Versar INC.

ORIGINAL
(Red)

441348

ANALYTICAL DATA PACKAGE
General Chemistry Section

DATE: 17-May-90
CODE / CONTROL #: VERSCDM / 2538
CLIENT: Versar Division 31
SITE: CDM
PROJECT / BATCH: 420.1 / 2
CASE # / SDG: R3-7 / 1

Versar INC.

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ANALYTICAL NARRATIVE
General Inorganic Chemistry Section

DATE : 17-May-90
CODE / CONTROL # : VERSCDM / 2536
CLIENT / SITE : Versar Division 31 / CDM
PROJECT / BATCH : 420.1 / 2
CASE # / SDG: R3-7 / CDM

This task consisted of six sludge samples which were analyzed for total cyanide according to a CLP modified version of MCAWW 335.2. Sample results have been reported on an oven-dried basis.

Samples were received April 19, were distilled April 30 and May 1, and were analyzed May 11. No analytical problems were encountered, and the distillation holding time was met. All check standard recoveries and duplicate precision results were within acceptable limits, and all blank results were below method detection limits. Although the distilled spike recovery for sample #1 was low, it is not considered unreasonable because the spike level was relatively low compared to the actual sample concentration. An analytical spike for this same sample yielded excellent results.

Release of this data has been authorized by laboratory management.

Sincerely,

Melanie J Dillman

Melanie J. Dillman
General Chemistry
Laboratory Operations

C. Thompson

Approved for Release
Chris Thompson, Section Chief

Versar INC.

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ANALYSIS REPORT
General Inorganic Chemistry Section

DATE: 17-May-90 PAGE: 1
CODE / CONTROL #: VERSCDM / 2536
CLIENT / SITE: Versar Divsion 31 / CDM
PROJECT / BATCH: 420.1 / 2
CASE # / SDG: R3-7 / 1

LAB #	FIELD #	**TOTAL CYANIDE (mg/kg)	TOTAL SOLIDS (%)			
16406	1	12.1	68.9			
16407	2	1.28	72.5			
16408	3	2.51	71.6			
16409	5	<1.04	45.5			
16410	6	2.80	59.1			
16411	7	1.91	95.8			

** = Dry-weight basis

C. Thompson
LABORATORY MANAGER

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Versar INC.

QUALITY ASSURANCE REPORT
General Chemistry Section

DATE: 17-May-90 PAGE: 1
CODE / CONTROL #: VERSCDM / 2536
CLIENT / SITE: Versar Division 31 / CDM
PROJECT / BATCH: 420.1 / 2
CASE # / SDG: R3-7 / 1

	TOTAL CYANIDE				
INITIAL CALIBRATION VERIFICATION					
Source	EPA WP 586				
Units	ug/L				
True Value	500				
Found	474				
Recovery	95%				
METHOD DETECTION					
Limit (ug/L)	10.0				
Limit (mg/kg)	0.50				
1. Calib. Blank	(10.0ug/L				
2. Calib. Blank					
1. Reagent Blank	(0.5mg/kg				
2. Reagent Blank					
3. Reagent Blank					
CONTINUING CALIBRATION VERIFICATION					
Source	Versar				
Units	ug/L				
True Value	100				
1. Found	104				
Recovery	104%				
2. Found	106				
Recovery	106%				
3. Found					
Recovery					
LABORATORY CONTROL STANDARD					
Source	ICV #6 0789				
Units	ug/L				
1. True Value	94.0				
Found	88.7				
Recovery	94%				
2. Found					
Recovery					

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QUALITY ASSURANCE REPORT
General Chemistry Section

DATE: 17-May-90 PAGE: 2
CODE / CONTROL #: VERSCDM / 2536
CLIENT / SITE: Versar Division 31 / CDM
PROJECT / BATCH: 420.1 / 2
CASE # / SDG: R3-7 / 1

