	*< 0.311*	

10 CFR 20 Appendix B Table 3 Values

Analyte	Units	Limit	Discharge Concentration	Averaged Concentration
Ra-226	pCi/L	0.6	3.41	0.003
Ra-228	pCi/L	0.6	1.02	0.001
Th-228	pCi/L	2	0.16	0.000
Th-230	pCi/L	1	0.2	0.000
Th-232	pCi/L	0.3	0.14	0.000
U-234	pCi/L	3	0.001	0.000
U-235/6	pCi/L	3	0.15	0.000
U-238	pCi/L	3	0.16	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.009*

Discharge Volume (gals) = 20,000

Covidien averaging factor[2] = 0.001

Analyte	Units	Annual Limit	Discharge Activity	Year to Date Activity
Gross Radioactivity	Ci	1	1.8E-06	5.9E-05

Notes:

(1) 'B' indicates estimated value; 'U' indicates result less than sample detection limit; 'ND' indicates not detected; 'NR' indicates not reported.

(2) derived from discharge volume divided by a Covidien minimum average monthly volume (20,000,000 gal)

Discharge Log for Area 5 Processing Frac Tanks

CT Covidien Plant — Discharge 023

Contractor: AECOM

Date Start Discharge: 7/19/2011 — Notified MSD, Steve Grace, (314) 436-8755
Email via Karen Burke

Date Discharged Completed: 7/19/2011 — Notified MSD, Steve Grace, (314) 436-8755

Annalytical Results:

Various:	
pH:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary

Total Metals:	
Cadmium:	See Results In Monthly Summary
Chromium:	See Results In Monthly Summary
Copper:	See Results In Monthly Summary
Iron:	See Results In Monthly Summary
Lead:	See Results In Monthly Summary
Nickel:	See Results In Monthly Summary
Zinc:	See Results In Monthly Summary

Isotopic	
U-235	See Results In Monthly Summary
U-238	See Results In Monthly Summary
Ra-226	See Results In Monthly Summary
Ra-228	See Results In Monthly Summary
Th-230	See Results In Monthly Summary
Th-232	See Results In Monthly Summary

Signurature	Frac Tank ID#	Date	Start		Stop	
			Time	Gallons	Time	Gallons
	255824	7/19/2011	0700	10000	xxx	xxx
	255824	7/19/2011	xxx	xxx	0930	0
	239801	7/19/2011	0705	10000	xxx	xxx
	239801	7/19/2011	xxx	xxx	0930	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time: 2.5 Hours
Total Volume 20000 Gallons

Wastewater Discharge 024 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8015

Sample Date: 19 Jul 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	ND
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	ND
Iron	mg/L	150	< 0.1	ND
Nickel	mg/L	2.3	< 0.04	ND
Lead	mg/L	0.4	< 0.01	ND
Zinc	mg/L	3	0.0506	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.0	
COD	mg/L	600	43.0	
TSS	mg/L	300	2.0	B
Radionuclides				
Gross Alpha	pCi/L	3,000	8.4	
Gross Beta	pCi/L	50	15	
Ra-226	pCi/L	10	2.09	
Ra-228	pCi/L	30	1.11	
Th-228	pCi/L	2,000	0.2	
Th-230	pCi/L	1,000	0.19	
Th-232	pCi/L	300	< 0.16	U
U-234	pCi/L		< 0.001	NR
U-235/6	pCi/L		< 0.16	U
U-238	pCi/L		0.24	
Total Uranium	*pCi/L*	*3,000*	*< 0.401*	

10 CFR 20 Appendix B Table 3 Values

Analyte	Units	Limit	Discharge Concentration	Averaged Concentration
Ra-226	pCi/L	0.6	2.09	0.002
Ra-228	pCi/L	0.6	1.11	0.001
Th-228	pCi/L	2	0.2	0.000
Th-230	pCi/L	1	0.19	0.000
Th-232	pCi/L	0.3	0.16	0.000
U-234	pCi/L	3	0.001	0.000
U-235/6	pCi/L	3	0.16	0.000
U-238	pCi/L	3	0.24	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.007*

Discharge Volume (gals) = 20,000

Covidien averaging factor[2] = 0.001

Analyte	Units	Annual Limit	Discharge Activity	Year to Date Activity
Gross Radioactivity	Ci	1	1.8E-06	6.0E-05

Notes:

(1) 'B' indicates estimated value; 'U' indicates result less than sample detection limit; 'ND' indicates not detected; 'NR' indicates not reported.

(2) derived from discharge volume divided by a Covidien minimum average monthly volume (20,000,000 gal)

Discharge Log for Area 5 Processing Frac Tanks

CT Covidien Plant — Discharge 024

Contractor: AECOM

Date Start Discharge: 7/20/2011 — Notified MSD, Steve Grace, (314) 436-8755
Email via Karen Burke

Date Discharged Completed: 7/20/2011 — Notified MSD, Steve Grace, (314) 436-8755

Annalytical Results:			
Various:		Total Metals:	
pH:	See Results In Monthly Summary	Cadmium:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary	Chromium:	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary	Copper:	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary	Iron:	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary	Lead:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary	Nickel:	See Results In Monthly Summary
		Zinc:	See Results In Monthly Summary
Isotopic			
U-235	See Results In Monthly Summary		
U-238	See Results In Monthly Summary		
Ra-226	See Results In Monthly Summary		
Ra-228	See Results In Monthly Summary		
Th-230	See Results In Monthly Summary		
Th-232	See Results In Monthly Summary		

			Start		Stop	
Signurature	Frac Tank ID#	Date	Time	Gallons	Time	Gallons
	255824	7/20/2011	0700	10000	xxx	xxx
	255824	7/20/2011	xxx	xxx	0930	0
	239801	7/20/2011	0705	10000	xxx	xxx
	239801	7/20/2011	xxx	xxx	0930	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time: 2.5 Hours
Total Volume 20000 Gallons

Wastewater Discharge 025 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8016

Sample Date: 20 Jul 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	ND
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	ND
Iron	mg/L	150	< 0.1	ND
Nickel	mg/L	2.3	< 0.04	ND
Lead	mg/L	0.4	< 0.01	ND
Zinc	mg/L	3	0.0514	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.0	
COD	mg/L	600	36.0	
TSS	mg/L	300	1.0	B
Radionuclides				
Gross Alpha	pCi/L	3,000	< 8.2	U
Gross Beta	pCi/L	50	12.7	
Ra-226	pCi/L	10	4.07	
Ra-228	pCi/L	30	1.51	
Th-228	pCi/L	2,000	< 0.12	U
Th-230	pCi/L	1,000	0.17	
Th-232	pCi/L	300	< 0.067	U
U-234	pCi/L		< 0.001	NR
U-235/6	pCi/L		< 0.11	U
U-238	pCi/L		0.39	
Total Uranium	*pCi/L*	*3,000*	*< 0.501*	

10 CFR 20 Appendix B Table 3 Values

Analyte	Units	Limit	Discharge Concentration	Averaged Concentration
Ra-226	pCi/L	0.6	4.07	0.004
Ra-228	pCi/L	0.6	1.51	0.002
Th-228	pCi/L	2	0.12	0.000
Th-230	pCi/L	1	0.17	0.000
Th-232	pCi/L	0.3	0.067	0.000
U-234	pCi/L	3	0.001	0.000
U-235/6	pCi/L	3	0.11	0.000
U-238	pCi/L	3	0.39	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.011*

Discharge Volume (gals) = 20,000

Covidien averaging factor[2] = 0.001

Analyte	Units	Annual Limit	Discharge Activity	Year to Date Activity
Gross Radioactivity	Ci	1	1.6E-06	6.2E-05

Notes:

(1) 'B' indicates estimated value; 'U' indicates result less than sample detection limit; 'ND' indicates not detected; 'NR' indicates not reported.

(2) derived from discharge volume divided by a Covidien minimum average monthly volume (20,000,000 gal)

Discharge Log for Area 5 Processing Frac Tanks

CT Covidien Plant — Discharge 025

Contractor: AECOM

Date Start Discharge: 7/21/2011 — Notified MSD, Steve Grace, (314) 436-8755
Email via Karen Burke

Date Discharged Completed: 7/21/2011 — Notified MSD, Steve Grace, (314) 436-8755

Annalytical Results:

Various:	
pH:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary

Total Metals:	
Cadmium:	See Results In Monthly Summary
Chromium:	See Results In Monthly Summary
Copper:	See Results In Monthly Summary
Iron:	See Results In Monthly Summary
Lead:	See Results In Monthly Summary
Nickel:	See Results In Monthly Summary.
Zinc:	See Results In Monthly Summary

Isotopic	
U-235	See Results In Monthly Summary
U-238	See Results In Monthly Summary
Ra-226	See Results In Monthly Summary
Ra-228	See Results In Monthly Summary
Th-230	See Results In Monthly Summary
Th-232	See Results In Monthly Summary

Signurature	Frac Tank ID#	Date	Start		Stop	
			Time	Gallons	Time	Gallons
	255824	7/21/2011	0700	10000	xxx	xxx
	255824	7/21/2011	xxx	xxx	0930	0
	239801	7/21/2011	0705	10000	xxx	xxx
	239801	7/21/2011	xxx	xxx	0930	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time: 2.5 Hours
Total Volume 20000 Gallons

Wastewater Discharge 026 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8017

Sample Date: 21 Jul 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	ND
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	ND
Iron	mg/L	150	< 0.1	ND
Nickel	mg/L	2.3	< 0.04	ND
Lead	mg/L	0.4	< 0.01	ND
Zinc	mg/L	3	0.056	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.0	
COD	mg/L	600	42.0	
TSS	mg/L	300	< 4.0	ND
Radionuclides				
Gross Alpha	pCi/L	3,000	< 11	U
Gross Beta	pCi/L	50	25.3	
Ra-226	pCi/L	10	3.91	
Ra-228	pCi/L	30	1.34	
Th-228	pCi/L	2,000	< 0.15	U
Th-230	pCi/L	1,000	0.2	
Th-232	pCi/L	300	< 0.071	U
U-234	pCi/L		< 0.001	NR
U-235/6	pCi/L		< 0.11	U
U-238	pCi/L		0.26	
Total Uranium	*pCi/L*	*3,000*	*< 0.371*	

10 CFR 20 Appendix B Table 3 Values

Analyte	Units	Limit	Discharge Concentration	Averaged Concentration
Ra-226	pCi/L	0.6	3.91	0.004
Ra-228	pCi/L	0.6	1.34	0.001
Th-228	pCi/L	2	0.15	0.000
Th-230	pCi/L	1	0.2	0.000
Th-232	pCi/L	0.3	0.071	0.000
U-234	pCi/L	3	0.001	0.000
U-235/6	pCi/L	3	0.11	0.000
U-238	pCi/L	3	0.26	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.010*

Discharge Volume (gals) = 20,000

Covidien averaging factor[2] = 0.001

Analyte	Units	Annual Limit	Discharge Activity	Year to Date Activity
Gross Radioactivity	Ci	1	2.7E-06	6.5E-05

Notes:

(1) 'B' indicates estimated value; 'U' indicates result less than sample detection limit; 'ND' indicates not detected; 'NR' indicates not reported.

(2) derived from discharge volume divided by a Covidien minimum average monthly volume (20,000,000 gal)

Discharge Log for Area 5 Processing Frac Tanks

CT Covidien Plant

	Discharge 026	
Contractor:	AECOM	
Date Start Discharge:	7/22/2011	Notified MSD, Steve Grace, (314) 436-8755 Email via Karen Burke
Date Discharged Completed:	7/22/2011	Notified MSD, Steve Grace, (314) 436-8755

Annalytical Results:

Various:	
pH:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary

Total Metals:	
Cadmium:	See Results In Monthly Summary
Chromium:	See Results In Monthly Summary
Copper:	See Results In Monthly Summary
Iron:	See Results In Monthly Summary
Lead:	See Results In Monthly Summary
Nickel:	See Results In Monthly Summary
Zinc:	See Results In Monthly Summary

Isotopic	
U-235	See Results In Monthly Summary
U-238	See Results In Monthly Summary
Ra-226	See Results In Monthly Summary
Ra-228	See Results In Monthly Summary
Th-230	See Results In Monthly Summary
Th-232	See Results In Monthly Summary

Signurature	Frac Tank ID#	Date	Start		Stop	
			Time	Gallons	Time	Gallons
Rhonda Bean	255824	7/22/2011	0700	10000	xxx	xxx
Rhonda Bean	255824	7/22/2011	xxx	xxx	0930	0
Rhonda Bean	239801	7/22/2011	0705	10000	xxx	xxx
Rhonda Bean	239801	7/22/2011	xxx	xxx	0930	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time:	2.5	Hours
Total Volume	20000	Gallons

Wastewater Discharge 027 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8018

Sample Date: 22 Jul 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	ND
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	ND
Iron	mg/L	150	< 0.1	ND
Nickel	mg/L	2.3	< 0.04	ND
Lead	mg/L	0.4	< 0.01	ND
Zinc	mg/L	3	0.0612	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	6.9	
COD	mg/L	600	39.0	
TSS	mg/L	300	< 4.0	ND
Radionuclides				
Gross Alpha	pCi/L	3,000	< 18	U
Gross Beta	pCi/L	50	28.3	
Ra-226	pCi/L	10	3.29	
Ra-228	pCi/L	30	1.2	
Th-228	pCi/L	2,000	< 0.36	U
Th-230	pCi/L	1,000	< 0.18	U
Th-232	pCi/L	300	< 0.1	U
U-234	pCi/L		< 0.001	NR
U-235/6	pCi/L		< 0.072	U
U-238	pCi/L		0.16	
Total Uranium	*pCi/L*	*3,000*	*< 0.233*	

10 CFR 20 Appendix B Table 3 Values

Analyte	Units	Limit	Discharge Concentration	Averaged Concentration
Ra-226	pCi/L	0.6	3.29	0.003
Ra-228	pCi/L	0.6	1.2	0.001
Th-228	pCi/L	2	0.36	0.000
Th-230	pCi/L	1	0.18	0.000
Th-232	pCi/L	0.3	0.1	0.000
U-234	pCi/L	3	0.001	0.000
U-235/6	pCi/L	3	0.072	0.000
U-238	pCi/L	3	0.16	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.009*

Discharge Volume (gals) = 20,000

Covidien averaging factor[2] = 0.001

Analyte	Units	Annual Limit	Discharge Activity	Year to Date Activity
Gross Radioactivity	Ci	1	3.5E-06	6.8E-05

Notes:

(1) 'B' indicates estimated value; 'U' indicates result less than sample detection limit; 'ND' indicates not detected; 'NR' indicates not reported.

(2) derived from discharge volume divided by a Covidien minimum average monthly volume (20,000,000 gal)

Discharge Log for Area 5 Processing Frac Tanks

CT Covidien Plant — Discharge 027

Contractor: AECOM

Date Start Discharge: 7/25/2011 — Notified MSD, Steve Grace, (314) 436-8755
Email via Karen Burke

Date Discharged Completed: 7/25/2011 — Notified MSD, Steve Grace, (314) 436-8755

Annalytical Results:

Various:	
pH:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary

Total Metals:	
Cadmium:	See Results In Monthly Summary
Chromium	See Results In Monthly Summary
Copper	See Results In Monthly Summary
Iron:	See Results In Monthly Summary
Lead:	See Results In Monthly Summary
Nickel:	See Results In Monthly Summary
Zinc:	See Results In Monthly Summary

Isotopic	
U-235	See Results In Monthly Summary
U-238	See Results In Monthly Summary
Ra-226	See Results In Monthly Summary
Ra-228	See Results In Monthly Summary
Th-230	See Results In Monthly Summary
Th-232	See Results In Monthly Summary

Signurature	Frac Tank ID#	Date	Start		Stop	
			Time	Gallons	Time	Gallons
Rhedta Bean	255824	7/25/2011	0700	10000	xxx	xxx
Rhedta Bean	255824	7/25/2011	xxx	xxx	0930	0
Rhedta Bean	239801	7/25/2011	0705	10000	xxx	xxx
Rhedta Bean	239801	7/25/2011	xxx	xxx	0930	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time: 2.5 Hours

Total Volume 20000 Gallons

Wastewater Discharge 028 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8019

Sample Date: 25 Jul 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	ND
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	0.0057	B
Iron	mg/L	150	< 0.1	ND
Nickel	mg/L	2.3	0.0333	B
Lead	mg/L	0.4	0.0029	B
Zinc	mg/L	3	0.118	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.0	B
COD	mg/L	600	19.0	B
TSS	mg/L	300	2.0	B
Radionuclides				
Gross Alpha	pCi/L	3,000	< 6.4	U
Gross Beta	pCi/L	50	17.4	
Ra-226	pCi/L	10	2.51	
Ra-228	pCi/L	30	1.52	
Th-228	pCi/L	2,000	< 0.13	U
Th-230	pCi/L	1,000	0.2	
Th-232	pCi/L	300	< 0.071	U
U-234	pCi/L		< 0.001	NR
U-235/6	pCi/L		< 0.14	U
U-238	pCi/L		0.49	
Total Uranium	*pCi/L*	*3,000*	*< 0.631*	

10 CFR 20 Appendix B Table 3 Values

Analyte	Units	Limit	Discharge Concentration	Averaged Concentration
Ra-226	pCi/L	0.6	2.51	0.003
Ra-228	pCi/L	0.6	1.52	0.002
Th-228	pCi/L	2	0.13	0.000
Th-230	pCi/L	1	0.2	0.000
Th-232	pCi/L	0.3	0.071	0.000
U-234	pCi/L	3	0.001	0.000
U-235/6	pCi/L	3	0.14	0.000
U-238	pCi/L	3	0.49	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.008*

Discharge Volume (gals) = 20,000

Covidien averaging factor[2] = 0.001

Analyte	Units	Annual Limit	Discharge Activity	Year to Date Activity
Gross Radioactivity	Ci	1	1.8E-06	7.0E-05

Notes:

(1) 'B' indicates estimated value; 'U' indicates result less than sample detection limit; 'ND' indicates not detected; 'NR' indicates not reported.

(2) derived from discharge volume divided by a Covidien minimum average monthly volume (20,000,000 gal)

Discharge Log for Area 5 Processing Frac Tanks

CT Covidien Plant — Discharge 028

Contractor: AECOM

Date Start Discharge: 7/26/2011 — Notified MSD, Steve Grace, (314) 436-8755
Email via Karen Burke

Date Discharged Completed: 7/26/2011 — Notified MSD, Steve Grace, (314) 436-8755

Annalytical Results:

Various:	
pH:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary

Total Metals:	
Cadmium:	See Results In Monthly Summary
Chromium	See Results In Monthly Summary
Copper:	See Results In Monthly Summary
Iron:	See Results In Monthly Summary
Lead:	See Results In Monthly Summary
Nickel:	See Results In Monthly Summary
Zinc:	See Results In Monthly Summary

Isotopic	
U-235	See Results In Monthly Summary
U-238	See Results In Monthly Summary
Ra-226	See Results In Monthly Summary
Ra-228	See Results In Monthly Summary
Th-230	See Results In Monthly Summary
Th-232	See Results In Monthly Summary

Signurature	Frac Tank ID#	Date	Start		Stop	
			Time	Gallons	Time	Gallons
Rhedra Bean	255824	7/26/2011	0700	10000	xxx	xxx
Rhedra Bean	255824	7/26/2011	xxx	xxx	0930	0
Rhedra Bean	239801	7/26/2011	0705	10000	xxx	xxx
Rhedra Bean	239801	7/26/2011	xxx	xxx	0930	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time: 2.5 Hours
Total Volume 20000 Gallons

Wastewater Discharge 029 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8020

Sample Date: 26 Jul 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	ND
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	ND
Iron	mg/L	150	< 0.1	ND
Nickel	mg/L	2.3	< 0.04	ND
Lead	mg/L	0.4	< 0.01	ND
Zinc	mg/L	3	0.0647	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.3	
COD	mg/L	600	46.0	
TSS	mg/L	300	3.0	B
Radionuclides				
Gross Alpha	pCi/L	3,000	10.2	
Gross Beta	pCi/L	50	19.5	
Ra-226	pCi/L	10	2.84	
Ra-228	pCi/L	30	1.83	
Th-228	pCi/L	2,000	< 0.23	U
Th-230	pCi/L	1,000	< 0.16	U
Th-232	pCi/L	300	< 0.16	U
U-234	pCi/L		< 0.001	NR
U-235/6	pCi/L		< 0.085	U
U-238	pCi/L		0.41	
Total Uranium	*pCi/L*	*3,000*	*< 0.496*	

10 CFR 20 Appendix B Table 3 Values

Analyte	Units	Limit	Discharge Concentration	Averaged Concentration
Ra-226	pCi/L	0.6	2.84	0.003
Ra-228	pCi/L	0.6	1.83	0.002
Th-228	pCi/L	2	0.23	0.000
Th-230	pCi/L	1	0.16	0.000
Th-232	pCi/L	0.3	0.16	0.000
U-234	pCi/L	3	0.001	0.000
U-235/6	pCi/L	3	0.085	0.000
U-238	pCi/L	3	0.41	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.010*

Discharge Volume (gals) = 20,000

Covidien averaging factor[2] = 0.001

Analyte	Units	Annual Limit	Discharge Activity	Year to Date Activity
Gross Radioactivity	Ci	1	2.2E-06	7.2E-05

Notes:

(1) 'B' indicates estimated value; 'U' indicates result less than sample detection limit; 'ND' indicates not detected; 'NR' indicates not reported.

(2) derived from discharge volume divided by a Covidien minimum average monthly volume (20,000,000 gal)

Discharge Log for Area 5 Processing Frac Tanks

CT Covidien Plant — Discharge 029

Contractor: AECOM

Date Start Discharge: 7/27/2011 — Notified MSD, Steve Grace, (314) 436-8755
Email via Karen Burke

Date Discharged Completed: 7/27/2011 — Notified MSD, Steve Grace, (314) 436-8755

Annalytical Results:

Various:	
pH:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary

Total Metals:	
Cadmium:	See Results In Monthly Summary
Chromium:	See Results In Monthly Summary
Copper:	See Results In Monthly Summary
Iron:	See Results In Monthly Summary
Lead:	See Results In Monthly Summary
Nickel:	See Results In Monthly Summary
Zinc:	See Results In Monthly Summary

Isotopic	
U-235	See Results In Monthly Summary
U-238	See Results In Monthly Summary
Ra-226	See Results In Monthly Summary
Ra-228	See Results In Monthly Summary
Th-230	See Results In Monthly Summary
Th-232	See Results In Monthly Summary

Signurature	Frac Tank ID#	Date	Start		Stop	
			Time	Gallons	Time	Gallons
Khedtu Bean	255824	7/27/2011	0700	10000	xxx	xxx
Khedta Bean	255824	7/27/2011	xxx	xxx	0930	0
Khedtu Bean	239801	7/27/2011	0705	10000	xxx	xxx
Khedtn Bean	239801	7/27/2011	xxx	xxx	0930	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time: 2.5 Hours
Total Volume 20000 Gallons

Wastewater Discharge 030 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8021

Sample Date: 27 Jul 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	ND
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	ND
Iron	mg/L	150	< 0.1	ND
Nickel	mg/L	2.3	< 0.0194	B
Lead	mg/L	0.4	< 0.01	ND
Zinc	mg/L	3	0.0714	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.1	
COD	mg/L	600	45.0	
TSS	mg/L	300	< 4.0	ND
Radionuclides				
Gross Alpha	pCi/L	3,000	27	
Gross Beta	pCi/L	50	25.6	
Ra-226	pCi/L	10	3.72	
Ra-228	pCi/L	30	1.33	
Th-228	pCi/L	2,000	< 0.2	U
Th-230	pCi/L	1,000	0.3	
Th-232	pCi/L	300	< 0.094	U
U-234	pCi/L		< 0.001	NR
U-235/6	pCi/L		< 0.069	U
U-238	pCi/L		0.44	
Total Uranium	*pCi/L*	*3,000*	*< 0.51*	

10 CFR 20 Appendix B Table 3 Values

Analyte	Units	Limit	Discharge Concentration	Averaged Concentration
Ra-226	pCi/L	0.6	3.72	0.004
Ra-228	pCi/L	0.6	1.33	0.001
Th-228	pCi/L	2	0.2	0.000
Th-230	pCi/L	1	0.3	0.000
Th-232	pCi/L	0.3	0.094	0.000
U-234	pCi/L	3	0.001	0.000
U-235/6	pCi/L	3	0.069	0.000
U-238	pCi/L	3	0.44	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.010*

Discharge Volume (gals) = 20,000

Covidien averaging factor[2] = 0.001

Analyte	Units	Annual Limit	Discharge Activity	Year to Date Activity
Gross Radioactivity	Ci	1	4.0E-06	7.6E-05

Notes:

(1) 'B' indicates estimated value; 'U' indicates result less than sample detection limit; 'ND' indicates not detected; 'NR' indicates not reported.

(2) derived from discharge volume divided by a Covidien minimum average monthly volume (20,000,000 gal)

Discharge Log for Area 5 Processing Frac Tanks

CT Covidien Plant

Discharge 030

Contractor: AECOM

Date Start Discharge: 7/28/2011 Notified MSD, Steve Grace, (314) 436-8755
Email via Karen Burke

Date Discharged Completed: 7/28/2011 Notified MSD, Steve Grace, (314) 436-8755

Annalytical Results:			
Various:		Total Metals:	
pH:	See Results In Monthly Summary	Cadmium:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary	Chromium:	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary	Copper:	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary	Iron:	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary	Lead:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary	Nickel:	See Results In Monthly Summary
		Zinc:	See Results In Monthly Summary
Isotopic			
U-235	See Results In Monthly Summary		
U-238	See Results In Monthly Summary		
Ra-226	See Results In Monthly Summary		
Ra-228	See Results In Monthly Summary		
Th-230	See Results In Monthly Summary		
Th-232	See Results In Monthly Summary		

			Start		Stop	
Signurature	Frac Tank ID#	Date	Time	Gallons	Time	Gallons
Rhedta Bean	255824	7/28/2011	0700	10000	xxx	xxx
Rhedta Bean	255824	7/28/2011	xxx	xxx	0930	0
Rhedta Bean	239801	7/28/2011	0705	10000	xxx	xxx
Rhedta Bean	239801	7/28/2011	xxx	xxx	0930	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time: 2.5 Hours

Total Volume 20000 Gallons

Wastewater Discharge 031 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-8022

Sample Date: 28 Jul 2011

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	ND
Acrylonitrile	mg/L		< 0.01	ND
Benzene	mg/L		< 0.001	ND
Bromoform	mg/L		< 0.001	ND
Bromomethane	mg/L		< 0.002	ND
Carbon tetrachloride	mg/L		< 0.001	ND
Chlorobenzene	mg/L		< 0.001	ND
Chlorodibromomethane	mg/L		< 0.001	ND
Chloroethane	mg/L		< 0.002	ND
Chloroform	mg/L		< 0.001	ND
Chloromethane	mg/L		< 0.002	ND
Dichlorobromomethane	mg/L		< 0.001	ND
1,1- Dichloroethane	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.001	ND
1,1- Dichloroethene	mg/L		< 0.001	ND
1,2- Dichloroethane	mg/L		< 0.002	ND
1,2- Dichloropropane	mg/L		< 0.001	ND
cis-1,3-Dichloropropene	mg/L		< 0.001	ND
trans-1,3-Dichloropropene	mg/L		< 0.001	ND
Ethylbenzene	mg/L		< 0.001	ND
Methylene Chloride	mg/L		< 0.001	ND
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	ND
Tetra chloroethene	mg/L		< 0.001	ND
Toluene	mg/L		< 0.001	ND
1,1,1- Trichloroethane	mg/L		< 0.001	ND
1,1,2- Trichloroethane	mg/L		< 0.001	ND
Trichloroethene	mg/L		< 0.001	ND
Vinyl Chloride	mg/L		< 0.002	ND
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	ND
Chromium	mg/L	5	< 0.01	ND
Copper	mg/L	2.7	< 0.025	ND
Iron	mg/L	150	< 0.1	ND
Nickel	mg/L	2.3	< 0.04	ND
Lead	mg/L	0.4	< 0.01	ND
Zinc	mg/L	3	0.0587	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.1	
COD	mg/L	600	34.0	
TSS	mg/L	300	4.0	
Radionuclides				
Gross Alpha	pCi/L	3,000	< 21	U
Gross Beta	pCi/L	50	17	
Ra-226	pCi/L	10	3.8	
Ra-228	pCi/L	30	1.46	
Th-228	pCi/L	2,000	< 0.21	U
Th-230	pCi/L	1,000	< 0.11	U
Th-232	pCi/L	300	< 0.071	U
U-234	pCi/L		< 0.001	NR
U-235/6	pCi/L		< 0.073	U
U-238	pCi/L		0.34	
Total Uranium	*pCi/L*	*3,000*	*< 0.414*	

10 CFR 20 Appendix B Table 3 Values

Analyte	Units	Limit	Discharge Concentration	Averaged Concentration
Ra-226	pCi/L	0.6	3.8	0.004
Ra-228	pCi/L	0.6	1.46	0.001
Th-228	pCi/L	2	0.21	0.000
Th-230	pCi/L	1	0.11	0.000
Th-232	pCi/L	0.3	0.071	0.000
U-234	pCi/L	3	0.001	0.000
U-235/6	pCi/L	3	0.073	0.000
U-238	pCi/L	3	0.34	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.010*

Discharge Volume (gals) = 20,000

Covidien averaging factor[2] = 0.001

Analyte	Units	Annual Limit	Discharge Activity	Year to Date Activity
Gross Radioactivity	Ci	1	2.9E-06	7.9E-05

Notes:

(1) 'B' indicates estimated value; 'U' indicates result less than sample detection limit; 'ND' indicates not detected; 'NR' indicates not reported.

(2) derived from discharge volume divided by a Covidien minimum average monthly volume (20,000,000 gal)

Discharge Log for Area 5 Processing Frac Tanks

CT Covidien Plant — Discharge 031

Contractor: AECOM

Date Start Discharge: 7/29/2011 — Notified MSD, Steve Grace, (314) 436-8755
Email via Karen Burke

Date Discharged Completed: 7/29/2011 — Notified MSD, Steve Grace, (314) 436-8755

Annalytical Results:

Various:	
pH:	See Results In Monthly Summary
Total Suspended Solids (TSS):	See Results In Monthly Summary
Chemical Oxegen Demand (COD):	See Results In Monthly Summary
Volitile Organics (Method 624):	See Results In Monthly Summary
Gross Alpha Radioactivity:	See Results In Monthly Summary
Gross Beta Radioactivity:	See Results In Monthly Summary

Total Metals:	
Cadmium:	See Results In Monthly Summary
Chromium:	See Results In Monthly Summary
Copper:	See Results In Monthly Summary
Iron:	See Results In Monthly Summary
Lead:	See Results In Monthly Summary
Nickel:	See Results In Monthly Summary
Zinc:	See Results In Monthly Summary

Isotopic	
U-235	See Results In Monthly Summary
U-238	See Results In Monthly Summary
Ra-226	See Results In Monthly Summary
Ra-228	See Results In Monthly Summary
Th-230	See Results In Monthly Summary
Th-232	See Results In Monthly Summary

			Start		Stop	
Signurature	Frac Tank ID#	Date	Time	Gallons	Time	Gallons
Rhedta Bean	255824	7/29/2011	0700	10000	xxx	xxx
Rhedta Bean	255824	7/29/2011	xxx	xxx	0930	0
Rhedta Bean	239801	7/29/2011	0705	10000	xxx	xxx
Rhedta Bean	239801	7/29/2011	xxx	xxx	0930	0
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		
					xxx	xxx
			xxx	xxx		

Total Time: 2.5 Hours
Total Volume 20000 Gallons

MALLINCKRODT
2112059600

Meeting Agenda

PROJECT: Mallinckrodt MSD Special Discharge Permit
November 2, 2011 Incident

MEETING DATE: November 10, 2011

MSD Attendees
- STEVE GRACE
- DOUG MENDOZA

Background

- Reason for the special discharge permit: Columbium-Tantalum (C-T) Decommissioning Project
- Goal: Ensure a robust water treatment system through administrative and operational systems to meet Covidien's special discharge permit requirements.

Incident Details

Radioisotopes	Discharge Limit	Highest Concentration Discharged	Number of Discharges
Ra-226	10 pCi/L	13 pCi/L	23
Gross Beta	50 pCi/L	78 pCi/L	16

Mallinckrodt Plant MSD Permit Limit: 1 Ci per year
YTD discharge from CT Remediation Project: 7.8xE-4 Ci

Corrective Actions:

- As of November 2nd cease water discharges, hold collected water for reprocessing through new treatment system. Preliminary reprocessing results indicate 10.1 pCi/L gross beta and 0.85 pCi/L Ra-226.
- Notify MSD of incident.
- All filter media (sand, charcoal and resin beds) will be changed out. Resin beds have been changed out. Waiting for delivery of activated carbon and sand filters.
- Analyze sample exceeding the gross beta radioactivity to determine the radioisotopes; Lab reporting the bulk of the gross activity contribution is from beta/photon-emitting natural decay series constituents and naturally occurring K-40

Preventative Measures

- Implement a redundant treatment system to ensure compliance with the MSD Special Discharge Permit. Re-design the treatment system to include two resin beds in series, sampling of inflow and outflow from each bed.

- Modify C-T WTP SOP to incorporate operations and administrative requirements of the improved water treatment system.
- Monitoring and reporting of water treatment system performance will be a part of the daily reporting requirements which will be reviewed by contractor Field Construction Manager and contractor Project Manager. Plant personnel will receive copies of the analytical results for review.
- Re-train water treatment operators on the administrative and operational changes of the water treatment system.

TO: Chris Verplancke - Finance Department

FROM: Steven M. Grace – DEC SMG

DATE: November 10, 2011

RE: **Wastewater User Charge Billing for Special Discharge**

Please bill, by invoice, the following charges applicable to an on-site special discharge approved in our letter dated October 30, 1998, as modified in letters dated November 20, 1998, July 19, 1999, March 28, 2001, October 13, 2004, June 19, 2006, and May 22, 2008. The discharge dates and quantity are from information submitted by Sharon Cotner, Corps of Engineers, in a letter dated October 31, 2011. Please note that, as of July 1, 2011, the volume charge of $2.11 per 100 cubic feet of wastewater became effective.

This charge is based on the rates in MSD Wastewater User Charge Ordinance 13021.

PARTY TO BILL: Larry Joellenbeck
The Shaw Group Inc.
1 Angelrodt Street
St. Louis, MO 63147

BILLING IS FOR: On-Site Special Discharge

DISCHARGE PERIOD: July through September 2011

SOURCE OF WASTE: Treated construction water from the St. Louis Downtown FUSRAP Site located at Mallinckrodt, Inc., 3600 N. Second Street, St. Louis, Missouri.

Discharge Period	Billing Item	Quantity	Units	Rate	Charge
7/1/11 - 9/30/11	Volume	445	CcF	$2.11	$938.95
Totals:	---	445	CcF	---	$938.95

If you have any questions, please call me on extension 8755.

bv

pc: Brian Gibson
Doug Mendoza
Larry Joellenbeck, The Shaw Group Inc., 1 Angelrodt St., St. Louis, MO 63147

File: IU, MALLINCKRODT INC [2112059600]

Steve Grace

From: Crouch, Amber [Amber.Crouch@Covidien.com]
Sent: Tuesday, November 01, 2011 10:47 AM
To: Steve Grace
Subject: Discharge of Glycol from Bldg. 25 Under Special Discharge Permit Dated 8/11/2011

Steve,

On October 12th, 2011, approval was received from MSD to discharge an additional 150 gallons of a 30% ethylene glycol solution from Bldg. 25. The additional 150 gallons of 30% ethylene glycol solution was discharged through the plant sewer to the plant's neutralization system and SP010 on October 25th, 2011.

Please call me if you have any questions or need additional information.

Thanks,

Amber Crouch
Senior HSE Engineer
Covidien
3600 North Second Street
St. Louis, MO 63147
USA
(314) 654-0127 office
(314) 253-2213 pager
(314) 654-1251 fax
www.covidien.com
This information may be confidential and/or privileged. Use of this information by anyone other than the intended recipient is prohibited. If you receive this in error, please inform the sender and remove any record of this message.

COVIDIEN

October 27, 2011

Mr. Doug Mendoza
Metropolitan St. Louis Sewer District
Department of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147

Re: 2011 3rd Quarter Self-Monitoring Report for Permit No. 21120596 – 3.1

Dear Mr. Mendoza,

Please find enclosed the 2011 3rd Quarter Self Monitoring report for Mallinckrodt Inc.

The following sample points received no pharmaceutical process water flow during the second quarter: SP930, SP933 and SP935.

CT Excavation activities continued during the third quarter and there were multiple discharges under the Special Discharge Permit issued for wastewater generated from CT remediation activities. A summary of the discharges is provided in the Industrial User Radioactive Discharge Report included in this submittal.

DOES SITE HAVE GRAGE WEED DATA?

The planned electric shutdown occurred on September 30– October 3, 2011. As was stated in our letter to you dated September 9, 2011, the two lift station outfalls SP008 and SP011 overflowed directly to MSD during this time. Samples were taken and analyzed and are included in this report as well as pH readings during the overflow event for September 30. The pH readings for October 1-3, 2011 will be included in the 4th Quarter Self Monitoring report.

If you have any questions or require more detailed information, please contact me at 314-654-1969.

Sincerely,

Julie Summers

Julie Summers
Environmental Manager

ENCLOSURES

COVIDIEN/MALLINCKRODT
3600 NORTH SECOND STREET
ST. LOUIS, MO 63147

TELEPHONE: 314-654-2000
FAX: 314-654-1251

METROPOLITAN ST. LOUIS SEWER DISTRICT
INDUSTRIAL USER RADIOACTIVE MATERIALS DISCHARGE REPORT

PART I: IDENTIFYING INFORMATION

Company Name: Mallinckrodt Inc.

Permit No: 2112059600-3.1

Premise Address: 3600 N Second St. St. Louis, MO 63147

Reporting Period: ☐(JAN-MAR) ☐(APR-JUNE) ☒(JULY-SEPT) ☐(OCT-DEC)

PART II: RECORD OF DISPOSAL OF RADIOACTIVE MATERIALS TO THE SEWER SYSTEM

RADIONUCLIDE	ACTIVITY DISCHARGED (millicuries)
Ur-234	1.06×10^{-6}
Ur-235	1.56×10^{-4}
Ur-238	2.76×10^{-4}
Ra-226	1.53×10^{-3}
Ra-228	5.27×10^{-4}
Th-228	2.13×10^{-4}
Th-230	2.39×10^{-4}
Th-232	1.16×10^{-4}
TOTAL ACTIVITY DISCHARGED:	3.06×10^{-3}

PART III: CERTIFICATION STATEMENTS

Place your initials in the box under item A.
Everyone must complete the information under items A & B and sign this report.

A. CERTIFICATION OF COMPLIANCE WITH STATE AND FEDERAL REGULATIONS

JW I certify that to the best of my knowledge & belief, all requirements of 10 CFR Part 20.2003 and 19 CSR Part 20-10.090 governing disposal by release into sanitary sewage for material regulated by the Nuclear Regulatory Commission and the Missouri Department of Health, respectively, have been met for the period covered by this report.

B. RADIOACTIVE MATERIALS DISCHARGE REPORT CERTIFICATION

I certify under penalty of Law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Print/type name of signing official: James A. Walter

Title: Sr. Director of Manufacturing Telephone: 314-654-1300

Signature: [signature] Date: 10/26/11

radrpt.doc 2/00

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 05-01-2011 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: _____(JAN-MAR) ____(APR-JUNE) __X__(JULY-SEPT) _____(OCT-DEC)

Samples Collected By: Mallinckrodt Inc

Analysis Performed By: Teklab

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->		001					
DATES ON WHICH SAMPLES WERE COLLECTED	----->		NA					
TIMES AT WHICH SAMPLES WERE COLLECTED	----->							
PARAMETER	LIMIT	RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW G=grab,C=composite,M=measured flow,E=estimated flo						UNITS
FLOW		E	1,000					gal/day
NO MONITORING REQUIRED (Sanitary Only)								
There have been no change in the character of the wastes discharged since the last report.								

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 05-01-2011 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: _____(JAN-MAR) ____(APR-JUNE) _X___(JULY-SEPT) ____(OCT-DEC)

Samples Collected By: Mallinckrodt Inc

Analysis Performed By: Teklab

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->		002					
DATES ON WHICH SAMPLES WERE COLLECTED	----->		NA					
TIMES AT WHICH SAMPLES WERE COLLECTED	----->							
PARAMETER	LIMIT	RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW G=grab,C=composite,M=measured flow,E=estimated flo						UNITS
FLOW		E	2,200					gal/day
NO MONITORING REQUIRED (Sanitary Only)								
There have been no change in the character of the wastes discharged since the last report.								

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 05-01-2011 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: ____(JAN-MAR) ____(APR-JUNE) __X__(JULY-SEPT) ____(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->		003		009		099	
DATES ON WHICH SAMPLES WERE COLLECTED	----->		9/12/2011		9/12/2011		calculated	
TIMES AT WHICH SAMPLES WERE COLLECTED	----->		0710, 0810, 0910, 1010		0740, 0840, 0940, 1040		n/a	
PARAMETER	LIMIT	RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW G=grab,C=composite,M=measured flow,E=estimated flow						UNITS
FLOW		M	56,419	M	26,957	E	29,462	gal/day
Oil & Grease	200	G	4	G	5	E	3	mg/l
Biochemical Oxygen Demand	****	C	24	C	5	E	41	mg/l
Chemical Oxygen Demand	****	C	53	C	50	E	56	mg/l
Total Suspended Solids	****	C	15	C	6	E	23	mg/l
Temperature	****	G	25.5	G	25.5	E	26	deg C
pH	****	G	6.8	G	6.8	E	6.8	S.U.
**** No limits for SP003 or SP009;								
monitoring requirement only for calculation at SP099								
* Calculated value was less than zero.								
Lab Dilution Factor			1		1			

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 **Effective Date:** 06-01-2010 **Expiration Date:** 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: _____(JAN-MAR) _____(APR-JUNE) __X__(JULY-SEPT) _____(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->		**005**					
DATES ON WHICH SAMPLES WERE COLLECTED	----->		9/12/2011					
TIMES AT WHICH SAMPLES WERE COLLECTED	----->		0720, 0820, 0920, 1020					
PARAMETER	LIMIT	**RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW** G=grab,C=composite,M=measured flow,E=estimated flo						UNITS
FLOW		E	32,000					gal/day
Oil & Grease	200	G	5					mg/l
Biochemical Oxygen Demand	****	C	5					mg/l
Chemical Oxygen Demand	****	C	50					mg/l
Total Suspended Solids	****	C	6					mg/l
Temperature	60	G	27.7					deg C
pH	5.5 - 11.5	G	7.0					S.U.
Lab Dilution Factor			1					

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 05-01-2011 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: ____(JAN-MAR) ____(APR-JUNE) __X__(JULY-SEPT) ____(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	---->		008					
DATES ON WHICH SAMPLES WERE COLLECTED	---->		9/30/2011					
TIMES AT WHICH SAMPLES WERE COLLECTED	---->		9:00					
PARAMETER	LIMIT	RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW G=grab,C=composite,M=measured flow,E=estimated flo						UNITS
FLOW		E	130,000					gal/day
Oil & Grease	200	G	4					mg/l
Biochemical Oxygen Demand	****	G	17					mg/l
Chemical Oxygen Demand	****	G	22					mg/l
Temperature	60	G	21.9					deg C
Total Suspended Solids	****	G	32					mg/L
pH	5.5 - 11.5	G	8.7					S.U.
Lab Dilution Factor								

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 05-01-2011 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: ____(JAN-MAR) ____(APR-JUNE) _X__(JULY-SEPT) ____(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->	008						
DATES ON WHICH SAMPLES WERE COLLECTED	----->	9/30/2011						
TIMES AT WHICH SAMPLES WERE COLLECTED	----->	9:00						
PARAMETER	LIMIT	RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW G=grab,C=composite,M=measured flow,E=estimated flo						UNITS
FLOW		E	130,000					gal/day
1,1,1-Trichloroethane		G	<0.005	X				mg/l
1,1,2,2-Tetrachloroethane		G	<0.005	X				mg/l
1,1,2-Trichloroethane		G	<0.005	X				mg/l
1,1-Dichloroethane		G	<0.005					mg/l
1,1-Dichloroethene		G	<0.005					mg/l
1,2-Dichlorobenzene		G	<0.005	X				mg/l
1,2-Dichloroethane		G	<0.005	X				mg/l
1,2-Dichloropropane		G	<0.005					mg/l
1,3-Dichlorobenzene		G	<0.005	X				mg/l
1,4-Dichlorobenzene		G	<0.005	X				mg/l
2-Chloroethylvinylether		G	<0.020					mg/l
Acrolein		G	<0.100	X				mg/l
Acrylonitrile		G	<0.005	X				mg/l
Benzene		G	<0.002	X				mg/l
Bromodichloromethane		G	<0.005	X				mg/l
Bromoform		G	<0.005					mg/l
Bromomethane		G	<0.010	X				mg/l
Carbon Tetrachloride		G	<0.005	X				mg/l
Chlorobenzene		G	<0.005	X				mg/l
Chloroethane		G	<0.010					mg/l
Chloroform		G	0.0024	X				mg/l
Chloromethane		G	<0.010	X				mg/l
cis-1,3-Dicholropropene		G	<0.005					mg/l
Dibromochloromethane		G	<0.005	X				mg/l
Ethylbenzene		G	<0.005	X				mg/l
Methylene Chloride		G	<0.005	X				mg/l
Tetrachloroethene		G	<0.005	X				mg/l
Toluene		G	<0.002	X				mg/l
1,2-Dichloroethene		G	<0.005					mg/l
trans-1,3-Dichloropropene		G	<0.005					mg/l
Trichloroethene		G	<0.005	X				mg/l
Vinyl Chloride		G	0.0008	X				mg/l
1,2,4-Trichlorobenzene		G	<0.008					mg/l
2,4,6-Trichlorophenol		G	<0.008					mg/l
2,4-Dichlorophenol		G	<0.008	X				mg/l
2,4-Dimethylphenol		G	<0.008	X				mg/l
2,4-Dinitrophenol		G	<0.016	X				mg/l
2,4-Dinitrotoluene		G	<0.008	X				mg/l
2,6-Dinitrotoluene		G	<0.008					mg/l
2-Chloronapthalene		G	<0.008					mg/l
2-Chlorophenol		G	<0.008	X				mg/l
2-Nitrophenol		G	<0.016	X				mg/l
3,3-Dichlorobenzidine		G	<0.008					mg/l
2-Methyl-4,6-dinitrophenol		G	<0.016					mg/l
4-Bromophenyl-phenylether		G	<0.008					mg/l
4-Chloro-3-methylphenol		G	<0.016					mg/l
4-Chlorophenyl-phenylether		G	<0.008					mg/l
4-Nitrophenol		G	<0.016	X				mg/l
Acenapthene		G	<0.008					mg/l
Acenaphthylene		G	<0.008					mg/l
Anthracene		G	<0.008					mg/l
Benzidine		G	<0.031	X				mg/l
Benzo(a)anthracene		G	<0.008					mg/l
Benzo(a)pyrene		G	<0.039	X				mg/l

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

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Permit No.: 2112059600 - 3 Effective Date: 05-01-2011 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: ____(JAN-MAR) ____(APR-JUNE) _X__(JULY-SEPT) ____(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->		008						
DATES ON WHICH SAMPLES WERE COLLECTED	----->		9/30/2011						
TIMES AT WHICH SAMPLES WERE COLLECTED	----->		9:00						
PARAMETER	LIMIT	RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW G=grab,C=composite,M=measured flow,E=estimated flo							UNITS
FLOW		E	130,000						gal/day
Benzo(b)fluoranthene		G	<0.039						mg/l
Benzo(g,h,i)perylene		G	<0.039						mg/l
Benzo(k)fluoranthene		G	<0.039						mg/l
Bis(2-chloroethoxy)methane		G	<0.008						mg/l
Bis(2-chloroethyl)ether		G	<0.008						mg/l
Bis(2-chloroisopropyl)ether		G	<0.008						mg/l
Bis(2-ethylhexyl)phthalate		G	<0.005	X					mg/l
Butyl benzyl phthalate		G	<0.008						mg/l
Chrysene		G	<0.008						mg/l
Dibenzo(a,h)anthracene		G	<0.039						mg/l
Diethyl phthalate		G	<0.008	X					mg/l
Dimethyl phthalate		G	<0.008	X					mg/l
Di-n-butyl phthalate		G	<0.008						mg/l
Di-n-octyl-phthalate		G	<0.008						mg/l
Fluorene		G	<0.008						mg/l
Fluoranthene		G	<0.008						mg/l
Hexachlorobenzene		G	<0.008						mg/l
Hexachlorobutadiene		G	<0.008	X					mg/l
Hexachlorocyclopentadiene		G	<0.016	X					mg/l
Hexachloroethane		G	<0.008	X					mg/l
Ideno(1,2,3-cd)pyrene		G	<0.039						mg/l
Isophorone		G	<0.008						mg/l
Naphthalene		G	<0.008						mg/l
Nitrobenzene		G	<0.008	X					mg/l
N-nitrosodimethylamine		G	<0.016	X					mg/l
N-nitrosodi-n-propylamine		G	<0.008						mg/l
N-nitrosodiphenylamine		G	<0.008						mg/l
Pentachlorophenol		G	<0.016						mg/l
Phenanthrene		G	<0.008	X					mg/l
Phenol		G	<0.004	X					mg/l
Pyrene		G	<0.008						mg/l
1,2-Diphenylhydrazine		G	<0.008						mg/l
Total Toxic Organics	5.844	--	0.970						mg/l
Lab Dilution Factor			1						

Electrical Shutdown Manual pH Monitoring

Date: Friday, September 30, 2011
Sample Point: SP008

Time	pH	Time	pH
9/30/11 7:30	No Flow	9/30/11 16:00	7.59
9/30/11 8:00	No Flow	9/30/11 16:30	7.80
9/30/11 8:30	7.70	9/30/11 17:00	7.73
9/30/11 9:00	8.66	9/30/11 17:30	7.94
9/30/11 9:30	8.96	9/30/11 18:00	8.09
9/30/11 10:00	9.20	9/30/11 18:30	8.09
9/30/11 10:30	9.20	9/30/11 19:00	8.11
9/30/11 11:00	8.88	9/30/11 19:30	8.14
9/30/11 11:30	9.10	9/30/11 20:00	8.16
9/30/11 12:00	9.12	9/30/11 20:30	8.30
9/30/11 12:30	9.22	9/30/11 21:00	8.38
9/30/11 13:00	9.18	9/30/11 21:30	8.33
9/30/11 13:30	9.02	9/30/11 22:00	8.36
9/30/11 14:00	9.06	9/30/11 22:30	8.34
9/30/11 14:30	9.04	9/30/11 23:00	8.42
9/30/11 15:00	9.21	9/30/11 23:30	8.46
9/30/11 15:30	8.88		

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 **Effective Date:** 06-01-2010 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: ____(JAN-MAR) ____(APR-JUNE) __X__(JULY-SEPT) _____(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	---->		010					
DATES ON WHICH SAMPLES WERE COLLECTED	---->		9/12/2011					
TIMES AT WHICH SAMPLES WERE COLLECTED	----->		0750, 0850, 0950, 1050					
PARAMETER	LIMIT	RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW G=grab,C=composite,M=measured flow,E=estimated flo						UNITS
FLOW		E	1,142,913					gal/day
Oil & Grease	200	G	32					mg/l
Biochemical Oxygen Demand	****	C	635					mg/l
Chemical Oxygen Demand	****	C	1090					mg/l
Total Suspended Solids	****	C	327					mg/l
Temperature	60	G	37.7					deg C
pH	5.5 - 11.5	G	see attached					S.U.
Chromium	5.0	C	0.008					mg/l
Copper	2.7	C	0.016					mg/l
Nickel	2.3	C	0.011					mg/l
Zinc	3.0	C	0.026					mg/l
Lab Dilution Factor			1					

Mallinckrodt pH Monitoring for SP010: July 2011

Date / Time	pH	pH	Total for Event in Minutes
None			
		July Total:	**0**

Mallinckrodt pH Monitoring for SP010: August 2011

Date / Time	pH	pH	Total for Event in Minutes
8/9/11 16:20	117	11.7	30
8/9/11 16:25	120	12.0	
8/9/11 16:30	119	11.9	
8/9/11 16:35	117	11.7	
8/9/11 16:40	117	11.7	
8/9/11 16:45	116	11.6	
8/11/11 10:10	**35**	**3.5**	**5**
8/18/11 9:00	40.2	4.0	5
		August Total:	**40**

Mallinckrodt pH Monitoring for SP010: September 2011

Date / Time	pH	pH	Total for Event in Minutes
9/16/11 10:40	42	4.2	5
9/19/11 8:00	**46**	**4.6**	**5**
		September Total:	**10**

METROPOLITAN ST. LOUIS SEWER DISTRICT
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Monitoring Period: ___(JAN-MAR) ____(APR-JUNE) __X__(JULY-SEPT) ____(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->		011					
DATES ON WHICH SAMPLES WERE COLLECTED	----->		9/30/2011					
TIMES AT WHICH SAMPLES WERE COLLECTED	----->		7:45					
PARAMETER	LIMIT	RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW G=grab,C=composite,M=measured flow,E=estimated flo						UNITS
FLOW		E	14,000					gal/day
Oil & Grease	200	G	6					mg/l
Biochemical Oxygen Demand	****	G	21					mg/l
Chemical Oxygen Demand	****	G	50					mg/l
Total Suspended Solids	****	G	30					mg/l
Temperature	60	G	22.0					deg C
pH	5.5 - 11.5	G	8.2					S.U.
* No flow during this reporting period.								
Lab Dilution Factor			1					

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

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Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->		011					
DATES ON WHICH SAMPLES WERE COLLECTED	----->		9/30/2011					
TIMES AT WHICH SAMPLES WERE COLLECTED	----->		7:45					
PARAMETER	LIMIT	RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW G=grab,C=composite,M=measured flow,E=estimated flo						UNITS
FLOW		E	14,000					gal/day
1,1,1-Trichloroethane		G	<0.005					mg/l
1,1,2,2-Tetrachloroethane		G	<0.005					mg/l
1,1,2-Trichloroethane		G	<0.005					mg/l
1,1-Dichloroethane		G	<0.005					mg/l
1,1-Dichloroethene		G	<0.005					mg/l
1,2-Dichlorobenzene		G	<0.005					mg/l
1,2-Dichloroethane		G	<0.005					mg/l
1,2-Dichloropropane		G	<0.005					mg/l
1,3-Dichlorobenzene		G	<0.005					mg/l
1,4-Dichlorobenzene		G	<0.005					mg/l
2-Chloroethylvinylether		G	<0.020					mg/l
Acrolein		G	<0.100					mg/l
Acrylonitrile		G	<0.005					mg/l
Benzene		G	<0.002					mg/l
Bromodichloromethane		G	<0.005					mg/l
Bromoform		G	<0.005					mg/l
Bromomethane		G	<0.010					mg/l
Carbon Tetrachloride		G	<0.005					mg/l
Chlorobenzene		G	<0.005					mg/l
Chloroethane		G	<0.010					mg/l
Chloroform		G	0.0026					mg/l
Chloromethane		G	<0.010					mg/l
cis-1,3-Dicholropropene		G	<0.005					mg/l
Dibromochloromethane		G	<0.005					mg/l
Ethylbenzene		G	<0.005					mg/l
Methylene Chloride		G	<0.005					mg/l
Tetrachloroethene		G	<0.005					mg/l
Toluene		G	<0.002					mg/l
trans-1,2-Dichloroethene		G	<0.005					mg/l
trans-1,3-Dichloropropene		G	<0.005					mg/l
Trichloroethene		G	<0.005					mg/l
Vinyl Chloride		G	<0.002					mg/l
1,2,4-Trichlorobenzene		G	<0.008					mg/l
2,4,6-Trichlorophenol		G	<0.008					mg/l
2,4-Dichlorophenol		G	<0.008					mg/l
2,4-Dimethylphenol		G	<0.008					mg/l
2,4-Dinitrophenol		G	<0.016					mg/l
2,4-Dinitrotoluene		G	<0.008					mg/l
2,6-Dinitrotoluene		G	<0.008					mg/l
2-Chloronapthalene		G	<0.008					mg/l
2-Chlorophenol		G	<0.008					mg/l
2-Nitrophenol		G	<0.016					mg/l
3,3-Dichlorobenzidine		G	<0.008					mg/l
2-Methyl-4,6-dinitrophenol		G	<0.016					mg/l
4-Bromophenyl-phenylether		G	<0.008					mg/l
4-Chloro-3-methylphenol		G	<0.016					mg/l
4-Chlorophenyl-phenylether		G	<0.008					mg/l
4-Nitrophenol		G	<0.016					mg/l
Acenapthene		G	<0.008					mg/l
Acenaphthylene		G	<0.008					mg/l
Anthracene		G	<0.008					mg/l
Benzidine		G	<0.032					mg/l
Benzo(a)anthracene		G	<0.008					mg/l

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 05-01-2011 Expiration Date: 05-31-2015

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Monitoring Period: ____(JAN-MAR) _____(APR-JUNE) _X___(JULY-SEPT) ____(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->	011					
DATES ON WHICH SAMPLES WERE COLLECTED	----->	9/30/2011					
TIMES AT WHICH SAMPLES WERE COLLECTED	----->	7:45					
PARAMETER	LIMIT	RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW G=grab,C=composite,M=measured flow,E=estimated flo					UNITS
FLOW		E	14,000				gal/day
Benzo(a)pyrene		G	<0.008				mg/l
Benzo(b)fluoranthene		G	<0.008				mg/l
Benzo(g,h,i)perylene		G	<0.008				mg/l
Benzo(k)fluoranthene		G	<0.008				mg/l
Bis(2-chloroethoxy)methane		G	<0.008				mg/l
Bis(2-chloroethyl)ether		G	<0.008				mg/l
Bis(2-chloroisopropyl)ether		G	<0.008				mg/l
Bis(2-ethylhexyl)phthalate		G	<0.005				mg/l
Butyl benzyl phthalate		G	<0.008				mg/l
Chrysene		G	<0.008				mg/l
Dibenzo(a,h)anthracene		G	<0.008				mg/l
Diethyl phthalate		G	<0.008				mg/l
Dimethyl phthalate		G	<0.008				mg/l
Di-n-butyl phthalate		G	<0.008				mg/l
Di-n-octyl-phthalate		G	<0.008				mg/l
Fluoranthene		G	<0.008				mg/l
Fluorene		G	<0.008				mg/l
Hexachlorobenzene		G	<0.008				mg/l
Hexachlorobutadiene		G	<0.008				mg/l
Hexachlorocyclopentadiene		G	<0.016				mg/l
Hexachloroethane		G	<0.008				mg/l
Ideno(1,2,3-cd)pyrene		G	<0.008				mg/l
Isophorone		G	<0.008				mg/l
Naphthalene		G	<0.008				mg/l
Nitrobenzene		G	<0.008				mg/l
N-nitrosodimethylamine		G	<0.016				mg/l
N-nitrosodi-n-propylamine		G	<0.008				mg/l
N-nitrosodiphenylamine		G	<0.008				mg/l
Pentachlorophenol		G	<0.016				mg/l
Phenanthrene		G	<0.008				mg/l
Phenol		G	<0.004				mg/l
Pyrene		G	<0.008				mg/l
1,2-Diphenylhydrazine		G	<0.008				mg/l
Total Toxic Organics	5.844	--	0.787				mg/l
Lab Dilution Factor			1				

Electrical Shutdown Manual pH Monitoring

Date: Friday, September 30, 2011
Sample Point: SP011

Time	pH	Time	pH
9/30/11 7:45	8.19	9/30/11 16:15	7.73
9/30/11 8:15	8.54	9/30/11 16:45	7.73
9/30/11 8:45	8.39	9/30/11 17:15	7.73
9/30/11 9:15	9.02	9/30/11 17:45	7.75
9/30/11 9:45	9.39	9/30/11 18:15	7.75
9/30/11 10:15	9.48	9/30/11 18:45	7.76
9/30/11 10:45	9.48	9/30/11 19:15	7.76
9/30/11 11:15	9.49	9/30/11 19:45	7.76
9/30/11 11:45	9.32	9/30/11 20:15	7.75
9/30/11 12:15	9.50	9/30/11 20:45	7.75
9/30/11 12:45	9.54	9/30/11 21:15	7.74
9/30/11 13:15	9.51	9/30/11 21:45	7.75
9/30/11 13:45	9.54	9/30/11 22:15	7.84
9/30/11 14:15	9.53	9/30/11 22:45	7.93
9/30/11 14:45	7.47	9/30/11 23:15	8.12
9/30/11 15:15	7.68	9/30/11 23:45	8.08
9/30/11 15:45	7.71		

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3.1 **Effective Date:** 05-01-2011 **Expiration Date:** 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: _____(JAN-MAR) ___(APR-JUN) __X__(JULY-SEP) _____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->		**080**				
DATES ON WHICH SAMPLES WERE COLLECTED			---->		8/23/2011				
TIMES AT WHICH SAMPLES WERE COLLECTED			---->		920, 1030, 1130, 1230				
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS** G=Grab, C-composite, M=measured flow, E=estimated					UNITS
FLOW				E	3,500				gal/day
Acetone	524.2	20.70	8.20	G	<1.000				mg/L
n-Amyl Acetate	1666	20.70	8.20	G	<0.100				mg/L
Benzene	524.2	3.00	0.70	G	0.045				mg/L
n-Butyl acetate	1666	20.70	8.20	G	<0.100				mg/L
Chlorobenzene	524.2	3.00	0.70	G	<0.100				mg/L
Chloroform	524.2	0.10	0.03	G	<0.02				mg/L
1,2-Dichlorobenzene	524.2	20.70	8.20	G	<0.100				mg/L
1,2-Dichloroethane	524.2	20.70	8.20	G	<0.100				mg/L
Diethyl amine	1671	255.00	100.00	G	<50				mg/L
Ethyl Acetate	1666	20.70	8.20	G	<0.200				mg/L
n-Heptane	1666	3.00	0.70	G	<0.200				mg/L
n-Hexane	1666	3.00	0.70	G	<0.200				mg/L
Isobutyraldehyde	1666	20.70	8.20	G	<0.200				mg/L
Isopropyl acetate	1666	20.70	8.20	G	<0.100				mg/L
Isopropyl ether	1666	20.70	8.20	G	<0.100				mg/L
Methylene chloride	524.2	3.00	0.70	G	<0.100				mg/L
Methyl formate	1666	20.70	8.20	G	<1.000				mg/L
4-Methyl-2-pentanone	1666	20.70	8.20	G	<0.200				mg/L
Tetrahydrofuran	1666	9.20	3.40	G	<0.400				mg/L
Toluene	524.2	0.30	0.20	G	<0.100				mg/L
Triethyl amine	1671	255.00	100.00	G	<20				mg/L
Xylenes	1666	3.00	0.70	G	<0.100				mg/L
Oil & Grease	1664	200		G	<5				mg/L
Biochemical Oxygen Demand		****		C	<5				mg/L
Chemical Oxygen Demand		****		C	<50				mg/L
Total Suspended Solids		****		C	38				mg/L
Temperature		60		G	32.7				deg C
pH		5.5 - 11.5		G	9.8				S.U.
Dilution by lab					1,20				

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 06-01-2010 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: _____(JAN-MAR) _____(APR-JUNE) __X__(JULY-SEPT) _____(OCT-DEC)

Samples Collected By: Mallinckrodt Inc

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS ---->		912		912		912		
DATES ON WHICH SAMPLES WERE COLLECTED ---->		7/11/2011		8/1/2011		9/12/2011		
TIMES AT WHICH SAMPLES WERE COLLECTED ---->		800		800		900		
PARAMETER	LIMIT	RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW G=grab,C=composite,M=measured flow,E=estimated flo						UNITS
FLOW		M	40179	M	69878	M	71368	gal/day
DMAC (daily max)	7091	C	2000	C	2700	C	1400	lb/day
DMAC (monthly average)	5459	C	2000	C	2700	C	1400	lb/day
Lab Dilution Factor			1		1		1	

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 **Effective Date:** 06-01-2010 **Expiration Date:** 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: ____(JAN-MAR) _____ (APR-JUNE) __X___(JULY-SEPT) ____(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS		---->		**905**			
DATES ON WHICH SAMPLES WERE COLLECTED		---->		8/8/2011			
TIMES AT WHICH SAMPLES WERE COLLECTED		---->		9:00			
PARAMETER	MONTHLY LIMIT (ave) (gm/day)	DAILY MAX LIMIT (gm/day)	**RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW** G=grab,C=composite,M=measured flow,E=estimated flow		Lab results mg/L		UNITS
FLOW			M	83345			gal/day
1,2,4-Trichlorobenzene	74	301	G	3.15	0.010		gm/day
1,2-Dichlorobenzene	74	301	G	1.58	0.005		gm/day
1,3-Dichlorobenzene	54	144	G	1.58	0.005		gm/day
1,4-Dichlorobenzene	54	144	G	1.58	0.005		gm/day
2-Nitrophenol	25	87	G	6.31	0.020		gm/day
2-Methyl-4,6-dinitrophenol	30	105	G	6.31	0.020		gm/day
4-Nitrophenol	61	218	G	6.31	0.020		gm/day
Acenapthene	7	18	G	3.15	0.010		gm/day
Anthracene	7	18	G	3.15	0.010		gm/day
Bis(2-ethylhexyl)phthalate	36	98	G	1.89	0.006		gm/day
Diethyl phthalate	17	43	G	3.15	0.010		gm/day
Dimethyl phthalate	7	18	G	3.15	0.010		gm/day
Di-n-butyl phthalate	8	16	G	3.15	0.010		gm/day
Fluoranthene	8	20	G	3.15	0.010		gm/day
Fluorene	7	18	G	3.15	0.010		gm/day
Hexachlorobenzene	74	301	G	3.15	0.010		gm/day
Hexachlorobutadiene	54	144	G	3.15	0.010		gm/day
Hexachloroethane	74	301	G	3.15	0.010		gm/day
Naphthalene	7	18	G	3.15	0.010		gm/day
Phenanthrene	7	18	G	3.15	0.010		gm/day
Pyrene	8	18	G	3.15	0.010		gm/day
1,1,1-Trichloroethane	8	22	G	1.58	0.005		gm/day
1,1,2-Trichloroethane	12	48	G	1.58	0.005		gm/day
1,1-Dichloroethane	8	22	G	1.58	0.005		gm/day
1,1-Dichloroethene	8	23	G	1.58	0.005		gm/day
1,2-Dichloroethane	74	301	G	1.58	0.005		gm/day
1,2-Dichloropropane	74	301	G	1.58	0.005		gm/day
Benzene	22	51	G	0.63	0.002		gm/day
Carbon Tetrachloride	54	144	G	1.58	0.005		gm/day
Chlorobenzene	54	144	G	1.58	0.005		gm/day
Chloroethane	42	112	G	3.15	0.010		gm/day
Chloroform	42	123	G	2.56	0.008		gm/day
Chloromethane	42	112	G	3.15	0.010		gm/day
cis-1,3-Dichloropropene	74	301	G	1.58	0.005		gm/day
Ethylbenzene	54	144	G	1.58	0.005		gm/day
Methylene Chloride	14	64	G	1.58	0.005		gm/day
Nitrobenzene	847	2423	G	3.15	0.010		gm/day
Tetrachloroethene	20	62	G	1.58	0.005		gm/day
Toluene	11	28	G	1.58	0.005		gm/day
trans-1,2-Dichloroethene	9	25	G	1.58	0.005		gm/day
trans-1,3-Dichloropropene	74	301	G	1.58	0.005		gm/day
Trichloroethene	10	26	G	1.58	0.005		gm/day
Vinyl Chloride	37	65	G	0.63	0.002		gm/day
Shaded values represent detection limits							
Lab Dilution Factor				1			

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **MALLINCKRODT INC.**
Permit No.: 2112059600 - 3 Effective Date: 06-01-2010 Expiration Date: 05-31-2015
Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: ____(JAN-MAR) ____(APR-JUN) __X__(JULY-SEP) ____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS					915						
DATES ON WHICH SAMPLES WERE COLLECTED					7/6/2011						
TIMES AT WHICH SAMPLES WERE COLLECTED					16:45						
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW G=Grab, C-composite, M=measured flow, E=estimated flow							UNITS
FLOW				E	2,700						gal/day
Acetone	524.2	20.70	8.20	G	0.120						mg/L
n-Amyl acetate	1666	20.70	8.20	G	<0.100						mg/L
Benzene	524.2	3.00	0.70	G	<0.100						mg/L
n-Butyl acetate	1666	20.70	8.20	G	<0.100						mg/L
Chlorobenzene	524.2	3.00	0.70	G	<0.100						mg/L
Chloroform	524.2	0.10	0.03	G	<0.020						mg/L
1,2-Dichlorobenzene	524.2	20.70	8.20	G	<0.100						mg/L
1,2-Dichloroethane	524.2	20.70	8.20	G	<0.100						mg/L
Diethyl amine*	1671	255.00	100.00	G	--						mg/L
Ethyl Acetate	1666	20.70	8.20	G	<0.200						mg/L
n-Heptane	1666	3.00	0.70	G	<0.200						mg/L
n-Hexane	1666	3.00	0.70	G	<0.200						mg/L
Isobutyraldehyde	1666	20.70	8.20	G	<0.200						mg/L
Isopropyl acetate	1666	20.70	8.20	G	<0.100						mg/L
Isopropyl ether	1666	20.70	8.20	G	<0.100						mg/L
Methylene chloride	524.2	3.00	0.70	G	<0.100						mg/L
Methyl formate	1666	20.70	8.20	G	<1						mg/L
4-Methyl-2-pentanone	1666	20.70	8.20	G	<0.200						mg/L
Tetrahydrofuran	1666	9.20	3.40	G	<0.400						mg/L
Toluene	524.2	0.30	0.20	G	<0.100						mg/L
Triethyl amine*	1671	255.00	100.00	G	--						mg/L
Xylenes	1666	3.00	0.70	G	<0.100						mg/L
** Annual monitoring requirement last sampled CY2011 Q2.*											
Dilution by lab					20						

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **MALLINCKRODT INC.**
Permit No.: 2112059600 - 3 Effective Date: 06-01-2010 Expiration Date: 05-31-2015
Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: ____(JAN-MAR) ____(APR-JUN) __X__(JULY-SEP) ____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->		**920**						
DATES ON WHICH SAMPLES WERE COLLECTED			---->		7/19/2011						
TIMES AT WHICH SAMPLES WERE COLLECTED			---->		8:30						
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW G=Grab, C-composite, M=measured flow, E=estimated flow**							UNITS
FLOW				E	22,274	E					gal/day
Tetrahydrofuran	1666	9.20	3.40	G	<0.400	G					mg/L
Toluene	524.2	0.30	0.20	G	<0.100	G					mg/L
Dilution by lab					20						

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **MALLINCKRODT INC.**
Permit No.: 2112059600 - 3 Effective Date: 06-01-2010 Expiration Date: 05-31-2015
Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: ____(JAN-MAR) ____(APR-JUN) __X__(JULY-SEP) ____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS					927							
DATES ON WHICH SAMPLES WERE COLLECTED					7/7/2011							
TIMES AT WHICH SAMPLES WERE COLLECTED					10:50							
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW G=Grab, C-composite, M=measured flow, E=estimated flow								UNITS
FLOW				E	2,700 ✓							gal/day
Acetone	524.2	20.70	8.20	G	<1 ✓							mg/L
n-Amyl acetate	1666	20.70	8.20	G	<0.100 ✓							mg/L
Ethyl Acetate	1666	20.70	8.20	G	<0.200 ✓							mg/L
Isopropyl acetate	1666	20.70	8.20	G	<0.100							mg/L
Methylene chloride	524.2	3.00	0.70	G	<0.100 ✓							mg/L
Dilution by lab					20							

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PLEASE READ THE INSTRUCTIONS BEFORE COMPLETING THIS REPORT

PART I: IDENTIFYING INFORMATION

Company Name: Mallinckrodt Inc.
Permit No.: 2112059600 - 3
Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: ____(JAN-MAR) ____(APR-JUN) __X__(JULY-SEP) _____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TekLab

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->		930						
DATES ON WHICH SAMPLES WERE COLLECTED			---->								
TIMES AT WHICH SAMPLES WERE COLLECTED			---->								
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW** G=Grab, C-composite, M=measured flow, E=estimated flow						UNITS	Permit
FLOW				E	*					gal/day	Avg Flow
Acetone	524.2	20.70	8.20	G	*					mg/L	
Ethyl Acetate	1666	20.70	8.20	G	*					mg/L	
Isopropyl acetate	1666	20.70	8.20	G	*					mg/L	
Methylene chloride	524.2	3.00	0.70	G	*					mg/L	
n-Amyl acetate	1666	20.70	8.20	G	*					mg/L	
*** No flow during this reporting period.**											
Dilution by lab					20						

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

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PART I: IDENTIFYING INFORMATION

Company Name: Mallinckrodt Inc.
Permit No.: 2112059600 - 3
Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: _____(JAN-MAR) ____(APR-JUN) __X__(JULY-SEP) ____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TekLab

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->		933						
DATES ON WHICH SAMPLES WERE COLLECTED			---->								
TIMES AT WHICH SAMPLES WERE COLLECTED			---->								
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW** G=Grab, C-composite, M=measured flow, E=estimated flow							UNITS
FLOW				E	*						gal/day
Acetone	524.2	20.70	8.20	G	*						mg/L
n-Amyl acetate	1666	20.70	8.20	G	*						mg/L
Ethyl Acetate	1666	20.70	8.20	G	*						mg/L
Isopropyl acetate	1666	20.70	8.20	G	*						mg/L
Methylene chloride	524.2	3.00	0.70	G	*						mg/L
*** No flow during this reporting period.**											
Dilution by lab					20						

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PLEASE READ THE INSTRUCTIONS BEFORE COMPLETING THIS REPORT

PART I: IDENTIFYING INFORMATION

Company Name: Mallinckrodt Inc.
Permit No.: 2112059600 - 3
Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: ____(JAN-MAR) ____(APR-JUN) __X__(JULY-SEP) ____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By:

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->		935					
DATES ON WHICH SAMPLES WERE COLLECTED			---->							
TIMES AT WHICH SAMPLES WERE COLLECTED			---->							
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW G=Grab, C-composite, M=measured flow, E=estimated flow**						**UNITS**
FLOW				E	0					gal/day
Acetone	**524.2**	**20.70**	**8.20**	G	*					**mg/L**
Benzene	524.2	3.00	0.70	G	*					mg/L
Chlorobenzene	524.2	3.00	0.70	G	*					mg/L
Chloroform	524.2	0.10	0.03	G	*					mg/L
1,2-Dichlorobenzene	524.2	20.70	8.20	G	*					mg/L
1,2-Dichloroethane	524.2	20.70	8.20	G	*					mg/L
Ethyl Acetate	1666	20.70	8.20	G	*					mg/L
n-Hexane	1666	3.00	0.70	G	*					mg/L
Methylene chloride	524.2	3.00	0.70	G	*					mg/L
4-Methyl-2-pentanone	1666	20.70	8.20	G	*					mg/L
Tetrahydrofuran	1666	9.20	3.40	G	*					mg/L
Toluene	524.2	0.30	0.20	G	*					mg/L
Xylenes	1666	3.00	0.70	G	*					mg/L
Isobutyraldehyde	1666	20.70	8.20	G	*					mg/L
n-Amyl acetate	1666	20.70	8.20	G	*					mg/L
n-Butyl acetate	1666	20.70	8.20	G	*					mg/L
Isopropyl acetate	1666	20.70	8.20	G	*					mg/L
Isopropyl ether	1666	20.70	8.20	G	*					mg/L
n-Heptane	1666	3.00	0.70	G	*					mg/L
Methyl formate	1666	20.70	8.20	G	*					mg/L
Diethyl amine	1671	255.00	100.00	G	*					mg/L
Triethyl amine	1671	255.00	100.00	G	*					mg/L
**** No PEG flow this quarter***										
Dilution by lab										

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PLEASE READ THE INSTRUCTIONS BEFORE COMPLETING THIS REPORT

PART I: IDENTIFYING INFORMATION

Company Name: Mallinckrodt Inc.
Permit No.: **2112059600 - 3**
Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: ____(JAN-MAR) _____(APR-JUN) __X__(JULY-SEP) ____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS ----->					**936**							
DATES ON WHICH SAMPLES WERE COLLECTED ----->					7/6/2011							
TIMES AT WHICH SAMPLES WERE COLLECTED ----->					7:15							
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS** G=Grab, C-composite, M=measured flow, E=estimated flow								**UNITS**
FLOW				E	16,500							gal/day
Acetone	524.2	20.70	8.20	G	<1							mg/L
n-Amyl acetate	1666	20.70	8.20	G	<0.100							mg/L
Benzene	524.2	3.00	0.70	G	<0.100							mg/L
n-Butyl acetate	1666	20.70	8.20	G	<0.100							mg/L
Chlorobenzene	524.2	3.00	0.70	G	<0.100							mg/L
Chloroform*	524.2	0.10	0.03	G	<0.020							mg/L
1,2-Dichlorobenzene	524.2	20.70	8.20	G	<0.100							mg/L
1,2-Dichloroethane	524.2	20.70	8.20	G	<0.100							mg/L
Diethyl amine**	1671	255.00	100.00	G	--							mg/L
Ethyl Acetate	1666	20.70	8.20	G	<0.200							mg/L
n-Heptane	1666	3.00	0.70	G	<0.200							mg/L
n-Hexane	1666	3.00	0.70	G	<0.200							mg/L
Isobutyraldehyde	1666	20.70	8.20	G	<0.200							mg/L
Isopropyl acetate	1666	20.70	8.20	G	<0.100							mg/L
Isopropyl ether	1666	20.70	8.20	G	<0.100							mg/L
Methylene chloride	524.2	3.00	0.70	G	<0.100							mg/L
Methyl formate	1666	20.70	8.20	G	<1							mg/L
4-Methyl-2-pentanone	1666	20.70	8.20	G	<0.200							mg/L
Tetrahydrofuran	1666	9.20	3.40	G	<0.400							mg/L
Toluene	524.2	0.30	0.20	G	<0.100							mg/L
Triethyl amine**	1671	255.00	100.00	G	--							mg/L
Xylenes	1666	3.00	0.70	G	<0.100							mg/L
* Chloroform Results	Raw Water	SP936										
7/6/2011	0.012 mg/l	<0.020 mg/l										
Results above reported as the difference between SP936 and Raw Water.												
*** Annual monitoring requirement last sampled CY2011 Q1.*												
Dilution by lab					20							

2011 3Q SP9XX PEG.xlsx

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PLEASE READ THE INSTRUCTIONS BEFORE COMPLETING THIS REPORT

PART I: IDENTIFYING INFORMATION

Company Name: Mallinckrodt Inc.
Permit No.: 2112059600 - 3
Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: ____(JAN-MAR) ____(APR-JUN) __X__(JULY-SEP) ____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->		937							
DATES ON WHICH SAMPLES WERE COLLECTED			---->		7/19/2011							
TIMES AT WHICH SAMPLES WERE COLLECTED			---->		8:45							
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW G=Grab, C-composite, M=measured flow, E=estimated flow**								UNITS
FLOW				E	37,438							gal/day
Tetrahydrofuran	524.2	9.20	3.40	G	<0.400							mg/L
Toluene	524.2	0.30	0.20	G	0.052							mg/L
Dilution by lab					20							

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PLEASE READ THE INSTRUCTIONS BEFORE COMPLETING THIS REPORT

PART I: IDENTIFYING INFORMATION

Company Name: Mallinckrodt Inc.
Permit No.: **2112059600 - 3**
Premise Address: 3600 North Second St., St. Louis, MO 63147
Monitoring Period: _____(JAN-MAR) ____(APR-JUN) __X__(JULY-SEP) ____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TekLab

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->		**938**							
DATES ON WHICH SAMPLES WERE COLLECTED			---->		7/13/2011							
TIMES AT WHICH SAMPLES WERE COLLECTED			---->		08:30							
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW G=Grab, C-composite, M=measured flow, E=estimated flow**								UNITS
FLOW				E	71 ✓							gal/day
Acetone	524.2	20.70	8.20	G	<1 ✓							mg/L
n-Amyl acetate	1666	20.70	8.20	G	<0.100 ✓							mg/L
Ethyl Acetate	1666	20.70	8.20	G	<0.200 ✓							mg/L
Isopropyl acetate	1666	20.70	8.20	G	<0.100 ✓							mg/L
Methylene chloride	524.2	3.00	0.70	G	<0.100 ✓							mg/L
Dilution by lab					20							

INDUSTRIAL USER SELF MONITORING REPORT PAGE 2

PART III: SPECIAL CERTIFICATION STATEMENTS

Based on the special conditions contained in your discharge permit you may be required to certify the following. Please review your permit and **PLACE YOUR INITIALS ON THE LINES NEXT TO THE CERTIFICATIONS.**

A	**NO CHANGE IN WASTEWATER DISCHARGE AT SAMPLE POINTS WITH NO MONITORING REQUIRED** For permit special conditions that waive monitoring at any sample point(s) specified in your permit, you are required to make the following certification for each report in which monitoring is waived: JAW I certify, since the last discharge monitoring report, there has been no change in the character of the wastes discharged at sample points 001 and 002. _____ I certify, since the last discharge monitoring report, there has been no discharge from sample points 008 and 011.
B	**NO CHANGE IN WASTEWATER DISCHARGE AT ACTIVE CONNECTIONS WITHOUT SAMPLE POINTS** For permit special conditions that waive monitoring at active connection points which are not specified as sample points in your permit, you are required to make the following certification: JAW I certify, since the last discharge monitoring report, there has been no change in the character of wastes discharged at those active connection points which are not specified in my permit.
E	**NO DISCHARGE OF CATEGORICAL WASTE** For permit special conditions that prohibit discharge of wastes which are subject to certain categorical pretreatment standards, you are required to make the following certification: JAW I certify, since the last discharge monitoring report, there has been no discharge of wastes which are subject to pretreatment standards in 40 CFR 414 (except for those wastes conveyed by SP 905).
F	**CYANIDE NOT USED OR GENERATED IN 40 CFR 439 OPERATIONS** Discharges subject to Pharmaceutical Categorical Standards (40 CFR 439) can be exempted from limitations and monitoring for Total Cyanide at the Pharmaceutical sample points 080, 915, 920, 935, 936, and 937, subject to the following certification: JAW I certify, since the last discharge monitoring report, cyanide has not been used or generated in any pharmaceutical manufacturing process subject to Categorical Standards in 40 CFR 439.
H	**PHARMACEUTICAL POLLUTANTS NOT USED OR GENERATED IN 40 CFR 439 OPERATIONS** Discharges subject to Pharmaceutical Categorical Standards (40 CFR 439) can be exempted from monitoring for certain 40 CFR 439-regulated pollutants at the Pharmaceutical sample points 915, 935, and 936, subject to the following certification: JAW I certify, since the last discharge monitoring report, the 40 CFR 439-regulated pollutants, as determined in permittee's report dated April 5, 2010, have not been used or generated in any pharmaceutical manufacturing process subject to Categorical Standards in 40 CFR 439. In addition, the above-referenced report remains valid.
I	**SURROGATE MONITORING ALLOWED FOR 40 CFR 439 OPERATIONS** Discharges subject to Pharmaceutical Categorical Standards (40 CFR 439) can be exempted from monitoring for certain 40 CFR 439-regulated pollutants, and replaced by monitoring for surrogate pollutant(s), at the Pharmaceutical sample points 920 and 937 subject to the following certification: JAW I certify, since the last discharge monitoring report, the 40 CFR 439-regulated pollutants, as determined in permittee's report dated April 5, 2010, continue to receive the same degree of treatment as the surrogate pollutant(s). In addition, the above-referenced report remains valid.

PART IV: GENERAL CERTIFICATION STATEMENTS

B	**DISCHARGE MONITORING REPORT CERTIFICATION** **All permittees must sign and complete the information below:** I certify under penalty of Law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. Print or type name of signing official: James A. Walter Title: Sr. Director of Manufacturing Telephone: 314-654-1300 Signature: _____ Date: 10/26/11

Steve Grace

From: Crouch, Amber [Amber.Crouch@Covidien.com]
Sent: Monday, October 24, 2011 9:12 AM
To: Steve Grace
Subject: RE: Special Discharge Permit Question - tank clean out

4000 gal per tank plus an additional 400 gallons of wash water.

Total = approx. 8500 gallons (estimated high)

Thanks,
Amber

From: Steve Grace [mailto:sgrace@stlmsd.com]
Sent: Monday, October 24, 2011 8:33 AM
To: Crouch, Amber
Subject: RE: Special Discharge Permit Question - tank clean out

Hello Amber,

I got the application and lab data...thanks. I have one quick question...can you give me an idea on the volume you're looking to discharge? Even a ballpark figure would be helpful.

Thanks,
Steve Grace

From: Crouch, Amber [mailto:Amber.Crouch@Covidien.com]
Sent: Friday, October 21, 2011 2:23 PM
To: Steve Grace
Cc: Summers, Julie
Subject: Special Discharge Permit Question - tank clean out

Steve,

Attached is a special discharge application for clean out of our spill tanks. There are two sets of analytical included as well (one for each tank) as per your request. Please let me know if you have any questions.

Thanks,

Amber Crouch
Senior HSE Engineer
Covidien
3600 North Second Street
St. Louis, MO 63147
USA

(314) 654-0127 office
(314) 253-2213 pager
(314) 654-1251 fax

www.covidien.com

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From: Steve Grace [mailto:sgrace@stlmsd.com]
Sent: Thursday, October 13, 2011 11:17 AM
To: Crouch, Amber
Subject: RE: Special Discharge Permit Question - tank clean out

Hello Amber,

Based on my previous conversations with Julie, these spill tanks could contain any of the wastewater streams generated at your facility. As a result, the laboratory analytical requirement list looks to be a bit lengthy:

pH
Total Suspended Solids (TSS)
Chemical Oxygen Demand (COD)
Cadmium (Cd); Chromium (Cr); Copper (Cu); Iron (Fe); Nickel (Ni); Lead (Pb); and Zinc (Zn)
Total Cyanide
Oil & Grease
Volatile organic priority pollutants (using EPA Method 624)
Semi-volatile organic priority pollutants (using EPA Method 625)
Pharmaceutical Pollutants (using EPA Method 1666)
N,N – Dimethyl Acetamide (DMAc) (I believe this can be run using EPA Method 624)
1,3, - Dichloropropylene (I believe this can be run using EPA Method 608; however, you may want to check with whatever lab you decide to use…if it can be run under either the 624 or 625 Method, there's an obvious cost savings for you)

Please contact me with any questions or if you require additional information.

Thank you,
Steve Grace

From: Crouch, Amber [mailto:Amber.Crouch@Covidien.com]
Sent: Thursday, October 13, 2011 7:32 AM
To: Steve Grace
Subject: RE: Special Discharge Permit Question - tank clean out

Ok, thanks. If you could get me a list by mid day that would be great. Then we could take samples and have then sent to the lab today. The reason we need to expedite this is that these are our spill tanks and they are currently out of service.

Thanks for your help.
Amber Crouch
Senior HSE Engineer
Covidien
3600 North Second Street
St. Louis, MO 63147
USA
(314) 654-0127 office
(314) 253-2213 pager

(314) 654-1251 fax
www.covidien.com
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From: Steve Grace [mailto:sgrace@stlmsd.com]
Sent: Wednesday, October 12, 2011 4:34 PM
To: Crouch, Amber
Subject: RE: Special Discharge Permit Question - tank clean out

Ugh, I owed you the list on this...sorry for the delay. Let me see what I can cobble together for you today or tomorrow before noon.

Steve

From: Crouch, Amber [mailto:Amber.Crouch@Covidien.com]
Sent: Wednesday, October 12, 2011 10:41 AM
To: Steve Grace
Subject: FW: Special Discharge Permit Question - tank clean out

Steve,

Julie is out for a couple of weeks so I am handling this project. I know we are going to get samples from both spill tanks. Do you know what you would like them analyzed for?

Thanks,

Amber Crouch
Senior HSE Engineer
Covidien
3600 North Second Street
St. Louis, MO 63147
USA
(314) 654-0127 office
(314) 253-2213 pager
(314) 654-1251 fax
www.covidien.com
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Metropolitan St. Louis Sewer District

Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

October 24, 2011

Amber Crouch
MALLINCKRODT INC.
3600 N. 2nd Street
St. Louis, MO 63147

Dear Ms. Crouch:

We have reviewed your application dated October 18, 2011, requesting approval to discharge 8,500 gallons of a waste stream to the Metropolitan St. Louis Sewer District for treatment. This waste stream consists of wastewater and sludge generated during cleanout of the two spill tanks for the Mallinckrodt Inc. facility located at 3600 N. 2nd Street, St. Louis, Missouri. In an email from you dated October 24, 2011, you indicated that each tank has a capacity of 4,000 gallons, and that your plan is to discharge the plant wastewater to the onsite sewer system, and the associated sludge to the Bissell Point Hauled Waste Receiving Station (HWRS).

Based on the analytical results you provided, the spill tank wastewater meets MSD Ordinance 12559 standards and is approved for discharge into a combined sewer on site. Due to the elevated chemical oxygen demand (COD) concentration, the discharge is limited to 75 gallons per minute. The discharge into the sewer must be controlled at a rate that will not surcharge the lines in that area. In addition, the spill tank sludge meets our criteria for acceptance as a hauled waste and is approved for discharge at the Bissell Point HWRS. The material may be discharged only by a hauler having a valid MSD identification number and presenting an original, completed Hauled Waste Receipt (form HWR-S). The approval for both waste streams is valid for 30 days from the date of this letter.

For billing purposes associated with this high COD wastewater, you must confirm the volume of this wastewater discharged to us, in writing, at the completion of the discharge. This report is due no later than 28 days after this approval expires. Please refer to this letter and include the date of the discharge when providing that figure. Under the provisions of Ordinance 13021, you will be billed by invoice at the billing rate in effect at the time of discharge. The current rate contained in MSD Ordinance 13021 is $310.07 per ton for COD over 600 mg/L. Using the COD concentration contained in the laboratory analytical report, and the proposed discharge volume provided in your application, it is estimated that you will be discharging just over one ton of COD over 600 mg/L. (Our quantitative estimate is 1.33 tons COD times $310.07.) Please do not pay this amount until you receive our invoice.

This discharge has been approved based upon the information and sample analysis you provided, and is subject to the conditions stated above. This approval may be revoked by the District at any time if any of the information is found to be incorrect, or if the conditions of this approval are violated. Also, if the discharge causes any operational or maintenance problem within the District's collection or treatment system, or results in violations of any conditions of the District's NPDES permit, Mallinckrodt, Inc. will be considered responsible for damages.

If you have any questions, please call me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

pc: Darin Lewis
Sara Kammerer
Doug Mendoza
Brian Gibson

File: IU, MALLINCKRODT INC [2112059600]

C1A

SD EVALUATION CHECKLIST - ON SITE

APPLICATION INFORMATION

Source Name: Mallinckrodt, Inc.

Premise Address: 3600 N. 2nd St

Send approval letter to applicant

Evaluated by: SMG

Date: 10/25/11

Application Dated: 10/18/11 Received: 10/21/11 All Requested Info. Received: 10/24/11

SOURCE FILING/DESCRIPTION

1 - Source in PIMS? (Y) / N
2 - If No, on IU Cross-Ref list? * Y / N
3 - If No, MSD Account # from E-CIS? Y / N
4 - If none, on "Source" list (pre-IMS)? ** Y / N
5 - If No, assigned SOUR# from PIMS.

* o:\costrecovery\cross reference xls file

** o:\costrecovery\sourlist xls file

SOURCE TYPE (circle): (IU) / Dead IU / SD

INDUSTRY ID: 21120596-00

Sample Point: No. Assigned: 852 Description: plant wastewater & sludge generated during cleanout of the two spill tanks @ SP010

Normal WW flow from premise? N/A _____ ccf/month, 2,992,101 GPD, _____ GPH.

REGULATORY STATUS

Is waste a Hazardous Waste? (N) / Y

Categorical standards apply? N / (Y) 40 CFR 414 & 40 CFR 439

Contain PCB/ asbestos/ radioactive/ dioxin/ used oil? (N) / Y

Regulatory Agency Oversight? (N) / Y

DISCHARGE CONSIDERATIONS At MSD's connection:

Ordinance Limits (12559, p32) exceeded? N / (Y) Zn limits exceeded; but discharge rate imposed should ensure WW conc. dont exceed dist. limits

Ordinance other limits exceeded (dye, flash pt <140F, temp >140F, obstruction, nuisance foaming/odor, corrosion causing): (N) / Y

Water Quality Standard exceeded? (N) / Y

Fumes in sewer exceed PEL/TLV limits? (N) / Y

Vapors in sewer exceed 10% of LEL? (N) / Y

RECOMMENDATION: (APPROVE) / DENY (cc WWTP Mgr for timed discharge)

APPROVAL CONDITIONS:

Timed Discharge (COD/BOD/WQ/foam): N / (Y) Limit = 4,500 gal/hour

Require Treatment before Discharge? (N) / Y

Laboratory analysis fee due? (N) / Y $_____

SMR required? (N) / Y Frequency/analysis:

SMR log: (N/A) / Remediation.xls / Nonremediation.xls

Volume Billing applies (water unmetered or credited)? (N) / Y

Bill High Strength? N / (Y) Yes, If use >60,000 gal/month water ✓ and, > norm WW strgth

Surcharge calculation attached: N/A / N / (Y)

Expiration log updated: (N/A) / N / Y

O:\CostRecovery\Special Discharge\C1a Checklist.doc

On-Site Special Discharge High Strength Flow Rate and Surcharge Calculator

1 GENERAL INFORMATION:

Date: 10/24/11
Calculated by: Steve Grace
Source name: MALLINCKRODT LLC [2112059600]
Waste material: wastewater and sludge generated during cleanout of the spill tanks for facility
Discharge volume: 8,500 gallons

2 STRENGTH INFORMATION:

Sample BOD =	0	mg/l =	0	lbs BOD to be discharged
Sample COD =	38,000	mg/l =	2694	lbs COD to be discharged
Sample TSS =	24,800	mg/l =	for surcharge calculation only	

3 PLANT DATA: 2010

Treatment area: Bissell

	Flow (MGD)	BOD (mg/L)	COD (mg/L)	BOD (lb/hr)	COD (lb/hr)	Max Loading = 10% BOD (lb/hr)	COD (lb/hr)
Bissell	140	146	292	7,113	14,227	711	1,423
Coldwater	26	188	377	1,704	3,408	170	341
Fenton	5	388	776	679	1,357	68	136
Grand Glaize	16	129	405	708	2,218	71	222
Lemay	131	78	210	3,531	9,584	353	958
Lower Meramec	13	124	409	543	1,785	54	179
Missouri River	27	280	559	2,671	5,341	267	534

4 MINIMUM REQUIRED FLOW RATE:

	BOD (hours	BOD (gpm)	COD (hours)	COD (gpm)
Bissell	0.00	0	1.89	75
Coldwater	0.00	0	7.90	18
Fenton	0.00	0	19.85	7
Grand Glaize	0.00	0	12.15	12
Lemay	0.00	0	2.81	50
Lower Meramec	0.00	0	15.09	9
Missouri River	0.00	0	5.04	28

5 SURCHARGE AND VOLUME BILLING

Is volume subject to billing? yes (yes/no)
Ratio of BOD/COD = 0.00

(Sample BOD) - 300 = 0 mg/l subject to surcharge
(sample COD) - 600 = 37400 mg/l subject to surcharge
(sample TSS) - 300 = 24500 mg/l subject to surcharge

If BOD/COD ratio <= 0.35, the following calculations use the COD value. Otherwise they use the BOD value
Current rates under Ordinance: 13021

Volume = $ 2.11 /CcF
BOD = $ 620.14 /ton
COD = $ 310.07 /ton
TSS = $ 231.35 /ton

Flow charge = $ 23.98 based on volume = 11.4 CcF
BOD surcharge = $ -
COD surcharge = $ 411.15
TSS surcharge = $ 200.96
Total discharge charge = $ 636.09
Customer charge = $ 636.09 DEC charges special discharge customers for total charges > $20.00
Approximate charge/gallon = $ 0.07

Comments

require volume report for billing purposes. Smg

On-Site Special Discharge Flow Rate Calculator

This calculator does not consider attributable concentrations from normal flow

1 GENERAL INFORMATION:

Date:	10/24/11
Calculated by:	Steve Grace
Source name:	MALLINCKRODT LLC [2112059600]
Waste material:	SP852
Discharge volume:	8,500 gallons

2 PLANT DATA (as needed): FY07

Treatment area: Bissell

	Flow (MGD)
Bissell	119
Coldwater	23
Fenton	5
Grand Glaize	16
Lemay	122
Lower Meramec	10
Missouri River	28

3 MINIMUM REQUIRED FLOW RATE:

SD Concentration =	7.22	mg/L	
SD Limit =	3.0	mg/L	Define the SD limit here = Ord Limit - Zinc
Normal Flow Rate =	124,671	GPH	Use normal flow, RF, upstream flow and plant flow, as applicable
Safety Factor =	10%	default is 10%, apply more as neccessary	
SD Flow Rate =	**79766**	**GPH**	
SD Flow Rate =	**1329**	**GPM**	
Total discharge time =	**0.1**	**Hours**	

Comments:

No flow rate condition required because discharge ≤ 1.0 hour. Smg

As discharge will occur through SP010, used daily flow rate at that sample point for Normal Flow Rate. Smg

C1A

SD EVALUATION CHECKLIST - HAULED WASTE

APPLICATION INFORMATION

Source Name: Mallinckrodt Inc.

Premise Address: 3600 N. 2nd St.

