Caporale, Cynthia

From: Arguto, William
Sent: Tuesday, February 11, 2014 6:57 AM
To: Gray, Wendy; Magnuson, Matthew; Weber, Eric; Caporale, Cynthia; binetti, victoria; Hedrick, Elizabeth; Warner, Sue
Cc: Allgeier, Steve; R3 ESC-LB
Subject: MCHM DEGREDATION DISCUSSION Call in Number

Importance: High

The call in number for the conference call is Ex. 6 - Personal Privacy
Conference Code Ex. 6 - Personal Privacy

Thanks
Bill

Sue W
Adam M,
Kevin P.
Jennie
Hoang.

Bill
Wendy
Vicky
Matthew
Ex. 6 - Personal Privacy — Univ. Minnesota
Elizabeth Hedrick

Ex. 5 - Deliberative

Ex. 5 - Deliberative

Ex. 5 - Deliberative

Ex. 5 - Deliberative

Eric Graybill

Graybill.eric@epa.gov

410-305-2665

3EA21

Prepared By: ERD
Prepared Date: 1/23/14
Expiration Date: 7/21/14
SNB364 Certificate of Analysis

Solvent/Barcode: MeOH 10707
Reagent Purity: ERD
Storage Location (4 +/- 2 C): G202

Stds Prep Log

Source Solution ID or Vial #	Volume of source solution (uL)	Conc. of prepared solution (µg/mL)	Final volume of prepared solution (mL)	Prepared Solution ID
MCHM1000_012314	500	50	10	BS MCHM50_012314
MCHM 1000_012314	50	5	10	BS MCHM5_012314
MCHM 1000_012314	5	0.5	10	BS MCHM0.5_012314

Comments: _____

Prepared By: ERY
Prepared Date: 1/23/14
Expiration Date: 7/21/14
SNB364 Certificate of Analysis

Solvent/Barcode: MeCl2 | 13549
Reagent Purity: ERY
Storage Location (4 +/- 2 C): F204

Stds Prep Log

Source Solution ID or Vial #	Volume of source solution (uL)	Conc. of prepared solution (µg/mL)	Final volume of prepared solution (mL)	Prepared Solution ID
MCHMINT-140121-ACM	1000	1000	10	MCHM1000_012314
MCHM 1000_012314	100	100	1.0	MCHM100_012314

Comments: _____

Prepared By: EDD
Prepared Date: 1/23/14
Expiration Date: 7/21/14
SNB364 Certificate of Analysis

Solvent/Barcode: $MeCl_2$/13549
Reagent Purity: EDD
Storage Location (4 +/- 2 C): F204

Stds Prep Log

Source Solution ID or Vial #	Volume of source solution (uL)					Conc. of prepared solution (µg/mL)				Final volume of prepared solution (mL)	Prepared Solution ID
	MCHM 1000-012314	MCHM 100-012314	1300374	1300375	1300376	MCHM	AcidSurr	BN Surr	ISTD		
see below	50	-	5	5	10	50	50	25	20	1.0	MCHM50_012314
	20	-	5	5	10	20	50	25	20	1.0	MCHM20_012314
	10	-	5	5	10	10	50	25	20	1.0	MCHM10_012314
	5	-	5	5	10	5	50	25	20	1.0	MCHM5_012314
	-	5	5	5	10	0.5	50	25	20	1.0	MCHM0.5_012314

Comments: MCHM 1000_012314
MCHM 100_012314
1300374 Acid Surr
1300375 BN Surr
1300376 ISTD

Prepared By: ERY
Prepared Date: 1/25/14
Expiration Date: 7/23/14
SNB364 Certificate of Analysis

Solvent/Barcode: MeCl2 / 13549
Reagent Purity: ERY
Storage Location (4 +/- 2 C): F204