	TOTAL CYANIDE (mg/kg)				
DUPLICATE PRECISION SAMPLE RESULTS					
Duplicate 1 :					
Sample ID	1				
Lab #	16406				
Sample Result	12.9				
Duplicate Result	11.3				
RPD	13.2%				
Duplicate 2 :					
Sample ID					
Lab #					
Sample Result					
Duplicate Result					
RPD					
SPIKED SAMPLE RESULTS					
Distilled Spike:					
Sample ID	1				
Lab #	16406				
Sample Result	12.9				
Spike Result	17.6				
Spike Added	6.91				
Recovery	68%				
Analytical Spike:					
Sample ID	1				
Lab #	16406				
Sample Result	12.9				
Spike Result	26.9				
Spike Added	13.6				
Recovery	103%				

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Data for calibration curve analysis
Soils

Dates:
Anal.: 5/11/90
Prep.: 4/30/90 & 5/1/90

Analyte: CN
Method: CLP

Project/Batch: 420.1-2
Control #: 2536

Calibration:

Standard (ug/L)	Response (Peak Ht)
200	82.0
90	37.0
50	20.6
20	8.4
10	3.9
Blk	0.0

Correlation coefficient
r= 0.99999

ICV = WP586 @ 500 ug/L

LCS = ICV6 (0789) @ 94.0 ug/L

Calibration Verification Standard Source: CCV - NaCN
Conc.: 100 ug/L

Final Extraction Volume: 250 mL

Sample #	Sample wt. (g)	Response (Peak Ht)	Conc. (ug/L)	dil.	adj. conc. (ug/L)	Wet conc. (mg/kg)	TS (%)	Dry conc. (mg/kg)	Remarks and Recoveries
± CVS	–	38.9	94.7863	Five Fold	474.	–	–	–	95 %
Init Cal. Blk	–	0.1	0.1820	–	<10.0	–	–	–	
Rgt. Blk	5.0	0.0	-0.0618	–	<10.0	<0.50	–	–	4/30
LCS	–	36.4	88.6906	–	88.7	–	–	–	94%
* 16406	5.35	77.9	189.878	–	189.878	8.8728	68.9	12.9	
16407	5.42	8.3	20.1757	–	20.1757	0.9306	72.5	1.28	
5408	6.41	18.9	46.0212	–	46.0212	1.7949	71.6	2.51	
CCV	–	42.7	104.052	–	104.	–	–	–	104%
*									
CCV	–	42.3	103.076		103.	–	–	–	103%
CCB	–	0.2	0.4259	–	<10.0	–	–	–	
* 16406 dp	5.64	71.9	175.249	–	175.249	7.7681	68.9	11.3	X= 12.1 %RPD= 13
* 16406 spk	5.25	~~52.2~~ 52.2	127.215	Two Fold	254.430	12.1157	68.9	17.6	+ 6.91 mg/kg % = 68
sdp									+ ____ % =
CCVS	–	42.7	104.052	–	104.	–	–	–	104%

Checked by: [illegible]
Date: 5/15/90

Analyst: [illegible]
Date: 5/15/90

Data for calibration curve analysis
Soils

ORIGINAL (Red)

Dates:
Anal.: 5/11/90
Prep.: 5/1/90

Analyte: CN
Method: CLP

Project/Batch: 420.1-2
Control #: 2536

Sample #	Sample wt. (g)	Response (Peak Ht)	Conc. (µg/L)	dil.	adj. conc. (µg/L)	Wet conc. (mg/kg)	TS %	Dry conc. (mg/kg)	Remarks and Recoveries
CCB	-	0.0	-0.0618	-	<10.0	-	-	-	
Rgt. Blk	5.0	0.0	-0.0618	-	<10.0	<0.50	-	-	5/1
LCS	-	39.1	95.2739	-	95.3	-	-	-	101%
16409	5.28	2.4	5.7900	-	<10.0	<0.4735	45.5	<1.04	
16410	5.59	15.2	36.9997	-	36.9997	1.6547	59.1	2.80	
411	5.55	16.7	40.6570	-	40.6570	1.8314	95.8	1.91	
CCV	-	42.7	104.052	-	104.	-	-	-	104%
CCB	-	0.2	0.4259	-	<10.0	-	-	-	
CCV	-	43.5	106.002	-	106.	-	-	-	106%
16406 bench spk	5.35	32.5	79.1815	Five Fold	395.907	18.5003	68.9	26.9	+13.6 mg/kg
CCV	-	43.3	105.515	-	106.	-	-	-	103% Rec 106%
CCB	-	0.0	-0.0618	-	<10.0	-	-	-	