Send approval letter to applicant

Evaluated by: SMG

Date: 10/25/11

Application Dated: 10/18/11 Received: 10/21/11 All Requested Info. Received: 10/24/11

SOURCE FILING/DESCRIPTION

1 - Source in PIMS? (Y) / N
2 - If No, on IU Cross-Ref list? * Y / N
3 - If No, MSD Account # from E-CIS? Y / N
4 - If none, on "Source" list (pre-IMS)? ** Y / N
5 - If No, assigned SOUR# from PIMS.

* o:\costrecovery\cross reference xls file

** o:\costrecovery\sourlist xls file

SOURCE TYPE (circle): (IU) / Dead IU / SD

INDUSTRY ID: 21120596-00

Sample Point: No. Assigned: 852 Description: plant wastewater & sludge generated during cleanout of the two spill tanks

REGULATORY STATUS

Is waste a Hazardous Waste? (N) / Y (prohibited)

Categorical standards apply? N / (Y) 40 CFR 414 & 40 CFR 439

Contain PCB/ asbestos/ radioactive/ dioxin/ used oil? (N) / Y

Regulatory Agency Oversight? (N) / Y

DISCHARGE CONSIDERATIONS

Other limits exceeded (dye, temp >140F, nuisance foaming/odor): (N) / Y

Attached Metals loading limits exceeded: N/A / (N) / Y

Attached Organics loading limits exceeded: N/A / (N) / Y

Varience justified (removal cost?, non-water env. impact?): (N/A) / N / Y

If pollutant not considered above, consider:

Acute / Chronic toxicity data: N/A

Inhibition of secondary: none. Sludge Impact: none

RECOMMENDATION: (APPROVE) / DENY

APPROVAL CONDITIONS

Timed Discharge (COD/BOD/WQ/foam): (N) / Y Limit = _____ gal/hour

Laboratory analysis fees due: (N) / Y Fee = $_____

High strength fees (trk-acpt.wk3): (N) / Y for COD / BOD / TSS = $0. /gal

SMR required: (N) / Y Frequency: _____

Analysis _____

SMR log: (N/A) / Remediation.xls / Nonremediation.xls

Other Conditions: none

Expiration log updated: (N/A) / N / Y

O:\CostRecovery\Special Discharge\C1a.Checklist.doc

DATE CALCULATED: 10/24/11 CALCULATED BY: Steve Grace

SOURCE NAME: Mallinckrodt Inc.
WASTE MATERIAL: wastewater and sludge generated during cleanout of the spill tanks for facility
DISCHARGE VOLUME 8500 gallons

SAMPLE BOD:	0	mg/l =	0	lbs BOD to be discharged
COD:	38000	mg/l =	2694	lbs COD to be discharged
TSS:	24800	mg/l		

MINIMUM REQUIRED DISCHARGE TIME
==========

BISSELL: BOD =	**Not Limited**	**hrs**
COD =	**Not Limited**	**hrs**
FLOW LIMIT =	0.94	hrs

AVERAGE STP INFLUENT
==========

BISSELL: FLOW =		119	Mgal/day	
BOD =	272	11230	lbs BOD/hr	
COD =	348	14340	lbs COD/hr	

MAX EXTRA LOADING ON TF/AS (10%)
==========

3369	lbs BOD/primary tank load
4302	lbs COD/ primary tank load

==> Use maximum of the BOD, COD or FLOW LIMIT required discharge time.

primary tank load (hrs)= 3

Other Pollutant Acceptance Criteria at Bissell HWRS 10/24/11

Source: Mallinckrodt Inc.
Waste Volume: 8500 Gal.

Update when DM completes 2006 Prelim Calcs

Weight of Pollutant in the Discharge:

Bissell Point (8/95 data in lb/day):

Pollutant	Conc. (ppm)	Total (lb)	Allowable Loading	Current Load	SD Allowed	Accept??	Time Dis?
Cyanide (CN)	0	0	136	135	0	Yes	
Phenol	0	0	152	0	15	Yes	..

	TCLP?	Source Conc. (ppm)	Total (lb.)	Influent Conc. ppm	Primary Conc. ppm	Inhibition Level (ppm)	Primary Removal %	Removed by AS (%)	Effluent Conc. ppb	Conc. in ZID (ppb)	Acute WQ Stand. ppb	Conc. in MZ (ppb)	Chronic WQ Stand. ppb	Sludge Acceptable?	Acceptable? Safety Factor= 10%	Normal/nonSD Effluent (ppb)	Fume Tox ppm
Benzene	ok	0	0	0	0	100	0%	0%	0	0	999999	0	5	Yes	Yes		0
Ethyl Benzene		0	0	0	0	200	0%	0%	0	0	999999	0	320	Yes	Yes		2
Toluene		0	0	0	0	200	0%	0%	0	0	999999	0	1000	Yes	Yes		1
Xylene		0	0	0	0	999999	0%	0%	0	0	999999	0	10000	Yes	Yes		2
Oil and Grease		161	11	0	0	999999	50%	0%	2046	350	87750	30	999999		Yes	2000	
TPH (HEM)		0	0	0	0	999999	0%	0%	2000	342	87750	29	999999		Yes	2000	
Ammonia (NH3)**		0	0	0	0	480	0%	0%	30	5	3333	0	667	Yes	Yes	30	24
Ammonia-N (total)		0	0	0	0	480	0%	0%	1000	171	468000	15	99999999		Yes	1000	
Chloride		0	0	0	0	6062	0%	0%	116000	19829	860000	1698	230000		Yes	116000	
Chlorine		0	0	0	0	999999	0%	0%	0	0	999999	0	2		Yes		
Nitrates (or nitrite)		0	0	0	0	999999	0%	0%	8000	1368	999999	117	10000		Yes	8000	
Sulfate		0	0	0	0	500	0%	0%	160000	27350	999999	2341	250000		Yes	160000	
Sulfide		0	0	0	0	25	0%	0%	0	0	999999	0	9999999		Yes		
Surfactants		0	0	0	0	100	0%	0%	0	0	999999	0	9999999		Yes		
Anionic surfactants		0	0	0	0	120	0%	0%	0	0	3500	0	9999999		Yes		
Cationic Surfactants		0	0	0	0	20	0%	0%	0	0	999999	0	9999999		Yes		
Nonionic surfactants		0	0	0	0	500	0%	0%	0	0	999999	0	9999999		Yes		
Acetone		0	0	0	0	999999	0%	0%	0	0	999999	0	9999999	Yes	Yes		261
Chloroform	ok	0	0	0	0	10	0%	0%	0	0	999999	0	2	Yes	Yes		0
Dimethylamine		0	0	0	0	250	0%	0%	0	0	999999	0	100	Yes	Yes		25
Formaldehyde		0	0	0	0	135	0%	0%	0	0	2000	0	9999999	Yes	Yes		0
Methyl chloride (chlorom		0	0	0	0	999999	0%	0%	0	0	999999	0	5	Yes	Yes		0
Methylene Chloride		0	0	0	0	100	0%	0%	0	0	999999	0	5	Yes	Yes		2
Methyl Ethyl Ketone	ok	0	0	0	0	999999	0%	0%	0	0	999999	0	3220000	Yes	Yes		249
Methanol		0	0	0	0	999999	0%	0%	0	0	999999	0	9999999	Yes	Yes		1076
N-methyl pyrrolidone		0	0	0	0	999999	0%	0%	0	0	5000000	0	5000000	Yes	Yes		999999
111-Trichloroethane		0	0	0	0	10	0%	0%	0	0	999999	0	200	Yes	Yes		2
Tetrachloroethylene	ok	0	0	0	0	1	0%	0%	0	0	999999	0	1	Yes	Yes		1
Trichloroethylene	ok	0	0	0	0	1	0%	0%	0	0	999999	0	5	Yes	Yes		1
Triethylamine		0	0	0	0	999999	0%	0%	0	0	999999	0	999999	Yes	Yes		17
Flouride		0	0	0	0	999999	0%	0%	0	0	999999	0	4000	Yes	Yes		999999
Boron		0	0	0	0	999999	0%	0%	0	0	999999	0	2000	Yes	Yes		999999
Ethanol		0	0	0	0	999999	0%	0%	0	0	999999	0	9999999	Yes	Yes		8642
cis-1,3-dichloropropene		0	0	0	0	1	0%	0%	0	0	999999	0	20	Yes	Yes		999999
1,2,4-trimethylbenzei		0	0	0	0	999999	0%	0%	0	0	3610	0	999999	Yes	Yes		0.46
1,3,5-trimethylbenzei		0	0	0	0	999999	0%	0%	0	0	71	0	425	Yes	Yes		0.52
Methyldiethanolamin		0	0	0	0	999999	0%	0%	0	0	37000	0	999999	Yes	Yes		45.7
Styrene		0	0	0	0	999999	0%	0%	0	0	999999	0	100	Yes	Yes		3.8
Ethyl Acetate		0	0	0	0	999999	0%	0%	0	0	999999	0	999999	Yes	Yes		265.2

* - evaluate under TCLP.
** note - discharge rate based on ppm * 4.5= COD increase of 10%.

Other Chemicals:	Source Conc. (ppm)	Total (lb.)	Influent Conc. ppm	Primary Conc. ppm	Inhibition Level (ppm)	Primary Removal %	Removed by AS (%)	Effluent Conc. ppb	Conc. in ZID (ppb)	Acute WQ Stand. ppb	Conc. in MZ (ppb)	Chronic WQ Stand. ppb	Sludge Acceptble?	Acceptable? Safety Factor= 10%		
chem 1	input	0	0	0	input	0%	0%	0	0	input	0	input	NO	NO	input	input
chem 2	input	0	0	0	input	0%	0%	0	0	input	0	input	NO	NO	input	input
chem 3	input	0	0	0	input	0%	0%	0	0	input	0	input	NO	NO	input	input

See SD Reference Notebook for background data.

9999999 means the data is not available/considered.

Acute WQ standards in MO CSR at ZID * 5.85 = BP plant effluent WQ limit
Chronic WQ standards at Mixing Zone , use diff. calculation about 10x more dilution than acute limit.

Revisions:

Sludge impact determined by 1/3 primary flow (since hwrs could in worst case be added to only 1 of 3 online basins) and fume toxicity limits in sludge handling building.
Flow at BPTP revised at 120MGD per E. Cope 8/5/99.

11/10/99 Added Formaldehyde, inhibition, removal and acute WQ from Verschueren, Karel, Handbook of env data on org chem.
12/28/99 O&G (HEM) WQ limit arbitrarily set, based on BP Permit limit of 15 ppm*5.85.
12/28/99 Ammonia AS removal changed to 56% removal due to JL to DM email on nitrification at BP dated 6/10/99.
12/29/99 Added column for normal effluent conc, which is added to calculated SD in effluent. Values from 8/99-9/98 BP data. Ammonia unionized (NH3) at pH7.7 is 3% total ammonia (1ppm).
03/03/05 rb updated sulphate normal effluent conc based on 2004 BP data (160ppm)
12/29/99 Ammonia water quality limits based on 12 month BP summary, worst case temp of 84F and pH8.

Update when 2011 local limits calculations completed

Metals Acceptance from Special Discharges

24-Oct-11

Calc. by: Steve Grace

Source Name: Mallinckrodt Inc.

Waste Description: wastewater and sludge generated during cleanout of the spill tank: Assumptions:

Volume (gallons): 8500

Primary flow vol. (hrs): 3

SD allocation: 10%

Weight of Metals in the Discharge:

Bissell Point (2006 local limits data in lb/day):

Metal	Conc. (ppm)	Total (lb)	Allowable Loading	Current Load	SD Allowed	Accept??	Time Dis?	2006 Allowable Loading	2006 Current Load	2001 Allowable Loading	2001 Current Load	1995 Allowable Loading	1995 Current Load
Arsenic (As) *		0	432	1	43	Yes	..	432	1	95		119	7
Barium (Ba) *		0											
Beryllium (Be)		0	29	0	3	Yes		29	0	457		37	0
Cadmium (Cd) *	0.052	0	100	4	10	Yes		100	4	368		478	7
Chromium (Cr) *	0.6	0	13499	28	1347	Yes	..	13499	28	615		2746	14
Copper (Cu)	1.7	0	416	38	38	Yes		416	38	692		410	51
Cyanide (Cn)			411	51				411	51	496		136	135
Iron (Fe)	126	9	55037	6195	4884	Yes		55037	6195	90473		245501	4409
Lead (Pb) *	0.333	0	923	14	91	Yes	..	923	14	1320		188	23
Manganese (Mn)		0	5962	0	596	Yes		5962	0	2773		2815	0
Mercury (Hg) *		0	11	0	1	Yes		11	0	10		12	0
Nickel (Ni)	1.55	0	5906	7	590	Yes	..	5906	7	2237		1309	16
Selenium (Se) *		0	534	1	53	Yes		534	1	408		511	1
Silver (Ag) *		0	181	1	18	Yes	..	181	1	81		599	4
Zinc (Zn)	7.22	1	3117	163	295	Yes		3117	163	5622		4672	221

* - on RCRA TCLP list

Metropolitan St. Louis Sewer District
2350 Market Street
St. Louis MO 63103

APPLICATION FOR SPECIAL DISCHARGE APPROVAL

I. WASTEWATER SOURCE IDENTIFICATION:

Site Name: Mallinckrodt
Premise Address: 3600 N. 2nd Street
City: St. Louis State: MO Zip: 63147
Owner: Mallinckrodt
Contact Person: Amber Crouch
Title: EHS
Phone: 314-654-0127 Fax: 314-654-1251

II. APPLICANT (mailing information):

Applicant Name: Amber Crouch
Title: EHS
Company Name: Mallinckrodt
Mailing Address: 3600 N. 2nd Street
City: St. Louis State: MO Zip: 63147
Phone: 314-654-0127 Fax: 314-654-1251

III. A. MATERIAL TO BE DISCHARGED (check all applicable boxes):

1. Wastewater description/location: Boilerhouse Sludge / Washwater from tank
2. Process/activity generating wastewater: cleanout.

*-see 10/24/11 email reply

3. Physical and chemical composition: List all constituents, and known or potentially present regulated contaminants below.
   ☐ See separate listing enclosed, and/or ☑ See analytical results enclosed, and/or ☐ Material Safety Data Sheet enclosed.

washwater for discharge

DESCRIPTION	RANGE	UNIT
plant wastewater	98-99	%
solids (sludge dirt, mud)	1-2	%

sludge hauled to MSD

DESCRIPTION *(continued)*	RANGE	UNIT
sludge	90	%
plant wastewater	10	%

4. Is this wastewater from a process subject to EPA's categorical standards in 40 CFR Subchapter N? ☐ Yes ☑ No
   a. If yes, the applicable standards are in: 40 CFR Part _____, Subpart _____ ☐ Existing source ☐ New source
5. Does this wastewater contain polychlorinated biphenyls, asbestos or radioactive material? ☐ Yes ☑ No
   a. If yes, describe: _____
6. Representative sample: ☑ Laboratory results attached, and/or ☐ Sample provided (1/2 gallon minimum, clear container)
   a. Sample collection point/location: _____ Collection method: _____
   b. Sampler's name/Co.: _____ Sample date/time: _____
   c. Attach chain of custody as available
7. Discharge will occur over the following time period: ☑ < 30 days ☐ ≥ Two years ☐ Other: _____ per 10/24/11 email
   a. Expected total volume of wastewater to be discharged over the time period above: 8,500 Gallons
   b. Proposed discharge volume: 8500 Gallons, at a frequency of: ☒ One time ☐ Daily ☐ Weekly ☐ Monthly ☐ Once/three months ☐ Once/six months ☐ Other: _____
8. Pretreatment of wastewater prior to discharge: ☐ None ☑ Yes, describe: pH adjust at main outfall SP010
   a. If yes, attach site plan, pretreatment system schematic, and design specifications.
9. Wastewater from a remediation project under: ☐ Superfund/CERCLA ☐ RCRA ☐ Voluntary program ☐ UST ☑ Not applicable
   a. If from a remediation project, briefly describe the past and present utilization of the property: _____

Rev. 1/2/08

III.B. MATERIAL FROM UNDERGROUND STORAGE TANK SOURCE

☑ **Not applicable (go to Section IV)**

Please answer the following questions if you are requesting to discharge wastewater associated with an underground storage tank system.

1. a. Wastewater from: ☐ Inside UST(s) ☐ UST system pit ☐ Excavation outside UST system pit ☐ Monitoring well ☐ Groundwater remediation system

   b. UST project involves wastewater from: ☐ UST(s) closed in place ☐ UST(s) removed ☐ Remediation ☐ Upgrade ☐ Maintenance activities ☐ Well monitoring ☐ Other, explain: _____

   c. If wastewater is from a closure project, how long has UST(s) been out of service: _____ years

2. a. State assigned UST site identification number: _____ ☐ Not applicable

   b. Number of USTs affected: _____ ☐ Unknown

   c. For the UST(s) involved, their state identification number(s): _____ ☐ Not applicable

   d. Service Station Identification Number, as applicable: _____

3. Tank contents/former contents: ☐ Gasoline ☐ #2 diesel ☐ Used oil ☐ Unknown ☐ Other: _____

IV. DISCHARGE LOCATION

1. ☑ On-site. For wash water Describe proposed point of entry to sewer and the discharge rate (must be a sanitary or combined sewer): plant sewer to main outfall SP010 Note: Range of discharge must not surcharge sewer line.

2. ☑ Haul to MSD Bissell Point Hauled Waste Receiving Station at 10 E. Grand, St. Louis, MO. For sludge

   a. Transporters Name: Veolia and MSD Hauler ID Number: ?

   b. Hazardous Waste Certification:

   For wastewater which is hauled to MSD's Bissell Point Hauled Waste Receiving Station, I hereby certify that to the best of my knowledge and belief, the above hauled waste is not classified as a RCRA "hazardous waste" as defined by the MDNR in 10 CSR 25 or USEPA in 40 CFR Part 261.

   Applicant Name (print): Amber Crouch

   Signature: Amber Crouch **Date:** 10/18/2011

ADDITIONAL INFORMATION:

V. APPLICANT SIGNATURE AND CERTIFICATION

This application must be signed by the applicant: either the source contact, or a contractor or agent directly responsible for site activities.

I hereby certify that I am directly responsible for activities at the site regarding the wastewater to be discharged, and to the best of my knowledge and belief, based on appropriate inquiry, the information in this application is true, complete, and accurate. The samples or analyses submitted are representative of the materials to be discharged. If granted approval to discharge, I agree to abide by the MSD Ordinances, and all applicable federal, state and local regulations. I agree to pay the costs of any pre-approval analyses performed by MSD and to pay any applicable disposal charges for the volume and strength of the wastes discharged.

Applicant Name (print): Amber Crouch

Signature: Amber Crouch **Date:** 10/18/2011

FOR MSD USE ONLY:

File Name: Mallinckrodt LLC ID No. 21120596-00 Sample Point No. 852

Crouch, Amber

From: Heather A. White [HWhite@teklabinc.com]
Sent: Thursday, October 13, 2011 2:06 PM
To: Crouch, Amber
Subject: RE: sample bottles ?

Please see my answers below

Heather White
Project Manager
Teklab, Inc.
618-344-1004 ext. 20

Confidentiality Notice: The information contained in this message is intended only for the use of the addressee, and may be confidential and/or privileged. If the reader of this message is not the intended recipient, or the employee or agent responsible to deliver it to the intended recipient, you are hereby notified that any dissemination, distribution or copying of this communication is strictly prohibited. If you have received this communication in error, please notify the sender immediately

---

From: Crouch, Amber [mailto:Amber.Crouch@Covidien.com]
Sent: Thursday, October 13, 2011 12:09 PM
To: Heather A. White
Subject: sample bottles ?

Heather – I need to run the following analytical on some samples for MSD. Can you tell me what type and size of samples I need for each test? Can you also see the note after the last one below.

pH 500 ml plastic unpreserved
Total Suspended Solids (TSS) 500 ml plastic unpreserved (pH and TSS can be combined into the same sample container)
Chemical Oxygen Demand (COD) 250 ml plastic w/H2SO4
Cadmium (Cd); Chromium (Cr); Copper (Cu); Iron (Fe); Nickel (Ni); Lead (Pb); and Zinc (Zn) 250 ml plastic w/HNO3
Total Cyanide 250ml plastic w/NaOH
Oil & Grease 1 liter glass w/H2SO4
Volatile organic priority pollutants (using EPA Method 624) 2-40ml HCL vials
Semi-volatile organic priority pollutants (using EPA Method 625) 1-1250ml amber glass unpreserved
Pharmaceutical Pollutants (using EPA Method 1666) 2-40 ml HCL vials
N,N – Dimethyl Acetamide (DMAc) (I believe this can be run using EPA Method 624) we report dimethyl acetamide under method 8015 which requires 2-40 ml unpreserved vials; let me know if this method will not be acceptable
1,3, - Dichloropropylene (I believe this can be run using EPA Method 608; however, you may want to check with whatever lab you decide to use…if it can be run under either the 624 or 625 Method, there's an obvious cost savings for you) we can run this with I think we can report this under method 624 but I am awaiting confirmation from the lab

Thanks,

Amber Crouch
Senior HSE Engineer
Covidien
3600 North Second Street
St. Louis, MO 63147
USA

(314) 654-0127 office
(314) 253-2213 pager
(314) 654-1251 fax

Crouch, Amber

From: Heather A. White [HWhite@teklabinc.com]
Sent: Thursday, October 13, 2011 2:06 PM
To: Crouch, Amber
Subject: RE: sample bottles ?

Please see my answers below

Heather White
Project Manager
Teklab, Inc.
618-344-1004 ext. 20

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Sent: Thursday, October 13, 2011 12:09 PM
To: Heather A. White
Subject: sample bottles ?

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Semi-volatile organic priority pollutants (using EPA Method 625) 1-1250ml amber glass unpreserved
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N,N – Dimethyl Acetamide (DMAc) (I believe this can be run using EPA Method 624) we report dimethyl acetamide under method 8015 which requires 2-40 ml unpreserved vials; let me know if this method will not be acceptable
1,3, - Dichloropropylene (I believe this can be run using EPA Method 608; however, you may want to check with whatever lab you decide to use...if it can be run under either the 624 or 625 Method, there's an obvious cost savings for you) we can run this with I think we can report this under method 624 but I am awaiting confirmation from the lab

Thanks,

Amber Crouch
Senior HSE Engineer
Covidien
3600 North Second Street
St. Louis, MO 63147
USA

(314) 654-0127 office
(314) 253-2213 pager
(314) 654-1251 fax

October 19, 2011

Julie Summers
Mallinckrodt Inc.
3600 N. 2nd St.
St. Louis, MO 63147
TEL: (314) 654-1969
FAX: (314) 654-1251

RE: Tank 1216

WorkOrder: 11100570

Dear Julie Summers:

TEKLAB, INC received 1 sample on 10/14/2011 5:18:00 PM for the analysis presented in the following report.

Samples are analyzed on an as received basis unless otherwise requested and documented. The sample results contained in this report relate only to the requested analytes of interest as directed on the chain of custody. NELAP accredited fields of testing are indicated by the letters NELAP under the Certification column. All tests are performed in the Collinsville, IL laboratory unless otherwise noted in the Case Narrative.

All quality control criteria applicable to the test methods employed for this project have been satisfactorily met and are in accordance with NELAP except where noted. The following report shall not be reproduced, except in full, without the written approval of Teklab, Inc.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Heather A. White

Heather A. White
Project Manager
(618)344-1004 ex 20
HWhite@teklabinc.com

Client: Mallinckrodt Inc.

Client Project: Tank 1216

Work Order: 11100570

Report Date: 19-Oct-11

Abbr Definition

Abbr	Definition
CCV	Continuing calibration verification is a check of a standard to determine the state of calibration of an instrument between recalibration.
DF	Dilution factor is the dilution performed during analysis only and does not take into account any dilutions made during sample preparation. The reported result is final and includes all dilutions factors.
DNI	Did not ignite
DUP	Laboratory duplicate is an aliquot of a sample taken from the same container under laboratory conditions for independent processing and analysis independently of the original aliquot.
ICV	Initial calibration verification is a check of a standard to determine the state of calibration of an instrument before sample analysis is initiated.
IDPH	IL Dept. of Public Health
LCS	Laboratory control sample, spiked with verified known amounts of analytes, is analyzed exactly like a sample to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system. The acceptable recovery range is in the QC Package (provided upon request).
LCSD	Laboratory control sample duplicate is a replicate laboratory control sample that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MB	Method blank is a sample of a matrix similar to the batch of associated sample (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences should present at concentrations that impact the analytical results for sample analyses.
MDL	Method detection limit means the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.
MS	Matrix spike is an aliquot of matrix fortified (spiked) with known quantities of specific analytes that is subjected to the entire analytical procedures in order to determine the effect of the matrix on an approved test method's recovery system. The acceptable recovery range is listed in the QC Package (provided upon request).
MSD	Matrix spike duplicate means a replicate matrix spike that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MW	Molecular weight
ND	Not Detected at the Reporting Limit
NELAP	NELAP Accredited
PQL	Practical quantitation limit means the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operation conditions. The acceptable recovery range is listed in the QC Package (provided upon request).
RL	The reporting limit the lowest level that the data is displayed in the final report. The reporting limit may vary according to customer request or sample dilution. The reporting limit may not be less than the MDL.
RPD	Relative percent difference is a calculated difference between two recoveries (ie. MS/MSD). The acceptable recovery limit is listed in the QC Package (provided upon request).
SPK	The spike is a known mass of target analyte added to a blank sample or sub-sample; used to determine recovery deficiency or for other quality control purposes.
Surr	Surrogates are compounds which are similar to the analytes of interest in chemical composition and behavior in the analytical process, but which are not normally found in environmental samples.
TNTC	Too numerous to count (> 200 CFU)

Qualifiers

# - Unknown hydrocarbon	B - Analyte detected in associated Method Blank
E - Value above quantitation range	H - Holding times exceeded
J - Analyte detected below quantitation limits	M - Manual Integration used to determine area response
ND - Not Detected at the Reporting Limit	R - RPD outside accepted recovery limits
S - Spike Recovery outside recovery limits	X - Value exceeds Maximum Contaminant Level

Client: Mallinckrodt Inc.

Client Project: Tank 1216

Work Order: 11100570

Report Date: 19-Oct-11

Cooler Receipt Temp: 0.4 °C

Locations and Accreditations

Collinsville

Address 5445 Horseshoe Lake Road
Collinsville, IL 62234-7425
Phone (618) 344-1004
Fax (618) 344-1005
Email jhriley@teklabinc.com

Springfield

Address 3920 Pintail Dr
Springfield, IL 62711-9415
Phone (217) 698-1004
Fax (217) 698-1005
Email kmcclain@teklabinc.com

Kansas City

Address 8421 Nieman Road
Lenexa, KS 66214
Phone (913) 541-1998
Fax (913) 541-1998
Email dthompson@teklabinc.com

State	Dept	Cert #	NELAP	Exp Date	Lab
Illinois	IEPA	100226	NELAP	1/31/2012	Collinsville
Kansas	KDHE	E-10374	NELAP	1/31/2012	Collinsville
Louisiana	LDEQ	166493	NELAP	6/30/2012	Collinsville
Louisiana	LDEQ	166578	NELAP	6/30/2012	Springfield
Arkansas	ADEQ	88-0966		3/14/2012	Collinsville
Illinois	IDPH	17584		4/30/2012	Collinsville
Kentucky	UST	0073		5/26/2012	Collinsville
Missouri	MDNR	00930		4/13/2013	Collinsville
Oklahoma	ODEQ	9978		8/31/2012	Collinsville

Teklab, Inc.
Environmental Laboratory

Laboratory Results

http://www.teklabinc.com/

Client: Mallinckrodt Inc.
Client Project: Tank 1216
Lab ID: 11100570-001
Matrix: AQUEOUS

Work Order: 11100570
Report Date: 19-Oct-11
Client Sample ID: Tank 1216
Collection Date: 10/14/2011 0:00

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 1664A								
Hexane Extractable Material	NELAP	50		**68**	mg/L	1	10/17/2011 8:26	R155509
EPA 335.4 R1.0 (TOTAL)								
Cyanide	NELAP	0.038		**0.093**	mg/L	1	10/17/2011 15:32	72105
EPA 600 410.4								
Chemical Oxygen Demand	NELAP	5000		**38000**	mg/L	100	10/17/2011 13:04	R155491
STANDARD METHOD 18TH ED. 4500-H B, LABORATORY ANALYZED								
Lab pH	NELAP	1.00		**9.56**		1	10/17/2011 13:13	R155492
STANDARD METHODS 18TH ED. 2540 D								
Total Suspended Solids	NELAP	600		**24800**	mg/L	100	10/17/2011 7:53	R155505
EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL)								
Cadmium	NELAP	0.0100		**0.0135**	mg/L	5	10/16/2011 17:02	72027
Chromium	NELAP	0.0200		**0.0462**	mg/L	2	10/16/2011 16:57	72027
Copper	NELAP	0.0100		**< 0.0100**	mg/L	1	10/16/2011 16:27	72027
Iron	NELAP	0.200		**126**	mg/L	10	10/16/2011 17:08	72027
Lead	NELAP	0.0400		**< 0.0400**	mg/L	1	10/16/2011 16:27	72027
Nickel	NELAP	0.100		**1.55**	mg/L	10	10/16/2011 17:08	72027
Zinc	NELAP	0.100	X	**7.22**	mg/L	10	10/16/2011 17:08	72027
EPA 600 625 (MODIFIED), SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
1,2,4-Trichlorobenzene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
1,2-Diphenylhydrazine		2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
2,4,6-Trichlorophenol	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
2,4-Dichlorophenol	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
2,4-Dimethylphenol	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
2,4-Dinitrophenol	NELAP	5.00		**ND**	mg/L	5	10/17/2011 10:02	71990
2,4-Dinitrotoluene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
2,6-Dinitrotoluene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
2-Chloronaphthalene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
2-Chlorophenol	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
2-Nitrophenol	NELAP	5.00		**ND**	mg/L	5	10/17/2011 10:02	71990
3,3'-Dichlorobenzidine	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
4,6-Dinitro-2-methylphenol	NELAP	5.00		**ND**	mg/L	5	10/17/2011 10:02	71990
4-Bromophenyl phenyl ether	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
4-Chloro-3-methylphenol	NELAP	5.00		**ND**	mg/L	5	10/17/2011 10:02	71990
4-Chlorophenyl phenyl ether	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
4-Nitrophenol	NELAP	5.00		**ND**	mg/L	5	10/17/2011 10:02	71990
Acenaphthene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
Acenaphthylene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
Anthracene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
Benzidine	NELAP	10.0		**ND**	mg/L	5	10/17/2011 10:02	71990
Benzo(a)anthracene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
Benzo(a)pyrene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
Benzo(b)fluoranthene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
Benzo(g,h,i)perylene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
Benzo(k)fluoranthene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
Bis(2-chloroethoxy)methane	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
Bis(2-chloroethyl)ether	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
Bis(2-chloroisopropyl)ether	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990

Teklab, Inc.
Environmental Laboratory

Laboratory Results

http://www.teklabinc.com/

Client: Mallinckrodt Inc.
Work Order: 11100570
Client Project: Tank 1216
Report Date: 19-Oct-11
Lab ID: 11100570-001
Client Sample ID: Tank 1216
Matrix: AQUEOUS
Collection Date: 10/14/2011 0:00

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 625 (MODIFIED), SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Bis(2-ethylhexyl)phthalate	NELAP	1.50		**ND**	mg/L	5	10/17/2011 10:02	71990
Butyl benzyl phthalate	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
Chrysene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
Dibenzo(a,h)anthracene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
Diethyl phthalate	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
Dimethyl phthalate	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
Di-n-butyl phthalate	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
Di-n-octyl phthalate	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
Fluoranthene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
Fluorene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
Hexachlorobenzene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
Hexachlorobutadiene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
Hexachlorocyclopentadiene	NELAP	5.00		**ND**	mg/L	5	10/17/2011 10:02	71990
Hexachloroethane	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
Indeno(1,2,3-cd)pyrene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
Isophorone	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
Naphthalene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
Nitrobenzene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
N-Nitrosodimethylamine	NELAP	5.00		**ND**	mg/L	5	10/17/2011 10:02	71990
N-Nitroso-di-n-propylamine	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
N-Nitrosodiphenylamine	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
Pentachlorophenol	NELAP	5.00		**ND**	mg/L	5	10/17/2011 10:02	71990
Phenanthrene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
Phenol	NELAP	1.25		**ND**	mg/L	5	10/17/2011 10:02	71990
Pyrene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 10:02	71990
Surr: 2,4,6-Tribromophenol		26.4-130		**64.4**	%REC	5	10/17/2011 10:02	71990
Surr: 2-Fluorobiphenyl		38.3-115		**72.0**	%REC	5	10/17/2011 10:02	71990
Surr: 2-Fluorophenol		16.5-65		**36.4**	%REC	5	10/17/2011 10:02	71990
Surr: Nitrobenzene-d5		47.6-107		**67.1**	%REC	5	10/17/2011 10:02	71990
Surr: Phenol-d5		9.94-41.7		**22.4**	%REC	5	10/17/2011 10:02	71990
Surr: p-Terphenyl-d14		1-136		**69.7**	%REC	5	10/17/2011 10:02	71990
Elevated reporting limit(s) due to sample extract composition.								
SW-846 8015B, MISCELLANEOUS COMPOUNDS BY GC/FID								
Dimethyl Acetamide		25		**ND**	mg/L	1	10/17/2011 12:07	R155494
EPA 600 1666A (MODIFIED), VOLATILE ORGANIC COMPOUNDS BY GC/MS								
4-Methyl-2-pentanone		200		**ND**	µg/L	20	10/18/2011 22:42	72158
Butyl acetate		100		**ND**	µg/L	20	10/18/2011 22:42	72158
Diisopropyl ether		100		**ND**	µg/L	20	10/18/2011 22:42	72158
Ethyl acetate		200		**ND**	µg/L	20	10/18/2011 22:42	72158
Furfural		1000		**ND**	µg/L	20	10/18/2011 22:42	72158
Isobutyraldehyde		200		**ND**	µg/L	20	10/18/2011 22:42	72158
Isopropyl acetate		100		**ND**	µg/L	20	10/18/2011 22:42	72158
m,p-Xylene		160		**ND**	µg/L	20	10/18/2011 22:42	72158
Methyl formate		1000		**ND**	µg/L	20	10/18/2011 22:42	72158
n-Amyl acetate		100		**ND**	µg/L	20	10/18/2011 22:42	72158
n-Heptane		200		**ND**	µg/L	20	10/18/2011 22:42	72158
n-Hexane		200		**ND**	µg/L	20	10/18/2011 22:42	72158

Client: Mallinckrodt Inc.
Client Project: Tank 1216
Lab ID: 11100570-001
Matrix: AQUEOUS

Work Order: 11100570
Report Date: 19-Oct-11
Client Sample ID: Tank 1216
Collection Date: 10/14/2011 0:00

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 1666A (MODIFIED), VOLATILE ORGANIC COMPOUNDS BY GC/MS								
o-Xylene		100		**ND**	µg/L	20	10/18/2011 22:42	72158
Tetrahydrofuran		400		**ND**	µg/L	20	10/18/2011 22:42	72158
Surr: Bromofluorobenzene		70-130		**101.9**	%REC	20	10/18/2011 22:42	72158
Surr: Cyclohexane-d12		8-156		**88.8**	%REC	20	10/18/2011 22:42	72158
Surr: Ethyl acetate-C13		58-159		**119.0**	%REC	20	10/18/2011 22:42	72158
Surr: m-Xylene-d10		70-130		**98.3**	%REC	20	10/18/2011 22:42	72158
Surr: n-Heptane-d16		14-128		**96.6**	%REC	20	10/18/2011 22:42	72158
Surr: n-Hexane-d14		5-157		**79.4**	%REC	20	10/18/2011 22:42	72158
Surr: o-Xylene-d10		70-130		**99.2**	%REC	20	10/18/2011 22:42	72158
Surr: tert-Butanol-d10		40-160		**137.2**	%REC	20	10/18/2011 22:42	72158
Surr: Tetrahydrofuran-d8		42-178		**135.8**	%REC	20	10/18/2011 22:42	72158
CCV and LCS recoveries were above QC limits for n-Hexane. Sample did not take a hit; data is reportable.								
EPA 600 624 (MODIFIED), VOLATILE ORGANIC COMPOUNDS BY GC/MS								
1,1,1-Trichloroethane	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:33	72126
1,1,2,2-Tetrachloroethane	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:33	72126
1,1,2-Trichloroethane	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:33	72126
1,1-Dichloroethane	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:33	72126
1,1-Dichloroethene	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:33	72126
1,2-Dichlorobenzene	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:33	72126
1,2-Dichloroethane	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:33	72126
1,2-Dichloropropane	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:33	72126
1,3-Dichlorobenzene	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:33	72126
1,3-Dichloropropene, Total		50.0		**ND**	µg/L	10	10/17/2011 19:33	72126
1,4-Dichlorobenzene	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:33	72126
2-Chloroethyl vinyl ether	NELAP	200		**ND**	µg/L	10	10/17/2011 19:33	72126
Acrolein	NELAP	1000		**ND**	µg/L	10	10/17/2011 19:33	72126
Acrylonitrile	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:33	72126
Benzene	NELAP	20.0		**ND**	µg/L	10	10/17/2011 19:33	72126
Bromodichloromethane	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:33	72126
Bromoform	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:33	72126
Bromomethane	NELAP	100		**ND**	µg/L	10	10/17/2011 19:33	72126
Carbon tetrachloride	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:33	72126
Chlorobenzene	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:33	72126
Chloroethane	NELAP	100		**ND**	µg/L	10	10/17/2011 19:33	72126
Chloroform	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:33	72126
Chloromethane	NELAP	100		**ND**	µg/L	10	10/17/2011 19:33	72126
cis-1,3-Dichloropropene	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:33	72126
Dibromochloromethane	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:33	72126
Ethylbenzene	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:33	72126
Methylene chloride	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:33	72126
Tetrachloroethene	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:33	72126
Toluene	NELAP	20.0	J	**12**	µg/L	10	10/17/2011 19:33	72126
trans-1,2-Dichloroethene	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:33	72126
trans-1,3-Dichloropropene	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:33	72126
Trichloroethene	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:33	72126
Vinyl chloride	NELAP	20.0		**ND**	µg/L	10	10/17/2011 19:33	72126
Xylenes, Total	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:33	72126

Teklab, Inc.
Environmental Laboratory

Laboratory Results

http://www.teklabinc.com/

Client: Mallinckrodt Inc.
Work Order: 11100570
Client Project: Tank 1216
Report Date: 19-Oct-11
Lab ID: 11100570-001
Client Sample ID: Tank 1216
Matrix: AQUEOUS
Collection Date: 10/14/2011 0:00

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 624 (MODIFIED), VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Surr: 1,2-Dichloroethane-d4		74.7-129		**95.0**	%REC	10	10/17/2011 19:33	72126
Surr: 4-Bromofluorobenzene		86-119		**103.8**	%REC	10	10/17/2011 19:33	72126
Surr: Dibromofluoromethane		81.7-123		**99.0**	%REC	10	10/17/2011 19:33	72126
Surr: Toluene-d8		84.3-114		**97.5**	%REC	10	10/17/2011 19:33	72126

Elevated reporting limit due to sample composition.

Teklab, Inc.
Environmental Laboratory

Receiving Check List

http://www.teklabinc.com/

Client: Mallinckrodt Inc.
Client Project: Tank 1216

Work Order: 11100570
Report Date: 19-Oct-11

Carrier: Dawn Brantley

Received By: MT

Completed by: Timothy W. Mathis
On: 17-Oct-11

Reviewed by: Heather A. White
On: 17-Oct-11

Pages to follow: Chain of custody 1 Extra pages included 0

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐	Temp °C 0.4
Type of thermal preservation?	None ☐	Ice ☑	Blue Ice ☐	Dry Ice ☐
Chain of custody present?	Yes ☑	No ☐		
Chain of custody signed when relinquished and received?	Yes ☑	No ☐		
Chain of custody agrees with sample labels?	Yes ☑	No ☐		
Samples in proper container/bottle?	Yes ☑	No ☐		
Sample containers intact?	Yes ☑	No ☐		
Sufficient sample volume for indicated test?	Yes ☑	No ☐		
All samples received within holding time?	Yes ☑	No ☐		
Reported field parameters measured:	Field ☐	Lab ☑	NA ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐		
When thermal preservation is required, samples are compliant with a temperature between 0.1°C - 6.0°C, or when samples are received on ice the same day as collected.				
Water - vials have zero headspace?	Yes ☐	No ☑	No VOA vials ☐	
Water - TOX containers have zero headspace?	Yes ☐	No ☐	No TOX containers ☑	
Water - pH acceptable upon receipt?	Yes ☑	No ☐		

Any No responses must be detailed below or on the COC.

Headspace was present in the volatile vials. Per client consent letter, continue with analysis as requested.

CHAIN OF CUSTODY

pg. 1 of 1 Work Order # 1110070

TEKLAB, INC. 5445 Horseshoe Lake Road ~ Collinsville, IL 62234 ~ Phone: (618) 344-1004 ~ Fax: (618) 344-1005

Client: Mallinckrodt
Address: 3600 N. 2nd St.
City / State / Zip: St. Louis MO 63147
Contact: Amber Crouch Phone: 314-654-0127
E-Mail: Fax:

Samples on: ☐ Ice ☐ Blue Ice ☐ No Ice 0-4 °C
Preserved in: ☒ Lab ☐ Field
FOR LAB USE ONLY
Lab Notes:
One Day TAT
Comments: If heads pace · continue processing
HEADSPACE ALL VIALS

- Are these samples known to be involved in litigation? If yes, a surcharge will apply. ☐ Yes ☒ No
- Are these samples known to be hazardous? ☐ Yes ☒ No
- Are there any required reporting limits to be met on the requested analysis? If yes, please provide limits in comment section. ☐ Yes ☐ No

Project Name / Number: Tank 1216
Sample Collector's Name:
Results Requested: ☐ Standard ☒ 1-2 Day (100% Surcharge) ☐ Other_____ ☐ 3 Day (50% Surcharge)
Billing Instructions: —

Lab Use Only	Sample Identification	Date/Time Sampled	# and Type of Containers: UNPRES	HNO3	NaOH	H2SO4	HCL	MeOH	NaHSO4	Other	MATRIX: Water	Drinking Water	Soil	Sludge	Sp. Waste	INDICATE ANALYSIS REQUESTED: TSS	pH	COD	Metals	Total Cyanide	Oil & Grease	624	625	1666	8015			
	Tank 1216	10/14/11	4	1	1	2	6				X					X	X	X	X	X	X	X	X	X	X			

Teklab, Inc.
Courier Pick Up

Relinquished By	Date / Time	Received By	Date / Time
Amber Crouch	10/14/11 1523	[signature]	10/14/11 1523
[signature]	10/14/11 1718	[signature]	10/14/11 1718

The individual signing this agreement on behalf of client acknowledges that he/she has read and understands the terms and conditions of this agreement, on the reverse side, and that he/she has the authority to sign on behalf of client.

WHITE & YELLOW – LAB PINK – SAMPLER'S COPY

MSD 012949

October 19, 2011

Julie Summers
Mallinckrodt Inc.
3600 N. 2nd St.
St. Louis, MO 63147
TEL: (314) 654-1969
FAX: (314) 654-1251

RE: Tank 1219

WorkOrder: 11100569

Dear Julie Summers:

TEKLAB, INC received 1 sample on 10/14/2011 5:18:00 PM for the analysis presented in the following report.

Samples are analyzed on an as received basis unless otherwise requested and documented. The sample results contained in this report relate only to the requested analytes of interest as directed on the chain of custody. NELAP accredited fields of testing are indicated by the letters NELAP under the Certification column. All tests are performed in the Collinsville, IL laboratory unless otherwise noted in the Case Narrative.

All quality control criteria applicable to the test methods employed for this project have been satisfactorily met and are in accordance with NELAP except where noted. The following report shall not be reproduced, except in full, without the written approval of Teklab, Inc.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Heather A. White

Heather A. White
Project Manager
(618)344-1004 ex 20
HWhite@teklabinc.com

Definitions

Client: Mallinckrodt Inc.
Client Project: Tank 1219

Work Order: 11100569
Report Date: 19-Oct-11

Abbr Definition

CCV	Continuing calibration verification is a check of a standard to determine the state of calibration of an instrument between recalibration.
DF	Dilution factor is the dilution performed during analysis only and does not take into account any dilutions made during sample preparation. The reported result is final and includes all dilutions factors.
DNI	Did not ignite
DUP	Laboratory duplicate is an aliquot of a sample taken from the same container under laboratory conditions for independent processing and analysis independently of the original aliquot.
ICV	Initial calibration verification is a check of a standard to determine the state of calibration of an instrument before sample analysis is initiated.
IDPH	IL Dept. of Public Health
LCS	Laboratory control sample, spiked with verified known amounts of analytes, is analyzed exactly like a sample to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system. The acceptable recovery range is in the QC Package (provided upon request).
LCSD	Laboratory control sample duplicate is a replicate laboratory control sample that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MB	Method blank is a sample of a matrix similar to the batch of associated sample (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences should present at concentrations that impact the analytical results for sample analyses.
MDL	Method detection limit means the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.
MS	Matrix spike is an aliquot of matrix fortified (spiked) with known quantities of specific analytes that is subjected to the entire analytical procedures in order to determine the effect of the matrix on an approved test method's recovery system. The acceptable recovery range is listed in the QC Package (provided upon request).
MSD	Matrix spike duplicate means a replicate matrix spike that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MW	Molecular weight
ND	Not Detected at the Reporting Limit
NELAP	NELAP Accredited
PQL	Practical quantitation limit means the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operation conditions. The acceptable recovery range is listed in the QC Package (provided upon request).
RL	The reporting limit the lowest level that the data is displayed in the final report. The reporting limit may vary according to customer request or sample dilution. The reporting limit may not be less than the MDL.
RPD	Relative percent difference is a calculated difference between two recoveries (ie. MS/MSD). The acceptable recovery limit is listed in the QC Package (provided upon request).
SPK	The spike is a known mass of target analyte added to a blank sample or sub-sample; used to determine recovery deficiency or for other quality control purposes.
Surr	Surrogates are compounds which are similar to the analytes of interest in chemical composition and behavior in the analytical process, but which are not normally found in environmental samples.
TNTC	Too numerous to count (> 200 CFU)

Qualifiers

# - Unknown hydrocarbon	B - Analyte detected in associated Method Blank
E - Value above quantitation range	H - Holding times exceeded
J - Analyte detected below quantitation limits	M - Manual Integration used to determine area response
ND - Not Detected at the Reporting Limit	R - RPD outside accepted recovery limits
S - Spike Recovery outside recovery limits	X - Value exceeds Maximum Contaminant Level

Client: Mallinckrodt Inc.

Client Project: Tank 1219

Work Order: 11100569

Report Date: 19-Oct-11

Cooler Receipt Temp: 0.4 °C

Locations and Accreditations

Collinsville

Address 5445 Horseshoe Lake Road
Collinsville, IL 62234-7425
Phone (618) 344-1004
Fax (618) 344-1005
Email jhriley@teklabinc.com

Springfield

Address 3920 Pintail Dr
Springfield, IL 62711-9415
Phone (217) 698-1004
Fax (217) 698-1005
Email kmcclain@teklabinc.com

Kansas City

Address 8421 Nieman Road
Lenexa, KS 66214
Phone (913) 541-1998
Fax (913) 541-1998
Email dthompson@teklabinc.com

State	Dept	Cert #	NELAP	Exp Date	Lab
Illinois	IEPA	100226	NELAP	1/31/2012	Collinsville
Kansas	KDHE	E-10374	NELAP	1/31/2012	Collinsville
Louisiana	LDEQ	166493	NELAP	6/30/2012	Collinsville
Louisiana	LDEQ	166578	NELAP	6/30/2012	Springfield
Arkansas	ADEQ	88-0966		3/14/2012	Collinsville
Illinois	IDPH	17584		4/30/2012	Collinsville
Kentucky	UST	0073		5/26/2012	Collinsville
Missouri	MDNR	00930		4/13/2013	Collinsville
Oklahoma	ODEQ	9978		8/31/2012	Collinsville

Teklab, Inc.
Environmental Laboratory

Laboratory Results

http://www.teklabinc.com/

Client: Mallinckrodt Inc.
Work Order: 11100569
Client Project: Tank 1219
Report Date: 19-Oct-11
Lab ID: 11100569-001
Client Sample ID: Tank 1219
Matrix: AQUEOUS
Collection Date: 10/14/2011 0:00

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 1664A								
Hexane Extractable Material	NELAP	50		**161**	mg/L	1	10/17/2011 8:26	R155509
EPA 335.4 R1.0 (TOTAL)								
Cyanide	NELAP	0.035		**0.100**	mg/L	1	10/17/2011 15:28	72105
EPA 600 410.4								
Chemical Oxygen Demand	NELAP	5000		**13900**	mg/L	100	10/17/2011 13:04	R155491
STANDARD METHOD 18TH ED. 4500-H B, LABORATORY ANALYZED								
Lab pH	NELAP	1.00		**9.91**		1	10/17/2011 13:11	R155492
STANDARD METHODS 18TH ED. 2540 D								
Total Suspended Solids	NELAP	600		**5300**	mg/L	100	10/17/2011 7:56	R155505
EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL)								
Cadmium	NELAP	0.0200		**0.0520**	mg/L	10	10/16/2011 16:22	72027
Chromium	NELAP	0.100		**0.600**	mg/L	10	10/16/2011 16:22	72027
Copper	NELAP	0.100		**1.74**	mg/L	10	10/16/2011 16:22	72027
Iron	NELAP	0.200		**70.8**	mg/L	10	10/16/2011 16:22	72027
Lead	NELAP	0.200		**0.333**	mg/L	5	10/16/2011 16:16	72027
Nickel	NELAP	0.100		**0.528**	mg/L	10	10/16/2011 16:22	72027
Zinc	NELAP	0.100	X	**6.00**	mg/L	10	10/16/2011 16:22	72027
EPA 600 625 (MODIFIED), SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
1,2,4-Trichlorobenzene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
1,2-Diphenylhydrazine		2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
2,4,6-Trichlorophenol	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
2,4-Dichlorophenol	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
2,4-Dimethylphenol	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
2,4-Dinitrophenol	NELAP	5.00		**ND**	mg/L	5	10/17/2011 16:04	72069
2,4-Dinitrotoluene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
2,6-Dinitrotoluene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
2-Chloronaphthalene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
2-Chlorophenol	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
2-Nitrophenol	NELAP	5.00		**ND**	mg/L	5	10/17/2011 16:04	72069
3,3'-Dichlorobenzidine	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
4,6-Dinitro-2-methylphenol	NELAP	5.00		**ND**	mg/L	5	10/17/2011 16:04	72069
4-Bromophenyl phenyl ether	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
4-Chloro-3-methylphenol	NELAP	5.00		**ND**	mg/L	5	10/17/2011 16:04	72069
4-Chlorophenyl phenyl ether	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
4-Nitrophenol	NELAP	5.00		**ND**	mg/L	5	10/17/2011 16:04	72069
Acenaphthene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
Acenaphthylene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
Anthracene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
Benzidine	NELAP	10.0		**ND**	mg/L	5	10/17/2011 16:04	72069
Benzo(a)anthracene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
Benzo(a)pyrene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
Benzo(b)fluoranthene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
Benzo(g,h,i)perylene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
Benzo(k)fluoranthene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
Bis(2-chloroethoxy)methane	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
Bis(2-chloroethyl)ether	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
Bis(2-chloroisopropyl)ether	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069

Teklab, Inc.
Environmental Laboratory

Laboratory Results

http://www.teklabinc.com/

Client: Mallinckrodt Inc.
Client Project: Tank 1219
Lab ID: 11100569-001
Matrix: AQUEOUS

Work Order: 11100569
Report Date: 19-Oct-11
Client Sample ID: Tank 1219
Collection Date: 10/14/2011 0:00

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 625 (MODIFIED), SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Bis(2-ethylhexyl)phthalate	NELAP	1.50		**ND**	mg/L	5	10/17/2011 16:04	72069
Butyl benzyl phthalate	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
Chrysene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
Dibenzo(a,h)anthracene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
Diethyl phthalate	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
Dimethyl phthalate	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
Di-n-butyl phthalate	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
Di-n-octyl phthalate	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
Fluoranthene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
Fluorene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
Hexachlorobenzene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
Hexachlorobutadiene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
Hexachlorocyclopentadiene	NELAP	5.00		**ND**	mg/L	5	10/17/2011 16:04	72069
Hexachloroethane	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
Indeno(1,2,3-cd)pyrene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
Isophorone	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
Naphthalene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
Nitrobenzene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
N-Nitrosodimethylamine	NELAP	5.00		**ND**	mg/L	5	10/17/2011 16:04	72069
N-Nitroso-di-n-propylamine	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
N-Nitrosodiphenylamine	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
Pentachlorophenol	NELAP	5.00		**ND**	mg/L	5	10/17/2011 16:04	72069
Phenanthrene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
Phenol	NELAP	1.25		**ND**	mg/L	5	10/17/2011 16:04	72069
Pyrene	NELAP	2.50		**ND**	mg/L	5	10/17/2011 16:04	72069
Surr: 2,4,6-Tribromophenol		26.4-130		**60.6**	%REC	5	10/17/2011 16:04	72069
Surr: 2-Fluorobiphenyl		38.3-115		**61.2**	%REC	5	10/17/2011 16:04	72069
Surr: 2-Fluorophenol		16.5-65		**35.5**	%REC	5	10/17/2011 16:04	72069
Surr: Nitrobenzene-d5		47.6-107		**62.6**	%REC	5	10/17/2011 16:04	72069
Surr: Phenol-d5		9.94-41.7		**22.4**	%REC	5	10/17/2011 16:04	72069
Surr: p-Terphenyl-d14		1-136		**66.8**	%REC	5	10/17/2011 16:04	72069
Elevated reporting limit(s) due to sample extract composition.								
SW-846 8015B, MISCELLANEOUS COMPOUNDS BY GC/FID								
Dimethyl Acetamide		25		**460**	mg/L	1	10/17/2011 11:07	R155494
EPA 600 1666A (MODIFIED), VOLATILE ORGANIC COMPOUNDS BY GC/MS								
4-Methyl-2-pentanone		200		**ND**	µg/L	20	10/18/2011 22:15	72158
Butyl acetate		100		**ND**	µg/L	20	10/18/2011 22:15	72158
Diisopropyl ether		100		**ND**	µg/L	20	10/18/2011 22:15	72158
Ethyl acetate		200	J	**180**	µg/L	20	10/18/2011 22:15	72158
Furfural		1000		**ND**	µg/L	20	10/18/2011 22:15	72158
Isobutyraldehyde		200		**ND**	µg/L	20	10/18/2011 22:15	72158
Isopropyl acetate		100		**ND**	µg/L	20	10/18/2011 22:15	72158
m,p-Xylene		160		**ND**	µg/L	20	10/18/2011 22:15	72158
Methyl formate		1000		**ND**	µg/L	20	10/18/2011 22:15	72158
n-Amyl acetate		100		**ND**	µg/L	20	10/18/2011 22:15	72158
n-Heptane		200		**ND**	µg/L	20	10/18/2011 22:15	72158
n-Hexane		200		**ND**	µg/L	20	10/18/2011 22:15	72158

Teklab, Inc.
Environmental Laboratory

Laboratory Results

http://www.teklabinc.com/

Client: Mallinckrodt Inc.
Client Project: Tank 1219
Lab ID: 11100569-001
Matrix: AQUEOUS

Work Order: 11100569
Report Date: 19-Oct-11
Client Sample ID: Tank 1219
Collection Date: 10/14/2011 0:00

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 1666A (MODIFIED), VOLATILE ORGANIC COMPOUNDS BY GC/MS								
o-Xylene		100		**ND**	µg/L	20	10/18/2011 22:15	72158
Tetrahydrofuran		400		**ND**	µg/L	20	10/18/2011 22:15	72158
Surr: Bromofluorobenzene		70-130		**101.7**	%REC	20	10/18/2011 22:15	72158
Surr: Cyclohexane-d12		8-156		**90.4**	%REC	20	10/18/2011 22:15	72158
Surr: Ethyl acetate-C13		58-159		**115.1**	%REC	20	10/18/2011 22:15	72158
Surr: m-Xylene-d10		70-130		**99.0**	%REC	20	10/18/2011 22:15	72158
Surr: n-Heptane-d16		14-128		**96.9**	%REC	20	10/18/2011 22:15	72158
Surr: n-Hexane-d14		5-157		**80.6**	%REC	20	10/18/2011 22:15	72158
Surr: o-Xylene-d10		70-130		**100.5**	%REC	20	10/18/2011 22:15	72158
Surr: tert-Butanol-d10		40-160		**127.8**	%REC	20	10/18/2011 22:15	72158
Surr: Tetrahydrofuran-d8		42-178		**132.9**	%REC	20	10/18/2011 22:15	72158
CCV and LCS recoveries were above QC limits for n-Hexane. Sample did not take a hit; data is reportable.								
EPA 600 624 (MODIFIED), VOLATILE ORGANIC COMPOUNDS BY GC/MS								
1,1,1-Trichloroethane	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:06	72126
1,1,2,2-Tetrachloroethane	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:06	72126
1,1,2-Trichloroethane	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:06	72126
1,1-Dichloroethane	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:06	72126
1,1-Dichloroethene	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:06	72126
1,2-Dichlorobenzene	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:06	72126
1,2-Dichloroethane	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:06	72126
1,2-Dichloropropane	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:06	72126
1,3-Dichlorobenzene	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:06	72126
1,3-Dichloropropene, Total		50.0		**ND**	µg/L	10	10/17/2011 19:06	72126
1,4-Dichlorobenzene	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:06	72126
2-Chloroethyl vinyl ether	NELAP	200		**ND**	µg/L	10	10/17/2011 19:06	72126
Acrolein	NELAP	1000		**ND**	µg/L	10	10/17/2011 19:06	72126
Acrylonitrile	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:06	72126
Benzene	NELAP	20.0		**ND**	µg/L	10	10/17/2011 19:06	72126
Bromodichloromethane	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:06	72126
Bromoform	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:06	72126
Bromomethane	NELAP	100		**ND**	µg/L	10	10/17/2011 19:06	72126
Carbon tetrachloride	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:06	72126
Chlorobenzene	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:06	72126
Chloroethane	NELAP	100		**ND**	µg/L	10	10/17/2011 19:06	72126
Chloroform	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:06	72126
Chloromethane	NELAP	100		**ND**	µg/L	10	10/17/2011 19:06	72126
cis-1,3-Dichloropropene	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:06	72126
Dibromochloromethane	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:06	72126
Ethylbenzene	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:06	72126
Methylene chloride	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:06	72126
Tetrachloroethene	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:06	72126
Toluene	NELAP	20.0		**ND**	µg/L	10	10/17/2011 19:06	72126
trans-1,2-Dichloroethene	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:06	72126
trans-1,3-Dichloropropene	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:06	72126
Trichloroethene	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:06	72126
Vinyl chloride	NELAP	20.0		**ND**	µg/L	10	10/17/2011 19:06	72126
Xylenes, Total	NELAP	50.0		**ND**	µg/L	10	10/17/2011 19:06	72126

Laboratory Results

Client: Mallinckrodt Inc.
Work Order: 11100569
Client Project: Tank 1219
Report Date: 19-Oct-11
Lab ID: 11100569-001
Client Sample ID: Tank 1219
Matrix: AQUEOUS
Collection Date: 10/14/2011 0:00

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 624 (MODIFIED), VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Surr: 1,2-Dichloroethane-d4		74.7-129		**94.2**	%REC	10	10/17/2011 19:06	72126
Surr: 4-Bromofluorobenzene		86-119		**106.0**	%REC	10	10/17/2011 19:06	72126
Surr: Dibromofluoromethane		81.7-123		**99.0**	%REC	10	10/17/2011 19:06	72126
Surr: Toluene-d8		84.3-114		**98.8**	%REC	10	10/17/2011 19:06	72126

Elevated reporting limit due to sample composition.

Teklab, Inc.
Environmental Laboratory

Receiving Check List

http://www.teklabinc.com/

Client: Mallinckrodt Inc.
Client Project: Tank 1219

Work Order: 11100569
Report Date: 19-Oct-11

Carrier: Dawn Brantley

Received By: MT

Completed by: Timothy W. Mathis
On: 14-Oct-11

Reviewed by: Heather A. White
On: 17-Oct-11

Pages to follow: Chain of custody 1 Extra pages included 0

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐	Temp °C 0.4
Type of thermal preservation?	None ☐	Ice ☑	Blue Ice ☐	Dry Ice ☐
Chain of custody present?	Yes ☑	No ☐		
Chain of custody signed when relinquished and received?	Yes ☑	No ☐		
Chain of custody agrees with sample labels?	Yes ☑	No ☐		
Samples in proper container/bottle?	Yes ☑	No ☐		
Sample containers intact?	Yes ☑	No ☐		
Sufficient sample volume for indicated test?	Yes ☑	No ☐		
All samples received within holding time?	Yes ☑	No ☐		
Reported field parameters measured:	Field ☐	Lab ☑	NA ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐		
When thermal preservation is required, samples are compliant with a temperature between 0.1°C - 6.0°C, or when samples are received on ice the same day as collected.				
Water - vials have zero headspace?	Yes ☐	No ☑	No VOA vials ☐	
Water - TOX containers have zero headspace?	Yes ☐	No ☐	No TOX containers ☑	
Water - pH acceptable upon receipt?	Yes ☑	No ☐		

Any No responses must be detailed below or on the COC.

Headspace was present in the volatile vials. Per client consent letter, continue with analysis as requested.

CHAIN OF CUSTODY

pg. 1 of 1 Work Order # 11100569

TEKLAB, INC. 5445 Horseshoe Lake Road ~ Collinsville, IL 62234 ~ Phone: (618) 344-1004 ~ Fax: (618) 344-1005

Client: Mallinckrodt
Address: 3600 N 2nd St.
City / State / Zip: St. Louis MO 63147
Contact: Amber Crouch Phone: 314-654-0127
E-Mail: Fax:

Samples on: ☒ Ice ☐ Blue Ice ☐ No Ice 0.4 °C
Preserved in: ☐ Lab ☐ Field FOR LAB USE ONLY
Lab Notes: HEADSPACE PRESENT IN ALL VOAS JA 10.14.11
Comments: if headspace; continue processing. One Day JA

- Are these samples known to be involved in litigation? If yes, a surcharge will apply. ☐ Yes ☒ No
- Are these samples known to be hazardous? ☐ Yes ☒ No
- Are there any required reporting limits to be met on the requested analysis? If yes, please provide limits in comment section. ☐ Yes ☐ No

Project Name / Number: Tank 1219
Sample Collector's Name:
Results Requested: ☐ Standard ☒ 1-2 Day (100% Surcharge) ☐ Other_____ ☐ 3 Day (50% Surcharge)
Billing Instructions:

Lab Use Only	Sample Identification	Date/Time Sampled	# and Type of Containers: UNPRES	HNO_3	NaOH	H_2SO_4	HCL	MeOH	$NaHSO_4$	Other	MATRIX: Water	Drinking Water	Soil	Sludge	Sp. Waste	TSS	pH	COD	Metals	Total Cyanide	Oil+Grease	624	625	16646	8015
11100569 001	Tank 1219	10/14/11	4	1	1	2	6				X					X	X	X	X	X	X	X	X	X	X

Teklab, Inc. Courier Pick Up

Relinquished By	Date / Time	Received By	Date / Time
Amber Crouch	10/14/11 1523	[signature]	10/14/11 1523
[signature]	10/14/11 1718	[signature]	10/14/11 1718

The individual signing this agreement on behalf of client acknowledges that he/she has read and understands the terms and conditions of this agreement, on the reverse side, and that he/she has the authority to sign on behalf of client.

WHITE & YELLOW – LAB PINK – SAMPLER'S COPY

MSD 012958

Steve Grace

From: Crouch, Amber [Amber.Crouch@Covidien.com]
Sent: Monday, October 24, 2011 1:41 PM
To: Steve Grace
Subject: RE: Special Discharge Permit Question - tank clean out

Yes, discharge any liquids we have sitting in the tanks (on top of the solids). Then Veolia will suck up and haul solids/ sludge to you. Then we will discharge the wash water from cleaning out the tanks.

> **From:** Steve Grace [mailto:sgrace@stlmsd.com]
> **Sent:** Monday, October 24, 2011 1:28 PM
> **To:** Crouch, Amber
> **Subject:** RE: Special Discharge Permit Question - tank clean out
>
> Amber,
>
> O.K...I want to make sure I have this right, lol. So you're plan is to discharge the existing plant wastewater in the tanks onsite, correct? Then water jet the sludge along the walls and bottoms, have Veolia suck that up for discharge at our Hauled Waste Receiving Station?
>
> Thanks,
> Steve

From: Crouch, Amber [mailto:Amber.Crouch@Covidien.com]
Sent: Monday, October 24, 2011 10:58 AM
To: Steve Grace
Subject: RE: Special Discharge Permit Question - tank clean out

Oh, and 0040 is the Hauler # for Veolia. I think I left that blank on the application.

> **From:** Crouch, Amber
> **Sent:** Monday, October 24, 2011 9:12 AM
> **To:** 'Steve Grace'
> **Subject:** RE: Special Discharge Permit Question - tank clean out
>
> 4000 gal per tank plus an additional 400 gallons of wash water.
>
> Total = approx. 8500 gallons (estimated high)
>
> Thanks,
> Amber
>
> > **From:** Steve Grace [mailto:sgrace@stlmsd.com]
> > **Sent:** Monday, October 24, 2011 8:33 AM
> > **To:** Crouch, Amber
> > **Subject:** RE: Special Discharge Permit Question - tank clean out
> >
> > Hello Amber,
> >
> > I got the application and lab data...thanks. I have one quick question...can you give me an idea on the volume you're looking to discharge? Even a ballpark figure would be helpful.
> >
> > Thanks,
> > Steve Grace

From: Crouch, Amber [mailto:Amber.Crouch@Covidien.com]
Sent: Friday, October 21, 2011 2:23 PM
To: Steve Grace
Cc: Summers, Julie
Subject: Special Discharge Permit Question - tank clean out

Steve,

Attached is a special discharge application for clean out of our spill tanks. There are two sets of analytical included as well (one for each tank) as per your request. Please let me know if you have any questions.

Thanks,

Amber Crouch
Senior HSE Engineer
Covidien
3600 North Second Street
St. Louis, MO 63147
USA

(314) 654-0127 office
(314) 253-2213 pager
(314) 654-1251 fax

www.covidien.com

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From: Steve Grace [mailto:sgrace@stlmsd.com]
Sent: Thursday, October 13, 2011 11:17 AM
To: Crouch, Amber
Subject: RE: Special Discharge Permit Question - tank clean out

Hello Amber,

Based on my previous conversations with Julie, these spill tanks could contain any of the wastewater streams generated at your facility. As a result, the laboratory analytical requirement list looks to be a bit lengthy:

pH
Total Suspended Solids (TSS)
Chemical Oxygen Demand (COD)
Cadmium (Cd); Chromium (Cr); Copper (Cu); Iron (Fe); Nickel (Ni); Lead (Pb); and Zinc (Zn)
Total Cyanide
Oil & Grease
Volatile organic priority pollutants (using EPA Method 624)
Semi-volatile organic priority pollutants (using EPA Method 625)
Pharmaceutical Pollutants (using EPA Method 1666)

N,N – Dimethyl Acetamide (DMAc) (I believe this can be run using EPA Method 624)
1,3, - Dichloropropylene (I believe this can be run using EPA Method 608; however, you may want to check with whatever lab you decide to use...if it can be run under either the 624 or 625 Method, there's an obvious cost savings for you)

Please contact me with any questions or if you require additional information.

Thank you,
Steve Grace

From: Crouch, Amber [mailto:Amber.Crouch@Covidien.com]
Sent: Thursday, October 13, 2011 7:32 AM
To: Steve Grace
Subject: RE: Special Discharge Permit Question - tank clean out

Ok, thanks. If you could get me a list by mid day that would be great. Then we could take samples and have then sent to the lab today. The reason we need to expedite this is that these are our spill tanks and they are currently out of service.

Thanks for your help.
Amber Crouch
Senior HSE Engineer
Covidien
3600 North Second Street
St. Louis, MO 63147
USA
(314) 654-0127 office
(314) 253-2213 pager
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From: Steve Grace [mailto:sgrace@stlmsd.com]
Sent: Wednesday, October 12, 2011 4:34 PM
To: Crouch, Amber
Subject: RE: Special Discharge Permit Question - tank clean out

Ugh, I owed you the list on this...sorry for the delay. Let me see what I can cobble together for you today or tomorrow before noon.

Steve

From: Crouch, Amber [mailto:Amber.Crouch@Covidien.com]
Sent: Wednesday, October 12, 2011 10:41 AM
To: Steve Grace
Subject: FW: Special Discharge Permit Question - tank clean out

Steve,

Julie is out for a couple of weeks so I am handling this project. I know we are going to get samples from both spill tanks. Do you know what you would like them analyzed for?

Thanks,

Amber Crouch
Senior HSE Engineer
Covidien
3600 North Second Street
St. Louis, MO 63147
USA
(314) 654-0127 office
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Metropolitan St. Louis Sewer District

Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

October 6, 2011

Julie Summers
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Re: Wastewater User Charge Billing for Special Discharge

Dear Ms. Summers:

This is to advise you of the wastewater user charges applicable to an on-site special discharge approved in our letter to you dated January 21, 2011. The discharge date and quantity are from information submitted by you in an email dated October 4, 2011.

Our Finance Department will bill you by invoice for the charges described below. These charges are based on the rates in MSD Wastewater User Charge Ordinance 13021. Please note that, as of July 1, 2011, the volume charge of $2.11 per 100 cubic feet of wastewater became effective.

PARTY TO BILL: Addressee

BILLING IS FOR: *On-Site Special Discharge*

DISCHARGE PERIOD: June 20 – September 8, 2011

SOURCE OF WASTE: 46 batches of treated rainwater and groundwater from the remediation of the Columbium-Tantalum (CT) decommissioning project at the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri.

Discharge Period	Billing Item	Quantity	Units	Rate	Charge
June 2011	Volume	107	CcF	$2.02	$216.14
July 2011	Volume	802	CcF	$2.11	$1,692.22
August 2011	Volume	722	CcF	$2.11	$1,523.42
September 2011	Volume	428	CcF	$2.11	$903.08
Totals:	------	2,059	Gal	-----	$4,334.86

Please do not pay until you receive our invoice. If you have any questions, please contact me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

pc Chris Verplancke - Finance Dept.
Doug Mendoza
Brian Gibson

File: IU, MALLINCKRODT INC [2112059600], 3600 North Second Street, St. Louis, Missouri

Summary of CT Excavation Wastewater Discharges
Mallinckrodt St. Louis Plant

	Date of Discharge	Start Time	End Time	Volume Discharged (gallons)		
Discharge 1	3/24/2011	0800	0850	21,000		
Discharge 2	3/28/2011	0801	0900	20,000		
Discharge 3	4/7/2011	1038	1313	40,000		
Discharge 4	4/19/2011	0700	0930	40,000		
Discharge 5	4/27/2011	0700	0930	40,000		
Discharge 6	5/9/2011	0700	0930	40,000		
Discharge 7	5/25/2011	0700	0930	40,000		
Discharge 8	6/7/2011	0725	0930	40,000		
Discharge 9	6/20/2011	0725	0930	40,000		
Discharge 10	6/30/2011	0725	0930	40,000	Total for June =	80,000
Discharge 11	7/1/2011	0700	0930	40,000		
Discharge 12	7/5/2011	0700	0930	40,000		
Discharge 13	7/6/2011	0700	0930	40,000		
Discharge 14	7/7/2011	0700	0930	40,000		
Discharge 15	7/8/2011	0700	0930	40,000		
Discharge 16	7/9/2011	0700	0930	40,000		
Discharge 17	7/11/2011	0700	0930	40,000		
Discharge 18	7/12/2011	0700	0930	40,000		
Discharge 19	7/13/2011	0700	0930	40,000		
Discharge 20	7/14/2011	0700	0930	20,000		
Discharge 21	7/15/2011	0700	0930	20,000		
Discharge 22	7/18/2011	0700	0930	20,000		
Discharge 23	7/19/2011	0700	0930	20,000		
Discharge 24	7/20/2011	0700	0930	20,000		
Discharge 25	7/21/2011	0700	0930	20,000		
Discharge 26	7/22/2011	0700	0930	20,000		
Discharge 27	7/25/2011	0700	0930	20,000		
Discharge 28	7/26/2011	0700	0930	20,000		
Discharge 29	7/27/2011	0700	0930	20,000		
Discharge 30	7/28/2011	0700	0930	20,000		
Discharge 31	7/29/2011	0700	0930	20,000	Total for July =	600,000
Discharge 32	8/1/2011	0700	0930	20,000		
Discharge 33	8/2/2011	0700	0930	20,000		
Discharge 34	8/8/2011	0700	0930	40,000		
Discharge 35	8/10/2011	0700	0930	40,000		
Discharge 36	8/12/2011	0700	0930	40,000		
Discharge 37	8/15/2011	0700	0930	40,000		
Discharge 38	8/16/2011	0700	0930	40,000		
Discharge 39	8/18/2011	0700	0930	40,000		
Discharge 40	8/23/2011	0700	0930	40,000		
Discharge 41	8/24/2011	0700	0930	30,000		
Discharge 42	8/26/2011	0700	0930	30,000		
Discharge 43	8/29/2011	0700	0930	40,000		
Discharge 44	8/29/2011	1000	1130	40,000		
Discharge 45	8/30/2011	1100	1500	40,000		
Discharge 46	8/31/2011	800	1200	40,000	Total for August =	540,000
Discharge 47	9/1/2011	610	1020	40,000		
Discharge 48	9/2/2011	830	1200	40,000		
Discharge 49	9/3/2011	1040	1300	40,000		
Discharge 50	9/4/2011	930	1300	40,000		
Discharge 51	9/5/2011	745	1145	40,000		

Discharge 52	9/6/2011	610	1145	40,000
Discharge 53	9/7/2011	1445	1715	40,000
Discharge 54	9/8/2011	1030	1300	40,000

Total for September = 320,000

Unbilled Total = 1,540,000

Note - Shaded volumes have been previously billed

Environmental Affairs

2929 Allen Parkway
Suite 2100
Houston, Texas 77019
Phone: 713.439.8329
Fax: 713.439.8383
www.bakerhughes.com
chris.clodfelter@bakerhughes.com

BAKER HUGHES

4 Oct 2011

Mr. Steve Grace
Environmental Assistant Engineer
Office of Environmental Compliance
Metropolitan St. Louis Sewer District
10 East Grand Avenue
St. Louis, MO 63147-2913

RE: Quarterly Discharge Monitoring Report, 3rd Quarter 2011
Baker Petrolite Webster Groves Site
369 Marshall Avenue
St. Louis, MO 63119

Dear Mr. Grace:

Attached is the discharge monitoring report for the Baker Petrolite wastewater treatment plant discharge for the 3rd quarter of year 2011, covering July through September. Per your March 23, 2010 discharge approval letter, flow was monitored and representative samples of the discharge were analytically characterized for chemical oxygen demand (COD), total suspended solids (TSS), pH, and volatile and semi-volatile compounds. The samples were collected and analyzed using EPA procedures and protocols.

For reporting purposes, the analytical results and the applicable Ordinance 12559 and gas/vapor and explosivity discharge limits have been tabulated (attached). This presentation shows that the discharge was in compliance with the applicable St. Louis MSD Ordinance 12559 and gas/vapor and explosivity discharge limits. Note also that, per your request, previously-reported data is also presented.

In accordance with Ordinance 13021, I am anticipating that the fees will be calculated as the sum of the base rate of $11.85 plus a volume charge of $2.11 per 100 cubic feet. Since the TSS and COD levels were verified to be less than 300 and 600 mg/l, respectively, this discharge qualifies as normal wastewater and there should be no extra strength surcharges. Please bill this amount to Account #0483409-9. Note also that all records required by Ordinance 12559 will be retained at my office.

In closing and in accordance with Ordinance 12559, I also submit the following certification: "I certify under penalty of Law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

I believe this letter and the attached table contain all of the required reporting information. However, should you have any questions or need any additional information, please feel free to call me.

Regards,

Chris Clodfelter
Senior HS&E Specialist

DISCHARGE MONITORING REPORT: 3rd Quarter 2011

Baker Petrolite Webster Groves Groundwater Treatment Facility - 369 Marshall Avenue, St. Louis, Missouri 63119

PARAMETER, Units	CAS Number	St. Louis MSD Discharge Limits: Ord. 8472 Limits, mg/l (or as noted)	MSD Screening Level: Gas/Vapor Tox., mg/l	MSD Screening Level: Explosivity, mg/l	Sample Results/Date (mg/l): Sample Date 12/21/09	Sample Date 3/18/10	Sample Date 6/21/10	Sample Date 9/20/10	Sample Date 12/20/10	Sample Date 3/14/11	Sample Date 6/6/11	Sample Date 8/16/11
Flow, total gallons		-	-	-	145,562	58,563	210,670	24,510	43,573	16,523	127,037	123,057
Daily Average, gallons		-	-	-	1,797	673	2,218	233	474	197	1,495	1,733
pH, Standard Units		5.5-11.5 S.U.	-	-	7.1 S.U.	7.8 S.U.	7.6 S.U.	7.4 S.U.	7.0 S.U.	7.4 S.U.	7.5 S.U.	7.3 S.U.
Temperature, degrees Fahrenheit		<140°F	-	-	58°F	61°F	87°F	80°F	59°F	59°F	81°F	72°F
Chemical Oxygen Demand, mg/l		<600	-	-	41.1	29.7	31.7	42.7	29.3	24.1	20.0	<20
Total Suspended Solids, mg/l		<350	-	-	<4.0	10.0	<4.0	3.6	4.4	45.0	<4.0	9.0
Method 8260 Volatile Organic Compounds (VOCs), mg/l												
Acrolein	107-02-8	toxic organic	-	-	<0.025	<0.025	<0.025	<0.0026	<0.000024	<0.025	<0.025	<0.025
Benzene	71-43-2	toxic organic	0.13	20	<0.0005	<0.0005	<0.0005	<0.00013	<0.00013	<0.0005	<0.0005	<0.0005
Dibromochloromethane	124-48-1	toxic organic	-	-	<0.001	<0.001	<0.001	<0.00018	<0.00018	<0.001	<0.001	<0.001
Carbon tetrachloride	56-23-5	toxic organic	0.03	-	<0.001	<0.001	<0.001	<0.00016	<0.00016	<0.001	<0.001	<0.001
Chlorobenzene	108-90-7	toxic organic	2.31	40	<0.001	<0.001	<0.001	<0.00012	<0.00012	<0.001	<0.001	<0.001
Chloroethane	75-00-3	toxic organic	5.73	1.6	<0.002	<0.002	<0.002	<0.00027	<0.00027	<0.002	<0.002	<0.002
Chloroform	67-66-3	toxic organic	0.41	-	<0.001	<0.001	<0.001	<0.00014	<0.00014	<0.001	0.0011	<0.001
Chloromethane/Methyl chloride	74-87-3	toxic organic	-	-	<0.002	<0.002	<0.002	<0.00027	<0.00027	<0.002	<0.002	<0.002
1,2-Dichlorobenzene	95-50-1	toxic organic	3.75	165	<0.001	<0.001	<0.001	<0.00022	<0.00022	<0.001	<0.001	<0.001
1,1-Dichloroethane	75-34-3	toxic organic	4.58	128	<0.001	<0.001	<0.001	<0.00025	<0.00025	<0.001	<0.001	<0.001
1,2-Dichloroethane	107-06-2	toxic organic	1.05	660	<0.001	<0.001	<0.001	<0.00025	<0.00025	<0.001	<0.001	<0.001
1,1-Dichloroethylene	75-35-4	toxic organic	-	-	<0.001	<0.001	<0.001	<0.00025	<0.00025	<0.001	<0.001	<0.001
trans-1,2-Dichloroethylene	156-60-5	toxic organic	0.28	14	<0.001	<0.001	<0.001	<0.00022	<0.00022	<0.001	<0.001	<0.001
1,2-Dichloropropane	78-87-5	toxic organic	-	-	<0.002	<0.002	<0.002	<0.00033	<0.00033	<0.002	<0.002	<0.002
Ethylbenzene	100-41-4	toxic organic	1.59	16	<0.001	<0.001	<0.001	<0.00048	<0.00048	<0.001	<0.001	<0.001
Methylene chloride	75-09-2	toxic organic	2.06	494	<0.002	<0.002	<0.002	<0.00036	<0.00036	<0.002	<0.002	<0.002
1,1,2,2-Tetrachloroethane	79-34-5	toxic organic	-	-	<0.001	<0.001	<0.001	<0.00025	<0.00025	<0.001	<0.001	<0.001
Tetrachloroethylene	127-18-4	toxic organic	0.53	-	<0.001	<0.001	0.0187	0.0280	<0.00024	0.0046	0.0118	0.0551
Toluene	108-88-3	toxic organic	1.36	17	0.0025	<0.001	<0.001	<0.00013	<0.00013	<0.001	<0.001	<0.001
1,2,4-Trichlorobenzene	120-82-1	toxic organic	-	-	<0.005	<0.005	<0.005	<0.00025	<0.00025	<0.005	<0.005	<0.005
1,1,2-Trichloroethane	79-00-5	toxic organic	-	-	<0.001	<0.001	<0.001	<0.00035	<0.00035	<0.001	<0.001	<0.001
Trichloroethylene	79-01-6	toxic organic	0.71	114	<0.001	<0.001	0.0026	0.0410	<0.0003	0.0011	0.0023	0.0104
Vinyl chloride	75-01-4	toxic organic	0.004	2.2	<0.001	<0.001	<0.001	<0.00019	<0.00019	<0.001	<0.001	<0.001
Acetone	67-64-1	-	-	-	<0.005	<0.005	<0.005	0.0034	0.0045	<0.005	<0.005	<0.005
Methyl ethyl ketone/2-Butanone	78-93-3	-	249	2,486	0.0063	<0.005	<0.005	<0.0023	<0.0023	<0.005	<0.005	<0.005
cis-1,2-Dichloroethylene	156-59-2	-	-	-	<0.001	0.0025	0.0236	0.0470	0.0012	0.0168	0.0398	0.1540
Isopropylbenzene	98-82-8	-	-	-	<0.005	<0.005	<0.005	<0.0003	<0.0003	<0.005	<0.005	<0.005
1,2,4-Trimethylbenzene	95-63-6	-	-	-	<0.005	<0.005	<0.005	<0.00014	<0.00014	<0.005	<0.005	<0.005
1,3,5-Trimethylbenzene	108-67-8	-	-	-	<0.005	<0.005	<0.005	<0.00014	<0.00014	<0.005	<0.005	<0.005
Xylenes	1330-20-7	-	2.08	-	<0.001	<0.001	<0.001	<0.00058	<0.00058	<0.001	<0.001	<0.001
All Other Method 8260 VOCs	various	-	various	various	ND	ND	ND	0.063	ND	ND	ND	ND
Method 8270 Semi-Volatile Organics (SVOCs,) mg/l												
Acenaphthene	83-32-9	toxic organic	-	-	<0.005	<0.0001	<0.0001	<0.000006	<0.000003	<0.005	<0.0052	<0.0055
Acenaphthylene	208-96-8	toxic organic	-	-	<0.005	<0.0001	<0.0001	<0.0000052	<0.0000026	<0.005	<0.0052	<0.0055
Anthracene-PAH	120-12-7	toxic organic	-	-	<0.005	<0.0001	<0.0001	0.000018	0.000025	<0.005	<0.0052	<0.0055
Benzo(a)anthracene-PAH	56-55-3	toxic organic	-	-	<0.005	0.00011	0.00013	<0.0000054	<0.0000027	<0.005	<0.0052	<0.0055
Benzo(b)fluoranthene-PAH	205-99-2	toxic organic	-	-	<0.005	0.00014	0.00024	<0.000008	<0.000004	<0.005	<0.0052	<0.0055
Benzo(k)fluoranthene-PAH	207-08-9	toxic organic	-	-	<0.005	0.00011	0.00016	<0.0000064	<0.0000033	<0.005	<0.0052	<0.0055
Benzo(a)pyrene-PAH	50-32-8	toxic organic	-	-	<0.005	0.00012	0.00015	<0.0000045	0.000032	<0.005	<0.0052	<0.0055
Benzo(g,h,i)perylene	191-24-2	toxic organic	-	-	<0.005	0.00018	0.00019	<0.0000061	0.00062	<0.005	<0.0052	<0.0055
Butyl benzyl phthalate	85-68-7	toxic organic	-	-	<0.005	<0.005	<0.005	<0.00037	<0.0004	<0.005	<0.0052	<0.0055
Bis(2-chloroethyl)ether	111-44-4	toxic organic	-	-	<0.005	<0.0001	<0.0001	<0.0000076	0.000026	<0.005	<0.0052	<0.0055
Bis(2-ethylhexyl)phthalate	117-81-7	toxic organic	-	-	0.0089	0.0045	<0.0021	NT	NT	0.0024	0.0027	<0.0022
Chrysene-PAH	218-01-9	toxic organic	-	-	<0.005	0.00015	0.00018	NT	NT	<0.005	<0.0052	<0.0055
Dibenzo(a,h)anthracene-PAH	53-70-3	toxic organic	-	-	<0.005	<0.000002	<0.000002	<0.0000077	<0.0000039	<0.005	<0.0052	<0.0055
Di-n-butyl phthalate	84-74-2	toxic organic	-	-	<0.005	<0.005	<0.005	<0.00035	<0.00038	<0.005	<0.0052	<0.0055
Diethyl phthalate	84-66-2	toxic organic	-	-	<0.005	<0.005	<0.005	<0.00044	<0.00048	<0.005	<0.0052	<0.0055
Dimethyl phthalate	131-11-3	toxic organic	-	-	<0.005	<0.005	<0.005	NT	NT	<0.005	<0.0052	<0.0055
Di-n-octyl phthalate	117-84-0	toxic organic	-	-	<0.005	<0.005	<0.005	<0.00073	<0.00079	<0.005	<0.0052	<0.0055
Fluoranthene-PAH	206-44-0	toxic organic	-	-	<0.005	0.00030	0.00043	<0.0000029	<0.0000015	<0.005	<0.0052	<0.0055
Fluorene-PAH	86-73-7	toxic organic	-	-	<0.005	<0.0001	<0.0001	<0.0000054	<0.0000028	<0.005	<0.0052	<0.0055
Hexachlorobenzene	118-74-1	toxic organic	-	-	<0.005	<0.0002	<0.0002	<0.000004	<0.000002	<0.005	<0.0052	<0.0055
Hexachloroethane	67-72-1	toxic organic	0.93	-	<0.005	<0.005	<0.005	NT	NT	<0.005	<0.0052	<0.0055
Indeno(1,2,3-cd)pyrene-PAH	193-39-5	toxic organic	-	-	<0.005	0.00013	0.00120	<0.0000092	<0.0000046	<0.005	<0.0052	<0.0055
Naphthalene	91-20-3	toxic organic	-	240	<0.005	<0.0001	<0.0001	0.000017	0.000012	<0.005	<0.0052	<0.0055
n-Nitrosodi-n-propylamine	621-64-7	toxic organic	-	-	<0.005	<0.005	<0.005	<0.0011	NT	<0.005	<0.0052	<0.0055
Phenanthrene	85-01-8	toxic organic	-	-	<0.005	0.00013	0.00015	0.0000092	0.0000092	<0.005	<0.0052	<0.0055
Pyrene-PAH	129-00-0	toxic organic	-	-	<0.005	0.00030	0.00034	0.000014	0.000026	<0.005	<0.0052	<0.0055
All Other Method 8270 SVOCs	various	-	various	various	ND	ND	ND	0.000073	ND	ND	ND	ND
Total Toxic Organic (TTO) Level		5.52			0.0039	0.0114	0.0032	0.0690	0.0045	0.0000	0.0577	0.2195

Notes: ND indicates none detected at the method Practical Quantition Limits (PQLs) or Dectection Limits (MDLs). A dash indicates no limits established.

NT = Analyte not tested.

J Indicates that the analyte is an estimated value between the RL and the MDL.

All Method 8260 VOCs and 8270 SVOCs detected in the discharge samples are listed discretely.

All 40CFR401.15 Toxic Organics are listed and noted. Total Toxic Organics (TTO) level is calculated by summing the levels of all Toxic Organics .

Discharge Screening Levels are from Table 4-2 of "Guidance to Protect POTW Workers From Toxic And Reactive Gases and Vapors", USEPA, Office of Water, EPA 612-B-92-001.

Gas/Vapor Toxicity for Xylene, as estabfished by St. Louis MSD, is 2.08 mg/l; Xylene is not fisted in Table 4.2.

Shading highfights Ordinance 8479 or Gas/Vapor Toxicity and Explosivity excedances in discharge.

Baker - Hughes Petrolite

Quarterly MSD Effluent Discharge Sampling Form

Date	8-16-11
Time	11:45
pH	7.3
Specific Cond.	1680
Temp °F	72
Meter Reading	259,372
Sampler	D. Abeln / H. Pope

Comments:

ACCUTEST LABORATORIES

CHAIN OF CUSTODY

Accutest Laboratories of New England
495 Technology Center West, Building One
TEL. 508-481-6200 FAX: 508-481-7753
www.accutest.com

PAGE 1 OF 1

FED-EX Tracking #: | Bottle Order Control #:
Accutest Quote #: | Accutest Job #:

Client / Reporting Information

Company Name: Schreiber, Yonley & Assoc.
Street Address: 16252 Westwoods Bus. Pk. Dr.
City: Ellisville State: MO Zip: 63021
Project Contact: Doug Abeln E-mail: dougA@syaeng.com
Phone #: 636-256-7200 Fax #:
Sampler(s) Name(s): Homer Lopez Phone #:

Project Information

Project Name: Baker Hughes - Petrolite
Street:
City: Webster Groves, MO
Project #: 040099
Client PO#:
Project Manager:

Billing Information (if different from Report to)

Company Name: Baker Hughes
Street Address:
City: State: Zip:
Attention: PO#:

Requested Analysis (see TEST CODE sheet)

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB- Equipment Blank
RB- Rinse Blank
TB-Trip Blank

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Bisulfite	VOC 8260	SVOC 8270	COD	TSS							LAB USE ONLY
	Effluent Discharge		9-16-11	11:45	HP	GW	6	2			1	3					X	X	X	X							
	Trip blank							2									X										

Turnaround Time (Business days)

- [x] Std. 10 Business Days
- [ ] Std. 5 Business Days (By Contract only)
- [ ] 5 Day *RUSH*
- [ ] 3 Day *EMERGENCY*
- [ ] 2 Day *EMERGENCY*
- [ ] 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Lablink

Approved By (Accutest PM): / Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] CT RCP
- [ ] MA MCP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary

Comments / Special Instructions

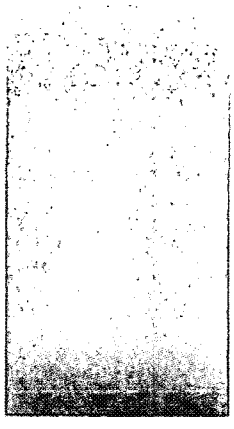
Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 Homer Lopez	9-16-11 / 12:00	1	2		2
Relinquished by Sampler: 3	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
Relinquished by: 5	Date Time:	Received By: 5	Custody Seal #	[ ] Intact [ ] Not Intact	Preserved where applicable [ ] On Ice [ ] Cooler Temp.

MSD 012969

New England ACCUTEST LABORATORIES

09/01/11



Technical Report for

Schreiber, Yonley & Associates

Baker Hughes/Petro Lite Webster Groves MO

BH1 040099

Accutest Job Number: MC2826

Sampling Date: 08/16/11

Report to:

Schreiber, Yonley & Associates

douga@syaeng.com

ATTN: Doug Abeln

Total number of pages in report: **39**

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Reza Tand
Lab Director

Client Service contact: Kristen Blanchard 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) ISO 17025:2005 (L2235)

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Test results relate only to samples analyzed.

Accutest Laboratories is the sole authority for authorizing edits or modifications to this document. Unauthorized modification of this report is strictly prohibited.