Stds Prep Log

Source Solution ID or Vial #	Volume of source solution (uL)					Conc. of prepared solution (µg/mL)				Final volume of prepared solution (mL)	Prepared Solution ID
	PPH 1000_012514	PPH100_012514	1300374	1300375	1300376	PPH	Acid Surr	B/N Surr	ISTD		
See below	50	-	5	5	10	50	50	25	20	1.0	PPH50_012514
	20	-	5	5	10	20	50	25	20	1.0	PPH20_012514
	10	-	5	5	10	10	50	25	20	1.0	PPH10_012514
	5	-	5	5	10	5	50	25	20	1.0	PPH05_012514
	-	5	5	5	10	0.5	50	25	20	1.0	PPHLowS_012514

Comments: PPH 1000_012514
PPH 100_012514
~~1300~~ 1300374 - Acid Surr
1300375 - B/N Surr
1300376 - ISTD

Prepared By: EDJ
Prepared Date: 1/25/14
Expiration Date: 7/23/14
SNB364 Certificate of Analysis

Solvent/Barcode: MeCl2/13549
Reagent Purity: EDJ
Storage Location (4 +/- 2 C): F204

Stds Prep Log

Source Solution ID or Vial #	Volume of source solution (uL)	Conc. of prepared solution (µg/mL)	Final volume of prepared solution (mL)	Prepared Solution ID
TCI, Lot# GFRQO-MK, PO# P0118	0.1g	10,000	10	PPH10,000_012514
PPH10,000_012514	100	1000	1.0	PPH1000_012514
PPH1000_012514	100	100	1.0	PPH100_012514

Comments: _____

Prepared By: ERJ
Prepared Date: 1/26/14
Expiration Date: 7/23/14
SNB364 Certificate of Analysis

Solvent/Barcode: MeOH/10707
Reagent Purity: ERJ
Storage Location (4 +/- 2 C): G202

Stds Prep Log

Source Solution ID or Vial #	Volume of source solution (uL)	Conc. of prepared solution (µg/mL)	Final volume of prepared solution (mL)	Prepared Solution ID
PPH1000_012514	500	50	10	BSPPH50_012614
PPH1000_012514	50	5	10	BSPPH05_012614
PPH1000_012514	5	0.5	10	BSPPH0.5_012614

Comments: _____

Prepared By: ERD | Oerstel
Prepared Date: 2/18/14
Expiration Date: 7/21/14
SNB364 Certificate of Analysis

Solvent/Barcode: MeCl2 | 13549
Reagent Purity: ERD
Storage Location (4 +/- 2 C): F204

Stds Prep Log

Source Solution ID or Vial #	Volume of source solution (uL)					Conc. of prepared solution (µg/mL)				Final volume of prepared solution (mL)	Prepared Solution ID
	MCHM 1000_012314	MCHM 100_021814	1400088	1400089	1400053	MCHM	Acid Surr	B/N Surr	ISTD		
See below	50	-	5	5	10	50	50	25	20	1.0	MCHM50_021814
	20	-	5	5	10	20	50	25	20	1.0	MCHM20_021814
	10	-	5	5	10	10	50	25	20	1.0	MCHM10_021814
	5	-	5	5	10	5	50	25	20	1.0	MCHM05_021814
	-	5	5	5	10	0.5	50	25	20	1.0	MCHMlow5_021814

Comments: MCHM 1000_012314
MCHM 100_021814
1400088 Acid Surr
1400089 B/N Surr
1400053 ISTD

Prepared By: ERY
Prepared Date: 2/8/14
Expiration Date: 7/21/14
SNB364 Certificate of Analysis

Solvent/Barcode: MeCl2 / 13549
Reagent Purity: ERY
Storage Location (4 +/- 2 C): F204

Stds Prep Log

Source Solution ID or Vial #	Volume of source solution (uL)	Conc. of prepared solution (µg/mL)	Final volume of prepared solution (mL)	Prepared Solution ID
MCHM 1000_012314	100	100	1.0	MCHM100_021814

Comments: _____

Prepared By: ERY
Prepared Date: 2/18/14
Expiration Date: 7/23/14
SNB364 Certificate of Analysis

Solvent/Barcode: MeCl2 / 13549
Reagent Purity: ERY
Storage Location (4 +/- 2 C): F204