Checked by: [illegible]
Date: 5/10/90

Analyst: [illegible]
Date: 5/15/90

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VERSAR INC.
GENERAL INORGANIC CHEMISTRY
DISTILLATION LOG SHEET

PARAMETER: CNT

MATRIX: Sludge

PROJECT/BATCH: 420.1-2/#2536

LAB#	INITIAL VOL. (ml)	SAMPLE WT. (g)	FINAL VOL. (ml)	INITIALS	DATE	COMMENTS
Blank	500	—	250	MA	4-30-90	
LCS	250	—				
16406		5.35				
16406DP		5.64				
16406Spk		5.25				
16407		5.42				
16408		6.41	—	—	—	
Blank	500	—	250	MA	5-1-90	
LCS	250	—				
1C09		5.28				
16410		5.59				
16411		5.55	—	—	—	

SPIKE: LAB # 16406 SPIKED WITH 2.5 ml of 10 mg/l KCN SOLUTI

CHECK STANDARD: SOURCE: ICV6 (0789) CONCENTRATION: 0.094 mg/l

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

REGION 3
Curtis Bldg., 6th & Walnut Sts.
Philadelphia, Pennsylvania 19106

CHAIN OF CUSTODY RECORD

PROJ. NO.: R3-7
PROJECT NAME: R3-7
SAMPLERS: (Signature) Sharon E. Schaeffer, Laurie B. Wyl

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	TAL Metals	Cyanide					REMARKS Tag #'s
1	4/18/90	1000		X	Location 1 (Sludge)	2	1	1					3-1068301, 62.

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Sharon E. Schaeffer	4/18/90 2000				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
		J. A. Monson	4/19/90 0900	Shipped via Federal Express Airbill # 2294123705	

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

REGION 3
Curtis Bldg., 6th & Walnut Sts.
Philadelphia, Pennsylvania 19106

CHAIN OF CUSTODY RECORD

PROJ. NO.: R3-7
PROJECT NAME: R3-7
SAMPLERS: (Signature) Sharon E. Schaffer, Laurie B. Wyl

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	VOA	BNA	PCB/Pest.	TAL Metals	Cyanide		REMARKS Tag #'s
2	4/18/90	1135		X	Location 2	6	2	1	1	1	1		3-10683 59, 63, 64, 65, 66, 67
3	4/18/90	1145		X	Location 3	6	2	1	1	1	1		3-10683 68, 69, 70, 71, 72, 73
5	4/18/90	1430		X	Location 5	6	2	1	1	1	1		3-10683 74, 75, 76, 77, 78, 79
6	4/18/90	1455		X	Location 6	10	2	1 2	1 2	1 2	1 2		3-10683 80, 81, 82, 83, 84, 85, 86, 87, 88, 89
7	4/18/90	1505		X	Location 7	10	2	1 2	1 2	1 2	1 2		3-10683 90, 91, 92, 93, 94, 95, 96, 97, 98, 99

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Sharon E. Schaffer	4/18/90 2000				
Relinquished by: (Signature)	Date / Time	Received by: (Signature) J. R. Morrison	Relinquished by: (Signature)	Date / Time	Received by: (Signature) ORIGINAL (Red)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature) J. R. Morrison	Date / Time 4/19/90 0900	Remarks Shipped via Federal Express Airbill # 4026936093	

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files