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Sample Summary

Schreiber, Yonley & Associates

Job No: MC2826

Baker Hughes/Petro Lite Webster Groves MO
Project No: BH1 040099

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
MC2826-1	08/16/11	11:45 HP	08/17/11	AQ	Effluent	EFFLUENT DISCHARGE
MC2826-1A	08/16/11	11:45 HP	08/17/11	AQ	Effluent	EFFLUENT DISCHARGE
MC2826-2	08/16/11	00:00 HP	08/17/11	AQ	Trip Blank Water	TRIP BLANK

New England ACCUTEST LABORATORIES

Sample Results

Report of Analysis

Accutest Laboratories

Report of Analysis

Client Sample ID:	EFFLUENT DISCHARGE		
Lab Sample ID:	MC2826-1	Date Sampled:	08/16/11
Matrix:	AQ - Effluent	Date Received:	08/17/11
Method:	SW846 8260B	Percent Solids:	n/a
Project:	Baker Hughes/Petro Lite Webster Groves MO		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L56355.D	1	08/26/11	EK	n/a	n/a	MSL1882
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
75-05-8	Acetonitrile	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
71-43-2	Benzene	ND	0.50	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	154	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
78-83-1	Isobutyl alcohol	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	EFFLUENT DISCHARGE		
Lab Sample ID:	MC2826-1	Date Sampled:	08/16/11
Matrix:	AQ - Effluent	Date Received:	08/17/11
Method:	SW846 8260B	Percent Solids:	n/a
Project:	Baker Hughes/Petro Lite Webster Groves MO		

VOA Special List

CAS No.	Compound	Result	RL	Units	Q
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	55.1	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	10.4	1.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	93%		70-130%
2037-26-5	Toluene-D8	99%		70-130%
460-00-4	4-Bromofluorobenzene	104%		70-130%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	EFFLUENT DISCHARGE		
Lab Sample ID:	MC2826-1	Date Sampled:	08/16/11
Matrix:	AQ - Effluent	Date Received:	08/17/11
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	Baker Hughes/Petro Lite Webster Groves MO		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	S26763.D	1	08/31/11	PR	08/22/11	OP25982	MSS1151
Run #2							

	Initial Volume	Final Volume
Run #1	910 ml	1.0 ml
Run #2		

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	11	ug/l	
105-67-9	2,4-Dimethylphenol	ND	11	ug/l	
95-48-7	2-Methylphenol	ND	11	ug/l	
	3&4-Methylphenol	ND	11	ug/l	
88-75-5	2-Nitrophenol	ND	11	ug/l	
87-86-5	Pentachlorophenol	ND	11	ug/l	
108-95-2	Phenol	ND	5.5	ug/l	
83-32-9	Acenaphthene	ND	5.5	ug/l	
208-96-8	Acenaphthylene	ND	5.5	ug/l	
62-53-3	Aniline	ND	11	ug/l	
120-12-7	Anthracene	ND	5.5	ug/l	
56-55-3	Benzo(a)anthracene	ND	5.5	ug/l	
50-32-8	Benzo(a)pyrene	ND	5.5	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	5.5	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	5.5	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	5.5	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.5	ug/l	
218-01-9	Chrysene	ND	5.5	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.5	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	5.5	ug/l	
132-64-9	Dibenzofuran	ND	5.5	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.5	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.5	ug/l	
84-66-2	Diethyl phthalate	ND	5.5	ug/l	
131-11-3	Dimethyl phthalate	ND	5.5	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.2	ug/l	
206-44-0	Fluoranthene	ND	5.5	ug/l	
86-73-7	Fluorene	ND	5.5	ug/l	
118-74-1	Hexachlorobenzene	ND	5.5	ug/l	
67-72-1	Hexachloroethane	ND	5.5	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	5.5	ug/l	
91-57-6	2-Methylnaphthalene	ND	5.5	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	EFFLUENT DISCHARGE		
Lab Sample ID:	MC2826-1	Date Sampled:	08/16/11
Matrix:	AQ - Effluent	Date Received:	08/17/11
Method:	SW846 8270C SW846 3510C	Percent Solids:	n/a
Project:	Baker Hughes/Petro Lite Webster Groves MO		

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
91-20-3	Naphthalene	ND	5.5	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.5	ug/l	
85-01-8	Phenanthrene	ND	5.5	ug/l	
129-00-0	Pyrene	ND	5.5	ug/l	
110-86-1	Pyridine	ND	11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	33%		15-110%
4165-62-2	Phenol-d5	20%		15-110%
118-79-6	2,4,6-Tribromophenol	85%		15-110%
4165-60-0	Nitrobenzene-d5	60%		30-130%
321-60-8	2-Fluorobiphenyl	70%		30-130%
1718-51-0	Terphenyl-d14	72%		30-130%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	EFFLUENT DISCHARGE		
Lab Sample ID:	MC2826-1	**Date Sampled:**	08/16/11
Matrix:	AQ - Effluent	**Date Received:**	08/17/11
		Percent Solids:	n/a
Project:	Baker Hughes/Petro Lite Webster Groves MO		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chemical Oxygen Demand	< 20	20	mg/l	1	08/30/11	MC	SM21 5220C
Solids, Total Suspended	9.0	4.0	mg/l	1	08/18/11	BF	SM21 2540D

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	EFFLUENT DISCHARGE		
Lab Sample ID:	MC2826-1A	Date Sampled:	08/16/11
Matrix:	AQ - Effluent	Date Received:	08/17/11
Method:	SW846 8270C BY SIM SW846 3510C	Percent Solids:	n/a
Project:	Baker Hughes/Petro Lite Webster Groves MO		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	U2009.D	1	08/31/11	KR	08/22/11	OP25983	MSU127
Run #2							

	Initial Volume	Final Volume
Run #1	910 ml	1.0 ml
Run #2		

ABN Special List

CAS No.	Compound	Result	RL	Units	Q
87-86-5	Pentachlorophenol	ND	1.1	ug/l	
83-32-9	Acenaphthene	ND	0.11	ug/l	
208-96-8	Acenaphthylene	ND	0.11	ug/l	
120-12-7	Anthracene	ND	0.11	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.055	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.11	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.055	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.11	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.11	ug/l	
218-01-9	Chrysene	ND	0.11	ug/l	
111-44-4	bis(2-Chloroethyl)ether	0.36	0.22	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.11	ug/l	
132-64-9	Dibenzofuran	ND	0.22	ug/l	
206-44-0	Fluoranthene	ND	0.11	ug/l	
86-73-7	Fluorene	ND	0.11	ug/l	
118-74-1	Hexachlorobenzene	ND	0.22	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.11	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.22	ug/l	
91-20-3	Naphthalene	ND	0.11	ug/l	
85-01-8	Phenanthrene	ND	0.055	ug/l	
129-00-0	Pyrene	ND	0.11	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	34%		15-110%
4165-62-2	Phenol-d5	25%		15-110%
118-79-6	2,4,6-Tribromophenol	73%		15-110%
4165-60-0	Nitrobenzene-d5	69%		30-130%
321-60-8	2-Fluorobiphenyl	61%		30-130%
1718-51-0	Terphenyl-d14	59%		30-130%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	MC2826-2	Date Sampled:	08/16/11
Matrix:	AQ - Trip Blank Water	Date Received:	08/17/11
Method:	SW846 8260B	Percent Solids:	n/a
Project:	Baker Hughes/Petro Lite Webster Groves MO		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	L56346.D	1	08/26/11	EK	n/a	n/a	MSL1882
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
75-05-8	Acetonitrile	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
71-43-2	Benzene	ND	0.50	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
78-83-1	Isobutyl alcohol	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	MC2826-2	Date Sampled:	08/16/11
Matrix:	AQ - Trip Blank Water	Date Received:	08/17/11
Method:	SW846 8260B	Percent Solids:	n/a
Project:	Baker Hughes/Petro Lite Webster Groves MO		

VOA Special List

CAS No.	Compound	Result	RL	Units	Q
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	93%		70-130%
2037-26-5	Toluene-D8	99%		70-130%
460-00-4	4-Bromofluorobenzene	106%		70-130%

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

New England ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Certification Exceptions (MO)
- Chain of Custody

ACCUTEST LABORATORIES

CHAIN OF CUSTODY

Accutest Laboratories of New England
495 Technology Center West, Building One
TEL. 508-481-6200 FAX 508-481-7753
www.accutest.com

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MC2826

Client / Reporting Information

Company Name: Schreiber, Yonley & Assoc.
Street Address: 16252 Westwoods Bus. Pk. Dr.
City: Ellisville State: MO Zip: 63021
Project Contact: Doug Abeln E-mail: doug@sycengs.com
Phone #: 636-256-7000 Fax #:
Sampler(s) Name(s): Homer Pope Phone #:

Project Information

Project Name: Baker Hughes - Petrolite
Street:
City: Webster Groves State: MO
Project #: 040099
Client PO#:
Project Manager:
Attention:

Billing Information (if different from Report to)

Company Name: Baker Hughes
Street Address:
City: State: Zip:
PO#:

Field ID / Point of Collection	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	VOC 8260	SVOC 8270	COD	TSS
1 Effluent Discharge	8-16-11	11:45	HP	GW	6	2	1	3	X	X	X	X
2 Trip blank					2	X			

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED - Sediment; OIL - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WIPE - Wipe; FB - Field Blank; EB - Equipment Blank; RB - Rinse Blank; TB - Trip Blank

LAB USE ONLY

Turnaround Time (Business days)
- [x] Std. 10 Business Days
- [ ] Std. 5 Business Days (By Contract only)
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY

Emergency & Rush T/A data available VIA Labtrack

Approved By (Accutest PM) / Date

Data Deliverable Information
- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] FULLT1 (Level 3+4)
- [ ] CT RCP
- [ ] MA MCP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary

Comments / Special Instructions

19AH, 13E, 6C, 2H2

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 Homer Pope	8-16-11 12:00	1 FedEx	2 FedEx	8/17/11 9:30	
3		3	4		4
5		5			

Custody Seal #: [ ] Intact [ ] Not Intact
Preserved where applicable: [ ]
On Ice: [x]
Cooler Temp: 1.9°

MC2826: Chain of Custody
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ACCUTEST LABORATORIES

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC2826 **Client:** SCHREIBER YONLEY ASSOC **Immediate Client Services Action Required:** No

Date / Time Received: 8/17/2011 **Delivery Method:** **Client Service Action Required at Login:** No

Project: BAKER HUGHES **No. Coolers:** 1 **Airbill #'s:** N/A

3.1 3

Cooler Security	Y or N		Y or N
1. Custody Seals Present:	☑ ☐	3. COC Present:	☑ ☐
2. Custody Seals Intact:	☑ ☐	4. Smpl Dates/Time OK	☑ ☐

Cooler Temperature	Y or N
1. Temp criteria achieved:	☑ ☐
2. Cooler temp verification:	Infared gun
3. Cooler media:	Ice (bag)

Quality Control Preservatio	Y or N	N/A
1. Trip Blank present / cooler:	☑ ☐	☐
2. Trip Blank listed on COC:	☑ ☐	☐
3. Samples preserved properly:	☑ ☐	
4. VOCs headspace free:	☑ ☐	☐

Sample Integrity - Documentation	Y or N
1. Sample labels present on bottles:	☑ ☐
2. Container labeling complete:	☑ ☐
3. Sample container label / COC agree:	☑ ☐

Sample Integrity - Condition	Y or N
1. Sample recvd within HT:	☑ ☐
2. All containers accounted for:	☑ ☐
3. Condition of sample:	Intact

Sample Integrity - Instructions	Y or N	N/A
1. Analysis requested is clear:	☑ ☐	
2. Bottles received for unspecified tests	☐ ☑	
3. Sufficient volume recvd for analysis:	☑ ☐	
4. Compositing instructions clear:	☐ ☐	☑
5. Filtering instructions clear:	☐ ☐	☑

Comments

Accutest Laboratories
V:508.481.6200

495 Technology Center West, Bldg One
F: 508.481.7753

Marlborough, MA
www.accutest.com

MC2826: Chain of Custody
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New England ACCUTEST LABORATORIES

4

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries

Method Blank Summary

Job Number: MC2826
Account: SYAMO Schreiber, Yonley & Associates
Project: Baker Hughes/Petro Lite Webster Groves MO

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSL1882-MB	L56341.D	1	08/26/11	EK	n/a	n/a	MSL1882

The QC reported here applies to the following samples: **Method:** SW846 8260B

MC2826-1, MC2826-2

CAS No.	Compound	Result	RL	Units	Q
67-64-1	Acetone	ND	5.0	ug/l	
75-05-8	Acetonitrile	ND	5.0	ug/l	
107-02-8	Acrolein	ND	25	ug/l	
71-43-2	Benzene	ND	0.50	ug/l	
78-93-3	2-Butanone (MEK)	ND	5.0	ug/l	
104-51-8	n-Butylbenzene	ND	5.0	ug/l	
135-98-8	sec-Butylbenzene	ND	5.0	ug/l	
98-06-6	tert-Butylbenzene	ND	5.0	ug/l	
75-15-0	Carbon disulfide	ND	5.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	2.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	2.0	ug/l	
95-49-8	o-Chlorotoluene	ND	5.0	ug/l	
106-43-4	p-Chlorotoluene	ND	5.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/l	
123-91-1	1,4-Dioxane	ND	25	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
591-78-6	2-Hexanone	ND	5.0	ug/l	
78-83-1	Isobutyl alcohol	ND	5.0	ug/l	
98-82-8	Isopropylbenzene	ND	5.0	ug/l	
99-87-6	p-Isopropyltoluene	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	5.0	ug/l	
75-09-2	Methylene chloride	ND	2.0	ug/l	
103-65-1	n-Propylbenzene	ND	5.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	

Method Blank Summary

Job Number: MC2826
Account: SYAMO Schreiber, Yonley & Associates
Project: Baker Hughes/Petro Lite Webster Groves MO

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSL1882-MB	L56341.D	1	08/26/11	EK	n/a	n/a	MSL1882

The QC reported here applies to the following samples: **Method:** SW846 8260B

MC2826-1, MC2826-2

CAS No.	Compound	Result	RL	Units	Q
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
	m,p-Xylene	ND	1.0	ug/l	
95-47-6	o-Xylene	ND	1.0	ug/l	
1330-20-7	Xylene (total)	ND	1.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	97%	70-130%
2037-26-5	Toluene-D8	102%	70-130%
460-00-4	4-Bromofluorobenzene	109%	70-130%

Blank Spike/Blank Spike Duplicate Summary

Job Number: MC2826
Account: SYAMO Schreiber, Yonley & Associates
Project: Baker Hughes/Petro Lite Webster Groves MO

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSL1882-BS	L56338.D	1	08/26/11	EK	n/a	n/a	MSL1882
MSL1882-BSD	L56339.D	1	08/26/11	EK	n/a	n/a	MSL1882

The QC reported here applies to the following samples: Method: SW846 8260B

MC2826-1, MC2826-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	50	70.8	142* [a]	58.5	117	19	70-130/25
75-05-8	Acetonitrile	50	92.1	184* [b]	71.1	142* [b]	26* [b]	70-130/25
107-02-8	Acrolein	250	1000	400* [b]	888	355* [b]	12	70-130/25
71-43-2	Benzene	50	53.9	108	47.5	95	13	70-130/25
78-93-3	2-Butanone (MEK)	50	64.6	129	54.8	110	16	70-130/25
104-51-8	n-Butylbenzene	50	51.3	103	50.3	101	2	70-130/25
135-98-8	sec-Butylbenzene	50	48.9	98	47.6	95	3	70-130/25
98-06-6	tert-Butylbenzene	50	46.3	93	45.3	91	2	70-130/25
75-15-0	Carbon disulfide	50	57.3	115	47.6	95	18	70-130/25
56-23-5	Carbon tetrachloride	50	54.4	109	47.8	96	13	70-130/25
108-90-7	Chlorobenzene	50	53.0	106	50.7	101	4	70-130/25
75-00-3	Chloroethane	50	62.0	124	55.2	110	12	70-130/25
67-66-3	Chloroform	50	58.7	117	48.7	97	19	70-130/25
74-87-3	Chloromethane	50	48.4	97	40.1	80	19	70-130/25
95-49-8	o-Chlorotoluene	50	49.2	98	48.0	96	2	70-130/25
106-43-4	p-Chlorotoluene	50	47.8	96	47.5	95	1	70-130/25
124-48-1	Dibromochloromethane	50	61.6	123	61.6	123	0	70-130/25
95-50-1	1,2-Dichlorobenzene	50	52.1	104	52.1	104	0	70-130/25
107-06-2	1,2-Dichloroethane	50	55.8	112	50.8	102	9	70-130/25
75-35-4	1,1-Dichloroethene	50	60.1	120	49.7	99	19	70-130/25
156-59-2	cis-1,2-Dichloroethene	50	57.3	115	47.9	96	18	70-130/25
156-60-5	trans-1,2-Dichloroethene	50	57.1	114	48.2	96	17	70-130/25
78-87-5	1,2-Dichloropropane	50	53.3	107	47.1	94	12	70-130/25
123-91-1	1,4-Dioxane	250	295	118	258	103	13	70-130/25
100-41-4	Ethylbenzene	50	52.6	105	51.2	102	3	70-130/25
591-78-6	2-Hexanone	50	56.3	113	55.6	111	1	70-130/25
78-83-1	Isobutyl alcohol	250	287	115	236	94	20	70-130/25
98-82-8	Isopropylbenzene	50	54.2	108	52.3	105	4	70-130/25
99-87-6	p-Isopropyltoluene	50	52.0	104	50.3	101	3	70-130/25
1634-04-4	Methyl Tert Butyl Ether	50	57.9	116	49.8	100	15	70-130/25
108-10-1	4-Methyl-2-pentanone (MIBK)	50	61.3	123	55.8	112	9	70-130/25
75-09-2	Methylene chloride	50	59.5	119	50.8	102	16	70-130/25
103-65-1	n-Propylbenzene	50	47.9	96	46.6	93	3	70-130/25
79-34-5	1,1,2,2-Tetrachloroethane	50	53.3	107	54.4	109	2	70-130/25
127-18-4	Tetrachloroethene	50	53.0	106	52.0	104	2	70-130/25
108-88-3	Toluene	50	53.3	107	46.7	93	13	70-130/25

Blank Spike/Blank Spike Duplicate Summary

Job Number: MC2826
Account: SYAMO Schreiber, Yonley & Associates
Project: Baker Hughes/Petro Lite Webster Groves MO

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MSL1882-BS	L56338.D	1	08/26/11	EK	n/a	n/a	MSL1882
MSL1882-BSD	L56339.D	1	08/26/11	EK	n/a	n/a	MSL1882

The QC reported here applies to the following samples: **Method:** SW846 8260B

MC2826-1, MC2826-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
120-82-1	1,2,4-Trichlorobenzene	50	50.3	101	49.9	100	1	70-130/25
79-00-5	1,1,2-Trichloroethane	50	60.3	121	53.2	106	13	70-130/25
79-01-6	Trichloroethene	50	53.2	106	46.9	94	13	70-130/25
95-63-6	1,2,4-Trimethylbenzene	50	49.5	99	48.6	97	2	70-130/25
108-67-8	1,3,5-Trimethylbenzene	50	46.6	93	45.2	90	3	70-130/25
75-01-4	Vinyl chloride	50	52.1	104	44.1	88	17	70-130/25
	m,p-Xylene	100	107	107	103	103	4	70-130/25
95-47-6	o-Xylene	50	51.8	104	49.1	98	5	70-130/25
1330-20-7	Xylene (total)	150	159	106	152	101	5	70-130/25

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	121%	105%	70-130%
2037-26-5	Toluene-D8	117%	105%	70-130%
460-00-4	4-Bromofluorobenzene	101%	102%	70-130%

(a) Outside control limits. Blank Spike meets program technical requirements.
(b) Outside control limits. Associated samples are non-detect for this compound.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC2826
Account: SYAMO Schreiber, Yonley & Associates
Project: Baker Hughes/Petro Lite Webster Groves MO

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC2906-1MS	L56360.D	5	08/26/11	EK	n/a	n/a	MSL1882
MC2906-1MSD	L56361.D	5	08/26/11	EK	n/a	n/a	MSL1882
MC2906-1	L56347.D	1	08/26/11	EK	n/a	n/a	MSL1882

The QC reported here applies to the following samples: Method: SW846 8260B

MC2826-1, MC2826-2

CAS No.	Compound	MC2906-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND		250	253	101	233	93	8	70-130/30
75-05-8	Acetonitrile	ND		250	365	146* a	365	146* a	0	70-130/30
107-02-8	Acrolein	ND		1250	3500	280* a	3430	274* a	2	70-130/30
71-43-2	Benzene	ND		250	230	92	233	93	1	70-130/30
78-93-3	2-Butanone (MEK)	ND		250	235	94	231	92	2	70-130/30
104-51-8	n-Butylbenzene	ND		250	256	102	260	104	2	70-130/30
135-98-8	sec-Butylbenzene	ND		250	250	100	254	102	2	70-130/30
98-06-6	tert-Butylbenzene	ND		250	235	94	238	95	1	70-130/30
75-15-0	Carbon disulfide	ND		250	232	93	234	94	1	70-130/30
56-23-5	Carbon tetrachloride	ND		250	246	98	249	100	1	70-130/30
108-90-7	Chlorobenzene	ND		250	255	102	261	104	2	70-130/30
75-00-3	Chloroethane	ND		250	270	108	261	104	3	70-130/30
67-66-3	Chloroform	ND		250	233	93	230	92	1	70-130/30
74-87-3	Chloromethane	ND		250	197	79	184	74	7	70-130/30
95-49-8	o-Chlorotoluene	ND		250	238	95	247	99	4	70-130/30
106-43-4	p-Chlorotoluene	ND		250	233	93	238	95	2	70-130/30
124-48-1	Dibromochloromethane	ND		250	301	120	303	121	1	70-130/30
95-50-1	1,2-Dichlorobenzene	ND		250	253	101	262	105	3	70-130/30
107-06-2	1,2-Dichloroethane	ND		250	234	94	240	96	3	70-130/30
75-35-4	1,1-Dichloroethene	ND		250	252	101	250	100	1	70-130/30
156-59-2	cis-1,2-Dichloroethene	ND		250	231	92	228	91	1	70-130/30
156-60-5	trans-1,2-Dichloroethene	ND		250	231	92	228	91	1	70-130/30
78-87-5	1,2-Dichloropropane	ND		250	220	88	227	91	3	70-130/30
123-91-1	1,4-Dioxane	ND		1250	1140	91	1120	90	2	70-130/30
100-41-4	Ethylbenzene	ND		250	256	102	267	107	4	70-130/30
591-78-6	2-Hexanone	ND		250	247	99	241	96	2	70-130/30
78-83-1	Isobutyl alcohol	ND		1250	1050	84	1040	83	1	70-130/30
98-82-8	Isopropylbenzene	ND		250	271	108	276	110	2	70-130/30
99-87-6	p-Isopropyltoluene	ND		250	259	104	264	106	2	70-130/30
1634-04-4	Methyl Tert Butyl Ether	ND		250	220	88	218	87	1	70-130/30
108-10-1	4-Methyl-2-pentanone (MIBK)	ND		250	242	97	239	96	1	70-130/30
75-09-2	Methylene chloride	ND		250	238	95	235	94	1	70-130/30
103-65-1	n-Propylbenzene	ND		250	242	97	247	99	2	70-130/30
79-34-5	1,1,2,2-Tetrachloroethane	ND		250	258	103	255	102	1	70-130/30
127-18-4	Tetrachloroethene	ND		250	275	110	283	113	3	70-130/30
108-88-3	Toluene	ND		250	225	90	229	92	2	70-130/30

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC2826
Account: SYAMO Schreiber, Yonley & Associates
Project: Baker Hughes/Petro Lite Webster Groves MO

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
MC2906-1MS	L56360.D	5	08/26/11	EK	n/a	n/a	MSL1882
MC2906-1MSD	L56361.D	5	08/26/11	EK	n/a	n/a	MSL1882
MC2906-1	L56347.D	1	08/26/11	EK	n/a	n/a	MSL1882

The QC reported here applies to the following samples: **Method:** SW846 8260B

MC2826-1, MC2826-2

CAS No.	Compound	MC2906-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
120-82-1	1,2,4-Trichlorobenzene	ND		250	237	95	243	97	3	70-130/30
79-00-5	1,1,2-Trichloroethane	ND		250	247	99	251	100	2	70-130/30
79-01-6	Trichloroethene	ND		250	227	91	232	93	2	70-130/30
95-63-6	1,2,4-Trimethylbenzene	ND		250	242	97	249	100	3	70-130/30
108-67-8	1,3,5-Trimethylbenzene	ND		250	231	92	235	94	2	70-130/30
75-01-4	Vinyl chloride	ND		250	224	90	220	88	2	70-130/30
	m,p-Xylene	ND		500	521	104	536	107	3	70-130/30
95-47-6	o-Xylene	ND		250	248	99	256	102	3	70-130/30
1330-20-7	Xylene (total)	ND		750	769	103	791	105	3	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	MC2906-1	Limits
1868-53-7	Dibromofluoromethane	94%	92%	94%	70-130%
2037-26-5	Toluene-D8	95%	95%	100%	70-130%
460-00-4	4-Bromofluorobenzene	99%	100%	107%	70-130%

(a) Outside control limits. Associated samples are non-detect for this compound.

Volatile Surrogate Recovery Summary

Job Number: MC2826
Account: SYAMO Schreiber, Yonley & Associates
Project: Baker Hughes/Petro Lite Webster Groves MO

Method: SW846 8260B **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
MC2826-1	L56355.D	93.0	99.0	104.0
MC2826-2	L56346.D	93.0	99.0	106.0
MC2906-1MS	L56360.D	94.0	95.0	99.0
MC2906-1MSD	L56361.D	92.0	95.0	100.0
MSL1882-BS	L56338.D	121.0	117.0	101.0
MSL1882-BSD	L56339.D	105.0	105.0	102.0
MSL1882-MB	L56341.D	97.0	102.0	109.0

Surrogate Compounds	Recovery Limits
S1 = Dibromofluoromethane	70-130%
S2 = Toluene-D8	70-130%
S3 = 4-Bromofluorobenzene	70-130%

New England ACCUTEST LABORATORIES

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GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries

Method Blank Summary

Job Number: MC2826
Account: SYAMO Schreiber, Yonley & Associates
Project: Baker Hughes/Petro Lite Webster Groves MO

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP25982-MB	U1878.D	1	08/26/11	KR	08/22/11	OP25982	MSU119

The QC reported here applies to the following samples: Method: SW846 8270C

MC2826-1

CAS No.	Compound	Result	RL	Units	Q
65-85-0	Benzoic Acid	ND	10	ug/l	
105-67-9	2,4-Dimethylphenol	ND	10	ug/l	
95-48-7	2-Methylphenol	ND	10	ug/l	
	3&4-Methylphenol	ND	10	ug/l	
88-75-5	2-Nitrophenol	ND	10	ug/l	
87-86-5	Pentachlorophenol	ND	10	ug/l	
108-95-2	Phenol	ND	5.0	ug/l	
83-32-9	Acenaphthene	ND	5.0	ug/l	
208-96-8	Acenaphthylene	ND	5.0	ug/l	
62-53-3	Aniline	ND	10	ug/l	
120-12-7	Anthracene	ND	5.0	ug/l	
56-55-3	Benzo(a)anthracene	ND	5.0	ug/l	
50-32-8	Benzo(a)pyrene	ND	5.0	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	5.0	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	5.0	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	5.0	ug/l	
85-68-7	Butyl benzyl phthalate	ND	5.0	ug/l	
218-01-9	Chrysene	ND	5.0	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	5.0	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	5.0	ug/l	
132-64-9	Dibenzofuran	ND	5.0	ug/l	
84-74-2	Di-n-butyl phthalate	ND	5.0	ug/l	
117-84-0	Di-n-octyl phthalate	ND	5.0	ug/l	
84-66-2	Diethyl phthalate	ND	5.0	ug/l	
131-11-3	Dimethyl phthalate	ND	5.0	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	ug/l	
206-44-0	Fluoranthene	ND	5.0	ug/l	
86-73-7	Fluorene	ND	5.0	ug/l	
118-74-1	Hexachlorobenzene	ND	5.0	ug/l	
67-72-1	Hexachloroethane	ND	5.0	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	5.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	5.0	ug/l	
91-20-3	Naphthalene	ND	5.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	5.0	ug/l	
85-01-8	Phenanthrene	ND	5.0	ug/l	
129-00-0	Pyrene	ND	5.0	ug/l	

Method Blank Summary

Job Number: MC2826
Account: SYAMO Schreiber, Yonley & Associates
Project: Baker Hughes/Petro Lite Webster Groves MO

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP25982-MB	U1878.D	1	08/26/11	KR	08/22/11	OP25982	MSU119

The QC reported here applies to the following samples: Method: SW846 8270C

MC2826-1

CAS No.	Compound	Result	RL	Units	Q
110-86-1	Pyridine	ND	10	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	49%	15-110%
4165-62-2	Phenol-d5	31%	15-110%
118-79-6	2,4,6-Tribromophenol	85%	15-110%
4165-60-0	Nitrobenzene-d5	83%	30-130%
321-60-8	2-Fluorobiphenyl	80%	30-130%
1718-51-0	Terphenyl-d14	89%	30-130%

Method Blank Summary

Job Number: MC2826
Account: SYAMO Schreiber, Yonley & Associates
Project: Baker Hughes/Petro Lite Webster Groves MO

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP25983-MB	U1883.D	1	08/26/11	KR	08/22/11	OP25983	MSU120

The QC reported here applies to the following samples: Method: SW846 8270C BY SIM

MC2826-1A

CAS No.	Compound	Result	RL	Units	Q
87-86-5	Pentachlorophenol	ND	1.0	ug/l	
83-32-9	Acenaphthene	ND	0.10	ug/l	
208-96-8	Acenaphthylene	ND	0.10	ug/l	
120-12-7	Anthracene	ND	0.10	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.050	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.050	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.10	ug/l	
218-01-9	Chrysene	ND	0.10	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	0.20	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.10	ug/l	
132-64-9	Dibenzofuran	ND	0.20	ug/l	
206-44-0	Fluoranthene	ND	0.10	ug/l	
86-73-7	Fluorene	ND	0.10	ug/l	
118-74-1	Hexachlorobenzene	ND	0.20	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.10	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.20	ug/l	
91-20-3	Naphthalene	ND	0.10	ug/l	
85-01-8	Phenanthrene	ND	0.050	ug/l	
129-00-0	Pyrene	ND	0.10	ug/l	

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	79%	30-130%
321-60-8	2-Fluorobiphenyl	72%	30-130%
1718-51-0	Terphenyl-d14	72%	30-130%

Blank Spike Summary

Job Number: MC2826
Account: SYAMO Schreiber, Yonley & Associates
Project: Baker Hughes/Petro Lite Webster Groves MO

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP25982-BS	U1879.D	1	08/26/11	KR	08/22/11	OP25982	MSU119

5.2.1 5

The QC reported here applies to the following samples: Method: SW846 8270C

MC2826-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
65-85-0	Benzoic Acid	100	51.0	51	30-130
105-67-9	2,4-Dimethylphenol	100	84.2	84	30-130
95-48-7	2-Methylphenol	100	80.3	80	30-130
	3&4-Methylphenol	200	158	79	30-130
88-75-5	2-Nitrophenol	100	90.9	91	30-130
87-86-5	Pentachlorophenol	100	101	101	30-130
108-95-2	Phenol	100	59.6	60	30-130
83-32-9	Acenaphthene	50	46.3	93	40-140
208-96-8	Acenaphthylene	50	36.8	74	40-140
62-53-3	Aniline	50	37.7	75	40-140
120-12-7	Anthracene	50	45.6	91	40-140
56-55-3	Benzo(a)anthracene	50	50.9	102	40-140
50-32-8	Benzo(a)pyrene	50	44.8	90	40-140
205-99-2	Benzo(b)fluoranthene	50	47.6	95	40-140
191-24-2	Benzo(g,h,i)perylene	50	47.1	94	40-140
207-08-9	Benzo(k)fluoranthene	50	56.1	112	40-140
85-68-7	Butyl benzyl phthalate	50	51.2	102	40-140
218-01-9	Chrysene	50	48.4	97	40-140
111-44-4	bis(2-Chloroethyl)ether	50	46.3	93	40-140
53-70-3	Dibenzo(a,h)anthracene	50	49.7	99	40-140
132-64-9	Dibenzofuran	50	44.0	88	40-140
84-74-2	Di-n-butyl phthalate	50	50.1	100	40-140
117-84-0	Di-n-octyl phthalate	50	55.9	112	40-140
84-66-2	Diethyl phthalate	50	49.7	99	40-140
131-11-3	Dimethyl phthalate	50	47.7	95	40-140
117-81-7	bis(2-Ethylhexyl)phthalate	50	53.0	106	40-140
206-44-0	Fluoranthene	50	47.4	95	40-140
86-73-7	Fluorene	50	47.4	95	40-140
118-74-1	Hexachlorobenzene	50	47.5	95	40-140
67-72-1	Hexachloroethane	50	37.9	76	40-140
193-39-5	Indeno(1,2,3-cd)pyrene	50	50.5	101	40-140
91-57-6	2-Methylnaphthalene	50	41.1	82	40-140
91-20-3	Naphthalene	50	44.6	89	40-140
86-30-6	N-Nitrosodiphenylamine	50	47.0	94	40-140
85-01-8	Phenanthrene	50	46.0	92	40-140
129-00-0	Pyrene	50	48.2	96	40-140

Blank Spike Summary

Job Number: MC2826
Account: SYAMO Schreiber, Yonley & Associates
Project: Baker Hughes/Petro Lite Webster Groves MO

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP25982-BS	U1879.D	1	08/26/11	KR	08/22/11	OP25982	MSU119

The QC reported here applies to the following samples: **Method:** SW846 8270C

MC2826-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
110-86-1	Pyridine	50	11.7	23* [a]	40-140

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	80%	15-110%
4165-62-2	Phenol-d5	59%	15-110%
118-79-6	2,4,6-Tribromophenol	94%	15-110%
4165-60-0	Nitrobenzene-d5	96%	30-130%
321-60-8	2-Fluorobiphenyl	88%	30-130%
1718-51-0	Terphenyl-d14	95%	30-130%

(a) Outside control limits. Blank Spike meets program technical requirements.

Blank Spike Summary

Job Number: MC2826
Account: SYAMO Schreiber, Yonley & Associates
Project: Baker Hughes/Petro Lite Webster Groves MO

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP25983-BS	U1884.D	1	08/26/11	KR	08/22/11	OP25983	MSU120

The QC reported here applies to the following samples: Method: SW846 8270C BY SIM

MC2826-1A

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
87-86-5	Pentachlorophenol	100	96.1	96	15-130
83-32-9	Acenaphthene	50	42.0	84	40-140
208-96-8	Acenaphthylene	50	30.7	61	40-140
120-12-7	Anthracene	50	43.5	87	40-140
56-55-3	Benzo(a)anthracene	50	44.3	89	40-140
50-32-8	Benzo(a)pyrene	50	40.6	81	40-140
205-99-2	Benzo(b)fluoranthene	50	45.3	91	40-140
191-24-2	Benzo(g,h,i)perylene	50	40.5	81	40-140
207-08-9	Benzo(k)fluoranthene	50	41.3	83	40-140
218-01-9	Chrysene	50	46.2	92	40-140
111-44-4	bis(2-Chloroethyl)ether	50	37.5	75	43-113
53-70-3	Dibenzo(a,h)anthracene	50	44.6	89	40-140
132-64-9	Dibenzofuran	50	47.1	94	40-140
206-44-0	Fluoranthene	50	40.1	80	40-140
86-73-7	Fluorene	50	41.3	83	40-140
118-74-1	Hexachlorobenzene	50	47.5	95	40-140
193-39-5	Indeno(1,2,3-cd)pyrene	50	45.0	90	40-140
91-57-6	2-Methylnaphthalene	50	36.5	73	40-140
91-20-3	Naphthalene	50	42.2	84	40-140
85-01-8	Phenanthrene	50	39.8	80	40-140
129-00-0	Pyrene	50	40.4	81	40-140

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	88%	30-130%
321-60-8	2-Fluorobiphenyl	73%	30-130%
1718-51-0	Terphenyl-d14	84%	30-130%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC2826
Account: SYAMO Schreiber, Yonley & Associates
Project: Baker Hughes/Petro Lite Webster Groves MO

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP25982-MS	S26758.D	1	08/30/11	PR	08/22/11	OP25982	MSS1151
OP25982-MSD	S26759.D	1	08/30/11	PR	08/22/11	OP25982	MSS1151
MC2970-1	S26760.D	1	08/30/11	PR	08/22/11	OP25982	MSS1151

The QC reported here applies to the following samples: Method: SW846 8270C

MC2826-1

CAS No.	Compound	MC2970-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic Acid	ND		100	39.4	39	39.4	39	0	30-130/20
105-67-9	2,4-Dimethylphenol	ND		100	68.4	68	67.9	68	1	30-130/20
95-48-7	2-Methylphenol	ND		100	59.4	59	54.1	54	9	30-130/20
	3&4-Methylphenol	ND		200	118	59	104	52	13	30-130/20
88-75-5	2-Nitrophenol	ND		100	88.5	89	86.1	86	3	30-130/20
87-86-5	Pentachlorophenol	ND		100	91.6	92	92.0	92	0	30-130/20
108-95-2	Phenol	ND		100	33.4	33	27.1	27* [a]	21* [b]	30-130/20
83-32-9	Acenaphthene	ND		50	42.7	85	41.3	83	3	40-140/20
208-96-8	Acenaphthylene	ND		50	33.0	66	31.6	63	4	40-140/20
62-53-3	Aniline	ND		50	12.0	24* [a]	12.0	24* [a]	0	40-140/20
120-12-7	Anthracene	ND		50	41.1	82	40.6	81	1	40-140/20
56-55-3	Benzo(a)anthracene	ND		50	46.5	93	46.6	93	0	40-140/20
50-32-8	Benzo(a)pyrene	ND		50	38.2	76	38.5	77	1	40-140/20
205-99-2	Benzo(b)fluoranthene	ND		50	40.2	80	40.4	81	0	40-140/20
191-24-2	Benzo(g,h,i)perylene	ND		50	42.3	85	42.1	84	0	40-140/20
207-08-9	Benzo(k)fluoranthene	ND		50	44.9	90	45.0	90	0	40-140/20
85-68-7	Butyl benzyl phthalate	0.42		50	42.4	84	42.2	84	0	40-140/20
218-01-9	Chrysene	ND		50	42.8	86	43.0	86	0	40-140/20
111-44-4	bis(2-Chloroethyl)ether	ND		50	32.5	65	31.2	62	4	40-140/20
53-70-3	Dibenzo(a,h)anthracene	ND		50	43.5	87	44.1	88	1	40-140/20
132-64-9	Dibenzofuran	ND		50	41.3	83	40.6	81	2	40-140/20
84-74-2	Di-n-butyl phthalate	0.43		50	41.8	83	41.5	82	1	40-140/20
117-84-0	Di-n-octyl phthalate	ND		50	46.2	92	42.4	85	9	40-140/20
84-66-2	Diethyl phthalate	ND		50	44.9	90	44.5	89	1	40-140/20
131-11-3	Dimethyl phthalate	ND		50	45.3	91	44.8	90	1	40-140/20
117-81-7	bis(2-Ethylhexyl)phthalate	1.2		50	39.4	76	39.2	76	1	40-140/20
206-44-0	Fluoranthene	ND		50	44.3	89	44.4	89	0	40-140/20
86-73-7	Fluorene	ND		50	44.6	89	43.9	88	2	40-140/20
118-74-1	Hexachlorobenzene	ND		50	45.8	92	46.4	93	1	40-140/20
67-72-1	Hexachloroethane	ND		50	28.6	57	25.4	51	12	40-140/20
193-39-5	Indeno(1,2,3-cd)pyrene	ND		50	43.5	87	44.6	89	2	40-140/20
91-57-6	2-Methylnaphthalene	ND		50	39.1	78	36.9	74	6	40-140/20
91-20-3	Naphthalene	ND		50	39.4	79	37.3	75	5	40-140/20
86-30-6	N-Nitrosodiphenylamine	ND		50	39.9	80	41.0	82	3	40-140/20
85-01-8	Phenanthrene	ND		50	42.6	85	43.0	86	1	40-140/20
129-00-0	Pyrene	ND		50	44.7	89	44.6	89	0	40-140/20

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC2826
Account: SYAMO Schreiber, Yonley & Associates
Project: Baker Hughes/Petro Lite Webster Groves MO

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP25982-MS	S26758.D	1	08/30/11	PR	08/22/11	OP25982	MSS1151
OP25982-MSD	S26759.D	1	08/30/11	PR	08/22/11	OP25982	MSS1151
MC2970-1	S26760.D	1	08/30/11	PR	08/22/11	OP25982	MSS1151

The QC reported here applies to the following samples: Method: SW846 8270C

MC2826-1

CAS No.	Compound	MC2970-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
110-86-1	Pyridine	ND		50	18.9	38* c	20.3	41	7	40-140/20

CAS No.	Surrogate Recoveries	MS	MSD	MC2970-1	Limits
367-12-4	2-Fluorophenol	46%	45%	38%	15-110%
4165-62-2	Phenol-d5	35%	28%	22%	15-110%
118-79-6	2,4,6-Tribromophenol	94%	98%	88%	15-110%
4165-60-0	Nitrobenzene-d5	71%	70%	60%	30-130%
321-60-8	2-Fluorobiphenyl	85%	83%	71%	30-130%
1718-51-0	Terphenyl-d14	84%	85%	78%	30-130%

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(b) High RPD due to possible matrix interference and/or sample non-homogeneity.
(c) Outside control limits. Blank Spike meets program technical requirements.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC2826
Account: SYAMO Schreiber, Yonley & Associates
Project: Baker Hughes/Petro Lite Webster Groves MO

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP25983-MS	U2006.D	1	08/31/11	KR	08/22/11	OP25983	MSU127
OP25983-MSD	U2007.D	1	08/31/11	KR	08/22/11	OP25983	MSU127
MC2914-3	U2008.D	1	08/31/11	KR	08/22/11	OP25983	MSU127

The QC reported here applies to the following samples: Method: SW846 8270C BY SIM

MC2826-1A

CAS No.	Compound	MC2914-3 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
87-86-5	Pentachlorophenol	ND		100	90.1	90	91.0	91	1	15-130/20
83-32-9	Acenaphthene	ND		50	38.8	78	37.5	75	3	40-140/20
208-96-8	Acenaphthylene	ND		50	28.5	57	27.4	55	4	40-140/20
120-12-7	Anthracene	ND		50	37.7	75	37.6	75	0	40-140/20
56-55-3	Benzo(a)anthracene	ND		50	39.5	79	39.1	78	1	40-140/20
50-32-8	Benzo(a)pyrene	ND		50	35.1	70	35.2	70	0	40-140/20
205-99-2	Benzo(b)fluoranthene	ND		50	38.5	77	39.1	78	2	40-140/20
191-24-2	Benzo(g,h,i)perylene	ND		50	36.0	72	35.8	72	1	40-140/20
207-08-9	Benzo(k)fluoranthene	ND		50	34.5	69	34.1	68	1	40-140/20
218-01-9	Chrysene	0.015		50	40.1	80	40.0	80	0	40-140/20
111-44-4	bis(2-Chloroethyl)ether	ND		50	34.2	68	33.1	66	3	43-114/30
53-70-3	Dibenzo(a,h)anthracene	ND		50	39.1	78	39.1	78	0	40-140/20
132-64-9	Dibenzofuran	ND		50	44.2	88	43.5	87	2	40-140/20
206-44-0	Fluoranthene	ND		50	36.0	72	36.0	72	0	40-140/20
86-73-7	Fluorene	ND		50	39.2	78	38.8	78	1	40-140/20
118-74-1	Hexachlorobenzene	ND		50	39.9	80	39.8	80	0	40-140/20
193-39-5	Indeno(1,2,3-cd)pyrene	ND		50	39.5	79	39.9	80	1	40-140/20
91-57-6	2-Methylnaphthalene	0.028		50	34.6	69	33.2	66	4	40-140/20
91-20-3	Naphthalene	0.054		50	38.1	76	36.0	72	6	40-140/20
85-01-8	Phenanthrene	ND		50	35.6	71	35.7	71	0	40-140/20
129-00-0	Pyrene	0.020		50	36.4	73	35.8	72	2	40-140/20

CAS No.	Surrogate Recoveries	MS	MSD	MC2914-3	Limits
4165-60-0	Nitrobenzene-d5	79%	78%	68%	30-130%
321-60-8	2-Fluorobiphenyl	67%	65%	62%	30-130%
1718-51-0	Terphenyl-d14	70%	68%	58%	30-130%

Semivolatile Surrogate Recovery Summary

Job Number: MC2826
Account: SYAMO Schreiber, Yonley & Associates
Project: Baker Hughes/Petro Lite Webster Groves MO

Method: SW846 8270C **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6
MC2826-1	S26763.D	33.0	20.0	85.0	60.0	70.0	72.0
OP25982-BS	U1879.D	80.0	59.0	94.0	96.0	88.0	95.0
OP25982-MB	U1878.D	49.0	31.0	85.0	83.0	80.0	89.0
OP25982-MS	S26758.D	46.0	35.0	94.0	71.0	85.0	84.0
OP25982-MSD	S26759.D	45.0	28.0	98.0	70.0	83.0	85.0

Surrogate Compounds	Recovery Limits
S1 = 2-Fluorophenol	15-110%
S2 = Phenol-d5	15-110%
S3 = 2,4,6-Tribromophenol	15-110%
S4 = Nitrobenzene-d5	30-130%
S5 = 2-Fluorobiphenyl	30-130%
S6 = Terphenyl-d14	30-130%

Semivolatile Surrogate Recovery Summary

Job Number: MC2826
Account: SYAMO Schreiber, Yonley & Associates
Project: Baker Hughes/Petro Lite Webster Groves MO

Method: SW846 8270C BY SIM **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6
MC2826-1A	U2009.D	34.0	25.0	73.0	69.0	61.0	59.0
OP25983-BS	U1884.D				88.0	73.0	84.0
OP25983-MB	U1883.D				79.0	72.0	72.0
OP25983-MS	U2006.D				79.0	67.0	70.0
OP25983-MSD	U2007.D				78.0	65.0	68.0

Surrogate Compounds	Recovery Limits
S1 = 2-Fluorophenol	15-110%
S2 = Phenol-d5	15-110%
S3 = 2,4,6-Tribromophenol	15-110%
S4 = Nitrobenzene-d5	30-130%
S5 = 2-Fluorobiphenyl	30-130%
S6 = Terphenyl-d14	30-130%

New England ACCUTEST LABORATORIES

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC2826
Account: SYAMO - Schreiber, Yonley & Associates
Project: Baker Hughes/Petro Lite Webster Groves MO

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chemical Oxygen Demand	GP13424/GN35958	20	0.0	mg/l				
Chemical Oxygen Demand	GP13424/GN35958	20	0.0	mg/l	50	52.0	104.0	80-120%
Solids, Total Suspended	GN35812	4.0	0.0	mg/l				

Associated Samples:
Batch GN35812: MC2826-1
Batch GP13424: MC2826-1
(*) Outside of QC limits

6.1 6

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC2826
Account: SYAMO - Schreiber, Yonley & Associates
Project: Baker Hughes/Petro Lite Webster Groves MO

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chemical Oxygen Demand	GP13424/GN35958	MC2786-1	mg/l	0.0	0.0	0.0	0-20%
Solids, Total Suspended	GN35812	MC2826-1	mg/l	9.0	9.0	0.0	0-20%

Associated Samples:
Batch GN35812: MC2826-1
Batch GP13424: MC2826-1
(*) Outside of QC limits

6.2 6

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: MC2826
Account: SYAMO - Schreiber, Yonley & Associates
Project: Baker Hughes/Petro Lite Webster Groves MO

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chemical Oxygen Demand	GP13424/GN35958	MC2786-1	mg/l	0.0	50	54.6	109.2	75-125%

Associated Samples:
Batch GP13424: MC2826-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

6.3

6

COVIDIEN

September 22, 2011

Mr. Doug Mendoza
Manager, Environmental Compliance
St. Louis Metropolitan Sewer District
10 East Grand Ave
St. Louis, MO 63147

FEDEX Tracking Number: 8755 9159 9821

RE: Follow-up to the Unplanned Ioversol Solution Release from Building 505 at the St. Louis Plant
PERMIT NO. 2112059600-2.1

Dear Mr. Mendoza:

This letter is a follow-up to an unplanned release of 200 gallons of a water-based Ioversol solution from Building 505 at the Mallinckrodt St. Louis Plant's as reported via phone on September 20, 2011.

Between approximately 0830 and 1030 on September 20, 2011, the release of an estimated 200 gallons of a water based Ioversol (contrast media) solution occurred in Building 505. During a routine walkthrough an operator noticed a leak from the housing on a filter used in the Ioversol process and the process was immediately stopped. Upon examination, a crack was discovered in the filter housing around a gasket flange. The filter housing was replaced and leak checked before the process resumed.

The water based Ioversol solution was discharged to a plant sewer and to MSD through the plant's main outfall, SP010.

If you have any questions or need additional information, please call me at 314-654-1969.

Sincerely,

Julie Summers

Julie Summers
Environmental Manager

RECEIVED
SEP 23 2011
DIVISION OF
ENVIRONMENTAL COMPLIANCE

COVIDIEN/MALLINCKRODT
3600 NORTH SECOND STREET
ST. LOUIS, MO 63147

TELEPHONE: 314-654-2000
FAX: 314-654-1251

PIMS - Pretreatment Information Management System [PIMS St. Louis (PIMS)]

File Edit Records Worklists Reports/Letters Tools Window Help

Facility ID: 2112059600 Name: MALLINCKRODT LLC [2112059600] SIU: ☑ Class: Categorical Industrial User All Facilities

General Info | Sample Points | Metering | Monitoring | Permits | Results | Compliance | Enforcement | Water Use | Spec Dischrg

Results

Start Date: 01/01/2010 End Date: Apply

Events | Inspections | Sampling | Limit Comp | Violations | SMDE | Gen Rpts | **Notifications** | Surcharge | Surcharge Export

Notification Type	Date
Problem Discharge - 5 Day Written Follow Up	12/23/2010
Self-Mon Discharge Viol - 1 Day Notice	12/23/2010
Problem Discharge - Immediate Notice	12/18/2010
Problem Discharge - 5 Day Written Follow Up	11/04/2010
Problem Discharge - Immediate Notice	10/30/2010
Problem Discharge - 5 Day Written Follow Up	10/21/2010
Problem Discharge - Immediate Notice	10/16/2010
Problem Discharge - 5 Day Written Follow Up	08/17/2010
Problem Discharge - Immediate Notice	08/10/2010
Problem Discharge - 5 Day Written Follow Up	05/27/2010
Problem Discharge - Immediate Notice	05/23/2010
Problem Discharge - 5 Day Written Follow Up	05/18/2010
Problem Discharge - Immediate Notice	05/13/2010
Problem Discharge - Immediate Notice	09/20/2011

Text

Julie Summers called MSD Dispatcher at 1:45 pm to report spill to sewer. Doug Mendoza called Julie back to get details:

200 gallons of Ioversol to sewer, just discovered it. It was because a weld on a filter housing failed. Occurred between 8:30 am - 10:30 am. Written report will follow.

Ready Sep 20, 2011 1:52:18 PM

start | Industry Files - Laser... | PIMS - Pretreatment ... | http://www.gpo.gov/... | Compliance Charge &... | Calendar - Microsoft ... | 1:52 PM

MSD 013010

Metropolitan St. Louis Sewer District

Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

September 13, 2011

Julie Summers
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Re: Wastewater User Charge Billing for Special Discharge

Dear Ms. Summers:

This is to advise you of the wastewater user charges applicable to an on-site special discharge approved in our letter to you dated August 23, 2011. You were advised of the extra-strength surcharges as part of the original approval letter. That charge was determined using the COD and TSS concentrations contained in the previously provided laboratory analytical report dated August 22, 2011. The discharge date and quantity are from information submitted by you in an email dated September 13, 2011.

Our Finance Department will bill you by invoice for the charges described below. These charges are based on the rates in MSD Wastewater User Charge Ordinance 13021. For your convenience, using the volume and strength of the waste discharged, the ordinance rates have been converted to a per-gallon basis.

PARTY TO BILL: Addressee

BILLING IS FOR: On-Site Special Discharge

DISCHARGE PERIOD: September 9, 2011

SOURCE OF WASTE: MP104 reworked wastewater from building 507 at the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri.

Discharge Period	Billing Item	Quantity	Units	Rate	Charge
9/9/11	Extra-Strength Surcharge	1,000	Gal	$0.27	$270.00
Total:	------	**1,000**	Gal	-----	**$270.00**

Please do not pay until you receive our invoice. If you have any questions, please contact me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steve Grace
Environmental Assistant Engineer

bv

pc Chris Verplancke - Finance Dept.
Doug Mendoza
Brian Gibson

File: IU, MALLINCKRODT INC [2112059600], 3600 North Second Street

Steve Grace

From: Summers, Julie [Julie.Summers@Covidien.com]
Sent: Tuesday, September 13, 2011 11:15 AM
To: Steve Grace
Subject: Discharge of MP-104/Water Solution from B507 Under Special Discharge Permit Dated 8/23/11

Steve,

On August 23, 2011, approval was receive from MSD to discharge 1050 gallons of a MP-104/water solution from B507. On September 9, 2011 between 10:20 and 16:15, 1000 gallons of the MP-104/water solution was discharged through the plant sewers to the plant's neutralization system.

Please call me if you have any questions or need additional information.

Thanks,
Julie Summers
Environmental Manager
Mallinckrodt/Covidien
3600 North 2nd Street
St. Louis, MO 63147
314-654-1969 Phone
314-654-1251 Fax

COVIDIEN

September 9, 2011

Mr. Doug Mendoza
Metropolitan St. Louis Sewer District
Department of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913

RE: Electrical outage - PERMIT NO. 2112059600-3

Dear Mr. Mendoza:

A plant-wide electrical outage for periodic maintenance has been scheduled for Friday, September 30, 2011 through Sunday, October 2, 2011. As a result of the outage, the two lift stations at Sample Points 008 and 011 will lose power, causing the plant's wastewater to overflow through these sample points rather than to the plant-wide pH neutralization tanks and through our main outfall, Sample Point 010.

Per our permit conditions, a sample will be taken at the two sample points after overflow discharge commences, in addition to pH readings. There will be no processes in operation as a result of the power outage, and therefore reduced wastewater discharge is expected. This notification is in accordance with Ordinance 12559 and Permit #2112059600-3.

If you have any questions or need additional information, please call me at 314-654-1969.

Sincerely,

Julie Summers

Julie Summers
Environmental Manager
Mallinckrodt, St. Louis Plant

RECEIVED
SEP 12 2011
DIVISION OF
ENVIRONMENTAL COMPLIANCE

COVIDIEN/MALLINCKRODT
3600 NORTH SECOND STREET
ST. LOUIS, MO 63147

TELEPHONE: 314-654-2000
FAX: 314-654-1251

Metropolitan St. Louis Sewer District

Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

September 9, 2011

Julie Summers
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Dear Ms. Summers:

We have reviewed your application dated September 9, 2011 requesting approval to discharge 1,650 gallons of wastewater to the Metropolitan St. Louis Sewer District for treatment. This wastewater is 28% ethylene glycol solution from Building 250 at the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri. We understand that the wastewater will be discharged through sampling point 010.

Based on the information you provided, this wastewater meets MSD Ordinance 12559 standards and is approved for discharge into a sanitary sewer on site. Due to the high ethylene glycol concentration, the discharge is limited to 600 gallons per hour. This approval is valid for 30 days from the date of this letter.

You must be certain the waste is discharged into a sanitary or combined sewer inlet only. This letter does not authorize any discharge to a separate storm sewer, or to any watercourse, as any such discharge would be in violation of state and federal laws. **Please notify me at the number below when the discharge is to commence, and please ensure the onsite personnel discharging the wastewater in question are provided with a copy of this letter.**

For billing purposes associated with this high COD wastewater, you must confirm the volume of this wastewater discharged to us, in writing, at the completion of the discharge. This report is due no later than 28 days after this approval expires. Please refer to this letter and include the date of the discharge when providing that figure. Under the provisions of Ordinance 13021, you will be billed by invoice at the billing rate in effect at the time of discharge. The current rate contained in MSD Ordinance 13021 is $310.07 per ton for COD over 600 mg/L. Using the assumed COD concentration based on the percent of ethylene glycol contained in the wastewater in question, and the proposed discharge volume provided in your application, it is estimated that you will be discharging just under two tons of COD over 600 mg/L. (Our quantitative estimate is 1.92 tons COD times $310.07.) Please do not pay this amount until you receive our invoice.

This discharge has been approved based upon the information and sample analysis you provided, and is subject to the conditions stated above. This approval may be revoked by the District at any time if any of the information is found to be incorrect, or if the conditions of this approval are violated. Also, if the discharge causes any operational or maintenance problem within the District's collection or treatment system, or results in violations of any conditions of the District's NPDES permit, Mallinckrodt will be considered responsible for damages. If you have any questions, please call me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

pc: Brian Gibson
Doug Mendoza

File: IU, MALLINCKRODT INC [2112059600]

C1A

SD EVALUATION CHECKLIST - ON SITE

APPLICATION INFORMATION

Source Name: Mallinckrodt Inc.

Premise Address: 3600 N. 2nd St.

Send approval letter to applicant

Evaluated by: SMG

Date: 9/9/11

Application Dated: 9/9/11 Received: 9/9/11 All Requested Info. Received: 9/9/11

SOURCE FILING/DESCRIPTION

1 - Source in PIMS? (Y) / N
2 - If No, on IU Cross-Ref list? * Y / N
3 - If No, MSD Account # from E-CIS? Y / N
4 - If none, on "Source" list (pre-IMS)? ** Y / N
5 - If No, assigned SOUR# from PIMS.

* o:\costrecovery\cross reference xls file

** o:\costrecovery\sourlist xls file

SOURCE TYPE (circle): (IU) / Dead IU / SD

INDUSTRY ID: 21120596-00

Sample Point: No. Assigned: 815 Description: 28% glycol soln. @ Bldg. 250

Normal WW flow from premise? N/A _____ ccf/month, 2,992,101 GPD, _____ GPH. @ SP010

REGULATORY STATUS

Is waste a Hazardous Waste? (N) / Y

Categorical standards apply? (N) / Y

Contain PCB/ asbestos/ radioactive/ dioxin/ used oil? (N) / Y

Regulatory Agency Oversight? (N) / Y

DISCHARGE CONSIDERATIONS At MSD's connection:

Ordinance Limits (12559, p32) exceeded? (N) / Y

Ordinance other limits exceeded (dye, flash pt <140F, temp >140F, obstruction, nuisance foaming/odor, corrosion causing): (N) / Y

Water Quality Standard exceeded? (N) / Y

Fumes in sewer exceed PEL/TLV limits? (N) / Y

Vapors in sewer exceed 10% of LEL? (N) / Y

RECOMMENDATION: (APPROVE) / DENY (cc WWTP Mgr for timed discharge)

APPROVAL CONDITIONS:

Timed Discharge (COD/BOD/WQ/foam): N / (Y) Limit = 600 gal/hour

Require Treatment before Discharge? (N) / Y

Laboratory analysis fee due? (N) / Y $_____

SMR required? (N) / Y Frequency/analysis: _____

SMR log: (N/A) / Remediation.xls / Nonremediation.xls

Volume Billing applies (water unmetered or credited)? (N) / Y

Bill High Strength? N / (Y) Yes, If use >60,000 gal/month water ✓ and, > norm WW strgth

Surcharge calculation attached: N/A / N / (Y)

Expiration log updated: (N/A) / N / Y

O:\CostRecovery\Special Discharge\C1a.Checklist.doc

On-Site Special Discharge High Strength Flow Rate and Surcharge Calculator

1 GENERAL INFORMATION:

Date: 09/09/11
Calculated by: Steve Grace
Source name: MALLINCKRODT LLC [2112059600]
Waste material: Used ethylene glycol solution from building 250 chiller system
Discharge volume: 1,650 gallons

2 STRENGTH INFORMATION:

Sample BOD =	0	mg/l =	0	lbs BOD to be discharged
Sample COD =	280,000	mg/l =	3853	lbs COD to be discharged
Sample TSS =	0	mg/l =	for surcharge calculation only	

3 PLANT DATA: 2010

Treatment area: Bissell

	Flow (MGD)	BOD (mg/L)	COD (mg/L)	BOD (lb/hr)	COD (lb/hr)	Max Loading = 10% BOD (lb/hr)	COD (lb/hr)
Bissell	**140**	**146**	**292**	**7,113**	**14,227**	**711**	**1,423**
Coldwater	26	188	377	1,704	3,408	170	341
Fenton	5	388	776	679	1,357	68	136
Grand Glaize	16	129	405	708	2,218	71	222
Lemay	131	78	210	3,531	9,584	353	958
Lower Meramec	13	124	409	543	1,785	54	179
Missouri River	27	280	559	2,671	5,341	267	534

4 MINIMUM REQUIRED FLOW RATE:

	BOD (hours	BOD (gpm)	COD (hours)	COD (gpm)
Bissell	**0.00**	**0**	**2.71**	**10**
Coldwater	0.00	0	11.31	2
Fenton	0.00	0	28.39	1
Grand Glaize	0.00	0	17.38	2
Lemay	0.00	0	4.02	7
Lower Meramec	0.00	0	21.59	1
Missouri River	0.00	0	7.21	4

5 SURCHARGE AND VOLUME BILLING

Is volume subject to billing? no (yes/no)
Ratio of BOD/COD = 0.00

(Sample BOD) - 300 = 0 mg/l subject to surcharge
(sample COD) - 600 = 279400 mg/l subject to surcharge
(sample TSS) - 300 = 0 mg/l subject to surcharge

If BOD/COD ratio <= 0.35, the following calculations use the COD value. Otherwise they use the BOD value

Current rates under Ordinance: 13021

Volume = $ 2.11 /CcF
BOD = $ 620.14 /ton
COD = $ 310.07 /ton
TSS = $ 231.35 /ton

Flow charge = $ - based on volume = 2.2 CcF
BOD surcharge = $ -
COD surcharge = $ 596.24
TSS surcharge = $ -
Total discharge charge = $ 596.24
Customer charge = $ 596.24 DEC charges special discharge customers for total charges > $20.00
Approximate charge/gallon = $ 0.36

Comments

require volume report for billing purposes. Smg

Metropolitan St. Louis Sewer District
2350 Market Street
St. Louis, MO 63103

APPLICATION FOR SPECIAL DISCHARGE APPROVAL

I. WASTEWATER SOURCE IDENTIFICATION:

Site Name: Mallinckrodt
Premise Address: 3600 N 2nd Street
City: St Louis State: MO Zip: 63147
Owner: Mallinckrodt
Contact Person: Julie Summers
Title: Environmental Mgr
Phone: 314-654-1969 Fax: 314-654-1257

II. APPLICANT (mailing information):

Applicant Name: Julie Summers
Title: Environmental Mgr
Company Name: Mallinckrodt
Mailing Address: 3600 N 2nd Street
City: St Louis State: MO Zip: 63147
Phone: 314-654-1969 Fax: 314-654-1251

III. A. MATERIAL TO BE DISCHARGED (check all applicable boxes):

1. Wastewater description/location: Bldg 250 Chiller Unit (Ethylene glycol/water)
2. Process/activity generating wastewater: Bldg 250 Chiller System
3. Physical and chemical composition: List all constituents, and known or potentially present regulated contaminants below.
   ☐ See separate listing enclosed, and/or ☐ See analytical results enclosed, and/or ☑ Material Safety Data Sheet enclosed.

DESCRIPTION	RANGE	UNIT
Ethylene Glycol	28	%
Water	72	%

DESCRIPTION *(continued)*	RANGE	UNIT

4. Is this wastewater from a process subject to EPA's categorical standards in 40 CFR Subchapter N? ☐ Yes ☑ No
   a. If yes, the applicable standards are in: 40 CFR Part _____, Subpart _____ ☐ Existing source ☐ New source
5. Does this wastewater contain polychlorinated biphenyls, asbestos or radioactive material? ☐ Yes ☑ No
   a. If yes, describe: _____
6. Representative sample: ☐ Laboratory results attached, and/or ☐ Sample provided (1/2 gallon minimum, clear container)
   a. Sample collection point/location: _____ Collection method: _____
   b. Sampler's name/Co.: _____ Sample date/time: _____
   c. Attach chain of custody as available
7. Discharge will occur over the following time period: ☑ < 30 days ☐ ≥ Two years ☐ Other: _____
   a. Expected total volume of wastewater to be discharged over the time period above: 1650 Gallons
   b. Proposed discharge volume: 1650 Gallons, at a frequency of: ☐ One time ☐ Daily ☐ Weekly ☐ Monthly ☐ Once/three months ☐ Once/six months ☐ Other: _____
8. Pretreatment of wastewater prior to discharge: ☐ None ☑ Yes, describe: pH adjust at main plant Outfall SP010
   a. If yes, attach site plan, pretreatment system schematic, and design specifications.
9. Wastewater from a remediation project under: ☐ Superfund/CERCLA ☐ RCRA ☐ Voluntary program ☐ UST ☑ Not applicable
   a. If from a remediation project, briefly describe the past and present utilization of the property: _____

III.B. MATERIAL FROM UNDERGROUND STORAGE TANK SOURCE

☐ **Not applicable (go to Section IV)**

Please answer the following questions if you are requesting to discharge wastewater associated with an underground storage tank system.

1. a. Wastewater from: ☐ Inside UST(s) ☐ UST system pit ☐ Excavation outside UST system pit ☐ Monitoring well ☐ Groundwater remediation system

   b. UST project involves wastewater from: ☐ UST(s) closed in place ☐ UST(s) removed ☐ Remediation ☐ Upgrade ☐ Maintenance activities ☐ Well monitoring ☐ Other, explain: _____

   c. If wastewater is from a closure project, how long has UST(s) been out of service: _____ years

2. a. State assigned UST site identification number: _____ ☐ Not applicable

   b. Number of USTs affected: _____ ☐ Unknown

   c. For the UST(s) involved, their state identification number(s): _____ ☐ Not applicable

   d. Service Station Identification Number, as applicable: _____

3. Tank contents/former contents: ☐ Gasoline ☐ #2 diesel ☐ Used oil ☐ Unknown ☐ Other: _____

IV. DISCHARGE LOCATION

1. ☑ On-site. Describe proposed point of entry to sewer and the discharge rate (must be a sanitary or combined sewer): _____
   Plant Sewer to main outfall SP01D Note: Range of discharge must not surcharge sewer line.

2. ☐ Haul to MSD Bissell Point Hauled Waste Receiving Station at 10 E. Grand, St. Louis, MO.

   a. Transporters Name: _____ and MSD Hauler ID Number: _____

   b. Hazardous Waste Certification:

   For wastewater which is hauled to MSD's Bissell Point Hauled Waste Receiving Station, I hereby certify that to the best of my knowledge and belief, the above hauled waste is not classified as a RCRA "hazardous waste" as defined by the MDNR in 10 CSR 25 or USEPA in 40 CFR Part 261.

   Applicant Name (print): _____

   Signature: _____ **Date:** _____

ADDITIONAL INFORMATION:

_____

V. APPLICANT SIGNATURE AND CERTIFICATION

This application must be signed by the applicant: either the source contact, or a contractor or agent directly responsible for site activities.

I hereby certify that I am directly responsible for activities at the site regarding the wastewater to be discharged, and to the best of my knowledge and belief, based on appropriate inquiry, the information in this application is true, complete, and accurate. The samples or analyses submitted are representative of the materials to be discharged. If granted approval to discharge, I agree to abide by the MSD Ordinances, and all applicable federal, state and local regulations. I agree to pay the costs of any pre-approval analyses performed by MSD and to pay any applicable disposal charges for the volume and strength of the wastes discharged.

Applicant Name (print): Julie Summers

Signature: Julie Summers **Date:** 9/9/11

FOR MSD USE ONLY:

File Name: Mallinckrodt LLC ID No. 21120596-00 Sample Point No. 815

MSDS Material Safety Data Sheet

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865

Mallinckrodt CHEMICALS J.T.Baker

24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300

National Response in Canada
CANUTEC: 613-996-6666

Outside U.S. and Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

ETHYLENE GLYCOL

1. Product Identification

Synonyms: 1,2-Ethanediol; glycol; 1,2-Dihydroxyethane; Ethylene Alcohol; Ethulene Dihydrate
CAS No.: 107-21-1
Molecular Weight: 62.07
Chemical Formula: CH2OHCH2OH
Product Codes:
J.T. Baker: 5387, 5845, 9140, 9298, 9300, 9346, 9356, L715
Mallinckrodt: 5001, 5037

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Ethylene Glycol	107-21-1	99 - 100%	Yes

3. Hazards Identification

Emergency Overview

WARNING! HARMFUL OR FATAL IF SWALLOWED. HARMFUL IF INHALED OR ABSORBED THROUGH SKIN. MAY CAUSE ALLERGIC SKIN REACTION. MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT. AFFECTS CENTRAL NERVOUS SYSTEM.

SAF-T-DATA(tm) Ratings (Provided here for your convenience)

Health Rating: 2 - Moderate (Life)
Flammability Rating: 1 - Slight
Reactivity Rating: 1 - Slight
Contact Rating: 3 - Severe (Life)
Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES
Storage Color Code: Green (General Storage)

Potential Health Effects

Inhalation:
Vapor inhalation is generally not a problem unless heated or misted. Exposure to vapors over an extended time period has caused throat irritation and headache. May cause nausea, vomiting, dizziness and drowsiness. Pulmonary edema and central nervous system depression may also develop. When heated or misted, has produced rapid, involuntary eye movement and coma.
Ingestion:
Initial symptoms in massive dosage parallel alcohol intoxication, progressing to CNS depression, vomiting, headache, rapid respiratory and heart rate, lowered blood pressure, stupor, collapse, and unconsciousness with convulsions. Death from respiratory arrest or cardiovascular collapse may follow. Lethal dose in humans: 100 ml (3-4 ounces).
Skin Contact:
Minor skin irritation and penetration may occur.
Eye Contact:
Splashes may cause irritation, pain, eye damage.
Chronic Exposure:
Repeated small exposures by any route can cause severe kidney problems. Brain damage may also occur. Skin allergy can develop. May damage the developing fetus.
Aggravation of Pre-existing Conditions:
Persons with pre-existing skin disorders, eye problems, or impaired liver, kidney, or respiratory function may be more susceptible to the effects of this substance.

4. First Aid Measures

Inhalation:
Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
Ingestion:
Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.
Skin Contact:
Remove any contaminated clothing. Wash skin with soap and water for at least 15 minutes. Get medical attention if irritation develops or persists.
Eye Contact:
Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

Note to Physician:
Give sodium bicarbonate intravenously to treat acidosis. Urinalysis may show low specific gravity, proteinuria, pyuria, cylindruria, hematuria, calcium oxide, and hippuric acid crystals. Ethanol can be used in antidotal treatment but monitor blood glucose when administering ethanol because it can cause hypoglycemia. Consider infusion of a diuretic such as mannitol to help prevent or control brain edema and hemodialysis to remove ethylene glycol from circulation.

5. Fire Fighting Measures

Fire:
Flash point: 111C (232F) CC
Autoignition temperature: 398C (748F)
Flammable limits in air % by volume:
lel: 3.2; uel: 15.3
Slight to moderate fire hazard when exposed to heat or flame.

Explosion:
Above flash point, vapor-air mixtures are explosive within flammable limits noted above. Containers may explode when involved in a fire.
Fire Extinguishing Media:
Dry chemical, foam or carbon dioxide. Water or foam may cause frothing. Water spray may be used to extinguish surrounding fire and cool exposed containers. Water spray will also reduce fume and irritant gases.
Special Information:
In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Toxic gases and vapors may be released if involved in a fire.

6. Accidental Release Measures

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Separate from acids and oxidizing materials. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:
Ethylene Glycol [107-21-1]:

-ACGIH Short-Term Exposure Limit (STEL):
100 mg/m3 Ceiling (aerosol only)
Ventilation System:
A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.
Personal Respirators (NIOSH Approved):
If the exposure limit is exceeded, a half-face respirator with an organic vapor cartridge and particulate filter (NIOSH type P95 or R95 filter) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece respirator with an organic vapor cartridge and particulate filter (NIOSH P100 or R100 filter) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. Please note that N series filters are not recommended for this material. For emergencies or instances where the exposure levels are not known, use a full-face piece positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.
Skin Protection:
Wear protective gloves and clean body-covering clothing.
Eye Protection:

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:
Clear oily liquid.
Odor:
Odorless.
Solubility:
Miscible in water.
Specific Gravity:
1.1 @20C/4C
pH:
No information found.
% Volatiles by volume @ 21C (70F):
100
Boiling Point:
197.6C (388F)
Melting Point:
-13C (9F)
Vapor Density (Air=1):
2.14
Vapor Pressure (mm Hg):
0.06 @ 20C (68F)
Evaporation Rate (BuAc=1):
No information found.

10. Stability and Reactivity

Stability:
Stable under ordinary conditions of use and storage.
Hazardous Decomposition Products:
Carbon dioxide and carbon monoxide may form when heated to decomposition. May produce acrid smoke and irritating fumes when heated to decomposition.
Hazardous Polymerization:
Will not occur.
Incompatibilities:
Strong oxidizing agents. Reacts violently with chlorosulfonic acid, oleum, sulfuric acid, perchloric acid. Causes ignition at room temperature with chromium trioxide, potassium permanganate and sodium peroxide; causes ignition at 212F(100C) with ammonium dichromate, silver chlorate, sodium chloride and uranyl nitrate.
Conditions to Avoid:
Heat, flames, ignition sources, water (absorbs readily) and incompatibles.

11. Toxicological Information

Toxicological Data:
Oral rat LD50: 4700 mg/kg; skin rabbit LD50: 9530 mg/kg.
Irritation - skin rabbit: 555 mg(open), mild; eye rabbit: 500mg/24H, mild.
Investigated as a tumorigen, mutagen, reproductive effector.
Reproductive Toxicity:
Has shown teratogenic effects in laboratory animals.

--------\Cancer Lists\----------
---NTP Carcinogen---

Ingredient	Known	Anticipated	IARC Category
Ethylene Glycol (107-21-1)	No	No	None

12. Ecological Information

Environmental Fate:
When released into the soil, this material is expected to readily biodegrade. When released into the soil, this material is expected to leach into groundwater. When released into the soil, this material is not expected to evaporate significantly. When released into water, this material is expected to readily biodegrade. When released into the water, this material is expected to have a half-life between 1 and 10 days. This material is not expected to significantly bioaccumulate. This material has a log octanol-water partition coefficient of less than 3.0. When released into water, this material is not expected to evaporate significantly. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material is expected to have a half-life between 1 and 10 days.
Environmental Toxicity:
The LC50/96-hour values for fish are over 100 mg/l.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Not regulated.

15. Regulatory Information

--------\Chemical Inventory Status - Part 1\--------

Ingredient	TSCA	EC	Japan	Australia
Ethylene Glycol (107-21-1)	Yes	Yes	Yes	Yes

--------\Chemical Inventory Status - Part 2\--------

Ingredient	Korea	--Canada-- DSL	NDSL	Phil.
Ethylene Glycol (107-21-1)	Yes	Yes	No	Yes

--------\Federal, State & International Regulations - Part 1\--------

Ingredient	-SARA 302- RQ	TPQ	------SARA 313------ List	Chemical Catg.
Ethylene Glycol (107-21-1)	No	No	Yes	No

--------\Federal, State & International Regulations - Part 2\--------

Ingredient	CERCLA	-RCRA- 261.33	-TSCA- 8(d)
Ethylene Glycol (107-21-1)	5000	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No
Reactivity: No (Pure / Liquid)

Australian Hazchem Code: None allocated.
Poison Schedule: None allocated.
WHMIS:
This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: **1** Flammability: **1** Reactivity: **0**
Label Hazard Warning:
WARNING! HARMFUL OR FATAL IF SWALLOWED. HARMFUL IF INHALED OR ABSORBED THROUGH SKIN. MAY CAUSE ALLERGIC SKIN REACTION. MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT. AFFECTS CENTRAL NERVOUS SYSTEM.
Label Precautions:
Do not breathe vapor or mist.
Use only with adequate ventilation.
Keep container closed.
Avoid contact with eyes, skin and clothing.
Wash thoroughly after handling.
Label First Aid:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes. Call a physician if irritation develops or persists. If swallowed, give water or milk to drink and induce vomiting. Never give anything by mouth to an unconscious person. In all cases call a physician.
Product Use:
Laboratory Reagent.
Revision Information:
No Changes.
Disclaimer:
****
Mallinckrodt Baker, Inc. provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose. MALLINCKRODT BAKER, INC. MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE INFORMATION SET FORTH HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS. ACCORDINGLY, MALLINCKRODT BAKER, INC. WILL NOT BE RESPONSIBLE FOR DAMAGES RESULTING FROM USE OF OR RELIANCE UPON THIS INFORMATION.
****
Prepared by: Environmental Health & Safety
Phone Number: (314) 654-1600 (U.S.A.)

Mallinckrodt Inc.
21120596-00 SP851

Steve Grace

From: Steve Grace
Sent: Thursday, September 08, 2011 4:43 PM
To: 'Summers, Julie'
Subject: RE: B25 Special Discharge Permit Extension Request

Hello Julie,

Based on the information provided below, your request for extension is granted. The approval for the onsite discharge of used ethylene glycol coolant solution from Building 25 will expire on October 11, 2011. All other terms and conditions of the original approval apply.

Contact me with any questions.

Thanks,
Steve

From: Summers, Julie [mailto:Julie.Summers@Covidien.com]
Sent: Thursday, September 08, 2011 1:37 PM
To: Steve Grace
Subject: B25 Special Discharge Permit Extension Request

Steve,

Mallinckrodt requests a 30 day extension on the B25 Ethylene Glycol Special Discharge permit issued by MSD on August 11, 2011. The project work that would have resulted in the discharge is behind schedule resulting in the need for an extension to the permit. Please let me know if you have any questions regarding this request.

Thanks,
Julie Summers
Environmental Manager
Covidien/Mallinckrodt
3600 North 2nd Street
St. Louis, MO 63147
314-654-1969 Phone
314-654-1251 Fax

Metropolitan St. Louis Sewer District

Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

August 23, 2011

Julie Summers
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Dear Ms. Summers:

We have reviewed your application dated August 12, 2011 requesting approval to discharge 1,050 gallons of wastewater to the Metropolitan St. Louis Sewer District for treatment. This wastewater consists of MP104 reworked wastewater from building 507 at the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri. We understand that the wastewater will be discharged through sampling point 010.

Based on the information you provided, this wastewater meets MSD Ordinance 12559 standards and is approved for discharge into a sanitary sewer on site. The discharge into the sewer must be controlled at a rate that will not surcharge the lines in the area. This approval is valid for 30 days from the date of this letter.

You must be certain the waste is discharged into a sanitary or combined sewer inlet only. This letter does not authorize any discharge to a separate storm sewer, or to any watercourse, as any such discharge would be in violation of state and federal laws. **Please notify me at the number below when the discharge is to commence, and please ensure the onsite personnel discharging the wastewater in question are provided with a copy of this letter.**

For billing purposes associated with this high chemical oxygen demand (COD) and total suspended solids (TSS) wastewater, you must confirm the volume of this wastewater discharged to us, in writing, at the completion of the discharge. This report is due no later than 28 days after this approval expires. Please refer to this letter and include the date of the discharge when providing that figure. Under the provisions of Ordinance 13021, you will be billed by invoice at the billing rate in effect at the time of discharge. The current rate contained in MSD Ordinance 13021 is $310.07 per ton for COD over 600 mg/L, and $231.35 per ton for TSS over 300 mg/L. Using the assumed COD and TSS concentrations contained in the laboratory analytical report for the wastewater in question, and the proposed discharge volume provided in your application, it is estimated that you will be discharging just over 0.5 tons of COD over 600 mg/L (our quantitative estimate is 0.52 tons COD times $310.07), and just over 0.5 tons of TSS over 300 mg/L (our quantitative estimate is 0.55 tons TSS times $231.35). Please do not pay this amount until you receive our invoice.

This discharge has been approved based upon the information and sample analysis you provided, and is subject to the conditions stated above. This approval may be revoked by the District at any time if any of the information is found to be incorrect, or if the conditions of this approval are violated. Also, if the discharge causes any operational or maintenance problem within the District's collection or treatment system, or results in violations of any conditions of the District's NPDES permit, Mallinckrodt will be considered responsible for damages. If you have any questions, please call me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

pc: Brian Gibson
Doug Mendoza
File: IU, MALLINCKRODT INC [2112059600]

C1A

SD EVALUATION CHECKLIST - ON SITE

APPLICATION INFORMATION

Source Name: Mallinckrodt Inc.

Premise Address: 3600 N 2nd St

Send approval letter to applicant

Evaluated by: SMG

Date: 8/23/11

Application Dated: 8/12/11 Received: 8/15/11 All Requested Info. Received: 8/23/11

SOURCE FILING/DESCRIPTION

1 - Source in PIMS? (Y) / N
2 - If No, on IU Cross-Ref list? * Y / N
3 - If No, MSD Account # from E-CIS? Y / N
4 - If none, on "Source" list (pre-IMS)? ** Y / N
5 - If No, assigned SOUR# from PIMS.

* o:\costrecovery\cross reference xls file

** o:\costrecovery\sourlist xls file

SOURCE TYPE (circle): (IU) / Dead IU / SD

INDUSTRY ID: 21120596-00

Sample Point: No. Assigned: 829 Description: MP104 reworked wastewater from Bldg. 507

Normal WW flow from premise? N/A _____ ccf/month, 2,992,101 GPD, _____ GPH. from SP010

REGULATORY STATUS

Is waste a Hazardous Waste? (N) / Y

Categorical standards apply? (N) / Y

Contain PCB/ asbestos/ radioactive/ dioxin/ used oil? (N) / Y

Regulatory Agency Oversight? (N) / Y

DISCHARGE CONSIDERATIONS At MSD's connection:

Ordinance Limits (12559, p32) exceeded? (N) / Y

Ordinance other limits exceeded (dye, flash pt <140F, temp >140F, obstruction, nuisance foaming/odor, corrosion causing): (N) / Y

Water Quality Standard exceeded? (N) / Y

Fumes in sewer exceed PEL/TLV limits? (N) / Y

Vapors in sewer exceed 10% of LEL? (N) / Y

RECOMMENDATION: (APPROVE) / DENY (cc WWTP Mgr for timed discharge)

APPROVAL CONDITIONS:

Timed Discharge (COD/BOD/WQ/foam): (N) / Y Limit = _____ gal/hour

Require Treatment before Discharge? (N) / Y

Laboratory analysis fee due? (N) / Y $_____

SMR required? (N) / Y Frequency/analysis: _____

SMR log: (N/A) / Remediation.xls / Nonremediation.xls

Volume Billing applies (water unmetered or credited)? (N) / Y

Bill High Strength? N / (Y) Yes, If use >60,000 gal/month water ✓ and, > norm WW strgth

Surcharge calculation attached: N/A / N / (Y)

Expiration log updated: (N/A) / N / Y

O:\CostRecovery\Special Discharge\C1a.Checklist.doc

On-Site Special Discharge High Strength Flow Rate and Surcharge Calculator

1 GENERAL INFORMATION:

Date: 08/23/11
Calculated by: Steve Grace
Source name: Mallinckrodt, Inc.
Waste material: MP104 rework wastewater from building 507
Discharge volume: 1,050 gallons

2 STRENGTH INFORMATION:

Sample BOD =	0	mg/l =	0	lbs BOD to be discharged
Sample COD =	119,000	mg/l =	1042	lbs COD to be discharged
Sample TSS =	126,000	mg/l =	for surcharge calculation only	

3 PLANT DATA: 2010

Treatment area: Bissell

	Flow (MGD)	BOD (mg/L)	COD (mg/L)	BOD (lb/hr)	COD (lb/hr)	Max Loading = 10% BOD (lb/hr)	COD (lb/hr)
Bissell	**140**	**146**	**292**	**7,113**	**14,227**	**711**	**1,423**
Coldwater	26	188	377	1,704	3,408	170	341
Fenton	5	388	776	679	1,357	68	136
Grand Glaize	16	129	405	708	2,218	71	222
Lemay	131	78	210	3,531	9,584	353	958
Lower Meramec	13	124	409	543	1,785	54	179
Missouri River	27	280	559	2,671	5,341	267	534

4 MINIMUM REQUIRED FLOW RATE:

	BOD (hours	BOD (gpm)	COD (hours)	COD (gpm)
Bissell	**0.00**	**0**	**0.73**	**24**
Coldwater	0.00	0	3.06	6
Fenton	0.00	0	7.68	2
Grand Glaize	0.00	0	4.70	4
Lemay	0.00	0	1.09	16
Lower Meramec	0.00	0	5.84	3
Missouri River	0.00	0	1.95	9

5 SURCHARGE AND VOLUME BILLING

Is volume subject to billing? no (yes/no)
Ratio of BOD/COD = 0.00

(Sample BOD) - 300 = 0 mg/l subject to surcharge
(sample COD) - 600 = 118400 mg/l subject to surcharge
(sample TSS) - 300 = 125700 mg/l subject to surcharge

If BOD/COD ratio <= 0.35, the following calculations use the COD value. Otherwise they use the BOD value

Current rates under Ordinance: 13021

Volume = $ 2.11 /CcF
BOD = $ 620.14 /ton
COD = $ 310.07 /ton
TSS = $ 231.35 /ton

Flow charge = $ - based on volume = 1.4 CcF
BOD surcharge = $ -
COD surcharge = $ 160.79
TSS surcharge = $ 127.36
Total discharge charge = $ 288.15
Customer charge = $ 288.15 DEC charges special discharge customers for total charges > $20.00
Approximate charge/gallon = $ 0.27

Comments

require volume report for billing purposes. Smg
as discharge time is < 1 hour, discharge rate does not apply. Smg

Metropolitan St. Louis Sewer District
2350 Market Street
St. Louis MO 63103

APPLICATION FOR SPECIAL DISCHARGE APPROVAL

I. WASTEWATER SOURCE IDENTIFICATION:

Site Name: Mallinckrodt
Premise Address: 3600 N 2nd Street
City: St Louis State: MO Zip: 63147
Owner: Mallinckrodt
Contact Person: Julie Summers
Title: Env Mgr
Phone: 314-654-1969 Fax: 314-654-1251

II. APPLICANT (mailing information):

Applicant Name: Julie Summers
Title: Env Mgr
Company Name: Mallinckrodt
Mailing Address: 3600 N 2nd Street
City: St Louis State: MO Zip: 63147
Phone: 314-654-1969 Fax: 314-654-1251

III. A. MATERIAL TO BE DISCHARGED (check all applicable boxes):

1. Wastewater description/location: MP-104
2. Process/activity generating wastewater:
3. Physical and chemical composition: List all constituents, and known or potentially present regulated contaminants below.
   ☐ See separate listing enclosed, and/or ☐ See analytical results enclosed, and/or ☑ Material Safety Data Sheet enclosed.

DESCRIPTION	RANGE	UNIT
MP104	22	%
Water	78	%

DESCRIPTION *(continued)*	RANGE	UNIT

4. Is this wastewater from a process subject to EPA's categorical standards in 40 CFR Subchapter N? ☐ Yes ☒ No
   a. If yes, the applicable standards are in: 40 CFR Part _____, Subpart _____ ☐ Existing source ☐ New source
5. Does this wastewater contain polychlorinated biphenyls, asbestos or radioactive material? ☐ Yes ☒ No
   a. If yes, describe:
6. Representative sample: ☐ Laboratory results attached, and/or ☐ Sample provided (1/2 gallon minimum, clear container)
   a. Sample collection point/location: _____ Collection method: _____
   b. Sampler's name/Co.: _____ Sample date/time: _____
   c. Attach chain of custody as available
7. Discharge will occur over the following time period: ☒ < 30 days ☐ ≥ Two years ☐ Other:
   a. Expected total volume of wastewater to be discharged over the time period above: 1050 Gallons
   b. Proposed discharge volume: 1050 Gallons, at a frequency of: ☒ One time ☐ Daily ☐ Weekly ☐ Monthly ☐ Once/three months ☐ Once/six months ☐ Other:
8. Pretreatment of wastewater prior to discharge: ☐ None ☒ Yes, describe: pH adjust at plant outfall
   a. If yes, attach site plan, pretreatment system schematic, and design specifications.
9. Wastewater from a remediation project under: ☐ Superfund/CERCLA ☐ RCRA ☐ Voluntary program ☐ UST ☒ Not applicable
   a. If from a remediation project, briefly describe the past and present utilization of the property:

III.B. MATERIAL FROM UNDERGROUND STORAGE TANK SOURCE

☒ **Not applicable (go to Section IV)**

Please answer the following questions if you are requesting to discharge wastewater associated with an underground storage tank system.

1. a. Wastewater from: ☐ Inside UST(s) ☐ UST system pit ☐ Excavation outside UST system pit ☐ Monitoring well ☐ Groundwater remediation system

   b. UST project involves wastewater from: ☐ UST(s) closed in place ☐ UST(s) removed ☐ Remediation ☐ Upgrade ☐ Maintenance activities ☐ Well monitoring ☐ Other, explain: _____

   c. If wastewater is from a closure project, how long has UST(s) been out of service: _____ years

2. a. State assigned UST site identification number: _____ ☐ Not applicable

   b. Number of USTs affected: _____ ☐ Unknown

   c. For the UST(s) involved, their state identification number(s): _____ ☐ Not applicable

   d. Service Station Identification Number, as applicable: _____

3. Tank contents/former contents: ☐ Gasoline ☐ #2 diesel ☐ Used oil ☐ Unknown ☐ Other: _____

IV. DISCHARGE LOCATION

1. ☒ On-site. Describe proposed point of entry to sewer and the discharge rate (must be a sanitary or combined sewer): _____
   B507 to plant sewer @ SP01D Note: Range of discharge must not surcharge sewer line.

2. ☐ Haul to MSD Bissell Point Hauled Waste Receiving Station at 10 E. Grand, St. Louis, MO.

   a. Transporters Name: _____ and MSD Hauler ID Number: _____

   b. Hazardous Waste Certification:

   For wastewater which is hauled to MSD's Bissell Point Hauled Waste Receiving Station, I hereby certify that to the best of my knowledge and belief, the above hauled waste is not classified as a RCRA "hazardous waste" as defined by the MDNR in 10 CSR 25 or USEPA in 40 CFR Part 261.

   Applicant Name (print): _____

   Signature: _____ **Date:** _____

ADDITIONAL INFORMATION:

_____

V. APPLICANT SIGNATURE AND CERTIFICATION

This application must be signed by the applicant: either the source contact, or a contractor or agent directly responsible for site activities.

I hereby certify that I am directly responsible for activities at the site regarding the wastewater to be discharged, and to the best of my knowledge and belief, based on appropriate inquiry, the information in this application is true, complete, and accurate. The samples or analyses submitted are representative of the materials to be discharged. If granted approval to discharge, I agree to abide by the MSD Ordinances, and all applicable federal, state and local regulations. I agree to pay the costs of any pre-approval analyses performed by MSD and to pay any applicable disposal charges for the volume and strength of the wastes discharged.

Applicant Name (print): Julie Summers

Signature: Julie Summers **Date:** 8/12/11

FOR MSD USE ONLY:

File Name: Mallinckrodt LLC ID No. 21120596-00 Sample Point No. 829

August 22, 2011

Julie Summers
Mallinckrodt Inc.
3600 N. 2nd St.
St. Louis, MO 63147
TEL: (314) 654-1969
FAX: (314) 654-1251

RE: MP-104 **WorkOrder:** 11080650

Dear Julie Summers:

TEKLAB, INC received 1 sample on 8/15/2011 4:45:00 PM for the analysis presented in the following report.

Samples are analyzed on an as received basis unless otherwise requested and documented. The sample results contained in this report relate only to the requested analytes of interest as directed on the chain of custody. NELAP accredited fields of testing are indicated by the letters NELAP under the Certification column. All tests are performed in the Collinsville, IL laboratory unless otherwise noted in the Case Narrative.

All quality control criteria applicable to the test methods employed for this project have been satisfactorily met and are in accordance with NELAP except where noted. The following report shall not be reproduced, except in full, without the written approval of Teklab, Inc.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Elizabeth A. Hurley

Elizabeth A. Hurley
Project Manager
(618)344-1004 ex 33
ehurley@teklabinc.com

Definitions

Client: Mallinckrodt Inc. **Work Order:** 11080650

Client Project: MP-104 **Report Date:** 22-Aug-11

Abbr Definition

CCV	Continuing calibration verification is a check of a standard to determine the state of calibration of an instrument between recalibration.
DF	Dilution factor is the dilution performed during analysis only and does not take into account any dilutions made during sample preparation. The reported result is final and includes all dilutions factors.
DNI	Did not ignite
DUP	Laboratory duplicate is an aliquot of a sample taken from the same container under laboratory conditions for independent processing and analysis independently of the original aliquot.
ICV	Initial calibration verification is a check of a standard to determine the state of calibration of an instrument before sample analysis is initiated.
IDPH	IL Dept. of Public Health
LCS	Laboratory control sample, spiked with verified known amounts of analytes, is analyzed exactly like a sample to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system. The acceptable recovery range is in the QC Package (provided upon request).
LCSD	Laboratory control sample duplicate is a replicate laboratory control sample that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MB	Method blank is a sample of a matrix similar to the batch of associated sample (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences should present at concentrations that impact the analytical results for sample analyses.
MDL	Method detection limit means the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.
MS	Matrix spike is an aliquot of matrix fortified (spiked) with known quantities of specific analytes that is subjected to the entire analytical procedures in order to determine the effect of the matrix on an approved test method's recovery system. The acceptable recovery range is listed in the QC Package (provided upon request).
MSD	Matrix spike duplicate means a replicate matrix spike that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MW	Molecular weight
ND	Not Detected at the Reporting Limit
NELAP	NELAP Accredited
PQL	Practical quantitation limit means the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operation conditions. The acceptable recovery range is listed in the QC Package (provided upon request).
RL	The reporting limit the lowest level that the data is displayed in the final report. The reporting limit may vary according to customer request or sample dilution. The reporting limit may not be less than the MDL.
RPD	Relative percent difference is a calculated difference between two recoveries (ie. MS/MSD). The acceptable recovery limit is listed in the QC Package (provided upon request).
SPK	The spike is a known mass of target analyte added to a blank sample or sub-sample; used to determine recovery deficiency or for other quality control purposes.
Surr	Surrogates are compounds which are similar to the analytes of interest in chemical composition and behavior in the analytical process, but which are not normally found in environmental samples.
TNTC	Too numerous to count (> 200 CFU)

Qualifiers

# -	Unknown hydrocarbon	B -	Analyte detected in associated Method Blank
E -	Value above quantitation range	H -	Holding times exceeded
J -	Analyte detected below quantitation limits	M -	Manual Integration used to determine area response
ND -	Not Detected at the Reporting Limit	R -	RPD outside accepted recovery limits
S -	Spike Recovery outside recovery limits	X -	Value exceeds Maximum Contaminant Level

Client: Mallinckrodt Inc.

Client Project: MP-104

Work Order: 11080650

Report Date: 22-Aug-11

Cooler Receipt Temp: 2.6 °C

Locations and Accreditations

Collinsville		Springfield		Kansas City	
Address	5445 Horseshoe Lake Road Collinsville, IL 62234-7425	Address	3920 Pintail Dr Springfield, IL 62711-9415	Address	8421 Nieman Road Lenexa, KS 66214
Phone	(618) 344-1004	Phone	(217) 698-1004	Phone	(913) 541-1998
Fax	(618) 344-1005	Fax	(217) 698-1005	Fax	(913) 541-1998
Email	jhriley@teklabinc.com	Email	kmcclain@teklabinc.com	Email	dthompson@teklabinc.com

State	Dept	Cert #	NELAP	Exp Date	Lab
Illinois	IEPA	100226	NELAP	1/31/2012	Collinsville
Kansas	KDHE	E-10374	NELAP	1/31/2012	Collinsville
Louisiana	LDEQ	166493	NELAP	6/30/2012	Collinsville
Louisiana	LDEQ	166578	NELAP	6/30/2012	Springfield
Arkansas	ADEQ	88-0966		3/14/2012	Collinsville
Illinois	IDPH	17584		4/30/2012	Collinsville
Kentucky	UST	0073		5/26/2012	Collinsville
Missouri	MDNR	00930		4/13/2013	Collinsville
Oklahoma	ODEQ	9978		8/31/2011	Collinsville

Teklab, Inc.
Environmental Laboratory

Laboratory Results

http://www.teklabinc.com/

Client: Mallinckrodt Inc. **Work Order:** 11080650

Client Project: MP-104 **Report Date:** 22-Aug-11

Lab ID: 11080650-001 **Client Sample ID:** MP-104

Matrix: AQUEOUS **Collection Date:** 08/15/2011 0:00

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 410.4								
Chemical Oxygen Demand	NELAP	50000		**119000**	mg/L	1000	08/16/2011 11:21	R153217
STANDARD METHOD 18TH ED. 4500-H B, LABORATORY ANALYZED								
Lab pH	NELAP	1.00		**6.03**		1	08/15/2011 18:27	R153199
STANDARD METHODS 18TH ED. 2540 D								
Total Suspended Solids	NELAP	120		**126000**	mg/L	20	08/16/2011 7:33	R153227
STANDARD METHODS 18TH ED. 5210 B								
Biochemical Oxygen Demand	NELAP	5		**9040**	mg/L	1	08/15/2011 21:20	70422
EPA 600 4.1.4, 200.7R4.4, METALS BY ICP (TOTAL)								
Cadmium	NELAP	0.0400		**< 0.0400**	mg/L	20	08/16/2011 10:43	70417
Chromium	NELAP	0.200		**0.464**	mg/L	20	08/16/2011 10:43	70417
Copper	NELAP	0.200		**< 0.200**	mg/L	20	08/16/2011 10:43	70417
Iron	NELAP	0.400	J	**0.37**	mg/L	20	08/16/2011 10:43	70417
Lead	NELAP	0.800		**< 0.800**	mg/L	20	08/16/2011 10:43	70417
Nickel	NELAP	0.200	J	**0.084**	mg/L	20	08/16/2011 10:43	70417
Zinc	NELAP	3.00		**< 3.00**	mg/L	20	08/16/2011 10:43	70417
Cd, Cu,Fe, Pb, Ni, Zn - Elevated reporting limit due to high levels of target and/or non-target analytes.								
EPA 600 625 (MODIFIED), SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
1,2,4-Trichlorobenzene	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
1,2-Diphenylhydrazine		0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
2,4,6-Trichlorophenol	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
2,4-Dichlorophenol	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
2,4-Dimethylphenol	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
2,4-Dinitrophenol	NELAP	0.100		**ND**	mg/L	1	08/16/2011 12:27	70418
2,4-Dinitrotoluene	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
2,6-Dinitrotoluene	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
2-Chloronaphthalene	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
2-Chlorophenol	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
2-Nitrophenol	NELAP	0.100		**ND**	mg/L	1	08/16/2011 12:27	70418
3,3'-Dichlorobenzidine	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
4,6-Dinitro-2-methylphenol	NELAP	0.100		**ND**	mg/L	1	08/16/2011 12:27	70418
4-Bromophenyl phenyl ether	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
4-Chloro-3-methylphenol	NELAP	0.100		**ND**	mg/L	1	08/16/2011 12:27	70418
4-Chlorophenyl phenyl ether	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
4-Nitrophenol	NELAP	0.100		**ND**	mg/L	1	08/16/2011 12:27	70418
Acenaphthene	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
Acenaphthylene	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
Anthracene	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
Benzidine	NELAP	0.200		**ND**	mg/L	1	08/16/2011 12:27	70418
Benzo(a)anthracene	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
Benzo(a)pyrene	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
Benzo(b)fluoranthene	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
Benzo(g,h,i)perylene	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
Benzo(k)fluoranthene	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
Bis(2-chloroethoxy)methane	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
Bis(2-chloroethyl)ether	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
Bis(2-chloroisopropyl)ether	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
Bis(2-ethylhexyl)phthalate	NELAP	0.030		**ND**	mg/L	1	08/16/2011 12:27	70418

Client: Mallinckrodt Inc. **Work Order:** 11080650

Client Project: MP-104 **Report Date:** 22-Aug-11

Lab ID: 11080650-001 **Client Sample ID:** MP-104

Matrix: AQUEOUS **Collection Date:** 08/15/2011 0:00

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 625 (MODIFIED), SEMI-VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Butyl benzyl phthalate	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
Chrysene	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
Dibenzo(a,h)anthracene	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
Diethyl phthalate	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
Dimethyl phthalate	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
Di-n-butyl phthalate	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
Di-n-octyl phthalate	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
Fluoranthene	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
Fluorene	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
Hexachlorobenzene	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
Hexachlorobutadiene	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
Hexachlorocyclopentadiene	NELAP	0.100		**ND**	mg/L	1	08/16/2011 12:27	70418
Hexachloroethane	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
Indeno(1,2,3-cd)pyrene	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
Isophorone	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
Naphthalene	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
Nitrobenzene	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
N-Nitrosodimethylamine	NELAP	0.100	J	**0.036**	mg/L	1	08/16/2011 12:27	70418
N-Nitroso-di-n-propylamine	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
N-Nitrosodiphenylamine	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
Pentachlorophenol	NELAP	0.100		**ND**	mg/L	1	08/16/2011 12:27	70418
Phenanthrene	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
Phenol	NELAP	0.025		**ND**	mg/L	1	08/16/2011 12:27	70418
Pyrene	NELAP	0.050		**ND**	mg/L	1	08/16/2011 12:27	70418
Surr: 2,4,6-Tribromophenol		26.4-130		**108.1**	%REC	1	08/16/2011 12:27	70418
Surr: 2-Fluorobiphenyl		38.3-115		**93.9**	%REC	1	08/16/2011 12:27	70418
Surr: 2-Fluorophenol		16.5-65		**53.0**	%REC	1	08/16/2011 12:27	70418
Surr: Nitrobenzene-d5		47.6-107		**91.2**	%REC	1	08/16/2011 12:27	70418
Surr: Phenol-d5		9.94-41.7		**41.7**	%REC	1	08/16/2011 12:27	70418
Surr: p-Terphenyl-d14		1-136		**104.7**	%REC	1	08/16/2011 12:27	70418

p-Terphenyl-d14 surrogate was outside upper QC limits in the Method Blank.