Stds Prep Log

Source Solution ID or Vial #	Volume of source solution (uL)	Conc. of prepared solution (µg/mL)	Final volume of prepared solution (mL)	Prepared Solution ID
PPH 10,000_012514	100	1000	1.0	PPH1000_021814
PPH1000_021814	100	100	1.0	PPH100_021814

Comments: _____

Prepared By: ERJ/Gerstel
Prepared Date: 2/18/14
Expiration Date: 7/23/14
SNB364 Certificate of Analysis

Solvent/Barcode: MeOH2/ ~~134~~ 13549
Reagent Purity: ERJ
Storage Location (4 +/- 2 C): F204

Stds Prep Log

Source Solution ID or Vial #	Volume of source solution (uL)					Conc. of prepared solution (µg/mL)				Final volume of prepared solution (mL)	Prepared Solution ID
	PPH1000_021814	PPH100_021814	1400088	1400089	1400053	PPH	Acid Surr	B/N Surr	ISTD		
See below	50	–	5	5	10	50	50	25	20	1.0	PPH50_021814
	20	–	5	5	10	20	50	25	20	1.0	PPH20_021814
	10	–	5	5	10	10	50	25	20	1.0	PPH10_021814
	5	–	5	5	10	5	50	25	20	1.0	PPH5_021814
	–	5	5	5	10	0.5	50	25	20	1.0	PPH LowS_021814

Comments: PPH1000_021814
PPH100_021814
1400088 Acid Surr
1400089 B/N Surr
1400053 ISTD

Prepared By: EDY
Prepared Date: 2/19/14
Expiration Date: 7/23/14
SNB364 Certificate of Analysis

Solvent/Barcode: MeCl2/13549
Reagent Purity: EDY
Storage Location (4 +/- 2 C): F204

Stds Prep Log

Source Solution ID or Vial #	Volume of source solution (uL)					Conc. of prepared solution (µg/mL)				Final volume of prepared solution (mL)	Prepared Solution ID
	PPH1000_021914	PPH100_021914	1400088	1400089	1400091	PPH	Acid Surr	B/N Surr	ISTD		
see below	50	-	5	5	10	50	50	25	20	1.0	PPH50_021914
	20	-	5	5	10	20	50	25	20	1.0	PPH20_021914
	10	-	5	5	10	10	50	25	20	1.0	PPH10_021914
	5	-	5	5	10	5	50	25	20	1.0	PPH05_021914
	-	5	5	5	10	0.5	50	25	20	1.0	PPHLow5_021914

Comments: ~~PPH-021914~~ EDY 02/19/14 1400091 Rev ISTD
PPH1000_021914
PPH100_021914
1400088 Acid Surr
1400089 B/N Surr

Prepared By: ERD
Prepared Date: 2/19/14
Expiration Date: 7/23/14
SNB364 Certificate of Analysis

Solvent/Barcode: MeCl2/13549
Reagent Purity: ERD
Storage Location (4 +/- 2 C): F204

Stds Prep Log

Source Solution ID or Vial #	Volume of source solution (uL)	Conc. of prepared solution (µg/mL)	Final volume of prepared solution (mL)	Prepared Solution ID
PPH10,000_012514	100	1000	1.0	PPH1000_021914
PPH1000_021914	100	100	1.0	PPH100_021914

Comments: _____

EPA REGION 3 OASQA STANDARD/REAGENT PREPARATION LOG

1400088

std_Org_analytical.rpt

Description:	ERG Acid Surrogate Standard Mix	Expires:	08/17/2014
Standard Type:	Surrogate Spike	Prepared:	02/18/2014
Department:	ORGANIC-GCMS	Prepared By:	** Vendor **
Solvent:	Methanol	Vendor:	Restek
Final Volume (mls):	1	Vendor Lot:	A093841
Vials:	1	Received:	12/05/2013
Reagent Purity Checked	ERY	Mfgr Expiration:	03/31/2021

Analyte	CAS Number	Concentration	Units
2,4,6-Tribromophenol	118-79-6	10000	ug/mL
2-Fluorophenol	367-12-4	10000	ug/mL
Phenol-d5	NA	10000	ug/mL