EPA 600 624 (MODIFIED), VOLATILE ORGANIC COMPOUNDS BY GC/MS								
1,1,1-Trichloroethane	NELAP	100		**ND**	µg/L	20	08/16/2011 14:31	70444
1,1,2,2-Tetrachloroethane	NELAP	100		**ND**	µg/L	20	08/16/2011 14:31	70444
1,1,2-Trichloroethane	NELAP	100		**ND**	µg/L	20	08/16/2011 14:31	70444
1,1-Dichloroethane	NELAP	100		**ND**	µg/L	20	08/16/2011 14:31	70444
1,1-Dichloroethene	NELAP	100		**ND**	µg/L	20	08/16/2011 14:31	70444
1,2-Dichlorobenzene	NELAP	100		**ND**	µg/L	20	08/16/2011 14:31	70444
1,2-Dichloroethane	NELAP	100		**ND**	µg/L	20	08/16/2011 14:31	70444
1,2-Dichloropropane	NELAP	100		**ND**	µg/L	20	08/16/2011 14:31	70444
1,3-Dichlorobenzene	NELAP	100		**ND**	µg/L	20	08/16/2011 14:31	70444
1,4-Dichlorobenzene	NELAP	100		**ND**	µg/L	20	08/16/2011 14:31	70444
2-Chloroethyl vinyl ether	NELAP	400		**ND**	µg/L	20	08/16/2011 14:31	70444
Acrolein	NELAP	2000		**ND**	µg/L	20	08/16/2011 14:31	70444
Acrylonitrile	NELAP	100		**ND**	µg/L	20	08/16/2011 14:31	70444
Benzene	NELAP	40.0		**ND**	µg/L	20	08/16/2011 14:31	70444
Bromodichloromethane	NELAP	100		**ND**	µg/L	20	08/16/2011 14:31	70444

Teklab, Inc.
Environmental Laboratory

Laboratory Results

http://www.teklabinc.com/

Client: Mallinckrodt Inc.
Work Order: 11080650
Client Project: MP-104
Report Date: 22-Aug-11
Lab ID: 11080650-001
Client Sample ID: MP-104
Matrix: AQUEOUS
Collection Date: 08/15/2011 0:00

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 624 (MODIFIED), VOLATILE ORGANIC COMPOUNDS BY GC/MS								
Bromoform	NELAP	100		**ND**	µg/L	20	08/16/2011 14:31	70444
Bromomethane	NELAP	200		**ND**	µg/L	20	08/16/2011 14:31	70444
Carbon tetrachloride	NELAP	100		**ND**	µg/L	20	08/16/2011 14:31	70444
Chlorobenzene	NELAP	100		**ND**	µg/L	20	08/16/2011 14:31	70444
Chloroethane	NELAP	200		**ND**	µg/L	20	08/16/2011 14:31	70444
Chloroform	NELAP	100	J	**27**	µg/L	20	08/16/2011 14:31	70444
Chloromethane	NELAP	200	J	**55**	µg/L	20	08/16/2011 14:31	70444
cis-1,3-Dichloropropene	NELAP	100		**ND**	µg/L	20	08/16/2011 14:31	70444
Dibromochloromethane	NELAP	100		**ND**	µg/L	20	08/16/2011 14:31	70444
Ethylbenzene	NELAP	100		**ND**	µg/L	20	08/16/2011 14:31	70444
Methylene chloride	NELAP	100		**ND**	µg/L	20	08/16/2011 14:31	70444
Tetrachloroethene	NELAP	100		**ND**	µg/L	20	08/16/2011 14:31	70444
Toluene	NELAP	40.0		**ND**	µg/L	20	08/16/2011 14:31	70444
trans-1,2-Dichloroethene	NELAP	100		**ND**	µg/L	20	08/16/2011 14:31	70444
trans-1,3-Dichloropropene	NELAP	100		**ND**	µg/L	20	08/16/2011 14:31	70444
Trichloroethene	NELAP	100		**ND**	µg/L	20	08/16/2011 14:31	70444
Vinyl chloride	NELAP	40.0		**ND**	µg/L	20	08/16/2011 14:31	70444
Xylenes, Total	NELAP	100		**ND**	µg/L	20	08/16/2011 14:31	70444
Surr: 1,2-Dichloroethane-d4		74.7-129		**96.3**	%REC	20	08/16/2011 14:31	70444
Surr: 4-Bromofluorobenzene		86-119		**101.7**	%REC	20	08/16/2011 14:31	70444
Surr: Dibromofluoromethane		81.7-123		**98.3**	%REC	20	08/16/2011 14:31	70444
Surr: Toluene-d8		84.3-114		**100.2**	%REC	20	08/16/2011 14:31	70444

Elevated reporting limit due to sample composition.

Teklab, Inc.
Environmental Laboratory

Receiving Check List

http://www.teklabinc.com/

Client: Mallinckrodt Inc.
Client Project: MP-104

Work Order: 11080650
Report Date: 22-Aug-11

Carrier: Ricky Schmidt

Received By: MLD

Completed by: Timothy W. Mathis
On: 15-Aug-11

Reviewed by: Elizabeth A. Hurley
On: 16-Aug-11

Pages to follow: Chain of custody 1 Extra pages included 1

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐	Temp °C 2.6
Type of thermal preservation?	None ☐	Ice ☑	Blue Ice ☐	Dry Ice ☐
Chain of custody present?	Yes ☑	No ☐		
Chain of custody signed when relinquished and received?	Yes ☑	No ☐		
Chain of custody agrees with sample labels?	Yes ☑	No ☐		
Samples in proper container/bottle?	Yes ☑	No ☐		
Sample containers intact?	Yes ☑	No ☐		
Sufficient sample volume for indicated test?	Yes ☑	No ☐		
All samples received within holding time?	Yes ☑	No ☐		
Reported field parameters measured:	Field ☐	Lab ☑	NA ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐		
When thermal preservation is required, samples are compliant with a temperature between 0.1°C - 6.0°C, or when samples are received on ice the same day as collected.				
Water - vials have zero headspace?	Yes ☐	No ☑	No VOA vials ☐	
Water - TOX containers have zero headspace?	Yes ☐	No ☐	No TOX containers ☑	
Water - pH acceptable upon receipt?	Yes ☐	No ☑		

Any No responses must be detailed below or on the COC.

Headspace was present in all of the volatile vials. Per client consent, continue with analysis despite headspace.

Additional nitric and sulfuric acids were needed upon arrival at the laboratory. BSJ/TWM 8/15/11

CHAIN OF CUSTODY

pg. 1 of 1 Work Order # 11080650

TEKLAB, INC. 5445 Horseshoe Lake Road ~ Collinsville, IL 62234 ~ Phone: (618) 344-1004 ~ Fax: (618) 344-1005

Client: Mallinckrodt
Address: 3600 N 2nd Street
City / State / Zip: St Louis, MO 63147
Contact: Julie Summers Phone: 314-654-1969
E-Mail: Fax:

Samples on: ☒ Ice ☐ Blue Ice ☐ No Ice 2.6 °C
Preserved in: ☒ Lab ☐ Field
FOR LAB USE ONLY
Lab Notes: One Day TAT
Teklab, Inc. Courier Pick Up

Comments: 24-hr turn around
If headspace, continue processing
HEADSPACE IN BOTH CONTAINERS TM 8-15-11

- Are these samples known to be involved in litigation? If yes, a surcharge will apply. ☐ Yes ☐ No
- Are these samples known to be hazardous? ☐ Yes ☐ No
- Are there any required reporting limits to be met on the requested analysis? If yes, please provide limits in comment section. ☐ Yes ☐ No

Project Name / Number: MD-104
Sample Collector's Name: JAS
Results Requested: ☐ Standard ☒ 1-2 Day (100% Surcharge) ☐ Other ☐ 3 Day (50% Surcharge)
Billing Instructions:

Lab Use Only	Sample Identification	Date/Time Sampled	# and Type of Containers: UNPRES	HNO_3	NaOH	H_2SO_4	HCL	MeOH	$NaHSO_4$	Other	MATRIX: Water	Drinking Water	Soil	Sludge	Sp. Waste	BOD	COD	TSS	Metals	TTD Volatile	TTD Semivols	pH
11080650-001	MD-104	8/15	2			1	2				X					X	X	X	X	X	X	X
	* Added Nitric No																					
	CHANGE IN PH	TM 8-15-11																				
	ADD SULFURIC	TM 8-15-11																				

Relinquished By	Date / Time	Received By	Date / Time
Julie Summers	8/15/11	Rick Sander	8/15/11 16:00
Ricky Sander	8/15/11 16:45	Marvin L. Darling II	8/15/11 1645

The individual signing this agreement on behalf of client acknowledges that he/she has read and understands the terms and conditions of this agreement, on the reverse side, and that he/she has the authority to sign on behalf of client.

WHITE & YELLOW – LAB PINK – SAMPLER'S COPY

MSD 013038

Timothy W. Mathis

From: Heather A. White
Sent: Tuesday, August 16, 2011 8:27 AM
To: Timothy W. Mathis
Subject: FW: MP-104 Sample

From: Summers, Julie [mailto:Julie.Summers@Covidien.com]
Sent: Tuesday, August 16, 2011 8:25 AM
To: Heather A. White
Subject: MP-104 Sample

The metals I need to have run on the MP-104 samples we submitted yesterday are:

Cadmium
Chromium
Copper
Iron
Nickel
Lead
Zinc

Thanks,
Julie Summers
Environmental Manager
Covidien/Mallinckrodt
3600 North 2nd Street
St. Louis, MO 63147
314-654-1969 Phone
314-654-1251 Fax

MSDS Number: **MP104** * * * * * *Effective Date: 02/19/97*

MSDS Material Safety Data Sheet

From: Mallinckrodt Inc.
675 McDonnell Blvd.
St. Louis, MO 63042

MALLINCKRODT

24 Hour Emergency Telephone: 314-654-1600
CHEMTREC: 1-800-424-9300
National Response in Canada
CANUTEC: 613-996-6666
Outside U.S. And Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

MP-104

1. Product Identification

Synonyms: 5-Amino-N,N'-bis(2,3-dihydroxypropyl)-2,4,6-triiodoisophtha lamide
CAS No.: 76801-93-9
Molecular Weight: 705.04
Chemical Formula: C14H18I3N3O6
Product Codes: 5831

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
5-Amino-N,N'-bis(2,3-dihydroxypropyl)-2,4,6-triiodoisophthalamide (MP-104)	76801-93-9	100%	Yes

3. Hazards Identification

Emergency Overview

As part of good industrial and personal hygiene and safety procedure, avoid all unnecessary exposure to the chemical substance and ensure prompt removal from skin, eyes and clothing.

Potential Health Effects

Inhalation:
Inhalation of large amounts of dust may cause breathing discomfort.
Ingestion:
No information found.
Skin Contact:
No adverse affects expected.
Eye Contact:
No adverse effects expected but dust may cause mechanical irritation.
Chronic Exposure:
No information found.

Aggravation of Pre-existing Conditions:
No information found.

4. First Aid Measures

Inhalation:
Remove to fresh air. Get medical attention for any breathing difficulty.
Ingestion:
If large amounts were swallowed, give water to drink and get medical advice.
Skin Contact:
Wash exposed area with soap and water. Get medical advice if irritation develops.
Eye Contact:
Wash thoroughly with running water. Get medical advice if irritation develops.

5. Fire Fighting Measures

Fire:
Not considered to be a fire hazard.
Explosion:
Not considered to be an explosion hazard.
Fire Extinguishing Media:
Use any means suitable for extinguishing surrounding fire.
Special Information:
In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Sweep up and containerize for reclamation or disposal. Vacuuming or wet sweeping may be used to avoid dust dispersal.

7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:
- OSHA Permissible Exposure Limit (PEL):
15 mg/m3 total dust, 5 mg/m3 respirable fraction for nuisance dusts.
- ACGIH Threshold Limit Value (TLV):
10 mg/m3 total dust containing no asbestos and < 1% crystalline silica for Particulates Not Otherwise Classified (PNOC).
Ventilation System:
A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.
Personal Respirators (NIOSH Approved):
If the exposure limit is exceeded, a half-face dust/mist respirator may be worn for up to ten times the exposure

limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece dust/mist respirator may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:
Gloves and lab coat, apron or coveralls.

Eye Protection:
Safety glasses. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:
Off-white granules.

Odor:
Odorless.

Solubility:
Approximately 1% w/v in water.

Specific Gravity:
0.8-1.0

pH:
No information found.

% Volatiles by volume @ 21C (70F):
No information found.

Boiling Point:
Not applicable.

Melting Point:
185 - 187C (365 - 369F) Decomposes.

Vapor Density (Air=1):
No information found.

Vapor Pressure (mm Hg):
No information found.

Evaporation Rate (BuAc=1):
No information found.

10. Stability and Reactivity

Stability:
Stable under ordinary conditions of use and storage.

Hazardous Decomposition Products:
Oxides of carbon as well as ionic or oxidized iodine if heated to decomposition.

Hazardous Polymerization:
Will not occur.

Incompatibilities:
No information found.

Conditions to Avoid:
No information found.

11. Toxicological Information

Unpublished studies: No toxicity observed in mice at i. v. doses below 400 mg/kg. Not mutagenic based on Ames test.

--------\Cancer Lists\----------

Ingredient	NTP Carcinogen Known	NTP Carcinogen Anticipated	IARC Category
5-Amino-N,N'-bis(2,3-dihydroxypropyl)-2,4,6-triiodoisophthalamide (MP-104) (76801-93-9)	No	No	None

12. Ecological Information

Environmental Fate:
No information found.
Environmental Toxicity:
No information found.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Not regulated.

15. Regulatory Information

--------\Chemical Inventory Status - Part 1\----------

Ingredient	TSCA	EC	Japan	Australia
5-Amino-N,N'-bis(2,3-dihydroxypropyl)-2,4,6-triiodoisophthalamide (MP-104) (76801-93-9)	Exempt	No	No	No

--------\Chemical Inventory Status - Part 2\----------

Ingredient	Korea	Canada DSL	Canada NDSL	Phil.
5-Amino-N,N'-bis(2,3-dihydroxypropyl)-2,4,6-triiodoisophthalamide (MP-104) (76801-93-9)	No	No	No	No

--------\Federal, State & International Regulations - Part 1\----------

Ingredient	SARA 302 RQ	SARA 302 TPQ	SARA 313 List	SARA 313 Chemical Catg.
5-Amino-N,N'-bis(2,3-dihydroxypropyl)-2,4,6-triiodoisophthalamide (MP-104) (76801-93-9)	No	No	No	No

--------\Federal, State & International Regulations - Part 2\----------

Ingredient	CERCLA	RCRA 261.33	TSCA 8(d)
5-Amino-N,N'-bis(2,3-dihydroxypropyl)-2,4,6-triiodoisophthalamide (MP-104)	No	No	No

(76801-93-9)

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: No Chronic: No Fire: No Pressure: No
Reactivity: No (Pure / Solid)

Australian Hazchem Code: No information found.
Poison Schedule: No information found.
WHMIS:
This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: **0** Flammability: **0** Reactivity: **0**
Label Hazard Warning:
As part of good industrial and personal hygiene and safety procedure, avoid all unnecessary exposure to the chemical substance and ensure prompt removal from skin, eyes and clothing.
Label Precautions:
None.
Label First Aid:
Not applicable.
Product Use:
Drug manufacturing intermediate.
Revision Information:
New 16 section MSDS format, all sections have been revised.
Disclaimer:
****
Mallinckrodt provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose. MALLINCKRODT MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE INFORMATION SET FORTH HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS. ACCORDINGLY, MALLINCKRODT WILL NOT BE RESPONSIBLE FOR DAMAGES RESULTING FROM USE OF OR RELIANCE UPON THIS INFORMATION.
****
Prepared by: Strategic Services Division
Phone Number: (314) 539-1600 (U.S.A.)

Metropolitan St. Louis Sewer District
Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

August 11, 2011

Julie Summers
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Re: Wastewater User Charge Billing for Special Discharge

Dear Ms. Summers:

This is to advise you of the wastewater user charges applicable to an on-site special discharge approved in our letter to you dated August 1, 2011. You were advised of the extra-strength surcharges as part of the approval letter. That charge was determined using the ethylene glycol concentration in your application for special discharge. The discharge date and quantity are from information submitted by you in an email dated August 11, 2011.

Our Finance Department will bill you by invoice for the charges described below. These charges are based on the rates in MSD Wastewater User Charge Ordinance 13021. For your convenience, using the volume and strength of the waste discharged, the ordinance rates have been converted to a per-gallon basis.

PARTY TO BILL: Addressee

BILLING IS FOR: On-Site Special Discharge

DISCHARGE PERIOD: August 9, 2011

SOURCE OF WASTE: 10% ethylene glycol solution at the building 250 Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri.

Discharge Period	Billing Item	Quantity	Units	Rate	Charge
8/9/11	Extra-Strength Surcharge	2700	Gal	$0.13	$351.00
Totals:	------	2700	Gal	-----	$351.00

Please do not pay until you receive our invoice. If you have any questions, please contact me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

pc Chris Verplancke - Finance Dept.
Doug Mendoza
Brian Gibson

File: IU, MALLINCKRODT INC [2112059600], 3600 North Second Street, St. Louis, Missouri

Steve Grace

From: Summers, Julie [Julie.Summers@Covidien.com]
Sent: Thursday, August 11, 2011 9:02 AM
To: Steve Grace
Subject: August 1, 2011 B250 Glycol Special Discharge Permit Follow-up Information

Steve,

On August 1, 2011, approval was receive from MSD to discharge 2750 gallons of a 10% ethylene glycol solution from the B250 chiller system. On August 9, 2011 2700 gallons of 10% ethylene glycol solution was discharged through the plant sewers to the plant's neutralization system between 0645 and 1100.

Please call me if you have any questions or need additional information.

Thanks,
Julie Summers
Environmental Manager
Mallinckrodt/Covidien
3600 North 2nd Street
St. Louis, MO 63147
314-654-1969 Phone
314-654-1251 Fax

Metropolitan St. Louis Sewer District

Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

August 11, 2011

Julie Summers
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Dear Ms. Summers:

We have reviewed your application dated August 11, 2011 requesting approval to discharge 150 gallons of wastewater to the Metropolitan St. Louis Sewer District for treatment. This wastewater is 30% ethylene glycol solution at the building 25 Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri. We understand that the wastewater will be discharged through sampling point 010.

Based on the information you provided, this wastewater meets MSD Ordinance 12559 standards and is approved for discharge into a sanitary sewer on site. The discharge into the sewer must be controlled at a rate that will not surcharge the lines in the area. This approval is valid for 30 days from the date of this letter.

You must be certain the waste is discharged into a sanitary or combined sewer inlet only. This letter does not authorize any discharge to a separate storm sewer, or to any watercourse, as any such discharge would be in violation of state and federal laws. **Please notify me at the number below when the discharge is to commence, and please ensure the onsite personnel discharging the wastewater in question are provided with a copy of this letter.**

For billing purposes associated with this high COD wastewater, you must confirm the volume of this wastewater discharged to us, in writing, at the completion of the discharge. This report is due no later than 28 days after this approval expires. Please refer to this letter and include the date of the discharge when providing that figure. Under the provisions of Ordinance 13021, you will be billed by invoice at the billing rate in effect at the time of discharge. The current rate contained in MSD Ordinance 13021 is $310.07 per ton for COD over 600 mg/L. Using the assumed COD concentration based on the percent of ethylene glycol contained in the wastewater in question, and the proposed discharge volume provided in your application, it is estimated that you will be discharging under one ton of COD over 600 mg/L. (Our quantitative estimate is 0.19 tons COD times $310.07.) Please do not pay this amount until you receive our invoice.

This discharge has been approved based upon the information and sample analysis you provided, and is subject to the conditions stated above. This approval may be revoked by the District at any time if any of the information is found to be incorrect, or if the conditions of this approval are violated. Also, if the discharge causes any operational or maintenance problem within the District's collection or treatment system, or results in violations of any conditions of the District's NPDES permit, Mallinckrodt will be considered responsible for damages. If you have any questions, please call me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

pc: Brian Gibson
Doug Mendoza

File: IU, MALLINCKRODT INC [2112059600]

C1A

SD EVALUATION CHECKLIST - ON SITE

APPLICATION INFORMATION

Source Name: Mallinckrodt Inc.

Premise Address: 3600 N. 2nd St.

Send approval letter to applicant

Evaluated by: SMG

Date: 8/11/11

Application Dated: 8/11/11 Received: 8/11/11 All Requested Info. Received: 8/11/11

SOURCE FILING/DESCRIPTION

1 - Source in PIMS? (Y) / N
2 - If No, on IU Cross-Ref list? * Y / N
3 - If No, MSD Account # from E-CIS? Y / N
4 - If none, on "Source" list (pre-IMS)? ** Y / N
5 - If No, assigned SOUR# from PIMS.

* o:\costrecovery\cross reference xls file

** o:\costrecovery\sourlist xls file

SOURCE TYPE (circle): (IU) / Dead IU / SD

INDUSTRY ID: 2112-0596-00

Sample Point: No. Assigned: 851 Description: 30% ethylene glycol solution from Bldg. 25 chiller system

Normal WW flow from premise? N/A _____ ccf/month, 2,992,101 GPD, _____ GPH. from SP010

REGULATORY STATUS

Is waste a Hazardous Waste? (N) / Y

Categorical standards apply? (N) / Y

Contain PCB/ asbestos/ radioactive/ dioxin/ used oil? (N) / Y

Regulatory Agency Oversight? (N) Y

DISCHARGE CONSIDERATIONS At MSD's connection:

Ordinance Limits (12559, p32) exceeded? (N) / Y

Ordinance other limits exceeded (dye, flash pt <140F, temp >140F, obstruction, nuisance foaming/odor, corrosion causing): (N) / Y

Water Quality Standard exceeded? (N) / Y

Fumes in sewer exceed PEL/TLV limits? (N) / Y

Vapors in sewer exceed 10% of LEL? (N) / Y

RECOMMENDATION: (APPROVE) / DENY (cc WWTP Mgr for timed discharge)

APPROVAL CONDITIONS:

Timed Discharge (COD/BOD/WQ/foam): (N) / Y Limit = _____ gal/hour

Require Treatment before Discharge? (N) / Y

Laboratory analysis fee due? (N) / Y $_____

SMR required? (N) / Y Frequency/analysis: _____

SMR log: (N/A) / Remediation.xls / Nonremediation.xls

Volume Billing applies (water unmetered or credited)? (N) / Y

Bill High Strength? N / (Y) Yes, If use >60,000 gal/month water ✓ and, > norm WW strgth

Surcharge calculation attached: N/A / N / (Y)

Expiration log updated: (N/A) / N / Y

O:\CostRecovery\Special Discharge\C1a.Checklist.doc

On-Site Special Discharge High Strength Flow Rate and Surcharge Calculator

1 GENERAL INFORMATION:

Date: 08/11/11
Calculated by: Steve Grace
Source name: MALLINCKRODT LLC [2112059600]
Waste material: Used ethylene glycol coolant solution from Building 25
Discharge volume: 150 gallons

2 STRENGTH INFORMATION:

Sample BOD =	0	mg/l =	0	lbs BOD to be discharged
Sample COD =	300,000	mg/l =	375	lbs COD to be discharged
Sample TSS =	0	mg/l =	for surcharge calculation only	

3 PLANT DATA: 2010

Treatment area: Bissell

	Flow (MGD)	BOD (mg/L)	COD (mg/L)	BOD (lb/hr)	COD (lb/hr)	Max Loading = 10% BOD (lb/hr)	COD (lb/hr)
Bissell	**140**	**146**	**292**	**7,113**	**14,227**	**711**	**1,423**
Coldwater	26	188	377	1,704	3,408	170	341
Fenton	5	388	776	679	1,357	68	136
Grand Glaize	16	129	405	708	2,218	71	222
Lemay	131	78	210	3,531	9,584	353	958
Lower Meramec	13	124	409	543	1,785	54	179
Missouri River	27	280	559	2,671	5,341	267	534

4 MINIMUM REQUIRED FLOW RATE:

	BOD (hours	BOD (gpm)	COD (hours)	COD (gpm)
Bissell	**0.00**	**0**	**0.26**	**9**
Coldwater	0.00	0	1.10	2
Fenton	0.00	0	2.76	1
Grand Glaize	0.00	0	1.69	1
Lemay	0.00	0	0.39	6
Lower Meramec	0.00	0	2.10	1
Missouri River	0.00	0	0.70	4

5 SURCHARGE AND VOLUME BILLING

Is volume subject to billing? no (yes/no)
Ratio of BOD/COD = 0.00

(Sample BOD) - 300 = 0 mg/l subject to surcharge
(sample COD) - 600 = 299400 mg/l subject to surcharge
(sample TSS) - 300 = 0 mg/l subject to surcharge

If BOD/COD ratio <= 0.35, the following calculations use the COD value. Otherwise they use the BOD value

Current rates under Ordinance: 13021

Volume =	$ 2.11	/CcF
BOD =	$ 620.14	/ton
COD =	$ 310.07	/ton
TSS =	$ 231.35	/ton

Flow charge =	$ -	based on volume = 0.2 CcF
BOD surcharge =	$ -	
COD surcharge =	$ 58.08	
TSS surcharge =	$ -	
Total discharge charge =	$ 58.08	
Customer charge =	**$ 58.08**	DEC charges special discharge customers for total charges > $20.00
Approximate charge/gallon =	$ 0.39	

Comments

require volume report for billing purposes. Smg

Metropolitan St. Louis Sewer District
2350 Market Street
St. Louis, MO 63103

APPLICATION FOR SPECIAL DISCHARGE APPROVAL

I. WASTEWATER SOURCE IDENTIFICATION:

Site Name: Mallinckrodt
Premise Address: 3600 N 2nd Street
City: St Louis State: MO Zip: 63147
Owner: Mallinckrodt
Contact Person: Julie Summers
Title: Env Mgr
Phone: 314-654-1969 Fax: 314-654-1251

II. APPLICANT (mailing information):

Applicant Name: ~~Matt~~ Julie Summers
Title: Env Mgr
Company Name: Mallinckrodt
Mailing Address: 3600 N 2nd Street
City: St Louis State: MO Zip: 63147
Phone: 314-654-1969 Fax: 314-654-1251

III. A. MATERIAL TO BE DISCHARGED (check all applicable boxes):

1. Wastewater description/location: B25 Chiller Unit (Ethylene glycol/water)
2. Process/activity generating wastewater: B25 Chiller System
3. Physical and chemical composition: List all constituents, and known or potentially present regulated contaminants below.
   ☐ See separate listing enclosed, and/or ☐ See analytical results enclosed, and/or ☑ Material Safety Data Sheet enclosed.

DESCRIPTION	RANGE	UNIT
Ethylene Glycol	30	%
Water	70	%

DESCRIPTION *(continued)*	RANGE	UNIT

4. Is this wastewater from a process subject to EPA's categorical standards in 40 CFR Subchapter N? ☐ Yes ☑ No
   a. If yes, the applicable standards are in: 40 CFR Part _____, Subpart _____ ☐ Existing source ☐ New source
5. Does this wastewater contain polychlorinated biphenyls, asbestos or radioactive material? ☐ Yes ☑ No
   a. If yes, describe: _____
6. Representative sample: ☐ Laboratory results attached, and/or ☐ Sample provided (1/2 gallon minimum, clear container)
   a. Sample collection point/location: _____ Collection method: _____
   b. Sampler's name/Co.: _____ Sample date/time: _____
   c. Attach chain of custody as available
7. Discharge will occur over the following time period: ☑ < 30 days ☐ ≥ Two years ☐ Other: _____
   a. Expected total volume of wastewater to be discharged over the time period above: 150 Gallons
   b. Proposed discharge volume: 150 Gallons, at a frequency of: ☑ One time ☐ Daily ☐ Weekly ☐ Monthly ☐ Once/three months ☐ Once/six months ☐ Other: _____
8. Pretreatment of wastewater prior to discharge: ☐ None ☑ Yes, describe: pH adjust at main Outfall SP010
   a. If yes, attach site plan, pretreatment system schematic, and design specifications.
9. Wastewater from a remediation project under: ☐ Superfund/CERCLA ☐ RCRA ☐ Voluntary program ☐ UST ☑ Not applicable
   a. If from a remediation project, briefly describe the past and present utilization of the property: _____

III.B. MATERIAL FROM UNDERGROUND STORAGE TANK SOURCE

☑ **Not applicable (go to Section IV)**

Please answer the following questions if you are requesting to discharge wastewater associated with an underground storage tank system.

1. a. Wastewater from: ☐ Inside UST(s) ☐ UST system pit ☐ Excavation outside UST system pit ☐ Monitoring well ☐ Groundwater remediation system

   b. UST project involves wastewater from: ☐ UST(s) closed in place ☐ UST(s) removed ☐ Remediation ☐ Upgrade ☐ Maintenance activities ☐ Well monitoring ☐ Other, explain: _____

   c. If wastewater is from a closure project, how long has UST(s) been out of service: _____ years

2. a. State assigned UST site identification number: _____ ☐ Not applicable

   b. Number of USTs affected: _____ ☐ Unknown

   c. For the UST(s) involved, their state identification number(s): _____ ☐ Not applicable

   d. Service Station Identification Number, as applicable: _____

3. Tank contents/former contents: ☐ Gasoline ☐ #2 diesel ☐ Used oil ☐ Unknown ☐ Other: _____

IV. DISCHARGE LOCATION

1. ☑ On-site. Describe proposed point of entry to sewer and the discharge rate (must be a sanitary or combined sewer): _____

   Plant sewer to main outfall SP010 Note: Range of discharge must not surcharge sewer line.

2. ☐ Haul to MSD Bissell Point Hauled Waste Receiving Station at 10 E. Grand, St. Louis, MO.

   a. Transporters Name: _____ and MSD Hauler ID Number: _____

   b. Hazardous Waste Certification:

   For wastewater which is hauled to MSD's Bissell Point Hauled Waste Receiving Station, I hereby certify that to the best of my knowledge and belief, the above hauled waste is not classified as a RCRA "hazardous waste" as defined by the MDNR in 10 CSR 25 or USEPA in 40 CFR Part 261.

   Applicant Name (print): _____

   Signature: _____ **Date:** _____

ADDITIONAL INFORMATION:

_____

V. APPLICANT SIGNATURE AND CERTIFICATION

This application must be signed by the applicant: either the source contact, or a contractor or agent directly responsible for site activities.

I hereby certify that I am directly responsible for activities at the site regarding the wastewater to be discharged, and to the best of my knowledge and belief, based on appropriate inquiry, the information in this application is true, complete, and accurate. The samples or analyses submitted are representative of the materials to be discharged. If granted approval to discharge, I agree to abide by the MSD Ordinances, and all applicable federal, state and local regulations. I agree to pay the costs of any pre-approval analyses performed by MSD and to pay any applicable disposal charges for the volume and strength of the wastes discharged.

Applicant Name (print): Julie Summers

Signature: Julie Summers **Date:** 8/11/11

FOR MSD USE ONLY:

File Name: Mallinckrodt, Inc. ID No. 21120596-00 Sample Point No. 851

MSDS Material Safety Data Sheet

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865

Mallinckrodt CHEMICALS J.T.Baker

24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300

National Response in Canada
CANUTEC: 613-996-6666

Outside U.S. and Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

ETHYLENE GLYCOL

1. Product Identification

Synonyms: 1,2-Ethanediol; glycol; 1,2-Dihydroxyethane; Ethylene Alcohol; Ethulene Dihydrate
CAS No.: 107-21-1
Molecular Weight: 62.07
Chemical Formula: CH2OHCH2OH
Product Codes:
J.T. Baker: 5387, 5845, 9140, 9298, 9300, 9346, 9356, L715
Mallinckrodt: 5001, 5037

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Ethylene Glycol	107-21-1	99 - 100%	Yes

3. Hazards Identification

Emergency Overview

WARNING! HARMFUL OR FATAL IF SWALLOWED. HARMFUL IF INHALED OR ABSORBED THROUGH SKIN. MAY CAUSE ALLERGIC SKIN REACTION. MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT. AFFECTS CENTRAL NERVOUS SYSTEM.

SAF-T-DATA(tm) Ratings (Provided here for your convenience)

Health Rating: 2 - Moderate (Life)
Flammability Rating: 1 - Slight
Reactivity Rating: 1 - Slight
Contact Rating: 3 - Severe (Life)
Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES
Storage Color Code: Green (General Storage)

Explosion:
Above flash point, vapor-air mixtures are explosive within flammable limits noted above. Containers may explode when involved in a fire.
Fire Extinguishing Media:
Dry chemical, foam or carbon dioxide. Water or foam may cause frothing. Water spray may be used to extinguish surrounding fire and cool exposed containers. Water spray will also reduce fume and irritant gases.
Special Information:
In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Toxic gases and vapors may be released if involved in a fire.

6. Accidental Release Measures

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Separate from acids and oxidizing materials. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:
Ethylene Glycol [107-21-1]:

-ACGIH Short-Term Exposure Limit (STEL):
100 mg/m3 Ceiling (aerosol only)
Ventilation System:
A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.
Personal Respirators (NIOSH Approved):
If the exposure limit is exceeded, a half-face respirator with an organic vapor cartridge and particulate filter (NIOSH type P95 or R95 filter) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece respirator with an organic vapor cartridge and particulate filter (NIOSH P100 or R100 filter) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. Please note that N series filters are not recommended for this material. For emergencies or instances where the exposure levels are not known, use a full-face piece positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.
Skin Protection:
Wear protective gloves and clean body-covering clothing.
Eye Protection:

Ingredient	Known	Anticipated	IARC Category
Ethylene Glycol (107-21-1)	No	No	None

12. Ecological Information

Environmental Fate:
When released into the soil, this material is expected to readily biodegrade. When released into the soil, this material is expected to leach into groundwater. When released into the soil, this material is not expected to evaporate significantly. When released into water, this material is expected to readily biodegrade. When released into the water, this material is expected to have a half-life between 1 and 10 days. This material is not expected to significantly bioaccumulate. This material has a log octanol-water partition coefficient of less than 3.0. When released into water, this material is not expected to evaporate significantly. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material is expected to have a half-life between 1 and 10 days.
Environmental Toxicity:
The LC50/96-hour values for fish are over 100 mg/l.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Not regulated.

15. Regulatory Information

--------\Chemical Inventory Status - Part 1\--------

Ingredient	TSCA	EC	Japan	Australia
Ethylene Glycol (107-21-1)	Yes	Yes	Yes	Yes

--------\Chemical Inventory Status - Part 2\--------

Ingredient	Korea	--Canada-- DSL	NDSL	Phil.
Ethylene Glycol (107-21-1)	Yes	Yes	No	Yes

--------\Federal, State & International Regulations - Part 1\--------

Ingredient	-SARA 302- RQ	TPQ	------SARA 313------ List	Chemical Catg.
Ethylene Glycol (107-21-1)	No	No	Yes	No

--------\Federal, State & International Regulations - Part 2\--------

Ingredient	CERCLA	-RCRA- 261.33	-TSCA- 8(d)
Ethylene Glycol (107-21-1)	5000	No	No

TO: Chris Verplancke, Finance Department

FROM: Steven M. Grace, DEC SMG

DATE: August 1, 2011

RE: **Wastewater User Charge Billing for Special Discharge**

Please bill, by invoice, the following charges applicable to an on-site special discharge approved in our letter dated October 30, 1998, as modified in letters dated November 20, 1998, July 19, 1999, March 28, 2001, October 13, 2004, June 19, 2006, and May 22, 2008. The discharge dates and quantity are from information submitted by Sharon Cotner, Corps of Engineers, in a letter dated July 28, 2011.

This charge is based on the rates in MSD Wastewater User Charge Ordinance 13021.

PARTY TO BILL: Larry Joellenbeck
The Shaw Group Inc.
1 Angelrodt Street
St. Louis, MO 63147

BILLING IS FOR: On-Site Special Discharge

DISCHARGE PERIOD: April through June 2011

SOURCE OF WASTE: Treated construction water from the St. Louis Downtown FUSRAP Site located at Mallinckrodt, Inc., 3600 N. Second Street, St. Louis, Missouri.

Discharge Period	Billing Item	Quantity	Units	Rate	Charge
4/1/11 - 6/30/11	Volume	588	CcF	$2.02	$1,187.76
Totals:	---	588	CcF	---	$1,187.76

If you have any questions, please call me on extension 8755.

bv

pc: Brian Gibson
Doug Mendoza
Larry Joellenbeck, The Shaw Group Inc., 1 Angelrodt St., St. Louis, MO 63147

File: IU, MALLINCKRODT INC [2112059600]

Metropolitan St. Louis Sewer District

Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

August 1, 2011

Julie Summers
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Dear Ms. Summers:

We have reviewed your application dated August 1, 2011 requesting approval to discharge 2,750 gallons of wastewater to the Metropolitan St. Louis Sewer District for treatment. This wastewater is 10% ethylene glycol solution at the building 250 Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri. We understand that the wastewater will be discharged through sampling point 010.

Based on the information you provided, this wastewater meets MSD Ordinance 12559 standards and is approved for discharge into a sanitary sewer on site. Due to the high ethylene glycol concentration, the discharge is limited to 1,700 gallons per hour. This approval is valid for 30 days from the date of this letter.

You must be certain the waste is discharged into a sanitary or combined sewer inlet only. This letter does not authorize any discharge to a separate storm sewer, or to any watercourse, as any such discharge would be in violation of state and federal laws. **Please notify me at the number below when the discharge is to commence, and please ensure the onsite personnel discharging the wastewater in question are provided with a copy of this letter.**

For billing purposes associated with this high COD wastewater, you must confirm the volume of this wastewater discharged to us, in writing, at the completion of the discharge. This report is due no later than 28 days after this approval expires. Please refer to this letter and include the date of the discharge when providing that figure. Under the provisions of Ordinance 13021, you will be billed by invoice at the billing rate in effect at the time of discharge. The current rate contained in MSD Ordinance 13021 is $310.07 per ton for COD over 600 mg/L. Using the assumed COD concentration based on the percent of ethylene glycol contained in the wastewater in question, and the proposed discharge volume provided in your application, it is estimated that you will be discharging just over one ton of COD over 600 mg/L. (Our quantitative estimate is 1.14 tons COD times $310.07.) Please do not pay this amount until you receive our invoice.

This discharge has been approved based upon the information and sample analysis you provided, and is subject to the conditions stated above. This approval may be revoked by the District at any time if any of the information is found to be incorrect, or if the conditions of this approval are violated. Also, if the discharge causes any operational or maintenance problem within the District's collection or treatment system, or results in violations of any conditions of the District's NPDES permit, Mallinckrodt will be considered responsible for damages. If you have any questions, please call me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

pc: Brian Gibson
Doug Mendoza

File: IU, MALLINCKRODT INC [2112059600]

On-Site Special Discharge High Strength Flow Rate and Surcharge Calculator

1 GENERAL INFORMATION:

Date: 08/01/11
Calculated by: Steve Grace
Source name: Mallinckrodt, Inc.
Waste material: Used ethylene glycol solution from building 250 chiller system
Discharge volume: 2,750 gallons

2 STRENGTH INFORMATION:

Sample BOD =	0	mg/l =	0	lbs BOD to be discharged
Sample COD =	100,000	mg/l =	2294	lbs COD to be discharged
Sample TSS =	0	mg/l =	for surcharge calculation only	

3 PLANT DATA: 2010

Treatment area: Bissell

	Flow (MGD)	BOD (mg/L)	COD (mg/L)	BOD (lb/hr)	COD (lb/hr)	Max Loading = 10% BOD (lb/hr)	COD (lb/hr)
Bissell	**140**	**146**	**292**	**7,113**	**14,227**	**711**	**1,423**
Coldwater	26	188	377	1,704	3,408	170	341
Fenton	5	388	776	679	1,357	68	136
Grand Glaize	16	129	405	708	2,218	71	222
Lemay	131	78	210	3,531	9,584	353	958
Lower Meramec	13	124	409	543	1,785	54	179
Missouri River	27	280	559	2,671	5,341	267	534

4 MINIMUM REQUIRED FLOW RATE:

	BOD (hours	BOD (gpm)	COD (hours)	COD (gpm)
Bissell	**0.00**	**0**	**1.61**	**28**
Coldwater	0.00	0	6.73	7
Fenton	0.00	0	16.90	3
Grand Glaize	0.00	0	10.34	4
Lemay	0.00	0	2.39	19
Lower Meramec	0.00	0	12.85	4
Missouri River	0.00	0	4.29	11

5 SURCHARGE AND VOLUME BILLING

Is volume subject to billing? no (yes/no)
Ratio of BOD/COD = 0.00

(Sample BOD) - 300 = 0 mg/l subject to surcharge
(sample COD) - 600 = 99400 mg/l subject to surcharge
(sample TSS) - 300 = 0 mg/l subject to surcharge

If BOD/COD ratio <= 0.35, the following calculations use the COD value. Otherwise they use the BOD value

Current rates under Ordinance: 13021

Volume =	$ 2.11	/CcF
BOD =	$ 620.14	/ton
COD =	$ 310.07	/ton
TSS =	$ 231.35	/ton

Flow charge = $ - based on volume = 3.7 CcF
BOD surcharge = $ -
COD surcharge = $ 353.53
TSS surcharge = $ -
Total discharge charge = $ 353.53
Customer charge = $ 353.53 DEC charges special discharge customers for total charges > $20.00
Approximate charge/gallon = $ 0.13

Comments

require volume report for billing purposes. Smg

C1A

SD EVALUATION CHECKLIST - ON SITE

APPLICATION INFORMATION

Source Name: Mallinckrodt Inc.

Evaluated by: SMG

Premise Address: 3600 N. 2nd St.

Date: 8/1/11

Send approval letter to applicant

Application Dated: 8/1/11 Received: 8/1/11 All Requested Info. Received: 8/1/11

SOURCE FILING/DESCRIPTION

1 - Source in PIMS? (Y) / N
2 - If No, on IU Cross-Ref list? * Y / N
3 - If No, MSD Account # from E-CIS? Y / N
4 - If none, on "Source" list (pre-IMS)? ** Y / N
5 - If No, assigned SOUR# from PIMS.

* o:\costrecovery\cross reference xls file
** o:\costrecovery\sourlist xls file

SOURCE TYPE (circle): (IU) / Dead IU / SD

INDUSTRY ID: 21120596-00

Sample Point: No. Assigned: 815 Description: 10% ethylene glycol solution from Bldg. 250 chiller system

Normal WW flow from premise? N/A _____ ccf/month, 2,992,101 GPD, _____ GPH. from SP010

REGULATORY STATUS

Is waste a Hazardous Waste? (N) / Y
Categorical standards apply? (N) / Y
Contain PCB/ asbestos/ radioactive/ dioxin/ used oil? (N) / Y
Regulatory Agency Oversight? (N) / Y

DISCHARGE CONSIDERATIONS At MSD's connection:

Ordinance Limits (12559, p32) exceeded? (N) / Y
Ordinance other limits exceeded (dye, flash pt <140F, temp >140F, obstruction, nuisance foaming/odor, corrosion causing): (N) / Y
Water Quality Standard exceeded? (N) / Y
Fumes in sewer exceed PEL/TLV limits? (N) / Y
Vapors in sewer exceed 10% of LEL? (N) / Y

RECOMMENDATION: (APPROVE) / DENY (cc WWTP Mgr for timed discharge)

APPROVAL CONDITIONS:

Timed Discharge (COD/BOD/WQ/foam): N / (Y) Limit = 1,700 gal/hour
Require Treatment before Discharge? (N) / Y
Laboratory analysis fee due? (N) / Y $_____
SMR required? (N) / Y Frequency/analysis: _____
SMR log: (N/A) / Remediation.xls / Nonremediation.xls
Volume Billing applies (water unmetered or credited)? (N) / Y
Bill High Strength? N / (Y) Yes, If use >60,000 gal/month water ✓ and, > norm WW strgth
Surcharge calculation attached: N/A / N / (Y)
Expiration log updated: (N/A) / N / Y

O:\CostRecovery\Special Discharge\C1a.Checklist.doc

Metropolitan St. Louis Sewer District
2350 Market Street
St. Louis, MO 63103

APPLICATION FOR SPECIAL DISCHARGE APPROVAL

I. WASTEWATER SOURCE IDENTIFICATION:

Site Name: Mallinckrodt
Premise Address: 3600 N 2nd Street
City: St Louis State: MO Zip: 63147
Owner: Mallinckrodt
Contact Person: Julie Summers
Title: Env. Mgr
Phone: 314-654-1969 Fax: 314-654-1251

II. APPLICANT (mailing information):

Applicant Name: Julie Summers
Title: Env mgr
Company Name: Mallinckrodt
Mailing Address: 3600 N 2nd street
City: St LOUIS State: MO Zip: 63147
Phone: 314-654-1969 Fax: 314-654-1251

III. A. MATERIAL TO BE DISCHARGED (check all applicable boxes):

1. Wastewater description/location: Bldg 250 - Glycol/water from chiller system
2. Process/activity generating wastewater: Bldg 250 Chiller System
3. Physical and chemical composition: List all constituents, and known or potentially present regulated contaminants below.
   ☐ See separate listing enclosed, and/or ☐ See analytical results enclosed, and/or ☑ Material Safety Data Sheet enclosed.

DESCRIPTION	RANGE	UNIT
Glycol	10	%
Water	90	%

DESCRIPTION *(continued)*	RANGE	UNIT

4. Is this wastewater from a process subject to EPA's categorical standards in 40 CFR Subchapter N? ☐ Yes ☑ No
   a. If yes, the applicable standards are in: 40 CFR Part _____, Subpart _____ ☐ Existing source ☐ New source
5. Does this wastewater contain polychlorinated biphenyls, asbestos or radioactive material? ☐ Yes ☑ No
   a. If yes, describe: _____
6. Representative sample: ☐ Laboratory results attached, and/or ☐ Sample provided (1/2 gallon minimum, clear container)
   a. Sample collection point/location: _____ Collection method: _____
   b. Sampler's name/Co.: _____ Sample date/time: _____
   c. Attach chain of custody as available
7. Discharge will occur over the following time period: ☑ < 30 days ☐ ≥ Two years ☐ Other: _____
   a. Expected total volume of wastewater to be discharged over the time period above: 2750 Gallons
   b. Proposed discharge volume: 2750 Gallons, at a frequency of: ☑ One time ☐ Daily ☐ Weekly ☐ Monthly ☐ Once/three months ☐ Once/six months ☐ Other: _____
8. Pretreatment of wastewater prior to discharge: ☐ None ☑ Yes, describe: pH adjust at main outfall
   a. If yes, attach site plan, pretreatment system schematic, and design specifications.
9. Wastewater from a remediation project under: ☐ Superfund/CERCLA ☐ RCRA ☐ Voluntary program ☐ UST ☑ Not applicable
   a. If from a remediation project, briefly describe the past and present utilization of the property: _____

III.B. MATERIAL FROM UNDERGROUND STORAGE TANK SOURCE

☑ Not applicable (go to Section IV)

Please answer the following questions if you are requesting to discharge wastewater associated with an underground storage tank system.

1. a. Wastewater from: ☐ Inside UST(s) ☐ UST system pit ☐ Excavation outside UST system pit ☐ Monitoring well ☐ Groundwater remediation system

   b. UST project involves wastewater from: ☐ UST(s) closed in place ☐ UST(s) removed ☐ Remediation ☐ Upgrade ☐ Maintenance activities ☐ Well monitoring ☐ Other, explain: _____

   c. If wastewater is from a closure project, how long has UST(s) been out of service: _____ years

2. a. State assigned UST site identification number: _____ ☐ Not applicable

   b. Number of USTs affected: _____ ☐ Unknown

   c. For the UST(s) involved, their state identification number(s): _____ ☐ Not applicable

   d. Service Station Identification Number, as applicable: _____

3. Tank contents/former contents: ☐ Gasoline ☐ #2 diesel ☐ Used oil ☐ Unknown ☐ Other: _____

IV. DISCHARGE LOCATION

1. ☑ On-site. Describe proposed point of entry to sewer and the discharge rate (must be a sanitary or combined sewer): _____
   Plant sewer to main outfall SP010 Note: Range of discharge must not surcharge sewer line.

2. ☐ Haul to MSD Bissell Point Hauled Waste Receiving Station at 10 E. Grand, St. Louis, MO.

   a. Transporters Name: _____ and MSD Hauler ID Number: _____

   b. Hazardous Waste Certification:

   For wastewater which is hauled to MSD's Bissell Point Hauled Waste Receiving Station, I hereby certify that to the best of my knowledge and belief, the above hauled waste is not classified as a RCRA "hazardous waste" as defined by the MDNR in 10 CSR 25 or USEPA in 40 CFR Part 261.

   Applicant Name (print): _____

   Signature: _____ **Date:** _____

ADDITIONAL INFORMATION:

_____

V. APPLICANT SIGNATURE AND CERTIFICATION

This application must be signed by the applicant: either the source contact, or a contractor or agent directly responsible for site activities.

I hereby certify that I am directly responsible for activities at the site regarding the wastewater to be discharged, and to the best of my knowledge and belief, based on appropriate inquiry, the information in this application is true, complete, and accurate. The samples or analyses submitted are representative of the materials to be discharged. If granted approval to discharge, I agree to abide by the MSD Ordinances, and all applicable federal, state and local regulations. I agree to pay the costs of any pre-approval analyses performed by MSD and to pay any applicable disposal charges for the volume and strength of the wastes discharged.

Applicant Name (print): Julie Summers

Signature: Julie Summers **Date:** 8/1/11

FOR MSD USE ONLY:

File Name: Mallinckrodt Inc. ID No. 21120596-00 Sample Point No. 815

MSDS Material Safety Data Sheet

From: Mallinckrodt Baker, Inc.
222 Red School Lane
Phillipsburg, NJ 08865

Mallinckrodt CHEMICALS

J.T.Baker

24 Hour Emergency Telephone: 908-859-2151
CHEMTREC: 1-800-424-9300

National Response In Canada
CANUTEC: 613-996-6666

Outside U.S. and Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

ETHYLENE GLYCOL

1. Product Identification

Synonyms: 1,2-Ethanediol; glycol; 1,2-Dihydroxyethane; Ethylene Alcohol; Ethulene Dihydrate
CAS No.: 107-21-1
Molecular Weight: 62.07
Chemical Formula: CH2OHCH2OH
Product Codes:
J.T. Baker: 5387, 5845, 9140, 9298, 9300, 9346, 9356, L715
Mallinckrodt: 5001, 5037

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Ethylene Glycol	107-21-1	99 - 100%	Yes

3. Hazards Identification

Emergency Overview

WARNING! HARMFUL OR FATAL IF SWALLOWED. HARMFUL IF INHALED OR ABSORBED THROUGH SKIN. MAY CAUSE ALLERGIC SKIN REACTION. MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT. AFFECTS CENTRAL NERVOUS SYSTEM.

SAF-T-DATA(tm) Ratings (Provided here for your convenience)

Health Rating: 2 - Moderate (Life)
Flammability Rating: 1 - Slight
Reactivity Rating: 1 - Slight
Contact Rating: 3 - Severe (Life)
Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES
Storage Color Code: Green (General Storage)

Potential Health Effects

Inhalation:
Vapor inhalation is generally not a problem unless heated or misted. Exposure to vapors over an extended time period has caused throat irritation and headache. May cause nausea, vomiting, dizziness and drowsiness. Pulmonary edema and central nervous system depression may also develop. When heated or misted, has produced rapid, involuntary eye movement and coma.
Ingestion:
Initial symptoms in massive dosage parallel alcohol intoxication, progressing to CNS depression, vomiting, headache, rapid respiratory and heart rate, lowered blood pressure, stupor, collapse, and unconsciousness with convulsions. Death from respiratory arrest or cardiovascular collapse may follow. Lethal dose in humans: 100 ml (3-4 ounces).
Skin Contact:
Minor skin irritation and penetration may occur.
Eye Contact:
Splashes may cause irritation, pain, eye damage.
Chronic Exposure:
Repeated small exposures by any route can cause severe kidney problems. Brain damage may also occur. Skin allergy can develop. May damage the developing fetus.
Aggravation of Pre-existing Conditions:
Persons with pre-existing skin disorders, eye problems, or impaired liver, kidney, or respiratory function may be more susceptible to the effects of this substance.

4. First Aid Measures

Inhalation:
Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
Ingestion:
Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.
Skin Contact:
Remove any contaminated clothing. Wash skin with soap and water for at least 15 minutes. Get medieal attention if irritation develops or persists.
Eye Contact:
Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

Note to Physician:
Give sodium bicarbonate intravenously to treat acidosis. Urinalysis may show low specific gravity, proteinuria, pyuria, cylindruria, hematuria, calcium oxide, and hippuric acid crystals. Ethanol can be used in antidotal treatment but monitor blood glucose when administering ethanol because it can cause hypoglycemia. Consider infusion of a diuretic such as mannitol to help prevent or control brain edema and hemodialysis to remove ethylene glycol from circulation.

5. Fire Fighting Measures

Fire:
Flash point: 111C (232F) CC
Autoignition temperature: 398C (748F)
Flammable limits in air % by volume:
lel: 3.2; uel: 15.3
Slight to moderate fire hazard when exposed to heat or flame.

Explosion:
Above flash point, vapor-air mixtures are explosive within flammable limits noted above. Containers may explode when involved in a fire.
Fire Extinguishing Media:
Dry chemical, foam or carbon dioxide. Water or foam may cause frothing. Water spray may be used to extinguish surrounding fire and cool exposed containers. Water spray will also reduce fume and irritant gases.
Special Information:
In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Toxic gases and vapors may be released if involved in a fire.

6. Accidental Release Measures

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Separate from acids and oxidizing materials. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:
Ethylene Glycol [107-21-1]:

-ACGIH Short-Term Exposure Limit (STEL):
100 mg/m3 Ceiling (aerosol only)
Ventilation System:
A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.
Personal Respirators (NIOSH Approved):
If the exposure limit is exceeded, a half-face respirator with an organic vapor cartridge and particulate filter (NIOSH type P95 or R95 filter) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece respirator with an organic vapor cartridge and particulate filter (NIOSH P100 or R100 filter) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. Please note that N series filters are not recommended for this material. For emergencies or instances where the exposure levels are not known, use a full-face piece positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.
Skin Protection:
Wear protective gloves and clean body-covering clothing.
Eye Protection:

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:
Clear oily liquid.
Odor:
Odorless.
Solubility:
Miscible in water.
Specific Gravity:
1.1 @20C/4C
pH:
No information found.
% Volatiles by volume @ 21C (70F):
100
Boiling Point:
197.6C (388F)
Melting Point:
-13C (9F)
Vapor Density (Air=1):
2.14
Vapor Pressure (mm Hg):
0.06 @ 20C (68F)
Evaporation Rate (BuAc=1):
No information found.

10. Stability and Reactivity

Stability:
Stable under ordinary conditions of use and storage.
Hazardous Decomposition Products:
Carbon dioxide and carbon monoxide may form when heated to decomposition. May produce acrid smoke and irritating fumes when heated to decomposition.
Hazardous Polymerization:
Will not occur.
Incompatibilities:
Strong oxidizing agents. Reacts violently with chlorosulfonic acid, oleum, sulfuric acid, perchloric acid. Causes ignition at room temperature with chromium trioxide, potassium permanganate and sodium peroxide; causes ignition at 212F(100C) with ammonium dichromate, silver chlorate, sodium chloride and uranyl nitrate.
Conditions to Avoid:
Heat, flames, ignition sources, water (absorbs readily) and incompatibles.

11. Toxicological Information

Toxicological Data:
Oral rat LD50: 4700 mg/kg; skin rabbit LD50: 9530 mg/kg.
Irritation - skin rabbit: 555 mg(open), mild; eye rabbit: 500mg/24H, mild.
Investigated as a tumorigen, mutagen, reproductive effector.
Reproductive Toxicity:
Has shown teratogenic effects in laboratory animals.

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--------\Cancer Lists\-----------------------------------------------------
                                        ---NTP Carcinogen---
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Ingredient	Known	Anticipated	IARC Category
Ethylene Glycol (107-21-1)	No	No	None

12. Ecological Information

Environmental Fate:
When released into the soil, this material is expected to readily biodegrade. When released into the soil, this material is expected to leach into groundwater. When released into the soil, this material is not expected to evaporate significantly. When released into water, this material is expected to readily biodegrade. When released into the water, this material is expected to have a half-life between 1 and 10 days. This material is not expected to significantly bioaccumulate. This material has a log octanol-water partition coefficient of less than 3.0. When released into water, this material is not expected to evaporate significantly. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material is expected to have a half-life between 1 and 10 days.
Environmental Toxicity:
The LC50/96-hour values for fish are over 100 mg/l.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Not regulated.

15. Regulatory Information

--------\Chemical Inventory Status - Part 1\--------

Ingredient	TSCA	EC	Japan	Australia
Ethylene Glycol (107-21-1)	Yes	Yes	Yes	Yes

--------\Chemical Inventory Status - Part 2\--------

Ingredient	Korea	--Canada-- DSL	NDSL	Phil.
Ethylene Glycol (107-21-1)	Yes	Yes	No	Yes

--------\Federal, State & International Regulations - Part 1\--------

Ingredient	-SARA 302- RQ	TPQ	------SARA 313------ List	Chemical Catg.
Ethylene Glycol (107-21-1)	No	No	Yes	No

--------\Federal, State & International Regulations - Part 2\--------

Ingredient	CERCLA	-RCRA- 261.33	-TSCA- 8(d)
Ethylene Glycol (107-21-1)	5000	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No
Reactivity: No (Pure / Liquid)

Australian Hazchem Code: None allocated.
Poison Schedule: None allocated.
WHMIS:
This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: 1 Flammability: 1 Reactivity: 0
Label Hazard Warning:
WARNING! HARMFUL OR FATAL IF SWALLOWED. HARMFUL IF INHALED OR ABSORBED THROUGH SKIN. MAY CAUSE ALLERGIC SKIN REACTION. MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT. AFFECTS CENTRAL NERVOUS SYSTEM.
Label Precautions:
Do not breathe vapor or mist.
Use only with adequate ventilation.
Keep container closed.
Avoid contact with eyes, skin and clothing.
Wash thoroughly after handling.
Label First Aid:
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes. Call a physician if irritation develops or persists. If swallowed, give water or milk to drink and induce vomiting. Never give anything by mouth to an unconscious person. In all cases call a physician.
Product Use:
Laboratory Reagent.
Revision Information:
No Changes.
Disclaimer:
****
Mallinckrodt Baker, Inc. provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose. MALLINCKRODT BAKER, INC. MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE INFORMATION SET FORTH HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS. ACCORDINGLY, MALLINCKRODT BAKER, INC. WILL NOT BE RESPONSIBLE FOR DAMAGES RESULTING FROM USE OF OR RELIANCE UPON THIS INFORMATION.
****
Prepared by: Environmental Health & Safety
Phone Number: (314) 654-1600 (U.S.A.)

Metropolitan St. Louis Sewer District

Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

July 27, 2011

Julie Summers
MALLINCKRODT INC
3600 North 2nd Street
St. Louis, MO 63147

RE: Account Number 0118821-8

Dear Ms. Summers:

The Metropolitan St. Louis Sewer District (MSD) routinely reviews analytical data which shows the strength of wastewaters discharged by industrial users. The purpose of this review is to determine which users should pay extra strength surcharges as authorized by Sewer Service Charge Ordinance 13021. The analytical results for BOD, COD, and TSS are used for this purpose. Surcharges become applicable for a user when their average concentrations of BOD, COD, and/or TSS exceed normal concentrations.

Our records show that your discharge has been sampled 13 times during the past 23 months, including six certified MSD self-monitoring reports as required by your discharge permit, and seven MSD routine monitoring samples. The average surcharge concentrations calculated from this sample data are lower than your current billing surcharge concentrations. Therefore, your surcharge concentration will be lowered, resulting in a lower surcharge fee per CcF of wastewater discharged. The data from the 13 samples used to calculate the new averages are enclosed as Attachment 1.

PARAMETER	MSD ORDINANCE NORMAL CONCENTRATIONS (mg/L)	CURRENT BILLING SURCHARGE CONCENTRATIONS (mg/L)	NEW AVERAGE CONCENTRATIONS (mg/L)
BOD	300	431	415
COD	600	947	825
TSS	300	83	68

At this time, I will notify our Finance Department of your new average surcharge concentrations. The new average surcharge concentrations will be used to determine the amount of surcharge on future sewer service charges billed to Mallinckrodt Inc by MSD.

Should you have any questions, please call me at (314) 436-8716.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Darin J Lewis
Environmental Engineering Associate

bv

pc: Brian Gibson
Doug Mendoza

File: IU, Mallinckrodt Inc. (2112-0596-00

Attachment 1

Sample Data

SP003

Sample Date	BOD (mg/L)	COD (mg/L)	TSS (mg/L)	Sample Taker
08/19/2009	58	177	55	MSD
10/20/2009	37	124	42	Industry
10/29/2009	47	168	25	MSD
01/06/2010	136	207	157	Industry
02/03/2010	63	193	39	MSD
04/15/2010	30	156	46	Industry
07/16/2010	34	109	31	Industry
09/30/2010	24	70	13	MSD
10/20/2010	61	188	11	Industry
12/16/2010	30	83	40	MSD
02/14/2011	11	32	26	Industry
03/28/2011	5	9	11	MSD
06/21/2011	35	71	6	MSD

SP005

Sample Date	BOD (mg/L)	COD (mg/L)	TSS (mg/L)	Sample Taker
08/19/2009	37	72	1	MSD
10/20/2009	80	133	7	Industry
10/29/2009	25	43	2	MSD
01/06/2010	251	290	13	Industry
02/03/2010	283	498	4	MSD
04/15/2010	7	50	6	Industry
07/16/2010	7	50	39	Industry
09/30/2010	33	55	1	MSD
10/20/2010	137	169	12	Industry
12/16/2010	369	688	4	MSD
02/14/2011	44	138	14	Industry
03/28/2011	91	220	92	MSD

SP009

Sample Date	BOD (mg/L)	COD (mg/L)	TSS (mg/L)	Sample Taker
08/19/2009	63	379	64	MSD
10/20/2009	92	234	63	Industry
10/29/2009	131	313	57	MSD
01/06/2010	76	196	20	Industry
02/03/2010	118	253	64	MSD
04/15/2010	48	116	75	Industry
07/16/2010	33	37	38	Industry
09/30/2010	23	51	3	MSD
10/20/2010	98	32	10	Industry
12/16/2010	9	31	9	MSD
02/14/2011	19	59	12	Industry
03/28/2011	4	5	3	MSD
06/21/2011	22	72	5	MSD

SP010

Sample Date	BOD (mg/L)	COD (mg/L)	TSS (mg/L)	Sample Taker
08/19/2009	317	1,042	101	MSD
10/20/2009	707	1,330	75	Industry
10/29/2009	359	910	101	MSD
01/06/2010	927	1,430	87	Industry
02/03/2010	582	1,027	59	MSD
04/15/2010	384	527	102	Industry
06/30/2010	25	120	2	MSD
07/16/2010	407	934	70	Industry
09/30/2010	18	209	128	MSD
10/20/2010	380	518	46	Industry
12/16/2010	824	1,292	23	MSD
02/14/2011	122	741	116	Industry
03/28/2011	617	1,202	17	MSD

7/28/11

MEMO TO: Chris Verplancke
Finance Department

FROM: Darin Lewis

DATE: July 27, 2011

SUBJECT: Surcharge Changes

We recommend that the new surcharge values below be applied to the following account effective July 2011.

Account No: 0118821-8

Company: **MALLINCKRODT INC**

Premise: 3600 North 2nd Street
St. Louis, MO 63147

	TSS	BOD	COD
New Surcharge Values (mg/L):	68	415	825
Old Surcharge Values (mg/L):	83	431	947

This change was initiated by the District. The surcharge values represent the average of 13 composite samples collected between August 19, 2009 and June 21, 2011.

Based on a wastewater discharge of 462,721 CCF, this equates to an estimated annual revenue decrease to the District of $14,324.64.

If you have any questions, please call me at 436-8716.

pc: Brian Gibson
Doug Mendoza
Scott Rehmer

FILE: IU, Mallinckrodt Inc, 2112059600

EXTRA STRENGTH SURCHARGE REVIEW CHECKLIST

Reviewed by: D Lewis Date: 7/21/11 Checked by: [illegible] Date: 7/28/11

Review PIMS, ECIS, industry file, and permit file.

1) Company name: Mallinckrodt Inc

2) Primary PIMS account number: 2112059600 and it's ECIS account number: 0118821-8

3) Premise address: 3600 North 2nd Street St. Louis MO 63147

4) Is discharge greater than 60,000 gallon(80 CcF)/month, considering RF? ☑ Yes ☐ No
If no, take no further action.

5) Is company currently in surcharge? ☑ Yes ☐ No
If yes, last recertification date: 7/6/2009 and do current surcharge values match ECIS, including related accounts? ☑ Yes ☐ No

If no, explain:

6) Reason for surcharge action: ☑ Bi-Annual Review ☐ Customer Requested ☐ Other

If other, comment:

7) Number of work shifts per day. Identify hours of work and brief process description:
1st: 7:00 AM 24 hours/7 days FDA Drugs Industrail chemicals
2nd: 3:20 PM
3rd: 11:10 PM

8) Are sample collection times representative of facility work shifts? ☑ Yes ☐ No

If no, comment:

9) Update Surcharge status Log: ☑ Yes

10) New surcharge concentrations (mg/L): BOD 415 COD 825 TSS 68
Final surcharge concentrations (mg/L): BOD COD TSS
11) Old surcharge concentrations (mg/L): BOD 431 COD 947 TSS 83

12) Comment on changes in wastewater strength:

13) Send Notification letter to: Julie Summers

14) Other related sewer accounts to be billed surcharges: N/A

15) Waiting for IUQ? ☐ Yes ☑ No If surcharge is removed or decreased, check with DEC IU assigned inspector to review if we are waiting for an IUQ. We will refrain granting changes until IU provides the inspector with the required information.

16) Recertification Comments

17) Memo to Finance, date: 7/22/11

18) Enter final surcharge billing values into PIMS and Surcharge Log file, date: 7/22/11

19) Additional sample data forwarded to Pretreatment unit for PIMS entry: ☐ Yes ☑ N/A

Attachments
Surcharge calculation, first pass, all data dated: 7/21/11
Surcharge calculation, first pass, MSD data dated: 7/21/11
Surcharge calculation, first pass, IND data dated: 7/21/11
Surcharge calculation, final data dated:
MSD letters, dated:
Industry letters, dated:
Other:

SURCHARGE CALCULATOR

Date:7/21/2011
File:o:\envcom\surcharg\2112059600-2011.xls

Sum of Discharge Factors: 1.00

Sampling Point: 003				Discharge factor: 0.02			Flow: ####	GPD	
	Date	Start Time	Type	End Time	24 hr	BOD (mg/L)	COD (mg/L)	TSS (mg/L)	Day	Sampler
1	08/19/2009	N/A			yes	58	177	55	4	MSD
2	10/20/2009	5.50	4.00	9.50	N/A	37	124	42	3	Industry
3	10/29/2009	N/A			yes	47	168	25	5	MSD
4	01/06/2010	6.15	4.00	10.15	N/A	136	207	157	4	Industry
5	02/03/2010	N/A			yes	63	193	39	4	MSD
6	04/15/2010	6.10	4.00	10.10	N/A	30	156	46	5	Industry
7	07/16/2010	5.15	4.00	9.15	N/A	34	109	31	6	Industry
8	09/30/2010	N/A			yes	24	70	13	5	MSD
9	10/20/2010	6.15	4.00	10.15	N/A	61	188	11	4	Industry
10	12/16/2010	N/A			yes	30	83	40	5	MSD
11	02/14/2011	6.20	4.00	10.20	N/A	11	32	26	2	Industry
12	03/28/2011	N/A			yes	5	9	11	2	MSD
13	06/21/2011	N/A			yes	35	71	6	3	MSD
14		N/A			N/A				N/A	
15		N/A			N/A				N/A	
16		N/A			N/A				N/A	
17		N/A			N/A				N/A	
18		N/A			N/A				N/A	
19		N/A			N/A				N/A	
20		N/A			N/A				N/A	
					Total:	571	1587	502		
					Average:	44	122	39		
					Weighted Average:	1	3	1		

1=Sun, 2=Mon, 3=Tue, 4=Wed, 5=Thur, 6=Fri, 7=Sat

Sampling Point: 005				Discharge factor: 0.03			Flow: ####	GPD	
	Date	Start Time	Type	End Time	24 hr	BOD (mg/L)	COD (mg/L)	TSS (mg/L)	Day	Sampler
1	08/19/2009	N/A			yes	37	72	1	4	MSD
2	10/20/2009	6.00	4.00	10.00	N/A	80	133	7	3	Industry
3	10/29/2009	N/A			yes	25	43	2	5	MSD
4	01/06/2010	8.35	4.00	12.35	N/A	251	290	13	4	Industry
5	02/03/2010	N/A			yes	283	498	4	4	MSD
6	04/15/2010	6.25	4.00	10.25	N/A	7	50	6	5	Industry
7	07/16/2010	5.25	4.00	9.25	N/A	7	50	39	6	Industry
8	09/30/2010	N/A			yes	33	55	1	5	MSD
9	10/20/2010	6.20	4.00	10.20	N/A	137	169	12	4	Industry
10	12/16/2010	N/A			yes	369	688	4	5	MSD
11	02/14/2011	6.30	4.00	10.30	N/A	44	138	14	2	Industry
12	03/28/2011	9.49		9.49	N/A	91	220	92	2	MSD
13										
14		N/A			N/A				N/A	
15		N/A			N/A				N/A	
16		N/A			N/A				N/A	
17		N/A			N/A				N/A	
18		N/A			N/A				N/A	
19		N/A			N/A				N/A	
20		N/A			N/A				N/A	
					Total:	1364	2406	195		
					Average:	114	201	16		
					Weighted Average:	3	5	0		

Sampling Point: 009				Discharge factor: 0.01			Flow: ####	GPD	
	Date	Start Time	Type	End Time	24 hr	BOD (mg/L)	COD (mg/L)	TSS (mg/L)	Day	Sampler
1	08/19/2009	N/A			yes	63	379	64	4	MSD
2	10/20/2009	6.15	4.00	10.15	N/A	92	234	63	3	Industry
3	10/29/2009	N/A			yes	131	313	57	5	MSD
4	01/06/2010	6.50	4.00	10.50	N/A	76	196	20	4	Industry
5	02/03/2010	N/A			yes	118	253	64	4	MSD
6	04/15/2010	6.50	4.00	10.50	N/A	48	116	75	5	Industry
7	07/16/2010	5.40	4.00	9.40	N/A	33	37	38	6	Industry
8	09/30/2010	N/A			yes	23	51	3	5	MSD
9	10/20/2010	6.35	4.00	10.35	N/A	98	32	10	4	Industry
10	12/16/2010	N/A			yes	9	31	9	5	MSD
11	02/14/2011	6.40	4.00	10.40	N/A	19	59	12	2	Industry
12	03/28/2011	N/A			yes	4	5	3	2	MSD
13	06/21/2011	N/A			yes	22	72	5	3	MSD
14		N/A			N/A				N/A	
15		N/A			N/A				N/A	
16		N/A			N/A				N/A	
17		N/A			N/A				N/A	
18		N/A			N/A				N/A	
19		N/A			N/A				N/A	
20		N/A			N/A				N/A	
					Total:	736	1778	423		
					Average:	57	137	33		
					Weighted Average:	1	1	0		

General Information:

Calculated by:	Darin Lewis
Facility name:	Mallinchrodt Inc
Account No:	2112059600
Last recertification date:	7/6/2009

Volume:

First meter reading date:	7/1/2010
Last meter reading date:	7/1/2011
Total Volume:	482001 CcF
RF:	0.96
Annualized volume:	462721 CcF
Monthly volume:	38560 CcF

Surcharge Values:

	Previous	New
BOD:	431 mg/L	415 mg/L
COD:	947 mg/L	825 mg/L
TSS:	83 mg/L	68 mg/L

Surcharge Calculations:

BOD in normal wastewater:	300 mg/L		
COD in normal wastewater:	600 mg/L		
TSS in normal wastewater:	300 mg/L		
		Ordiannce:	13021
Current BOD rate:	$ 620.14 / ton	Effective:	7/1/2011
Current COD rate:	$ 310.07 / ton	Effective:	7/1/2011
Current TSS rate:	$ 231.35 / ton	Effective:	7/1/2011

Conversion factor (mg/L to tons/CcF): 1.444

	Previous	New
Estimated BOD surcharge:	$ 117,282.98	$ 102,958.34
Estimated COD surcharge:	$ 155,332.80	$ 100,720.12
Estimated TSS surcharge:	$ -	$ -
BOD/COD:	0.46	0.5

Use zero if BOD or COD = zero

	Previous	New	Change
Estimated annual surcharge:	**$ 117,282.98**	**$ 102,958.34**	**$ (14,324.64)**

Comments:

First pass calculation, all data:	☐
First pass calculation, MSD data:	☐
First pass calculation, IND data:	☐
Calculation, final data:	☐

Water Consumption Data: Reading Date	Consumption
7/1/2011	43154
6/1/2011	44592
5/1/2011	43154
4/1/2011	34458
3/1/2011	39322
2/1/2011	43535
1/1/2011	43535
12/1/2010	42130
11/1/2010	43535
10/1/2010	34104
9/1/2010	35241
8/1/2010	35241
7/1/2010	
Total =	482001

SURCHARGE CALCULATOR

Date:7/21/2011
File:o:\envcom\surcharg\2112059600-2011.xls

Calculated by:	Darin Lewis
Facility name:	Mallinchrodt Inc
Account No:	2112059600
Last recertification date:	40000

Sampling Point: 010 | Discharge factor: 0.94 | Flow: #### GPD

	Date	Start Time	Type	End Time	24 hr	BOD (mg/L)	COD (mg/L)	TSS (mg/L)	Day	Sampler
1	08/19/2009	N/A			yes	317	1042	101	4	MSD
2	10/20/2009	6.30	4.00	10.30	N/A	707	1330	75	3	Industry
3	10/29/2009	N/A			yes	359	910	101	5	MSD
4	01/06/2010	7.00	4.00	11.00	N/A	927	1430	87	4	Industry
5	02/03/2010	N/A			yes	582	1027	59	4	MSD
6	04/15/2010	7.05	4.00	11.05	N/A	384	527	102	5	Industry
7	06/30/2010	6.23	6.00	12.23	N/A	25	120	2	4	MSD
8	07/16/2010	6.00	4.00	10.00	N/A	407	934	70	6	Industry
9	09/30/2010	N/A			yes	18	209	128	5	MSD
10	10/20/2010	6.50	4.00	10.50	N/A	380	518	46	4	Industry
11	12/16/2010	N/A			yes	824	1292	23	5	MSD
12	02/14/2011	6.50	4.00	10.50	N/A	122	741	116	2	Industry
13	03/28/2011	N/A			yes	617	1202	17	2	MSD
14		N/A			N/A				N/A	
15		N/A			N/A				N/A	
16		N/A			N/A				N/A	
17		N/A			N/A				N/A	
18		N/A			N/A				N/A	
19		N/A			N/A				N/A	
20		N/A			N/A				N/A	
					Total:	5669	11282	927		
					Average:	436	868	71		
					Weighted Average:	410	816	67		

1=Sun, 2=Mon, 3=Tue, 4=Wed, 5=Thur, 6=Fri, 7=Sat

Sampling Point: 005 | Discharge factor: 0.00 | Flow: GPD

	Date	Start Time	Type	End Time	24 hr	BOD (mg/L)	COD (mg/L)	TSS (mg/L)	Day	Sampler
1		N/A			N/A				N/A	
2		N/A			N/A				N/A	
3		N/A			N/A				N/A	
4		N/A			N/A				N/A	
5		N/A			N/A				N/A	
6		N/A			N/A				N/A	
7		N/A			N/A				N/A	
8		N/A			N/A				N/A	
9		N/A			N/A				N/A	
10		N/A			N/A				N/A	
11		N/A			N/A				N/A	
12		N/A			N/A				N/A	
13		N/A			N/A				N/A	
14		N/A			N/A				N/A	
15		N/A			N/A				N/A	
16		N/A			N/A				N/A	
17		N/A			N/A				N/A	
18		N/A			N/A				N/A	
19		N/A			N/A				N/A	
20		N/A			N/A				N/A	
					Total:	0	0	0		
					Average:	0	0	0		
					Weighted Average:	0	0	0		

Sampling Point: 006 | Discharge factor: 0.00 | Flow: GPD

	Date	Start Time	Type	End Time	24 hr	BOD (mg/L)	COD (mg/L)	TSS (mg/L)	Day	Sampler
1		N/A			N/A				N/A	
2		N/A			N/A				N/A	
3		N/A			N/A				N/A	
4		N/A			N/A				N/A	
5		N/A			N/A				N/A	
6		N/A			N/A				N/A	
7		N/A			N/A				N/A	
8		N/A			N/A				N/A	
9		N/A			N/A				N/A	
10		N/A			N/A				N/A	
11		N/A			N/A				N/A	
12		N/A			N/A				N/A	
13		N/A			N/A				N/A	
14		N/A			N/A				N/A	
15		N/A			N/A				N/A	
16		N/A			N/A				N/A	
17		N/A			N/A				N/A	
18		N/A			N/A				N/A	
19		N/A			N/A				N/A	
20		N/A			N/A				N/A	
					Total:	0	0	0		
					Average:	0	0	0		
					Weighted Average:	0	0	0		

SR
8-3

COVIDIEN

July 27, 2011

Mr. Doug Mendoza
Metropolitan St. Louis Sewer District
Department of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147

Re: 2011 2nd Quarter Self-Monitoring Report for Permit No. 21120596 - 3

Dear Mr. Mendoza,

Please find enclosed the 2011 2nd Quarter Self Monitoring report for Mallinckrodt Inc.

The following sample points received no pharmaceutical process water flow during the second quarter: SP008, SP011 and SP935.

CT Excavation activities continued during the second quarter and there were multiple discharges under the Special Discharge Permit issued for wastewater generated from CT remediation activities. A summary of the discharges is provided in the Industrial User Radioactive Discharge Report included in this submittal.

If you have any questions or require more detailed information, please contact me at 314.654.1969.

Sincerely,

Julie Summers

Julie Summers
Environmental Manager

ENCLOSURES

RECEIVED
JUL 29 2011
DIVISION OF
ENVIRONMENTAL COMPLIANCE

COVIDIEN/MALLINCKRODT
3600 NORTH SECOND STREET
ST. LOUIS, MO 63147

TELEPHONE: 314-654-2000
FAX: 314-654-1251

METROPOLITAN ST. LOUIS SEWER DISTRICT
INDUSTRIAL USER RADIOACTIVE MATERIALS DISCHARGE REPORT

PART I: IDENTIFYING INFORMATION

Company Name: Mallinckrodt -

Permit No: 2112059600-3

Premise Address: 3600 N Second St. St. Louis, MO 63147

Reporting Period: ☐(JAN-MAR) ☒(APR-JUNE) ☐(JULY-SEPT) ☐(OCT-DEC)

PART II: RECORD OF DISPOSAL OF RADIOACTIVE MATERIALS TO THE SEWER SYSTEM

RADIONUCLIDE	ACTIVITY DISCHARGED (millicuries)
Ur-234	1.97×10^{-4}
Ur-235	1.88×10^{-4}
Ur-238	2.13×10^{-4}
Ra-226	8.77×10^{-4}
Ra-228	5.34×10^{-4}
Th-228	2.71×10^{-4}
Th-230	4.46×10^{-4}
Th-232	1.92×10^{-4}
TOTAL ACTIVITY DISCHARGED:	2.92×10^{-3}

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PART III: CERTIFICATION STATEMENTS

Place your initials in the box under item A.
Everyone must complete the information under items A & B and sign this report.

(A) CERTIFICATION OF COMPLIANCE WITH STATE AND FEDERAL REGULATIONS

☐ I certify that to the best of my knowledge & belief, all requirements of 10 CFR Part 20.2003 and 19 CSR Part 20-10.090 governing disposal by release into sanitary sewage for material regulated by the Nuclear Regulatory Commission and the Missouri Department of Health, respectively, have been met for the period covered by this report.

B RADIOACTIVE MATERIALS DISCHARGE REPORT CERTIFICATION

I certify under penalty of Law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Print/type name of signing official: John Leonard

Title: Production Manager Telephone: 314-654-1879

Signature: John Leon Date: 7/27/11

radrpt.doc 2/00

INDUSTRIAL USER SELF MONITORING REPORT PAGE 2

PART III: SPECIAL CERTIFICATION STATEMENTS

Based on the special conditions contained in your discharge permit you may be required to certify the following. Please review your permit and **PLACE YOUR INITIALS ON THE LINES NEXT TO THE CERTIFICATIONS.**

A	**NO CHANGE IN WASTEWATER DISCHARGE AT SAMPLE POINTS WITH NO MONITORING REQUIRED** For permit special conditions that waive monitoring at any sample point(s) specified in your permit, you are required to make the following certification for each report in which monitoring is waived: JL I certify, since the last discharge monitoring report, there has been no change in the character of the wastes discharged at sample points 001 and 002. JL I certify, since the last discharge monitoring report, there has been no discharge from sample points 008 and 011.
B	**NO CHANGE IN WASTEWATER DISCHARGE AT ACTIVE CONNECTIONS WITHOUT SAMPLE POINTS** For permit special conditions that waive monitoring at active connection points which are not specified as sample points in your permit, you are required to make the following certification: JL I certify, since the last discharge monitoring report, there has been no change in the character of wastes discharged at those active connection points which are not specified in my permit.
E	**NO DISCHARGE OF CATEGORICAL WASTE** For permit special conditions that prohibit discharge of wastes which are subject to certain categorical pretreatment standards, you are required to make the following certification: JL I certify, since the last discharge monitoring report, there has been no discharge of wastes which are subject to pretreatment standards in 40 CFR 414 (except for those wastes conveyed by SP 905).
F	**CYANIDE NOT USED OR GENERATED IN 40 CFR 439 OPERATIONS** Discharges subject to Pharmaceutical Categorical Standards (40 CFR 439) can be exempted from limitations and monitoring for Total Cyanide at the Pharmaceutical sample points 080, 915, 920, 935, 936, and 937, subject to the following certification: JL I certify, since the last discharge monitoring report, cyanide has not been used or generated in any pharmaceutical manufacturing process subject to Categorical Standards in 40 CFR 439.
H	**PHARMACEUTICAL POLLUTANTS NOT USED OR GENERATED IN 40 CFR 439 OPERATIONS** Discharges subject to Pharmaceutical Categorical Standards (40 CFR 439) can be exempted from monitoring for certain 40 CFR 439-regulated pollutants at the Pharmaceutical sample points 915, 935, and 936, subject to the following certification: JL I certify, since the last discharge monitoring report, the 40 CFR 439-regulated pollutants, as determined in permittee's report dated April 5, 2010, have not been used or generated in any pharmaceutical manufacturing process subject to Categorical Standards in 40 CFR 439. In addition, the above-referenced report remains valid.
I	**SURROGATE MONITORING ALLOWED FOR 40 CFR 439 OPERATIONS** Discharges subject to Pharmaceutical Categorical Standards (40 CFR 439) can be exempted from monitoring for certain 40 CFR 439-regulated pollutants, and replaced by monitoring for surrogate pollutant(s), at the Pharmaceutical sample points 920 and 937 subject to the following certification: JL I certify, since the last discharge monitoring report, the 40 CFR 439-regulated pollutants, as determined in permittee's report dated April 5, 2010, continue to receive the same degree of treatment as the surrogate pollutant(s). In addition, the above-referenced report remains valid.

PART IV: GENERAL CERTIFICATION STATEMENTS

B	**DISCHARGE MONITORING REPORT CERTIFICATION** **All permittees must sign and complete the information below:** I certify under penalty of Law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. Print or type name of signing official: John Leonard Title: Production Manager Telephone: 314-654-1879 Signature: John Leon Date: 7/27/11

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DIVISION OF
ENVIRONMENTAL COMPLIANCE

METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 05-01-2011 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: _____(JAN-MAR) _X___(APR-JUNE) _____(JULY-SEPT) _____(OCT-DEC)

Samples Collected By: Mallinckrodt Inc

Analysis Performed By: Teklab

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->>		**001**					
DATES ON WHICH SAMPLES WERE COLLECTED	------>		NA					
TIMES AT WHICH SAMPLES WERE COLLECTED	------>							
PARAMETER	LIMIT	**RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW** G=grab,C=composite,M=measured flow,E=estimated flo						UNITS
FLOW		E	1,000					gal/day
NO MONITORING REQUIRED (Sanitary Only)								
There have been no change in the character of the wastes discharged since the last report.								

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METROPOLITAN ST. LOUIS SEWER DISTRICT
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Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: _____(JAN-MAR) __X__(APR-JUNE) _____(JULY-SEPT) _____(OCT-DEC)

Samples Collected By: Mallinckrodt Inc

Analysis Performed By: Teklab

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	---->		**002**						
DATES ON WHICH SAMPLES WERE COLLECTED	---->		NA						
TIMES AT WHICH SAMPLES WERE COLLECTED	---->								
PARAMETER	LIMIT	**RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW** G=grab,C=composite,M=measured flow,E=estimated flo							UNITS
FLOW		E	2,200						gal/day
NO MONITORING REQUIRED (Sanitary Only)									
There have been no change in the character of the wastes discharged since the last report.									

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Permit No.: 2112059600 - 3 **Effective Date:** 05-01-2011 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: ____(JAN-MAR) __X__(APR-JUNE) ____(JULY-SEPT) ____(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS ---->		003		009		099		
DATES ON WHICH SAMPLES WERE COLLECTED ---->		5/12/2011		5/12/2011		calculated		
TIMES AT WHICH SAMPLES WERE COLLECTED ---->		0705, 0805, 0905, 1005		0725, 0825, 0925, 1025		n/a		
PARAMETER	LIMIT	RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW G=grab,C=composite,M=measured flow,E=estimated flow						UNITS
FLOW		M	58,234	M	40,003	E	18,231	gal/day
Oil & Grease	200	G	3	G	3	E	3	mg/l
Biochemical Oxygen Demand	****	C	9	C	22	E	0*	mg/l
Chemical Oxygen Demand	****	C	32	C	64	E	0*	mg/l
Total Suspended Solids	****	C	6	C	6	E	6	mg/l
Temperature	****	G	18.8	G	16.7	E	23	deg C
pH	****	G	7.0	G	6.0	E	9.2	S.U.
**** No limits for SP003 or SP009; monitoring requirement only for calculation at SP099								
* Calculated value was less than zero.								
Lab Dilution Factor			1		1			

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METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

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Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: _____(JAN-MAR) __X__(APR-JUNE) ____(JULY-SEPT) ____(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	---->		**005**					
DATES ON WHICH SAMPLES WERE COLLECTED	---->		5/12/2011					
TIMES AT WHICH SAMPLES WERE COLLECTED	---->		0715, 0815, 0915, 1015					
PARAMETER	LIMIT	**RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW** G=grab,C=composite,M=measured flow,E=estimated fl						UNITS
FLOW		E	32,000					gal/day
Oil & Grease	200	G	6					mg/l
Biochemical Oxygen Demand	****	C	10					mg/l
Chemical Oxygen Demand	****	C	32					mg/l
Total Suspended Solids	****	C	6					mg/l
Temperature	60	G	28.9					deg C
pH	5.5 - 11.5	G	8.0					S.U.
Lab Dilution Factor			1					

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Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: ____(JAN-MAR) __X__(APR-JUNE) ____(JULY-SEPT) ____(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->		**008**					
DATES ON WHICH SAMPLES WERE COLLECTED	----->							
TIMES AT WHICH SAMPLES WERE COLLECTED	----->							
PARAMETER	**LIMIT**	**RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW** G=grab,C=composite,M=measured flow,E=estimated fl						UNITS
FLOW		E	*					gal/day
Oil & Grease	200	G						mg/l
Biochemical Oxygen Demand	****	G						mg/l
Chemical Oxygen Demand	****	G						mg/l
Temperature	60	G						deg C
Total Suspended Solids	****	G						mg/L
pH	5.5 - 11.5	G						S.U.
* No flow during this reporting period.								
Lab Dilution Factor								

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Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: ____(JAN-MAR) _X___(APR-JUNE) ____(JULY-SEPT) _____(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->		**010**					
DATES ON WHICH SAMPLES WERE COLLECTED	----->		5/12/2011					
TIMES AT WHICH SAMPLES WERE COLLECTED	----->		0735, 0835, 0935, 1035					
PARAMETER	LIMIT	**RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW** G=grab,C=composite,M=measured flow,E=estimated flo						UNITS
FLOW		E	1,142,913					gal/day
Oil & Grease	200	G	13					mg/l
Biochemical Oxygen Demand	****	C	478					mg/l
Chemical Oxygen Demand	****	C	960					mg/l
Total Suspended Solids	****	C	60					mg/l
Temperature	60	G	31.1					deg C
pH	5.5 - 11.5	G	see attached					S.U.
Chromium	5.0	C	0.010					mg/l
Copper	2.7	C	0.018					mg/l
Nickel	2.3	C	0.006					mg/l
Zinc	3.0	C	0.039					mg/l
Lab Dilution Factor			1					

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Mallinckrodt pH Monitoring for SP010: April 2011

Date / Time	pH	pH	Total for Event in Minutes
4/7/11 8:45	40	4.0	5
4/13/11 11:00	48	4.8	5
4/21/11 9:10	41	4.1	5
4/27/11 11:05	2	2.2	5
		April Total:	**20**

Mallinckrodt pH Monitoring for SP010: May 2011

Date / Time	pH	pH	Total for Event in Minutes
5/5/11 16:15	43	4.3	5
5/12/11 10:10	45	4.5	5
5/19/11 13:00	41.8	4.2	5
5/27/11 13:20	51	5.1	5
		May Total:	**20**

Mallinckrodt pH Monitoring for SP010: June 2011

Date / Time	pH	pH	Total for Event in Minutes
6/3/11 8:35	41	4.1	5
6/8/11 2:45	38	3.8	15
6/8/11 2:50	32	3.2	
6/8/11 2:55	32	3.2	
6/16/11 10:55	40	4.0	5
6/23/11 10:15	34	3.4	5
		June Total:	**30**

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METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 05-01-2011 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: ___(JAN-MAR) __X__(APR-JUNE) ____(JULY-SEPT) ____(OCT-DEC)

Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS	----->		**011**					
DATES ON WHICH SAMPLES WERE COLLECTED	----->							
TIMES AT WHICH SAMPLES WERE COLLECTED	----->							
PARAMETER	LIMIT	**RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW** G=grab,C=composite,M=measured flow,E=estimated flo						UNITS
FLOW		E	*					gal/day
Oil & Grease	200	G						mg/l
Biochemical Oxygen Demand	****	G						mg/l
Chemical Oxygen Demand	****	G						mg/l
Total Suspended Solids	****	G						mg/l
Temperature	60	G						deg C
pH	5.5 - 11.5	G						S.U.
* No flow during this reporting period.								
Lab Dilution Factor			1					

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Monitoring Period: _____(JAN-MAR) __X_(APR-JUN) _____(JULY-SEP) _____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->		**080**						
DATES ON WHICH SAMPLES WERE COLLECTED			---->		4/5/2011						
TIMES AT WHICH SAMPLES WERE COLLECTED			---->		922, 1031, 1125, 1225						
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS** G=Grab, C-composite, M=measured flow, E=estimated							UNITS
FLOW				E	3,500						gal/day
Acetone	524.2	20.70	8.20	G	<1.000						mg/L
n-Amyl Acetate	1666	20.70	8.20	G	<0.100						mg/L
Benzene	524.2	3.00	0.70	G	0.069						mg/L
n-Butyl acetate	1666	20.70	8.20	G	<0.100						mg/L
Chlorobenzene	524.2	3.00	0.70	G	<0.100						mg/L
Chloroform	524.2	0.10	0.03	G	<0.02						mg/L
1,2-Dichlorobenzene	524.2	20.70	8.20	G	<0.100						mg/L
1,2-Dichloroethane	524.2	20.70	8.20	G	<0.100						mg/L
Diethyl amine	1671	255.00	100.00	G	<50						mg/L
Ethyl Acetate	1666	20.70	8.20	G	<0.200						mg/L
n-Heptane	1666	3.00	0.70	G	<0.200						mg/L
n-Hexane	1666	3.00	0.70	G	<0.200						mg/L
Isobutyraldehyde	1666	20.70	8.20	G	<0.200						mg/L
Isopropyl acetate	1666	20.70	8.20	G	<0.100						mg/L
Isopropyl ether	1666	20.70	8.20	G	<0.100						mg/L
Methylene chloride	524.2	3.00	0.70	G	<0.100						mg/L
Methyl formate	1666	20.70	8.20	G	<1.000						mg/L
4-Methyl-2-pentanone	1666	20.70	8.20	G	<0.200						mg/L
Tetrahydrofuran	1666	9.20	3.40	G	<0.400						mg/L
Toluene	524.2	0.30	0.20	G	<0.100						mg/L
Triethyl amine	1671	255.00	100.00	G	<20						mg/L
Xylenes	1666	3.00	0.70	G	<0.100						mg/L
Oil & Grease	1664	200		G	<5						mg/L
Biochemical Oxygen Demand		****		C	<5						mg/L
Chemical Oxygen Demand		****		C	281						mg/L
Total Suspended Solids		****		C	49						mg/L
Temperature		60		G	12.1						deg C
pH		5.5 - 11.5		G	8.4						S.U.
Dilution by lab					1,20						

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Samples Collected By: Mallinckrodt

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS		---->		**905**			
DATES ON WHICH SAMPLES WERE COLLECTED		---->		4/7/2011			
TIMES AT WHICH SAMPLES WERE COLLECTED		---->		11:10			
PARAMETER	MONTHLY LIMIT (ave) (gm/day)	DAILY MAX LIMIT (gm/day)	**RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW** G=grab,C=composite,M=measured flow,E=estimated flow		Lab results mg/L		UNITS
FLOW			M	52797			gal/day
1,2,4-Trichlorobenzene	74	301	G	2.20	0.011		gm/day
1,2-Dichlorobenzene	74	301	G	1.00	0.005		gm/day
1,3-Dichlorobenzene	54	144	G	1.00	0.005		gm/day
1,4-Dichlorobenzene	54	144	G	1.00	0.005		gm/day
2-Nitrophenol	25	87	G	4.20	0.021		gm/day
2-Methyl-4,6-dinitrophenol	30	105	G	4.20	0.021		gm/day
4-Nitrophenol	61	218	G	4.20	0.021		gm/day
Acenapthene	7	18	G	2.20	0.011		gm/day
Anthracene	7	18	G	2.20	0.011		gm/day
Bis(2-ethylhexyl)phthalate	36	98	G	1.20	0.006		gm/day
Diethyl phthalate	17	43	G	2.20	0.011		gm/day
Dimethyl phthalate	7	18	G	2.20	0.011		gm/day
Di-n-butyl phthalate	8	16	G	2.20	0.011		gm/day
Fluoranthene	8	20	G	2.20	0.011		gm/day
Fluorene	7	18	G	2.20	0.011		gm/day
Hexachlorobenzene	74	301	G	2.20	0.011		gm/day
Hexachlorobutadiene	54	144	G	2.20	0.011		gm/day
Hexachloroethane	74	301	G	2.20	0.011		gm/day
Naphthalene	7	18	G	2.20	0.011		gm/day
Phenanthrene	7	18	G	2.20	0.011		gm/day
Pyrene	8	18	G	2.20	0.011		gm/day
1,1,1-Trichloroethane	8	22	G	1.00	0.005		gm/day
1,1,2-Trichloroethane	12	48	G	1.00	0.005		gm/day
1,1-Dichloroethane	8	22	G	1.00	0.005		gm/day
1,1-Dichloroethene	8	23	G	1.00	0.005		gm/day
1,2-Dichloroethane	74	301	G	1.00	0.005		gm/day
1,2-Dichloropropane	74	301	G	1.00	0.005		gm/day
Benzene	22	51	G	0.40	0.002		gm/day
Carbon Tetrachloride	54	144	G	1.00	0.005		gm/day
Chlorobenzene	54	144	G	1.00	0.005		gm/day
Chloroethane	42	112	G	2.00	0.010		gm/day
Chloroform	42	123	G	1.62	0.008		gm/day
Chloromethane	42	112	G	2.00	0.010		gm/day
cis-1,3-Dichloropropene	74	301	G	1.00	0.005		gm/day
Ethylbenzene	54	144	G	1.00	0.005		gm/day
Methylene Chloride	14	64	G	1.00	0.005		gm/day
Nitrobenzene	847	2423	G	2.20	0.011		gm/day
Tetrachloroethene	20	62	G	1.00	0.005		gm/day
Toluene	11	28	G	1.00	0.005		gm/day
trans-1,2-Dichloroethene	9	25	G	1.00	0.005		gm/day
trans-1,3-Dichloropropene	74	301	G	1.00	0.005		gm/day
Trichloroethene	10	26	G	1.00	0.005		gm/day
Vinyl Chloride	37	65	G	0.40	0.002		gm/day
Shaded values represent detection limits							
Lab Dilution Factor				1			

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METROPOLITAN ST. LOUIS SEWER DISTRICT
2011 INDUSTRIAL USER SELF MONITORING REPORT

PART I: IDENTIFYING INFORMATION

Company Name: **Mallinckrodt Inc.**

Permit No.: 2112059600 - 3 Effective Date: 05-01-2011 Expiration Date: 05-31-2015

Premise Address: 3600 North Second St., St. Louis, MO 63147

Monitoring Period: _____(JAN-MAR) _ X___(APR-JUNE) _____(JULY-SEPT) _____(OCT-DEC)

Samples Collected By: Mallinckrodt Inc

Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS ----->		912		912		912		
DATES ON WHICH SAMPLES WERE COLLECTED ----->		4/4/2011		5/9/2011		6/6/2011		
TIMES AT WHICH SAMPLES WERE COLLECTED ----->		700		900		900		
PARAMETER	LIMIT	RECORD SAMPLE TYPES (G,C,M OR E) & RESULTS BELOW G=grab,C=composite,M=measured flow,E=estimated flo						UNITS
FLOW		M	74907	M	86154	M	77774	gal/day
DMAC (daily max)	7091	C	3000	C	1700	C	1600	lb/day
DMAC (monthly average)	5459	C	3000	C	1700	C	1600	lb/day
Lab Dilution Factor			1		1		1	

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Monitoring Period: ____(JAN-MAR) __X__(APR-JUN) ____(JULY-SEP) ____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->		**915**						
DATES ON WHICH SAMPLES WERE COLLECTED			---->		4/12/2011						
TIMES AT WHICH SAMPLES WERE COLLECTED			---->		16:20						
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW** G=Grab, C-composite, M=measured flow, E=estimated flow							UNITS
FLOW				E	2,700						gal/day
Acetone	524.2	20.70	8.20	G	<1						mg/L
n-Amyl acetate	1666	20.70	8.20	G	<0.100						mg/L
Benzene	524.2	3.00	0.70	G	<0.100						mg/L
n-Butyl acetate	1666	20.70	8.20	G	<0.100						mg/L
Chlorobenzene	524.2	3.00	0.70	G	<0.100						mg/L
Chloroform	524.2	0.10	0.03	G	<0.020						mg/L
1,2-Dichlorobenzene	524.2	20.70	8.20	G	<0.100						mg/L
1,2-Dichloroethane	524.2	20.70	8.20	G	<0.100						mg/L
Diethyl amine*	1671	255.00	100.00	G	<50						mg/L
Ethyl Acetate	1666	20.70	8.20	G	<0.200						mg/L
n-Heptane	1666	3.00	0.70	G	<0.200						mg/L
n-Hexane	1666	3.00	0.70	G	<0.200						mg/L
Isobutyraldehyde	1666	20.70	8.20	G	<0.200						mg/L
Isopropyl acetate	1666	20.70	8.20	G	<0.100						mg/L
Isopropyl ether	1666	20.70	8.20	G	<0.100						mg/L
Methylene chloride	524.2	3.00	0.70	G	<0.100						mg/L
Methyl formate	1666	20.70	8.20	G	<1						mg/L
4-Methyl-2-pentanone	1666	20.70	8.20	G	<0.200						mg/L
Tetrahydrofuran	1666	9.20	3.40	G	<0.400						mg/L
Toluene	524.2	0.30	0.20	G	<0.100						mg/L
Triethyl amine*	1671	255.00	100.00	G	<20						mg/L
Xylenes	1666	3.00	0.70	G	<0.100						mg/L
** Annual monitoring requirement.*											
Dilution by lab					20						

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Monitoring Period: ____(JAN-MAR) __X__(APR-JUN) ____(JULY-SEP) ____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->		**920**							
DATES ON WHICH SAMPLES WERE COLLECTED			---->		4/12/2011							
TIMES AT WHICH SAMPLES WERE COLLECTED			---->		14:20							
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW** G=Grab, C-composite, M=measured flow, E=estimated flow								UNITS
FLOW				M	22,274							gal/day
Tetrahydrofuran	1666	9.20	3.40	G	<0.400							mg/L
Toluene	524.2	0.30	0.20	G	<0.100							mg/L
Dilution by lab					20							

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Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->		**927**						
DATES ON WHICH SAMPLES WERE COLLECTED			---->		4/13/2011						
TIMES AT WHICH SAMPLES WERE COLLECTED			---->		13:40						
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW** G=Grab, C-composite, M=measured flow, E=estimated flow							UNITS
FLOW				E	2,700						gal/day
Acetone	524.2	20.70	8.20	G	<1						mg/L
n-Amyl acetate	1666	20.70	8.20	G	<0.100						mg/L
Ethyl Acetate	1666	20.70	8.20	G	<0.200						mg/L
Isopropyl acetate	1666	20.70	8.20	G	<0.100						mg/L
Methylene chloride	524.2	3.00	0.70	G	<0.100						mg/L
Dilution by lab					20						

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Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TekLab

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS					**930**							
DATES ON WHICH SAMPLES WERE COLLECTED					5/11/2011							
TIMES AT WHICH SAMPLES WERE COLLECTED					15:59							
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW** G=Grab, C-composite, M=measured flow, E=estimated flow								UNITS
FLOW				E	650							gal/day
Acetone	524.2	20.70	8.20	G	<1.000							mg/L
Ethyl Acetate	1666	20.70	8.20	G	<0.200							mg/L
Isopropyl acetate	1666	20.70	8.20	G	<0.100							mg/L
Methylene chloride	524.2	3.00	0.70	G	<0.100							mg/L
n-Amyl acetate	1666	20.70	8.20	G	<0.100							mg/L
Dilution by lab					20							

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Monitoring Period: ____(JAN-MAR) __X__(APR-JUN) ____(JULY-SEP) ____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TekLab

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->			**933**						
DATES ON WHICH SAMPLES WERE COLLECTED			---->			4/7/2011						
TIMES AT WHICH SAMPLES WERE COLLECTED			---->			13:00						
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW** G=Grab, C-composite, M=measured flow, E=estimated flow								UNITS
FLOW					E	100						gal/day
Acetone	524.2	20.70	8.20		G	<1						mg/L
n-Amyl acetate	1666	20.70	8.20		G	<0.100						mg/L
Ethyl Acetate	1666	20.70	8.20		G	<0.200						mg/L
Isopropyl acetate	1666	20.70	8.20		G	<0.100						mg/L
Methylene chloride	524.2	3.00	0.70		G	<0.100						mg/L
Dilution by lab						20						

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Monitoring Period: ____(JAN-MAR) __X__(APR-JUN) ____(JULY-SEP) ____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By:

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS					935						
DATES ON WHICH SAMPLES WERE COLLECTED											
TIMES AT WHICH SAMPLES WERE COLLECTED											
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW** G=Grab, C-composite, M=measured flow, E=estimated flow							UNITS
FLOW				E	0						gal/day
Acetone	524.2	20.70	8.20	G	*						mg/L
Benzene	524.2	3.00	0.70	G	*						mg/L
Chlorobenzene	524.2	3.00	0.70	G	*						mg/L
Chloroform	524.2	0.10	0.03	G	*						mg/L
1,2-Dichlorobenzene	524.2	20.70	8.20	G	*						mg/L
1,2-Dichloroethane	524.2	20.70	8.20	G	*						mg/L
Ethyl Acetate	1666	20.70	8.20	G	*						mg/L
n-Hexane	1666	3.00	0.70	G	*						mg/L
Methylene chloride	524.2	3.00	0.70	G	*						mg/L
4-Methyl-2-pentanone	1666	20.70	8.20	G	*						mg/L
Tetrahydrofuran	1666	9.20	3.40	G	*						mg/L
Toluene	524.2	0.30	0.20	G	*						mg/L
Xylenes	1666	3.00	0.70	G	*						mg/L
Isobutyraldehyde	1666	20.70	8.20	G	*						mg/L
n-Amyl acetate	1666	20.70	8.20	G	*						mg/L
n-Butyl acetate	1666	20.70	8.20	G	*						mg/L
Isopropyl acetate	1666	20.70	8.20	G	*						mg/L
Isopropyl ether	1666	20.70	8.20	G	*						mg/L
n-Heptane	1666	3.00	0.70	G	*						mg/L
Methyl formate	1666	20.70	8.20	G	*						mg/L
Diethyl amine	1671	255.00	100.00	G	*						mg/L
Triethyl amine	1671	255.00	100.00	G	*						mg/L
**** No PEG flow this quarter***											
Dilution by lab											

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Monitoring Period: ____(JAN-MAR) __X___(APR-JUN) ____(JULY-SEP) ____(OCT-DEC)
Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS ----->					**936**						
DATES ON WHICH SAMPLES WERE COLLECTED ----->					4/1/2011						
TIMES AT WHICH SAMPLES WERE COLLECTED ----->					11:20						
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS** G=Grab, C-composite, M=measured flow, E=estimated flow							UNITS
FLOW				E	16,500						gal/day
Acetone	524.2	20.70	8.20	G	<1						mg/L
n-Amyl acetate	1666	20.70	8.20	G	<0.200						mg/L
Benzene	524.2	3.00	0.70	G	<0.100						mg/L
n-Butyl acetate	1666	20.70	8.20	G	<0.100						mg/L
Chlorobenzene	524.2	3.00	0.70	G	<0.100						mg/L
Chloroform*	524.2	0.10	0.03	G	<0.020						mg/L
1,2-Dichlorobenzene	524.2	20.70	8.20	G	<0.100						mg/L
1,2-Dichloroethane	524.2	20.70	8.20	G	<0.100						mg/L
Diethyl amine	1671	255.00	100.00	G	Reported 1st Qtr						mg/L
Ethyl Acetate	1666	20.70	8.20	G	<0.200						mg/L
n-Heptane	1666	3.00	0.70	G	<0.200						mg/L
n-Hexane	1666	3.00	0.70	G	<0.200						mg/L
Isobutyraldehyde	1666	20.70	8.20	G	<0.200						mg/L
Isopropyl acetate	1666	20.70	8.20	G	<0.100						mg/L
Isopropyl ether	1666	20.70	8.20	G	<0.100						mg/L
Methylene chloride	524.2	3.00	0.70	G	<0.100						mg/L
Methyl formate	1666	20.70	8.20	G	<1						mg/L
4-Methyl-2-pentanone	1666	20.70	8.20	G	<0.200						mg/L
Tetrahydrofuran	1666	9.20	3.40	G	<0.400						mg/L
Toluene	524.2	0.30	0.20	G	<0.100						mg/L
Triethyl amine	1671	255.00	100.00	G	Reported 1st Qtr						mg/L
Xylenes	1666	3.00	0.70	G	<0.100						mg/L
	4/1/2011										
	ND	ND									
* Chloroform Results	Raw Water	SP936									
4/1/2011	<0.020 mg/l	<0.020 mg/l									
Results above reported as the difference between SP936 and Raw Water.											
Dilution by lab					20						

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Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TEKLAB

Part II: ANALYTICAL RESULTS OF SELF MONITORING

MSD SAMPLE POINT REFERENCE NUMBERS			---->		**937**						
DATES ON WHICH SAMPLES WERE COLLECTED			---->		4/12/2011						
TIMES AT WHICH SAMPLES WERE COLLECTED			---->		14:30						
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW** G=Grab, C-composite, M=measured flow, E=estimated flow							UNITS
FLOW				M	37,438						gal/day
Tetrahydrofuran	524.2	9.20	3.40	G	<0.400						mg/L
Toluene	524.2	0.30	0.20	G	<0.100						mg/L
Dilution by lab					20						

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Samples Collected By: Mallinckrodt Inc
Analysis Performed By: TekLab

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MSD SAMPLE POINT REFERENCE NUMBERS			---->		**938**							
DATES ON WHICH SAMPLES WERE COLLECTED			---->		5/6/2011							
TIMES AT WHICH SAMPLES WERE COLLECTED			---->		12:00							
PARAMETER	EPA METHOD	DAILY MAX	AVG MONTHLY	**RECORD SAMPLE TYPES (G, C, M OR E) & RESULTS BELOW** G=Grab, C-composite, M=measured flow, E=estimated flow								UNITS
FLOW				E	71							gal/day
Acetone	524.2	20.70	8.20	G	<1							mg/L
n-Amyl acetate	1666	20.70	8.20	G	<0.100							mg/L
Ethyl Acetate	1666	20.70	8.20	G	<0.200							mg/L
Isopropyl acetate	1666	20.70	8.20	G	<0.100							mg/L
Methylene chloride	524.2	3.00	0.70	G	<0.100							mg/L
Dilution by lab					20							

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Metropolitan St. Louis Sewer District

Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

July 26, 2011

Julie Summers
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Re: Wastewater User Charge Billing for Special Discharge

Dear Ms. Summers:

This is to advise you of the wastewater user charges applicable to an on-site special discharge approved in our letter to you dated July 7, 2011. You were advised of the extra-strength surcharges as part of the original approval letter. That charge was determined using the COD and TSS concentrations contained in the previously provided laboratory analytical report dated January 28, 2011. The discharge date and quantity are from information submitted by you in an email dated July 22, 2011.

Our Finance Department will bill you by invoice for the charges described below. These charges are based on the rates in MSD Wastewater User Charge Ordinance 13021. For your convenience, using the volume and strength of the waste discharged, the ordinance rates have been converted to a per-gallon basis.

PARTY TO BILL: Addressee

BILLING IS FOR: On-Site Special Discharge

DISCHARGE PERIOD: July 8, 2011

SOURCE OF WASTE: Wastewater from a failed batch of magnesium stearate solution from Building X at the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri.

Discharge Period	Billing Item	Quantity	Units	Rate	Charge
7/8/11	Extra-Strength Surcharge	2,500	Gal	$0.015	$37.50
Total:	------	**2,500**	Gal	-----	**$37.50**

Please do not pay until you receive our invoice. If you have any questions, please contact me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

pc Chris Verplancke - Finance Dept.
Doug Mendoza
Brian Gibson
File: IU, MALLINCKRODT INC [2112059600], 3600 North Second Street

PRIORITIES PERFORMANCE SERVICE

Steve Grace

From: Summers, Julie [Julie.Summers@Covidien.com]
Sent: Friday, July 22, 2011 11:21 AM
To: Steve Grace
Subject: Bldg X Special Discharge Permit July 2011 Follow-up Information

Steve,

The following information is being provided in regards to the Special Discharge permit issued by MSD date July 7, 2011 for a failed batch of magnesium stearate from Building X at the Mallinckrodt, St. Louis Plant.

Date discharged: July 8, 2011
Start/End Time: 1030/1140
Volume: 2500 gallons

Please let me know if you have any questions or need additional information.

Julie Summers
Environmental Manager
Covidien/Mallinckrodt
3600 North 2nd Street
St. Louis, MO 63147
314-654-1969 Phone
314-654-1251 Fax

On-Site Special Discharge High Strength Flow Rate and Surcharge Calculator

1 GENERAL INFORMATION:

Date: 07/26/11
Calculated by: Steve Grace
Source name: MALLINCKRODT INC
Waste material: Off-specification magnesium stearate
Discharge volume: 2,500 gallons

2 STRENGTH INFORMATION:

Sample BOD =	0	mg/l =	0	lbs BOD to be discharged
Sample COD =	1,170	mg/l =	24	lbs COD to be discharged
Sample TSS =	15,500	mg/l =	for surcharge calculation only	

3 PLANT DATA: 2010

Treatment area: Bissell

	Flow (MGD)	BOD (mg/L)	COD (mg/L)	BOD (lb/hr)	COD (lb/hr)	Max Loading = 10% BOD (lb/hr)	COD (lb/hr)
Bissell	140	146	292	7,113	14,227	711	1,423
Coldwater	26	188	377	1,704	3,408	170	341
Fenton	5	388	776	679	1,357	68	136
Grand Glaize	16	129	405	708	2,218	71	222
Lemay	131	78	210	3,531	9,584	353	958
Lower Meramec	13	124	409	543	1,785	54	179
Missouri River	27	280	559	2,671	5,341	267	534

4 MINIMUM REQUIRED FLOW RATE:

	BOD (hours	BOD (gpm)	COD (hours)	COD (gpm)
Bissell	0.00	0	0.02	2430
Coldwater	0.00	0	0.07	582
Fenton	0.00	0	0.18	232
Grand Glaize	0.00	0	0.11	379
Lemay	0.00	0	0.03	1637
Lower Meramec	0.00	0	0.14	305
Missouri River	0.00	0	0.05	912

5 SURCHARGE AND VOLUME BILLING

Is volume subject to billing? no (yes/no)
Ratio of BOD/COD = 0.00

(Sample BOD) - 300 = 0 mg/l subject to surcharge
(sample COD) - 600 = 570 mg/l subject to surcharge
(sample TSS) - 300 = 15200 mg/l subject to surcharge

If BOD/COD ratio <= 0.35, the following calculations use the COD value. Otherwise they use the BOD value

Current rates under Ordinance: 13021

Volume = $ 2.11 /CcF
BOD = $ 620.14 /ton
COD = $ 310.07 /ton
TSS = $ 231.35 /ton

Flow charge = $ - based on volume = 3.3 CcF
BOD surcharge = $ -
COD surcharge = $ 1.84
TSS surcharge = $ 36.67
Total discharge charge = $ 38.51
Customer charge = $ 38.51 DEC charges special discharge customers for total charges > $20.00
Approximate charge/gallon = $ 0.015

Comments

require volume report for billing purposes. Smg

MEMO TO: Chris Verplancke

FROM: Sara Kammerer SK

DATE: July 29, 2011

SUBJECT: **RETURN FACTOR APPLICATION REVIEW**

RE: **MIDDENDORF MEAT CO.**
3737 N. Broadway, St. Louis, MO 63147

MSD Sewer Account No: 119991-8

Recommended Return Factor (RF) for future billing: 0.44
Previous Return Factor: 1.00

Total annualized consumption on this account from water agency meters as of June 2011 was 4,302 Ccf.

Total annualized nonsewered water from metered data and company records for evaporation due to ammonia refrigeration as of May 2011 was 2,429 Ccf.

We recommend RF credits be applied effective the start of the documentation program in May 2010.

Under the current Ordinance 13021 rates, this new RF equates to a revenue decrease per year as follows:

Volume Charges ($2.11/Ccf)	=	$5,083.24
Extra Strength Surcharges	=	$ 0.00
Total Revenue Decrease	=	$5,083.24

If you have any questions, please call me at 436-8763.

bv

pc Brian G. Gibson
Doug Mendoza

File: RF, 2112-3215-00, MIDDENDORF MEAT CO.
IU, 2112-3215-00, MIDDENDORF MEAT

Metropolitan St. Louis Sewer District
Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

July 7, 2011

Julie Summers
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Re: Wastewater User Charge Billing for Special Discharge

Dear Ms. Summers:

This is to advise you of the wastewater user charges applicable to an on-site special discharge approved in our letter to you dated April 28, 2011. You were advised of the extra-strength surcharges as part of the original approval letter. That charge was determined using the COD and TSS concentrations contained in the previously provided laboratory analytical report dated January 28, 2011. The discharge date and quantity are from information submitted by you in an email dated July 7, 2011.

Our Finance Department will bill you by invoice for the charges described below. These charges are based on the rates in MSD Wastewater User Charge Ordinance 13021. For your convenience, using the volume and strength of the waste discharged, the ordinance rates have been converted to a per-gallon basis.

PARTY TO BILL: Addressee

BILLING IS FOR: On-Site Special Discharge

DISCHARGE PERIOD: April 28, 2011

SOURCE OF WASTE: Wastewater from a failed batch of magnesium stearate solution from Building X at the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri.

Discharge Period	Billing Item	Quantity	Units	Rate	Charge
4/28/11	Extra-Strength Surcharge	2,000	Gal	$0.015	$30.00
Total:	------	**2,000**	Gal	-----	**$30.00**

Please do not pay until you receive our invoice. If you have any questions, please contact me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

pc Chris Verplancke - Finance Dept.
Doug Mendoza
Brian Gibson
File: IU, MALLINCKRODT INC [2112059600], 3600 North Second Street, St. Louis, Missouri

Steve Grace

From: Summers, Julie [Julie.Summers@Covidien.com]
Sent: Thursday, July 07, 2011 9:38 AM
To: Steve Grace
Subject: Special Discharge Followup 4/28 Bldg X Mag Stearate Discharge

You know I was looking at my documentation this morning and I could find no record of us sending you follow-up information. I contacted the building engineer and here is the info to close out the April 28, 2011 permit:

The magnesium stearate/water mixture was discharged on April 28th. 2000 gallons of the mixture was discharge over a 1 hour period.

Thanks,
Julie

> **From:** Steve Grace [mailto:sgrace@stlmsd.com]
> **Sent:** Thursday, July 07, 2011 9:30 AM
> **To:** Summers, Julie
> **Subject:** RE: Special Discharge Request
>
> Thanks, Julie! In reviewing this waste stream, I couldn't find any record of a volume report ever being received as outlined in the April 28, 2011 approval letter. I have attached this approval letter, with highlighted sections. April was a super busy month for me, so it's possible I misplaced the correspondence and never issued the Special Billing Invoice letter.
>
> Can you check your records to see if someone on your end ever provided me with the dates and volume of this discharge? Once I get it (or get it again, lol) I can issue the invoice letter and close out this prior approval. Any assistance would be appreciated.
>
> Thanks again, Julie!
>
> Steve

> **From:** Summers, Julie [mailto:Julie.Summers@Covidien.com]
> **Sent:** Thursday, July 07, 2011 9:15 AM
> **To:** Steve Grace
> **Subject:** RE: Special Discharge Request
>
> Yes – the composition of this batch is the same as the January one so the analytical you have represents this batch as well.
>
> Thanks,
> Julie
>
>> **From:** Steve Grace [mailto:sgrace@stlmsd.com]
>> **Sent:** Thursday, July 07, 2011 9:12 AM
>> **To:** Summers, Julie
>> **Subject:** RE: Special Discharge Request
>>
>> Hello Julie,
>>
>> It appears that this is the same waste stream that we approved in January and April of this year. In reviewing the

file, it looks like we had you guys run COD and TSS lab analysis on the January 2011 failed batch of magnesium stearate, and used this lab data for the April approval as well. As this lab analytical was not provided for this most recent failed batch, can you confirm that the characteristics of this failed batch are the same as the January 2011 failed batch (with the exception of the percentages of water and magnesium stearate)?

Contact me with any questions or if you require additional information.

Thanks,
Steve Grace

From: Summers, Julie [mailto:Julie.Summers@Covidien.com]
Sent: Thursday, July 07, 2011 7:45 AM
To: Steve Grace
Cc: Crouch, Amber
Subject: Special Discharge Request
Importance: High

Steve,

Attached is a special discharge permit request to discharge 2500 gallons of a water/magnesium stearate mixture from Building X at the Mallinckrodt St. Louis Plant. Last night a valve became stuck open when water was being added to a batch of magnesium stearate causing too much water to be added and ruining the batch. This request is to discharge that batch to MSD.

Currently the building is down pending approval of this discharge so please let me know if there is any additional information you need or anything I can do to expedite the permitting process.

Thanks,

Julie Summers
Environmental Manager
Covidien/Mallinckrodt
3600 North 2nd Street
St. Louis, MO 63147
314-654-1969 Phone
314-654-1251 Fax

Metropolitan St. Louis Sewer District

Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

July 7, 2011

Julie Summers
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Dear Ms. Summers:

We have reviewed your application dated July 7, 2011 requesting approval to discharge 2,500 gallons of wastewater to the Metropolitan St. Louis Sewer District for treatment. This wastewater is from a failed batch of magnesium stearate solution from Building X at the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri. This wastewater is subject to the categorical pretreatment standards in 40 CFR Part 414 subparts G and H. We understand that the wastewater will be discharged through sampling point 010.

Based on the information and sample results you provided, this wastewater meets MSD Ordinance 12559 standards and is approved for discharge into a sanitary sewer on site. The discharge into the sewer must be controlled at a rate that will not surcharge the lines in the area. This approval is valid for 30 days from the date of this letter.

You must be certain the waste is discharged into a sanitary or combined sewer inlet only. This letter does not authorize any discharge to a separate storm sewer, or to any watercourse, as any such discharge would be in violation of state and federal laws. **Please notify me at the number below when the discharge is to commence, and please ensure the onsite personnel discharging the wastewater in question are provided with a copy of this letter.**

For billing purposes associated with this high strength wastewater, you must confirm the volume of this wastewater discharged to us, in writing, at the completion of the discharge. This report is due no later than 28 days after this approval expires. Please refer to this letter and include the date of the discharge when providing that figure. Under the provisions of Ordinance 13021, you will be billed by invoice at the billing rate in effect at the time of discharge. The current rate contained in MSD Ordinance 13021 is $2.11 per hundred cubic feet ($2.82 per thousand gallons), $310.07 per ton for COD over 600 mg/L, and $231.35 per ton for TSS over 300 mg/L. Using the assumed COD and TSS concentrations contained in a previously provided laboratory analytical report, and the proposed discharge volume provided in your application, it is estimated that you will be discharging just over 3 hundred cubic feet, less than one ton of COD over 600 mg/L (our quantitative estimate is 0.006 tons COD times $310.07), and less than one ton of TSS over 300 mg/L (our quantitative estimate is 0.16 tons TSS times $231.35). Please do not pay this amount until you receive our invoice.

This discharge has been approved based upon the information you provided, and is subject to the conditions stated above. This approval may be revoked by the District at any time if any of the information is found to be incorrect, or if the conditions of this approval are violated. Also, if the discharge causes any operational or maintenance problem within the District's collection or treatment system, or results in violations of any conditions of the District's NPDES permit, Mallinckrodt will be considered responsible for damages.

If you have any questions, please call me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

pc: Brian Gibson
Doug Mendoza

File: IU, MALLINCKRODT INC [2112059600], SP834

C1A

SD EVALUATION CHECKLIST - ON SITE

APPLICATION INFORMATION

Source Name: Mallinckrodt Inc.

Premise Address: 3600 N. 2nd St.

Send approval letter to applicant

Evaluated by: _____

Date: _____

Application Dated: 7/7/11 Received: 7/7/11 All Requested Info. Received: 7/7/11

SOURCE FILING/DESCRIPTION

1 - Source in PIMS? (Y) / N
2 - If No, on IU Cross-Ref list? * Y / N
3 - If No, MSD Account # from E-CIS? Y / N
4 - If none, on "Source" list (pre-IMS)? ** Y / N
5 - If No, assigned SOUR# from PIMS.

* o:\costrecovery\cross reference xls file

** o:\costrecovery\sourlist xls file

SOURCE TYPE (circle): (IU) / Dead IU / SD

INDUSTRY ID: 21120596-00

Sample Point: No. Assigned: 834 Description: failed batch of magnesium stearate solution from Bldg. X

Normal WW flow from premise? N/A _____ ccf/month, 2,992,101 GPD, _____ GPH. from SP010

REGULATORY STATUS

Is waste a Hazardous Waste? (N) / Y

Categorical standards apply? N / (Y) 40 CFR 414 Subparts G & H

Contain PCB/ asbestos/ radioactive/ dioxin/ used oil? (N) / Y

Regulatory Agency Oversight? (N) / Y

DISCHARGE CONSIDERATIONS At MSD's connection:

Ordinance Limits (12559, p32) exceeded? (N) / Y

Ordinance other limits exceeded (dye, flash pt <140F, temp >140F, obstruction, nuisance foaming/odor, corrosion causing): (N) / Y

Water Quality Standard exceeded? (N) / Y

Fumes in sewer exceed PEL/TLV limits? (N) / Y

Vapors in sewer exceed 10% of LEL? (N) / Y

RECOMMENDATION: (APPROVE) / DENY (cc WWTP Mgr for timed discharge)

APPROVAL CONDITIONS:

Timed Discharge (COD/BOD/WQ/foam): (N) / Y Limit = _____ gal/hour

Require Treatment before Discharge? (N) / Y

Laboratory analysis fee due? (N) / Y $_____

SMR required? (N) / Y Frequency/analysis: _____

SMR log: (N/A) / Remediation.xls / Nonremediation.xls

Volume Billing applies (water unmetered or credited)? (N) / Y

Bill High Strength? N / (Y) Yes, If use >60,000 gal/month water ✓ and, > norm WW strgth

Surcharge calculation attached: N/A / N / (Y)

Expiration log updated: (N/A) / N / Y

O:\CostRecovery\Special Discharge\C1a.Checklist.doc

Steve Grace

From: Summers, Julie [Julie.Summers@Covidien.com]
Sent: Thursday, July 07, 2011 9:15 AM
To: Steve Grace
Subject: RE: Special Discharge Request

Yes – the composition of this batch is the same as the January one so the analytical you have represents this batch as well.

Thanks,
Julie

> **From:** Steve Grace [mailto:sgrace@stlmsd.com]
> **Sent:** Thursday, July 07, 2011 9:12 AM
> **To:** Summers, Julie
> **Subject:** RE: Special Discharge Request
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> Hello Julie,
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> It appears that this is the same waste stream that we approved in January and April of this year. In reviewing the file, it looks like we had you guys run COD and TSS lab analysis on the January 2011 failed batch of magnesium stearate, and used this lab data for the April approval as well. As this lab analytical was not provided for this most recent failed batch, can you confirm that the characteristics of this failed batch are the same as the January 2011 failed batch (with the exception of the percentages of water and magnesium stearate)?
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> Contact me with any questions or if you require additional information.
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> Thanks,
> Steve Grace
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> ---
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> **Sent:** Thursday, July 07, 2011 7:45 AM
> **To:** Steve Grace
> **Cc:** Crouch, Amber
> **Subject:** Special Discharge Request
> **Importance:** High
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> Steve,
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> Attached is a special discharge permit request to discharge 2500 gallons of a water/magnesium stearate mixture from Building X at the Mallinckrodt St. Louis Plant. Last night a valve became stuck open when water was being added to a batch of magnesium stearate causing too much water to be added and ruining the batch. This request is to discharge that batch to MSD.
>
> Currently the building is down pending approval of this discharge so please let me know if there is any additional information you need or anything I can do to expedite the permitting process.
>
> Thanks,
>
> Julie Summers
> Environmental Manager
> Covidien/Mallinckrodt
> 3600 North 2nd Street
> St. Louis, MO 63147
> 314-654-1969 Phone
> 314-654-1251 Fax

On-Site Special Discharge High Strength Flow Rate and Surcharge Calculator

1 GENERAL INFORMATION:

Date: 07/07/11
Calculated by: Steve Grace
Source name: MALLINCKRODT INC
Waste material: Off-specification magnesium stearate
Discharge volume: 2,500 gallons

2 STRENGTH INFORMATION:

Sample BOD =	0	mg/l =	0	lbs BOD to be discharged
Sample COD =	1,170	mg/l =	24	lbs COD to be discharged
Sample TSS =	15,500	mg/l =	for surcharge calculation only	

3 PLANT DATA: 2010

Treatment area: Bissell

	Flow (MGD)	BOD (mg/L)	COD (mg/L)	BOD (lb/hr)	COD (lb/hr)	Max Loading = 10% BOD (lb/hr)	COD (lb/hr)
Bissell	**140**	**146**	**292**	**7,113**	**14,227**	**711**	**1,423**
Coldwater	26	188	377	1,704	3,408	170	341
Fenton	5	388	776	679	1,357	68	136
Grand Glaize	16	129	405	708	2,218	71	222
Lemay	131	78	210	3,531	9,584	353	958
Lower Meramec	13	124	409	543	1,785	54	179
Missouri River	27	280	559	2,671	5,341	267	534

4 MINIMUM REQUIRED FLOW RATE:

	BOD (hours	BOD (gpm)	COD (hours)	COD (gpm)
Bissell	**0.00**	**0**	**0.02**	**2430**
Coldwater	0.00	0	0.07	582
Fenton	0.00	0	0.18	232
Grand Glaize	0.00	0	0.11	379
Lemay	0.00	0	0.03	1637
Lower Meramec	0.00	0	0.14	305
Missouri River	0.00	0	0.05	912

5 SURCHARGE AND VOLUME BILLING

Is volume subject to billing? no (yes/no)
Ratio of BOD/COD = 0.00

(Sample BOD) - 300 = 0 mg/l subject to surcharge
(sample COD) - 600 = 570 mg/l subject to surcharge
(sample TSS) - 300 = 15200 mg/l subject to surcharge

If BOD/COD ratio <= 0.35, the following calculations use the COD value. Otherwise they use the BOD value

Current rates under Ordinance: 13021

Volume =	$ 2.11	/CcF
BOD =	$ 620.14	/ton
COD =	$ 310.07	/ton
TSS =	$ 231.35	/ton

Flow charge = $ - based on volume = 3.3 CcF
BOD surcharge = $ -
COD surcharge = $ 1.84
TSS surcharge = $ 36.67
Total discharge charge = $ 38.51
Customer charge = $ 38.51 DEC charges special discharge customers for total charges > $20.00
Approximate charge/gallon = $ 0.02

Comments

require volume report for billing purposes. Smg

Metropolitan St. Louis Sewer District
2350 Market Street
St. Louis, MO 63103

APPLICATION FOR SPECIAL DISCHARGE APPROVAL

I. WASTEWATER SOURCE IDENTIFICATION:

Site Name: Mallinckrodt
Premise Address: 3600 N. 2nd Street
City: St Louis State: MO Zip: 63147
Owner: Mallinckrodt
Contact Person: Julie Summers
Title: Env Mgr
Phone: 314-654-1969 Fax: 314-654-1251

II. APPLICANT (mailing information):

Applicant Name: Julie Summers
Title: Env Mgr
Company Name: Mallinckrodt
Mailing Address: 3600 N 2nd St
City: St Louis State: MO Zip: 63147
Phone: 314-654-1969 Fax: 314-654-~~1969~~ 1251

III. A. MATERIAL TO BE DISCHARGED (check all applicable boxes):

1. Wastewater description/location: Bldg X - Magnesium Stearate
2. Process/activity generating wastewater: Batch of magnesium stearate with too much water added to process - failed batch
3. Physical and chemical composition: List all constituents, and known or potentially present regulated contaminants below.
   ☐ See separate listing enclosed, and/or ☐ See analytical results enclosed, and/or ☑ Material Safety Data Sheet enclosed.

DESCRIPTION	RANGE	UNIT
Water	86	%
Magnesium Stearate	14	%

DESCRIPTION *(continued)*	RANGE	UNIT

4. Is this wastewater from a process subject to EPA's categorical standards in 40 CFR Subchapter N? ☑ Yes ☐ No
   a. If yes, the applicable standards are in: 40 CFR Part 414, Subpart G+H ☑ Existing source ☐ New source
5. Does this wastewater contain polychlorinated biphenyls, asbestos or radioactive material? ☐ Yes ☑ No
   a. If yes, describe: _____
6. Representative sample: ☐ Laboratory results attached, and/or ☐ Sample provided (1/2 gallon minimum, clear container)
   a. Sample collection point/location: _____ Collection method: _____
   b. Sampler's name/Co.: _____ Sample date/time: _____
   c. Attach chain of custody as available
7. Discharge will occur over the following time period: ☑ < 30 days ☐ ≥ Two years ☐ Other: _____
   a. Expected total volume of wastewater to be discharged over the time period above: _____ Gallons
   b. Proposed discharge volume: 2500 Gallons, at a frequency of: ☑ One time ☐ Daily ☐ Weekly ☐ Monthly ☐ Once/three months ☐ Once/six months ☐ Other: _____
8. Pretreatment of wastewater prior to discharge: ☐ None ☑ Yes, describe: pH adjust at main outfall SPAD
   a. If yes, attach site plan, pretreatment system schematic, and design specifications.
9. Wastewater from a remediation project under: ☐ Superfund/CERCLA ☐ RCRA ☐ Voluntary program ☐ UST ☑ Not applicable
   a. If from a remediation project, briefly describe the past and present utilization of the property: _____

III.B. MATERIAL FROM UNDERGROUND STORAGE TANK SOURCE

☑ **Not applicable (go to Section IV)**

Please answer the following questions if you are requesting to discharge wastewater associated with an underground storage tank system.

1. a. Wastewater from: ☐ Inside UST(s) ☐ UST system pit ☐ Excavation outside UST system pit ☐ Monitoring well ☐ Groundwater remediation system

   b. UST project involves wastewater from: ☐ UST(s) closed in place ☐ UST(s) removed ☐ Remediation ☐ Upgrade ☐ Maintenance activities ☐ Well monitoring ☐ Other, explain: _____

   c. If wastewater is from a closure project, how long has UST(s) been out of service: _____ years

2. a. State assigned UST site identification number: _____ ☐ Not applicable

   b. Number of USTs affected: _____ ☐ Unknown

   c. For the UST(s) involved, their state identification number(s): _____ ☐ Not applicable

   d. Service Station Identification Number, as applicable: _____

3. Tank contents/former contents: ☐ Gasoline ☐ #2 diesel ☐ Used oil ☐ Unknown ☐ Other: _____

IV. DISCHARGE LOCATION

1. ☑ On-site. Describe proposed point of entry to sewer and the discharge rate (must be a sanitary or combined sewer): _____

   Bldg Sewer to Main Outfall SP010 Note: Range of discharge must not surcharge sewer line.

2. ☐ Haul to MSD Bissell Point Hauled Waste Receiving Station at 10 E. Grand, St. Louis, MO.

   a. Transporters Name: _____ and MSD Hauler ID Number: _____

   b. Hazardous Waste Certification:

   For wastewater which is hauled to MSD's Bissell Point Hauled Waste Receiving Station, I hereby certify that to the best of my knowledge and belief, the above hauled waste is not classified as a RCRA "hazardous waste" as defined by the MDNR in 10 CSR 25 or USEPA in 40 CFR Part 261.

   Applicant Name (print): _____

   Signature: _____ **Date:** _____

ADDITIONAL INFORMATION:

_____

V. APPLICANT SIGNATURE AND CERTIFICATION

This application must be signed by the applicant: either the source contact, or a contractor or agent directly responsible for site activities.

I hereby certify that I am directly responsible for activities at the site regarding the wastewater to be discharged, and to the best of my knowledge and belief, based on appropriate inquiry, the information in this application is true, complete, and accurate. The samples or analyses submitted are representative of the materials to be discharged. If granted approval to discharge, I agree to abide by the MSD Ordinances, and all applicable federal, state and local regulations. I agree to pay the costs of any pre-approval analyses performed by MSD and to pay any applicable disposal charges for the volume and strength of the wastes discharged.

Applicant Name (print): Julie Summers

Signature: Julie Summers **Date:** 7/7/11

FOR MSD USE ONLY:

File Name: Mallinckrodt, Inc. ID No. 21120596-00 Sample Point No. 834

January 28, 2011

Lisa Meyer
Mallinckrodt Inc.
3600 N. 2nd St.
St. Louis, MO 63147
TEL: (314) 654-3374
FAX: (314) 654-1251

RE: BX **WorkOrder:** 11010866

Dear Lisa Meyer:

TEKLAB, INC received 1 sample on 1/27/2011 9:06:00 AM for the analysis presented in the following report.

Samples are analyzed on an as received basis unless otherwise requested and documented. The sample results contained in this report relate only to the requested analytes of interest as directed on the chain of custody. NELAP accredited fields of testing are indicated by the letters NELAP under the Certification column. All tests are performed in the Collinsville, IL laboratory unless otherwise noted in the Case Narrative.

All quality control criteria applicable to the test methods employed for this project have been satisfactorily met and are in accordance with NELAP except where noted. The following report shall not be reproduced, except in full, without the written approval of Teklab, Inc.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

Heather A. White

Heather A. White
Project Manager
(618)344-1004 ex 20
HWhite@teklabinc.com

Definitions

Client: Mallinckrodt Inc. **Work Order:** 11010866

Client Project: BX **Report Date:** 28-Jan-11

Abbr	Definition
CCV	Continuing calibration verification is a check of a standard to determine the state of calibration of an instrument between recalibration.
DF	Dilution factor is the dilution performed during analysis only and does not take into account any dilutions made during sample preparation. The reported result is final and includes all dilutions factors.
DNI	Did not ignite
DUP	Laboratory duplicate is an aliquot of a sample taken from the same container under laboratory conditions for independent processing and analysis independently of the original aliquot.
ICV	Initial calibration verification is a check of a standard to determine the state of calibration of an instrument before sample analysis is initiated.
IDPH	IL Dept. of Public Health
LCS	Laboratory control sample, spiked with verified known amounts of analytes, is analyzed exactly like a sample to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system. The acceptable recovery range is in the QC Package (provided upon request).
LCSD	Laboratory control sample duplicate is a replicate laboratory control sample that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
MB	Method blank is a sample of a matrix similar to the batch of associated sample (when available) that is free from the analytes of interest and is processed simultaneously with and under the same conditions as samples through all steps of the analytical procedures, and in which no target analytes or interferences should present at concentrations that impact the analytical results for sample analyses.
MDL	Method detection limit means the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.
MS	Matrix spike is an aliquot of matrix fortified (spiked) with known quantities of specific analytes that is subjected to the entire analytical procedures in order to determine the effect of the matrix on an approved test method's recovery system. The acceptable recovery range is listed in the QC Package (provided upon request).
MSD	Matrix spike duplicate means a replicate matrix spike that is prepared and analyzed in order to determine the precision of the approved test method. The acceptable recovery range is listed in the QC Package (provided upon request).
ND	Not Detected at the Reporting Limit
NELAP	NELAP Accredited
PQL	Practical quantitation limit means the lowest level that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operation conditions. The acceptable recovery range is listed in the QC Package (provided upon request).
RL	The reporting limit the lowest level that the data is displayed in the final report. The reporting limit may vary according to customer request or sample dilution. The reporting limit may not be less than the MDL.
RPD	Relative percent difference is a calculated difference between two recoveries (ie. MS/MSD). The acceptable recovery limit is listed in the QC Package (provided upon request).
SPK	The spike is a known mass of target analyte added to a blank sample or sub-sample; used to determine recovery deficiency or for other quality control purposes.
Surr	Surrogates are compounds which are similar to the analytes of interest in chemical composition and behavior in the analytical process, but which are not normally found in environmental samples.
TNTC	Too numerous to count (> 200 CFU)

Qualifiers

# - Unknown hydrocarbon	B - Analyte detected in associated Method Blank
E - Value above quantitation range	H - Holding times exceeded
J - Analyte detected below quantitation limits	M - Manual Integration used to determine area response
ND - Not Detected at the Reporting Limit	R - RPD outside accepted recovery limits
S - Spike Recovery outside recovery limits	X - Value exceeds Maximum Contaminant Level

Case Narrative

Client: Mallinckrodt Inc.

Work Order: 11010866

Client Project: BX

Report Date: 28-Jan-11

Cooler Receipt Temp: 13.2 °C

Teklab, Inc.
Environmental Laboratory

Laboratory Results

http://www.teklabinc.com/

Client: Mallinckrodt Inc.
Work Order: 11010866
Client Project: BX
Report Date: 28-Jan-11
Lab ID: 11010866-001
Client Sample ID: BX
Matrix: AQUEOUS
Collection Date: 01/27/2011 7:45

Analyses	Certification	RL	Qual	Result	Units	DF	Date Analyzed	Batch
EPA 600 410.4								
Chemical Oxygen Demand	NELAP	100		**1170**	mg/L	2	01/27/2011 12:35	R145042
STANDARD METHODS 18TH ED. 2540 D								
Total Suspended Solids	NELAP	6		**15500**	mg/L	1	01/27/2011 9:13	R145002

Client: Mallinckrodt Inc.

Client Project: BX

Work Order: 11010866

Report Date: 28-Jan-11

Locations

	Collinsville		Springfield		Kansas City
Address	5445 Horseshoe Lake Road	Address	3920 Pintail Dr	Address	8421 Nieman Road
City	Collinsville	City	Springfield	City	Lenexa
State	IL	State	IL	State	KS
Zip	62234-7425	Zip	62711-9415	Zip	66214
Phone	(618) 344-1004	Phone	(217) 698-1004	Phone	(913) 541-1998
Fax	(618) 344-1005	Fax	(217) 698-1005	Fax	(913) 541-1998
Email	jhriley@teklabinc.com	Email	kmcclain@teklabinc.com	Email	dthompson@teklabinc.com

Accreditations

State	Dept	Cert #	NELAP	Exp Date	Lab
Illinois	IEPA	100226	NELAP	1/31/2012	Collinsville
Kansas	KDHE	E-10374	NELAP	1/31/2011	Collinsville
Louisiana	LDEQ	166493	NELAP	6/30/2011	Collinsville
Louisiana	LDEQ	166578	NELAP	6/30/2011	Springfield
Arkansas	ADEQ	88-0966		3/14/2011	Collinsville
Illinois	IDPH	17584		5/31/2011	Collinsville
Kentucky	UST	0073		5/26/2012	Collinsville
Missouri	MDNR	00930		5/31/2011	Collinsville
Oklahoma	ODEQ	9978		8/31/2011	Collinsville

Teklab, Inc.
Environmental Laboratory

Receiving Check List

http://www.teklabinc.com/

Client: Mallinckrodt Inc.

Client Project: BX

Work Order: 11010866

Report Date: 28-Jan-11

Carrier: Jacob Grimes

Received By: MLD

Completed by: Marvin L. Darling II
On: 27-Jan-11
Marvin L. Darling

Reviewed by: Elizabeth A. Hurley
On: 27-Jan-11
Elizabeth A. Hurley

Pages to follow: Chain of custody [1] Extra pages included [0]

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐	Temp °C	13.2
Type of thermal preservation?	None ☐	Ice ☑	Blue Ice ☐	Dry Ice	☐
Chain of custody present?	Yes ☑	No ☐			
Chain of custody signed when relinquished and received?	Yes ☑	No ☐			
Chain of custody agrees with sample labels?	Yes ☑	No ☐			
Samples in proper container/bottle?	Yes ☑	No ☐			
Sample containers intact?	Yes ☑	No ☐			
Sufficient sample volume for indicated test?	Yes ☑	No ☐			
All samples received within holding time?	Yes ☑	No ☐			
Reported field parameters measured:	Field ☐	Lab ☐	NA ☑		
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐			
When thermal preservation is required, samples are compliant with a temperature between 0.1°C - 6.0°C, or when samples are received on ice the same day as collected.					
Water - vials have zero headspace?	Yes ☐	No ☐	No VOA vials ☑		
Water - TOX containers have zero headspace?	Yes ☐	No ☐	No TOX containers ☑		
Water - pH acceptable upon receipt?	Yes ☑	No ☐			

Any No responses must be detailed below or on the COC.

CHAIN OF CUSTODY

pg. ____ of ____ Work Order # 1101086 6

TEKLAB, INC. 5445 Horseshoe Lake Road ~ Collinsville, IL 62234 ~ Phone: (618) 344-1004 ~ Fax: (618) 344-1005

Client: Mallinckrodt
Address: 3600 N 2nd St
City / State / Zip: St Louis MO 63147
Contact: Lisa Meyer Phone: 314 654 3374
E-Mail: Fax:

Samples on: ☒ Ice ☐ Blue Ice ☐ No Ice 1.2 °C
Preserved in: ☐ Lab ☒ Field
FOR LAB USE ONLY
Lab Notes: per Lisa Meyer/Heather Brinks, analyze on same day that is possible - [illegible] 1/27/11
Comments:

Teklab, Inc.
Courier Pick Up

- Are these samples known to be involved in litigation? If yes, a surcharge will apply. ☐ Yes ☒ No
- Are these samples known to be hazardous? ☐ Yes ☒ No
- Are there any required reporting limits to be met on the requested analysis? If yes, please provide limits in comment section. ☒ Yes ☐ No

Project Name / Number: BX
Sample Collector's Name: NS

Results Requested: ☐ Standard ☒ 1-2 Day (100% Surcharge) ☐ Other_____ ☐ 3 Day (50% Surcharge)
Billing Instructions:

Lab Use Only	Sample Identification	Date/Time Sampled	# and Type of Containers: UNPRES	HNO_3	NaOH	H_2SO_4	HCL	MeOH	$NaHSO_4$	Other	MATRIX: Water	Drinking Water	Soil	Sludge	Sp. Waste	INDICATE ANALYSIS REQUESTED: ~~BOD~~ COD	TSS
1101086-01	BX	1/27/11 0745	1			1					X					X	X

RUSH

Relinquished By	Date / Time	Received By	Date / Time
Tuy Colon	1/27/11 8:29		1/27/11 0829
	1/27/11 0906	Marvin R. Darling II	1/27/11 0906

The individual signing this agreement on behalf of client acknowledges that he/she has read and understands the terms and conditions of this agreement, on the reverse side, and that he/she has the authority to sign on behalf of client.

WHITE & YELLOW – LAB PINK – SAMPLER'S COPY

MSD 013116

Metropolitan St. Louis Sewer District

Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

June 24, 2011

Julie Summers
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Dear Ms. Summers:

In a letter dated January 21, 2011, we approved of the discharge of wastewater to the Metropolitan St. Louis Sewer District of treated rainwater and groundwater from the remediation of the Columbium-Tantalum (CT) decommissioning project at the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri. In addition, prior to discharging each batch of treated wastewater, the analytical results of a representative sample were to be reviewed and approved, in writing, by MSD. The required analytical results include: pH; total suspended solids (TSS); chemical oxygen demand (COD); cadmium, chromium, copper, iron, lead, nickel, and zinc; volatile organic priority pollutants (using EPA Method 624); gross alpha radioactivity; gross beta radioactivity; Uranium 235 and 238, Radium 226 and 228; and Thorium 230 and 232. On June 22, 2011, I visited your facility to observe the excavation and remediation activities associated with this project.

During this visit, we discussed the possibility of modifying the self-monitoring and reporting requirements outlined in the approval letter. To date, nine batches of treated wastewater have been discharged onsite. The laboratory analytical results submitted in conjunction with each of the batches indicated the wastewater effluent has met MSD Ordinance 12559 standards in addition to compliance with the limits for releases to sewers in 10 CFR Part 20, Appendix B, Table 3. Therefore, review and approval by MSD of the laboratory analytical results of each batch of treated wastewater prior to the discharge of each batch is no longer required. As discussed during our visit, each batch of treated wastewater will continue to be submitted for laboratory analysis of the parameters outlined above. However, copies of the laboratory analytical results of each batch of treated wastewater need only be submitted on a monthly basis, with the next one due by July 31, 2011.

As a general reminder, you must confirm the volume of each batch of treated wastewater discharged to us, in writing, for billing purposes. These reports are due no later than 28 days after each discharge event. Please notify us of any changes, which would affect the characteristics of this discharge. All other conditions of the original approval remain in effect.

Please contact me at (314) 436-8755 with questions or comments.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

pc: Brian Gibson
Doug Mendoza

File: IU, MALLINCKRODT INC [2112059600]

DEPARTMENT OF ENVIRONMENTAL COMPLIANCE
MEMORANDUM

MEMO TO: Mallinckrodt, Inc. (21120596-00)

FROM: Jason Gill JAG

DATE: 6/23/11

SUBJECT: **Phone Call RE: SP010 Sampling Event**

On 6/22/11 we received a phone call from Mallinckrodt contact Julie Summers. I returned Ms. Summers phone call on 6/23/11. The MSD sampling crew was taking samples the same day at the Mallinckrodt facility on 3600 N. 2nd St. According to Ms. Summers, the MSD crew notified a Mallinckrodt employee on hand that the characteristics of Sample Point 010's flow looked unusual in that it had a black "tar-ish" consistency, compared to a normal white cloudy appearance for that particular sample point.

The sampling event occurred approximately at 8:30 a.m., and according to Ms. Summers, Mallinckrodt employees did not witness the sample being taken because the SP010 manhole is in the back of the facility and does not require an escort to obtain a sample. Ms. Summers went to look at the SP010 structure at approximately 10:30 a.m. She said it did not appear as bad this time as it was described before. A cup was used to get a visual check, and some black stuff appeared on the cup itself, but the extracted liquid had a normal white cloudy appearance.

The odd thing about the SP010 was that the manhole lid had a brown ash-like foamy substance on it. This coupled with the fact that the area had some unprecedented flooding that occurred at the end of the previous week, Ms. Summers believed that the sewer backflowed into SP010. Some buildings of the facility were flooded that have never been flooded before.

Ms. Summers called everyone in the plant buildings that tie into SP010, and no one knew of any accidental discharges or other problems. Nothing conclusive was found in the pipes upstream from SP010. They could point out the downstream manhole across the railroad tracks, but Ms. Summers said that they hadn't seen it up close yet. I told Ms. Summers to go ahead and check the downstream manhole to see if it had anything similar to SP010 on top.

The main concern for Mallinckrodt is that the sample may not be representative if heavy rains caused a backup into SP010. I explained that such an extenuating circumstance will be taken into consideration if there is a violation. But first we need to determine if the backup, if one did in fact occur, originated from the MSD sewer or Mallinckrodt's sewer. Ms. Summers says she is unsure at the moment which one it is, and she will investigate further if needed after the analytical data becomes available.

COVIDIEN

FACSIMILE COVER SHEET

TO: Doug Mendoza

FAX NUMBER: 314-436-8753

FROM: Julie Summers

DATE: 6/23/11

TOTAL PAGES: 1 + cover

MESSAGE: SP905 Flow Measurement

Doug,

Attached is the flow measurement report for the SP905 composite sample taken by MSD from 6/21 to 6/22.

Please let me know if you have any questions or require additional information.

Julie

COVIDIEN
15 HAMPSHIRE STREET
MANSFIELD, MA
02048
XXX-XXX-XXXX [T]
XXX-XXX-XXXX [F]

INDUSTRY REPORT OF FLOW MEASUREMENT AT TIME OF MSD SAMPLING FOR DISCHARGE POINTS HAVING MASS LIMITATIONS

COMPANY NAME: MALLINCKRODT PERMIT NO: 2112059600

Presented to company representative (Name) Amber Crouch by:

MSD Ind. Waste Technician Dave Schepers Date 6/22/11 Time 10:15

Certain wastewater discharges from your facility are subject to mass limitations as specified in your Industrial Wastewater Discharge Permit. MSD technicians collected samples from these locations on the date and times indicated below.

In order for MSD to fully evaluate the results of this sampling, you must, for each point, provide MSD with a measured flow for a 24-hour period. The 24 hour period must include the hours between the sample collection Start and End Times shown.

If you have any questions, you may contact Doug Mendoza at (314) 436-8717.

Industry Representative: Please fill in the information on the right side of this table and sign below:

Samp Pt #	Sample Collection by MSD					Data from Flow Measurement by Company			
	Sample Match #	Start Date	End Date	Start Time	End Time	Start Time	End Time	Total Flow	Units
905	1197328	6/21/11	6/22/11	9:00 a.m.	8:48 a.m.	9 AM	830AM	64,968	gal

I certify under penalty of Law that the flow information in this document was prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature: Amber Crouch Date: 6/22/11

As soon as possible, and no later than 14 days after the Sample End date, send the completed form:

Via US Mail: Attn: Doug Mendoza
Metropolitan St. Louis Sewer District
Office of Environmental Compliance
10 E. Grand Avenue
St. Louis, MO 63147

or, via fax: Attn: Doug Mendoza
(314) 436-8753

MSD-OEC 01/02

Metropolitan St. Louis Sewer District

Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

June 20, 2011

Julie Summers
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Re: Wastewater User Charge Billing for Special Discharge

Dear Ms. Summers:

This is to advise you of the wastewater user charges applicable to an on-site special discharge approved in our letter to you dated June 3, 2011. You were advised of the extra-strength surcharges as part of the approval letter. That charge was determined using the ethylene glycol concentration in your application for special discharge. The discharge date and quantity are from information submitted by you in an email dated June 20, 2011.

Our Finance Department will bill you by invoice for the charges described below. These charges are based on the rates in MSD Wastewater User Charge Ordinance 13021. For your convenience, using the volume and strength of the waste discharged, the ordinance rates have been converted to a per-gallon basis.

PARTY TO BILL: Addressee

BILLING IS FOR: On-Site Special Discharge

DISCHARGE PERIOD: June 18, 2011

SOURCE OF WASTE: 40% ethylene glycol solution from Building 250 at the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri.

Discharge Period	Billing Item	Quantity	Units	Rate	Charge
6/18/11	Extra-Strength Surcharge	500	Gal	$0.50	$250.00
Totals:	------	500	Gal	-----	$250.00

Please do not pay until you receive our invoice. If you have any questions, please contact me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

pc Chris Verplancke - Finance Dept.
Doug Mendoza
Brian Gibson

File: IU, MALLINCKRODT INC [2112059600], 3600 North Second Street, St. Louis, Missouri

Steve Grace

From: Summers, Julie [Julie.Summers@Covidien.com]
Sent: Monday, June 20, 2011 10:16 AM
To: Steve Grace
Subject: Discharge of Glycol from B250 Under Special Discharge Permit Dated 6/3/11

Steve,

On June 3, 2011, approval was receive from MSD to discharge 550 gallons of a 40% ethylene glycol solution from the Boilerhouse rental chiller. On June 18, 2011 an estimated amount of 500 gallons of 40% ethylene glycol solution was discharged through the plant sewers to the plant's neutralization system between 0845 and 1145.

Please call me if you have any questions or need additional information.

Thanks,
Julie Summers
Environmental Manager
Mallinckrodt/Covidien
3600 North 2nd Street
St. Louis, MO 63147
314-654-1969 Phone
314-654-1251 Fax

IU - Mallinckrodt, Inc.
21120596-00, SP850

Steve Grace

From: Steve Grace
Sent: Friday, June 17, 2011 11:39 AM
To: 'Summers, Julie'
Subject: RE: CT Wastewater Discharge 009

Hello Julie,

A review of the laboratory analytical data for Discharge 009 from the C-T Phase II decommissioning activities indicated this batch meets MSD Ordinance 12559 standards along with those outlined in 10 CFR Part 20, Appendix B, Table 3, and is approved for discharge into a combined sewer identified on MSD's base map as Inlet 18D1-395C. As a general reminder, the discharge into the sewer must be controlled at a rate that will not surcharge the lines in that area. In addition, the volume of this batch of wastewater must be confirmed in writing no later than 28 days after the date of this discharge. The approval for Discharge 009 is valid for 30 days from the date of this email.

Please contact me should you have any questions or require additional information.

Thank you,
Steve Grace

From: Summers, Julie [mailto:Julie.Summers@Covidien.com]
Sent: Friday, June 17, 2011 10:41 AM
To: Steve Grace
Subject: CT Wastewater Discharge 009
Importance: High

Steve,

Mallinckrodt requests permission to discharge 40,000 gallons of treated rainwater and groundwater collected as part of the C-T Phase II decommissioning activities. The wastewater discharge will be identified as Discharge 009. The laboratory analytical results demonstrate that the discharge will comply with the requirements of the Metropolitan St. Louis Sewer District as set forth in their letter to Lisa Meyer dated January 21, 2011. In addition, the discharge meets the monthly average concentrations for release to sanitary sewers per the requirements of 10 CFR 20.2003. Both a discharge summary and the detailed laboratory analytical results are attached for your information.

Thanks,

Julie

6/17/2011

Wastewater Discharge 009 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-0971

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	U
Acrylonitrile	mg/L		< 0.01	U
Benzene	mg/L		< 0.001	U
Bromoform	mg/L		< 0.001	U
Bromomethane	mg/L		< 0.002	U
Carbon tetrachloride	mg/L		< 0.001	U
Chlorobenzene	mg/L		< 0.001	U
Chlorodibromomethane	mg/L		< 0.001	U
Chloroethane	mg/L		< 0.002	U
Chloroform	mg/L		< 0.001	U
Chloromethane	mg/L		< 0.002	U
Dichlorobromomethane	mg/L		< 0.001	U
1,1- Dichloroethane	mg/L		< 0.001	U
1,2- Dichloroethane	mg/L		< 0.001	U
1,1- Dichloroethene	mg/L		< 0.001	U
1,2- Dichloroethane	mg/L		< 0.002	U
1,2- Dichloropropane	mg/L		< 0.001	U
cis-1,3-Dichloropropene	mg/L		< 0.001	U
trans-1,3-Dichloropropene	mg/L		< 0.001	U
Ethylbenzene	mg/L		< 0.001	U
Methylene Chloride	mg/L		< 0.001	U
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	U
Tetra chloroethene	mg/L		< 0.001	U
Toluene	mg/L		< 0.001	U
1,1,1- Trichloroethane	mg/L		< 0.001	U
1,1,2- Trichloroethane	mg/L		< 0.001	U
Trichloroethene	mg/L		< 0.001	U
Vinyl Chloride	mg/L		< 0.002	U
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	U
Chromium	mg/L	5	< 0.01	U
Copper	mg/L	2.7	< 0.025	U
Iron	mg/L	150	0.0564	B
Nickel	mg/L	2.3	< 0.04	U
Lead	mg/L	0.4	< 0.01	U
Zinc	mg/L	3	0.0505	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.2	
COD	mg/L	600	12	B
TSS	mg/L	300	< 4	U
Radionuclides				
Gross Alpha	pCi/L	3,000	< 10	U
Gross Beta	pCi/L	50	12.8	
Ra-226	pCi/L	10	0.8	
Ra-228	pCi/L	30	< 0.58	U
Th-228	pCi/L	2,000	< 0.19	U
Th-230	pCi/L	1,000	0.21	
Th-232	pCi/L	300	< 0.13	U
U-234	pCi/L		0.29	
U-235/6	pCi/L		< 0.18	U
U-238	pCi/L		0.34	
Total Uranium	*pCi/L*	*3,000*	*< 0.81*	

10 CFR 20 Appendix B Table 3 Values

Analyte	Units	Limit	Discharge Concentration	Averaged Concentration
Ra-226	pCi/L	0.6	0.8	0.002
Ra-228	pCi/L	0.6	0.58	0.001
Th-228	pCi/L	2	0.19	0.000
Th-230	pCi/L	1	0.21	0.000
Th-232	pCi/L	0.3	0.13	0.000
U-234	pCi/L	3	0.29	0.001
U-235/6	pCi/L	3	0.18	0.000
U-238	pCi/L	3	0.34	0.001
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.008*

Discharge Volume (gals) = 40,000

Covidien averaging factor[2] = 0.002

Analyte	Units	Annual Limit	Discharge Activity	Year to Date Activity
Gross Radioactivity	Ci	1	3.5E-06	2.2E-05

Notes:

(1) 'B' indicates estimated value; 'U' indicates result less than sample detection limit;

(2) derived from discharge volume divided by a Covidien minimum average monthly volume (20,000,000 gal)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

ANALYTICAL REPORT

Mallinckrodt St. Louis Plant

Lot #: F1F070484

Mark Tepperman

AECOM Technical Services Inc.
8005 Outer Circle Road
Brooks Air Force Bas, TX 78235

TESTAMERICA LABORATORIES, INC.

for
Jayna Awalt
Project Manager

June 15, 2011

13715 Rider Trail North Earth City, MO 63045 tel 314.298.8566 fax 314.298.8757 www.testamericainc.com

Case Narrative
LOT NUMBER: **F1F070484**

This report contains the analytical results for the two samples received under chain of custody by TestAmerica St. Louis on June 7, 2011. These samples are associated with your Mallinckrodt St. Louis Plant project.

The analytical results included in this report meet all applicable quality control procedure requirements. except as noted on the following page.

The test results in this report meet all NELAP requirements for parameters in which accreditations are held by TestAmerica St. Louis. Any exceptions to NELAP requirements are noted in the case narrative. **TestAmerica St. Louis' Florida certification number is E87689.** The case narrative is an integral part of this report.

This report shall not be reproduced, except in full, without the written approval of the laboratory.

All chemical analysis results are based upon sample as received, wet weight, unless noted otherwise. All radiochemistry results are based upon sample as dried and ground with the exception of tritium, unless requested wet weight by the client.

Observations/Nonconformances
Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

GC/MS Volatile Organics Method 624
Batch: 1160103

The LCS recoveries for Benzene, Chloroform, Toluene, Chlorobenzene and 1,1,2,2-Tetrachoroethane are outside the upper QC limit, indicating a potential positive bias for these analytes. These analytes were not detected above the reporting limit in the associated samples; therefore the sample data was not adversely affected by this excursion. Numerous other compounds are outside the QC limits but are not targets for the associated samples.
Affected Samples:
F1F070484 (1): 60162412-SMP-PL5-WW-OTH-0971
F1F070484 (2): VOC BLANK

The average RRF for 1,1,2,2-Tetrachloroethane is outside the method limit of 0.300 but within the QC limit of 0.100. This analyte will be monitored closely and maintenance will be performed to try to improve the response for this analyte before the next curve.
Affected Samples:
F1F070484 (1): 60162412-SMP-PL5-WW-OTH-0971
F1F070484 (2): VOC BLANK

COD Method 410.4
Batch: 1164138

For COD batch 1164138, sample F1070484-001 and its duplicate had an RPD greater than 20%. Both results were less than five times the reporting limit. RPD determinations are not applicable to values near the reporting limit. Precision criteria for concentrations near the reporting limit is +/- the reporting limit. This criteria was met.
Affected Samples:
F1F070484 (1): 60162412-SMP-PL5-WW-OTH-0971

Gross Alpha/Beta Method 9310 MOD
Batch: 1159047

The Gross Alpha reporting limit was not met due to a reduction of sample size attributed to the sample's high residual mass.
Affected Samples:
F1F070484 (1): 60162412-SMP-PL5-WW-OTH-0971

Isotopic Thorium Method A-01-R MOD
Batch: 1160135

There was insufficient amount of sample for sample duplicate.
Affected Samples:
F1F070484 (1): 60162412-SMP-PL5-WW-OTH-0971

Isotopic Uranium Method A-01-R MOD
Batch: 1160136

There was insufficient sample for sample duplicate.
Affected Samples:
F1F070484 (1): 60162412-SMP-PL5-WW-OTH-0971

There are no other observations or non-conformances associated with the analyses contained in this report.

METHODS SUMMARY

F1F070484

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
pH Aqueous	SW846 9040	SW846 9040
Chemical Oxygen Demand	MCAWW 410.4	MCAWW 410.4
Gross Alpha/Beta by GFPC	SW846 9310 MOD	
Isotopic Thorium by Alpha Spectroscopy	EML A-01-R MOD	
Isotopic Uranium by Alpha Spectroscopy	EML A-01-R MOD	
Non-Filterable Residue (TSS)	MCAWW 160.2	MCAWW 160.2
Purgeables	CFR136A 624	SW846 5030B
Radium-226 by GFPC	EPA 903.0 MOD	
Radium-228 by GFPC	EPA 904 MOD	
Trace Inductively Coupled Plasma (ICP) Metals	SW846 6010B	

References:

CFR136A "Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EML "ENVIRONMENTAL MEASUREMENTS LABORATORY PROCEDURES MANUAL" HASL-300 28TH EDITION, VOLUME I and II DEPARTMENT OF ENERGY

EPA "EASTERN ENVIRONMENTAL RADIATION FACILITY RADIOCHEMISTRY PROCEDURES MANUAL" US EPA EPA 520/5-84-006 AUGUST 1984

MCAWW "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

SAMPLE SUMMARY

F1F070484

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
MJ203	001	60162412-SMP-PL5-WW-OTH-0971	06/07/11	11:30
MJ206	002	VOC BLANK	06/07/11	

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

AECOM Technical Services Inc.

Client Sample ID: 60162412-SMP-PL5-WW-OTH-0971

GC/MS Volatiles

Lot-Sample #...: F1F070484-001 **Work Order #...:** MJ2031AK **Matrix.....:** WATER
Date Sampled...: 06/07/11 11:30 **Date Received..:** 06/07/11
Prep Date.....: 06/08/11 **Analysis Date..:** 06/09/11
Prep Batch #...: 1160103 **Analysis Time..:** 00:50
Dilution Factor: 1

Method.....: CFR136A 624

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acrolein	ND	10	ug/L
Acrylonitrile	ND	10	ug/L
Benzene	ND	1.0	ug/L
Bromoform	ND	1.0	ug/L
Bromomethane	ND	2.0	ug/L
Carbon tetrachloride	ND	1.0	ug/L
Chlorobenzene	ND	1.0	ug/L
Chlorodibromomethane	ND	1.0	ug/L
Chloroethane	ND	2.0	ug/L
Chloroform	ND	1.0	ug/L
Chloromethane	ND	2.0	ug/L
Dichlorobromomethane	ND	1.0	ug/L
1,1-Dichloroethane	ND	1.0	ug/L
1,2-Dichloroethane	ND	1.0	ug/L
1,1-Dichloroethene	ND	1.0	ug/L
1,2-Dichloroethene (total)	ND	2.0	ug/L
1,2-Dichloropropane	ND	1.0	ug/L
cis-1,3-Dichloropropene	ND	1.0	ug/L
trans-1,3-Dichloropropene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Methylene chloride	ND	1.0	ug/L
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L
Tetrachloroethene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
1,1,1-Trichloroethane	ND	1.0	ug/L
1,1,2-Trichloroethane	ND	1.0	ug/L
Trichloroethene	ND	1.0	ug/L
Vinyl chloride	ND	2.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	88	(62 - 122)
Toluene-d8	89	(73 - 116)
4-Bromofluorobenzene	93	(68 - 118)

AECOM Technical Services Inc.

Client Sample ID: VOC BLANK

GC/MS Volatiles

Lot-Sample #...: F1F070484-002 **Work Order #...:** MJ2061AA **Matrix.....:** WATER
Date Sampled...: 06/07/11 **Date Received..:** 06/07/11
Prep Date.....: 06/08/11 **Analysis Date..:** 06/09/11
Prep Batch #...: 1160103 **Analysis Time..:** 00:20
Dilution Factor: 1

Method.....: CFR136A 624

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acrolein	ND	10	ug/L
Acrylonitrile	ND	10	ug/L
Benzene	ND	1.0	ug/L
Bromoform	ND	1.0	ug/L
Bromomethane	ND	2.0	ug/L
Carbon tetrachloride	ND	1.0	ug/L
Chlorobenzene	ND	1.0	ug/L
Chlorodibromomethane	ND	1.0	ug/L
Chloroethane	ND	2.0	ug/L
Chloroform	ND	1.0	ug/L
Chloromethane	ND	2.0	ug/L
Dichlorobromomethane	ND	1.0	ug/L
1,1-Dichloroethane	ND	1.0	ug/L
1,2-Dichloroethane	ND	1.0	ug/L
1,1-Dichloroethene	ND	1.0	ug/L
1,2-Dichloroethene (total)	ND	2.0	ug/L
1,2-Dichloropropane	ND	1.0	ug/L
cis-1,3-Dichloropropene	ND	1.0	ug/L
trans-1,3-Dichloropropene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Methylene chloride	**0.62 J**	**1.0**	**ug/L**
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L
Tetrachloroethene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
1,1,1-Trichloroethane	ND	1.0	ug/L
1,1,2-Trichloroethane	ND	1.0	ug/L
Trichloroethene	ND	1.0	ug/L
Vinyl chloride	ND	2.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	86	(62 - 122)
Toluene-d8	92	(73 - 116)
4-Bromofluorobenzene	95	(68 - 118)

NOTE(S):

J Estimated result. Result is less than RL.

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: F1F070484 **Work Order #...:** MJ6GM1AA **Matrix.....:** WATER
MB Lot-Sample #: F1F090000-103

Prep Date.....: 06/08/11 **Analysis Time..:** 18:54
Analysis Date..: 06/08/11 **Prep Batch #...:** 1160103
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acrolein	ND	10	ug/L	CFR136A 624
Acrylonitrile	ND	10	ug/L	CFR136A 624
Benzene	ND	1.0	ug/L	CFR136A 624
Bromoform	ND	1.0	ug/L	CFR136A 624
Bromomethane	ND	2.0	ug/L	CFR136A 624
Carbon tetrachloride	ND	1.0	ug/L	CFR136A 624
Chlorobenzene	ND	1.0	ug/L	CFR136A 624
Chlorodibromomethane	ND	1.0	ug/L	CFR136A 624
Chloroethane	ND	2.0	ug/L	CFR136A 624
Chloroform	ND	1.0	ug/L	CFR136A 624
Chloromethane	ND	2.0	ug/L	CFR136A 624
Dichlorobromomethane	ND	1.0	ug/L	CFR136A 624
1,1-Dichloroethane	ND	1.0	ug/L	CFR136A 624
1,2-Dichloroethane	ND	1.0	ug/L	CFR136A 624
1,1-Dichloroethene	ND	1.0	ug/L	CFR136A 624
1,2-Dichloroethene (total)	ND	2.0	ug/L	CFR136A 624
1,2-Dichloropropane	ND	1.0	ug/L	CFR136A 624
cis-1,3-Dichloropropene	ND	1.0	ug/L	CFR136A 624
trans-1,3-Dichloropropene	ND	1.0	ug/L	CFR136A 624
Ethylbenzene	ND	1.0	ug/L	CFR136A 624
Methylene chloride	ND	1.0	ug/L	CFR136A 624
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	CFR136A 624
Tetrachloroethene	ND	1.0	ug/L	CFR136A 624
Toluene	ND	1.0	ug/L	CFR136A 624
1,1,1-Trichloroethane	ND	1.0	ug/L	CFR136A 624
1,1,2-Trichloroethane	ND	1.0	ug/L	CFR136A 624
Trichloroethene	ND	1.0	ug/L	CFR136A 624
Vinyl chloride	ND	2.0	ug/L	CFR136A 624

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	89	(62 - 122)
Toluene-d8	91	(73 - 116)
4-Bromofluorobenzene	93	(68 - 118)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: F1F070484 Work Order #...: MJ6GM1AC Matrix.....: WATER
LCS Lot-Sample#: F1F090000-103
Prep Date.....: 06/08/11 Analysis Date..: 06/08/11
Prep Batch #...: 1160103 Analysis Time..: 17:53
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD
Acrolein	122	(40 - 140)	CFR136A 624
Acrylonitrile	137	(67 - 140)	CFR136A 624
Benzene	125 a	(76 - 119)	CFR136A 624
Bromoform	138	(71 - 139)	CFR136A 624
Bromomethane	110	(67 - 140)	CFR136A 624
Carbon tetrachloride	125	(73 - 140)	CFR136A 624
Chlorobenzene	121 a	(80 - 115)	CFR136A 624
Chlorodibromomethane	110	(74 - 140)	CFR136A 624
Chloroethane	117	(36 - 140)	CFR136A 624
Chloroform	123 a	(77 - 121)	CFR136A 624
Chloromethane	104	(41 - 140)	CFR136A 624
Dichlorobromomethane	129	(72 - 138)	CFR136A 624
1,1-Dichloroethane	124	(71 - 124)	CFR136A 624
1,2-Dichloroethane	127	(67 - 133)	CFR136A 624
1,1-Dichloroethene	117	(77 - 120)	CFR136A 624
1,2-Dichloroethene (total)	120	(78 - 123)	CFR136A 624
1,2-Dichloropropane	129	(67 - 137)	CFR136A 624
cis-1,3-Dichloropropene	137	(58 - 140)	CFR136A 624
trans-1,3-Dichloropropene	131	(61 - 140)	CFR136A 624
Ethylbenzene	122	(77 - 123)	CFR136A 624
Methylene chloride	119	(62 - 127)	CFR136A 624
1,1,2,2-Tetrachloroethane	130 a	(61 - 128)	CFR136A 624
Tetrachloroethene	132	(67 - 140)	CFR136A 624
Toluene	122 a	(75 - 120)	CFR136A 624
1,1,1-Trichloroethane	120	(81 - 125)	CFR136A 624
1,1,2-Trichloroethane	123	(73 - 126)	CFR136A 624
Trichloroethene	119	(76 - 126)	CFR136A 624
Vinyl chloride	110	(58 - 129)	CFR136A 624

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	92	(62 - 126)
Toluene-d8	87	(78 - 119)

(Continued on next page)

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: F1F070484 **Work Order #...:** MJ6GM1AC **Matrix.....:** WATER
LCS Lot-Sample#: F1F090000-103

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
4-Bromofluorobenzene	86	(73 - 115)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

a Spiked analyte recovery is outside stated control limits.

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: F1F070484 Work Order #...: MJ2031CC-MS Matrix.....: WATER
MS Lot-Sample #: F1F070484-001 MJ2031CD-MSD
Date Sampled...: 06/07/11 11:30 Date Received..: 06/07/11
Prep Date.....: 06/08/11 Analysis Date..: 06/09/11
Prep Batch #...: 1160103 Analysis Time..: 01:20
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Acrolein	101	(50 - 150)			CFR136A 624
	97	(50 - 150)	4.7	(0-20)	CFR136A 624
Acrylonitrile	122	(50 - 150)			CFR136A 624
	116	(50 - 150)	4.7	(0-20)	CFR136A 624
Benzene	104	(47 - 150)			CFR136A 624
	105	(47 - 150)	1.4	(0-20)	CFR136A 624
Bromoform	112	(45 - 150)			CFR136A 624
	118	(45 - 150)	5.0	(0-20)	CFR136A 624
Bromomethane	91	(41 - 150)			CFR136A 624
	95	(41 - 150)	4.1	(0-20)	CFR136A 624
Carbon tetrachloride	102	(70 - 140)			CFR136A 624
	104	(70 - 140)	1.6	(0-20)	CFR136A 624
Chlorobenzene	102	(54 - 145)			CFR136A 624
	100	(54 - 145)	1.5	(0-20)	CFR136A 624
Chlorodibromomethane	90	(64 - 148)			CFR136A 624
	91	(64 - 148)	1.0	(0-20)	CFR136A 624
Chloroethane	93	(28 - 150)			CFR136A 624
	98	(28 - 150)	6.0	(0-20)	CFR136A 624
Chloroform	101	(51 - 138)			CFR136A 624
	110	(51 - 138)	8.0	(0-20)	CFR136A 624
Chloromethane	90	(33 - 150)			CFR136A 624
	95	(33 - 150)	5.5	(0-20)	CFR136A 624
Dichlorobromomethane	109	(47 - 150)			CFR136A 624
	106	(47 - 150)	3.2	(0-20)	CFR136A 624
1,1-Dichloroethane	102	(59 - 150)			CFR136A 624
	104	(59 - 150)	1.1	(0-20)	CFR136A 624
1,2-Dichloroethane	106	(59 - 143)			CFR136A 624
	103	(59 - 143)	2.7	(0-20)	CFR136A 624
1,1-Dichloroethene	93	(48 - 150)			CFR136A 624
	97	(48 - 150)	4.3	(0-20)	CFR136A 624
1,2-Dichloroethene (total)	99	(56 - 150)			CFR136A 624
	99	(56 - 150)	0.10	(0-20)	CFR136A 624
1,2-Dichloropropane	110	(56 - 150)			CFR136A 624
	110	(56 - 150)	0.27	(0-20)	CFR136A 624
cis-1,3-Dichloropropene	105	(50 - 150)			CFR136A 624
	109	(50 - 150)	3.9	(0-20)	CFR136A 624
trans-1,3-Dichloropropene	108	(31 - 150)			CFR136A 624
	108	(31 - 150)	0.46	(0-20)	CFR136A 624

(Continued on next page)

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: F1F070484 Work Order #...: MJ2031CC-MS Matrix.....: WATER
MS Lot-Sample #: F1F070484-001 MJ2031CD-MSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Ethylbenzene	100	(53 - 150)			CFR136A 624
	101	(53 - 150)	1.0	(0-20)	CFR136A 624
Methylene chloride	102	(38 - 150)			CFR136A 624
	101	(38 - 150)	1.1	(0-20)	CFR136A 624
1,1,2,2-Tetrachloroethane	106	(46 - 150)			CFR136A 624
	109	(46 - 150)	3.1	(0-20)	CFR136A 624
Tetrachloroethene	96	(65 - 148)			CFR136A 624
	95	(65 - 148)	1.3	(0-20)	CFR136A 624
Toluene	101	(52 - 150)			CFR136A 624
	100	(52 - 150)	0.99	(0-20)	CFR136A 624
1,1,1-Trichloroethane	99	(54 - 150)			CFR136A 624
	103	(54 - 150)	3.8	(0-20)	CFR136A 624
1,1,2-Trichloroethane	108	(61 - 137)			CFR136A 624
	103	(61 - 137)	4.7	(0-20)	CFR136A 624
Trichloroethene	97	(71 - 150)			CFR136A 624
	99	(71 - 150)	1.7	(0-20)	CFR136A 624
Vinyl chloride	89	(33 - 150)			CFR136A 624
	96	(33 - 150)	7.6	(0-20)	CFR136A 624

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	90	(62 - 122)
	89	(62 - 122)
Toluene-d8	87	(73 - 116)
	83	(73 - 116)
4-Bromofluorobenzene	84	(68 - 118)
	84	(68 - 118)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

AECOM Technical Services Inc.

Client Sample ID: 60162412-SMP-PL5-WW-OTH-0971

TOTAL Metals

Lot-Sample #...: F1F070484-001 Matrix.....: WATER
Date Sampled...: 06/07/11 11:30 Date Received..: 06/07/11

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1159012						
Cadmium	ND	5	ug/L	SW846 6010B	06/08-06/09/11	MJ2031AC
		Dilution Factor: 1		Analysis Time..: 20:07		
Chromium	ND	10	ug/L	SW846 6010B	06/08-06/09/11	MJ2031AD
		Dilution Factor: 1		Analysis Time..: 20:07		
Copper	ND	25	ug/L	SW846 6010B	06/08-06/09/11	MJ2031AE
		Dilution Factor: 1		Analysis Time..: 20:07		
Iron	56.4 B	100	ug/L	SW846 6010B	06/08-06/09/11	MJ2031AF
		Dilution Factor: 1		Analysis Time..: 20:07		
Nickel	ND	40	ug/L	SW846 6010B	06/08-06/09/11	MJ2031AG
		Dilution Factor: 1		Analysis Time..: 20:07		
Lead	ND	10	ug/L	SW846 6010B	06/08-06/09/11	MJ2031AH
		Dilution Factor: 1		Analysis Time..: 20:07		
Zinc	50.5	20	ug/L	SW846 6010B	06/08-06/09/11	MJ2031AJ
		Dilution Factor: 1		Analysis Time..: 20:07		

NOTE(S):

B Estimated result. Result is less than RL.

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: F1F070484 Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: F1F080000-012 Prep Batch #...: 1159012						
Cadmium	ND	5	ug/L	SW846 6010B	06/08-06/09/11	MJ3CD1AA
		Dilution Factor: 1				
		Analysis Time..: 19:52				
Chromium	ND	10	ug/L	SW846 6010B	06/08-06/09/11	MJ3CD1AC
		Dilution Factor: 1				
		Analysis Time..: 19:52				
Copper	ND	25	ug/L	SW846 6010B	06/08-06/09/11	MJ3CD1AD
		Dilution Factor: 1				
		Analysis Time..: 19:52				
Iron	ND	100	ug/L	SW846 6010B	06/08-06/09/11	MJ3CD1AE
		Dilution Factor: 1				
		Analysis Time..: 19:52				
Lead	ND	10	ug/L	SW846 6010B	06/08-06/09/11	MJ3CD1AG
		Dilution Factor: 1				
		Analysis Time..: 19:52				
Nickel	ND	40	ug/L	SW846 6010B	06/08-06/09/11	MJ3CD1AF
		Dilution Factor: 1				
		Analysis Time..: 19:52				
Zinc	ND	20	ug/L	SW846 6010B	06/08-06/09/11	MJ3CD1AH
		Dilution Factor: 1				
		Analysis Time..: 19:52				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: F1F070484 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: F1F080000-012 **Prep Batch #...:** 1159012					
Cadmium	104	(80 - 120)	SW846 6010B	06/08-06/09/11	MJ3CD1AJ
		Dilution Factor: 1	Analysis Time..: 19:59		
Chromium	100	(80 - 120)	SW846 6010B	06/08-06/09/11	MJ3CD1AK
		Dilution Factor: 1	Analysis Time..: 19:59		
Copper	99	(80 - 120)	SW846 6010B	06/08-06/09/11	MJ3CD1AL
		Dilution Factor: 1	Analysis Time..: 19:59		
Iron	102	(80 - 120)	SW846 6010B	06/08-06/09/11	MJ3CD1AM
		Dilution Factor: 1	Analysis Time..: 19:59		
Nickel	101	(80 - 120)	SW846 6010B	06/08-06/09/11	MJ3CD1AN
		Dilution Factor: 1	Analysis Time..: 19:59		
Lead	101	(80 - 120)	SW846 6010B	06/08-06/09/11	MJ3CD1AP
		Dilution Factor: 1	Analysis Time..: 19:59		
Zinc	112	(80 - 120)	SW846 6010B	06/08-06/09/11	MJ3CD1AQ
		Dilution Factor: 1	Analysis Time..: 19:59		

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: F1F070484 **Matrix.....:** WATER
Date Sampled...: 06/07/11 11:30 **Date Received..:** 06/07/11

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: F1F070484-001 **Prep Batch #...:** 1159012							
Cadmium	92	(75 - 125)			SW846 6010B	06/08-06/09/11	MJ2031AV
	94	(75 - 125)	1.1	(0-20)	SW846 6010B	06/08-06/09/11	MJ2031AW
		Dilution Factor: 1					
		Analysis Time..: 20:37					
Chromium	90	(75 - 125)			SW846 6010B	06/08-06/09/11	MJ2031AX
	91	(75 - 125)	1.2	(0-20)	SW846 6010B	06/08-06/09/11	MJ2031A0
		Dilution Factor: 1					
		Analysis Time..: 20:37					
Copper	92	(75 - 125)			SW846 6010B	06/08-06/09/11	MJ2031A1
	92	(75 - 125)	0.76	(0-20)	SW846 6010B	06/08-06/09/11	MJ2031A2
		Dilution Factor: 1					
		Analysis Time..: 20:37					
Iron	91	(75 - 125)			SW846 6010B	06/08-06/09/11	MJ2031A3
	93	(75 - 125)	1.6	(0-20)	SW846 6010B	06/08-06/09/11	MJ2031A4
		Dilution Factor: 1					
		Analysis Time..: 20:37					
Lead	90	(75 - 125)			SW846 6010B	06/08-06/09/11	MJ2031A7
	91	(75 - 125)	1.2	(0-20)	SW846 6010B	06/08-06/09/11	MJ2031A8
		Dilution Factor: 1					
		Analysis Time..: 20:37					
Nickel	91	(75 - 125)			SW846 6010B	06/08-06/09/11	MJ2031A5
	91	(75 - 125)	0.68	(0-20)	SW846 6010B	06/08-06/09/11	MJ2031A6
		Dilution Factor: 1					
		Analysis Time..: 20:37					
Zinc	104	(75 - 125)			SW846 6010B	06/08-06/09/11	MJ2031A9
	105	(75 - 125)	1.2	(0-20)	SW846 6010B	06/08-06/09/11	MJ2031CA
		Dilution Factor: 1					
		Analysis Time..: 20:37					

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

AECOM Technical Services Inc.

Client Sample ID: 60162412-SMP-PL5-WW-OTH-0971

General Chemistry

Lot-Sample #...: F1F070484-001 Work Order #...: MJ203 Matrix.....: WATER
Date Sampled...: 06/07/11 11:30 Date Received..: 06/07/11

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
pH (liquid)	7.2	0.10	No Units	SW846 9040	06/07/11	1159064
		Dilution Factor: 1		Analysis Time..: 16:19		
COD	12.0 B	20.0	mg/L	MCAWW 410.4	06/13/11	1164138
		Dilution Factor: 1		Analysis Time..: 00:00		
Total Suspended Solids	ND	4.0	mg/L	MCAWW 160.2	06/08-06/09/11	1159117
		Dilution Factor: 1		Analysis Time..: 00:00		

NOTE(S):

RL Reporting Limit

B Estimated result. Result is less than RL.

METHOD BLANK REPORT

General Chemistry

Client Lot #...: F1F070484

Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
COD		Work Order #: MJ6VM1AA		MB Lot-Sample #:	F1F130000-138	
	ND	20.0	mg/L	MCAWW 410.4	06/13/11	1164138
		Dilution Factor: 1				
		Analysis Time..: 00:00				
Total Suspended Solids		Work Order #: MJ4A51AA		MB Lot-Sample #:	F1F080000-117	
	ND	4.0	mg/L	MCAWW 160.2	06/08-06/09/11	1159117
		Dilution Factor: 1				
		Analysis Time..: 00:00				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: F1F070484 Matrix.....: WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
pH (liquid)		Work Order #: MJ3VR1AA		LCS Lot-Sample#: F1F080000-064	
	100	(99 - 101)	SW846 9040	06/07/11	1159064
		Dilution Factor: 1		Analysis Time..: 16:10	
COD		Work Order #: MJ6VM1AC		LCS Lot-Sample#: F1F130000-138	
	101	(90 - 110)	MCAWW 410.4	06/13/11	1164138
		Dilution Factor: 1		Analysis Time..: 00:00	
Total Suspended Solids		Work Order #: MJ4A51AC		LCS Lot-Sample#: F1F080000-117	
	97	(79 - 122)	MCAWW 160.2	06/08-06/09/11	1159117
		Dilution Factor: 1		Analysis Time..: 00:00	

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: F1F070484
Date Sampled...: 06/07/11 11:30 Date Received..: 06/07/11
Matrix.....: WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
COD	96	Work Order #...: MJ2031CK (90 - 110)	MCAWW 410.4	MS Lot-Sample #: F1F070484-001 06/13/11	1164138

Dilution Factor: 1 Analysis Time..: 00:00

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: F1F070484 **Work Order #...:** MJ203-SMP MJ203-DUP **Matrix.....:** WATER

Date Sampled...: 06/07/11 11:30 **Date Received..:** 06/07/11

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
COD						SD Lot-Sample #:	F1F070484-001	
	12.0 B	29.0	mg/L	83	(0-20)	MCAWW 410.4	06/13/11	1164138
			Dilution Factor: 1			Analysis Time..: 00:00		
Total Suspended Solids						SD Lot-Sample #:	F1F070484-001	
	ND	1.0 B	mg/L	200	(0-20)	MCAWW 160.2	06/08-06/09/11	1159117
			Dilution Factor: 1			Analysis Time..: 00:00		
pH (liquid)						SD Lot-Sample #:	F1F070484-001	
	7.2	7.2	No Units	0.0	(0-0.0)	SW846 9040	06/07/11	1159064
			Dilution Factor: 1			Analysis Time..: 16:19		

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

B Estimated result. Result is less than RL.

AECOM Technical Services Inc.

Client Sample ID: 60162412-SMP-PL5-WW-OTH-0971

Radiochemistry

Lab Sample ID: F1F070484-001
Work Order: MJ203
Matrix: WATER

Date Collected: 06/07/11 1130
Date Received: 06/07/11 1330

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	mdc	Prep Date	Analysis Date
Iso THORIUM (SHORT CT) DOE A-01-R MOD				pCi/L		Batch # 1160135	Yld % 62
Thorium 228	0.033	U	0.090	1.00	0.19	06/09/11	06/11/11
Thorium 230	0.21		0.16	1.00	0.13	06/09/11	06/11/11
Thorium 232	0.025	U	0.062	1.00	0.13	06/09/11	06/11/11
Iso URANIUM (SHORT CT) DOE A-01-R MOD				pCi/L		Batch # 1160136	Yld % 77
Uranium 234	0.29		0.19	1.00	0.19	06/09/11	06/10/11
Uranium 235/236	-0.024	U	0.024	1.00	0.18	06/09/11	06/10/11
Uranium 238	0.34		0.19	1.00	0.15	06/09/11	06/10/11
Radium 226 by EPA 903.0 MOD				pCi/L		Batch # 1159084	Yld % 85
Radium (226)	0.80	J	0.23	1.00	0.17	06/08/11	06/09/11
Radium 228 by GFPC EPA 904 MOD				pCi/L		Batch # 1159085	Yld % 74
Radium 228	0.24	U	0.35	1.00	0.58	06/08/11	06/13/11
GROSS A/B BY GFPC SW846 9310 MOD				pCi/L		Batch # 1159047	Yld %
Gross Alpha	8.7	U	6.9	3.0	10	06/08/11	06/09/11
Gross Beta	12.8		3.5	4.0	4.0	06/08/11	06/09/11

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.
Bold results are greater than the MDC.

J Result is greater than sample detection limit but less than stated reporting limit.
U Result is less than the sample detection limit.

METHOD BLANK REPORT

Radiochemistry

Client Lot ID: F1F070484
Matrix: WATER

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC		Prep Date	Analysis Date	Lab Sample ID
GROSS A/B BY GFPC SW846 9310 MOD			pCi/L	Batch # 1159047		Yld %			F1F080000-047B
Gross Alpha	0.33	U	0.54	3.00	0.92		06/08/11	06/09/11	
Gross Beta	0.12	U	0.48	4.00	0.82		06/08/11	06/09/11	
Radium 228 by GFPC EPA 904 MOD			pCi/L	Batch # 1159085		Yld % 84			F1F080000-085B
Radium 228	-0.02	U	0.21	1.00	0.38		06/08/11	06/13/11	
Radium 226 by EPA 903.0 MOD			pCi/L	Batch # 1159084		Yld % 86			F1F080000-084B
Radium (226)	0.103	U	0.098	1.00	0.14		06/08/11	06/09/11	
Iso THORIUM (SHORT CT) DOE A-01-R MOD			pCi/L	Batch # 1160135		Yld % 81			F1F090000-135B
Thorium 228	0.051	U	0.094	1.00	0.17		06/09/11	06/11/11	
Thorium 230	0.0944	U	0.0998	1.00	0.11		06/09/11	06/11/11	
Thorium 232	-0.018	U	0.019	1.00	0.14		06/09/11	06/11/11	
Iso URANIUM (SHORT CT) DOE A-01-R MOD			pCi/L	Batch # 1160136		Yld % 79			F1F090000-136B
Uranium 234	0.023	U	0.046	1.00	0.062		06/09/11	06/10/11	
Uranium 235/236	0.020	U	0.059	1.00	0.13		06/09/11	06/10/11	
Uranium 238	0.016	U	0.047	1.00	0.11		06/09/11	06/10/11	

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined using instrument performance only
Bold results are greater than the MDC.

U Result is less than the sample detection limit.

Laboratory Control Sample Report

Radiochemistry

Client Lot ID: F1F070484
Matrix: WATER

Parameter	Spike Amount	Result	Total Uncert. (2 σ+/-)	MDC	% Yld	% Rec	Lab Sample ID / QC Control Limits
GROSS A/B BY GFPC SW846 9310 MOD			pCi/L	9310 MOD			F1F080000-047C
Gross Alpha	49.4	55.8	6.2	1.5		113	(83 - 131)
Gross Beta	65.9	67.6	5.8	1		102	(86 - 118)
	Batch #:	1159047		Analysis Date:	06/09/11		
Radium 226 by EPA 903.0 MOD			pCi/L	903.0 MOD			F1F080000-084C
Radium (226)	11.3	11.2	1.2	0.2	81	99	(62 - 136)
	Batch #:	1159084		Analysis Date:	06/09/11		
Radium 228 by GFPC EPA 904 MOD			pCi/L	904 MOD			F1F080000-085C
Radium 228	5.49	5.36	0.69	0.38	85	98	(69 - 140)
	Batch #:	1159085		Analysis Date:	06/13/11		

NOTE(S)

MDC is determined by instrument performance only
Calculations are performed before rounding to avoid round-off error in calculated results

Laboratory Control Sample/LCS Duplicate Report

Radiochemistry

Client Lot ID: F1F070484
Matrix: WATER

Parameter		Spike Amount	Result	Total Uncert. (2 σ+/-)	% Yld	% Rec	QC Control Limits	Precision	
Iso THORIUM (SHORT CT) DOE A-01-R MOD			pCi/L	A-01-R MOD			Lab Sample ID F1F090000-135C		
Thorium 230		9.49	10.6	1.3	81	112	(79 - 122)		
	Spk 2	9.49	9.9	1.3	87	104	(79 - 122)	7	%RPD
		Batch #:	1160135		Analysis Date:		06/12/11		
Iso URANIUM (SHORT CT) DOE A-01-R MOD			pCi/L	A-01-R MOD			F1F090000-136C		
Uranium 234		13.1	13.4	1.6	81	102	(83 - 130)		
	Spk 2	13.1	14.8	1.7	79	114	(83 - 130)	11	%RPD
Uranium 238		13.6	13.8	1.6	81	102	(86 - 128)		
	Spk 2	13.6	16.7	1.9	79	123	(86 - 128)	19	%RPD
		Batch #:	1160136		Analysis Date:		06/10/11		

NOTE(S)

Calculations are performed before rounding to avoid round-off error in calculated results

MATRIX SPIKE REPORT

Radiochemistry

Client Lot Id: F1F070484
Matrix: WATER

Date Sampled: 06/07/11
Date Received: 06/07/11

Parameter	Spike Amount	Spike Result	Total Uncert. (2σ +/-)	Spike Yld.	Sample Result	Total Uncert. (2 σ +/-)	QC Sample ID %YLD	%REC	QC Control Limits
GROSS A/B BY GFPC SW846 9310 MOD			pCi/L		9310 MOD			F1F070484-001	
Gross Beta	264	272	23		12.8	3.5		98	(65-150)
	Batch #:	1159047		Analysis Date:		06/09/11			
GROSS A/B BY GFPC SW846 9310 MOD			pCi/L		9310 MOD			F1F070484-001	
Gross Alpha	198	144	22		8.7	6.9		68	(44-150)
	Batch #:	1159047		Analysis Date:		06/09/11			

NOTE(S)

Data are incomplete without the case narrative.

Calculations are performed before rounding to avoid round-off errors in calculated results.

DUPLICATE EVALUATION REPORT

Radiochemistry

Client Lot ID: F1F070484
Matrix: WATER

Date Sampled: 06/07/11
Date Received: 06/07/11

Parameter	SAMPLE Result		Total Uncert. (2σ+/-)	% Yld	DUPLICATE Result		Total Uncert. (2σ+/-)	% Yld	QC Sample ID Precision	
GROSS A/B BY GFPC SW846 9310 MOD				pCi/L	9310 MOD				F1F070484-001	
Gross Alpha	8.7	U	6.9		1.5	U	5.5		142	%RPD
Gross Beta	12.8		3.5		12.4		3.5		3	%RPD
	Batch #:		1159047	(Sample)	1159047	(Duplicate)				
Radium 228 by GFPC EPA 904 MOD				pCi/L	904 MOD				F1F070484-001	
Radium 228	0.24	U	0.35	74	0.27	U	0.28	70	11	%RPD
	Batch #:		1159085	(Sample)	1159085	(Duplicate)				
Radium 226 by EPA 903.0 MOD				pCi/L	903.0 MOD				F1F070484-001	
Radium (226)	0.80	J	0.23	85	0.82	J	0.24	81	3	%RPD
	Batch #:		1159084	(Sample)	1159084	(Duplicate)				

NOTE(S)

Data are incomplete without the case narrative.
Calculations are performed before rounding to avoid round-off error in calculated results

J Result is greater than sample detection limit but less than stated reporting limit.
U Result is less than the sample detection limit.

F1F070484

CLIENT ANALYSIS SUMMARY

Storage Loc: R217,METS,3-30,

Project Manager: JKA
Quote #: 87754
SDG: F1F070484 JA 6/8/11
Date Received: 2011-06-07
Project:
Mallinckrodt St. Louis Plant
Analytical Due Date: 2011-06-13
PO#: 10372ACM
Report to: Mark Tepperman
RUSH
Report Due Date: 2011-06-14
Client: 404224 AECOM Technical Services Inc.
Report Type: D Expanded Deliverable
#SMPS in LOT: 2
EDD Code: 00

SAMPLE LOGIN: enter lot # into SDG field. Gamma Spec is as received for 5 BD TAT. Gamma Ra226, Iso U and Iso Th will be logged when initial count is complete. Log ZHE EXTRACTION line item for TCLP VOA. Log TCLP EXTRACTION line item for TCLP analyses. RAD: Initial Gamma Spec counted as received . When complete dry/grind and prep for Gamma Ra226,TAR,Iso U and Iso Th. GAMMA SPEC. SHOULD BE COUNTED IN CLIENTS 500ML MARINELLI. RA226/228 - NO INGROWTH REQUIRED!!! RA226/228 MUST BE PREPPED IN SEPERATE ALIQUOTS!!! DO NOT PREP TOGETHER! STANDARD QC ON CLIENT SAMPLE IS REQUIRED FOR ALL ANALYSES.