RESTEK 110 Benner Circle Bellefonte, PA 16823 Made in USA

Catalog# 31063 Rec 12/5/13

Acid Surrogate Standard Mix (4/89) ERY

10000 ug/mL each in Methanol

Lot# A093841 Exp Date: 03/2021 Store 10°C or colder

EPA REGION 3 OASQA STANDARD/REAGENT PREPARATION LOG

1400089

std_Org_analytical.rpt

Description:	ERG B/N Surrogate Mix	Expires:	08/17/2014
Standard Type:	Surrogate Spike	Prepared:	02/18/2014
Department:	ORGANIC-GCMS	Prepared By:	** Vendor **
Solvent:	MethyleneChloride	Vendor:	Restek
Final Volume (mls):	1	Vendor Lot:	A098468
Vials:	1	Received:	12/05/2013
Reagent Purity Checked	EBY	Mfgr Expiration:	09/30/2019

Analyte	CAS Number	Concentration	Units
2-Fluorobiphenyl	321-60-8	5000	ug/mL
Nitrobenzene-d5	NA	5000	ug/mL
Terphenyl-d14	NA	5000	ug/mL

RESTEK 110 Benner Circle Bellefonte, PA 16823 Made in USA

Catalog# 31062 Rec 12/5/13

Sonicate prior to use.

B/N Surrogate Mix (4/89 SOW) EBY

5000 ug/mL each in Methylene Chloride

Lot# A098468 Exp Date 09/2019 Store. 10°C or colder

Freedom_0006035_0018

EPA REGION 3 OASQA STANDARD/REAGENT PREPARATION LOG

1400090

std_Org_analytical.rpt

Description:	ERG SURR 021814	Expires:	08/17/2014
Standard Type:	Surrogate Spike	Prepared:	02/18/2014
Department:	ORGANIC-GCMS	Prepared By:	Eric Graybill
Solvent:	MeOH/10707	Vendor:	Restek
Final Volume (mls):	50	Vendor Lot:	see below
Vials:	1		
Reagent Purity Checked	ERG		

Analyte	CAS Number	Concentration	Units
2,4,6-Tribromophenol	118-79-6	100	ug/mL
2-Fluorobiphenyl	321-60-8	50	ug/mL
2-Fluorophenol	367-12-4	100	ug/mL
Nitrobenzene-d5	NA	50	ug/mL
Phenol-d5	NA	100	ug/mL
Terphenyl-d14	NA	50	ug/mL

Parent Standards used in this standard:

Standard	Description	Prepared	Expires	Prepared By	Vendor	Vendor Lot	Conc.	(mls)
1400088	ERG Acid Surrogate Standard Mix	02/18/2014	08/17/2014	** Vendor **	Restek	A093841	10000	0.5
1400089	ERG B/N Surrogate Mix	02/18/2014	08/17/2014	** Vendor **	Restek	A098468	5000	0.5

Freedom_0006035_0019

EPA REGION 3 OASQA STANDARD/REAGENT PREPARATION LOG

1400091

std_Org_analytical.rpt

Description:	ERG Revised ISTD	Expires:	08/19/2014
Standard Type:	Internal Std	Prepared:	02/19/2014
Department:	ORGANIC-GCMS	Prepared By:	** Vendor **
Solvent:	Methylene Chloride	Vendor:	Restek
Final Volume (mls):	1	Vendor Lot:	A096614
Vials:	1	Received:	06/26/2013
Reagent Purity Checked:	ERG	Mfgr Expiration:	06/30/2019

Analyte	CAS Number	Concentration	Units
1,4-Dichlorobenzene-d4	3855-82-1	2000	ug/mL
1,4-dioxane-d8	17647-74-4	2000	ug/mL
Acenaphthene-d10	NA	2000	ug/mL
Chrysene-d12	NA	2000	ug/mL
Naphthalene-d8	NA	2000	ug/mL
Perylene-d12	NA	2000	ug/mL
Phenanthrene-d10	NA	2000	ug/mL

RESTEK
110 Benner Circle
Bellefonte, PA 16823
Made in USA
Catalog# 31885
Sonicate prior to use.
Rec 6/26/13
Revised SV Internal Standard Mix ERG
2000 ug/mL each in Methylene Chloride
Lot# A096614 Exp Date: 06/2019 Store: 10°C or colder