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	J
1	60162412-SMP-PL5-WW-OTH-097			2011-06-07 / 1130	MJ203	WATER

SAMPLE COMMENTS:

	CR	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
	CU	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
	FE	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
	NI	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
	PB	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
	ZN	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
	CD	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
	XX	DN	CFR136 A	624	WATER, 624, VOA	25	PURGE AND TRAP - 25 mL purge (Waters)	01	STANDARD TEST SET	PROT: O	WRK LOC	06	TIC: N	
	XX	ZZ	NONE	NONE	WATER, RAD SCREEN	88	NO SAMPLE PREPARATION PERFORMED / DIRECT	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
	XX	2I	EML	A-01-R MOD	WATER, Iso URANIUM (SHORT CT)	J2	Extraction Chromatography - Sequential Actinides	01	STANDARD TEST SET	PROT: R	WRK LOC	06		
	XX	2K	EML	A-01-R MOD	WATER, Iso THORIUM (SHORT CT)	J2	Extraction Chromatography - Sequential Actinides	01	STANDARD TEST SET	PROT: R	WRK LOC	06		
	XX	Z4	EPA	904 MOD	WATER, 904 MOD, Ra-228 (NO INGROWTH)	N*	No Ingrowth	2X	SPECIAL PROJECTS	PROT: R	WRK LOC	06		
	XX	ZA	SW846	9310 MOD	WATER, 9310 MOD, GROSS A/B	FR	Evaporative Preparation, Total	01	STANDARD TEST SET	PROT: R	WRK LOC	06		
	XX	ZY	EPA	903.0 MOD	WATER, 903 MOD, Ra-226 (NO INGROWTH)	N*	No Ingrowth	2X	SPECIAL PROJECTS	PROT: R	WRK LOC	06		
	XX	AL	MCAW W	160.2	WATER, 160.2, TSS	88	NO SAMPLE PREPARATION PERFORMED / DIRECT	01	STANDARD TEST SET	PROT: W	WRK LOC	06		
	XX	FJ	SW846	9040	WATER, 9040, pH	88	NO SAMPLE PREPARATION PERFORMED / DIRECT	01	STANDARD TEST SET	PROT: W	WRK LOC	06		
	XX	VO	MCAW W	410.4	WATER, 410.4, COD	21	DIGESTION, NON-METAL/INORGANICS	01	STANDARD TEST SET	PROT: W	WRK LOC	06		
D	PB	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
D	CD	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
D	CR	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
D	CU	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
D	ZN	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
D	NI	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
D	FE	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
D	XX	DN	CFR136 A	624	WATER, 624, VOA	25	PURGE AND TRAP - 25 mL purge (Waters)	01	STANDARD TEST SET	PROT: O	WRK LOC	06	TIC: N	
S	ZN	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
S	CD	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
S	CR	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
S	CU	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
S	FE	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
S	NI	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
S	PB	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
S	XX	DN	CFR136 A	624	WATER, 624, VOA	25	PURGE AND TRAP - 25 mL purge (Waters)	01	STANDARD TEST SET	PROT: O	WRK LOC	06	TIC: N	
S	XX	ZA	SW846	9310 MOD	WATER, 9310 MOD, GROSS A/B	FR	Evaporative Preparation, Total	01	STANDARD TEST SET	PROT: R	WRK LOC	06		

F1F070484

CLIENT ANALYSIS SUMMARY

Storage Loc: R217,METS,3-30,

Project Manager: JKA
Quote #: 87754
SDG:
Date Received: 2011-06-07

Project:
Mallinckrodt St. Louis Plant
Analytical Due Date: 2011-06-13

PO#: 10372ACM
Report to: Mark Tepperman
RUSH
Report Due Date: 2011-06-14

Client: 404224 AECOM Technical Services Inc.
Report Type: D Expanded Deliverable
#SMPS In LOT: 2
EDD Code: 00

SAMPLE LOGIN: enter lot # into SDG field. Gamma Spec is as received for 5 BD TAT. Gamma Ra226, Iso U and Iso Th will be logged when initial count is complete. Log ZHE EXTRACTION line item for TCLP VOA. Log TCLP EXTRACTION line item for TCLP analyses. RAD: Initial Gamma Spec counted as received . When complete dry/grind and prep for Gamma Ra226,TAR,Iso U and Iso Th. GAMMA SPEC. SHOULD BE COUNTED IN CLIENTS 500ML MARINELLI. RA226/228 - NO INGROWTH REQUIRED!!! RA226/228 MUST BE PREPPED IN SEPERATE ALIQUOTS!!! DO NOT PREP TOGETHER! STANDARD QC ON CLIENT SAMPLE IS REQUIRED FOR ALL ANALYSES.

S	XX	ZA	SW846	9310 MOD	WATER, 9310 MOD, GROSS A/B	FR	Evaporative Preparation, Total	01	STANDARD TEST SET	PROT: R	WRK LOC	06	
S	XX	VO	MCAW W	410.4	WATER, 410.4, COD	21	DIGESTION, NON-METAL/INORGANICS	01	STANDARD TEST SET	PROT: W	WRK LOC	06	
X	XX	Z4	EPA	904 MOD	WATER, 904 MOD, Ra-228 (NO INGROWTH)	N*	No Ingrowth	2X	SPECIAL PROJECTS	PROT: R	WRK LOC	06	
X	XX	ZA	SW846	9310 MOD	WATER, 9310 MOD, GROSS A/B	FR	Evaporative Preparation, Total	01	STANDARD TEST SET	PROT: R	WRK LOC	06	
X	XX	ZY	EPA	903.0 MOD	WATER, 903 MOD, Ra-226 (NO INGROWTH)	N*	No Ingrowth	2X	SPECIAL PROJECTS	PROT: R	WRK LOC	06	
X	XX	AL	MCAW W	160.2	WATER, 160.2, TSS	88	NO SAMPLE PREPARATION PERFORMED / DIRECT	01	STANDARD TEST SET	PROT: W	WRK LOC	06	
X	XX	FJ	SW846	9040	WATER, 9040, pH	88	NO SAMPLE PREPARATION PERFORMED / DIRECT	01	STANDARD TEST SET	PROT: W	WRK LOC	06	
X	XX	VO	MCAW W	410.4	WATER, 410.4, COD	21	DIGESTION, NON-METAL/INORGANICS	01	STANDARD TEST SET	PROT: W	WRK LOC	06	

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	I
2	VOC BLANK			2011-06-07 / 0	MJ206	WATER

SAMPLE COMMENTS:

XX	DN	CFR136 624 A	WATER, 624, VOA	25	PURGE AND TRAP - 25 mL purge (Waters)	01	STANDARD TEST SET	PROT: O	WRK LOC	06	TIC: N		

St. Louis
8715 Rider Trail North
Earth City, MO 63045
Phone 314.298.8566 fax 314.298.8757

CUR 123

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Ed Palser	Site Contact: Casey Knuteson	Date: 6/7/11	COC No: 0971
AECOM	Tel/Fax: (618)444-5535	Lab Contact: Jayna Awold	Carrier: Test America	1 of 1 COCs
Address 8005 Outer Circle RD	Analysis Turnaround Time			Job No. 60162412
City/State/Zip Brooks City Base, TX 78235	Calendar (C) or Work Days (W) C			
(618)444-5535 Phone	TAT if different from Below			SDG No. FIF070484
none FAX	☐ 2 weeks			
Project Name: Mallinckrodt C-T Decommissioning	■ 1 week			
Site: St. Louis Plant	☐ 2 days			
P O # 10372ACM	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	pH	TSS	COD	ICP Metals (Cd, Cr, Cu, Fe, Pb, Ni, Zn)	Volatile Organics (EPA Method 624)	Gross Alpha/Beta	Isotopic Uranium (Alpha Spectrometry)	Radium-226 (GFPC, no decay/ingrowth)	Radium-228 (GFPC - no decay/ingrowth)	Isotopic Thorium (Alpha Spectrometry)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Sample Specific Notes:
60162412-SMP-PL5-WW-OTH-0971	6/7/2011	12:30	Water	Water	12		x	x	x	x	x	x	x	x	x	x	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	7xLP, 250P, 500P
VOC Blanks																									* Further Testing if Gross Beta above
n/a n/a n/a n/a	n/a	n/a	n/a	n/a	1		n/a	n/a	n/a	n/a	x	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	50 pci/L
n/a n/a n/a n/a	n/a	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a n/a n/a n/a	n/a	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
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n/a n/a n/a n/a	n/a	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a n/a n/a n/a	n/a	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a n/a n/a n/a	n/a	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a n/a n/a n/a	n/a	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a n/a n/a n/a	n/a	n/a	n/a	n/a	n/a		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification
■ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* *Poison B* ☐ *Unknown* ☐

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ■ *Archive For* 1 *Months*

Special Instructions/QC Requirements & Comments: Possible hazards include radiological. Sample methods to comply with MSD Ordinance 12559 standards.

Method 9310

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	TA/AECOM	6/7/11		TA	6/7/11 1300
	TA	6/7/11 1330		TA	6/7/11 1330

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Lot #(s): F1F070484

CONDITION UPON RECEIPT FORM

Client: AECOM
Quote No: 87754
COC/RFA No: 0911

123

Initiated By: 60 Date: Time:

Shipping Information

Shipper: FedEx UPS DHL Courier Client Other: NT Multiple Packages: Y (N)

Shipping # (s):*

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

Sample Temperature (s):**

1. ambient 2. 3. 4. 5. 6. 7. 8. 9. 10.

*Numbered shipping lines correspond to Numbered Sample Temp lines

**Sample must be received at 4°C ± 2°C- If not, note contents below. Temperature variance does NOT affect the following: Metals-Liquid or Rad tests- Liquid or Solids

Condition (Circle "Y" for yes, "N" for no and "N/A" for not applicable):

1.	Y (N)	Are there custody seals present on the cooler?	8.	Y (N)	Are there custody seals present on bottles?
2.	Y N (N/A)	Do custody seals on cooler appear to be tampered with?	9.	Y N (N/A)	Do custody seals on bottles appear to be tampered with?
3.	(Y) N	Were contents of cooler frisked after opening, but before unpacking?	10.	(Y) N N/A	Was sample received with proper pH[1]? (If not, make note below)
4.	(Y) N	Sample received with Chain of Custody?	11.	(Y) N	Sample received in proper containers?
5.	(Y) N N/A	Does the Chain of Custody match sample ID's on the container(s)?	12.	Y (N) N/A	Headspace in VOA or TOX liquid samples? (If Yes, note sample ID's below)
6.	Y (N)	Was sample received broken?	13.	Y N (N/A)	Was Internal COC/Workshare received?
7.	(Y) N	Is sample volume sufficient for analysis?	14.	Y N (N/A)	Was pH taken by original TestAmerica lab?

[1] For DOE-AL (Pantex, LANL, Sandia) sites, pH of ALL containers received must be verified, EXCEPT VOA, TOX and soils.

Notes:

Corrective Action:
- ☐ Client Contact Name: Informed by:
- ☐ Sample(s) processed "as is"
- ☐ Sample(s) on hold until: If released, notify:

Project Management Review: Jayme Awalt Date: 6/8/11

THIS FORM MUST BE COMPLETED AT THE TIME THE ITEMS ARE BEING CHECKED IN. IF ANY ITEM IS COMPLETED BY SOMEONE OTHER THAN THE INITIATOR, THEN THAT PERSON IS REQUIRED TO APPLY THEIR INITIAL AND THE DATE NEXT TO THAT ITEM.

ADMIN-0004, REVISED 10/21/08 \\Slsvr01\QA\FORMS\ST-LOUIS\ADMIN\Admin004 rev11.doc

Metropolitan St. Louis Sewer District

Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

June 15, 2011

Julie Summers
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Re: Wastewater User Charge Billing for Special Discharge

Dear Ms. Summers:

This is to advise you of the wastewater user charges applicable to an on-site special discharge approved in our letter to you dated January 21, 2011. The discharge date and quantity are from information submitted by you in an email dated June 14, 2011.

Our Finance Department will bill you by invoice for the charges described below. These charges are based on the rates in MSD Wastewater User Charge Ordinance 13021.

PARTY TO BILL: Addressee

BILLING IS FOR: On-Site Special Discharge

DISCHARGE PERIOD: April 19 – June 7, 2011

SOURCE OF WASTE: Five batches of treated rainwater and groundwater from the remediation of the Columbium-Tantalum (CT) decommissioning project at the Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri.

Discharge Period	Billing Item	Quantity	Units	Rate	Charge
April 19, 2011	Volume	54	CcF	$2.02	$109.08
April 27, 2011	Volume	54	CcF	$2.02	$109.08
May 9, 2011	Volume	54	CcF	$2.02	$109.08
May 25, 2011	Volume	54	CcF	$2.02	$109.08
June 7, 2011	Volume	54	CcF	$2.02	$109.08
Totals:	------	270	Gal	-----	$545.40

Please do not pay until you receive our invoice. If you have any questions, please contact me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

pc Chris Verplancke - Finance Dept.
Doug Mendoza
Brian Gibson

File: IU, MALLINCKRODT INC [2112059600], 3600 North Second Street, St. Louis, Missouri

Summary of CT Excavation Wastewater Discharges
Mallinckrodt St. Louis Plant

	Date of Discharge	Start Time	End Time	Volume Discharged (gallons)
[redacted]				
Discharge 4	4/19/2011	0700	0930	40,000
Discharge 5	4/27/2011	0700	0930	40,000
Discharge 6	5/9/2011	0700	0930	40,000
Discharge 7	5/25/2011	0700	0930	40,000
Discharge 8	6/7/2011	0725	0930	40,000

Via
SR

PATRICIA H. DUFT
Vice President, Legal

COVIDIEN

June 13, 2011

Mr. Douglas Mendoza
Metropolitan St. Louis Sewer District
Div. of Env. Compliance
10 East Grand Avenue
St. Louis, Missouri 63147

RE: Notification of Conversion of Mallinckrodt Inc. to Mallinckrodt LLC
21120596-00

Dear Mr. Mendoza:

This letter is to notify you that on or about June 24, 2011, Mallinckrodt Inc., an indirect subsidiary of Covidien plc, intends to complete an intercompany reorganization that will result in Mallinckrodt Inc. being converted into a limited liability company, Mallinckrodt LLC. This conversion is being done in accordance with Delaware corporate law and is tentatively scheduled to be completed on June 24, 2011. Mallinckrodt Inc. owns legal title to property, plant and equipment subject to the licenses or permits described on **"Exhibit A"** to this notification.

The following is a simplified summary of the proposed steps: (1) Mallinckrodt Inc. will file a certificate of conversion under Delaware law to convert the company into a limited liability company; (2) after the conversion to a limited liability company, the entity will be renamed as Mallinckrodt LLC; and (3) the ownership of Mallinckrodt LLC will be transferred to Mallinckrodt Enterprises LLC, a Delaware limited liability company that is also wholly owned by indirect subsidiaries of Covidien plc. None of these transactions involve any legal entities which are not affiliated with Mallinckrodt Inc. All of the movement of assets and ownership is within the group of companies all wholly owned directly or indirectly by Covidien plc. Please note, Mallinckrodt LLC is the same company, Mallinckrodt Inc., that is currently permitted.

By this letter, Mallinckrodt Inc. is notifying the Metropolitan St. Louis Sewer District that the above referenced transaction will occur on or about June 24, 2011. On the date the transaction is completed, an additional correspondence will be sent to your office, confirming that the conversion of Mallinckrodt Inc. to Mallinckrodt LLC has been finalized. Mallinckrodt is providing the following information to assist you in your review of the transaction.

RECEIVED
JUN 14 2011
DIVISION OF
ENVIRONMENTAL COMPLIANCE

675 McDONNELL BLVD.
HAZELWOOD, MO
63042

314-654-6314 [T]
314-654-6486 [F]

1. The new name of the organization will be Mallinckrodt LLC. Their headquarters address will remain at the current location.

   Mallinckrodt LLC
   675 McDonnell Blvd
   Hazelwood, MO 63042

2. All contact information used for the existing permit including telephone number(s) and names will remain the same.

3. There will be no changes in personnel having control over the permit and all officers and managers of Mallinckrodt LLC will be the same as Mallinckrodt Inc.

4. At this time, Mallinckrodt Inc. does not plan any specific changes to the organization, location, facility, equipment or procedures. If Mallinckrodt does intend to modify or change the organizational structure which may impact the permit, Mallinckrodt will notify your agency as necessary.

5. All records retained in connection with the permit will be maintained at the current location.

6. Mallinckrodt LLC will continue to abide by all commitments and representations within the permit and will maintain all permit terms, conditions, and requirements upon conversion to Mallinckrodt LLC.

Please note that we would appreciate your expeditious review of this notice and provide a response if you need any additional information. If you have any questions regarding the foregoing, please contact me, Patricia Duft, Mallinckrodt's Chief EHS Counsel at 314-654-6314.

Sincerely,

Patricia H. Duft

Enc:
Exhibit "A"-Permit List

Cc: file
Kay Yoder (Mallinckrodt)
Alan Faust (Mallinckrodt)
Bob Schaefer (Mallinckrodt)
Brian Lowery (Mallinckrodt)

RECEIVED
JUN 14 2011
DIVISION OF
ENVIRONMENTAL COMPLIANCE

Exhibit A

Facility Location	License Type	License Number
Hazelwood, MO	Industrial Discharge Permit	07101002-00
Maryland Heights, MO	MSD Discharge Permit	0611850500-1
St. Louis, MO	Industrial Wastewater Discharge Permit	2112059600-3
Webster Groves, MO	Industrial Wastewater Discharge Permit	1048568800

RECEIVED
JUN 14 2011
DIVISION OF
ENVIRONMENTAL COMPLIANCE

IU - Mallinckrodt, Inc. (21120596-00)

Steve Grace SP850

From: Steve Grace
Sent: Monday, June 06, 2011 11:34 AM
To: 'Summers, Julie'
Subject: RE: Mallinckrodt CT Wastewater Discharge 008

Hello Julie,

A review of the laboratory analytical data for Discharge 008 from the C-T Phase II decommissioning activities indicated this batch meets MSD Ordinance 12559 standards along with those outlined in 10 CFR Part 20, Appendix B, Table 3, and is approved for discharge into a combined sewer identified on MSD's base map as Inlet 18D1-395C. As a general reminder, the discharge into the sewer must be controlled at a rate that will not surcharge the lines in that area. The approval for Discharge 008 is valid for 30 days from the date of this email.

As a general reminder, the volume of this batch of wastewater must be confirmed in writing no later than 28 days after the date of this discharge. To date, I've gotten volume reports for Discharge 001 to 003, as outlined in your email dated April 18, 2011. If you can submit the volume reports for the discharges subsequent to 003 at your earliest convenience, it would be greatly appreciated.

I am still interested in getting out there to visit the excavation site. I'm not sure how much advance notice you need, but I don't have anything schedule for the week of June 20-24 if any of those days will work for you.

Please contact me should you have any questions or require additional information.

Thank you,
Steve Grace

From: Summers, Julie [mailto:Julie.Summers@Covidien.com]
Sent: Monday, June 06, 2011 9:36 AM
To: Steve Grace
Subject: Mallinckrodt CT Wastewater Discharge 008

Steve,

Mallinckrodt requests permission to discharge 40,000 gallons of treated rainwater and groundwater collected as part of the C-T Phase II decommissioning activities. The wastewater discharge will be identified as Discharge 008. The laboratory analytical results demonstrate that the discharge will comply with the requirements of the Metropolitan St. Louis Sewer District as set forth in their letter to Lisa Meyer dated January 21, 2011. In addition, the discharge meets the monthly average concentrations for release to sanitary sewers per the requirements of 10 CFR 20.2003. Both a discharge summary and the detailed laboratory analytical results are attached for your information.

Also –let me know what time works for you to come down for a site visit so that we can maybe changed the terms of the special discharge permit for CT.

Thanks,

Julie Summers
Environmental Manager
Covidien/Mallinckrodt
3600 North 2nd Street
St. Louis, MO 63147
314-654-1969 Phone
314-654-1251 Fax

Wastewater Discharge 008 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-0870

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	U
Acrylonitrile	mg/L		< 0.01	U
Benzene	mg/L		< 0.001	U
Bromoform	mg/L		< 0.001	U
Bromomethane	mg/L		< 0.002	U
Carbon tetrachloride	mg/L		< 0.001	U
Chlorobenzene	mg/L		< 0.001	U
Chlorodibromomethane	mg/L		< 0.001	U
Chloroethane	mg/L		< 0.002	U
Chloroform	mg/L		< 0.001	U
Chloromethane	mg/L		< 0.002	U
Dichlorobromomethane	mg/L		< 0.001	U
1,1- Dichloroethane	mg/L		< 0.001	U
1,2- Dichloroethane	mg/L		< 0.001	U
1,1- Dichloroethene	mg/L		< 0.001	U
1,2- Dichloroethane	mg/L		< 0.002	U
1,2- Dichloropropane	mg/L		< 0.001	U
cis-1,3-Dichloropropene	mg/L		< 0.001	U
trans-1,3-Dichloropropene	mg/L		< 0.001	U
Ethylbenzene	mg/L		< 0.001	U
Methylene Chloride	mg/L		< 0.001	U
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	U
Tetra chloroethene	mg/L		< 0.001	U
Toluene	mg/L		< 0.001	U
1,1,1- Trichloroethane	mg/L		< 0.001	U
1,1,2- Trichloroethane	mg/L		< 0.001	U
Trichloroethene	mg/L		< 0.001	U
Vinyl Chloride	mg/L		< 0.002	U
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	U
Chromium	mg/L	5	< 0.01	U
Copper	mg/L	2.7	< 0.025	U
Iron	mg/L	150	0.0558	B
Nickel	mg/L	2.3	< 0.04	U
Lead	mg/L	0.4	0.0016	B
Zinc	mg/L	3	0.0489	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.2	
COD	mg/L	600	24	
TSS	mg/L	300	4	J
Radionuclides				
Gross Alpha	pCi/L	3,000	< 8.6	U
Gross Beta	pCi/L	50	12.4	
Ra-226	pCi/L	10	0.58	
Ra-228	pCi/L	30	0.52	
Th-228	pCi/L	2,000	< 0.27	U
Th-230	pCi/L	1,000	0.3	
Th-232	pCi/L	300	< 0.16	U
U-234	pCi/L		< 0.17	U
U-235/6	pCi/L		< 0.16	U
U-238	pCi/L		< 0.13	U
Total Uranium	*pCi/L*	*3,000*	*< 0.46*	

10 CFR 20 Appendix B Table 3 Values

Analyte	Units	Limit	Discharge Concentration	Averaged Concentration
Ra-226	pCi/L	0.6	0.58	0.001
Ra-228	pCi/L	0.6	0.52	0.001
Th-228	pCi/L	2	0.27	0.001
Th-230	pCi/L	1	0.3	0.001
Th-232	pCi/L	0.3	0.16	0.000
U-234	pCi/L	3	0.17	0.000
U-235/6	pCi/L	3	0.16	0.000
U-238	pCi/L	3	0.13	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.008*

Discharge Volume (gals) = 40,000

Covidien averaging factor[2] = 0.002

Analyte	Units	Annual Limit	Discharge Activity	Year to Date Activity
Gross Radioactivity	Ci	1	3.2E-06	1.9E-05

Notes:

(1) 'B' indicates estimated value; 'U' indicates result less than sample detection limit; 'J' indicates method blank contamination reported by lab

(2) derived from discharge volume divided by a Covidien minimum average monthly volume (20,000,000 gal)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

ANALYTICAL REPORT

Mallinckrodt St. Louis Plant

Lot #: F1E250446

Mark Tepperman

AECOM Technical Services Inc.
8005 Outer Circle Road
Brooks Air Force Bas, TX 78235

TESTAMERICA LABORATORIES, INC.

FOR
Jayna Awalt
Project Manager

June 3, 2011

Case Narrative
LOT NUMBER: **F1E250446**

This report contains the analytical results for the two samples received under chain of custody by TestAmerica St. Louis on May 25, 2011. These samples are associated with your Mallinckrodt St. Louis Plant project.

The analytical results included in this report meet all applicable quality control procedure requirements. except as noted on the following page.

The test results in this report meet all NELAP requirements for parameters in which accreditations are held by TestAmerica St. Louis. Any exceptions to NELAP requirements are noted in the case narrative. **TestAmerica St. Louis' Florida certification number is E87689.** The case narrative is an integral part of this report.

This report shall not be reproduced, except in full, without the written approval of the laboratory.

All chemical analysis results are based upon sample as received, wet weight, unless noted otherwise. All radiochemistry results are based upon sample as dried and ground with the exception of tritium, unless requested wet weight by the client.

Observations/Nonconformances
Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

GC/MS Volatile Organics Method 624
Batch: 1151185

cis-1,3-Dichloropropene was removed from the initial calibration lowest point and Acrolein was removed from the initial calibration two lowest points due to poor response. The initial calibration still meets the minimum number of points and the reporting limits required. The compounds were removed within TestAmerica's selection of points policy.
Affected Samples:
F1E250446 (1): 60162412-SMP-PL5-WW-OTH-0870
F1E250446 (2): TRIP BLANK

The CCV recoveries are outside the upper QC limit (greater than 20% D) for Chloromethane, Vinyl chloride, 1,1-Dichloroethene, Carbon Tetrachloride, and Benzene indicating a potential high bias for those analytes in the samples associated with this CCV. These analytes were not detected above the reporting limit in the associated samples.
Affected Samples:
F1E250446 (1): 60162412-SMP-PL5-WW-OTH-0870
F1E250446 (2): TRIP BLANK

The LCS recoveries for Benzene, Chloroform, 1,1-Dichloroethane, 1,1-Dichloroethene, and 1,2-Dichloroethene (total), 1,1,1-Trichloroethane, and Vinyl chloride are outside the upper QC limit, indicating a potential positive bias for these analytes. The LCSD recoveries were within QC limit. These analytes were not observed above the reporting limit; therefore the sample data was not adversely affected by this excursion.
Affected Samples:
F1E250446 (1): 60162412-SMP-PL5-WW-OTH-0870
F1E250446 (2): TRIP BLANK

Total Suspended Solids Method 160.2
Batch: 1147067

The Duplicate RPD value is outside the established QC limits. Values for the sample and sample duplicate were less than 5x times the reporting limit. RPD determinations are not applicable to values near the reporting limit. A precision criterion for concentrations near the reporting limit is +/- the reporting limit. This criteria has been met.
Affected Samples:
F1E250446 (1): 60162412-SMP-PL5-WW-OTH-0870

Gross Alpha/Beta Method 9310 MOD
Batch: 1151051

The Gross Alpha and/or Beta reporting limit was not met due to a reduction of sample size attributed to the sample's high residual mass. The analytical results are reported with the MDA achieved.
Affected Samples:
F1E250446 (1): 60162412-SMP-PL5-WW-OTH-0870

There are no other observations or non-conformances associated with the analyses contained in this report.

METHODS SUMMARY

F1E250446

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
pH Aqueous	SW846 9040	SW846 9040
Chemical Oxygen Demand	MCAWW 410.4	MCAWW 410.4
Gross Alpha/Beta by GFPC	SW846 9310 MOD	
Isotopic Thorium by Alpha Spectroscopy	EML A-01-R MOD	
Isotopic Uranium by Alpha Spectroscopy	EML A-01-R MOD	
Non-Filterable Residue (TSS)	MCAWW 160.2	MCAWW 160.2
Purgeables	CFR136A 624	SW846 5030B
Radium-226 by GFPC	EPA 903.0 MOD	
Radium-228 by GFPC	EPA 904 MOD	
Trace Inductively Coupled Plasma (ICP) Metals	SW846 6010B	

References:

CFR136A "Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EML "ENVIRONMENTAL MEASUREMENTS LABORATORY PROCEDURES MANUAL" HASL-300 28TH EDITION, VOLUME I and II DEPARTMENT OF ENERGY

EPA "EASTERN ENVIRONMENTAL RADIATION FACILITY RADIOCHEMISTRY PROCEDURES MANUAL" US EPA EPA 520/5-84-006 AUGUST 1984

MCAWW "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

SAMPLE SUMMARY

F1E250446

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
MJRHJ	001	60162412-SMP-PL5-WW-OTH-0870	05/25/11	11:00
MJRH4	002	TRIP BLANK	05/25/11	

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

AECOM Technical Services Inc.

Client Sample ID: 60162412-SMP-PL5-WW-OTH-0870

GC/MS Volatiles

Lot-Sample #...: F1E250446-001 **Work Order #...:** MJRHJ1AJ **Matrix.....:** WATER
Date Sampled...: 05/25/11 11:00 **Date Received..:** 05/25/11
Prep Date.....: 05/26/11 **Analysis Date..:** 05/27/11
Prep Batch #...: 1151185 **Analysis Time..:** 04:50
Dilution Factor: 1

Method.....: CFR136A 624

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acrolein	ND	10	ug/L
Acrylonitrile	ND	10	ug/L
Benzene	ND	1.0	ug/L
Bromoform	ND	1.0	ug/L
Bromomethane	ND	2.0	ug/L
Carbon tetrachloride	ND	1.0	ug/L
Chlorobenzene	ND	1.0	ug/L
Chlorodibromomethane	ND	1.0	ug/L
Chloroethane	ND	2.0	ug/L
Chloroform	ND	1.0	ug/L
Chloromethane	ND	2.0	ug/L
Dichlorobromomethane	ND	1.0	ug/L
1,1-Dichloroethane	ND	1.0	ug/L
1,2-Dichloroethane	ND	1.0	ug/L
1,1-Dichloroethene	ND	1.0	ug/L
1,2-Dichloroethene (total)	ND	2.0	ug/L
1,2-Dichloropropane	ND	1.0	ug/L
cis-1,3-Dichloropropene	ND	1.0	ug/L
trans-1,3-Dichloropropene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Methylene chloride	ND	1.0	ug/L
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L
Tetrachloroethene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
1,1,1-Trichloroethane	ND	1.0	ug/L
1,1,2-Trichloroethane	ND	1.0	ug/L
Trichloroethene	ND	1.0	ug/L
Vinyl chloride	ND	2.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	89	(62 - 122)
Toluene-d8	98	(73 - 116)
4-Bromofluorobenzene	103	(68 - 118)

AECOM Technical Services Inc.

Client Sample ID: TRIP BLANK

GC/MS Volatiles

Lot-Sample #...: F1E250446-002 **Work Order #...:** MJRH41AA **Matrix.....:** WATER
Date Sampled...: 05/25/11 **Date Received..:** 05/25/11
Prep Date.....: 05/26/11 **Analysis Date..:** 05/27/11
Prep Batch #...: 1151185 **Analysis Time..:** 06:22
Dilution Factor: 1

Method.....: CFR136A 624

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acrolein	ND	10	ug/L
Acrylonitrile	ND	10	ug/L
Benzene	ND	1.0	ug/L
Bromoform	ND	1.0	ug/L
Bromomethane	ND	2.0	ug/L
Carbon tetrachloride	ND	1.0	ug/L
Chlorobenzene	ND	1.0	ug/L
Chlorodibromomethane	ND	1.0	ug/L
Chloroethane	ND	2.0	ug/L
Chloroform	ND	1.0	ug/L
Chloromethane	ND	2.0	ug/L
Dichlorobromomethane	ND	1.0	ug/L
1,1-Dichloroethane	ND	1.0	ug/L
1,2-Dichloroethane	ND	1.0	ug/L
1,1-Dichloroethene	ND	1.0	ug/L
1,2-Dichloroethene (total)	ND	2.0	ug/L
1,2-Dichloropropane	ND	1.0	ug/L
cis-1,3-Dichloropropene	ND	1.0	ug/L
trans-1,3-Dichloropropene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Methylene chloride	**0.67 J**	**1.0**	**ug/L**
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L
Tetrachloroethene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
1,1,1-Trichloroethane	ND	1.0	ug/L
1,1,2-Trichloroethane	ND	1.0	ug/L
Trichloroethene	ND	1.0	ug/L
Vinyl chloride	ND	2.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	86	(62 - 122)
Toluene-d8	97	(73 - 116)
4-Bromofluorobenzene	102	(68 - 118)

NOTE(S):

J Estimated result. Result is less than RL.

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: F1E250446 Work Order #...: MJWWL1AA Matrix.....: WATER
MB Lot-Sample #: F1E310000-185
Prep Date.....: 05/26/11 Analysis Time..: 20:39
Analysis Date..: 05/26/11 Prep Batch #...: 1151185
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acrolein	ND	10	ug/L	CFR136A 624
Acrylonitrile	ND	10	ug/L	CFR136A 624
Benzene	ND	1.0	ug/L	CFR136A 624
Bromoform	ND	1.0	ug/L	CFR136A 624
Bromomethane	ND	2.0	ug/L	CFR136A 624
Carbon tetrachloride	ND	1.0	ug/L	CFR136A 624
Chlorobenzene	ND	1.0	ug/L	CFR136A 624
Chlorodibromomethane	ND	1.0	ug/L	CFR136A 624
Chloroethane	ND	2.0	ug/L	CFR136A 624
Chloroform	ND	1.0	ug/L	CFR136A 624
Chloromethane	ND	2.0	ug/L	CFR136A 624
Dichlorobromomethane	ND	1.0	ug/L	CFR136A 624
1,1-Dichloroethane	ND	1.0	ug/L	CFR136A 624
1,2-Dichloroethane	ND	1.0	ug/L	CFR136A 624
1,1-Dichloroethene	ND	1.0	ug/L	CFR136A 624
1,2-Dichloroethene (total)	ND	2.0	ug/L	CFR136A 624
1,2-Dichloropropane	ND	1.0	ug/L	CFR136A 624
cis-1,3-Dichloropropene	ND	1.0	ug/L	CFR136A 624
trans-1,3-Dichloropropene	ND	1.0	ug/L	CFR136A 624
Ethylbenzene	ND	1.0	ug/L	CFR136A 624
Methylene chloride	ND	1.0	ug/L	CFR136A 624
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	CFR136A 624
Tetrachloroethene	ND	1.0	ug/L	CFR136A 624
Toluene	ND	1.0	ug/L	CFR136A 624
1,1,1-Trichloroethane	ND	1.0	ug/L	CFR136A 624
1,1,2-Trichloroethane	ND	1.0	ug/L	CFR136A 624
Trichloroethene	ND	1.0	ug/L	CFR136A 624
Vinyl chloride	ND	2.0	ug/L	CFR136A 624

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	88	(62 - 122)
Toluene-d8	95	(73 - 116)
4-Bromofluorobenzene	101	(68 - 118)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: F1E250446 Work Order #...: MJWWL1AC-LCS Matrix.....: WATER
LCS Lot-Sample#: F1E310000-185 MJWWL1AD-LCSD
Prep Date.....: 05/26/11 Analysis Date..: 05/26/11
Prep Batch #...: 1151185 Analysis Time..: 19:06
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Acrolein	121	(40 - 140)			CFR136A 624
	115	(40 - 140)	5.4	(0-20)	CFR136A 624
Acrylonitrile	102	(67 - 140)			CFR136A 624
	102	(67 - 140)	0.19	(0-20)	CFR136A 624
Benzene	128 a	(76 - 119)			CFR136A 624
	114	(76 - 119)	12	(0-20)	CFR136A 624
Bromoform	91	(71 - 139)			CFR136A 624
	85	(71 - 139)	7.6	(0-20)	CFR136A 624
Bromomethane	121	(67 - 140)			CFR136A 624
	112	(67 - 140)	8.1	(0-20)	CFR136A 624
Carbon tetrachloride	128	(73 - 140)			CFR136A 624
	117	(73 - 140)	9.0	(0-20)	CFR136A 624
Chlorobenzene	111	(80 - 115)			CFR136A 624
	102	(80 - 115)	8.7	(0-20)	CFR136A 624
Chlorodibromomethane	96	(74 - 140)			CFR136A 624
	91	(74 - 140)	5.2	(0-20)	CFR136A 624
Chloroethane	125	(36 - 140)			CFR136A 624
	111	(36 - 140)	12	(0-20)	CFR136A 624
Chloroform	122 a	(77 - 121)			CFR136A 624
	112	(77 - 121)	8.5	(0-20)	CFR136A 624
Chloromethane	130	(41 - 140)			CFR136A 624
	118	(41 - 140)	10	(0-20)	CFR136A 624
Dichlorobromomethane	108	(72 - 138)			CFR136A 624
	101	(72 - 138)	6.9	(0-20)	CFR136A 624
1,1-Dichloroethane	125 a	(71 - 124)			CFR136A 624
	114	(71 - 124)	9.4	(0-20)	CFR136A 624
1,2-Dichloroethane	120	(67 - 133)			CFR136A 624
	114	(67 - 133)	5.2	(0-20)	CFR136A 624
1,1-Dichloroethene	127 a	(77 - 120)			CFR136A 624
	115	(77 - 120)	10	(0-20)	CFR136A 624
1,2-Dichloroethene (total)	125 a	(78 - 123)			CFR136A 624
	114	(78 - 123)	8.6	(0-20)	CFR136A 624
1,2-Dichloropropane	127	(67 - 137)			CFR136A 624
	110	(67 - 137)	14	(0-20)	CFR136A 624
cis-1,3-Dichloropropene	107	(58 - 140)			CFR136A 624
	97	(58 - 140)	9.4	(0-20)	CFR136A 624
trans-1,3-Dichloropropene	99	(61 - 140)			CFR136A 624
	91	(61 - 140)	8.4	(0-20)	CFR136A 624

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LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: F1E250446 Work Order #...: MJWWL1AC-LCS Matrix.....: WATER
LCS Lot-Sample#: F1E310000-185 MJWWL1AD-LCSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Ethylbenzene	**111**	**(77 - 123)**			**CFR136A 624**
	100	**(77 - 123)**	**10**	**(0-20)**	**CFR136A 624**
Methylene chloride	**111**	**(62 - 127)**			**CFR136A 624**
	105	**(62 - 127)**	**5.7**	**(0-20)**	**CFR136A 624**
1,1,2,2-Tetrachloroethane	**104**	**(61 - 128)**			**CFR136A 624**
	97	**(61 - 128)**	**7.2**	**(0-20)**	**CFR136A 624**
Tetrachloroethene	**120**	**(67 - 140)**			**CFR136A 624**
	108	**(67 - 140)**	**11**	**(0-20)**	**CFR136A 624**
Toluene	**117**	**(75 - 120)**			**CFR136A 624**
	102	**(75 - 120)**	**13**	**(0-20)**	**CFR136A 624**
1,1,1-Trichloroethane	**127 a**	**(81 - 125)**			**CFR136A 624**
	114	**(81 - 125)**	**10**	**(0-20)**	**CFR136A 624**
1,1,2-Trichloroethane	**111**	**(73 - 126)**			**CFR136A 624**
	102	**(73 - 126)**	**7.7**	**(0-20)**	**CFR136A 624**
Trichloroethene	**126**	**(76 - 126)**			**CFR136A 624**
	111	**(76 - 126)**	**13**	**(0-20)**	**CFR136A 624**
Vinyl chloride	**130 a**	**(58 - 129)**			**CFR136A 624**
	116	**(58 - 129)**	**11**	**(0-20)**	**CFR136A 624**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	90	(62 - 126)
	94	(62 - 126)
Toluene-d8	92	(78 - 119)
	93	(78 - 119)
4-Bromofluorobenzene	97	(73 - 115)
	96	(73 - 115)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

a Spiked analyte recovery is outside stated control limits.

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: F1E250446 Work Order #...: MJRHJ1CC-MS Matrix.....: WATER
MS Lot-Sample #: F1E250446-001 MJRHJ1CD-MSD
Date Sampled...: 05/25/11 11:00 Date Received..: 05/25/11
Prep Date.....: 05/26/11 Analysis Date..: 05/27/11
Prep Batch #...: 1151185 Analysis Time..: 05:21
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Acrolein	100	(50 - 150)			CFR136A 624
	104	(50 - 150)	3.8	(0-20)	CFR136A 624
Acrylonitrile	84	(50 - 150)			CFR136A 624
	90	(50 - 150)	6.1	(0-20)	CFR136A 624
Benzene	98	(47 - 150)			CFR136A 624
	103	(47 - 150)	4.6	(0-20)	CFR136A 624
Bromoform	73	(45 - 150)			CFR136A 624
	79	(45 - 150)	8.3	(0-20)	CFR136A 624
Bromomethane	91	(41 - 150)			CFR136A 624
	101	(41 - 150)	10	(0-20)	CFR136A 624
Carbon tetrachloride	92	(70 - 140)			CFR136A 624
	99	(70 - 140)	7.1	(0-20)	CFR136A 624
Chlorobenzene	84	(54 - 145)			CFR136A 624
	88	(54 - 145)	5.4	(0-20)	CFR136A 624
Chlorodibromomethane	79	(64 - 148)			CFR136A 624
	83	(64 - 148)	4.5	(0-20)	CFR136A 624
Chloroethane	92	(28 - 150)			CFR136A 624
	97	(28 - 150)	4.9	(0-20)	CFR136A 624
Chloroform	96	(51 - 138)			CFR136A 624
	101	(51 - 138)	4.8	(0-20)	CFR136A 624
Chloromethane	97	(33 - 150)			CFR136A 624
	106	(33 - 150)	8.4	(0-20)	CFR136A 624
Dichlorobromomethane	89	(47 - 150)			CFR136A 624
	92	(47 - 150)	3.0	(0-20)	CFR136A 624
1,1-Dichloroethane	95	(59 - 150)			CFR136A 624
	101	(59 - 150)	6.2	(0-20)	CFR136A 624
1,2-Dichloroethane	103	(59 - 143)			CFR136A 624
	108	(59 - 143)	4.6	(0-20)	CFR136A 624
1,1-Dichloroethene	91	(48 - 150)			CFR136A 624
	98	(48 - 150)	7.2	(0-20)	CFR136A 624
1,2-Dichloroethene (total)	95	(56 - 150)			CFR136A 624
	101	(56 - 150)	6.6	(0-20)	CFR136A 624
1,2-Dichloropropane	99	(56 - 150)			CFR136A 624
	106	(56 - 150)	7.1	(0-20)	CFR136A 624
cis-1,3-Dichloropropene	82	(50 - 150)			CFR136A 624
	84	(50 - 150)	3.2	(0-20)	CFR136A 624
trans-1,3-Dichloropropene	78	(31 - 150)			CFR136A 624
	82	(31 - 150)	4.5	(0-20)	CFR136A 624

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MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: F1E250446 **Work Order #...:** MJRHJ1CC-MS **Matrix.....:** WATER
MS Lot-Sample #: F1E250446-001 MJRHJ1CD-MSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Ethylbenzene	**78**	**(53 - 150)**			**CFR136A 624**
	85	**(53 - 150)**	**7.9**	**(0-20)**	**CFR136A 624**
Methylene chloride	**90**	**(38 - 150)**			**CFR136A 624**
	96	**(38 - 150)**	**7.4**	**(0-20)**	**CFR136A 624**
1,1,2,2-Tetrachloroethane	**82**	**(46 - 150)**			**CFR136A 624**
	91	**(46 - 150)**	**11**	**(0-20)**	**CFR136A 624**
Tetrachloroethene	**77**	**(65 - 148)**			**CFR136A 624**
	82	**(65 - 148)**	**6.3**	**(0-20)**	**CFR136A 624**
Toluene	**86**	**(52 - 150)**			**CFR136A 624**
	88	**(52 - 150)**	**2.3**	**(0-20)**	**CFR136A 624**
1,1,1-Trichloroethane	**93**	**(54 - 150)**			**CFR136A 624**
	101	**(54 - 150)**	**7.8**	**(0-20)**	**CFR136A 624**
1,1,2-Trichloroethane	**91**	**(61 - 137)**			**CFR136A 624**
	96	**(61 - 137)**	**5.1**	**(0-20)**	**CFR136A 624**
Trichloroethene	**88**	**(71 - 150)**			**CFR136A 624**
	96	**(71 - 150)**	**8.1**	**(0-20)**	**CFR136A 624**
Vinyl chloride	**95**	**(33 - 150)**			**CFR136A 624**
	105	**(33 - 150)**	**9.5**	**(0-20)**	**CFR136A 624**

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	95	(62 - 122)
	96	(62 - 122)
Toluene-d8	92	(73 - 116)
	92	(73 - 116)
4-Bromofluorobenzene	92	(68 - 118)
	96	(68 - 118)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

AECOM Technical Services Inc.

Client Sample ID: 60162412-SMP-PL5-WW-OTH-0870

TOTAL Metals

Lot-Sample #...: F1E250446-001 Matrix.....: WATER
Date Sampled...: 05/25/11 11:00 Date Received..: 05/25/11

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1146074						
Cadmium	ND	5	ug/L	SW846 6010B	05/26-05/31/11	MJRHJ1AA
		Dilution Factor: 1		Analysis Time..: 16:03		
Chromium	ND	10	ug/L	SW846 6010B	05/26-05/31/11	MJRHJ1AC
		Dilution Factor: 1		Analysis Time..: 16:03		
Copper	ND	25	ug/L	SW846 6010B	05/26-05/31/11	MJRHJ1AD
		Dilution Factor: 1		Analysis Time..: 16:03		
Iron	**55.8 B**	**100**	**ug/L**	**SW846 6010B**	**05/26-05/31/11**	**MJRHJ1AE**
		Dilution Factor: 1		Analysis Time..: 16:03		
Nickel	ND	40	ug/L	SW846 6010B	05/26-05/31/11	MJRHJ1AF
		Dilution Factor: 1		Analysis Time..: 16:03		
Lead	**1.6 B**	**10**	**ug/L**	**SW846 6010B**	**05/26-05/31/11**	**MJRHJ1AG**
		Dilution Factor: 1		Analysis Time..: 16:03		
Zinc	**48.9**	**20**	**ug/L**	**SW846 6010B**	**05/26-05/31/11**	**MJRHJ1AH**
		Dilution Factor: 1		Analysis Time..: 16:03		

NOTE(S):

B Estimated result. Result is less than RL.

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: F1E250446 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: F1E260000-074 **Prep Batch #...:** 1146074						
Cadmium	ND	5	ug/L	SW846 6010B	05/26-05/31/11	MJRX81AA
		Dilution Factor: 1				
		Analysis Time..: 15:48				
Chromium	ND	10	ug/L	SW846 6010B	05/26-05/31/11	MJRX81AC
		Dilution Factor: 1				
		Analysis Time..: 15:48				
Copper	ND	25	ug/L	SW846 6010B	05/26-05/31/11	MJRX81AD
		Dilution Factor: 1				
		Analysis Time..: 15:48				
Iron	ND	100	ug/L	SW846 6010B	05/26-05/31/11	MJRX81AE
		Dilution Factor: 1				
		Analysis Time..: 15:48				
Lead	ND	10	ug/L	SW846 6010B	05/26-05/31/11	MJRX81AG
		Dilution Factor: 1				
		Analysis Time..: 15:48				
Nickel	ND	40	ug/L	SW846 6010B	05/26-05/31/11	MJRX81AF
		Dilution Factor: 1				
		Analysis Time..: 15:48				
Zinc	ND	20	ug/L	SW846 6010B	05/26-05/31/11	MJRX81AH
		Dilution Factor: 1				
		Analysis Time..: 15:48				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: F1E250446 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: F1E260000-074 **Prep Batch #...:** 1146074					
Cadmium	105	(80 - 120)	SW846 6010B	05/26-05/31/11	MJRX81AJ
		Dilution Factor: 1	Analysis Time..: 15:55		
Chromium	101	(80 - 120)	SW846 6010B	05/26-05/31/11	MJRX81AK
		Dilution Factor: 1	Analysis Time..: 15:55		
Copper	101	(80 - 120)	SW846 6010B	05/26-05/31/11	MJRX81AL
		Dilution Factor: 1	Analysis Time..: 15:55		
Iron	106	(80 - 120)	SW846 6010B	05/26-05/31/11	MJRX81AM
		Dilution Factor: 1	Analysis Time..: 15:55		
Nickel	102	(80 - 120)	SW846 6010B	05/26-05/31/11	MJRX81AN
		Dilution Factor: 1	Analysis Time..: 15:55		
Lead	102	(80 - 120)	SW846 6010B	05/26-05/31/11	MJRX81AP
		Dilution Factor: 1	Analysis Time..: 15:55		
Zinc	114	(80 - 120)	SW846 6010B	05/26-05/31/11	MJRX81AQ
		Dilution Factor: 1	Analysis Time..: 15:55		

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: F1E250446 **Matrix.....:** WATER
Date Sampled...: 05/25/11 11:00 **Date Received..:** 05/25/11

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: F1E250446-001 **Prep Batch #...:** 1146074							
Cadmium	98	(75 - 125)			SW846 6010B	05/26-05/31/11	MJRHJ1AV
	98	(75 - 125)	0.81	(0-20)	SW846 6010B	05/26-05/31/11	MJRHJ1AW
		Dilution Factor: 1					
		Analysis Time..: 16:18					
Chromium	95	(75 - 125)			SW846 6010B	05/26-05/31/11	MJRHJ1AX
	96	(75 - 125)	0.72	(0-20)	SW846 6010B	05/26-05/31/11	MJRHJ1A0
		Dilution Factor: 1					
		Analysis Time..: 16:18					
Copper	96	(75 - 125)			SW846 6010B	05/26-05/31/11	MJRHJ1A1
	97	(75 - 125)	1.1	(0-20)	SW846 6010B	05/26-05/31/11	MJRHJ1A2
		Dilution Factor: 1					
		Analysis Time..: 16:18					
Iron	99	(75 - 125)			SW846 6010B	05/26-05/31/11	MJRHJ1A3
	100	(75 - 125)	0.97	(0-20)	SW846 6010B	05/26-05/31/11	MJRHJ1A4
		Dilution Factor: 1					
		Analysis Time..: 16:18					
Lead	94	(75 - 125)			SW846 6010B	05/26-05/31/11	MJRHJ1A7
	95	(75 - 125)	1.3	(0-20)	SW846 6010B	05/26-05/31/11	MJRHJ1A8
		Dilution Factor: 1					
		Analysis Time..: 16:18					
Nickel	95	(75 - 125)			SW846 6010B	05/26-05/31/11	MJRHJ1A5
	96	(75 - 125)	0.74	(0-20)	SW846 6010B	05/26-05/31/11	MJRHJ1A6
		Dilution Factor: 1					
		Analysis Time..: 16:18					
Zinc	110	(75 - 125)			SW846 6010B	05/26-05/31/11	MJRHJ1A9
	110	(75 - 125)	0.70	(0-20)	SW846 6010B	05/26-05/31/11	MJRHJ1CA
		Dilution Factor: 1					
		Analysis Time..: 16:18					

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

AECOM Technical Services Inc.

Client Sample ID: 60162412-SMP-PL5-WW-OTH-0870

General Chemistry

Lot-Sample #...: F1E250446-001 Work Order #...: MJRHJ Matrix.....: WATER
Date Sampled...: 05/25/11 11:00 Date Received..: 05/25/11

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
pH (liquid)	7.2	0.10	No Units	SW846 9040	05/26/11	1146155
		Dilution Factor: 1		Analysis Time..: 15:02		
COD	24.0	20.0	mg/L	MCAWW 410.4	05/31/11	1151038
		Dilution Factor: 1		Analysis Time..: 00:00		
Total Suspended Solids	4.0 J	4.0	mg/L	MCAWW 160.2	05/26-05/27/11	1147067
		Dilution Factor: 1		Analysis Time..: 00:00		

NOTE(S):

RL Reporting Limit

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

METHOD BLANK REPORT

General Chemistry

Client Lot #...: F1E250446 Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
COD		Work Order #: MJWLR1AA		MB Lot-Sample #:	F1E310000-038	
	ND	20.0	mg/L	MCAWW 410.4	05/31/11	1151038
		Dilution Factor: 1				
		Analysis Time..: 00:00				
Total Suspended Solids		Work Order #: MJWNN1AA		MB Lot-Sample #:	F1E270000-067	
	1.0 B	4.0	mg/L	MCAWW 160.2	05/26-05/27/11	1147067
		Dilution Factor: 1				
		Analysis Time..: 00:00				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

B Estimated result. Result is less than RL.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: F1E250446 Matrix.....: WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
pH (liquid)		Work Order #: MJWR41AA	LCS Lot-Sample#: F1E260000-155		
	100	(99 - 101)	SW846 9040	05/26/11	1146155
		Dilution Factor: 1	Analysis Time..: 14:59		
COD		Work Order #: MJWLR1AC	LCS Lot-Sample#: F1E310000-038		
	101	(90 - 110)	MCAWW 410.4	05/31/11	1151038
		Dilution Factor: 1	Analysis Time..: 00:00		
Total Suspended Solids		Work Order #: MJWNN1AC	LCS Lot-Sample#: F1E270000-067		
	84	(79 - 122)	MCAWW 160.2	05/26-05/27/11	1147067
		Dilution Factor: 1	Analysis Time..: 00:00		

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: F1E250446 **Matrix.....:** WATER
Date Sampled...: 05/25/11 11:00 **Date Received..:** 05/25/11

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
COD		Work Order #...: MJRHJ1CK		MS Lot-Sample #: F1E250446-001	
	91	(90 - 110)	MCAWW 410.4	05/31/11	1151038

Dilution Factor: 1 Analysis Time..: 00:00

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: F1E250446 **Work Order #...:** MJRHJ-SMP MJRHJ-DUP **Matrix.....:** WATER

Date Sampled...: 05/25/11 11:00 **Date Received..:** 05/25/11

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
COD						SD Lot-Sample #:	F1E250446-001	
	24.0	22.0	mg/L	8.7	(0-20)	MCAWW 410.4	05/31/11	1151038
			Dilution Factor: 1			Analysis Time..: 00:00		
Total Suspended Solids						SD Lot-Sample #:	F1E250446-001	
	4.0 J	5.0	mg/L	22	(0-20)	MCAWW 160.2	05/26-05/27/11	1147067
			Dilution Factor: 1			Analysis Time..: 00:00		
pH (liquid)						SD Lot-Sample #:	F1E250446-001	
	7.2	7.3	No Units	0.28	(0-0.0)	SW846 9040	05/26/11	1146155
			Dilution Factor: 1			Analysis Time..: 15:02		

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

AECOM Technical Services Inc.

Client Sample ID: 60162412-SMP-PL5-WW-OTH-0870

Radiochemistry

Lab Sample ID: F1E250446-001
Work Order: MJRHJ
Matrix: WATER

Date Collected: 05/25/11 1100
Date Received: 05/25/11 1415

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	mdc	Prep Date	Analysis Date
Iso THORIUM (SHORT CT) DOE A-01-R MOD				**pCi/L**		**Batch # 1151149**	**Yld % 69**
Thorium 228	0.05	U	0.14	1.00	0.27	05/31/11	06/02/11
Thorium 230	**0.30**		**0.21**	1.00	0.25	**05/31/11**	**06/02/11**
Thorium 232	0.007	U	0.058	1.00	0.16	05/31/11	06/02/11
Iso URANIUM (SHORT CT) DOE A-01-R MOD				**pCi/L**		**Batch # 1151150**	**Yld % 87**
Uranium 234	0.052	U	0.094	1.00	0.17	05/31/11	06/02/11
Uranium 235/236	0.007	U	0.060	1.00	0.16	05/31/11	06/02/11
Uranium 238	0.028	U	0.066	1.00	0.13	05/31/11	06/02/11
Radium 226 by EPA 903.0 MOD				**pCi/L**		**Batch # 1146089**	**Yld % 83**
Radium (226)	0.58	J	0.20	1.00	0.20	05/26/11	05/27/11
Radium 228 by GFPC EPA 904 MOD				**pCi/L**		**Batch # 1146094**	**Yld % 85**
Radium 228	0.52	J	0.26	1.00	0.37	05/26/11	05/31/11
GROSS A/B BY GFPC SW846 9310 MOD				**pCi/L**		**Batch # 1151051**	**Yld %**
Gross Alpha	-2.6	U	3.7	3.0	8.6	05/31/11	06/01/11
Gross Beta	**12.4**		**4.1**	4.0	5.3	**05/31/11**	**06/01/11**

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.
Bold results are greater than the MDC.

J Result is greater than sample detection limit but less than stated reporting limit.
U Result is less than the sample detection limit.

METHOD BLANK REPORT

Radiochemistry

Client Lot ID: F1E250446
Matrix: WATER

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC		Prep Date	Analysis Date	Lab Sample ID
Radium 228 by GFPC EPA 904 MOD			pCi/L	Batch #	1146094	Yld %	89		F1E260000-094B
Radium 228	0.16	U	0.19	1.00	0.31		05/26/11	05/31/11	
Radium 226 by EPA 903.0 MOD			pCi/L	Batch #	1146089	Yld %	88		F1E260000-089B
Radium (226)	0.17	U	0.14	1.00	0.21		05/26/11	05/27/11	
GROSS A/B BY GFPC SW846 9310 MOD			pCi/L	Batch #	1151051	Yld %			F1E310000-051B
Gross Alpha	0.32	U	0.54	3.00	0.93		05/31/11	06/01/11	
Gross Beta	-0.03	U	0.60	4.00	1.0		05/31/11	06/01/11	
Iso URANIUM (SHORT CT) DOE A-01-R MOD			pCi/L	Batch #	1151150	Yld %	92		F1E310000-150B
Uranium 234	0.10	U	0.10	1.00	0.13		05/31/11	06/02/11	
Uranium 235/236	0.0	U	0.022	1.00	0.069		05/31/11	06/02/11	
Uranium 238	-0.012	U	0.013	1.00	0.11		05/31/11	06/02/11	
Iso THORIUM (SHORT CT) DOE A-01-R MOD			pCi/L	Batch #	1151149	Yld %	89		F1E310000-149B
Thorium 228	0.06	U	0.13	1.00	0.23		05/31/11	06/02/11	
Thorium 230	0.04	U	0.10	1.00	0.19		05/31/11	06/02/11	
Thorium 232	0.019	U	0.063	1.00	0.14		05/31/11	06/02/11	

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined using instrument performance only
Bold results are greater than the MDC.

U Result is less than the sample detection limit.

Laboratory Control Sample Report

Radiochemistry

Client Lot ID: F1E250446
Matrix: WATER

Parameter	Spike Amount	Result	Total Uncert. (2 σ+/-)	MDC	% Yld	% Rec	Lab Sample ID / QC Control Limits
Radium 226 by EPA 903.0 MOD			pCi/L	903.0 MOD			F1E260000-089C
Radium (226)	11.3	10.2	1.1	0.2	90	90	(62 - 136)
	Batch #:	1146089		Analysis Date:	05/27/11		
Radium 228 by GFPC EPA 904 MOD			pCi/L	904 MOD			F1E260000-094C
Radium 228	5.51	3.90	0.54	0.33	81	71	(69 - 140)
	Batch #:	1146094		Analysis Date:	05/31/11		
GROSS A/B BY GFPC SW846 9310 MOD			pCi/L	9310 MOD			F1E310000-051C
Gross Alpha	49.4	43.6	5.1	1.4		88	(83 - 131)
Gross Beta	66.0	65.8	5.6	1		100	(86 - 118)
	Batch #:	1151051		Analysis Date:	06/01/11		
Iso THORIUM (SHORT CT) DOE A-01-R MOD			pCi/L	A-01-R MOD			F1E310000-149C
Thorium 230	9.49	9.6	1.2	0.1	85	102	(79 - 122)
	Batch #:	1151149		Analysis Date:	06/02/11		
Iso URANIUM (SHORT CT) DOE A-01-R MOD			pCi/L	A-01-R MOD			F1E310000-150C
Uranium 234	13.1	14.7	1.7	0.1	83	113	(83 - 130)
Uranium 238	13.6	16.1	1.8	0.1	83	119	(86 - 128)
	Batch #:	1151150		Analysis Date:	06/02/11		

NOTE(S)

MDC is determined by instrument performance only
Calculations are performed before rounding to avoid round-off error in calculated results

MATRIX SPIKE REPORT

Radiochemistry

Client Lot Id: F1E250446 Date Sampled: 05/25/11
Matrix: WATER Date Received: 05/25/11

Parameter	Spike Amount	Spike Result	Total Uncert. (2σ +/-)	Spike Yld.	Sample Result	Total Uncert. (2 σ +/-)	QC Sample ID %YLD	%REC	QC Control Limits
GROSS A/B BY GFPC SW846 9310 MOD			pCi/L		9310 MOD			F1E250446-001	
Gross Alpha	235	245	31		-2.6	3.7		105	(44-150)
	Batch #:	1151051		Analysis Date:		06/01/11			
GROSS A/B BY GFPC SW846 9310 MOD			pCi/L		9310 MOD			F1E250446-001	
Gross Beta	314	342	29		12.4	4.1		105	(65-150)
	Batch #:	1151051		Analysis Date:		06/01/11			

NOTE(S)

Data are incomplete without the case narrative.

Calculations are performed before rounding to avoid round-off errors in calculated results.

DUPLICATE EVALUATION REPORT

Radiochemistry

Client Lot ID: F1E250446
Matrix: WATER

Date Sampled: 05/25/11
Date Received: 05/25/11

Parameter	SAMPLE Result		Total Uncert. (2σ+/-)	% Yld	DUPLICATE Result		Total Uncert. (2σ+/-)	% Yld	QC Sample ID Precision	
Iso THORIUM (SHORT CT) DOE A-01-R MOD				**pCi/L**	**A-01-R MOD**				**F1E250446-001**	
Thorium 228	0.05	U	0.14	69	0.12	U	0.14	75	76	%RPD
Thorium 230	0.30		0.21	69	0.25		0.17	75	20	%RPD
Thorium 232	0.007	U	0.058	69	-0.019	U	0.019	75	429	%RPD
	Batch #:		1151149	(Sample)	1151149		(Duplicate)			
Iso URANIUM (SHORT CT) DOE A-01-R MOD				**pCi/L**	**A-01-R MOD**				**F1E250446-001**	
Uranium 234	0.052	U	0.094	87	0.16		0.14	75	104	%RPD
Uranium 235/236	0.007	U	0.060	87	0.0	U	0.028	75	200	%RPD
Uranium 238	0.028	U	0.066	87	0.12		0.12	75	126	%RPD
	Batch #:		1151150	(Sample)	1151150		(Duplicate)			
Radium 228 by GFPC EPA 904 MOD				**pCi/L**	**904 MOD**				**F1E250446-001**	
Radium 228	0.52	J	0.26	85	0.11	U	0.21	84	132	%RPD
	Batch #:		1146094	(Sample)	1146094		(Duplicate)			
Radium 226 by EPA 903.0 MOD				**pCi/L**	**903.0 MOD**				**F1E250446-001**	
Radium (226)	0.58	J	0.20	83	0.53	J	0.20	86	8	%RPD
	Batch #:		1146089	(Sample)	1146089		(Duplicate)			
GROSS A/B BY GFPC SW846 9310 MOD				**pCi/L**	**9310 MOD**				**F1E250446-001**	
Gross Alpha	-2.6	U	3.7		1.8	U	4.7		1080	%RPD
Gross Beta	12.4		4.1		8.2		3.7		41	%RPD
	Batch #:		1151051	(Sample)	1151051		(Duplicate)			

NOTE(S)

Data are incomplete without the case narrative.
Calculations are performed before rounding to avoid round-off error in calculated results

J Result is greater than sample detection limit but less than stated reporting limit.
U Result is less than the sample detection limit.

TestAmerica St. Louis

F1E250446 CLIENT ANALYSIS SUMMARY

Storage Loc: MT,2-163,R144V2

Project Manager: JKA | Quote #: 87754 | SDG: F1E250446

Date Received: 2011-05-25

Analytical Due Date: 2011-06-01

Project: | Mallinckrodt St. Louis Plant

Report Due Date: 2011-06-02

PO#: 10372ACM | Report to: Mark Tepperman

RUSH

Report Type: D Expanded Deliverable

Client: 404224 AECOM Technical Services Inc.

#SMPS in LOT: 2 | EDD Code: 00

SAMPLE LOGIN: enter lot # into SDG field. Gamma Spec is as received for 5 BD TAT. Gamma Ra226, Iso U and Iso Th will be logged when initial count is complete.
Log ZHE EXTRACTION line item for TCLP VOA. Log TCLP EXTRACTION line item for TCLP analyses. RAD: initial Gamma Spec counted as received . When complete
dry/grind and prep for Gamma Ra226,TAR,Iso U and Iso Th. GAMMA SPEC. SHOULD BE COUNTED IN CLIENTS 500ML MARINELLI. RA226/228 - NO INGROWTH REQUIRED!!!
RA226/228 MUST BE PREPPED IN SEPERATE ALIQUOTS!!! DO NOT PREP TOGETHER! STANDARD QC ON CLIENT SAMPLE IS REQUIRED FOR ALL ANALYSES.

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	I
1	60162412-SMP-PL5-WW-OTH-087			2011-05-25 / 1100	MJRHJ	WATER

SAMPLE COMMENTS:

	CR	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
	CU	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
	FE	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
	NI	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
	PB	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
	CD	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
	ZN	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
	XX	DN	CFR13 6A	624	WATER, 624, VOA	25	PURGE AND TRAP - 25 mL purge (Waters)	01	STANDARD TEST SET	PROT: O	WRK LOC	06	TIC: N	
	XX	ZZ	NONE	NONE	WATER, RAD SCREEN	88	NO SAMPLE PREPARATION PERFORMED / DIRECT	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
	XX	2I	EML	A-01-R MOD	WATER, Iso URANIUM (SHORT CT)	J2	Extraction Chromatography - Sequential Actinides	01	STANDARD TEST SET	PROT: R	WRK LOC	06		
	XX	2K	EML	A-01-R MOD	WATER, Iso THORIUM (SHORT CT)	J2	Extraction Chromatography - Sequential Actinides	01	STANDARD TEST SET	PROT: R	WRK LOC	06		
	XX	Z4	EPA	904 MOD	WATER, 904 MOD, Ra-228 (NO INGROWTH)	N*	No ingrowth	2X	SPECIAL PROJECTS	PROT: R	WRK LOC	06		
	XX	ZA	SW846	9310 MOD	WATER, 9310 MOD, GROSS A/B	FR	Evaporative Preparation, Total	01	STANDARD TEST SET	PROT: R	WRK LOC	06		
	XX	ZY	EPA	903.0 MOD	WATER, 903 MOD, Ra-226 (NO INGROWTH)	N*	No ingrowth	2X	SPECIAL PROJECTS	PROT: R	WRK LOC	06		
	XX	AL	MCAW W	160.2	WATER, 160.2, TSS	88	NO SAMPLE PREPARATION PERFORMED / DIRECT	01	STANDARD TEST SET	PROT: W	WRK LOC	06		
	XX	FJ	SW846	9040	WATER, 9040, pH	88	NO SAMPLE PREPARATION PERFORMED / DIRECT	01	STANDARD TEST SET	PROT: W	WRK LOC	06		
	XX	VO	MCAW W	410.4	WATER, 410.4, COD	21	DIGESTION, NON-METAL/INORGANICS	01	STANDARD TEST SET	PROT: W	WRK LOC	06		
D	PB	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
D	NI	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
D	CD	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
D	CR	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
D	CU	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
D	ZN	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
D	FE	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
D	XX	DN	CFR13 6A	624	WATER, 624, VOA	25	PURGE AND TRAP - 25 mL purge (Waters)	01	STANDARD TEST SET	PROT: O	WRK LOC	06	TIC: N	
S	ZN	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
S	CD	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
S	CR	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
S	CU	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
S	FE	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
S	NI	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
S	PB	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
S	XX	DN	CFR13 6A	624	WATER, 624, VOA	25	PURGE AND TRAP - 25 mL purge (Waters)	01	STANDARD TEST SET	PROT: O	WRK LOC	06	TIC: N	
S	XX	ZA	SW846	9310 MOD	WATER, 9310 MOD, GROSS A/B	FR	Evaporative Preparation, Total	01	STANDARD TEST SET	PROT: R	WRK LOC	06		

FIE250446

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

CUR 467

Chain of Custody Record

Richland
2800 George Washington Way
Attn: Erika Jordan
Richland, WA 99354
Phone 509.375.3131 fax 509.375.5590

LOT# FIE250446

Client Contact	Project Manager: Mark Tepperman	Site Contact: Ed Palser	Date: 5/25/2011	COC No: 60162412-SMP-PL5-WA-OTH-0300
AECOM	Tel/Fax: (210) 271-0925 / (210) 271-3061	Lab Contact: Erika Jordan	Carrier: Test America	1 of 1 COCs
8005 Outer Circle Road	Analysis Turnaround Time			Job No. 60162412
Brooks-City Base, Texas 78235	Calendar (C) or Work Days (W)			
(210) 271-0925 Phone	TAT if different from Below			
(210) 271-3061 FAX	☐ 2 weeks			SDG No.
Project Name: COVIDIEN C-T	■ 1 week			
Site: Mallinckrodt-St. Louis	☐ 2 days			
P O # 10372ACM	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	Filtered Sample	pH	TSS	COD	ICP Metals (Cd,Cr, Cu, Fe, Pb, Ni, Zn)	Volitile Organics (Method 624)	Gross Alpha/Beta 9310	Isotopic Uranium (Alpha Spectrometry)	Radium-226 (GFPC, no decay/ingrowth)	Radium 228 (GFPC, no decay/ingrowth)	Isotopic Thorium (Alpha Spectrometry)	Sample Specific Notes:
60162412-SMP-PL5-WW-OTH-0870	5/25/2011	1100	Water	Water	12	N	X	X	X	X	X	X	X	X	X	X	Further Testing is Gross Beta above 50 pci/L
Trip Blank — 1x40mV	n/a	n/a	Water	Water	1	N	X	X	X	X	X	X	X	X	X	X	
7xLP																	
3x40mV																	
1x250P																	
1x500P																	

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification
■ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* *Poison B* ☐ *Unknown* ☐

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ■ *Archive For* 1 *Months*

Special Instructions/QC Requirements & Comments: **Possible hazards include radiological. Sample methods to comply with MSD Ordinance 12559, Please use Method 9310 for Alpha/Beta**

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Chris Knuteson / Todd Davidson	AECOM	05/25/11	Natale Theobald	Test America	5/25/11
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
	Test America	5/25/11 1415		TASTL	5/25/11 1415
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:

TestAmerica St. Louis

MSD 013190

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Lot #(s): F1E250446

CONDITION UPON RECEIPT FORM

Client: AECOM

Quote No: 87754

COC/RFA No: 60162412-SMP-PLS-N/A-OTH-468 0300

Initiated By: NVO Date: 5/25/11 Time: 1415

Shipping Information

Shipper: FedEx UPS DHL Courier Client Other: NT Multiple Packages: Y (N)

Shipping # (s):*

1. N/A
2.
3.
4.
5.
6.
7.
8.
9.
10.

Sample Temperature (s):**

1. AMBIENT
2.
3.
4.
5.
6.
7.
8.
9.
10.

*Numbered shipping lines correspond to Numbered Sample Temp lines

**Sample must be received at 4°C ± 2°C- If not, note contents below. Temperature variance does NOT affect the following: Metals-Liquid or Rad tests- Liquid or Solids

Condition (Circle "Y" for yes, "N" for no and "N/A" for not applicable):

1.	(Y) N	Are there custody seals present on the cooler?	8.	Y (N)	Are there custody seals present on bottles?
2.	Y (N) N/A	Do custody seals on cooler appear to be tampered with?	9.	Y N (N/A)	Do custody seals on bottles appear to be tampered with?
3.	(Y) N	Were contents of cooler frisked after opening, but before unpacking?	10.	(Y) N N/A	Was sample received with proper pH[1]? (If not, make note below)
4.	(Y) N	Sample received with Chain of Custody?	11.	(Y) N	Sample received in proper containers?
5.	Y (N) N/A	Does the Chain of Custody match sample ID's on the container(s)?	12.	Y (N) N/A	Headspace in VOA or TOX liquid samples? (If Yes, note sample ID's below)
6.	Y (N)	Was sample received broken?	13.	Y N (N/A)	Was Internal COC/Workshare received?
7.	(Y) N	Is sample volume sufficient for analysis?	14.	Y N (N/A)	Was pH taken by original TestAmerica lab?

[1] For DOE-AL (Pantex, LANL, Sandia) sites, pH of ALL containers received must be verified, EXCEPT VOA, TOX and soils.

Notes:

VOA NOT LABELED, BOTTLE SAMPLE ID'S WERE JUST SMUDGES
TRIPBLANK NOT LABELED (IN BAG ALONE). WILL LOG PER
C.O.C PER J. AWALT JA 5/25/11

Corrective Action:

☐ Client Contact Name: Informed by:

☐ Sample(s) processed "as is"

☐ Sample(s) on hold until: If released, notify:

Project Management Review: Jayna Awalt Date: 5/26/11

THIS FORM MUST BE COMPLETED AT THE TIME THE ITEMS ARE BEING CHECKED IN. IF ANY ITEM IS COMPLETED BY SOMEONE OTHER THAN THE INITIATOR, THEN THAT PERSON IS REQUIRED TO APPLY THEIR INITIAL AND THE DATE NEXT TO THAT ITEM.

ADMIN-0004, REVISED 10/21/08 \\Slsvr01\QA\FORMS\ST-LOUIS\ADMIN\Admin004 rev11.doc

Metropolitan St. Louis Sewer District

Division of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147-2913
Phone: 314.768.6200 www.stlmsd.com

June 3, 2011

Julie Summers
MALLINCKRODT
3600 North Second St.
St. Louis, MO 63147

Dear Ms. Summers:

We have reviewed your application dated June 3, 2011 requesting approval to discharge 550 gallons of wastewater to the Metropolitan St. Louis Sewer District for treatment. This wastewater is 40% ethylene glycol solution at the building 250 Mallinckrodt facility located at 3600 North Second Street, St. Louis, Missouri. We understand that the wastewater will be discharged through sampling point 010.

Based on the information you provided, this wastewater meets MSD Ordinance 12559 standards and is approved for discharge into a sanitary sewer on site. Due to the high ethylene glycol concentration, the discharge is limited to 420 gallons per hour. This approval is valid for 30 days from the date of this letter.

You must be certain the waste is discharged into a sanitary or combined sewer inlet only. This letter does not authorize any discharge to a separate storm sewer, or to any watercourse, as any such discharge would be in violation of state and federal laws. **Please notify me at the number below when the discharge is to commence, and please ensure the onsite personnel discharging the wastewater in question are provided with a copy of this letter.**

For billing purposes associated with this high COD wastewater, you must confirm the volume of this wastewater discharged to us, in writing, at the completion of the discharge. This report is due no later than 28 days after this approval expires. Please refer to this letter and include the date of the discharge when providing that figure. Under the provisions of Ordinance 13021, you will be billed by invoice at the billing rate in effect at the time of discharge. The current rate contained in MSD Ordinance 13021 is $298.36 per ton for COD over 600 mg/L. Using the assumed COD concentration based on the percent of ethylene glycol contained in the wastewater in question, and the proposed discharge volume provided in your application, it is estimated that you will be discharging just less than one ton of COD over 600 mg/L. (Our quantitative estimate is 0.92 tons COD times $298.36.) Please do not pay this amount until you receive our invoice.

This discharge has been approved based upon the information and sample analysis you provided, and is subject to the conditions stated above. This approval may be revoked by the District at any time if any of the information is found to be incorrect, or if the conditions of this approval are violated. Also, if the discharge causes any operational or maintenance problem within the District's collection or treatment system, or results in violations of any conditions of the District's NPDES permit, Mallinckrodt will be considered responsible for damages. If you have any questions, please call me at (314) 436-8755.

Sincerely,
METROPOLITAN ST. LOUIS SEWER DISTRICT

Steven M. Grace

Steve Grace
Environmental Assistant Engineer

bv

pc: Brian Gibson
Doug Mendoza

File: IU, MALLINCKRODT INC [2112059600]

On-Site Special Discharge High Strength Flow Rate and Surcharge Calculator

1 GENERAL INFORMATION:

Date: 06/03/11
Calculated by: Steve Grace
Source name: Mallinckrodt, Inc.
Waste material: Used ethylene glycol solution from building 250 chiller system
Discharge volume: 550 gallons

2 STRENGTH INFORMATION:

Sample BOD =	0	mg/l =	0	lbs BOD to be discharged
Sample COD =	400,000	mg/l =	1835	lbs COD to be discharged
Sample TSS =	0	mg/l =	for surcharge calculation only	

3 PLANT DATA: 2010

Treatment area: Bissell

	Flow (MGD)	BOD (mg/L)	COD (mg/L)	BOD (lb/hr)	COD (lb/hr)	Max Loading = 10% BOD (lb/hr)	COD (lb/hr)
Bissell	**140**	**146**	**292**	**7,113**	**14,227**	**711**	**1,423**
Coldwater	26	188	377	1,704	3,408	170	341
Fenton	5	388	776	679	1,357	68	136
Grand Glaize	16	129	405	708	2,218	71	222
Lemay	131	78	210	3,531	9,584	353	958
Lower Meramec	13	124	409	543	1,785	54	179
Missouri River	27	280	559	2,671	5,341	267	534

4 MINIMUM REQUIRED FLOW RATE:

	BOD (hours	BOD (gpm)	COD (hours)	COD (gpm)
Bissell	**0.00**	**0**	**1.29**	**7**
Coldwater	0.00	0	5.38	2
Fenton	0.00	0	13.52	1
Grand Glaize	0.00	0	8.27	1
Lemay	0.00	0	1.91	5
Lower Meramec	0.00	0	10.28	1
Missouri River	0.00	0	3.44	3

5 SURCHARGE AND VOLUME BILLING

Is volume subject to billing? no (yes/no)
Ratio of BOD/COD = 0.00

(Sample BOD) - 300 = 0 mg/l subject to surcharge
(sample COD) - 600 = 399400 mg/l subject to surcharge
(sample TSS) - 300 = 0 mg/l subject to surcharge

If BOD/COD ratio <= 0.35, the following calculations use the COD value. Otherwise they use the BOD value

Current rates under Ordinance: 13021

Volume = $ 2.02 /CcF
BOD = $ 596.72 /ton
COD = $ 298.36 /ton
TSS = $ 222.62 /ton

Flow charge = $ - based on volume = 0.7 CcF
BOD surcharge = $ -
COD surcharge = $ 273.38
TSS surcharge = $ -
Total discharge charge = $ 273.38
Customer charge = $ 273.38 DEC charges special discharge customers for total charges > $20.00
Approximate charge/gallon = $ 0.50

Comments

require volume report for billing purposes. Smg

C1A

SD EVALUATION CHECKLIST - ON SITE

APPLICATION INFORMATION

Source Name: Mallinckrodt Inc. Evaluated by: SMG

Premise Address: 3600 N. 2nd St. Date: 6/3/11

Send approval letter to applicant

Application Dated: 6/3/11 Received: 6/3/11 All Requested Info. Received: 6/3/11

SOURCE FILING/DESCRIPTION

1 - Source in PIMS? (Y) N
2 - If No, on IU Cross-Ref list? * Y / N
3 - If No, MSD Account # from E-CIS? Y / N
4 - If none, on "Source" list (pre-IMS)? ** Y / N
5 - If No, assigned SOUR# from PIMS.

* o:\costrecovery\cross reference xls file

** o:\costrecovery\sourlist xls file

SOURCE TYPE (circle): (IU) / Dead IU / SD

INDUSTRY ID: 21120596-00

Sample Point: No. Assigned: 815 Description: 40% ethylene glycol solution from Bldg. 250 chiller system

Normal WW flow from premise? N/A _____ ccf/month, 2,992,101 GPD, _____ GPH. from SP010

REGULATORY STATUS

Is waste a Hazardous Waste? (N) / Y

Categorical standards apply? (N) / Y

Contain PCB/ asbestos/ radioactive/ dioxin/ used oil? (N) / Y

Regulatory Agency Oversight? (N) / Y

DISCHARGE CONSIDERATIONS At MSD's connection:

Ordinance Limits (12559, p32) exceeded? (N) / Y

Ordinance other limits exceeded (dye, flash pt <140F, temp >140F, obstruction, nuisance foaming/odor, corrosion causing): (N) / Y

Water Quality Standard exceeded? (N) / Y

Fumes in sewer exceed PEL/TLV limits? (N) / Y

Vapors in sewer exceed 10% of LEL? (N) / Y

RECOMMENDATION: (APPROVE) / DENY (cc WWTP Mgr for timed discharge)

APPROVAL CONDITIONS:

Timed Discharge (COD/BOD/WQ/foam): N / (Y) Limit = 420 gal/hour

Require Treatment before Discharge? (N) / Y

Laboratory analysis fee due? (N) / Y $_____

SMR required? (N) / Y Frequency/analysis: _____

SMR log: (N/A) / Remediation.xls / Nonremediation.xls

Volume Billing applies (water unmetered or credited)? (N) / Y

Bill High Strength? N / (Y) Yes, If use >60,000 gal/month water ✓ and, > norm WW strgth

Surcharge calculation attached: N/A / N / (Y)

Expiration log updated: (N/A) / N / Y

O:\CostRecovery\Special Discharge\C1a.Checklist.doc

Steve Grace

From: Steve Grace
Sent: Friday, June 03, 2011 2:49 PM
To: Summers, Julie
Subject: RE: Special Discharge Permit Application

This email will work for me...thanks Julie!

Steve

From: Summers, Julie [mailto:Julie.Summers@Covidien.com]
Sent: Friday, June 03, 2011 2:48 PM
To: Summers, Julie; Steve Grace
Subject: RE: Special Discharge Permit Application

Steve – I just got an update and the actual amount they want to discharge is 550 gallons. Do you want me to fix the forms and resent or is this email adequate to make the change?

Thanks,
Julie

From: Summers, Julie
Sent: Friday, June 03, 2011 12:24 PM
To: 'Steve Grace'
Subject: Special Discharge Permit Application

Steve,

Attached is a special discharge permit application for approximately 350 gallons of a 50% ethylene glycol/water mixture from the chiller system in Building 250. Please let me know if you have any questions.

Thanks,

Julie Summers
Environmental Manager
Covidien/Mallinckrodt
3600 North 2nd Street
St. Louis, MO 63147
314-654-1969 Phone
314-654-1251 Fax

Metropolitan St. Louis Sewer District
2350 Market Street
St. Louis, MO 63103

APPLICATION FOR SPECIAL DISCHARGE APPROVAL

I. WASTEWATER SOURCE IDENTIFICATION:

Site Name: Mallinckrodt
Premise Address: 3600 N 2nd Street
City: St. Louis State: MO Zip: 63147
Owner: Mallinckrodt
Contact Person: Julie Summers
Title: Environmental Mgr
Phone: 314-654-1969 Fax: 314-654-1251

II. APPLICANT (mailing information):

Applicant Name: Julie Summers
Title: Environmental Manager
Company Name: Mallinckrodt
Mailing Address: 3600 North 2nd Street
City: St Louis State: MO Zip: 63147
Phone: 314-654-1969 Fax: 314-654-1251

III. A. MATERIAL TO BE DISCHARGED (check all applicable boxes):

1. Wastewater description/location: Bldg 250 Chiller Unit (Ethylene glycol/water)
2. Process/activity generating wastewater: Bldg 250 Chiller System
3. Physical and chemical composition: List all constituents, and known or potentially present regulated contaminants below.
   ☐ See separate listing enclosed, and/or ☐ See analytical results enclosed, and/or ☑ Material Safety Data Sheet enclosed.

DESCRIPTION	RANGE	UNIT
Ethylene Glycol	40	%
Water	60	%

DESCRIPTION *(continued)*	RANGE	UNIT

4. Is this wastewater from a process subject to EPA's categorical standards in 40 CFR Subchapter N? ☐ Yes ☑ No
   a. If yes, the applicable standards are in: 40 CFR Part _____, Subpart _____ ☐ Existing source ☐ New source
5. Does this wastewater contain polychlorinated biphenyls, asbestos or radioactive material? ☐ Yes ☑ No
   a. If yes, describe: _____
6. Representative sample: ☐ Laboratory results attached, and/or ☐ Sample provided (1/2 gallon minimum, clear container)
   a. Sample collection point/location: _____ Collection method: _____
   b. Sampler's name/Co.: _____ Sample date/time: _____
   c. Attach chain of custody as available
7. Discharge will occur over the following time period: ☑ < 30 days ☐ ≥ Two years ☐ Other: _____
   a. Expected total volume of wastewater to be discharged over the time period above: ~~1300~~ 350 Gallons
   b. Proposed discharge volume: 350 Gallons, at a frequency of: ☒ One time ☐ Daily ☐ Weekly ☐ Monthly ☐ Once/three months ☐ Once/six months ☐ Other: _____
8. Pretreatment of wastewater prior to discharge: ☐ None ☑ Yes, describe: pH adjust at main plant outfall SP010
   a. If yes, attach site plan, pretreatment system schematic, and design specifications.
9. Wastewater from a remediation project under: ☐ Superfund/CERCLA ☐ RCRA ☐ Voluntary program ☐ UST ☑ Not applicable
   a. If from a remediation project, briefly describe the past and present utilization of the property: _____

III.B. MATERIAL FROM UNDERGROUND STORAGE TANK SOURCE

☐ **Not applicable (go to Section IV)**

Please answer the following questions if you are requesting to discharge wastewater associated with an underground storage tank system.

1. a. Wastewater from: ☐ Inside UST(s) ☐ UST system pit ☐ Excavation outside UST system pit ☐ Monitoring well ☐ Groundwater remediation system

   b. UST project involves wastewater from: ☐ UST(s) closed in place ☐ UST(s) removed ☐ Remediation ☐ Upgrade ☐ Maintenance activities ☐ Well monitoring ☐ Other, explain: _____

   c. If wastewater is from a closure project, how long has UST(s) been out of service: _____ years

2. a. State assigned UST site identification number: _____ ☐ Not applicable

   b. Number of USTs affected: _____ ☐ Unknown

   c. For the UST(s) involved, their state identification number(s): _____ ☐ Not applicable

   d. Service Station Identification Number, as applicable: _____

3. Tank contents/former contents: ☐ Gasoline ☐ #2 diesel ☐ Used oil ☐ Unknown ☐ Other: _____

IV. DISCHARGE LOCATION

1. ☑ On-site. Describe proposed point of entry to sewer and the discharge rate (must be a sanitary or combined sewer): _____

Plant sewer to main outfall SP010 _____ Note: Range of discharge must not surcharge sewer line.

2. ☐ Haul to MSD Bissell Point Hauled Waste Receiving Station at 10 E. Grand, St. Louis, MO.

   a. Transporters Name: _____ and MSD Hauler ID Number: _____

   b. Hazardous Waste Certification:

   For wastewater which is hauled to MSD's Bissell Point Hauled Waste Receiving Station, I hereby certify that to the best of my knowledge and belief, the above hauled waste is not classified as a RCRA "hazardous waste" as defined by the MDNR in 10 CSR 25 or USEPA in 40 CFR Part 261.

   Applicant Name (print): _____

   Signature: _____ **Date:** _____

ADDITIONAL INFORMATION:

_____

_____

_____

_____

_____

_____

V. APPLICANT SIGNATURE AND CERTIFICATION

This application must be signed by the applicant: either the source contact, or a contractor or agent directly responsible for site activities.

I hereby certify that I am directly responsible for activities at the site regarding the wastewater to be discharged, and to the best of my knowledge and belief, based on appropriate inquiry, the information in this application is true, complete, and accurate. The samples or analyses submitted are representative of the materials to be discharged. If granted approval to discharge, I agree to abide by the MSD Ordinances, and all applicable federal, state and local regulations. I agree to pay the costs of any pre-approval analyses performed by MSD and to pay any applicable disposal charges for the volume and strength of the wastes discharged.

Applicant Name (print): Julie Summers

Signature: Julie Summers **Date:** 6/3/11

FOR MSD USE ONLY:

File Name: Mallinckrodt, Inc. ID No. 21120596-00 Sample Point No. [illegible]

815

Steve Grace IV - Mallinckrodt Inc. - 2112059600 SP850

From: Steve Grace
Sent: Tuesday, May 24, 2011 10:29 AM
To: 'Summers, Julie'
Subject: RE: Wastewater Discharge 007

Hello Julie,

A review of the laboratory analytical data for Discharge 007 from the C-T Phase II decommissioning activities indicated this batch meets MSD Ordinance 12559 standards along with those outlined in 10 CFR Part 20, Appendix B, Table 3, and is approved for discharge into a combined sewer identified on MSD's base map as Inlet 18D1-395C. As a general reminder, the discharge into the sewer must be controlled at a rate that will not surcharge the lines in that area. In addition, the volume of this batch of wastewater must be confirmed in writing no later than 28 days after the date of this discharge. The approval for Discharge 007 is valid for 30 days from the date of this email.

Please contact me should you have any questions or require additional information.

Thank you,
Steve Grace

From: Summers, Julie [mailto:Julie.Summers@Covidien.com]
Sent: Monday, May 23, 2011 9:44 AM
To: Steve Grace
Subject: Wastewater Discharge 007
Importance: High

Steve,

Mallinckrodt requests permission to discharge 40,000 gallons of treated rainwater and groundwater collected as part of the C-T Phase II decommissioning activities. The wastewater discharge will be identified as Discharge 007. The laboratory analytical results demonstrate that the discharge will comply with the requirements of the Metropolitan St. Louis Sewer District as set forth in their letter to Lisa Meyer dated January 21, 2011. In addition, the discharge meets the monthly average concentrations for release to sanitary sewers per the requirements of 10 CFR 20.2003. Both a discharge summary and the detailed laboratory analytical results are attached for your information.

Thanks,
Julie

Wastewater Discharge 007 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-0780

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	U
Acrylonitrile	mg/L		< 0.01	U
Benzene	mg/L		< 0.001	U
Bromoform	mg/L		< 0.001	U
Bromomethane	mg/L		< 0.002	U
Carbon tetrachloride	mg/L		< 0.001	U
Chlorobenzene	mg/L		< 0.001	U
Chlorodibromomethane	mg/L		< 0.001	U
Chloroethane	mg/L		< 0.002	U
Chloroform	mg/L		< 0.001	U
Chloromethane	mg/L		< 0.002	U
Dichlorobromomethane	mg/L		< 0.001	U
1,1- Dichloroethane	mg/L		< 0.001	U
1,2- Dichloroethane	mg/L		< 0.001	U
1,1- Dichloroethene	mg/L		< 0.001	U
1,2- Dichloroethane	mg/L		< 0.002	U
1,2- Dichloropropane	mg/L		< 0.001	U
cis-1,3-Dichloropropene	mg/L		< 0.001	U
trans-1,3-Dichloropropene	mg/L		< 0.001	U
Ethylbenzene	mg/L		< 0.001	U
Methylene Chloride	mg/L		< 0.001	U
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	U
Tetra chloroethene	mg/L		< 0.001	U
Toluene	mg/L		< 0.001	U
1,1,1- Trichloroethane	mg/L		< 0.001	U
1,1,2- Trichloroethane	mg/L		< 0.001	U
Trichloroethene	mg/L		< 0.001	U
Vinyl Chloride	mg/L		< 0.002	U
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	U
Chromium	mg/L	5	< 0.01	U
Copper	mg/L	2.7	< 0.025	U
Iron	mg/L	150	0.102	
Nickel	mg/L	2.3	0.0145	B
Lead	mg/L	0.4	0.0026	B
Zinc	mg/L	3	0.102	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.2	
COD	mg/L	600	33	
TSS	mg/L	300	5	J
Radionuclides				
Gross Alpha	pCi/L	3,000	< 7	U
Gross Beta	pCi/L	50	15	
Ra-226	pCi/L	10	0.88	
Ra-228	pCi/L	30	< 0.4	U
Th-228	pCi/L	2,000	< 0.31	U
Th-230	pCi/L	1,000	0.44	
Th-232	pCi/L	300	< 0.21	U
U-234	pCi/L		< 0.15	U
U-235/6	pCi/L		< 0.15	U
U-238	pCi/L		0.2	
Total Uranium	*pCi/L*	*3,000*	*< 0.5*	

10 CFR 20 Appendix B Table 3 Values

Analyte	Units	Limit	Discharge Concentration	Averaged Concentration
Ra-226	pCi/L	0.6	0.88	0.002
Ra-228	pCi/L	0.6	0.4	0.001
Th-228	pCi/L	2	0.31	0.001
Th-230	pCi/L	1	0.44	0.001
Th-232	pCi/L	0.3	0.21	0.000
U-234	pCi/L	3	0.15	0.000
U-235/6	pCi/L	3	0.15	0.000
U-238	pCi/L	3	0.2	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.009*

Discharge Volume (gals) = 40,000

Covidien averaging factor[2] = 0.002

Analyte	Units	Annual Limit	Discharge Activity	Year to Date Activity
Gross Radioactivity	Ci	1	3.3E-06	1.6E-05

Notes:

(1) 'B' indicates estimated value; 'U' indicates result less than sample detection limit; 'J' indicates method blank contamination reported by lab

(2) derived from discharge volume divided by a Covidien minimum average monthly volume (20,000,000 gal)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

ANALYTICAL REPORT

Mallinckrodt St. Louis Plant

Lot #: F1E100620

Mark Tepperman

AECOM Technical Services Inc.
8005 Outer Circle Road
Brooks Air Force Bas, TX 78235

TESTAMERICA LABORATORIES, INC.

Jayna Awalt
"for"
Jayna Awalt
Project Manager

May 19, 2011

Case Narrative
LOT NUMBER: **F1E100620**

This report contains the analytical results for the two samples received under chain of custody by TestAmerica St. Louis on May 10, 2011. These samples are associated with your Mallinckrodt St. Louis Plant project.

The analytical results included in this report meet all applicable quality control procedure requirements. except as noted in the following case narrative.

The test results in this report meet all NELAP requirements for parameters in which accreditations are held by TestAmerica St. Louis. Any exceptions to NELAP requirements are noted in the case narrative. **TestAmerica St. Louis' Florida certification number is E87689.** The case narrative is an integral part of this report.

This report shall not be reproduced, except in full, without the written approval of the laboratory.

All chemical analysis results are based upon sample as received, wet weight, unless noted otherwise. All radiochemistry results are based upon sample as dried and ground with the exception of tritium, unless requested wet weight by the client.

Observations/Nonconformances
Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

GC/MS Volatile Organics Method 624
Batch: 1135029

The MS recovery for Tetrachloroethene is outside the established QC limits. The MSD recovery for this analyte is within QC limits and the LCS/LCSD is within acceptance limits for this analyte. The RPD is within method acceptance criteria. There was insufficient sample to perform re-preparation/reanalysis. The results are provided with this narrative.
Affected Samples:
F1E100620 (1): 60162412-SMP-PL5-WW-OTH-0780
F1E100620 (2): VOC BLANKS

The surrogate recoveries are outside the upper QC limits, indicating a potential positive bias. There were no target analytes associated with these surrogates detected above the reporting limit in the samples; therefore the sample data was not adversely affected by this excursion. The original sample results are provided.
Affected Samples:
F1E100620 (1): 60162412-SMP-PL5-WW-OTH-0780
F1E100620 (2): VOC BLANKS

The MS/MSD surrogate recoveries are outside acceptance limits. MS/MSD spike recoveries (except for Tetrachloroethene in the MS sample) are within QC limits demonstrating acceptable sample extraction and instrument performance.
Affected Samples:
F1E100620 (1): 60162412-SMP-PL5-WW-OTH-0780
F1E100620 (2): VOC BLANKS

The LCS/LCSD surrogate recoveries are outside acceptance limits. LCS/LCSD spike recoveries are within QC limits demonstrating acceptable sample extraction and instrument performance.
Affected Samples:
F1E100620 (1): 60162412-SMP-PL5-WW-OTH-0780
F1E100620 (2): VOC BLANKS

Acrolein was removed from the initial calibration lowest point due to poor response. The initial calibration still meets the minimum number of points and the reporting limits required. The compounds were removed within TestAmerica's selection of points policy.
Affected Samples:
F1E100620 (1): 60162412-SMP-PL5-WW-OTH-0780
F1E100620 (2): VOC BLANKS

Total Suspended Solids Method 160.2
Batch: 1132317

The RPD value is outside the established QC limits. Values for the sample and sample duplicate were less than 5x times the reporting limit. RPD determinations are not applicable to values near the reporting limit. Precision criteria for concentrations near the reporting limit is +/- the reporting limit. This criteria has been met.
Affected Samples:
F1E100620 (1): 60162412-SMP-PL5-WW-OTH-0780

Gross Alpha/Beta Method 900 MOD
Batch: 1131296

The Gross Alpha LCS recovery is outside the statistical control limits of 83-128% (77%), but within the DOE general acceptance criteria of 70-130%. The data is reported upon client request.
Affected Samples:
F1E100620 (1): 60162412-SMP-PL5-WW-OTH-0780

The Gross Alpha and/or Beta reporting limit was not met due to a reduction of sample size attributed to the sample's high residual mass. The analytical results are reported with the MDA achieved.
Affected Samples:
F1E100620 (1): 60162412-SMP-PL5-WW-OTH-0780

There are no other observations or non-conformances associated with the analyses contained in this report.

METHODS SUMMARY

F1E100620

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
pH Aqueous	SW846 9040	SW846 9040
Chemical Oxygen Demand	MCAWW 410.4	MCAWW 410.4
Gross Alpha/Beta EPA 900	EPA 900.0 MOD	EPA 900.0
Isotopic Thorium by Alpha Spectroscopy	EML A-01-R MOD	
Isotopic Uranium by Alpha Spectroscopy	EML A-01-R MOD	
Non-Filterable Residue (TSS)	MCAWW 160.2	MCAWW 160.2
Purgeables	CFR136A 624	SW846 5030B
Radium-226 by GFPC	EPA 903.0 MOD	
Radium-228 by GFPC	EPA 904 MOD	
Trace Inductively Coupled Plasma (ICP) Metals	SW846 6010B	

References:

CFR136A "Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EML "ENVIRONMENTAL MEASUREMENTS LABORATORY PROCEDURES MANUAL" HASL-300 28TH EDITION, VOLUME I and II DEPARTMENT OF ENERGY

EPA "EASTERN ENVIRONMENTAL RADIATION FACILITY RADIOCHEMISTRY PROCEDURES MANUAL" US EPA EPA 520/5-84-006 AUGUST 1984

MCAWW "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

SAMPLE SUMMARY

F1E100620

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
MH7JA	001	60162412-SMP-PL5-WW-OTH-0780	05/10/11	12:30
MH7ME	002	VOC BLANKS	05/10/11	

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

AECOM Technical Services Inc.

Client Sample ID: 60162412-SMP-PL5-WW-OTH-0780

GC/MS Volatiles

Lot-Sample #...: F1E100620-001 **Work Order #...:** MH7JA1AK **Matrix.....:** WATER
Date Sampled...: 05/10/11 12:30 **Date Received..:** 05/10/11
Prep Date.....: 05/11/11 **Analysis Date..:** 05/12/11
Prep Batch #...: 1135029 **Analysis Time..:** 04:44
Dilution Factor: 1

Method.....: CFR136A 624

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acrolein	ND	10	ug/L
Acrylonitrile	ND	10	ug/L
Benzene	ND	1.0	ug/L
Bromoform	ND	1.0	ug/L
Bromomethane	ND	2.0	ug/L
Carbon tetrachloride	ND	1.0	ug/L
Chlorobenzene	ND	1.0	ug/L
Chlorodibromomethane	ND	1.0	ug/L
Chloroethane	ND	2.0	ug/L
Chloroform	ND	1.0	ug/L
Chloromethane	ND	2.0	ug/L
Dichlorobromomethane	ND	1.0	ug/L
1,1-Dichloroethane	ND	1.0	ug/L
1,2-Dichloroethane	ND	1.0	ug/L
1,1-Dichloroethene	ND	1.0	ug/L
1,2-Dichloroethene (total)	ND	2.0	ug/L
1,2-Dichloropropane	ND	1.0	ug/L
cis-1,3-Dichloropropene	ND	1.0	ug/L
trans-1,3-Dichloropropene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Methylene chloride	ND	1.0	ug/L
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L
Tetrachloroethene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
1,1,1-Trichloroethane	ND	1.0	ug/L
1,1,2-Trichloroethane	ND	1.0	ug/L
Trichloroethene	ND	1.0	ug/L
Vinyl chloride	ND	2.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	109	(62 - 122)
Toluene-d8	125 *	(73 - 116)
4-Bromofluorobenzene	127 *	(68 - 118)

NOTE(S):

* Surrogate recovery is outside stated control limits.

AECOM Technical Services Inc.

Client Sample ID: VOC BLANKS

GC/MS Volatiles

Lot-Sample #...: F1E100620-002 **Work Order #...:** MH7ME1AA **Matrix.....:** WATER
Date Sampled...: 05/10/11 **Date Received..:** 05/10/11
Prep Date.....: 05/11/11 **Analysis Date..:** 05/12/11
Prep Batch #...: 1135029 **Analysis Time..:** 06:14
Dilution Factor: 1

Method.....: CFR136A 624

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acrolein	ND	10	ug/L
Acrylonitrile	ND	10	ug/L
Benzene	ND	1.0	ug/L
Bromoform	ND	1.0	ug/L
Bromomethane	ND	2.0	ug/L
Carbon tetrachloride	ND	1.0	ug/L
Chlorobenzene	ND	1.0	ug/L
Chlorodibromomethane	ND	1.0	ug/L
Chloroethane	ND	2.0	ug/L
Chloroform	ND	1.0	ug/L
Chloromethane	ND	2.0	ug/L
Dichlorobromomethane	ND	1.0	ug/L
1,1-Dichloroethane	ND	1.0	ug/L
1,2-Dichloroethane	ND	1.0	ug/L
1,1-Dichloroethene	ND	1.0	ug/L
1,2-Dichloroethene (total)	ND	2.0	ug/L
1,2-Dichloropropane	ND	1.0	ug/L
cis-1,3-Dichloropropene	ND	1.0	ug/L
trans-1,3-Dichloropropene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Methylene chloride	**0.66 J**	**1.0**	**ug/L**
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L
Tetrachloroethene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
1,1,1-Trichloroethane	ND	1.0	ug/L
1,1,2-Trichloroethane	ND	1.0	ug/L
Trichloroethene	ND	1.0	ug/L
Vinyl chloride	ND	2.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	114	(62 - 122)
Toluene-d8	120 *	(73 - 116)
4-Bromofluorobenzene	118	(68 - 118)

NOTE(S):

* Surrogate recovery is outside stated control limits.

J Estimated result. Result is less than RL.

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: F1E100620
MB Lot-Sample #: F1E150000-029
Work Order #...: MJF4W1AA
Matrix.....: WATER
Prep Date.....: 05/11/11
Analysis Time..: 22:05
Analysis Date..: 05/11/11
Prep Batch #...: 1135029
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acrolein	ND	10	ug/L	CFR136A 624
Acrylonitrile	ND	10	ug/L	CFR136A 624
Benzene	ND	1.0	ug/L	CFR136A 624
Bromoform	ND	1.0	ug/L	CFR136A 624
Bromomethane	ND	2.0	ug/L	CFR136A 624
Carbon tetrachloride	ND	1.0	ug/L	CFR136A 624
Chlorobenzene	ND	1.0	ug/L	CFR136A 624
Chlorodibromomethane	ND	1.0	ug/L	CFR136A 624
Chloroethane	ND	2.0	ug/L	CFR136A 624
Chloroform	ND	1.0	ug/L	CFR136A 624
Chloromethane	ND	2.0	ug/L	CFR136A 624
Dichlorobromomethane	ND	1.0	ug/L	CFR136A 624
1,1-Dichloroethane	ND	1.0	ug/L	CFR136A 624
1,2-Dichloroethane	ND	1.0	ug/L	CFR136A 624
1,1-Dichloroethene	ND	1.0	ug/L	CFR136A 624
1,2-Dichloroethene (total)	ND	2.0	ug/L	CFR136A 624
1,2-Dichloropropane	ND	1.0	ug/L	CFR136A 624
cis-1,3-Dichloropropene	ND	1.0	ug/L	CFR136A 624
trans-1,3-Dichloropropene	ND	1.0	ug/L	CFR136A 624
Ethylbenzene	ND	1.0	ug/L	CFR136A 624
Methylene chloride	ND	1.0	ug/L	CFR136A 624
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	CFR136A 624
Tetrachloroethene	ND	1.0	ug/L	CFR136A 624
Toluene	ND	1.0	ug/L	CFR136A 624
1,1,1-Trichloroethane	ND	1.0	ug/L	CFR136A 624
1,1,2-Trichloroethane	ND	1.0	ug/L	CFR136A 624
Trichloroethene	ND	1.0	ug/L	CFR136A 624
Vinyl chloride	ND	2.0	ug/L	CFR136A 624

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	104	(62 - 122)
Toluene-d8	124 *	(73 - 116)
4-Bromofluorobenzene	125 *	(68 - 118)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

* Surrogate recovery is outside stated control limits.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: F1E100620 Work Order #...: MJF4W1AC-LCS Matrix.....: WATER
LCS Lot-Sample#: F1E150000-029 MJF4W1AD-LCSD
Prep Date.....: 05/11/11 Analysis Date..: 05/11/11
Prep Batch #...: 1135029 Analysis Time..: 20:32
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Acrolein	106	(40 - 140)			CFR136A 624
	103	(40 - 140)	2.8	(0-20)	CFR136A 624
Acrylonitrile	101	(67 - 140)			CFR136A 624
	94	(67 - 140)	7.3	(0-20)	CFR136A 624
Benzene	112	(76 - 119)			CFR136A 624
	105	(76 - 119)	6.7	(0-20)	CFR136A 624
Bromoform	93	(71 - 139)			CFR136A 624
	88	(71 - 139)	6.1	(0-20)	CFR136A 624
Bromomethane	106	(67 - 140)			CFR136A 624
	98	(67 - 140)	7.9	(0-20)	CFR136A 624
Carbon tetrachloride	104	(73 - 140)			CFR136A 624
	97	(73 - 140)	7.2	(0-20)	CFR136A 624
Chlorobenzene	109	(80 - 115)			CFR136A 624
	104	(80 - 115)	4.4	(0-20)	CFR136A 624
Chlorodibromomethane	92	(74 - 140)			CFR136A 624
	92	(74 - 140)	0.16	(0-20)	CFR136A 624
Chloroethane	110	(36 - 140)			CFR136A 624
	102	(36 - 140)	7.3	(0-20)	CFR136A 624
Chloroform	109	(77 - 121)			CFR136A 624
	105	(77 - 121)	4.3	(0-20)	CFR136A 624
Chloromethane	109	(41 - 140)			CFR136A 624
	101	(41 - 140)	7.5	(0-20)	CFR136A 624
Dichlorobromomethane	94	(72 - 138)			CFR136A 624
	92	(72 - 138)	1.8	(0-20)	CFR136A 624
1,1-Dichloroethane	110	(71 - 124)			CFR136A 624
	104	(71 - 124)	6.3	(0-20)	CFR136A 624
1,2-Dichloroethane	96	(67 - 133)			CFR136A 624
	93	(67 - 133)	2.6	(0-20)	CFR136A 624
1,1-Dichloroethene	110	(77 - 120)			CFR136A 624
	102	(77 - 120)	7.5	(0-20)	CFR136A 624
1,2-Dichloroethene (total)	99	(78 - 123)			CFR136A 624
	93	(78 - 123)	6.4	(0-20)	CFR136A 624
1,2-Dichloropropane	95	(67 - 137)			CFR136A 624
	92	(67 - 137)	3.5	(0-20)	CFR136A 624
cis-1,3-Dichloropropene	95	(58 - 140)			CFR136A 624
	90	(58 - 140)	5.1	(0-20)	CFR136A 624
trans-1,3-Dichloropropene	94	(61 - 140)			CFR136A 624
	91	(61 - 140)	2.6	(0-20)	CFR136A 624

(Continued on next page)

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: F1E100620 Work Order #...: MJF4W1AC-LCS Matrix.....: WATER
LCS Lot-Sample#: F1E150000-029 MJF4W1AD-LCSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Ethylbenzene	108	(77 - 123)			CFR136A 624
	103	(77 - 123)	5.1	(0-20)	CFR136A 624
Methylene chloride	107	(62 - 127)			CFR136A 624
	103	(62 - 127)	4.3	(0-20)	CFR136A 624
1,1,2,2-Tetrachloroethane	108	(61 - 128)			CFR136A 624
	101	(61 - 128)	7.0	(0-20)	CFR136A 624
Tetrachloroethene	75	(67 - 140)			CFR136A 624
	72	(67 - 140)	4.1	(0-20)	CFR136A 624
Toluene	113	(75 - 120)			CFR136A 624
	107	(75 - 120)	5.2	(0-20)	CFR136A 624
1,1,1-Trichloroethane	112	(81 - 125)			CFR136A 624
	105	(81 - 125)	6.7	(0-20)	CFR136A 624
1,1,2-Trichloroethane	105	(73 - 126)			CFR136A 624
	105	(73 - 126)	0.47	(0-20)	CFR136A 624
Trichloroethene	98	(76 - 126)			CFR136A 624
	89	(76 - 126)	9.6	(0-20)	CFR136A 624
Vinyl chloride	97	(58 - 129)			CFR136A 624
	91	(58 - 129)	6.8	(0-20)	CFR136A 624

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	106	(62 - 126)
	112	(62 - 126)
Toluene-d8	112	(78 - 119)
	115	(78 - 119)
4-Bromofluorobenzene	118 *	(73 - 115)
	116 *	(73 - 115)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

* Surrogate recovery is outside stated control limits.

MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: F1E100620 Work Order #...: MH7JA1CC-MS Matrix.....: WATER
MS Lot-Sample #: F1E100620-001 MH7JA1CD-MSD
Date Sampled...: 05/10/11 12:30 Date Received..: 05/10/11
Prep Date.....: 05/11/11 Analysis Date..: 05/12/11
Prep Batch #...: 1135029 Analysis Time..: 05:14
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Acrolein	104	(50 - 150)			CFR136A 624
	106	(50 - 150)	1.8	(0-20)	CFR136A 624
Acrylonitrile	94	(50 - 150)			CFR136A 624
	88	(50 - 150)	6.5	(0-20)	CFR136A 624
Benzene	102	(47 - 150)			CFR136A 624
	104	(47 - 150)	2.7	(0-20)	CFR136A 624
Bromoform	87	(45 - 150)			CFR136A 624
	89	(45 - 150)	2.2	(0-20)	CFR136A 624
Bromomethane	83	(41 - 150)			CFR136A 624
	86	(41 - 150)	3.7	(0-20)	CFR136A 624
Carbon tetrachloride	90	(70 - 140)			CFR136A 624
	93	(70 - 140)	3.3	(0-20)	CFR136A 624
Chlorobenzene	98	(54 - 145)			CFR136A 624
	104	(54 - 145)	5.5	(0-20)	CFR136A 624
Chlorodibromomethane	88	(64 - 148)			CFR136A 624
	93	(64 - 148)	6.3	(0-20)	CFR136A 624
Chloroethane	90	(28 - 150)			CFR136A 624
	95	(28 - 150)	5.0	(0-20)	CFR136A 624
Chloroform	102	(51 - 138)			CFR136A 624
	104	(51 - 138)	1.6	(0-20)	CFR136A 624
Chloromethane	92	(33 - 150)			CFR136A 624
	95	(33 - 150)	3.0	(0-20)	CFR136A 624
Dichlorobromomethane	93	(47 - 150)			CFR136A 624
	96	(47 - 150)	3.7	(0-20)	CFR136A 624
1,1-Dichloroethane	99	(59 - 150)			CFR136A 624
	101	(59 - 150)	1.5	(0-20)	CFR136A 624
1,2-Dichloroethane	94	(59 - 143)			CFR136A 624
	97	(59 - 143)	3.6	(0-20)	CFR136A 624
1,1-Dichloroethene	93	(48 - 150)			CFR136A 624
	95	(48 - 150)	2.3	(0-20)	CFR136A 624
1,2-Dichloroethene (total)	85	(56 - 150)			CFR136A 624
	88	(56 - 150)	3.3	(0-20)	CFR136A 624
1,2-Dichloropropane	90	(56 - 150)			CFR136A 624
	95	(56 - 150)	5.2	(0-20)	CFR136A 624
cis-1,3-Dichloropropene	86	(50 - 150)			CFR136A 624
	90	(50 - 150)	4.1	(0-20)	CFR136A 624
trans-1,3-Dichloropropene	88	(31 - 150)			CFR136A 624
	92	(31 - 150)	5.2	(0-20)	CFR136A 624

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MATRIX SPIKE SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: F1E100620 Work Order #...: MH7JA1CC-MS Matrix.....: WATER
MS Lot-Sample #: F1E100620-001 MH7JA1CD-MSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Ethylbenzene	91	(53 - 150)			CFR136A 624
	97	(53 - 150)	5.6	(0-20)	CFR136A 624
Methylene chloride	98	(38 - 150)			CFR136A 624
	100	(38 - 150)	2.4	(0-20)	CFR136A 624
1,1,2,2-Tetrachloroethane	103	(46 - 150)			CFR136A 624
	105	(46 - 150)	2.1	(0-20)	CFR136A 624
Tetrachloroethene	64 a	(65 - 148)			CFR136A 624
	68	(65 - 148)	6.8	(0-20)	CFR136A 624
Toluene	100	(52 - 150)			CFR136A 624
	107	(52 - 150)	6.9	(0-20)	CFR136A 624
1,1,1-Trichloroethane	98	(54 - 150)			CFR136A 624
	100	(54 - 150)	2.0	(0-20)	CFR136A 624
1,1,2-Trichloroethane	102	(61 - 137)			CFR136A 624
	107	(61 - 137)	4.8	(0-20)	CFR136A 624
Trichloroethene	85	(71 - 150)			CFR136A 624
	87	(71 - 150)	2.4	(0-20)	CFR136A 624
Vinyl chloride	83	(33 - 150)			CFR136A 624
	86	(33 - 150)	4.0	(0-20)	CFR136A 624

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	116	(62 - 122)
	120	(62 - 122)
Toluene-d8	113	(73 - 116)
	119 *	(73 - 116)
4-Bromofluorobenzene	116	(68 - 118)
	118	(68 - 118)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

* Surrogate recovery is outside stated control limits.

a Spiked analyte recovery is outside stated control limits.

AECOM Technical Services Inc.

Client Sample ID: 60162412-SMP-PL5-WW-OTH-0780

TOTAL Metals

Lot-Sample #...: F1E100620-001 Matrix.....: WATER
Date Sampled...: 05/10/11 12:30 Date Received..: 05/10/11

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1131314						
Cadmium	ND	5	ug/L	SW846 6010B	05/11-05/12/11	MH7JA1AC
		Dilution Factor: 1		Analysis Time..: 14:14		
Chromium	ND	10	ug/L	SW846 6010B	05/11-05/12/11	MH7JA1AD
		Dilution Factor: 1		Analysis Time..: 14:14		
Copper	ND	25	ug/L	SW846 6010B	05/11-05/12/11	MH7JA1AE
		Dilution Factor: 1		Analysis Time..: 14:14		
Iron	102	100	ug/L	SW846 6010B	05/11-05/12/11	MH7JA1AF
		Dilution Factor: 1		Analysis Time..: 14:14		
Nickel	14.5 B	40	ug/L	SW846 6010B	05/11-05/12/11	MH7JA1AG
		Dilution Factor: 1		Analysis Time..: 14:14		
Lead	2.6 B	10	ug/L	SW846 6010B	05/11-05/12/11	MH7JA1AH
		Dilution Factor: 1		Analysis Time..: 14:14		
Zinc	102	20	ug/L	SW846 6010B	05/11-05/12/11	MH7JA1AJ
		Dilution Factor: 1		Analysis Time..: 14:14		

NOTE(S):

B Estimated result. Result is less than RL.

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: F1E100620 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: F1E110000-314 **Prep Batch #...:** 1131314						
Cadmium	ND	5	ug/L	SW846 6010B	05/11-05/12/11	MH8901AA
		Dilution Factor: 1				
		Analysis Time..: 13:59				
Chromium	ND	10	ug/L	SW846 6010B	05/11-05/12/11	MH8901AC
		Dilution Factor: 1				
		Analysis Time..: 13:59				
Copper	ND	25	ug/L	SW846 6010B	05/11-05/12/11	MH8901AD
		Dilution Factor: 1				
		Analysis Time..: 13:59				
Iron	ND	100	ug/L	SW846 6010B	05/11-05/12/11	MH8901AE
		Dilution Factor: 1				
		Analysis Time..: 13:59				
Lead	ND	10	ug/L	SW846 6010B	05/11-05/12/11	MH8901AG
		Dilution Factor: 1				
		Analysis Time..: 13:59				
Nickel	ND	40	ug/L	SW846 6010B	05/11-05/12/11	MH8901AF
		Dilution Factor: 1				
		Analysis Time..: 13:59				
Zinc	ND	20	ug/L	SW846 6010B	05/11-05/12/11	MH8901AH
		Dilution Factor: 1				
		Analysis Time..: 13:59				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: F1E100620 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: F1E110000-314 **Prep Batch #...:** 1131314					
Cadmium	103	(80 - 120)	SW846 6010B	05/11-05/12/11	MH8901AJ
		Dilution Factor: 1	Analysis Time..: 14:07		
Chromium	101	(80 - 120)	SW846 6010B	05/11-05/12/11	MH8901AK
		Dilution Factor: 1	Analysis Time..: 14:07		
Copper	100	(80 - 120)	SW846 6010B	05/11-05/12/11	MH8901AL
		Dilution Factor: 1	Analysis Time..: 14:07		
Iron	102	(80 - 120)	SW846 6010B	05/11-05/12/11	MH8901AM
		Dilution Factor: 1	Analysis Time..: 14:07		
Nickel	100	(80 - 120)	SW846 6010B	05/11-05/12/11	MH8901AN
		Dilution Factor: 1	Analysis Time..: 14:07		
Lead	102	(80 - 120)	SW846 6010B	05/11-05/12/11	MH8901AP
		Dilution Factor: 1	Analysis Time..: 14:07		
Zinc	111	(80 - 120)	SW846 6010B	05/11-05/12/11	MH8901AQ
		Dilution Factor: 1	Analysis Time..: 14:07		

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: F1E100620 **Matrix.....:** WATER
Date Sampled...: 05/10/11 12:30 **Date Received..:** 05/10/11

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: F1E100620-001 **Prep Batch #...:** 1131314							
Cadmium	98	(75 - 125)			SW846 6010B	05/11-05/12/11	MH7JA1AV
	96	(75 - 125)	2.0	(0-20)	SW846 6010B	05/11-05/12/11	MH7JA1AW
		Dilution Factor: 1					
		Analysis Time..: 14:29					
Chromium	97	(75 - 125)			SW846 6010B	05/11-05/12/11	MH7JA1AX
	95	(75 - 125)	1.7	(0-20)	SW846 6010B	05/11-05/12/11	MH7JA1A0
		Dilution Factor: 1					
		Analysis Time..: 14:29					
Copper	98	(75 - 125)			SW846 6010B	05/11-05/12/11	MH7JA1A1
	96	(75 - 125)	1.7	(0-20)	SW846 6010B	05/11-05/12/11	MH7JA1A2
		Dilution Factor: 1					
		Analysis Time..: 14:29					
Iron	97	(75 - 125)			SW846 6010B	05/11-05/12/11	MH7JA1A3
	95	(75 - 125)	1.8	(0-20)	SW846 6010B	05/11-05/12/11	MH7JA1A4
		Dilution Factor: 1					
		Analysis Time..: 14:29					
Lead	95	(75 - 125)			SW846 6010B	05/11-05/12/11	MH7JA1A7
	93	(75 - 125)	1.4	(0-20)	SW846 6010B	05/11-05/12/11	MH7JA1A8
		Dilution Factor: 1					
		Analysis Time..: 14:29					
Nickel	94	(75 - 125)			SW846 6010B	05/11-05/12/11	MH7JA1A5
	93	(75 - 125)	1.8	(0-20)	SW846 6010B	05/11-05/12/11	MH7JA1A6
		Dilution Factor: 1					
		Analysis Time..: 14:29					
Zinc	109	(75 - 125)			SW846 6010B	05/11-05/12/11	MH7JA1A9
	109	(75 - 125)	0.06	(0-20)	SW846 6010B	05/11-05/12/11	MH7JA1CA
		Dilution Factor: 1					
		Analysis Time..: 14:29					

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

AECOM Technical Services Inc.

Client Sample ID: 60162412-SMP-PL5-WW-OTH-0780

General Chemistry

Lot-Sample #...: F1E100620-001 Work Order #...: MH7JA Matrix.....: WATER
Date Sampled...: 05/10/11 12:30 Date Received..: 05/10/11

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
pH (liquid)	7.2	0.10	No Units	SW846 9040	05/11/11	1131132
		Dilution Factor: 1		Analysis Time..: 11:02		
COD	33.0	20.0	mg/L	MCAWW 410.4	05/12-05/13/11	1133167
		Dilution Factor: 1		Analysis Time..: 00:00		
Total Suspended Solids	5.0 J	4.0	mg/L	MCAWW 160.2	05/12-05/13/11	1132317
		Dilution Factor: 1		Analysis Time..: 00:00		

NOTE(S):

RL Reporting Limit

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

METHOD BLANK REPORT

General Chemistry

Client Lot #...: F1E100620 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
COD		Work Order #: MJDM81AA		MB Lot-Sample #:	F1E130000-167	
	ND	20.0	mg/L	MCAWW 410.4	05/12-05/13/11	1133167
		Dilution Factor: 1				
		Analysis Time..: 00:00				
Total Suspended Solids		Work Order #: MJDR21AA		MB Lot-Sample #:	F1E120000-317	
	1.0 B	**4.0**	**mg/L**	**MCAWW 160.2**	**05/12-05/13/11**	**1132317**
		Dilution Factor: 1				
		Analysis Time..: 00:00				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

B Estimated result. Result is less than RL.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: F1E100620 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
pH (liquid)		Work Order #: MH8HX1AA	LCS Lot-Sample#: F1E110000-132		
	100	(99 - 101)	SW846 9040	05/11/11	1131132
		Dilution Factor: 1	Analysis Time..: 11:00		
COD		Work Order #: MJDM81AC	LCS Lot-Sample#: F1E130000-167		
	100	(90 - 110)	MCAWW 410.4	05/12-05/13/11	1133167
		Dilution Factor: 1	Analysis Time..: 00:00		
Total Suspended Solids		Work Order #: MJDR21AC	LCS Lot-Sample#: F1E120000-317		
	86	(79 - 122)	MCAWW 160.2	05/12-05/13/11	1132317
		Dilution Factor: 1	Analysis Time..: 00:00		

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: F1E100620 **Matrix.....:** WATER
Date Sampled...: 05/10/11 12:30 **Date Received..:** 05/10/11

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
COD		Work Order #...: MH7JA1CK		MS Lot-Sample #: F1E100620-001	
	91	(90 - 110)	MCAWW 410.4	05/12-05/13/11	1133167

Dilution Factor: 1 Analysis Time..: 00:00

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: F1E100620 **Work Order #...:** MH7JA-SMP MH7JA-DUP **Matrix.....:** WATER

Date Sampled...: 05/10/11 12:30 **Date Received..:** 05/10/11

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
COD						SD Lot-Sample #:	F1E100620-001	
	33.0	35.0	mg/L	5.9	(0-20)	MCAWW 410.4	05/12-05/13/11	1133167
			Dilution Factor: 1			Analysis Time..: 00:00		
Total Suspended Solids						SD Lot-Sample #:	F1E100620-001	
	5.0 J	3.0 B	mg/L	50	(0-20)	MCAWW 160.2	05/12-05/13/11	1132317
			Dilution Factor: 1			Analysis Time..: 00:00		
pH (liquid)						SD Lot-Sample #:	F1E100620-001	
	7.2	7.2	No Units	0.28	(0-0.0)	SW846 9040	05/11/11	1131132
			Dilution Factor: 1			Analysis Time..: 11:02		

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

B Estimated result. Result is less than RL.

J Method blank contamination. The associated method blank contains the target analyte at a reportable level.

AECOM Technical Services Inc.

Client Sample ID: 60162412-SMP-PL5-WW-OTH-0780

Radiochemistry

Lab Sample ID: F1E100620-001
Work Order: MH7JA
Matrix: WATER

Date Collected: 05/10/11 1230
Date Received: 05/10/11 1415

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	mdc	Prep Date	Analysis Date
Iso THORIUM (SHORT CT) DOE A-01-R MOD				pCi/L		Batch # 1131241	Yld % 63
Thorium 228	-0.08	U	0.10	1.00	0.31	05/11/11	05/12/11
Thorium 230	**0.44**		**0.25**	1.00	**0.24**	**05/11/11**	**05/12/11**
Thorium 232	0.017	U	0.089	1.00	0.21	05/11/11	05/12/11
Iso URANIUM (SHORT CT) DOE A-01-R MOD				pCi/L		Batch # 1131242	Yld % 76
Uranium 234	0.12	U	0.12	1.00	0.15	05/11/11	05/12/11
Uranium 235/236	-0.011	U	0.016	1.00	0.15	05/11/11	05/12/11
Uranium 238	**0.20**		**0.15**	1.00	**0.14**	**05/11/11**	**05/12/11**
Gross Alpha/Beta EPA 900				pCi/L		Batch # 1131296	Yld %
Gross Alpha	5.9	U	4.9	3.0	7.0	05/12/11	05/15/11
Gross Beta	**15.0**		**3.6**	4.0	**4.0**	**05/12/11**	**05/15/11**
Radium 226 by EPA 903.0 MOD				pCi/L		Batch # 1131232	Yld % 86
Radium (226)	**0.88**	J	**0.24**	1.00	**0.21**	**05/11/11**	**05/13/11**
Radium 228 by GFPC EPA 904 MOD				pCi/L		Batch # 1131234	Yld % 85
Radium 228	0.23	U	0.25	1.00	0.40	05/11/11	05/16/11

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.
Bold results are greater than the MDC.

J Result is greater than sample detection limit but less than stated reporting limit.
U Result is less than the sample detection limit.

METHOD BLANK REPORT

Radiochemistry

Client Lot ID: F1E100620
Matrix: WATER

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC		Prep Date	Lab Sample ID / Analysis Date
Iso URANIUM (SHORT CT) DOE A-01-R MOD			pCi/L	Batch # 1131242		Yld % 74		F1E110000-242B
Uranium 234	0.024	U	0.048	1.00	0.065		05/11/11	05/12/11
Uranium 235/236	-0.006	U	0.011	1.00	0.13		05/11/11	05/12/11
Uranium 238	0.020	U	0.049	1.00	0.10		05/11/11	05/12/11
Iso THORIUM (SHORT CT) DOE A-01-R MOD			pCi/L	Batch # 1131241		Yld % 79		F1E110000-241B
Thorium 228	-0.014	U	0.017	1.00	0.14		05/11/11	05/12/11
Thorium 230	0.062	U	0.090	1.00	0.14		05/11/11	05/12/11
Thorium 232	-0.0047	U	0.0095	1.00	0.11		05/11/11	05/12/11
Radium 226 by EPA 903.0 MOD			pCi/L	Batch # 1131232		Yld % 85		F1E110000-232B
Radium (226)	0.16	U	0.13	1.00	0.19		05/11/11	05/13/11
Radium 228 by GFPC EPA 904 MOD			pCi/L	Batch # 1131234		Yld % 95		F1E110000-234B
Radium 228	0.16	U	0.22	1.00	0.36		05/11/11	05/16/11
Gross Alpha/Beta EPA 900			pCi/L	Batch # 1131296		Yld %		F1E110000-296B
Gross Alpha	0.49	U	0.59	3.00	0.94		05/12/11	05/15/11
Gross Beta	0.24	U	0.61	4.00	1.0		05/12/11	05/15/11

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined using instrument performance only
Bold results are greater than the MDC.

U Result is less than the sample detection limit.

Laboratory Control Sample Report

Radiochemistry

Client Lot ID: F1E100620
Matrix: WATER

Parameter	Spike Amount	Result		Total Uncert. (2 σ +/-)	MDC	% Yld	% Rec		Lab Sample ID / QC Control Limits
Radium 226 by EPA 903.0 MOD			pCi/L		903.0 MOD				F1E110000-232C
Radium (226)	11.3	11.2		1.2	0.2	81	99		(62 - 136)
	Batch #:	1131232			Analysis Date:	05/13/11			
Radium 228 by GFPC EPA 904 MOD			pCi/L		904 MOD				F1E110000-234C
Radium 228	5.54	7.69		0.83	0.34	96	139		(69 - 140)
	Batch #:	1131234			Analysis Date:	05/16/11			
Iso THORIUM (SHORT CT) DOE A-01-R MOD			pCi/L		A-01-R MOD				F1E110000-241C
Thorium 230	9.49	9.7		1.3	0.06	82	102		(79 - 122)
	Batch #:	1131241			Analysis Date:	05/12/11			
Iso URANIUM (SHORT CT) DOE A-01-R MOD			pCi/L		A-01-R MOD				F1E110000-242C
Uranium 234	13.1	14.1		1.7	0.1	75	108		(83 - 130)
Uranium 238	13.6	13.9		1.6	0.1	75	102		(86 - 128)
	Batch #:	1131242			Analysis Date:	05/12/11			
Gross Alpha/Beta EPA 900			pCi/L		900.0 MOD				F1E110000-296C
Gross Alpha	49.4	37.9	a	4.6	1.4		77	a	(83 - 128)
Gross Beta	66.1	66.4		5.7	1.0		100		(90 - 115)
	Batch #:	1131296			Analysis Date:	05/15/11			

NOTE(S)

MDC is determined by instrument performance only
Calculations are performed before rounding to avoid round-off error in calculated results

a Spiked analyte outside of stated QC limits.

MATRIX SPIKE REPORT

Radiochemistry

Client Lot Id: F1E100620 Date Sampled: 05/10/11
Matrix: WATER Date Received: 05/10/11

Parameter	Spike Amount	Spike Result	Total Uncert. (2σ +/-)	Spike Yld.	Sample Result	Total Uncert. (2 σ +/-)	QC Sample ID %YLD	QC Sample ID %REC	QC Control Limits
Gross Alpha/Beta EPA 900			pCi/L		900.0 MOD			F1E100620-001	
Gross Beta	254	258	22		15.0	3.6		96	(51-150)
	Batch #:	1131296		Analysis Date:		05/15/11			
Gross Alpha/Beta EPA 900			pCi/L		900.0 MOD			F1E100620-001	
Gross Alpha	190	187	27		5.9	4.9		95	(34-150)
	Batch #:	1131296		Analysis Date:		05/15/11			

NOTE(S)

Data are incomplete without the case narrative.

Calculations are performed before rounding to avoid round-off errors in calculated results.

DUPLICATE EVALUATION REPORT

Radiochemistry

Client Lot ID: F1E100620
Matrix: WATER

Date Sampled: 05/10/11
Date Received: 05/10/11

Parameter	SAMPLE Result		Total Uncert. (2σ+/-)	% Yld	DUPLICATE Result		Total Uncert. (2 σ+/-)	% Yld	QC Sample ID Precision	
Radium 226 by EPA 903.0 MOD				**pCi/L**	**903.0 MOD**				**F1E100620-001**	
Radium (226)	0.88	J	0.24	86	0.80	J	0.23	82	10	%RPD
	Batch #:		1131232	(Sample)	1131232		(Duplicate)			
Radium 228 by GFPC EPA 904 MOD				**pCi/L**	**904 MOD**				**F1E100620-001**	
Radium 228	0.23	U	0.25	85	0.06	U	0.24	85	123	%RPD
	Batch #:		1131234	(Sample)	1131234		(Duplicate)			
Iso THORIUM (SHORT CT) DOE A-01-R MOD				**pCi/L**	**A-01-R MOD**				**F1E100620-001**	
Thorium 228	-0.08	U	0.10	63	-0.03	U	0.10	60	104	%RPD
Thorium 230	0.44		0.25	63	0.18	U	0.18	60	82	%RPD
Thorium 232	0.017	U	0.089	63	0.07	U	0.11	60	124	%RPD
	Batch #:		1131241	(Sample)	1131241		(Duplicate)			
Iso URANIUM (SHORT CT) DOE A-01-R MOD				**pCi/L**	**A-01-R MOD**				**F1E100620-001**	
Uranium 234	0.12	U	0.12	76	0.13		0.12	76	8	%RPD
Uranium 235/236	-0.011	U	0.016	76	-0.006	U	0.012	76	66	%RPD
Uranium 238	0.20		0.15	76	0.17		0.13	76	18	%RPD
	Batch #:		1131242	(Sample)	1131242		(Duplicate)			
Gross Alpha/Beta EPA 900				**pCi/L**	**900.0 MOD**				**F1E100620-001**	
Gross Alpha	5.9	U	4.9		5.3	U	5.5		10	%RPD
Gross Beta	15.0		3.6		12.6		3.9		17	%RPD
	Batch #:		1131296	(Sample)	1131296		(Duplicate)			

NOTE(S)

Data are incomplete without the case narrative.
Calculations are performed before rounding to avoid round-off error in calculated results

J Result is greater than sample detection limit but less than stated reporting limit.
U Result is less than the sample detection limit.

F1E100620

CLIENT ANALYSIS SUMMARY

Storage Loc: R259,2-65,V10

Project Manager: JKA
Quote #: 87754
SDG: F1E100620
Project:
Mallinckrodt St. Louis Plant
PO#: 10372ACM
Report to: Mark Tepperman
Client: 404224 AECOM Technical Services Inc.

RUSH

#SMPS In LOT: 2

Date Received: 2011-05-10
Analytical Due Date: 2011-05-16
Report Due Date: 2011-05-17
Report Type: D Expanded Deliverable
EDD Code: 00

SAMPLE LOGIN: enter lot # into SDG field. Gamma Spec is as received for 5 BD TAT. Gamma Ra226, Iso U and Iso Th will be logged when initial count is complete. Log ZHE EXTRACTION line item for TCLP VOA. Log TCLP EXTRACTION line item for TCLP analyses. RAD: initial Gamma Spec counted as received . When complete dry/grind and prep for Gamma Ra226,TAR,Iso U and Iso Th. GAMMA SPEC. SHOULD BE COUNTED IN CLIENTS 500ML MARINELLI. RA226/228 - NO INGROWTH REQUIRED!!! RA226/228 MUST BE PREPPED IN SEPERATE ALIQUOTS!!! DO NOT PREP TOGETHER! STANDARD QC ON CLIENT SAMPLE IS REQUIRED FOR ALL ANALYSES.

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	I
1	60162412-SMP-PL5-WW-OTH-078			2011-05-10 / 1230	MH7JA	WATER

SAMPLE COMMENTS:

	CR	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
	CU	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
	FE	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
	NI	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
	PB	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
	ZN	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
	CD	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
	XX	DN	CFR13 6A	624	WATER, 624, VOA	25	PURGE AND TRAP - 25 mL purge (Waters)	01	STANDARD TEST SET	PROT: O	WRK LOC	06	TIC: N	
	XX	ZZ	NONE	NONE	WATER, RAD SCREEN	88	NO SAMPLE PREPARATION PERFORMED / DIRECT	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
	XX	2I	EML	A-01-R MOD	WATER, Iso URANIUM (SHORT CT)	J2	Extraction Chromatography - Sequential Actinides	01	STANDARD TEST SET	PROT: R	WRK LOC	06		
	XX	2K	EML	A-01-R MOD	WATER, Iso THORIUM (SHORT CT)	J2	Extraction Chromatography - Sequential Actinides	01	STANDARD TEST SET	PROT: R	WRK LOC	06		
	XX	Y9	EPA	900.0 MOD	WATER, Gross Alpha/Beta	FR	Evaporative Preparation, Total	01	STANDARD TEST SET	PROT: R	WRK LOC	06		
	XX	Z4	EPA	904 MOD	WATER, 904 MOD, Ra-228 (NO INGROWTH)	N*	No Ingrowth	2X	SPECIAL PROJECTS	PROT: R	WRK LOC	06		
	XX	ZY	EPA	903.0 MOD	WATER, 903 MOD, Ra-226 (NO INGROWTH)	N*	No Ingrowth	2X	SPECIAL PROJECTS	PROT: R	WRK LOC	06		
	XX	AL	MCAW W	160.2	WATER, 160.2, TSS	88	NO SAMPLE PREPARATION PERFORMED / DIRECT	01	STANDARD TEST SET	PROT: W	WRK LOC	06		
	XX	FJ	SW846	9040	WATER, 9040, pH	88	NO SAMPLE PREPARATION PERFORMED / DIRECT	01	STANDARD TEST SET	PROT: W	WRK LOC	06		
	XX	VO	MCAW W	410.4	WATER, 410.4, COD	21	DIGESTION, NON-METAL/INORGANICS	01	STANDARD TEST SET	PROT: W	WRK LOC	06		
D	PB	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
D	CD	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
D	CR	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
D	CU	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
D	FE	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
D	ZN	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
D	NI	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
D	XX	DN	CFR13 6A	624	WATER, 624, VOA	25	PURGE AND TRAP - 25 mL purge (Waters)	01	STANDARD TEST SET	PROT: O	WRK LOC	06	TIC: N	
S	ZN	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
S	CD	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
S	CR	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
S	CU	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
S	FE	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
S	NI	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
S	PB	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
S	XX	DN	CFR13 6A	624	WATER, 624, VOA	25	PURGE AND TRAP - 25 mL purge (Waters)	01	STANDARD TEST SET	PROT: O	WRK LOC	06	TIC: N	
S	XX	Y9	EPA	900.0 MOD	WATER, Gross Alpha/Beta	FR	Evaporative Preparation, Total	01	STANDARD TEST SET	PROT: R	WRK LOC	06		

F1E100620

CLIENT ANALYSIS SUMMARY

Storage Loc: R259,2-65,V10

Project Manager: JKA
Quote #: 87754
SDG: F1E100620
Date Received: 2011-05-10
Analytical Due Date: 2011-05-16
Project: Mallinckrodt St. Louis Plant
Report Due Date: 2011-05-17
PO#: 10372ACM
Report to: Mark Tepperman
RUSH
Report Type: D Expanded Deliverable
Client: 404224 AECOM Technical Services Inc.
#SMPS In LOT: 2
EDD Code: 00

SAMPLE LOGIN: enter lot # into SDG field. Gamma Spec is as received for 5 BD TAT. Gamma Ra226, Iso U and Iso Th will be logged when initial count is complete. Log ZHE EXTRACTION line item for TCLP VOA. Log TCLP EXTRACTION line item for TCLP analyses. RAD: initial Gamma Spec counted as received. When complete dry/grind and prep for Gamma Ra226,TAR,Iso U and Iso Th. GAMMA SPEC. SHOULD BE COUNTED IN CLIENTS 500ML MARINELLI. RA226/228 - NO INGROWTH REQUIRED!!! RA226/228 MUST BE PREPPED IN SEPERATE ALIQUOTS!!! DO NOT PREP TOGETHER! STANDARD QC ON CLIENT SAMPLE IS REQUIRED FOR ALL ANALYSES.

S	XX	AL	MCAW W	160.2	WATER, 160.2, TSS ✓	88	NO SAMPLE PREPARATION PERFORMED / DIRECT	01	STANDARD TEST SET	PROT: W	WRK LOC	06	
S	XX	VO	MCAW W	410.4	WATER, 410.4, COD ✓	21	DIGESTION, NON-METAL/INORGANICS	01	STANDARD TEST SET	PROT: W	WRK LOC	06	
X	XX	2I	EML	A-01-R MOD	WATER, Iso URANIUM (SHORT CT) ✓	J2	Extraction Chromatography - Sequential Actinides	01	STANDARD TEST SET	PROT: R	WRK LOC	06	
X	XX	2K	EML	A-01-R MOD	WATER, Iso THORIUM (SHORT CT) ✓	J2	Extraction Chromatography - Sequential Actinides	01	STANDARD TEST SET	PROT: R	WRK LOC	06	
X	XX	Y9	EPA	900.0 MOD	WATER, Gross Alpha/Beta ✓	FR	Evaporative Preparation, Total	01	STANDARD TEST SET	PROT: R	WRK LOC	06	
X	XX	Z4	EPA	904 MOD	WATER, 904 MOD, Ra-226 (NO INGROWTH) ✓	N*	No Ingrowth	2X	SPECIAL PROJECTS	PROT: R	WRK LOC	06	
X	XX	ZY	EPA	903.0 MOD	WATER, 903 MOD, Ra-226 (NO INGROWTH) ✓	N*	No Ingrowth	2X	SPECIAL PROJECTS	PROT: R	WRK LOC	06	
X	XX	AL	MCAW W	160.2	WATER, 160.2, TSS ✓	88	NO SAMPLE PREPARATION PERFORMED / DIRECT	01	STANDARD TEST SET	PROT: W	WRK LOC	06	
X	XX	FJ	SW846	9040	WATER, 9040, pH ✓	88	NO SAMPLE PREPARATION PERFORMED / DIRECT	01	STANDARD TEST SET	PROT: W	WRK LOC	06	
X	XX	VO	MCAW W	410.4	WATER, 410.4, COD ✓	21	DIGESTION, NON-METAL/INORGANICS	01	STANDARD TEST SET	PROT: W	WRK LOC	06	

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	I
2	VOC BLANKS ✓			2011-05-10 / 0 ✓	MH7ME	WATER

SAMPLE COMMENTS:

XX	DN	CFR13 6A	624	WATER, 624, VOA ✓	25	PURGE AND TRAP - 25 mL purge (Waters)	01	STANDARD TEST SET	PROT: O	WRK LOC	06	TIC: N	

St. Louis
13715 Rider Trail North

Earth City, MO 63045
phone 314.298.8566 fax 314.298.8757

CVR 298

Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

FLE100620

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Ed Palser	Site Contact: Casey Kunteson	Date: 5/10/11	COC No: 0780
AECOM	Tel/Fax: (618)444-5535	Lab Contact: Jayna Awold	Carrier: Test America	1 of 1 COCs
Address 8005 Outer Circle RD	Analysis Turnaround Time			Job No. 60162412
City/State/Zip Brooks City Base, TX 78235	Calendar (C) or Work Days (W) C			
(618)444-5535 Phone	TAT if different from Below			SDG No.
none FAX	☐ 2 weeks			
Project Name: Mallinckrodt C-T Decommissioning	■ 1 week			
Site: St. Louis Plant	☐ 2 days			
P O # 10372ACM	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	pH	TSS	COD	ICP Metals (Cu, Cd, Cr, Fe, Pb, Ni, Zn)	Volatile Organics (EPA Method 624)	Gross Alpha/Beta	Isotopic Uranium (Alpha Spectrometry)	Radium-226 (GFPC, no decay/ingrowth)	Radium-228 (GFPC - no decay/ingrowth)	Isotopic Thorium (Alpha Spectrometry)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Sample Specific Notes:	
60162412-SMP-PL5-WW-OTH-0780	5/10/2011	12:30	Water	Water	13	X	X	X	X	X	X	X	X	X	X	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	* Further Testing if Gross Beta above 50 pci/L	
VOC Blanks	n/a	n/a	n/a	n/a	1	n/a	n/a	n/a	n/a	X	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a		
n/a n/a n/a n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	7X20	n/a
n/a n/a n/a n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	500P, 2X250P	n/a
n/a n/a n/a n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a		n/a
n/a n/a n/a n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a		n/a
n/a n/a n/a n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a		n/a
n/a n/a n/a n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a		n/a
n/a n/a n/a n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a		n/a
n/a n/a n/a n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a		n/a
n/a n/a n/a n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a		n/a

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification
■ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* *Poison B* ☐ *Unknown* ☐

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ■ *Archive For* 1 *Months*

Special Instructions/QC Requirements & Comments: Possible hazards include radiological. Sample methods to comply with MSD Ordinance 12559 standards.

13 Samples & 1 Blank

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	TA/AECOM	5/10/11 1300	[signature]	TA	5/10/11 1300
[signature]	TA	5/10/11 1415	[signature]	TA STL	5/10/11 1415

Lot F1E100620

TestAmerica - St. Louis

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Lot #(s): F1E100860 i120
BD 5/10/11

CONDITION UPON RECEIPT FORM

Client: AECOM
Quote No: 87754
COC/RFA No: 0780 298
Initiated By: CA Date: 5/10/11 Time: 1415

Shipping Information

Shipper: FedEx UPS DHL Courier Client Other: WT Multiple Packages: Y (N)

Shipping # (s):*		Sample Temperature (s):**	
1.	6.	1. Ambient	6.
2.	7.	2.	7.
3.	8.	3.	8.
4.	9.	4.	9.
5.	10.	5.	10.

*Numbered shipping lines correspond to Numbered Sample Temp lines

**Sample must be received at 4°C ± 2°C- If not, note contents below. Temperature variance does NOT affect the following: Metals-Liquid or Rad tests- Liquid or Solids

Condition (Circle "Y" for yes, "N" for no and "N/A" for not applicable):

1.	(Y) N	Are there custody seals present on the cooler?	8.	Y (N)	Are there custody seals present on bottles?
2.	Y (N) N/A	Do custody seals on cooler appear to be tampered with?	9.	Y N (N/A)	Do custody seals on bottles appear to be tampered with?
3.	(Y) N	Were contents of cooler frisked after opening, but before unpacking?	10.	(Y) N N/A	Was sample received with proper pH[1]? (If not, make note below)
4.	(Y) N	Sample received with Chain of Custody?	11.	(Y) N	Sample received in proper containers?
5.	Y (N) N/A	Does the Chain of Custody match sample ID's on the container(s)?	12.	Y (N) N/A	Headspace in VOA or TOX liquid samples? (If Yes, note sample ID's below)
6.	Y (N)	Was sample received broken?	13.	Y N (N/A)	Was Internal COC/Workshare received?
7.	(Y) N	Is sample volume sufficient for analysis?	14.	Y N (N/A)	Was pH taken by original TestAmerica lab?

[1] For DOE-AL (Pantex, LANL, Sandia) sites, pH of ALL containers received must be verified, EXCEPT VOA, TOX and soils.

Notes: COC Sample ID says 60162412 and sample ID's received say 66162412.
Use COC ID per JA BD 5/10/11

All vials were taken out of their bags before sample IDs could be verified. Trip blank was identified by HCl / DI lot from supplier. Each vial is attached with a label from supplier that represents each preservative lot.

Corrective Action:
☐ Client Contact Name: Informed by:
☐ Sample(s) processed "as is"
☐ Sample(s) on hold until: If released, notify:
Project Management Review: Jaymark Awalt Date: 5/11/11

THIS FORM MUST BE COMPLETED AT THE TIME THE ITEMS ARE BEING CHECKED IN. IF ANY ITEM IS COMPLETED BY SOMEONE OTHER THAN THE INITIATOR, THEN THAT PERSON IS REQUIRED TO APPLY THEIR INITIAL AND THE DATE NEXT TO THAT ITEM.

ADMIN-0004, REVISED 10/21/08 \\Slsvr01\QA\FORMS\ST-LOUIS\ADMIN\Admin004 rev11.doc

SR

DEPARTMENT OF ENVIRONMENTAL COMPLIANCE
MEMORANDUM

MEMO TO: Mallinckrodt, Inc. (21120596-00)

FROM: Jason Gill JAG

DATE: 5/24/11

SUBJECT: **Sample Point Problem Results in Map Revision**

On 3/31/11 I received an e-mail from Paul Slovacek about a sample point problem at Mallinckrodt's SP001. Apparently gravel was covering the manhole structure and the samplers were unable to locate it. Facility contact Julie Summers called me later on to notify me that the structure was located, and on 4/17/11 I made a site visit to the facility at 3600 N. Second St. When we arrived at the site of the manhole in question at the back of the property, I determined that the wrong manhole was uncovered – they uncovered a manhole that was upstream of the SP001. This may be understandable due to the constantly changing landscape from the FUSRAP activities in the vicinity.

The crux of the problem arose when I was informed by Ms. Summers that manhole covers were being stolen in the same area. Jersey barriers were placed over the two manholes without lids for safety purposes. The covered Northeast manhole (structure #17D3-014C) is SP001, and the covered Southwest manhole (structure #17D3-013C) is a diversion chamber. To make sure everyone is sampling from the correct structure, I notified the samplers of my discovery, and they recalled seeing the Jersey barriers. We are confident that samples were being taken from the correct Northeast manhole. I made another site to the facility on 5/17/11 after the Jersey barriers were moved to verify the location of the pair of manholes.

To rectify the sample point problem, Paul Slovacek will contact Julie Summers to set up a time to sample when the barriers will be moved. Ms. Summers will get back to me about a permanent solution, which may be acquiring new lockable manhole covers with key holes that an autosampler hose can be inserted.

While I was taking a look at Mallinckrodt's Sample Point Map, I saw that the structures did not exactly match the basemap structures. The structure that is SP001 was cut off and thus labeled incorrectly. A new Sample Point Map was made with a revision date of 5/17/11 to accurately depict the correct SP001 manhole structure.

Steve Grace IU - Mallinckrodt, Inc.

21120596-00

SP850

From: Steve Grace
Sent: Monday, May 09, 2011 9:38 AM
To: 'Summers, Julie'
Subject: RE: Wastewater Discharge 006

Hello Julie,

A review of the laboratory analytical data for Discharge 006 from the C-T Phase II decommissioning activities indicated this batch meets MSD Ordinance 12559 standards along with those outlined in 10 CFR Part 20, Appendix B, Table 3, and is approved for discharge into a combined sewer identified on MSD's base map as Inlet 18D1-395C. As a general reminder, the discharge into the sewer must be controlled at a rate that will not surcharge the lines in that area. In addition, the volume of this batch of wastewater must be confirmed in writing no later than 28 days after the date of this discharge. The approval for Discharge 006 is valid for 30 days from the date of this email.

Please contact me should you have any questions or require additional information.

Thank you,
Steve Grace

From: Summers, Julie [mailto:Julie.Summers@Covidien.com]
Sent: Sunday, May 08, 2011 7:41 PM
To: Steve Grace
Cc: Burke, Karen
Subject: FW: Wastewater Discharge 006

Steve,

Mallinckrodt requests permission to discharge 40,000 gallons of treated rainwater and groundwater collected as part of the C-T Phase II decommissioning activities. The wastewater discharge will be identified as Discharge 006. The laboratory analytical results demonstrate that the discharge will comply with the requirements of the Metropolitan St. Louis Sewer District as set forth in their letter to Lisa Meyer dated January 21, 2011. In addition, the discharge meets the monthly average concentrations for release to sanitary sewers per the requirements of 10 CFR 20.2003. Both a discharge summary and the detailed laboratory analytical results are attached for your information.

Thanks,

Julie Summers
Environmental Manager
Covidien/Mallinckrodt
3600 North 2nd Street
St. Louis, MO 63147
314-654-1969 Phone
314-654-1251 Fax

Wastewater Discharge 006 - Analytical Results Summary

Sample ID: 60162412-SMP-PL5-WW-OTH-0710

Analyte	Units	Limit	Concentration	Qualifiers[1]
VOCs				
Acrolein	mg/L		< 0.01	U
Acrylonitrile	mg/L		< 0.01	U
Benzene	mg/L		< 0.001	U
Bromoform	mg/L		< 0.001	U
Bromomethane	mg/L		< 0.002	U
Carbon tetrachloride	mg/L		< 0.001	U
Chlorobenzene	mg/L		< 0.001	U
Chlorodibromomethane	mg/L		< 0.001	U
Chloroethane	mg/L		< 0.002	U
Chloroform	mg/L		< 0.001	U
Chloromethane	mg/L		< 0.002	U
Dichlorobromomethane	mg/L		< 0.001	U
1,1- Dichloroethane	mg/L		< 0.001	U
1,2- Dichloroethane	mg/L		< 0.001	U
1,1- Dichloroethene	mg/L		< 0.001	U
1,2- Dichloroethane	mg/L		< 0.002	U
1,2- Dichloropropane	mg/L		< 0.001	U
cis-1,3-Dichloropropene	mg/L		< 0.001	U
trans-1,3-Dichloropropene	mg/L		< 0.001	U
Ethylbenzene	mg/L		< 0.001	U
Methylene Chloride	mg/L		< 0.001	U
1,1,2,2-Tetrachloroethane	mg/L		< 0.001	U
Tetra chloroethene	mg/L		< 0.001	U
Toluene	mg/L		< 0.001	U
1,1,1- Trichloroethane	mg/L		< 0.001	U
1,1,2- Trichloroethane	mg/L		< 0.001	U
Trichloroethene	mg/L		< 0.001	U
Vinyl Chloride	mg/L		< 0.002	U
Total Toxic Organics	*mg/L*	*5.844*	*< 0.051*	
Metals				
Cadmium	mg/L	0.7	< 0.005	U
Chromium	mg/L	5	< 0.01	U
Copper	mg/L	2.7	0.0092	J
Iron	mg/L	150	0.497	
Nickel	mg/L	2.3	0.018	J
Lead	mg/L	0.4	0.0082	J
Zinc	mg/L	3	0.281	

Analyte	Units	Limit	Concentration	Qualifiers[1]
General Chemistry				
pH		5.5-11.5	7.2	
COD	mg/L	600	37	
TSS	mg/L	300	9	
Radionuclides				
Gross Alpha	pCi/L	3,000	< 7.6	U
Gross Beta	pCi/L	50	14.3	
Ra-226	pCi/L	10	1.08	
Ra-228	pCi/L	30	< 0.48	U
Th-228	pCi/L	2,000	0.18	
Th-230	pCi/L	1,000	0.68	
Th-232	pCi/L	300	0.17	
U-234	pCi/L		0.19	
U-235/6	pCi/L		< 0.14	U
U-238	pCi/L		0.17	
Total Uranium	*pCi/L*	*3,000*	*< 0.5*	

10 CFR 20 Appendix B Table 3 Values

Analyte	Units	Limit	Discharge Concentration	Averaged Concentration
Ra-226	pCi/L	0.6	1.08	0.002
Ra-228	pCi/L	0.6	0.48	0.001
Th-228	pCi/L	2	0.18	0.000
Th-230	pCi/L	1	0.68	0.001
Th-232	pCi/L	0.3	0.17	0.000
U-234	pCi/L	3	0.19	0.000
U-235/6	pCi/L	3	0.14	0.000
U-238	pCi/L	3	0.17	0.000
Sum of Fractions	*pCi/L*	*1*	*n/a*	*0.010*

Discharge Volume (gals) = 40,000

Covidien averaging factor[2] = 0.002

Analyte	Units	Annual Limit	Discharge Activity	Year to Date Activity
Gross Radioactivity	Ci	1	3.3E-06	1.2E-05

Notes:

(1) 'J' indicates estimated value; 'U' indicates result less than sample detection limit;

(2) derived from discharge volume divided by a Covidien minimum average monthly volume (20,000,000 gal)

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

ANALYTICAL REPORT

Mallinckrodt St. Louis Plant

Lot #: F1D280529

Mark Tepperman

AECOM Technical Services Inc.
8005 Outer Circle Road
Brooks Air Force Bas, TX 78235

TESTAMERICA LABORATORIES, INC.

Jayna R Awalt
'bor'
Jayna Awalt
Project Manager

May 5, 2011

Case Narrative
LOT NUMBER: **F1D280529**

This report contains the analytical results for the two samples received under chain of custody by TestAmerica St. Louis on April 28, 2011. These samples are associated with your Mallinckrodt St. Louis Plant project.

The analytical results included in this report meet all applicable quality control procedure requirements. except as noted in the following case narrative.

The test results in this report meet all NELAP requirements for parameters in which accreditations are held by TestAmerica St. Louis. Any exceptions to NELAP requirements are noted in the case narrative. **TestAmerica St. Louis' Florida certification number is E87689.** The case narrative is an integral part of this report.

This report shall not be reproduced, except in full, without the written approval of the laboratory.

All chemical analysis results are based upon sample as received, wet weight, unless noted otherwise. All radiochemistry results are based upon sample as dried and ground with the exception of tritium, unless requested wet weight by the client.

Observations/Nonconformances
Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

GC/MS Volatile Organics Method 624
Batch: 1124271

Acrolein was removed from the initial calibration lowest point due to poor response. The initial calibration still meets the minimum number of points and the reporting limits required. The compounds were removed within TestAmerica's selection of points policy.
Affected Samples:
F1D280529 (1): 60162412-SMP-PL5-WW-OTH-0710
F1D280529 (2): VOA BLANKS

There was insufficient sample volume to perform an MS/MSD analysis. An LCS/LCSD was performed to demonstrate accuracy and replicate precision.
Affected Samples:
F1D280529 (1): 60162412-SMP-PL5-WW-OTH-0710
F1D280529 (2): VOA BLANKS

COD Method 410.4
Batch: 1123142

The Matrix Spike recovery was outside the method QC limits of 90%-110%. The LCS was within acceptance limits. In accordance with the method (section 9.4.3), if the LCS is within 90%-110%, the laboratory performance is shown to be in control. The recovery problem encountered is judged to be either matrix or solution related and not system related.
Affected Samples:
F1D280529 (1): 60162412-SMP-PL5-WW-OTH-0710

Gross Alpha/Beta Method 900 MOD
Batch: 1118127

The reporting limit for Gross Alpha and Beta was not met due to a reduction of sample size attributed to the sample's high residual mass. The analytical results are reported.
Affected Samples:
F1D280529 (1): 60162412-SMP-PL5-WW-OTH-0710

There are no other observations or non-conformances associated with the analyses contained in this report.

METHODS SUMMARY

F1D280529

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
pH Aqueous	SW846 9040	SW846 9040
Chemical Oxygen Demand	MCAWW 410.4	MCAWW 410.4
Gross Alpha/Beta EPA 900	EPA 900.0 MOD	EPA 900.0
Isotopic Thorium by Alpha Spectroscopy	EML A-01-R MOD	
Isotopic Uranium by Alpha Spectroscopy	EML A-01-R MOD	
Non-Filterable Residue (TSS)	MCAWW 160.2	MCAWW 160.2
Purgeables	CFR136A 624	SW846 5030B
Radium-226 by GFPC	EPA 903.0 MOD	
Radium-228 by GFPC	EPA 904 MOD	
Trace Inductively Coupled Plasma (ICP) Metals	SW846 6010B	

References:

CFR136A "Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EML "ENVIRONMENTAL MEASUREMENTS LABORATORY PROCEDURES MANUAL" HASL-300 28TH EDITION, VOLUME I and II DEPARTMENT OF ENERGY

EPA "EASTERN ENVIRONMENTAL RADIATION FACILITY RADIOCHEMISTRY PROCEDURES MANUAL" US EPA EPA 520/5-84-006 AUGUST 1984

MCAWW "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

SAMPLE SUMMARY

F1D280529

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
MHMFQ	001	60162412-SMP-PL5-WW-OTH-0710	04/28/11	12:30
MHMF1	002	VOA BLANKS	04/28/11	12:30

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

AECOM Technical Services Inc.

Client Sample ID: 60162412-SMP-PL5-WW-OTH-0710

GC/MS Volatiles

Lot-Sample #...: F1D280529-001 Work Order #...: MHMFQ1AK Matrix.....: WATER
Date Sampled...: 04/28/11 12:30 Date Received..: 04/28/11
Prep Date.....: 05/03/11 Analysis Date..: 05/04/11
Prep Batch #...: 1124271 Analysis Time..: 08:32
Dilution Factor: 1

Method.....: CFR136A 624

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acrolein	ND	10	ug/L
Acrylonitrile	ND	10	ug/L
Benzene	ND	1.0	ug/L
Bromoform	ND	1.0	ug/L
Bromomethane	ND	2.0	ug/L
Carbon tetrachloride	ND	1.0	ug/L
Chlorobenzene	ND	1.0	ug/L
Chlorodibromomethane	ND	1.0	ug/L
Chloroethane	ND	2.0	ug/L
Chloroform	ND	1.0	ug/L
Chloromethane	ND	2.0	ug/L
Dichlorobromomethane	ND	1.0	ug/L
1,1-Dichloroethane	ND	1.0	ug/L
1,2-Dichloroethane	ND	1.0	ug/L
1,1-Dichloroethene	ND	1.0	ug/L
1,2-Dichloroethene (total)	ND	2.0	ug/L
1,2-Dichloropropane	ND	1.0	ug/L
cis-1,3-Dichloropropene	ND	1.0	ug/L
trans-1,3-Dichloropropene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Methylene chloride	ND	1.0	ug/L
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L
Tetrachloroethene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
1,1,1-Trichloroethane	ND	1.0	ug/L
1,1,2-Trichloroethane	ND	1.0	ug/L
Trichloroethene	ND	1.0	ug/L
Vinyl chloride	ND	2.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	100	(62 - 122)
Toluene-d8	116	(73 - 116)
4-Bromofluorobenzene	115	(68 - 118)

AECOM Technical Services Inc.

Client Sample ID: VOA BLANKS

GC/MS Volatiles

Lot-Sample #...: F1D280529-002 Work Order #...: MHMF11AA Matrix.....: WATER
Date Sampled...: 04/28/11 12:30 Date Received..: 04/28/11
Prep Date.....: 05/03/11 Analysis Date..: 05/04/11
Prep Batch #...: 1124271 Analysis Time..: 08:02
Dilution Factor: 1

Method.....: CFR136A 624

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Acrolein	ND	10	ug/L
Acrylonitrile	ND	10	ug/L
Benzene	ND	1.0	ug/L
Bromoform	ND	1.0	ug/L
Bromomethane	ND	2.0	ug/L
Carbon tetrachloride	ND	1.0	ug/L
Chlorobenzene	ND	1.0	ug/L
Chlorodibromomethane	ND	1.0	ug/L
Chloroethane	ND	2.0	ug/L
Chloroform	ND	1.0	ug/L
Chloromethane	ND	2.0	ug/L
Dichlorobromomethane	ND	1.0	ug/L
1,1-Dichloroethane	ND	1.0	ug/L
1,2-Dichloroethane	ND	1.0	ug/L
1,1-Dichloroethene	ND	1.0	ug/L
1,2-Dichloroethene (total)	ND	2.0	ug/L
1,2-Dichloropropane	ND	1.0	ug/L
cis-1,3-Dichloropropene	ND	1.0	ug/L
trans-1,3-Dichloropropene	ND	1.0	ug/L
Ethylbenzene	ND	1.0	ug/L
Methylene chloride	**0.67 J**	**1.0**	**ug/L**
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L
Tetrachloroethene	ND	1.0	ug/L
Toluene	ND	1.0	ug/L
1,1,1-Trichloroethane	ND	1.0	ug/L
1,1,2-Trichloroethane	ND	1.0	ug/L
Trichloroethene	ND	1.0	ug/L
Vinyl chloride	ND	2.0	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	97	(62 - 122)
Toluene-d8	115	(73 - 116)
4-Bromofluorobenzene	116	(68 - 118)

NOTE(S):

J Estimated result. Result is less than RL.

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: F1D280529
MB Lot-Sample #: F1E040000-271
Work Order #...: MHWKH1AA
Matrix.....: WATER
Prep Date.....: 05/03/11
Analysis Time..: 22:18
Analysis Date..: 05/03/11
Prep Batch #...: 1124271
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Acrolein	ND	10	ug/L	CFR136A 624
Acrylonitrile	ND	10	ug/L	CFR136A 624
Benzene	ND	1.0	ug/L	CFR136A 624
Bromoform	ND	1.0	ug/L	CFR136A 624
Bromomethane	ND	2.0	ug/L	CFR136A 624
Carbon tetrachloride	ND	1.0	ug/L	CFR136A 624
Chlorobenzene	ND	1.0	ug/L	CFR136A 624
Chlorodibromomethane	ND	1.0	ug/L	CFR136A 624
Chloroethane	ND	2.0	ug/L	CFR136A 624
Chloroform	ND	1.0	ug/L	CFR136A 624
Chloromethane	ND	2.0	ug/L	CFR136A 624
Dichlorobromomethane	ND	1.0	ug/L	CFR136A 624
1,1-Dichloroethane	ND	1.0	ug/L	CFR136A 624
1,2-Dichloroethane	ND	1.0	ug/L	CFR136A 624
1,1-Dichloroethene	ND	1.0	ug/L	CFR136A 624
1,2-Dichloroethene (total)	ND	2.0	ug/L	CFR136A 624
1,2-Dichloropropane	ND	1.0	ug/L	CFR136A 624
cis-1,3-Dichloropropene	ND	1.0	ug/L	CFR136A 624
trans-1,3-Dichloropropene	ND	1.0	ug/L	CFR136A 624
Ethylbenzene	ND	1.0	ug/L	CFR136A 624
Methylene chloride	ND	1.0	ug/L	CFR136A 624
1,1,2,2-Tetrachloroethane	ND	1.0	ug/L	CFR136A 624
Tetrachloroethene	ND	1.0	ug/L	CFR136A 624
Toluene	ND	1.0	ug/L	CFR136A 624
1,1,1-Trichloroethane	ND	1.0	ug/L	CFR136A 624
1,1,2-Trichloroethane	ND	1.0	ug/L	CFR136A 624
Trichloroethene	ND	1.0	ug/L	CFR136A 624
Vinyl chloride	ND	2.0	ug/L	CFR136A 624

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	102	(62 - 122)
Toluene-d8	115	(73 - 116)
4-Bromofluorobenzene	116	(68 - 118)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: F1D280529 Work Order #...: MHWKH1AC-LCS Matrix.....: WATER
LCS Lot-Sample#: F1E040000-271 MHWKH1AD-LCSD
Prep Date.....: 05/03/11 Analysis Date..: 05/03/11
Prep Batch #...: 1124271 Analysis Time..: 20:16
Dilution Factor: 1

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Acrolein	105	(40 - 140)			CFR136A 624
	117	(40 - 140)	11	(0-20)	CFR136A 624
Acrylonitrile	81	(67 - 140)			CFR136A 624
	97	(67 - 140)	18	(0-20)	CFR136A 624
Benzene	94	(76 - 119)			CFR136A 624
	104	(76 - 119)	10	(0-20)	CFR136A 624
Bromoform	74	(71 - 139)			CFR136A 624
	80	(71 - 139)	8.0	(0-20)	CFR136A 624
Bromomethane	88	(67 - 140)			CFR136A 624
	92	(67 - 140)	4.8	(0-20)	CFR136A 624
Carbon tetrachloride	89	(73 - 140)			CFR136A 624
	93	(73 - 140)	4.2	(0-20)	CFR136A 624
Chlorobenzene	89	(80 - 115)			CFR136A 624
	100	(80 - 115)	12	(0-20)	CFR136A 624
Chlorodibromomethane	82	(74 - 140)			CFR136A 624
	94	(74 - 140)	13	(0-20)	CFR136A 624
Chloroethane	89	(36 - 140)			CFR136A 624
	96	(36 - 140)	6.9	(0-20)	CFR136A 624
Chloroform	90	(77 - 121)			CFR136A 624
	100	(77 - 121)	10	(0-20)	CFR136A 624
Chloromethane	90	(41 - 140)			CFR136A 624
	95	(41 - 140)	4.7	(0-20)	CFR136A 624
Dichlorobromomethane	83	(72 - 138)			CFR136A 624
	92	(72 - 138)	10	(0-20)	CFR136A 624
1,1-Dichloroethane	92	(71 - 124)			CFR136A 624
	100	(71 - 124)	8.3	(0-20)	CFR136A 624
1,2-Dichloroethane	84	(67 - 133)			CFR136A 624
	96	(67 - 133)	14	(0-20)	CFR136A 624
1,1-Dichloroethene	90	(77 - 120)			CFR136A 624
	97	(77 - 120)	6.8	(0-20)	CFR136A 624
1,2-Dichloroethene (total)	89	(78 - 123)			CFR136A 624
	96	(78 - 123)	8.3	(0-20)	CFR136A 624
1,2-Dichloropropane	82	(67 - 137)			CFR136A 624
	93	(67 - 137)	12	(0-20)	CFR136A 624
cis-1,3-Dichloropropene	82	(58 - 140)			CFR136A 624
	93	(58 - 140)	12	(0-20)	CFR136A 624
trans-1,3-Dichloropropene	83	(61 - 140)			CFR136A 624
	95	(61 - 140)	14	(0-20)	CFR136A 624

(Continued on next page)

LABORATORY CONTROL SAMPLE EVALUATION REPORT

GC/MS Volatiles

Client Lot #...: F1D280529 Work Order #...: MHWKH1AC-LCS Matrix.....: WATER
LCS Lot-Sample#: F1E040000-271 MHWKH1AD-LCSD

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD
Ethylbenzene	87	(77 - 123)			CFR136A 624
	97	(77 - 123)	11	(0-20)	CFR136A 624
Methylene chloride	85	(62 - 127)			CFR136A 624
	95	(62 - 127)	11	(0-20)	CFR136A 624
1,1,2,2-Tetrachloroethane	82	(61 - 128)			CFR136A 624
	94	(61 - 128)	13	(0-20)	CFR136A 624
Tetrachloroethene	94	(67 - 140)			CFR136A 624
	103	(67 - 140)	9.4	(0-20)	CFR136A 624
Toluene	93	(75 - 120)			CFR136A 624
	102	(75 - 120)	9.1	(0-20)	CFR136A 624
1,1,1-Trichloroethane	94	(81 - 125)			CFR136A 624
	101	(81 - 125)	7.0	(0-20)	CFR136A 624
1,1,2-Trichloroethane	88	(73 - 126)			CFR136A 624
	102	(73 - 126)	14	(0-20)	CFR136A 624
Trichloroethene	91	(76 - 126)			CFR136A 624
	99	(76 - 126)	7.6	(0-20)	CFR136A 624
Vinyl chloride	80	(58 - 129)			CFR136A 624
	85	(58 - 129)	6.4	(0-20)	CFR136A 624

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1,2-Dichloroethane-d4	96	(62 - 126)
	104	(62 - 126)
Toluene-d8	107	(78 - 119)
	109	(78 - 119)
4-Bromofluorobenzene	106	(73 - 115)
	106	(73 - 115)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

AECOM Technical Services Inc.

Client Sample ID: 60162412-SMP-PL5-WW-OTH-0710

TOTAL Metals

Lot-Sample #...: F1D280529-001
Date Sampled...: 04/28/11 12:30 Date Received..: 04/28/11

Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 1119153						
Cadmium	ND	5	ug/L	SW846 6010B	04/29-05/02/11	MHMFQ1AC
		Dilution Factor: 1		Analysis Time..: 14:32		
Chromium	ND	10	ug/L	SW846 6010B	04/29-05/03/11	MHMFQ1AD
		Dilution Factor: 1		Analysis Time..: 17:43		
Copper	9.2 B	25	ug/L	SW846 6010B	04/29-05/03/11	MHMFQ1AE
		Dilution Factor: 1		Analysis Time..: 17:43		
Iron	497	100	ug/L	SW846 6010B	04/29-05/02/11	MHMFQ1AF
		Dilution Factor: 1		Analysis Time..: 14:32		
Nickel	18.0 B	40	ug/L	SW846 6010B	04/29-05/03/11	MHMFQ1AG
		Dilution Factor: 1		Analysis Time..: 17:43		
Lead	8.2 B	10	ug/L	SW846 6010B	04/29-05/03/11	MHMFQ1AH
		Dilution Factor: 1		Analysis Time..: 17:43		
Zinc	281	20	ug/L	SW846 6010B	04/29-05/03/11	MHMFQ1AJ
		Dilution Factor: 1		Analysis Time..: 17:43		

NOTE(S):

B Estimated result. Result is less than RL.

METHOD BLANK REPORT

TOTAL Metals

Client Lot #...: F1D280529 Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: F1D290000-153 Prep Batch #...: 1119153						
Cadmium	ND	5	ug/L	SW846 6010B	04/29-05/02/11	MHNEK1AA
		Dilution Factor: 1				
		Analysis Time..: 14:17				
Chromium	ND	10	ug/L	SW846 6010B	04/29-05/03/11	MHNEK1AC
		Dilution Factor: 1				
		Analysis Time..: 17:28				
Copper	ND	25	ug/L	SW846 6010B	04/29-05/03/11	MHNEK1AD
		Dilution Factor: 1				
		Analysis Time..: 17:28				
Iron	ND	100	ug/L	SW846 6010B	04/29-05/02/11	MHNEK1AE
		Dilution Factor: 1				
		Analysis Time..: 14:17				
Lead	1.6 B	10	ug/L	SW846 6010B	04/29-05/03/11	MHNEK1AG
		Dilution Factor: 1				
		Analysis Time..: 17:28				
Nickel	ND	40	ug/L	SW846 6010B	04/29-05/03/11	MHNEK1AF
		Dilution Factor: 1				
		Analysis Time..: 17:28				
Zinc	ND	20	ug/L	SW846 6010B	04/29-05/03/11	MHNEK1AH
		Dilution Factor: 1				
		Analysis Time..: 17:28				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

B Estimated result. Result is less than RL.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: F1D280529 Matrix.....: WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: F1D290000-153 **Prep Batch #...:** 1119153					
Cadmium	98	(80 - 120)	SW846 6010B	04/29-05/02/11	MHNEK1AJ
		Dilution Factor: 1	Analysis Time..: 14:25		
Chromium	100	(80 - 120)	SW846 6010B	04/29-05/03/11	MHNEK1AK
		Dilution Factor: 1	Analysis Time..: 17:36		
Copper	99	(80 - 120)	SW846 6010B	04/29-05/03/11	MHNEK1AL
		Dilution Factor: 1	Analysis Time..: 17:36		
Iron	100	(80 - 120)	SW846 6010B	04/29-05/02/11	MHNEK1AM
		Dilution Factor: 1	Analysis Time..: 14:25		
Nickel	100	(80 - 120)	SW846 6010B	04/29-05/03/11	MHNEK1AN
		Dilution Factor: 1	Analysis Time..: 17:36		
Lead	99	(80 - 120)	SW846 6010B	04/29-05/03/11	MHNEK1AP
		Dilution Factor: 1	Analysis Time..: 17:36		
Zinc	107	(80 - 120)	SW846 6010B	04/29-05/03/11	MHNEK1AQ
		Dilution Factor: 1	Analysis Time..: 17:36		

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE EVALUATION REPORT

TOTAL Metals

Client Lot #...: F1D280529 **Matrix.....:** WATER
Date Sampled...: 04/28/11 12:30 **Date Received..:** 04/28/11

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: F1D280529-001 **Prep Batch #...:** 1119153							
Cadmium	90	(75 - 125)			SW846 6010B	04/29-05/02/11	MHMFQ1A0
	90	(75 - 125)	0.21	(0-20)	SW846 6010B	04/29-05/02/11	MHMFQ1A1
		Dilution Factor: 1					
		Analysis Time..: 14:47					
Chromium	96	(75 - 125)			SW846 6010B	04/29-05/03/11	MHMFQ1A2
	96	(75 - 125)	0.01	(0-20)	SW846 6010B	04/29-05/03/11	MHMFQ1A3
		Dilution Factor: 1					
		Analysis Time..: 17:58					
Copper	95	(75 - 125)			SW846 6010B	04/29-05/03/11	MHMFQ1A4
	95	(75 - 125)	0.0	(0-20)	SW846 6010B	04/29-05/03/11	MHMFQ1A5
		Dilution Factor: 1					
		Analysis Time..: 17:58					
Iron	92	(75 - 125)			SW846 6010B	04/29-05/02/11	MHMFQ1A6
	92	(75 - 125)	0.29	(0-20)	SW846 6010B	04/29-05/02/11	MHMFQ1A7
		Dilution Factor: 1					
		Analysis Time..: 14:47					
Lead	93	(75 - 125)			SW846 6010B	04/29-05/03/11	MHMFQ1CA
	92	(75 - 125)	0.40	(0-20)	SW846 6010B	04/29-05/03/11	MHMFQ1CC
		Dilution Factor: 1					
		Analysis Time..: 17:58					
Nickel	93	(75 - 125)			SW846 6010B	04/29-05/03/11	MHMFQ1A8
	93	(75 - 125)	0.01	(0-20)	SW846 6010B	04/29-05/03/11	MHMFQ1A9
		Dilution Factor: 1					
		Analysis Time..: 17:58					
Zinc	104	(75 - 125)			SW846 6010B	04/29-05/03/11	MHMFQ1CD
	103	(75 - 125)	0.24	(0-20)	SW846 6010B	04/29-05/03/11	MHMFQ1CE
		Dilution Factor: 1					
		Analysis Time..: 17:58					

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

AECOM Technical Services Inc.

Client Sample ID: 60162412-SMP-PL5-WW-OTH-0710

General Chemistry

Lot-Sample #...: F1D280529-001 Work Order #...: MHMFQ Matrix.....: WATER
Date Sampled...: 04/28/11 12:30 Date Received..: 04/28/11

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
pH (liquid)	7.2	0.10	No Units	SW846 9040	04/29/11	1119114
		Dilution Factor: 1		Analysis Time..: 09:54		
COD	37.0	20.0	mg/L	MCAWW 410.4	05/02-05/03/11	1123142
		Dilution Factor: 1		Analysis Time..: 00:00		
Total Suspended Solids	9.0	4.0	mg/L	MCAWW 160.2	05/02-05/03/11	1122345
		Dilution Factor: 1		Analysis Time..: 00:00		

METHOD BLANK REPORT

General Chemistry

Client Lot #...: F1D280529 Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
COD		Work Order #: MHR5F1AA		MB Lot-Sample #:	F1E030000-142	
	ND	20.0	mg/L	MCAWW 410.4	05/02-05/03/11	1123142
		Dilution Factor: 1				
		Analysis Time..: 00:00				
Total Suspended Solids		Work Order #: MHR4P1AA		MB Lot-Sample #:	F1E020000-345	
	ND	4.0	mg/L	MCAWW 160.2	05/02-05/03/11	1122345
		Dilution Factor: 1				
		Analysis Time..: 00:00				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: F1D280529 Matrix.....: WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
pH (liquid)		Work Order #: MHNCD1AA	LCS Lot-Sample#: F1D290000-114		
	100	(99 - 101)	SW846 9040	04/29/11	1119114
		Dilution Factor: 1	Analysis Time..: 09:52		
COD		Work Order #: MHR5F1AC	LCS Lot-Sample#: F1E030000-142		
	101	(90 - 110)	MCAWW 410.4	05/02-05/03/11	1123142
		Dilution Factor: 1	Analysis Time..: 00:00		
Total Suspended Solids		Work Order #: MHR4P1AC	LCS Lot-Sample#: F1E020000-345		
	94	(79 - 122)	MCAWW 160.2	05/02-05/03/11	1122345
		Dilution Factor: 1	Analysis Time..: 00:00		

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE EVALUATION REPORT

General Chemistry

Client Lot #...: F1D280529 Matrix.....: WATER
Date Sampled...: 04/28/11 12:30 Date Received..: 04/28/11

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
COD		Work Order #...: MHMFQ1CH		MS Lot-Sample #: F1D280529-001	
	87 N	(90 - 110)	MCAWW 410.4	05/02-05/03/11	1123142

Dilution Factor: 1 Analysis Time..: 00:00

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

N Spiked analyte recovery is outside stated control limits.

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: F1D280529 Work Order #...: MHRN8-SMP Matrix.....: WATER
MHRN8-DUP
Date Sampled...: 04/28/11 09:45 Date Received..: 05/02/11

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Total Suspended Solids						SD Lot-Sample #: F1E020523-002		
	2.0 B	2.0 B	mg/L	0.0	(0-20)	MCAWW 160.2	05/02-05/03/11	1122345
			Dilution Factor: 1			Analysis Time..: 00:00		

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

B Estimated result. Result is less than RL.

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #...: F1D280529 Work Order #...: MHMFQ-SMP Matrix.....: WATER
MHMFQ-DUP
Date Sampled...: 04/28/11 12:30 Date Received..: 04/28/11

PARAM	RESULT	DUPLICATE RESULT	UNITS	RPD	RPD LIMIT	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
COD						SD Lot-Sample #:	F1D280529-001	
	37.0	38.0	mg/L	2.7	(0-20)	MCAWW 410.4	05/02-05/03/11	1123142
			Dilution Factor: 1			Analysis Time..: 00:00		
pH (liquid)						SD Lot-Sample #:	F1D280529-001	
	7.2	7.2	No Units	0.42	(0-0.0)	SW846 9040	04/29/11	1119114
			Dilution Factor: 1			Analysis Time..: 09:54		

AECOM Technical Services Inc.

Client Sample ID: 60162412-SMP-PL5-WW-OTH-0710

Radiochemistry

Lab Sample ID: F1D280529-001
Work Order: MHMFQ
Matrix: WATER

Date Collected: 04/28/11 1230
Date Received: 04/28/11 1335

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	mdc	Prep Date	Analysis Date
Iso THORIUM (SHORT CT) DOE A-01-R MOD				pCi/L		Batch # 1119257	Yld % 70
Thorium 228	0.18		0.15	1.00	0.17	04/29/11	05/02/11
Thorium 230	0.68		0.28	1.00	0.15	04/29/11	05/02/11
Thorium 232	0.17		0.14	1.00	0.13	04/29/11	05/02/11
Iso URANIUM (SHORT CT) DOE A-01-R MOD				pCi/L		Batch # 1119258	Yld % 80
Uranium 234	0.19		0.14	1.00	0.14	04/29/11	05/02/11
Uranium 235/236	-0.011	U	0.015	1.00	0.14	04/29/11	05/02/11
Uranium 238	0.17		0.13	1.00	0.13	04/29/11	05/02/11
Gross Alpha/Beta EPA 900				pCi/L		Batch # 1118127	Yld %
Gross Alpha	0.9	U	4.0	3.0	7.6	04/28/11	05/03/11
Gross Beta	14.3		4.0	4.0	4.9	04/28/11	05/03/11
Radium 226 by EPA 903.0 MOD				pCi/L		Batch # 1119119	Yld % 78
Radium (226)	1.08		0.27	1.00	0.20	04/29/11	05/02/11
Radium 228 by GFPC EPA 904 MOD				pCi/L		Batch # 1119127	Yld % 76
Radium 228	-0.36	U	0.25	1.00	0.48	04/29/11	05/04/11

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.
Bold results are greater than the MDC.

U Result is less than the sample detection limit.

AECOM Technical Services Inc.

Client Sample ID: 60162412-SMP-PL5-WW-OTH-0710 DUP

Radiochemistry

Lab Sample ID: F1D280529-001X
Work Order: MHMFQ
Matrix: WATER

Date Collected: 04/28/11 1230
Date Received: 04/28/11 1335

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	mdc	Prep Date	Analysis Date
Radium 226 by EPA 903.0 MOD				pCi/L		Batch # 1119119	Yld % 68
Radium (226)	1.22		0.30	1.00	0.22	04/29/11	05/02/11
Radium 228 by GFPC EPA 904 MOD				pCi/L		Batch # 1119127	Yld % 83
Radium 228	-0.23	U	0.22	1.00	0.42	04/29/11	05/04/11
Iso THORIUM (SHORT CT) DOE A-01-R MOD				pCi/L		Batch # 1119257	Yld % 73
Thorium 228	0.19		0.15	1.00	0.15	04/29/11	05/02/11
Thorium 230	0.47		0.23	1.00	0.13	04/29/11	05/02/11
Thorium 232	0.13		0.12	1.00	0.07	04/29/11	05/02/11
Iso URANIUM (SHORT CT) DOE A-01-R MOD				pCi/L		Batch # 1119258	Yld % 76
Uranium 234	0.14		0.13	1.00	0.12	04/29/11	05/02/11
Uranium 235/236	0.0	U	0.027	1.00	0.086	04/29/11	05/02/11
Uranium 238	0.29		0.18	1.00	0.15	04/29/11	05/02/11

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined by instrument performance only.
Bold results are greater than the MDC.

U Result is less than the sample detection limit.

METHOD BLANK REPORT

Radiochemistry

Client Lot ID: F1D280529
Matrix: WATER

Parameter	Result	Qual	Total Uncert. (2 σ+/-)	RL	MDC		Prep Date	Analysis Date	Lab Sample ID
Gross Alpha/Beta EPA 900			pCi/L	Batch #	1118127	Yld %			F1D280000-127B
Gross Alpha	0.57	U	0.52	2.00	0.76		04/28/11	05/03/11	
Gross Beta	-0.03	U	0.62	4.00	1.1		04/28/11	05/03/11	
Radium 228 by GFPC EPA 904 MOD			pCi/L	Batch #	1119127	Yld %	93		F1D290000-127B
Radium 228	-0.19	U	0.21	1.00	0.39		04/29/11	05/04/11	
Radium 226 by EPA 903.0 MOD			pCi/L	Batch #	1119119	Yld %	86		F1D290000-119B
Radium (226)	-0.017	U	0.077	1.00	0.17		04/29/11	05/02/11	
Iso URANIUM (SHORT CT) DOE A-01-R MOD			pCi/L	Batch #	1119258	Yld %	88		F1D290000-258B
Uranium 234	0.022	U	0.043	1.00	0.059		04/29/11	05/02/11	
Uranium 235/236	0.0	U	0.023	1.00	0.073		04/29/11	05/02/11	
Uranium 238	0.0	U	0.019	1.00	0.059		04/29/11	05/02/11	
Iso THORIUM (SHORT CT) DOE A-01-R MOD			pCi/L	Batch #	1119257	Yld %	89		F1D290000-257B
Thorium 228	0.005	U	0.082	1.00	0.19		04/29/11	05/03/11	
Thorium 230	0.10	U	0.11	1.00	0.15		04/29/11	05/03/11	
Thorium 232	0.049	U	0.077	1.00	0.13		04/29/11	05/03/11	

NOTE(S)

Data are incomplete without the case narrative.

MDC is determined using instrument performance only
Bold results are greater than the MDC.

U Result is less than the sample detection limit.

Laboratory Control Sample Report

Radiochemistry

Client Lot ID: F1D280529
Matrix: WATER

Parameter	Spike Amount	Result	Total Uncert. (2 σ+/-)	MDC	% Yld	% Rec	Lab Sample ID / QC Control Limits
Gross Alpha/Beta EPA 900			pCi/L	900.0 MOD			F1D280000-127C
Gross Alpha	49.4	50.0	5.6	1.0		101	(83 - 128)
Gross Beta	66.2	67.0	5.7	1.1		101	(90 - 115)
	Batch #:	1118127		Analysis Date:	05/03/11		
Radium 226 by EPA 903.0 MOD			pCi/L	903.0 MOD			F1D290000-119C
Radium (226)	11.3	10.7	1.2	0.2	84	95	(62 - 136)
	Batch #:	1119119		Analysis Date:	05/02/11		
Radium 228 by GFPC EPA 904 MOD			pCi/L	904 MOD			F1D290000-127C
Radium 228	5.56	5.45	0.65	0.33	92	98	(69 - 140)
	Batch #:	1119127		Analysis Date:	05/04/11		
Iso THORIUM (SHORT CT) DOE A-01-R MOD			pCi/L	A-01-R MOD			F1D290000-257C
Thorium 230	9.49	8.4	1.1	0.1	86	89	(79 - 122)
	Batch #:	1119257		Analysis Date:	05/02/11		
Iso URANIUM (SHORT CT) DOE A-01-R MOD			pCi/L	A-01-R MOD			F1D290000-258C
Uranium 234	13.1	13.6	1.6	0.1	73	104	(83 - 130)
Uranium 238	13.6	14.9	1.7	0.1	73	110	(86 - 128)
	Batch #:	1119258		Analysis Date:	05/02/11		

NOTE(S)

MDC is determined by instrument performance only
Calculations are performed before rounding to avoid round-off error in calculated results

MATRIX SPIKE REPORT

Radiochemistry

Client Lot Id: F1D140504
Matrix: WATER

Date Sampled: 04/11/11
Date Received: 04/14/11

Parameter	Spike Amount	Spike Result	Total Uncert. (2σ +/-)	Spike Yld.	Sample Result	Total Uncert. (2 σ +/-)	QC Sample ID %YLD	QC Sample ID %REC	QC Control Limits
Gross Alpha/Beta EPA 900			pCi/L		900.0 MOD			F1D140504-001	
Gross Beta	66.2	73.5	6.2		4.9	1.0		104	(51-150)
	Batch #:	1118127		Analysis Date:		05/03/11			
Gross Alpha/Beta EPA 900			pCi/L		900.0 MOD			F1D140504-001	
Gross Alpha	49.4	42.7	5.7		-0.51	0.83		87	(34-150)
	Batch #:	1118127		Analysis Date:		05/03/11			

NOTE(S)

Data are incomplete without the case narrative.

Calculations are performed before rounding to avoid round-off errors in calculated results.

DUPLICATE EVALUATION REPORT

Radiochemistry

Client Lot ID: F1D280529
Matrix: WATER

Date Sampled: 04/11/11
Date Received: 04/14/11

Parameter	SAMPLE Result		Total Uncert. (2σ+/-)	% Yld	DUPLICATE Result		Total Uncert. (2 σ+/-)	% Yld	QC Sample ID Precision	
Gross Alpha/Beta EPA 900				pCi/L	900.0 MOD				F1D140504-001	
Gross Alpha	-0.51	U	0.83		1.0	U	1.1		612	%RPD
Gross Beta	4.9		1.0		6.5		1.2		27	%RPD
	Batch #:		1118127	(Sample)	1118127		(Duplicate)			
Radium 226 by EPA 903.0 MOD				pCi/L	903.0 MOD				F1D280529-001	
Radium (226)	1.08		0.27	78	1.22		0.30	68	12	%RPD
	Batch #:		1119119	(Sample)	1119119		(Duplicate)			
Radium 228 by GFPC EPA 904 MOD				pCi/L	904 MOD				F1D280529-001	
Radium 228	-0.36	U	0.25	76	-0.23	U	0.22	83	44	%RPD
	Batch #:		1119127	(Sample)	1119127		(Duplicate)			
Iso THORIUM (SHORT CT) DOE A-01-R MOD				pCi/L	A-01-R MOD				F1D280529-001	
Thorium 228	0.18		0.15	70	0.19		0.15	73	7	%RPD
Thorium 230	0.68		0.28	70	0.47		0.23	73	37	%RPD
Thorium 232	0.17		0.14	70	0.13		0.12	73	26	%RPD
	Batch #:		1119257	(Sample)	1119257		(Duplicate)			
Iso URANIUM (SHORT CT) DOE A-01-R MOD				pCi/L	A-01-R MOD				F1D280529-001	
Uranium 234	0.19		0.14	80	0.14		0.13	76	26	%RPD
Uranium 235/236	-0.011	U	0.015	80	0.0	U	0.027	76	200	%RPD
Uranium 238	0.17		0.13	80	0.29		0.18	76	52	%RPD
	Batch #:		1119258	(Sample)	1119258		(Duplicate)			

NOTE(S)

Data are incomplete without the case narrative.
Calculations are performed before rounding to avoid round-off error in calculated results

U Result is less than the sample detection limit.

F1D280529 CLIENT ANALYSIS SUMMARY

Storage Loc: R129,2-6,METS,V

Project Manager: JA Quote #: 87754 SDG: F1D280529

Date Received: 2011-04-28

Project: Mallinckrodt St. Louis Plant

Analytical Due Date: 2011-05-04

PO#: 10372ACM Report to: Mark Tepperman

RUSH

Report Due Date: 2011-05-05

Client: 404224 AECOM Technical Services Inc.

Report Type: D Expanded Deliverable

#SMPS In LOT: 2 EDD Code: 00

SAMPLE LOGIN: enter lot # into SDG field. Gamma Spec is as received for 5 BD TAT. Gamma Ra226, Iso U and Iso Th will be logged when initial count is complete. Log ZHE EXTRACTION line item for TCLP VOA. Log TCLP EXTRACTION line item for TCLP analyses. RAD: Initial Gamma Spec counted as received . When complete dry/grind and prep for Gamma Ra226,TAR,Iso U and Iso Th. GAMMA SPEC. SHOULD BE COUNTED IN CLIENTS 500ML MARINELLI. RA226/228 - NO INGROWTH REQUIRED!!! RA226/228 MUST BE PREPPED IN SEPERATE ALIQUOTS!!! DO NOT PREP TOGETHER! STANDARD QC ON CLIENT SAMPLE IS REQUIRED FOR ALL ANALYSES.

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	I
1	60162412-SMP-PL5-WW-OTH-071			2011-04-28 / 1230	MHMFQ	WATER

SAMPLE COMMENTS:

	CR	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
	CU	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
	FE	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
	NI	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
	PB	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
	ZN	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
	CD	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
	XX	DN	CFR136 A	624	WATER, 624, VOA	25	PURGE AND TRAP - 25 ml. purge (Waters)	01	STANDARD TEST SET	PROT: O	WRK LOC	06	TIC: N	
	XX	ZZ	NONE	NONE	WATER, RAD SCREEN	88	NO SAMPLE PREPARATION PERFORMED / DIRECT	01	STANDARD TEST SET	PROT: A	WRK LOC	06		
	XX	2I	EML	A-01-R MOD	WATER, Iso URANIUM (SHORT CT)	J2	Extraction Chromatography - Sequential Actinides	01	STANDARD TEST SET	PROT: R	WRK LOC	06		
	XX	2K	EML	A-01-R MOD	WATER, Iso THORIUM (SHORT CT)	J2	Extraction Chromatography - Sequential Actinides	01	STANDARD TEST SET	PROT: R	WRK LOC	06		
	XX	Y9	EPA	900.0 MOD	WATER, Gross Alpha/Beta	FR	Evaporative Preparation, Total	01	STANDARD TEST SET	PROT: R	WRK LOC	06		
	XX	Z4	EPA	904 MOD	WATER, 904 MOD, Ra-226 (NO INGROWTH)	N*	No Ingrowth	2X	SPECIAL PROJECTS	PROT: R	WRK LOC	06		
	XX	ZY	EPA	903.0 MOD	WATER, 903 MOD, Ra-226 (NO INGROWTH)	N*	No Ingrowth	2X	SPECIAL PROJECTS	PROT: R	WRK LOC	06		
	XX	AL	MCAW W	160.2	WATER, 160.2, TSS	88	NO SAMPLE PREPARATION PERFORMED / DIRECT	01	STANDARD TEST SET	PROT: W	WRK LOC	06		
	XX	FJ	SW846	9040	WATER, 9040, pH	88	NO SAMPLE PREPARATION PERFORMED / DIRECT	01	STANDARD TEST SET	PROT: W	WRK LOC	06		
	XX	VO	MCAW W	410.4	WATER, 410.4, COD	21	DIGESTION, NON-METAL/INORGANICS	01	STANDARD TEST SET	PROT: W	WRK LOC	06		
D	CU	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
D	FE	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
D	NI	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
D	PB	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
D	ZN	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
D	CD	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
D	CR	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
S	CU	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
S	ZN	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
S	PB	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
S	FE	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
S	CR	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
S	CD	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
S	NI	QM	SW846	6010B	WATER, ICP Metals	GJ	METALS, TOTAL - 2% HCL	01	STANDARD TEST SET	PROT: M	WRK LOC	06		
X	XX	2I	EML	A-01-R MOD	WATER, Iso URANIUM (SHORT CT)	J2	Extraction Chromatography - Sequential Actinides	01	STANDARD TEST SET	PROT: R	WRK LOC	06		
X	XX	2K	EML	A-01-R MOD	WATER, Iso THORIUM (SHORT CT)	J2	Extraction Chromatography - Sequential Actinides	01	STANDARD TEST SET	PROT: R	WRK LOC	06		
X	XX	Z4	EPA	904 MOD	WATER, 904 MOD, Ra-226 (NO INGROWTH)	N*	No Ingrowth	2X	SPECIAL PROJECTS	PROT: R	WRK LOC	06		

F1D280529

CLIENT ANALYSIS SUMMARY

Storage Loc: R129,2-6,METS,V

Project Manager: JA
Quote #: 87754
SDG: F1D280529
Date Received: 2011-04-28
Project:
Mallinckrodt St. Louis Plant
Analytical Due Date: 2011-05-04
PO#: 10372ACM
Report to: Mark Tepperman
RUSH
Report Due Date: 2011-05-05
Client: 404224 AECOM Technical Services Inc.
Report Type: D Expanded Deliverable
#SMPS In LOT: 2
EDD Code: 00

SAMPLE LOGIN: enter lot # into SDG field. Gamma Spec is as received for 5 BD TAT. Gamma Ra226, Iso U and Iso Th will be logged when initial count is complete. Log ZHE EXTRACTION line item for TCLP VOA. Log TCLP EXTRACTION line item for TCLP analyses. RAD: Initial Gamma Spec counted as received . When complete dry/grind and prep for Gamma Ra226,TAR,Iso U and Iso Th. GAMMA SPEC. SHOULD BE COUNTED IN CLIENTS 500ML MARINELLI. RA226/228 - NO INGROWTH REQUIRED!!! RA226/228 MUST BE PREPPED IN SEPERATE ALIQUOTS!!! DO NOT PREP TOGETHER! STANDARD QC ON CLIENT SAMPLE IS REQUIRED FOR ALL ANALYSES.