EPA REGION 3 OASQA STANDARD/REAGENT PREPARATION LOG

1400053

std_Org_analytical.rpt

Description:	ERG ISTD	Expires:	07/25/2014
Standard Type:	Internal Std	Prepared:	01/26/2014
Department:	ORGANIC-GCMS	Prepared By:	** Vendor **
Solvent:	Methylene Chloride	Vendor:	Restek
Final Volume (mls):	1	Vendor Lot:	A089208
Vials:	1	Received:	01/09/2013
Reagent Purity Checked	ERM	Mfgr Expiration:	05/31/2018

Analyte	CAS Number	Concentration	Units
1,4-Dichlorobenzene-d4	3855-82-1	2000	ug/mL
Acenaphthene-d10	NA	2000	ug/mL
Chrysene-d12	NA	2000	ug/mL
Naphthalene-d8	NA	2000	ug/mL
Perylene-d12	NA	2000	ug/mL
Phenanthrene-d10	NA	2000	ug/mL

RESTEK
110 Benner Circle
Bellefonte, PA 16823
Made in USA
Catalog # 31206
Sonicate prior to use.
SV Internal Standard Mix 2mg/ml
Rec 1/9/13 DS
2000 ug/mL each in Methylene Chloride
Lot# A089208 Exp. Date: 05/2018 Store: 10°C or colder

Freedom_0006035_0021

Ex. 5 - Deliberative

Jennifer Gunderson

Gunderson.Jennifer@EPA.GOV

410 305 2835

3EA20

Ex. 5 - Deliberative

ALS Environmental

Ex. 5 - Deliberative

27-Jan-2014

Kevin Thompson
Thompson Barney, PLLC
203 Kanawha Blvd E
Charleston, WV 25301

Re: **Freedom Spill**

Work Order: **1401359**

Dear Kevin,

Ex. 5 - Deliberative

ALS Environmental received 5 samples on 13-Jan-2014 05:00 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Ex. 5 - Deliberative

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 14.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Rebecca Kiser

Electronically approved by Rebecca Kiser

Rebecca Kiser
Project Manager

Ex. 5 - Deliberative

Report of Laboratory Analysis

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185
ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Environmental www.alsglobal.com
RIGHT SOLUTIONS RIGHT PARTNER

ALS Group USA, Corp

Date: 27-Jan-14

Client: Thompson Barney, PLLC
Project: Freedom Spill
Work Order: 1401359

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1401359-01	Van Mens Toil	Water		1/13/2014 15:45	1/13/2014 17:00	☐
1401359-02	Van Wom Toil	Water		1/13/2014 15:50	1/13/2014 17:00	☐
1401359-03	Van D.S. Toil	Water		1/13/2014 15:55	1/13/2014 17:00	☐
1401359-04	Van Bev	Water		1/13/2014 16:05	1/13/2014 17:00	☐
1401359-05	Van Hand	Water		1/13/2014 16:10	1/13/2014 17:00	☐

Freedom_0006035_0024

ALS Group USA, Corp

Date: 27-Jan-14

Client: Thompson Barney, PLLC
Project: Freedom Spill
WorkOrder: 1401359

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
µg/L	Micrograms per Liter
mg/L	Milligrams per Liter

ALS Group USA, Corp

Date: *27-Jan-14*

Client: Thompson Barney, PLLC
Project: Freedom Spill
Sample ID: Van Mens Toil
Collection Date: 1/13/2014 03:45 PM

Work Order: 1401359
Lab ID: 1401359-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ORGANIC COMPOUNDS BY GC-FID			**SW8015M**			Analyst: **JD**
Methanol	ND		5.0	mg/L	1	1/22/2014 10:41 PM
ACIDS BY HPLC			**SW8300M**			Analyst: **RM**
Formic Acid	ND		25	mg/L	1	1/16/2014 05:15 PM
CARBONYL COMPOUNDS BY HPLC			**SW8315A**		Prep Date: **1/16/2014**	Analyst: **RM**
Formaldehyde	**32**		**25**	**µg/L**	1	1/17/2014 04:30 PM
ORGANIC COMPOUNDS BY GC-FID			**SW8015M**		Prep Date: **1/15/2014**	Analyst: **RLK**
4-Methyl-1-cyclohexanemethanol	**0.16**		**0.050**	**mg/L**	1	1/15/2014

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Jan-14*

Client: Thompson Barney, PLLC
Project: Freedom Spill
Work Order: 1401359
Sample ID: Van Wom Toil
Lab ID: 1401359-02
Collection Date: 1/13/2014 03:50 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ORGANIC COMPOUNDS BY GC-FID			**SW8015M**			Analyst: **JD**
Methanol	ND		5.0	mg/L	1	1/22/2014 11:03 PM
ACIDS BY HPLC			**SW8300M**			Analyst: **RM**
Formic Acid	ND		25	mg/L	1	1/16/2014 05:15 PM
CARBONYL COMPOUNDS BY HPLC			**SW8315A**		Prep Date: **1/16/2014**	Analyst: **RM**
Formaldehyde	**32**		**25**	**µg/L**	1	1/17/2014 04:30 PM
ORGANIC COMPOUNDS BY GC-FID			**SW8015M**		Prep Date: **1/15/2014**	Analyst: **RLK**
4-Methyl-1-cyclohexanemethanol	ND		0.050	mg/L	1	1/15/2014

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Jan-14*

Client: Thompson Barney, PLLC
Project: Freedom Spill
Sample ID: Van D.S. Toil
Collection Date: 1/13/2014 03:55 PM

Work Order: 1401359
Lab ID: 1401359-03
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ORGANIC COMPOUNDS BY GC-FID			**SW8015M**			Analyst: **JD**
Methanol	ND		5.0	mg/L	1	1/22/2014 11:24 PM
ACIDS BY HPLC			**SW8300M**			Analyst: **RM**
Formic Acid	ND		25	mg/L	1	1/16/2014 05:15 PM
CARBONYL COMPOUNDS BY HPLC			**SW8315A**		Prep Date: **1/16/2014**	Analyst: **RM**
Formaldehyde	**33**		**25**	**µg/L**	1	1/17/2014 04:30 PM
ORGANIC COMPOUNDS BY GC-FID			**SW8015M**		Prep Date: **1/15/2014**	Analyst: **RLK**
4-Methyl-1-cyclohexanemethanol	**1.9**		**0.050**	**mg/L**	1	1/15/2014

Ex. 5 - Deliberative

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Jan-14*

Client: Thompson Barney, PLLC
Project: Freedom Spill
Sample ID: Van Bev
Collection Date: 1/13/2014 04:05 PM

Work Order: 1401359
Lab ID: 1401359-04
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ORGANIC COMPOUNDS BY GC-FID			**SW8015M**			Analyst: **JD**
Methanol	ND		5.0	mg/L	1	1/22/2014 11:45 PM
ACIDS BY HPLC			**SW8300M**			Analyst: **RM**
Formic Acid	ND		25	mg/L	1	1/16/2014 05:15 PM
CARBONYL COMPOUNDS BY HPLC			**SW8315A**		Prep Date: **1/16/2014**	Analyst: **RM**
Formaldehyde	ND		25	µg/L	1	1/17/2014 04:30 PM
ORGANIC COMPOUNDS BY GC-FID			**SW8015M**		Prep Date: **1/15/2014**	Analyst: **RLK**
4-Methyl-1-cyclohexanemethanol	ND		0.050	mg/L	1	1/15/2014

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *27-Jan-14*

Client: Thompson Barney, PLLC
Project: Freedom Spill
Work Order: 1401359
Sample ID: Van Hand
Lab ID: 1401359-05
Collection Date: 1/13/2014 04:10 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ORGANIC COMPOUNDS BY GC-FID			**SW8015M**			Analyst: **JD**
Methanol	ND		5.0	mg/L	1	1/23/2014 12:07 AM
ACIDS BY HPLC			**SW8300M**			Analyst: **RM**
Formic Acid	ND		25	mg/L	1	1/16/2014 05:15 PM
CARBONYL COMPOUNDS BY HPLC			**SW8315A**		Prep Date: **1/16/2014**	Analyst: **RM**
Formaldehyde	ND		25	µg/L	1	1/17/2014 04:30 PM
ORGANIC COMPOUNDS BY GC-FID			**SW8015M**		Prep Date: **1/15/2014**	Analyst: **RLK**
4-Methyl-1-cyclohexanemethanol	ND		0.050	mg/L	1	1/15/2014