X	XX	ZY	EPA	903.0 MOD	WATER, 903 MOD, Ra-226 (NO INGROWTH)	N*	No Ingrowth	2X	SPECIAL PROJECTS	PROT: R	WRK LOC	06	
X	XX	FJ	SW846	9040	WATER, 9040, pH	88	NO SAMPLE PREPARATION PERFORMED / DIRECT	01	STANDARD TEST SET	PROT: W	WRK LOC	06	

SAMPLE #	CLIENT SAMPLE ID	Site ID	Client Matrix	DATE/TIME SAMPLED	WORKORDER	I
2	VOA BLANKS			2011-04-28 / 1230	MHMF1	WATER

SAMPLE COMMENTS:

XX	DN	CFR136 624 A	WATER, 624, VOA	25	PURGE AND TRAP - 25 mL purge (Waters)	01	STANDARD TEST SET	PROT: O	WRK LOC	06	TIC: N		

St. Louis
13715 Rider Trail North
Earth City, MO 63045
phone 314.298.8566 fax 314.298.8757

CUR ~~HO~~ NVO
141

Chain of Custody Record

FID280529

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

Client Contact	Project Manager: Ed Palser	Site Contact: Casey Knuteson	Date: 4/28/11	COC No: 0710
AECOM	Tel/Fax: (618)444-5535	Lab Contact: Jayna Awold	Carrier: Test America	1 of 1 COCs
Address 8005 Outer Circle RD	Analysis Turnaround Time			Job No. 60162412
City/State/Zip Brooks City Base, TX 78235	Calendar (C) or Work Days (W) C			
(618)444-5535 Phone	TAT if different from Below			SDG No. 16x1L P, 3x40ml V, 5x500 P, 1x250 P
none FAX	☐ 2 weeks			
Project Name: Mallinckrodt C-T Decommissioning	■ 1 week			
Site: St. Louis Plant	☐ 2 days			
P O # 10372ACM	☐ 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type	Matrix	# of Cont.	pH	TSS	COD	ICP Metals (Cd, Cr, Cu, Fe, Pb, Ni, Zn)	Volatile Organics (EPA Method 624)	Gross Alpha/Beta	Isotopic Uranium (Alpha Spectrometry)	Radium-226 (GFPC, no decay/ingrowth)	Radium-228 (GFPC - no decay/ingrowth)	Isotopic Thorium (Alpha Spectrometry)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Sample Specific Notes:	
60162412-SMP-PL5-WW-OTH-0525 760	4/28/2011	12:30	Water	Water	15	x	x	x	x	x	x	x	x	x	x	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	* Further Testing if Gross Beta above 50 pci/L 2x40ml V	
VOC Blanks	n/a	n/a	n/a	n/a	2	n/a	n/a	n/a	n/a	x	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a		
n/a n/a n/a n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a n/a n/a n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a n/a n/a n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
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n/a n/a n/a n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
n/a n/a n/a n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____

Possible Hazard Identification
■ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* *Poison B* ☐ *Unknown* ☐

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ■ *Archive For* 1 *Months*

Special Instructions/QC Requirements & Comments: Possible hazards include radiological. Sample methods to comply with MSD Ordinance 12559 standards.

Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
[signature]	TA/AECom	4/28/11 1305	[signature]	TA	4/28/11 1305
[signature]	TA		[signature]	TA STL	4/28/11 1335

Lot F1D280529

TestAmerica - St. Louis

MSD 013261

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Lot #(s): F1D280529

CONDITION UPON RECEIPT FORM

Client: AECOM (MALLINCKRODT)

Quote No: 87754

COC/RFA No: 0710

141

Initiated By: NVD

Date: 4/28/11

Time: 1335 NVD

Shipping Information

Shipper: FedEx UPS DHL Courier Client Other: NT

Multiple Packages: Y N

Shipping # (s):*

1. N/A 2. 3. 4. 5. 6. 7. 8. 9. 10.

Sample Temperature (s):**

1. AMBIENT 2. 3. 4. 5. 6. 7. 8. 9. 10.

*Numbered shipping lines correspond to Numbered Sample Temp lines

**Sample must be received at 4°C ± 2°C- If not, note contents below. Temperature variance does NOT affect the following: Metals-Liquid or Rad tests- Liquid or Solids

Condition (Circle "Y" for yes, "N" for no and "N/A" for not applicable):

1.	Y N	Are there custody seals present on the cooler?	8.	Y N	Are there custody seals present on bottles?
2.	Y N N/A	Do custody seals on cooler appear to be tampered with?	9.	Y N N/A	Do custody seals on bottles appear to be tampered with?
3.	Y N	Were contents of cooler frisked after opening, but before unpacking?	10.	Y N N/A	Was sample received with proper pH[1]? (If not, make note below)
4.	Y N	Sample received with Chain of Custody?	11.	Y N	Sample received in proper containers?
5.	Y N N/A	Does the Chain of Custody match sample ID's on the container(s)?	12.	Y N N/A	Headspace in VOA or TOX liquid samples? (If Yes, note sample ID's below)
6.	Y N	Was sample received broken?	13.	Y N N/A	Was Internal COC/Workshare received?
7.	Y N	Is sample volume sufficient for analysis?	14.	Y N N/A	Was pH taken by original TestAmerica lab?

[1] For DOE-AL (Pantex, LANL, Sandia) sites, pH of ALL containers received must be verified, EXCEPT VOA, TOX and soils.

Notes:

SAMPLE ID 60162412-SMP-PL5-WW-OTH-0710 (2) VOA WERE RECD WITH HEADSPACE

Corrective Action:

☐ Client Contact Name: Informed by:

☐ Sample(s) processed "as is"

☐ Sample(s) on hold until: If released, notify:

Project Management Review: Jaymie Swalt Date: 5/2/11

THIS FORM MUST BE COMPLETED AT THE TIME THE ITEMS ARE BEING CHECKED IN. IF ANY ITEM IS COMPLETED BY SOMEONE OTHER THAN THE INITIATOR, THEN THAT PERSON IS REQUIRED TO APPLY THEIR INITIAL AND THE DATE NEXT TO THAT ITEM.

ADMIN-0004, REVISED 10/21/08 \\Slsvr01\QA\FORMS\ST-LOUIS\ADMIN\Admin004 rev11.doc

TO: Chris Verplancke, Finance Department

FROM: Steven M. Grace, DEC SMG

DATE: May 2, 2011

RE: **Wastewater User Charge Billing for Special Discharge**

Please bill, by invoice, the following charges applicable to an on-site special discharge approved in our letter dated October 30, 1998, as modified in letters dated November 20, 1998, July 19, 1999, March 28, 2001, October 13, 2004, June 19, 2006, and May 22, 2008. The discharge dates and quantity are from information submitted by Sharon Cotner, Corps of Engineers, in a letter dated April 28, 2011.

This charge is based on the rates in MSD Wastewater User Charge Ordinance 13021.

PARTY TO BILL: Larry Joellenbeck
The Shaw Group Inc.
1 Angelrodt Street
St. Louis, MO 63147

BILLING IS FOR: On-Site Special Discharge

DISCHARGE PERIOD: January through March 2011

SOURCE OF WASTE: Treated construction water from the St. Louis Downtown FUSRAP Site located at Mallinckrodt, Inc., 3600 N. Second Street, St. Louis, Missouri.

Discharge Period	Billing Item	Quantity	Units	Rate	Charge
1/1/11 - 3/31/11	Volume	69	CcF	$2.02	$139.38
Totals:	---	69	CcF	---	$139.38

If you have any questions, please call me on extension 8755.

bv

pc: Brian Gibson
Doug Mendoza
Larry Joellenbeck, The Shaw Group Inc., 1 Angelrodt St., St. Louis, MO 63147

File: IU, MALLINCKRODT INC [2112059600]

ACCOUNT NUMBER: **21120596-00**

COMPANY NAME: **MALLINCKRODT INC**

MAPS

FROM 12-13-07 THRU 01-28-10

CORRESPONDENCE

FROM 11-01-10 THRU 04-28-11

X	CORRESPONDENCE LOCATED IN OVERFLOW FILE

04-12-12 Moved to ARCHIV

ACCOUNT NUMBER: 21120596-00

COMPANY NAME: MALLINCKRODT INC
3600 N. 2nd St.
St. Louis, MO 63147

CORRESPONDENCE

FROM 01-12-10 THRU 10-27-10

X	CORRESPONDENCE LOCATED IN OVERFLOW ARCHIVE FILE CABINET

ACCOUNT NUMBER: 2112059600

COMPANY NAME: MALLINCKRODT INC
3600 N 2nd St.
St. Louis, MO 63147

CORRESPONDENCE

FROM 06-09-09 THRU 12-23-09

☑ CORRESPONDANCE LOCATED IN OVERFLOW FILE

06-15-11 Moved to Archive file cabinet

COVIDIEN

April 5, 2010

Mr. Jason Gill
Metropolitan St. Louis Sewer District
Department of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147

Re: MSD Inspection – Follow up Information and Updated Industrial User Questionnaire Information
Permit No. 2112059600 -2.1

Dear Mr. Gill,

Attached is the Mallinckrodt Inc. St. Louis Plant's follow-up information as we discussed during your site visit in January and our updated Industrial User Questionnaire.

We would like to request a revision to the Wastewater Source and Category description to Sample Point 080 by changing the "sanitary" reference to "laboratory waste".

In October, 2009 construction was completed for a new Hazardous Waste Storage Building. The project title was C.B.2536 (Covidien/Mallinckrodt Inc – Hazardous Waste Storage Bldg 116 – Destrehan St). Site Address: 101-129 Angelrodt 63147. A sewer tie in connection was constructed for storm water only under MSD Reference number P-0028720-00.

The two certification statements regarding 439 Absence Certification & Once per Year Sampling and 439 Surrogate Recommendation & Certification have been created in one document and signed by the plant's Site Director per your request and is attached. The 439 Absence Certification & Once per Year paragraph references SP930. In our current permit, the annual sampling requirement for diethylamine and triethylamine is not required and therefore, we have removed the SP930 reference from the certification statement.

On March 30, 2010 we submitted a request for a permit modification to reduce the frequency of sampling at SP912. The following is our response to Scott Rehmer's question as to how DMAc waste to the sewer is controlled in the Ioversol process. In the Ioversol process there is a DMAc solvent recovery system. As a cost benefit to the process, approximately 65% of the solvent is recovered in this system to minimize purchases of fresh DMAc. The DMAc is captured for this recovery system by decanting

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DIVISION OF
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COVIDIEN/MALLINCKRODT
3600 NORTH SECOND STREET
ST. LOUIS, MO 63147

TELEPHONE: 314-654-2000
FAX: 314-654-1251

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off the DMAc from the top of the batch while pumping in water in the bottom of the tank. All of the decanted liquor is collected and sent to the DMAc recovery system. A minor amount of DMAc is also collected in another reaction step by condensing the vapors from the reactor and collecting them in a tank which is pumped to the recovery system. There is approximately 2% DMAc remaining when it reaches its final major purge point, which is the Nanofiltration system. Any DMAc entering the Nanofiltration step is sent to the sewer via SP912.

A maximum of 1000 gallons or 7840 pounds of DMAc is charged per day in the process. The average daily discharge amount based on the last five years of weekly data is 1621 pounds or 23% of our daily maximum limit, which would indicate an 80% recovery of DMAc. Based on this information, we are requesting a reduced monitoring frequency from weekly to quarterly.

Industrial User Questionnaire Updates

Section C – Water Consumption and Wastewater Discharges
Item 7 c. Haulers. This has been revised to include the amount of water hauled off site as a content of hazardous waste hauled off site for disposal. Page 3 has been amended and is attached.

The Wastewater Section for Section E, Attachment 6 has been revised to reflect modifications to the water balance.

The Priority Pollutant list was revised to reflect three pollutants that were identified incorrectly. Zinc, chloromethane and dimethylphthalate should be listed as they were in the previous application as KP or Known Present. Pages 5 and 6 have been amended as well as Attachment 8 and are attached.

If you have any questions or require more detailed information, please contact me at 314.654.3374.

Sincerely,

Lisa Meyer

Lisa Meyer
Senior HSE Engineer

cc: Mr. Scott Rehmer, MSD
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COVIDIEN/MALLINCKRODT
3600 NORTH SECOND STREET
ST. LOUIS, MO 63147

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FAX: 314-654-1251

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439 Absence Certification & Once per Year Sampling

Based on the permittee's verification that all pollutants regulated under 40 CFR 439 Subpart B at sampling points 915, 935, and 936 are absent in the process wastewater discharged from pharmaceutical manufacturing operations, this permit requires sampling for those pollutants only once per year, with the results to be reported on the appropriate quarterly self-monitoring report. In addition, each quarterly self-monitoring report shall include a statement certifying that the determination on file, referenced by date, remains valid.

439 Surrogate Recommendation & Certification

Pursuant to the provisions of 40 CFR 439(1)(l) and (4) the District has accepted the permittee's recommendation to allow monitoring for surrogate pollutants at sampling points 920 and 937 in lieu of certain other pollutants regulated under 40 CFR 439, Subpart C, PSES. The permittee must maintain the documentation for this recommendation in the facility permit records. An updated recommendation shall be submitted to the District with each application for permit renewal and at any time, during the life of this permit, when changes in raw materials or processes or other factors could result in a change in the status of any pollutant for which monitoring, using a surrogate, has been allowed. In addition, each quarterly self-monitoring report shall include a statement certifying that the recommendation on file, referenced by date, remains valid.

I certify, since the last permit modification, that the above statements remain valid for the referenced wastewater outfalls at the St. Louis Plant.

Print or type name of signing official: Richard C. Proehl

Title: Site Director Telephone: 314.654.5816

Signature: Richard C. Proehl Date: 04/05/10

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DIVISION OF ENVIRONMENTAL COMPLIANCE

COVIDIEN/MALLINCKRODT
3600 NORTH SECOND STREET
ST. LOUIS, MO 63147

TELEPHONE: 314-654-2000
FAX: 314-654-1251

✓JM
✓JAG

COVIDIEN

April 14, 2010

Mr. Jason Gill
Metropolitan St. Louis Sewer District
Department of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147

Re: Second Updated Industrial User Questionnaire Information
Permit No. 2112059600 -2.1

Dear Mr. Gill,

Attached is the updated information as we discussed at your office on April 8, 2010 and in your email questions from April 12, 2010 for Mallinckrodt Inc. St. Louis Plant's Industrial User Questionnaire.

Section C – Water Consumption and Wastewater Discharges
Page 3 and Attachment 3 for Section C.8 has been amended and is attached.

The Wastewater Section for Section E, Attachment 6 has been revised to reflect modifications to the water balance.

The Priority Pollutant list was revised to reflect what is currently on file with MSD with the exception of the following priority pollutants. Selenium, Thallium, Hexachlorobenzene and Naphthalene are all listed as Suspected Absent (SA) on our form as we do not currently use these chemicals, but they may be present on our site as a result of past contamination. 2,3,7,8-tetrachlordibenzo-p-dioxin is listed as Known Absent (KA) on our form as we do not currently use or have any historical use of dioxin on our site. Pages 5 and 6 have been amended as well as Attachment 8 and are attached.

The parts washers in the plant use Crystal Clean. There is one small parts washer in our truck shop that uses carburetor cleaner. I have attached both MSDSs for your reference.

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DIVISION OF
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COVIDIEN/MALLINCKRODT
3600 NORTH SECOND STREET
ST. LOUIS, MO 63147

TELEPHONE: 314-654-2000
FAX: 314-654-1251

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Section F – Non-Sewered Wastes
Page 7 Item 2, Infectious Waste has been revised to reflect this quantity in pounds.

If you have any questions or require more detailed information, please contact me at 314.654.3374.

Sincerely,

Lisa Meyer
Senior HSE Engineer

cc: Mr. Scott Rehmer, MSD
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COVIDIEN/MALLINCKRODT
3600 NORTH SECOND STREET
ST. LOUIS, MO 63147

TELEPHONE: 314-654-2000
FAX: 314-654-1251

COVIDIEN

November 30, 2009

Mr. Scott M. Rehmer
Metropolitan St. Louis Sewer District
Department of Environmental Compliance
10 East Grand Avenue
St. Louis, MO 63147

Re: Industrial User Questionnaire – Permit Application
Permit No. 2112059600 -2.1

Dear Mr. Rehmer,

Attached is the Covidien d/b/a Mallinckrodt Inc. St. Louis Plant's completed Industrial User Questionnaire. This will serve as our permit application as you requested in your letter dated October 6, 2009.

If you have any questions or require more detailed information, please contact me at 314.654.3374.

Sincerely,

Lisa Meyer
Senior HSE Engineer

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COVIDIEN/MALLINCKRODT
3600 NORTH SECOND STREET
ST. LOUIS, MO 63147

TELEPHONE: 314-654-2000
FAX: 314-654-1251

FOR MSD USE ONLY		Category
Account Number:	21120596-00	SIU
TA:	Bissell	NONSIU
TS:	Salisbury	CIU
Reviewer:	JAG	NONTOX
Date:	12/1/09	TOXIC
		SUR
		NOPROC
		MULTI

METROPOLITAN ST. LOUIS SEWER DISTRICT
DIVISION OF ENVIRONMENTAL COMPLIANCE
INDUSTRIAL USER QUESTIONNAIRE

Note to Signing Official: In accordance with Title 40 of the Code of Federal Regulations Part 403, Section 403.14, information and data provided in this questionnaire, which identifies the nature and frequency of discharge, shall be available to the public without restriction. Requests for confidential treatment of other information shall be governed by procedures specified in 40 CFR Part 2. Should a discharge permit be required for your facility, the information in this questionnaire will be used to develop the permit.

SECTION A - GENERAL INFORMATION

1. Company Name: Mallinckrodt Inc.
2. Mailing Address: 3600 North Second Street
   City: St. Louis State Missouri Zip Code 63147
3. Premise Address: 3600 North Second Street
   City: St. Louis State Missouri Zip Code 63147
4. Person Authorized to Sign Reporting Documents (see note after Section H):
   Name: Richard C. Proehl
   Title: Site Director Phone Number (314) 654-5816
5. Check One: ◉ Existing Discharge ◯ Proposed Discharge
   If proposed, indicate discharge start date: _____
6. Shift Information:
   a. Number of shifts per work day: 3 and work days per week: 7
   b. Average number of employees per shift: 1st 744 2nd 168 3rd 66 Total: 978
   c. Shift start times: * Multiple shift schedules 1st 7:30 AM (HH:MM AM/PM) 2nd 4:00 PM (HH:MM AM/PM) 3rd 2:00 PM (HH:MM AM/PM)
   6:00 AM 6:00 PM

SECTION B - PRODUCT OR SERVICE INFORMATION

1. Briefly describe the primary manufacturing or service activities at the premise address and list the applicable SIC number for each activity:

	PRIMARY ACTIVITY	SIC NUMBER
a.	Reaction, separation, purification, drying and bulk packaging	2819
b.	Reaction, separation, purification, drying and bulk packaging	2833
c.	Pharmaceutical preparations (tabletizing) for final consumption	2834
d.	Reaction, separation, purification, drying and bulk packaging	2835
e.	Reaction, separation, purification, drying and bulk packaging	2869
f.		

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Company Name: Mallinckrodt Inc.
Premise Address: 3600 North Second Street

SECTION B - PRODUCT OR SERVICE INFORMATION (Continued)

2. Are primary activities generally batch or continuous processes ? ◉ batch ○ continuous

3. Principal raw materials used: See Attachment 1

4. Principal products produced: See Attachment 2

5. Check all activities which are conducted at your premise in addition to the primary activities described in B.1 above Indicate the SIC number, if known. Do not check activities which are already included in B.1.

ACTIVITY (with related 40 CFR Part)	SIC NO.	ACTIVITY (with related 40 CFR Part)	SIC NO.
☐ a. Adhesive and Sealants Mfg.		☐ nn. Nonferrous Metals Mfg. (421)	
☐ b. Aluminum Forming (467)		☐ oo. Oil and Gas Extraction (435)	
☐ c. Asbestos Mfg. (427)		☐ pp. Ore Mining and Dressing (440)	
☐ d. Battery Mfg. (461)		☐ qq. Organic Chem/Plastics/Synthetic Fibers Mfg (414)	
☐ e. Carbon Black Mfg. (458)		☐ rr. Paint Formulating (446)	
☐ f. Cement Mfg. (411)		☒ ss. Painting, Finishing or Paint Stripping	
☐ g. Centralized (non-Haz.) Waste Treatment (437)		☒ tt. Parts Washing	
☐ h. Coal Mining (434)		☐ uu. Paving and Roofing Mat'ls (Tars & Asphalt) (443)	
☐ i. Coil Coating (465)		☐ vv. Pesticide Chem Mfg/Formulating/Packaging (455)	
☐ j. Concentrated Animal Feeding Operations (412)		☐ ww. Petroleum Refining (419)	
☐ k. Concentrated Aquatic Animal Production (451)		☐ xx. Pharmaceutical Mfg. (439)	
☐ l. Copper Forming (468)		☐ yy. Phosphate Mfg. (422)	
☐ m. Dairy Products Processing (405)		☐ zz. Photographic Processing (459)	
☐ n. Drum Reconditioning		☐ aaa. Plastic Molding and Forming (463)	
☐ o. Electrical and Electronic Components (469)		☐ bbb. Porcelain Enameling (466)	
☐ p. Electroplating (413)		☐ ccc. Printing and Publishing	
☐ q. Explosives Mfg. (457)		☐ ddd. Pulp, Paper and Paperboard Mfg. (430)	
☐ r. Ferroalloy Mfg. (424)		☒ eee. Q.C. Laboratory	
☐ s. Fertilizer Mfg. (418)		☒ fff. R & D Laboratory	
☒ t. Food Preparation		☐ ggg. Radioactive Materials Processing	
☐ u. Fruit and Vegetable Processing (407)		☒ hhh. Repair Shop, Garage	
☒ v. General Offices		☐ iii. Rubber and Rubber Products Mfg. (428)	
☐ w. Glass Mfg. (426)		☐ jjj. Seafood Processing (408)	
☐ x. Grain Milling (406)		☐ kkk. Soap and Detergent Mfg. (417)	
☐ y. Gum and Wood Chemical Mfg. (454)		☐ lll. Solvent Recycling	
☒ z. Haz. Waste Treatment, Storage or Disposal		☐ mmm. Steam Electric Power Generation (423)	
☐ aa. Health Care or Hospital (460)		☐ nnn. Sugar Processing (409)	
☐ bb. Industrial Laundry		☐ ooo. Textile Mills (410)	
☐ cc. Ink Formulating (447)		☐ ppp. Timber Products Mfg. (429)	
☐ dd. Inorganic Chemicals Mfg. (415)		☐ qqq. Transportation Equipment Cleaning (442)	
☐ ee. Iron and Steel Mfg. (420)		☐ rrr. Transportation Services	
☐ ff. Leather Tanning and Finishing (425)		☐ sss. Used Oil Reclamation	
☒ gg. Machine Shop		☐ ttt. Vehicle/Equipment Washing	
☐ hh. Machinery Mfg. or Rebuilding (438)		☒ uuu. Warehousing	
☐ ii. Meat Processing (432)		☐ vvv. Waste Combustors (444)	
☐ jj. Metal Finishing (433)		☐ www. Waste Recycling	
☐ kk. Metal Molding and Casting (464)		☐ xxx. Others (Describe)	
☐ ll. Mineral Mining and Processing (436)		☐ yyy. Others (Describe)	
☐ mm. Nonferrous Metals Forming/Metal Powders (471)		☐ zzz. Others (Describe)	

6. Are your activities subject to seasonal variation? If "Yes," explain and indicate the month(s) of peak activity:

○ Yes ◉ No

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Company Name: Mallinckrodt Inc.
Premise Address: 3600 North Second Street

SECTION C - WATER CONSUMPTION AND WASTEWATER DISCHARGES

1. Raw Water Source(s):
   - ☒ City of St. Louis Water Div.
   - ☐ Missouri American Water Co.
   - ☐ Other municipal source _____
   - ☐ Hauled by contractor
   - ☐ Surface water
   - ☐ Private well
   - ☐ Other (describe) _____

2. Water Bill Addressee: Mallinckrodt Chemical PO Box 470158 3600 N 2nd St. St. Louis MO

3. Water Service Account Numbers: 349230-206290 (208 210 Mallinckrodt St)

4. List past twelve months water usage from:

				☒ Water Bills	☐ Other Sources
1st 3 mo period	9/15/08	through	12/15/08	126,338 Ccf	Ccf
2nd 3 mo period	12/15/08	through	3/15/09	176,415 Ccf	Ccf
3rd 3 mo period	3/15/09	through	6/15/09	159,255 Ccf	Ccf
4th 3 mo period	6/15/09	through	9/15/09	216,225 Ccf	Ccf

Water Bills and Other Sources Total: 678,233 Ccf = 1389913 GPD-calendar = 1389913 GPD-work

5. Describe any treatment or conditioning process performed on the raw water before use (list regeneration/reject water volume in 6h below):

6. Identify all water uses within your facility:

Water Uses	Estimated Average Daily Use (Gal per workday)
a. Sanitary	83200
b. Irrigation & lawn watering	0
c. Non-contact cooling water	150000
d. Contact cooling water	0
e. Process water	819813
f. Plant & equipment washdown	50000
g. Boiler	200000
h. Regeneration/reject water	86900
i. Other uses	0
j. Total of USES (6a through 6h):	1389913

(6a through 6i must equal total at item 4)

7. Identify all water losses and wastewater discharges from your facility:

Water Uses	Estimated Average Daily Loss/Discharge (Gal per workday)
a. Municipal sewer	1199755
b. Watercourse, storm drain, surface	0
c. Haulers	550
d. Evaporation	184858
e. Contained in product	4750
f. Total of LOSSES & DISCHARGES:	1389913

(7a through 7e must equal total at 6j)

8. For each activity you listed in Sections B.1 and B.5, list the average water usage and average wastewater discharge per workday. Attach additional sheets, if needed. (Total Avg. Water Use must equal total for 6e)

Item No	Activity	Type of Discharge: Cont	Batch	None	Avg. Water Use (GPD)	Avg. Discharge to Mun Sewer (GPD)	Date when activity first commenced at this facility
	See Attachment 3	○	○	○			
		○	○	○			
		○	○	○			
		○	○	○			
		○	○	○			
		○	○	○			
		○	○	○			
		○	○	○			
				Total:			

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REVISED – 2nd Revision

Company Name: Mallinckrodt Inc.
Premise Address: 3600 North Second Street

SECTION C - WATER CONSUMPTION AND WASTEWATER DISCHARGES

1. Raw Water Source(s):
   - ☒ City of St. Louis Water Div.
   - ☐ Missouri American Water Co.
   - ☐ Other municipal source _____
   - ☐ Hauled by contractor
   - ☐ Surface water
   - ☐ Private well
   - ☐ Other (describe) _____

2. Water Bill Addressee: Mallinckrodt Chemical PO Box 470158 3600 N 2nd St. St. Louis MO

3. Water Service Account Numbers: 349230-206290 (208 210 Mallinckrodt St)

4. List past twelve months water usage from:

				☒ Water Bills	☐ Other Sources
1st 3 mo period	9/15/08	through	12/15/08	126,338 Ccf	Ccf
2nd 3 mo period	12/15/08	through	3/15/09	176,415 Ccf	Ccf
3rd 3 mo period	3/15/09	through	6/15/09	159,255 Ccf	Ccf
4th 3 mo period	6/15/09	through	9/15/09	216,225 Ccf	Ccf

Water Bills and Other Sources Total: 678,233 Ccf = 1389913 GPD-calendar = 1389913 GPD-work

5. Describe any treatment or conditioning process performed on the raw water before use (list regeneration/reject water volume in 6h below):
Deionization and Soft Water Units

6. Identify all water uses within your facility:

Water Uses	Estimated Average Daily Use (Gal per workday)
a. Sanitary	~~85000~~ 83,200
b. Irrigation & lawn watering	0
c. Non-contact cooling water	150000
d. Contact cooling water	0
e. Process water	819571
f. Plant & equipment washdown	50000
g. Boiler	200000
h. Regeneration/reject water	~~85342~~
i. Other uses	0
j. Total of USES (6a through 6h):	1389913

(6a through 6i must equal total at item 4)

7. Identify all water losses and wastewater discharges from your facility:

Water Uses	Estimated Average Daily Loss/Discharge (Gal per workday)
a. Municipal sewer	~~1209613~~ 1,199,755
b. Watercourse, storm drain, surface	0
c. Haulers	550
d. Evaporation	175000
e. Contained in product	4750
f. Total of LOSSES & DISCHARGES:	1389913

(7a through 7e must equal total at 6j)

8. For each activity you listed in Sections B.1 and B.5, list the average water usage and average wastewater discharge per workday. Attach additional sheets, if needed. (Total Avg. Water Use must equal total for 6e)

Item No	Activity	Type of Discharge: Cont	Batch	None	Avg. Water Use (GPD)	Avg. Discharge to Mun Sewer (GPD)	Date when activity first commenced at this facility
	See Attachment 3	○	○	○			
		○	○	○			
		○	○	○			
		○	○	○			
		○	○	○			
		○	○	○			
		○	○	○			
		○	○	○			
				Total:			

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Ver. 5/2007

1st revision — see 2nd revision dated 4/15/10 JAG

Company Name: Mallinckrodt Inc.
Premise Address: 3600 North Second Street

SECTION C - WATER CONSUMPTION AND WASTEWATER DISCHARGES

1. Raw Water Source(s):
   - ☒ City of St. Louis Water Div.
   - ☐ Missouri American Water Co.
   - ☐ Other municipal source _____
   - ☐ Hauled by contractor
   - ☐ Surface water
   - ☐ Private well
   - ☐ Other (describe) _____

2. Water Bill Addressee: Mallinckrodt Chemical PO Box 470158 3600 N 2nd St. St. Louis MO

3. Water Service Account Numbers: 349230-206290 (208 210 Mallinckrodt St)

4. List past twelve months water usage from:

				☒ Water Bills	☐ Other Sources
1st 3 mo period	9/15/08	through	12/15/08	126,338 Ccf	Ccf
2nd 3 mo period	12/15/08	through	3/15/09	176,415 Ccf	Ccf
3rd 3 mo period	3/15/09	through	6/15/09	159,255 Ccf	Ccf
4th 3 mo period	6/15/09	through	9/15/09	216,225 Ccf	Ccf

Water Bills and Other Sources Total: 678,233 Ccf = 1389913 GPD-calendar = 1389913 GPD-work

5. Describe any treatment or conditioning process performed on the raw water before use (list regeneration/reject water volume in 6h below):
Deionization and Soft Water Units

6. Identify all water uses within your facility:

Water Uses	Estimated Average Daily Use (Gal per workday)
a. Sanitary	85000
b. Irrigation & lawn watering	0
c. Non-contact cooling water	100000
d. Contact cooling water	0
e. Process water	819571
f. Plant & equipment washdown	50000
g. Boiler	200000
h. Regeneration/reject water	135342
i. Other uses	0
j. Total of USES (6a through 6h):	1389913

(6a through 6i must equal total at item 4)

7. Identify all water losses and wastewater discharges from your facility:

Water Uses	Estimated Average Daily Loss/Discharge (Gal per workday)
a. Municipal sewer	1209613
b. Watercourse, storm drain, surface	0
c. Haulers	0
d. Evaporation	175000
e. Contained in product	5300
f. Total of LOSSES & DISCHARGES:	1389913

(7a through 7e must equal total at 6j)

8. For each activity you listed in Sections B.1 and B.5, list the average water usage and average wastewater discharge per workday. Attach additional sheets, if needed. (Total Avg. Water Use must equal total for 6e)

Item No	Activity	Type of Discharge: Cont	Batch	None	Avg. Water Use (GPD)	Avg. Discharge to Mun Sewer (GPD)	Date when activity first commenced at this facility
	See Attachment 3	○	○	○			
		○	○	○			
		○	○	○			
		○	○	○			
		○	○	○			
		○	○	○			
		○	○	○			
		○	○	○			
				Total:			

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Ver. 5/2007

1st Copy – see 2nd revision dated 4/15/10 JAG

Company Name: Mallinckrodt Inc.
Premise Address: 3600 North Second Street

SECTION D - SEWER CONNECTION INFORMATION See Attachment 4

1. Attach a scale drawing of your premise, which shows (for permit renewals, highlight any changes since last application):
   a. All buildings, structures, alleys, streets and other pertinent features.
   b. All sewers and drains, including all connections, inlets, manholes, vents and other access or control structures. Identify each sewer as sanitary, storm or combined and indicate its size.
   c. A sampling point for each connection to the public sewer.
   d. A sampling point for each discharge from a federally regulated categorical process.
   e. A sampling point for each discharge to a separate storm sewer or watercourse.

2. List each sampling point identified in 1c, d and e above and each connection for which there is no sampling point. Assign a sequential reference number to each location, starting with No. 1. Attach additional sheets, if needed.

Reference Number	Sewer Size (inches)	Description of sewer sampling point or connection. (Vent, manhole, valve, other appurtenance. Indicate size & location)	Upstream to other point? Yes	Upstream to other point? No	List Ref. No.	Total avg flow per workday(GPD)
1		See Attachment 5	○	○		
2			○	○		
3			○	○		
4			○	○		
5			○	○		
6			○	○		
7			○	○		

Grand Total Average Flow per Workday: 0

SECTION E - WASTEWATER INFORMATION See Attachment 6

1. For each point listed in Section D.2 above, list the wastewater discharge corresponding to each water usage listed in Section C.6. Attach additional sheets, if needed.

Type of Wastewater	Discharge Quantity (GPD-workday) for each sampling point or connection listed in D.2							Facility Total (See instr.)
	1	2	3	4	5	6	7	
	upstream to __	upstream to __	upstream to __	upstream to __	upstream to __	upstream to __	upstream to __	
a. Sanitary								0
c. Non-contact cooling water								0
d. Contact cooling water								0
e. Process (From C.8)								0
								0
								0
								0
								0
								0
								0
								0
								0
f. Plant & equipment washdown								0
g. Boiler blowdown								0
h. Regeneration/reject water								0
i. Other								0
Totals (Same as D.2):								0

2. If any of the above points discharge to a watercourse or to a separate storm sewer, complete the following:

NPDES Outfall Number NA

NPDES Permit Number

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3. Do any of the above sampling points also convey stormwater from your premise ?

See Attachment 6

4. Do you pretreat any of the wastes discharged through any of the above points ?

See Attachment 6

MSD 013279

Company Name: Mallinckrodt Inc.
Premise Address: 3600 North Second Street

SECTION E - WASTEWATER INFORMATION (Continued)

5. Describe the type of wastewater pretreatment you employ prior to each point for which you marked "Yes" in E.4

Ref. No.	Pretreatment System Description
	See Attachment 7

6. Does your facility have a written:

a. Spill control plan ? ◉ Yes ○ No
b. Waste minimization plan ? ◉ Yes ○ No
c. Solvent management plan ? ◉ Yes ○ No
d. Slug discharge control plan ? ◉ Yes ○ No

7. If any wastewater analyses have been performed on the wastewater discharges from your facility attach copies of the most recent data. Be sure to specify the locations from which the samples were collected. Attach sketches, plans, drawings, etc. as necessary. Permit renewal applications, only, may skip this item.

8. Priority Pollutant Information: Check one of the four boxes by each listed chemical to indicate whether it is: "Suspected Absent", "Known Absent", "Suspected Present" or "Known Present" ON YOUR PREMISE. Any chemical which is used in your manufacturing or service activity or is generated as a product or as a by-product should be marked "Known Present." Some pollutants are known by other names. Refer to the instruction booklet for synonyms for those pollutants which have an asterisk (*):

SA = "Suspected Absent" KA = "Known Absent" SP = "Suspected Present" KP = "Known Present"

Item No	PRIORITY POLLUTANT	SA	KA	SP	KP
1.	asbestos (fibrous)	○	○	○	◉
2.	cyanide (total)	○	○	○	◉
3.	antimony (total)	○	○	◉	○
4.	arsenic (total)	○	○	◉	○
5.	beryllium (total)	◉	○	○	○
6.	cadmium (total)	○	○	○	◉
7.	chromium (total)	○	○	○	◉
8.	copper (total)	○	○	○	◉
9.	lead (total)	○	○	○	◉
10.	mercury (total)	○	○	○	◉
11.	nickel (total)	○	○	○	◉
12.	selenium (total)	◉	○	○	○
13.	silver (total)	○	○	◉	○
14.	thallium (total)	◉	○	○	○
15.	zinc (total)	○	○	○	◉
16.	acenaphthene	◉	○	○	○
17.	acenaphthylene	◉	○	○	○
18.	acrolein	○	○	◉	○
19.	acrylonitrile	○	○	◉	○
20.	aldrin	◉	○	○	○
21.	anthracene	◉	○	○	○
22.	benzene	○	○	○	◉
23.	benzidine	○	○	◉	○
24.	benzo (a) anthracene *	◉	○	○	○
25.	benzo (a) pyrene	○	○	◉	○
26.	benzo (b) fluoranthene	◉	○	○	○
27.	benzo (g,h,i) perylene *	◉	○	○	○
28.	benzo (k) fluoranthene *	◉	○	○	○
29.	alpha-BHC	◉	○	○	○
30.	beta-BHC	◉	○	○	○
31.	delta-BHC	◉	○	○	○
32.	gamma-BHC *	◉	○	○	○
33.	bis (2-chloroethyl) ether *	◉	○	○	○
34.	bis (2-chloroethoxy) methane *	◉	○	○	○
35.	bis (2-chloroisopropyl) ether *	◉	○	○	○
36.	Reserved				
37.	bis (2-ethylhexyl) phthalate	○	○	○	◉
38.	bromodichloromethane *	○	○	◉	○
39.	bromoform *	◉	○	○	○
40.	bromomethane *	○	○	◉	○
41.	4-bromophenylphenyl ether	◉	○	○	○
42.	butylbenzyl phthalate	◉	○	○	○
43.	carbon tetrachloride *	○	○	○	◉
44.	chlordane	◉	○	○	○
45.	4-chloro-3-methylphenol *	◉	○	○	○
46.	chlorobenzene	○	○	○	◉
47.	chloroethane *	◉	○	○	○
48.	2-chloroethylvinyl ether	◉	○	○	○
49.	chloroform *	○	○	○	◉
50.	chloromethane *	○	○	○	◉
51.	2-chloronaphthalene	◉	○	○	○
52.	2-chlorophenol *	○	○	◉	○
53.	4-chlorophenylphenyl ether	◉	○	○	○
54.	chrysene *	◉	○	○	○
55.	4, 4'-DDD *	◉	○	○	○
56.	4, 4'-DDE *	◉	○	○	○
57.	4, 4'-DDT *	◉	○	○	○
58.	dibenzo (a,h) anthracene *	◉	○	○	○
59.	dibromochloromethane	○	○	◉	○
60.	1, 2-dichlorobenzene *	○	○	◉	○
61.	1, 3-dichlorobenzene *	○	○	◉	○
62.	1, 4-dichlorobenzene *	○	○	◉	○
63.	3, 3'-dichlorobenzidine	◉	○	○	○
64.	Reserved				
65.	1, 1-dichloroethane *	◉	○	○	○
66.	1, 2-dichloroethane *	○	○	◉	○
67.	1, 1-dichloroethene *	◉	○	○	○
68.	trans-1, 2-dichloroethene *	◉	○	○	○
69.	2, 4-dichlorophenol	◉	○	○	○
70.	1, 2-dichloropropane	◉	○	○	○

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Company Name: Mallinckrodt Inc.
Premise Address: 3600 North Second Street

SECTION E - WASTEWATER INFORMATION (Continued)

5. Describe the type of wastewater pretreatment you employ prior to each point for which you marked "Yes" in E.4

Ref. No.	Pretreatment System Description
	See Attachment 7

6. Does your facility have a written:

a. Spill control plan ? (●) Yes ( ) No
b. Waste minimization plan ? (●) Yes ( ) No
c. Solvent management plan ? (●) Yes ( ) No
d. Slug discharge control plan ? (●) Yes ( ) No

7. If any wastewater analyses have been performed on the wastewater discharges from your facility attach copies of the most recent data. Be sure to specify the locations from which the samples were collected. Attach sketches, plans, drawings, etc. as necessary. Permit renewal applications, only, may skip this item.

8. Priority Pollutant Information: Check one of the four boxes by each listed chemical to indicate whether it is: "Suspected Absent", "Known Absent", "Suspected Present" or "Known Present" ON YOUR PREMISE. Any chemical which is used in your manufacturing or service activity or is generated as a product or as a by-product should be marked "Known Present." Some pollutants are known by other names. Refer to the instruction booklet for synonyms for those pollutants which have an asterisk (*):

SA = "Suspected Absent" KA = "Known Absent" SP = "Suspected Present" KP = "Known Present"

Item No	PRIORITY POLLUTANT	SA	KA	SP	KP
1.	asbestos (fibrous)	( )	( )	( )	(●)
2.	cyanide (total)	( )	( )	( )	(●)
3.	antimony (total)	( )	( )	(●)	( )
4.	arsenic (total)	( )	( )	(●)	( )
5.	beryllium (total)	(●)	( )	( )	( )
6.	cadmium (total)	( )	( )	( )	(●)
7.	chromium (total)	( )	( )	( )	(●)
8.	copper (total)	( )	( )	( )	(●)
9.	lead (total)	( )	( )	( )	(●)
10.	mercury (total)	( )	( )	( )	(●)
11.	nickel (total)	( )	( )	( )	(●)
12.	selenium (total)	(●)	( )	( )	( )
13.	silver (total)	( )	( )	(●)	( )
14.	thallium (total)	(●)	( )	( )	( )
15.	zinc (total)	( )	( )	( )	(●)
16.	acenaphthene	(●)	( )	( )	( )
17.	acenaphthylene	(●)	( )	( )	( )
18.	acrolein	(●)	( )	( )	( )
19.	acrylonitrile	( )	( )	(●)	( )
20.	aldrin	(●)	( )	( )	( )
21.	anthracene	(●)	( )	( )	( )
22.	benzene	( )	( )	( )	(●)
23.	benzidine	( )	( )	(●)	( )
24.	benzo (a) anthracene *	(●)	( )	( )	( )
25.	benzo (a) pyrene	(●)	( )	( )	( )
26.	benzo (b) fluoranthene	(●)	( )	( )	( )
27.	benzo (g,h,i) perylene *	(●)	( )	( )	( )
28.	benzo (k) fluoranthene *	(●)	( )	( )	( )
29.	alpha-BHC	(●)	( )	( )	( )
30.	beta-BHC	(●)	( )	( )	( )
31.	delta-BHC	(●)	( )	( )	( )
32.	gamma-BHC *	(●)	( )	( )	( )
33.	bis (2-chloroethyl) ether *	(●)	( )	( )	( )
34.	bis (2-chloroethoxy) methane *	(●)	( )	( )	( )
35.	bis (2-chloroisopropyl) ether *	(●)	( )	( )	( )
36.	Reserved				
37.	bis (2-ethylhexyl) phthalate	( )	( )	( )	(●)
38.	bromodichloromethane *	( )	( )	(●)	( )
39.	bromoform *	(●)	( )	( )	( )
40.	bromomethane *	( )	( )	(●)	( )
41.	4-bromophenylphenyl ether	(●)	( )	( )	( )
42.	butylbenzyl phthalate	(●)	( )	( )	( )
43.	carbon tetrachlroride *	( )	( )	( )	(●)
44.	chlordane	(●)	( )	( )	( )
45.	4-chloro-3-methylphenol *	(●)	( )	( )	( )
46.	chlorobenzene	( )	( )	( )	(●)
47.	chloroethane *	(●)	( )	( )	( )
48.	2-chloroethylvinyl ether	(●)	( )	( )	( )
49.	chloroform *	( )	( )	( )	(●)
50.	chloromethane *	( )	( )	( )	(●)
51.	2-chloronaphthalene	(●)	( )	( )	( )
52.	2-chlorophenol *	( )	( )	(●)	( )
53.	4-chlorophenylphenyl ether	(●)	( )	( )	( )
54.	chrysene *	(●)	( )	( )	( )
55.	4, 4'-DDD *	(●)	( )	( )	( )
56.	4, 4'-DDE *	(●)	( )	( )	( )
57.	4, 4'-DDT *	(●)	( )	( )	( )
58.	dibenzo (a,h) anthracene *	(●)	( )	( )	( )
59.	dibromochloromethane	( )	( )	(●)	( )
60.	1, 2-dichlorobenzene *	( )	( )	(●)	( )
61.	1, 3-dichlorobenzene *	( )	( )	(●)	( )
62.	1, 4-dichlorobenzene *	( )	( )	(●)	( )
63.	3, 3'-dichlorobenzidine	(●)	( )	( )	( )
64.	Reserved				
65.	1, 1-dichloroethane *	(●)	( )	( )	( )
66.	1, 2-dichloroethane *	(●)	( )	(●)	( )
67.	1, 1-dichloroethene *	(●)	( )	( )	( )
68.	trans-1, 2-dichloroethene *	(●)	( )	( )	( )
69.	2, 4-dichlorophenol	(●)	( )	( )	( )
70.	1, 2-dichloropropane *	(●)	( )	( )	( )

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1st revision - see 2nd revision dated 4/15/10 JAG

Company Name: Mallinckrodt Inc.
Premise Address: 3600 North Second Street

SECTION E - WASTEWATER INFORMATION (Continued)

5. Describe the type of wastewater pretreatment you employ prior to each point for which you marked "Yes" in E.4

Ref. No.	Pretreatment System Description
	See Attachment 7

6. Does your facility have a written:

a. Spill control plan ? (●) Yes ( ) No
b. Waste minimization plan ? (●) Yes ( ) No
c. Solvent management plan ? (●) Yes ( ) No
d. Slug discharge control plan ? (●) Yes ( ) No

7. If any wastewater analyses have been performed on the wastewater discharges from your facility attach copies of the most recent data. Be sure to specify the locations from which the samples were collected. Attach sketches, plans, drawings, etc. as necessary. Permit renewal applications, only, may skip this item.

8. Priority Pollutant Information: Check one of the four boxes by each listed chemical to indicate whether it is: "Suspected Absent", "Known Absent", "Suspected Present" or "Known Present" ON YOUR PREMISE. Any chemical which is used in your manufacturing or service activity or is generated as a product or as a by-product should be marked "Known Present." Some pollutants are known by other names. Refer to the instruction booklet for synonyms for those pollutants which have an asterisk (*):

SA = "Suspected Absent" KA = "Known Absent" SP = "Suspected Present" KP = "Known Present"

Item No	PRIORITY POLLUTANT	SA	KA	SP	KP
1.	asbestos (fibrous)	( )	( )	( )	(●)
2.	cyanide (total)	( )	( )	( )	(●)
3.	antimony (total)	( )	( )	(●)	( )
4.	arsenic (total)	( )	( )	(●)	( )
5.	beryllium (total)	(●)	( )	( )	( )
6.	cadmium (total)	( )	( )	( )	(●)
7.	chromium (total)	( )	( )	( )	(●)
8.	copper (total)	( )	( )	( )	(●)
9.	lead (total)	( )	( )	( )	(●)
10.	mercury (total)	( )	( )	( )	(●)
11.	nickel (total)	( )	( )	( )	(●)
12.	selenium (total)	(●)	( )	( )	( )
13.	silver (total)	( )	( )	(●)	( )
14.	thallium (total)	(●)	( )	( )	( )
15.	zinc (total)	( )	( )	(X)	(●) JAG
16.	acenaphthene	(●)	( )	( )	( )
17.	acenaphthylene	(●)	( )	( )	( )
18.	acrolein	(X)	( )	(●)	( ) * JAG
19.	acrylonitrile	( )	( )	(●)	( )
20.	aldrin	(●)	( )	( )	( )
21.	anthracene	(●)	( )	( )	( )
22.	benzene	( )	( )	( )	(●)
23.	benzidine	( )	( )	(●)	( )
24.	benzo (a) anthracene *	(●)	( )	( )	( )
25.	benzo (a) pyrene	(X)	( )	(●)	( ) JAG
26.	benzo (b) fluoranthene	(●)	( )	( )	( )
27.	benzo (g,h,i) perylene *	(●)	( )	( )	( )
28.	benzo (k) fluoranthene *	(●)	( )	( )	( )
29.	alpha-BHC	(●)	( )	( )	( )
30.	beta-BHC	(●)	( )	( )	( )
31.	delta-BHC	(●)	( )	( )	( )
32.	gamma-BHC *	(●)	( )	( )	( )
33.	bis (2-chloroethyl) ether *	(●)	( )	( )	( )
34.	bis (2-chloroethoxy) methane *	(●)	( )	( )	( )
35.	bis (2-chloroisopropyl) ether *	(●)	( )	( )	( )
36.	Reserved				
37.	bis (2-ethylhexyl) phthalate	( )	( )	( )	(●)
38.	bromodichloromethane *	( )	( )	(●)	( )
39.	bromoform *	(●)	( )	( )	( )
40.	bromomethane *	( )	( )	(●)	( )
41.	4-bromophenylphenyl ether	(●)	( )	( )	( )
42.	butylbenzyl phthalate	(●)	( )	( )	( )
43.	carbon tetrachloride *	( )	( )	( )	(●) *
44.	chlordane	(●)	( )	( )	( )
45.	4-chloro-3-methylphenol *	(●)	( )	( )	( )
46.	chlorobenzene	( )	( )	( )	(●)
47.	chloroethane *	(●)	( )	( )	( )
48.	2-chloroethylvinyl ether	(●)	( )	( )	( )
49.	chloroform *	( )	( )	( )	(●)
50.	chloromethane *	( )	( )	(X)	(●) JAG
51.	2-chloronaphthalene	(●)	( )	( )	( )
52.	2-chlorophenol *	( )	( )	(●)	( )
53.	4-chlorophenylphenyl ether	(●)	( )	( )	( )
54.	chrysene *	(●)	( )	( )	( )
55.	4, 4'-DDD *	(●)	( )	( )	( )
56.	4, 4'-DDE *	(●)	( )	( )	( )
57.	4, 4'-DDT *	(●)	( )	( )	( )
58.	dibenzo (a,h) anthracene *	(●)	( )	( )	( )
59.	dibromochloromethane	( )	( )	(●)	( )
60.	1, 2-dichlorobenzene *	( )	( )	(●)	( )
61.	1, 3-dichlorobenzene *	( )	( )	(●)	( )
62.	1, 4-dichlorobenzene *	( )	( )	(●)	( )
63.	3, 3'-dichlorobenzidine	(●)	( )	( )	( )
64.	Reserved				
65.	1, 1-dichloroethane *	(●)	( )	( )	( )
66.	1, 2-dichloroethane *	( )	( )	(●)	( )
67.	1, 1-dichloroethene *	(●)	( )	( )	( )
68.	trans-1, 2-dichloroethene *	(●)	( )	( )	( )
69.	2, 4-dichlorophenol *	(●)	( )	( )	( )
70.	1, 2-dichloropropane *	(●)	( )	( )	( )

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Company Name: Mallinckrodt Inc.
Premise Address: 3600 North Second Street

SECTION E - WASTEWATER INFORMATION (Continued)

Priority Pollutant Information (Continued)

SA = "Suspected Absent" KA = "Known Absent" SP = "Suspected Present" KP = "Known Present"

Item No	PRIORITY POLLUTANT	SA	KA	SP	KP
71.	(cis and trans) 1, 3-dichloropropene *	●	○	○	○
72.	dieldrin	○	○	●	○
73.	diethylphthalate *	○	○	●	○
74.	2, 4-dimethylphenol *	○	○	●	○
75.	dimethyl phthalate	○	○	○	●
76.	di-n-butyl phthalate	●	○	○	○
77.	di-n-octyl phthalate *	●	○	○	○
78.	4, 6-dinitro-2-methylphenol *	●	○	○	○
79.	2, 4-dinitrophenol	○	○	●	○
80.	2, 4-dinitrotoluene	○	○	●	○
81.	2, 6-dinitrotoluene	●	○	○	○
82.	1, 2-diphenylhydrazine *	●	○	○	○
83.	endosulfan I *	●	○	○	○
84.	endosulfan II *	●	○	○	○
85.	endosulfan sulfate	●	○	○	○
86.	endrin	●	○	○	○
87.	endrin aldehyde	●	○	○	○
88.	ethylbenzene	○	○	○	●
89.	fluoranthene	●	○	○	○
90.	fluorene *	●	○	○	○
91.	heptachlor	●	○	○	○
92.	heptachlor epoxide	●	○	○	○
93.	hexachlorobenzene *	●	○	○	○
94.	hexachlorobutadiene	○	○	●	○
95.	hexachlorocyclopentadiene *	○	○	●	○
96.	hexachloroethane *	○	○	●	○
97.	indeno (1, 2, 3-cd) pyrene *	●	○	○	○
98.	isophorone *	●	○	○	○
99.	methylene chloride *	○	○	○	●
100.	naphthalene	●	○	○	○
101.	nitrobenzene	○	○	●	○
102.	2-nitrophenol	○	○	●	○
103.	4-nitrophenol *	○	○	●	○
104.	N-nitrosodimethylamine *	○	○	●	○
105.	N-nitrosodi-n-propylamine *	●	○	○	○
106.	N-nitrosodiphenylamine	●	○	○	○
107.	PCB-1016 *	●	○	○	○
108.	PCB-1221 *	●	○	○	○
109.	PCB-1232 *	●	○	○	○
110.	PCB-1242 *	●	○	○	○
111.	PCB-1248 *	●	○	○	○
112.	PCB-1254 *	●	○	○	○
113.	PCB-1260 *	●	○	○	○
114.	pentachlorophenol	●	○	○	○
115.	phenanthrene	○	○	●	○
116.	phenol	○	○	○	●
117.	pyrene	●	○	○	○
118.	2, 3, 7, 8-tetrachlorodibenzo-p-dioxin *	○	●	○	○
119.	1, 1, 2, 2-tetrachloroethane *	○	○	○	●
120.	tetrachloroethene *	○	○	○	●
121.	toluene *	○	○	○	●
122.	toxaphene	●	○	○	○
123.	1, 2, 4-trichlorobenzene	●	○	○	○
124.	1, 1, 1-trichloroethane *	○	○	○	●
125.	1, 1, 2-trichloroethane *	○	○	○	●
126.	trichloroethene *	○	○	○	●
127.	Reserved				
128.	2, 4, 6-trichlorophenol	●	○	○	○
129.	vinyl chloride *	○	○	○	●

9. For priority pollutants in E.8, which are indicated "Known Present" or "Suspected Present", list and provide the following information for each: (Attach additional sheets, if needed.)

Item No.	PRIORITY POLLUTANT	HOW USED (for KP) or WHY SUSPECTED (for SP)	ANNUAL USAGE for KP(lbs)	LOSS TO SEWER for KP(lbs)
		See Attachment 8		

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Company Name: Mallinckrodt Inc.
Premise Address: 3600 North Second Street

SECTION E - WASTEWATER INFORMATION (Continued)

Priority Pollutant Information (Continued)

SA = "Suspected Absent" KA = "Known Absent" SP = "Suspected Present" KP = "Known Present"

Item No	PRIORITY POLLUTANT	SA	KA	SP	KP
71.	(cis and trans) 1, 3-dichloropropene *	●	○	○	○
72.	dieldrin	●	○	○	○
73.	diethylphthalate *	○	○	●	○
74.	2, 4-dimethylphenol *	○	○	●	○
75.	dimethyl phthalate	○	○	○	●
76.	di-n-butyl phthalate	●	○	○	○
77.	di-n-octyl phthalate *	●	○	○	○
78.	4, 6-dinitro-2-methylphenol *	●	○	○	○
79.	2, 4-dinitrophenol	○	○	●	○
80.	2, 4-dinitrotoluene	○	○	●	○
81.	2, 6-dinitrotoluene	●	○	○	○
82.	1, 2-diphenylhydrazine *	●	○	○	○
83.	endosulfan I *	●	○	○	○
84.	endosulfan II *	●	○	○	○
85.	endosulfan sulfate	●	○	○	○
86.	endrin	●	○	○	○
87.	endrin aldehyde	●	○	○	○
88.	ethylbenzene	○	○	○	●
89.	fluoranthene	●	○	○	○
90.	fluorene *	●	○	○	○
91.	heptachlor	●	○	○	○
92.	heptachlor epoxide	●	○	○	○
93.	hexachlorobenzene *	●	○	○	○
94.	hexachlorobutadiene	○	○	●	○
95.	hexachlorocyclopentadiene *	●	○	○	○
96.	hexachloroethane *	●	○	○	○
97.	indeno (1, 2, 3-cd) pyrene *	●	○	○	○
98.	isophorone *	●	○	○	○
99.	methylene chloride *	○	○	○	●
100.	naphthalene	●	○	○	○
101.	nitrobenzene	○	○	●	○
102.	2-nitrophenol	○	○	●	○
103.	4-nitrophenol *	○	○	●	○
104.	N-nitrosodimethylamine *	○	○	●	○
105.	N-nitrosodi-n-propylamine *	●	○	○	○
106.	N-nitrosodiphenylamine	●	○	○	○
107.	PCB-1016 *	●	○	○	○
108.	PCB-1221 *	●	○	○	○
109.	PCB-1232 *	●	○	○	○
110.	PCB-1242 *	●	○	○	○
111.	PCB-1248 *	●	○	○	○
112.	PCB-1254 *	●	○	○	○
113.	PCB-1260 *	●	○	○	○
114.	pentachlorophenol	●	○	○	○
115.	phenanthrene	●	○	○	○
116.	phenol	○	○	○	●
117.	pyrene	●	○	○	○
118.	2, 3, 7, 8-tetrachlorodibenzo-p-dioxin *	○	●	○	○
119.	1, 1, 2, 2-tetrachloroethane *	○	○	○	●
120.	tetrachloroethene *	○	○	○	●
121.	toluene *	○	○	○	●
122.	toxaphene	●	○	○	○
123.	1, 2, 4-trichlorobenzene	●	○	○	○
124.	1, 1, 1-trichloroethane *	○	○	○	●
125.	1, 1, 2-trichloroethane *	○	○	○	●
126.	trichloroethene *	○	○	○	●
127.	Reserved				
128.	2, 4, 6-trichlorophenol	●	○	○	○
129.	vinyl chloride *	○	○	○	●

9. For priority pollutants in E.8, which are indicated "Known Present" or "Suspected Present", list and provide the following information for each: (Attach additional sheets, if needed.)

Item No.	PRIORITY POLLUTANT	HOW USED (for KP) or WHY SUSPECTED (for SP)	ANNUAL USAGE for KP(lbs)	LOSS TO SEWER for KP(lbs)
		See Attachment 8		

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Premise Address: 3600 North Second Street

SECTION E - WASTEWATER INFORMATION (Continued)

Priority Pollutant Information (Continued)

SA = "Suspected Absent" KA = "Known Absent" SP = "Suspected Present" KP = "Known Present"

Item No	PRIORITY POLLUTANT	SA	KA	SP	KP
71.	(cis and trans) 1, 3-dichloropropene *	●	○	○	○
72.	dieldrin	⊗	○	●	○ JAG
73.	diethylphthalate *	○	○	●	○
74.	2, 4-dimethylphenol *	○	○	●	○ *
75.	dimethyl phthalate	○	○	⊗	● JAG
76.	di-n-butyl phthalate	●	○	○	○
77.	di-n-octyl phthalate *	●	○	○	○
78.	4, 6-dinitro-2-methylphenol *	●	○	○	○
79.	2, 4-dinitrophenol	○	○	●	○
80.	2, 4-dinitrotoluene	○	○	●	○
81.	2, 6-dinitrotoluene	●	○	○	○
82.	1, 2-diphenylhydrazine *	●	○	○	○
83.	endosulfan I *	●	○	○	○
84.	endosulfan II *	●	○	○	○
85.	endosulfan sulfate	●	○	○	○
86.	endrin	●	○	○	○
87.	endrin aldehyde	●	○	○	○
88.	ethylbenzene	○	○	○	●
89.	fluoranthene	●	○	○	○
90.	fluorene *	●	○	○	○
91.	heptachlor	●	○	○	○
92.	heptachlor epoxide	●	○	○	○
93.	hexachlorobenzene *	●	○	○	○
94.	hexachlorobutadiene	○	○	●	○ *
95.	hexachlorocyclopentadiene *	⊗	○	●	○ JAG
96.	hexachloroethane *	⊗	○	●	○ JAG
97.	indeno (1, 2, 3-cd) pyrene *	●	○	○	○
98.	isophorone *	●	○	○	○
99.	methylene chloride *	○	○	○	●
100.	naphthalene	●	○	○	○
101.	nitrobenzene	○	○	●	○ *
102.	2-nitrophenol	○	○	●	○ *
103.	4-nitrophenol *	○	○	●	○ *
104.	N-nitrosodimethylamine *	○	○	●	○
105.	N-nitrosodi-n-propylamine *	●	○	○	○
106.	N-nitrosodiphenylamine	●	○	○	○
107.	PCB-1016 *	●	○	○	○
108.	PCB-1221 *	●	○	○	○
109.	PCB-1232 *	●	○	○	○
110.	PCB-1242 *	●	○	○	○
111.	PCB-1248 *	●	○	○	○
112.	PCB-1254 *	●	○	○	○
113.	PCB-1260 *	●	○	○	○
114.	pentachlorophenol	●	○	○	○
115.	phenanthrene	⊗	○	●	○ JAG
116.	phenol	○	○	○	● *
117.	pyrene	●	○	○	○
118.	2, 3, 7, 8-tetrachlorodibenzo-p-dioxin *	○	●	○	○
119.	1, 1, 2, 2-tetrachloroethane *	○	○	○	●
120.	tetrachloroethene *	○	○	○	● *
121.	toluene *	○	○	○	●
122.	toxaphene	●	○	○	○
123.	1, 2, 4-trichlorobenzene	●	○	○	○
124.	1, 1, 1-trichloroethane *	○	○	○	● *
125.	1, 1, 2-trichloroethane *	○	○	○	● *
126.	trichloroethene *	○	○	○	● *
127.	Reserved				
128.	2, 4, 6-trichlorophenol	●	○	○	○
129.	vinyl chloride *	○	○	○	●

* Laboratory use or standard.

9. For priority pollutants in E.8, which are indicated "Known Present" or "Suspected Present", list and provide the following information for each: (Attach additional sheets, if needed.)

Item No.	PRIORITY POLLUTANT	HOW USED (for KP) or WHY SUSPECTED (for SP)	ANNUAL USAGE for KP(lbs)	LOSS TO SEWER for KP(lbs)
		See Attachment 8		

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Company Name: Mallinckrodt Inc.
Premise Address: 3600 North Second Street

SECTION F - NON-SEWERED WASTES

1. Do you generate any liquid wastes or sludges, as described in item 2 below, which are not disposed in the sewer system?

   ◉ Yes ◯ No

   If "Yes" complete items 2 and 3 below. Note: Be sure to include wastewaters listed in Section C.7.c.
   If "No" skip remainder of this section.

2. Information on non-sewered waste:

Type of Waste	Estimated Quantity Disposed/yr	Units	Store On-Site	Dispose On-Site	Dispose Off-Site
☒ Acids and/or Alkalies	2,428,000	LB	☒	☐	☒
☒ Equipment Oils and/or Grease	16,000	LB	☒	☐	☒
☒ Infectious Waste	600	LB	☒	☐	☒
☐ Inks/ Dyes			☐	☐	☐
☒ Kitchen/Food Service Grease	1,000	LB	☒	☐	☒
☒ Organic Compounds	781,600	LB	☒	☐	☒
☒ Paints or Paint Sludges	1,400	LB	☒	☐	☒
☐ Pesticides			☐	☐	☐
☐ Pretreatment Sludges			☐	☐	☐
☐ Radioactive Waste			☐	☐	☐
☒ Solvents/Thinners	4,109,000	LB	☒	☐	☒
☐ Other			☐	☐	☐
☐ Other			☐	☐	☐
☐ Other			☐	☐	☐

3. List your USEPA and/or MDNR Hazardous Waste generator numbers:

   USEPA MOD096726484 MDNR 01029

SECTION G - INDUSTRIAL WASTE SURCHARGE INFORMATION Not Required

1. Provide the following analytical information for each sampling point or each connection to the public sewer only if your water usage exceeds 80 Ccf per month (1,995 Gal per calendar day). Representative samples of the wastewater in each sewer must be collected and analyzed for the listed parameters. Report the daily average concentrations in mg/l for each point. Permit renewal applications, only, may skip Section G regardless of water usage volume.

Parameter	Sewer Reference Numbers (Refer to Section D.2) If more than 7, attach additional sheets						
	1	2	3	4	5	6	7
Date Sampled							
Sample Start Time (eg. HH:MM PM)							
Sample End Time (eg. HH:MM PM)							
Type of Sample							
Flow (GPD)							
Biochemical Oxygen Demand (5 day)							
Chemical Oxygen Demand							
Total Suspended Solids							

Collected By (Name of organization):

Analyzed By (Name of organization):

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Company Name: Mallinckrodt Inc.
Premise Address: 3600 North Second Street

SECTION F - NON-SEWERED WASTES

1. Do you generate any liquid wastes or sludges, as described in item 2 below, which are not disposed in the sewer system?

◉ Yes ◯ No

If "Yes" complete items 2 and 3 below. Note: Be sure to include wastewaters listed in Section C.7.c.
If "No" skip remainder of this section.

2. Information on non-sewered waste:

Type of Waste	Estimated Quantity Disposed/yr	Units	Store On-Site	Dispose On-Site	Dispose Off-Site
☒ Acids and/or Alkalies	2,428,000	LB	☒	☐	☒
☒ Equipment Oils and/or Grease	16,000	LB	☒	☐	☒
☒ Infectious Waste	2,240	CT	☒	☐	☒
☐ Inks/ Dyes			☐	☐	☐
☒ Kitchen/Food Service Grease	1,000	LB	☒	☐	☒
☒ Organic Compounds	781,600	LB	☒	☐	☒
☒ Paints or Paint Sludges	1,400	LB	☒	☐	☒
☐ Pesticides			☐	☐	☐
☐ Pretreatment Sludges			☐	☐	☐
☐ Radioactive Waste			☐	☐	☐
☒ Solvents/Thinners	4,109,000	LB	☒	☐	☒
☐ Other			☐	☐	☐
☐ Other			☐	☐	☐
☐ Other			☐	☐	☐

3. List your USEPA and/or MDNR Hazardous Waste generator numbers:

USEPA MOD096726484 MDNR 01029

SECTION G - INDUSTRIAL WASTE SURCHARGE INFORMATION Not required

1. Provide the following analytical information for each sampling point or each connection to the public sewer only if your water usage exceeds 80 Ccf per month (1,995 Gal per calendar day). Representative samples of the wastewater in each sewer must be collected and analyzed for the listed parameters. Report the daily average concentrations in mg/l for each point. Permit renewal applications, only, may skip Section G regardless of water usage volume.

Parameter	Sewer Reference Numbers (Refer to Section D.2) If more than 7, attach additional sheets						
	1	2	3	4	5	6	7
Date Sampled							
Sample Start Time (eg. HH:MM PM)							
Sample End Time (eg. HH:MM PM)							
Type of Sample							
Flow (GPD)							
Biochemical Oxygen Demand (5 day)							
Chemical Oxygen Demand							
Total Suspended Solids							
Collected By (Name of organization):							
Analyzed By (Name of organization):							

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Ver. 5/2007

See Revised p7 dated 4/15/10 JAG

Company Name: Mallinckrodt Inc.
Premise Address: 3600 North Second Street

SECTION H - CERTIFICATION AND SIGNATURE

1. The following individual may be contacted regarding the information contained in this questionnaire:

Name of Contact Person: Lisa Meyer

Title: Senior HSE Engineer Phone Number (314) 654-3374

2. "I certify under penalty of Law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Name of Signing Official: Richard C. Proehl

Title: Site Director Phone Number (314) 654-5816

Signature: Richard C. Proehl Date: 11/30/09

This certification, along with any other reporting documents, must be signed by an individual described as follows: a responsible corporate officer if the user is a corporation; a general partner if the user is a partnership; the proprietor if the user is a sole proprietorship; a duly authorized representative of the individual just described, if that individual submits a written authorization which specifies a person or position within the company, having responsibility for the overall operation of the facility from which the discharge originates, such as a plant manager, or overall responsibility for environmental matters at the company.

List attachments included with this questionnaire:

Attachment 1:	Principal Raw Materials
Attachment 2:	Principal Products
Attachment 3:	Section C.8
Attachment 4:	Site Drawings
Attachment 5:	Section D.2
Attachment 6:	Section E - Wastewater Information
Attachment 7:	Section E.5
Attachment 8:	Priority Pollutants Known Present
	and Suspected Present

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ATTACHMENT 1

SECTION B.3
PRINCIPAL RAW MATERIALS USED

This listing includes only materials with usages greater than 10,000 pounds/year.

2-Methoxyethlilamine
5-Nitroisophthalic acid-Monomethyl ester
3-Amino-1,2,propane diol
Acetic anhydride
Acetonitrile
Activated carbon
Aluminum stearate
Ammonium Chloride
Amyl alcohol
Amberlite resin
Bismuth nitrate liquor
Calcium chloride dihydrate
Celatom MN 47
Chloroacetyl chloride
Chloroform
Cyclohexane
D-oxyphene
Diesel Fuel
Diethylenetriaminepentaacetic acid
Dimethylaminoisopropyl chloride
Diphenylacetonitrile
Ethyl Acetate
Ethyl Chloroformate
Ethylene chlorohydrin
Ethylenediamine
Formic acid
Hydrochloric acid (Muriatic acid)
Hydrogen chloride
Hydrogen peroxide (20-60%)
Isopropyl Alcohol (90-100%)
Lime
Magnesium stearate
Malic acid
Manganese nitrate solutions
Methyl alcohol
Methyl vinyl ketone
Nitric acid
Phosphoric acid
Potassium hydroxide
Potassium phosphate dibasic
Propionic anhydride
Propylene glycol
Salt
Sodium-2-napthalene sulfonate acid
Sodium aluminate
Sodium ethylate
5-Nitroisophthalic acid
Alpha-phenyl-alpha-2-pyridyl, Acetonitrile
Acetic acid, glacial
Acetone
Acetyl chloride
Ammonia (Conc. Greater than 20%)
Ammonium bisulfite
Ammonium hydroxide (10 – 35 %)
Aniline
Benzyl chloride
Bismuth subcarbonate
Calcium stearate
Chlorine
Chlorobenzene
Coal
Cyclohexanone
Dichloromethane
Diester
Dimethyacetamide
Dimethylformamide
Ethanol
Ethyl Bromide
Ethyl Ether
Ethylene Glycol
Ferrous Sulfate
Heptane
Hydrogen
Hydrogen fluoride
Iodine
Lead
Lubricating oils
Magnesium sulfate
Manganese
Methanesulfonic acid
Methyl isobutyl ketone
Methylamine solution
Nitrogen
Piperidine
Potassium iodide
Potassium t-butoxide
Propyl acetate
Pyridine
Soda ash
Sodium acetate
Sodium bicarbonate
Sodium hydroxide solutions/caustic soda

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ATTACHMENT 1

SECTION B.3
PRINCIPAL RAW MATERIALS USED (cont.)

This listing includes only materials with usages greater than 10,000 pounds/year.

Sodium methoxide
Sodium phosphate monobasic
Sodium thiosulfate
Standard denatured alcohol 2B
Sulfuric acid, 52 – 100%
Tartaric acid
Tert-butyl methy ether
Toluene
Trifluoracetic acid
Xylenes
Sodium phosphate dibasic
Sodium phosphate tribasic
Standard denatured alcohol 3A
Stearic fatty acids
Sulfurous acid
Tetrahydrofuran
Thionyl chloride
Triethylamine
Trimethylphenyl ammonium chloride

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ATTACHMENT 2

SECTION B. 4

PRINCIPAL PRODUCTS PRODUCED

This listing includes only products with production greater than 10,000 pounds/year.

Aluminum stearate
Bismuth subcarbonate
Codeine phosphate
Ferric subsulfate solution
Hydrocodone bitartrate
Iothalamic acid
Magnesium stearate
Methadone
Morphine sulfate
MP-104
Narcotine alkaloid
Papaverine
Oxycodone hydrochloride
Potassium phosphate monobasic
Sodium acetate
Sodium phosphate dibasic
Sodium sulfate
Thebaine derivatives
Threo-alpha-phenyl-2-piperidineacetic acid

Amino nitrile
Calcium Stearate
Diester
Gadoverstamide
Hydrocodone alkaloid
Ioversol
Manganese nitrate solutions
Morphine and codeine mix
Methylphenidate
NaI family of medicinal products
Noscapine
Opium tincture
Potassium phosphate dibasic
Propoxyphene derivatives
Sodium acetate trihydrate
Sodium phosphate monobasic
Sodium sulfate anhydrous
Triiodoamide
Other medicinal narcotics

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ATTACHMENT 3
SECTION C.8

For each activity you listed in Section B.1 and B.5, list the average water usage and average wastewater discharge fc

Item No.	Activity	Type of Discharge: Cont.	Type of Discharge: Batch	Average Use (gpd)	Average Discharge (gpd)	Date when activitiy first commenced at
1	Industrial Inorganic Chemicals, not elsewhere classified (2819)		X	100,000	90,000	
2	Medicinal Chemicals (2833)		X	250,000	227,500	
3	Pharmaceutical Preparations Dosage (2834)		X	71	71	2008
4	Contrast Media (2835)		X	225,000	200,613	
5	Industrial Organic Chemicals (2869)		X	125,000	106,729	
6	Food Preparation		X	2,500	2,500	
7	General Offices		X	0	0	
8	Hazardous Waste Treatment, Storage or Disposal		X	0	0	
9	Machine Shop		X	5,000	5,000	
10	Painting, Finishing or Paint Stripping		X	500	500	
11	Parts Washing		X	1,642	1,642	
12	QC Laboratories		X	34,000	34,000	
13	R&D Laboratories		X	75,000	75,000	
14	Repair Shop, Garage		X	300	300	
15	Warehousing		X	800	800	
				819,813	744,655	

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ATTACHMENT 3
SECTION C.8

For each activity you listed in Section B.1 and B.5, list the average water usage and average wastewater discharge for each activity per workday. (Total Avg. Water Use must equal total for 6e)

Item No.	Activity	Type of Discharge: Cont.	Type of Discharge: Batch	Average Use (gpd)	Average Discharge (gpd)	Date when activitiy first commenced at this facility
1	Industrial Inorganic Chemicals, not elsewhere classified (2819)		X	100,000	90,000	
2	Medicinal Chemicals (2833)		X	250,000	227,500	
3	Pharmaceutical Preparations Dosage (2834)		X	71	71	2008
4	Contrast Media (2835)		X	225,000	200,613	
5	Industrial Organic Chemicals (2869)		X	125,000	106,729	
6	Food Preparation		X	2,500	2,500	
7	General Offices		X	0	0	
8	Hazardous Waste Treatment, Storage or Disposal		X	0	0	
9	Machine Shop		X	5,000	5,000	
10	Painting, Finishing or Paint Stripping		X	500	500	
11	Parts Washing		X	1,400	1,400	
12	QC Laboratories		X	34,000	34,000	
13	R&D Laboratories		X	75,000	75,000	
14	Repair Shop, Garage		X	300	300	
15	Warehousing		X	800	800	
				819,571	744,413	

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Industrial User Questionnaire November, 2009

ATTACHMENT 5

REFERENCE NUMBER	PERMIT SAMPLE POINT NUMBER	SEWER SIZE DIAMETER (in)	DESCRIPTION OF SEWER / SAMPLING POINT LOCATION	TOTAL AVERAGE FLOW (GPD)	SEWER TYPE
1	001	30	Manhole at foot of Destrehan 100'E of RR	1,000	Combined
2	002	6	Manhole 5' south of Bldg. 96, 30' E of SP003, (6" pipe from NE, 3" down)	2,200	Sanitary
3	003	24 X 36	Manhole in alley at Salisbury Street, 12'W, 3'S of NW corner of Bldg 91	17,000	Combined
4	005	8	Manhole 5' south of Bldg. 96, 30'E of SP003 (Center 8" dia pipe, 3' down)	32,000	Process
5	008	15	Overflow chamber north side of pump station, east of S pad	0*	Combined
6	009	15	Manhhole in Mallinckrodt St., 27' east of Broadway, 4' from S curb	11,000	Combined
7	010	24	Main Plant Outfall, square manhole lid 50' North of neutralization control building at Hall & Salisbury Streets	1,142,913	Combined
8	011	15	MH with square lid 18'S from NW corner of Bldg 223 under iron ladder - Plant 5 flow	0*	Combined
9	080	6	Inlet to Sump (double manhole) North of Bldg 98	3,500	Combined
10	099		Difference between sample points 003 and 009.	8,000	Combined
11	905	8	Manhole inside Bldg. X, 12' west, 5' south of west door (Total flow out)	100,000	Process
12	912		Valve on discharge line from outdoor Tank-450 on SE corner of Bldg 504	150,000	Process
13	915		Valve on E side of T-315 at inside NE corner of Bldg 6	2700	Process
14	918		Valve on line under stairwell, N side of Bldg 235, E of generator	1,000	Process
15	920		Valve on discharge line, outside SW corner of diked area E of Bldg 512	13,000	Process
16	927		Tank 308 (acid press tank) in Bldg 6	2,700	Process
17	930		Valve on 4" PVC line inside NW corner of Bldg 222S only when sump is discharging PEG effluents from Tanks 300 and 355	650	Process
18	932		Valve 5' inside of N dike wall 27'W from NE corner of neutralization tank farm wall	0	Process
19	933		Valve on Tank #1, 10'NW of SE corner of Bldg 200W - only when discharge 40CFR439 Waste	100	Process
20	935	0.5	1/2" steel pipe on inside of concrete wall South of North stairs - Bldg 512	26,000	Process
21	936		Valve on 1/2" line 1' from hydrogenerator building 8' from South wall in SE corner of Building 260	16,500	Process
22	937		Valve on 2nd level on W side near pipe bridge N of Bldg 501	23,000	Process
23	938	6	6" floor drain in far SW corner of room in Bldg 5, Room 406	71	Process
* emergency overflow only					

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ATTACHMENT 7

SECTION E. 5
WASTEWATER PRETREATMENT

REFERENCE NO.	PERMIT SAMPLE POINT NO.	PRETREATMENT SYSTEM DESCRIPTION
3	003	Grease interceptor
4	005	Neutralization
7	010	Neutralization, Filtration, Steam Stripping, Oil/Grease interceptor
9	080	Neutralization
11	905	Neutralization, Precipitation, filtration.
12	912	Neutralization
15	920	Steam Stripping
16	927	Filtration
17	930	Neutralization
19	933	Neutralization
20	935	Steam Stripping
22	937	Steam Stripping

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Attachment 8

Priority Pollutants "Known Present" or "Suspected Present"

PRIORITY POLLUTANT ITEM NUMBER	PRIORITY POLLUTANT		HOW USED	ANNUAL USAGE (POUNDS)	LOSS TO SEWER, POUNDS PER YEAR
1	ASBESTOS	KP	EXISTING INSULATION	0	Unkown
2	CYANIDE	KP	LAB MATERIAL / PRODUCTION BYPRODUCT	0	<0.2
3	ANTIMONY	SP	CONTAMINANT	0	Unknown
4	ARSENIC	SP	CONTAMINANT	0	Unknown
6	CADMIUM	KP	EXISTING IN PAINTED SURFACES, CONTAMINANT	0	Unknown
7	CHROMIUM	KP	CONTAMINANT	0	Unknown
8	COPPER	KP	CONTAMINANT	0	Unknown
9	LEAD	KP	EXISTING IN PAINTED SURFACES	0	Unknown
10	MERCURY	KP	INSTRUMENTS	0	0
11	NICKEL	KP	CONTAMINANT	0	50
13	SILVER	SP	CONTAMINANT	0	Unknown
15	ZINC	SP	CONTAMINANT	0	Unknown
19	ACRYLONITRILE	SP	LAB MATERIAL	0	0
22	BENZENE	KP	LAB MATERIAL	0	1
23	BENZIDINE	SP	LAB MATERIAL	0	0
37	BIS (2 ETHYLHEXYL) PHTHALATE	KP	CONTAMINANT	0	10
38	BROMODICHLOROMETHANE	SP	LAB MATERIAL	0	0
40	BROMOMETHANE	SP	LAB MATERIAL	0	0
43	CARBON TETRACHLORIDE	KP	LAB MATERIAL	0	0
46	CHLOROBENZENE	KP	RAW MATERIAL	81000	8
49	CHLOROFORM	KP	RAW MATERIAL	297000	30
50	CHLOROMETHANE	SP	LAB MATERIAL	0	0
52	2-CHLOROPHENOL	SP	LAB MATERIAL	0	0
59	DIBROMOCHLOROMETHANE	SP	LAB MATERIAL	0	0
60	1,2-DICHLOROBENZENE	SP	LAB MATERIAL	0	0
61	1,3-DICHLOROBENZENE	SP	LAB MATERIAL	0	0
62	1,4-DICHLOROBENZENE	SP	LAB MATERIAL	0	0
66	1,2-DICHLOROETHANE	SP	LAB MATERIAL	0	0
73	DIETHYLPHTHALATE	SP	LAB MATERIAL	0	0

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PRIORITY POLLUTANT ITEM NUMBER	PRIORITY POLLUTANT		HOW USED	ANNUAL USAGE (POUNDS)	LOSS TO SEWER, POUNDS PER YEAR
74	2,4-DIMETHYLPHENOL	SP	LAB MATERIAL	0	0
75	DIMETHYL PHTHALATE	SP	LAB MATERIAL	0	0
79	2,4-DINITROPHENOL	SP	LAB MATERIAL	0	0
80	2,4-DINITROTOLUENE	SP	LAB MATERIAL	0	0
88	ETHYL BENZENE	KP	CONTAMINANT	0	Unknown
94	HEXACHLOROBUTADIENE	SP	LAB MATERIAL	0	0
99	METHYLENE CHLORIDE	KP	RAW MATERIAL	234,000	94
101	NITROBENZENE	SP	LAB MATERIAL	0	0
102	2-NITROPHENOL	SP	LAB MATERIAL	0	0
103	4-NITROPHENOL	SP	LAB MATERIAL	0	0
104	N-NITROSODIMETHYLAMINE	SP	LAB MATERIAL	0	0
116	PHENOL	KP	LAB MATERIAL	0	0
119	1,1,2,2, TETRACHLOROETHANE	KP	LAB MATERIAL	0	0
120	TETRACHLOROETHANE	KP	LAB MATERIAL	0	0
121	TOLUENE	KP	RAW MATERIAL	1,375,000	275
124	1,1,1 TRICHLOROETHANE	KP	DEGREASING (SPRAY CANS)	0	1
125	1,1,2 TRICHLOROETHANE	KP	LAB MATERIAL	0	0
126	TRICHLOROETHENE	KP	CONTAMINANT	0	0
129	VINYL CHLORIDE	KP	CONTAMINANT	0	2.8

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SECTION 9. PHYSICAL DATA

APPEARANCE :		Liquid.Water-White	
ODOR :		Amine	
BOILING RANGE :	111 178 201 C / 232 353 395 F		
AUTO IGNITION TEMPERATURE :	343 C / 650 F (Lowest Component)		
LOWER FLAMMABLE LIMIT IN AIR (% by vol):	1.0 (Lowest Component)		
FLASH POINT (TEST METHOD):	63 C / 146 F (TCC) (Lowest Component)		
FLAMMABILITY CLASSIFICATION: Class IIIA			
GRAVITY @ 60 F :			
API :		9.4	
SPECIFIC GRAVITY (Water=1) :		1.004	
POUNDS/GALLON :		8.367	
VOC'S (>0.44 Lbs/Sq In) :	0.0 Vol. % /	0.0 g/L /	0.000 Lbs/Gal
TOTAL VOC'S (TVOC) :	78.0 Vol. % /	784.4 g/L /	6.534 Lbs/Gal
NONEXEMPT VOC'S (CVOC) :	78.0 Vol. % /	784.4 g/L /	6.534 Lbs/Gal
HAZARDOUS AIR POLLUTANTS (HAPS) :	0.0 Wt. % /	0.0 g/L /	0.000 Lbs/Gal
VAPOR PRESSURE (mm of Hg)@20 C		10.5	Limit is
NONEXEMPT VOC PARTIAL PRESSURE (mm of Hg @ 20 C)		.2	5 mm Hg
VAPOR DENSITY (air=1) :		1.7	
WATER ABSORPTION :		Complete	
pH (Neutrality) :		13.0	per
REFRACTIVE INDEX :		1.442	

10 CSR 10-5.300 (3)(B)(R)(IV) (3)(B)(1)(B)(III) & (IV)

SECTION 10. STABILITY & REACTIVITY

STABILITY
Stable under normal conditions.
CONDITIONS TO AVOID
Isolate from oxidizers, acids,heat, & open flame.
MATERIALS TO AVOID
Isolate from strong oxidizers such as permanganates,chromates & peroxides.
HAZARDOUS DECOMPOSITION PRODUCTS
Carbon Monoxide, Carbon Dioxide,
Nitrogen Oxide vapors from burning.
HAZARDOUS POLYMERIZATION
Will not occur.

SECTION 11. TOXICOLOGICAL INFORMATION

MATERIAL	CAS #	TWA (OSHA)	TLV (ACGIH)	HAP
N-Methylpyrrolidone	872-50-4	None Known	100 ppm	No
Water	7732-18-5	None Known	None Known	No
Monoethanolamine	141-43-5	3 ppm	3 ppm	No
Heavy Aromatic Solvent Naphtha	*64742-94-5	100 ppm	5 mg/m3	No

This product contains no EPA Hazardous Air Pollutants (HAP) in amounts > 0.1%.
Using manufacturers' data, based on EPA Method 311, the following EPA Hazardous Air Pollutants may be present in trace amounts (less than 0.1%):
Naphthalene

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MATERIAL SAFETY DATA SHEET

SUPERIOR

APPROVED BY US DEPT OF LABOR, ESSENTIALLY SIMILAR TO FORM OSHA174

SUPERIOR SOLVENTS AND CHEMICALS
400 West Regent Street
Indianapolis, IN 46225
EMERGENCY PHONE NUMBER 317-781-4400

TRADE NAME: S-6032A Carburetor Cleaner

I. PHYSICAL DATA

Boiling Point (degF):	212
Specific Gravity (Water = 1):	1.012
Pounds/Gallon:	8.43
Vapor Pressure (of Organic Portion):	0.24 mm Hg @ 20 C
Vapor Density (Air = 1):	>1
Solubility in Water (%):	89.00
Dry Time (Ether = 1):	>1
% Volatile by Volume:	90
Appearance:	White Water Liquid
Odor:	Typical Solvent

II. HAZARDOUS INGREDIENTS

	MATERIAL	CAS #	VOL (%)	THLV	TWA
@	N-METHYLPYRROLIDONE	872-50-4	>29	N/E	N/E
	MONOETHANOLAMINE	141-43-5	>9	3	3
	AROMATIC SOLVENT NAPHTHA	64742-94-5	>9	N/E	N/E

III FIRE & EXPLOSION HAZARD DATA

LOWER EXPLOSIVE LIMIT IN AIR- (% BY VOLUME):	0.8
UPPER EXPLOSIVE LIMIT IN AIR- (% BY VOLUME):	23.5
FLASH POINT (T.C.C. deg F)	145 (lowest flashing component)
EXTINGUISHING MEDIA:	Carbon Dioxide, Alcohol Foam, or Dry Chemical
SPECIAL FIRE FIGHTING PROCEDURES:	S.C.B.A. for fire fighting in enclosed areas. Water spray may be used to cool exposed containers and protect personnel. In advanced fires, maintain a safe distance from sealed containers.
UNUSUAL EXPLOSION AND FIRE PROCEDURES:	COMBUSTIBLE LIQUID! Use away from heat and open flame. Use only with adequate ventilation. Keep container closed when not in use.

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Attachment 8

Priority Pollutants "Known Present" or "Suspected Present"

NUMBER	POLLUTANT		[illegible]	[illegible]	[illegible]
1	ASBESTOS	KP	EXISTING INSULATION	0	Unkown
2	CYANIDE	KP	LAB MATERIAL / PRODUCTION BYPRODUCT	0	<0.2
3	ANTIMONY	SP	CONTAMINANT	0	Unknown
4	ARSENIC	SP	CONTAMINANT	0	Unknown
6	CADMIUM	KP	EXISTING IN PAINTED SURFACES, CONTAMINANT	0	Unknown
7	CHROMIUM	KP	CONTAMINANT	0	Unknown
8	COPPER	KP	CONTAMINANT	0	Unknown
9	LEAD	KP	EXISTING IN PAINTED SURFACES	0	Unknown
10	MERCURY	KP	INSTRUMENTS	0	0
11	NICKEL	KP	CONTAMINANT	0	50
13	SILVER	SP	CONTAMINANT	0	Unknown
15	ZINC	KP	CONTAMINANT	0	Unknown
18	ACROLEIN	SP	LAB MATERIAL	0	Unknown
19	ACRYLONITRILE	SP	LAB MATERIAL	0	0
22	BENZENE	KP	LAB MATERIAL	0	1
23	BENZIDINE	SP	LAB MATERIAL	0	0
25	BENZO (a) PYRENE	SP	LAB MATERIAL	0	0
37	BIS (2 ETHYLHEXYL) PHTHALATE	KP	CONTAMINANT	0	10
38	BROMODICHLOROMETHANE	SP	LAB MATERIAL	0	0
40	BROMOMETHANE	SP	LAB MATERIAL	0	0
43	CARBON TETRACHLORIDE	KP	LAB MATERIAL	0	0
46	CHLOROBENZENE	KP	RAW MATERIAL	81000	8
49	CHLOROFORM	KP	RAW MATERIAL	297000	30
50	CHLOROMETHANE	KP	LAB MATERIAL	0	0
52	2-CHLOROPHENOL	SP	LAB MATERIAL	0	0
59	DIBROMOCHLOROMETHANE	SP	LAB MATERIAL	0	0
60	1,2-DICHLOROBENZENE	SP	LAB MATERIAL	0	0
61	1,3-DICHLOROBENZENE	SP	LAB MATERIAL	0	0
62	1,4-DICHLOROBENZENE	SP	LAB MATERIAL	0	0

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66	1,2-DICHLOROETHANE	SP	LAB MATERIAL	0	0
72	DIELDRIN	SP	LAB MATERIAL	0	0
73	DIETHYLPHTHALATE	SP	LAB MATERIAL	0	0
74	2,4-DIMETHYLPHENOL	SP	LAB MATERIAL	0	0
75	DIMETHYL PHTHALATE	KP	LAB MATERIAL	0	0
79	2,4-DINITROPHENOL	SP	LAB MATERIAL	0	0
80	2,4-DINITROTOLUENE	SP	LAB MATERIAL	0	0
88	ETHYL BENZENE	KP	CONTAMINANT	0	Unknown
94	HEXACHLOROBUTADIENE	SP	LAB MATERIAL	0	0
95	HEXACHLOROCYCLOPENTADIENE	SP	LAB MATERIAL	0	0
96	HEXACHLOROETHANE	SP	LAB MATERIAL	0	0
99	METHYLENE CHLORIDE	KP	RAW MATERIAL	234,000	94
101	NITROBENZENE	SP	LAB MATERIAL	0	0
102	2-NITROPHENOL	SP	LAB MATERIAL	0	0
103	4-NITROPHENOL	SP	LAB MATERIAL	0	0
104	N-NITROSODIMETHYLAMINE	SP	LAB MATERIAL	0	0
115	PHENANTHRENE	SP	LAB MATERIAL	0	0
116	PHENOL	KP	LAB MATERIAL	0	0
119	1,1,2,2, TETRACHLOROETHANE	KP	LAB MATERIAL	0	0
120	TETRACHLOROETHANE	KP	LAB MATERIAL	0	0
121	TOLUENE	KP	RAW MATERIAL	1,375,000	275
124	1,1,1 TRICHLOROETHANE	KP	DEGREASING (SPRAY CANS)	0	1
125	1,1,2 TRICHLOROETHANE	KP	LAB MATERIAL	0	0
126	TRICHLOROETHENE	KP	CONTAMINANT	0	0
129	VINYL CHLORIDE	KP	CONTAMINANT	0	2.8

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Attachment 8

Priority Pollutants "Known Present" or "Suspected Present"

PRIORITY POLLUTANT ITEM NUMBER	PRIORITY POLLUTANT		HOW USED	ANNUAL USAGE (POUNDS)	LOSS TO SEWER, POUNDS PER YEAR
1	ASBESTOS	KP	EXISTING INSULATION	0	Unkown
2	CYANIDE	KP	LAB MATERIAL / PRODUCTION BYPRODUCT	0	<0.2
3	ANTIMONY	SP	CONTAMINANT	0	Unknown
4	ARSENIC	SP	CONTAMINANT	0	Unknown
6	CADMIUM	KP	EXISTING IN PAINTED SURFACES, CONTAMINANT	0	Unknown
7	CHROMIUM	KP	CONTAMINANT	0	Unknown
8	COPPER	KP	CONTAMINANT	0	Unknown
9	LEAD	KP	EXISTING IN PAINTED SURFACES	0	Unknown
10	MERCURY	KP	INSTRUMENTS	0	0
11	NICKEL	KP	CONTAMINANT	0	50
13	SILVER	SP	CONTAMINANT	0	Unknown
15	ZINC	KP	CONTAMINANT	0	Unknown
19	ACRYLONITRILE	SP	LAB MATERIAL	0	0
22	BENZENE	KP	LAB MATERIAL	0	1
23	BENZIDINE	SP	LAB MATERIAL	0	0
37	BIS (2 ETHYLHEXYL) PHTHALATE	KP	CONTAMINANT	0	10
38	BROMODICHLOROMETHANE	SP	LAB MATERIAL	0	0
40	BROMOMETHANE	SP	LAB MATERIAL	0	0
43	CARBON TETRACHLORIDE	KP	LAB MATERIAL	0	0
46	CHLOROBENZENE	KP	RAW MATERIAL	81000	8
49	CHLOROFORM	KP	RAW MATERIAL	297000	30
50	CHLOROMETHANE	KP	LAB MATERIAL	0	0
52	2-CHLOROPHENOL	SP	LAB MATERIAL	0	0
59	DIBROMOCHLOROMETHANE	SP	LAB MATERIAL	0	0
60	1,2-DICHLOROBENZENE	SP	LAB MATERIAL	0	0
61	1,3-DICHLOROBENZENE	SP	LAB MATERIAL	0	0
62	1,4-DICHLOROBENZENE	SP	LAB MATERIAL	0	0
66	1,2-DICHLOROETHANE	SP	LAB MATERIAL	0	0
73	DIETHYLPHTHALATE	SP	LAB MATERIAL	0	0

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PRIORITY POLLUTANT ITEM NUMBER	PRIORITY POLLUTANT		HOW USED	ANNUAL USAGE (POUNDS)	LOSS TO SEWER, POUNDS PER YEAR
74	2,4-DIMETHYLPHENOL	SP	LAB MATERIAL	0	0
75	DIMETHYL PHTHALATE	KP	LAB MATERIAL	0	0
79	2,4-DINITROPHENOL	SP	LAB MATERIAL	0	0
80	2,4-DINITROTOLUENE	SP	LAB MATERIAL	0	0
88	ETHYL BENZENE	KP	CONTAMINANT	0	Unknown
94	HEXACHLOROBUTADIENE	SP	LAB MATERIAL	0	0
99	METHYLENE CHLORIDE	KP	RAW MATERIAL	234,000	94
101	NITROBENZENE	SP	LAB MATERIAL	0	0
102	2-NITROPHENOL	SP	LAB MATERIAL	0	0
103	4-NITROPHENOL	SP	LAB MATERIAL	0	0
104	N-NITROSODIMETHYLAMINE	SP	LAB MATERIAL	0	0
116	PHENOL	KP	LAB MATERIAL	0	0
119	1,1,2,2, TETRACHLOROETHANE	KP	LAB MATERIAL	0	0
120	TETRACHLOROETHANE	KP	LAB MATERIAL	0	0
121	TOLUENE	KP	RAW MATERIAL	1,375,000	275
124	1,1,1 TRICHLOROETHANE	KP	DEGREASING (SPRAY CANS)	0	1
125	1,1,2 TRICHLOROETHANE	KP	LAB MATERIAL	0	0
126	TRICHLOROETHENE	KP	CONTAMINANT	0	0
129	VINYL CHLORIDE	KP	CONTAMINANT	0	2.8

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DIVISION OF ENVIRONMENTAL COMPLIANCE

4/5/2010

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