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 27-Jan-14

Client: Thompson Barney, PLLC
Work Order: 1401359
Project: Freedom Spill

QC BATCH REPORT

Batch ID: **R134469** Instrument ID **GC11** Method: **SW8015M**

MBLK Sample ID: **MBLKW2-R134469** Units: **mg/L** Analysis Date: **1/22/2014 09:58 PM**
Client ID: Run ID: **GC11_140122B** SeqNo: **2620658** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methanol	ND	5.0								

LCS Sample ID: **LCSW2-R134469** Units: **mg/L** Analysis Date: **1/22/2014 10:20 PM**
Client ID: Run ID: **GC11_140122B** SeqNo: **2620660** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methanol	434.1	5.0	500	0	86.8	50-150	0			

MS Sample ID: **1401721-02B MS** Units: **mg/L** Analysis Date: **1/23/2014 03:19 AM**
Client ID: Run ID: **GC11_140122B** SeqNo: **2620685** Prep Date: DF: **2**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methanol	861.1	10	1000	0	86.1	50-150	0			

MSD Sample ID: **1401721-02B MSD** Units: **mg/L** Analysis Date: **1/23/2014 03:41 AM**
Client ID: Run ID: **GC11_140122B** SeqNo: **2620686** Prep Date: DF: **2**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Methanol	863.4	10	1000	0	86.3	50-150	861.1	0.27	30	

The following samples were analyzed in this batch:

1401359-01B	1401359-02B	1401359-03B
1401359-04B	1401359-05B	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Freedom_0006035_0031

Client: Thompson Barney, PLLC
Work Order: 1401359
Project: Freedom Spill

QC BATCH REPORT

Batch ID: **54948** Instrument ID **HPLC2** Method: **SW8315A**

MBLK Sample ID: **HBLKW1-54948-54948** Units: **µg/L** Analysis Date: **1/17/2014 04:30 PM**
Client ID: Run ID: **HPLC2_140117A** SeqNo: **2616633** Prep Date: **1/16/2014** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Formaldehyde	ND	25								

LCS Sample ID: **HLCSW1-54948-54948** Units: **µg/L** Analysis Date: **1/17/2014 04:30 PM**
Client ID: Run ID: **HPLC2_140117A** SeqNo: **2616634** Prep Date: **1/16/2014** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Formaldehyde	437.3	25	500	0	87.5	50-150	0			

MS Sample ID: **1401356-03B MS** Units: **µg/L** Analysis Date: **1/17/2014 04:30 PM**
Client ID: Run ID: **HPLC2_140117A** SeqNo: **2616625** Prep Date: **1/16/2014** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Formaldehyde	371.9	25	500	0	74.4	50-150	0			H

MSD Sample ID: **1401356-03B MSD** Units: **µg/L** Analysis Date: **1/17/2014 04:30 PM**
Client ID: Run ID: **HPLC2_140117A** SeqNo: **2616626** Prep Date: **1/16/2014** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Formaldehyde	453.6	25	500	0	90.7	50-150	371.9	19.8	50	H

The following samples were analyzed in this batch:

1401359-01B	1401359-02B	1401359-03B
1401359-04B	1401359-05B	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Thompson Barney, PLLC
Work Order: 1401359
Project: Freedom Spill

QC BATCH REPORT

Batch ID: **R134297a** Instrument ID **HPLC2** Method: **SW8300M**

MBLK Sample ID: **MB-R134297-R134297a** Units: **mg/L** Analysis Date: **1/16/2014 05:15 PM**
Client ID: Run ID: **HPLC2_140116B** SeqNo: **2616527** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Formic Acid	ND	25								

LCS Sample ID: **LCS-R134297-R134297a** Units: **mg/L** Analysis Date: **1/16/2014 05:15 PM**
Client ID: Run ID: **HPLC2_140116B** SeqNo: **2616528** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Formic Acid	503.1	25	500	0	101	80-120	0			

MS Sample ID: **1401356-04B MS** Units: **mg/L** Analysis Date: **1/16/2014 05:15 PM**
Client ID: Run ID: **HPLC2_140116B** SeqNo: **2616497** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Formic Acid	516.5	25	500	0	103	75-125	0			

MSD Sample ID: **1401356-04B MSD** Units: **mg/L** Analysis Date: **1/16/2014 05:15 PM**
Client ID: Run ID: **HPLC2_140116B** SeqNo: **2616498** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Formic Acid	513.9	25	500	0	103	75-125	516.5	0.507	20	

The following samples were analyzed in this batch:

1401359-01B	1401359-02B	1401359-03B
1401359-04B	1401359-05B	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Thompson Barney, PLLC
Work Order: 1401359
Project: Freedom Spill

QC BATCH REPORT

Batch ID: **R134639** Instrument ID **SUB** Method: **SW8015M**

MBLK Sample ID: **MBLK-R134639** Units: **mg/L** Analysis Date: **1/15/2014**
Client ID: Run ID: **SUB_140127A** SeqNo: **2624424** Prep Date: **1/15/2014** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
4-Methyl-1-cyclohexanemethanol	ND	0.050								

LCS Sample ID: **LCS-R134639** Units: **mg/L** Analysis Date: **1/15/2014**
Client ID: Run ID: **SUB_140127A** SeqNo: **2624423** Prep Date: **1/15/2014** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
4-Methyl-1-cyclohexanemethanol	0.05585	0.050	0.0442	0	126	70-130		0		

The following samples were analyzed in this batch:

1401359-01A	1401359-02A	1401359-03A
1401359-04A	1401359-05A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

ALS Environmental

Cincinnati, OH +1 513 733 5336 | Fort Collins, CO +1 970 490 1511 | Houston, TX +1 281 530 5656 | Spring City, PA +1 610 948 4903 | South Charleston, WV +1 304 356 3168

Everett, WA +1 425 356 2600 | Holland, MI +1 616 399 6070 | Middletown, PA +1 717 944 5541 | Salt Lake City, UT +1 801 266 7700 | York, PA +1 717 505 5280

Chain of Custody Form

Page ____ of ____

COC ID: 16359

ALS Project Manager: | ALS Work Order #: 1401359

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	SPILL	A	
Work Order		Project Number		B	IAW EMAIL
Company Name		Bill To Company	Thompson Barney	C	Ex. 6 - Personal Privacy
Send Report To	Ex. 6 - Personal Privacy	Invoice Attn	Kevin	D	
Address		Address		E	MCHM + VOC's
				F	
City/State/Zip		City/State/Zip		G	
Phone		Phone		H	
Fax		Fax		I	
e-Mail Address	Ex. 6 - Personal Privacy			J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	VAN Mens Toil	1/13	0575	WAT		2											
2	VAN Wom Toil		Bottle 1550														
3	VAN D.S. Toil		1555														
4	VAN BEV		1605														
5	VAN HAND		1640														
6																	
7																	
8																	
9																	
10																	

Sampler(s) Please Print & Sign: Ex. 6 - Personal Privacy

Shipment Method:

Required Turnaround Time: (Check Box) ☐ Other ____ ☐ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour

Results Due Date:

Relinquished by:	Date:	Time:	Received by:	Notes: Recd 1/14/14 1000 2.0°C AB
[signature]	1/13	1700		
Relinquished by:	Date: 1/13/14	Time: 1700	Received by (Laboratory): [signature]	
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	

Cooler ID	Cooler Temp
	16°C

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Date ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other ____

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **THOMPBARNEY** Date/Time Received: **13-Jan-14 17:00**

Work Order: **1401359** Received by: **JAS**

Checklist completed by Janet Smith (eSignature) 13-Jan-14 (Date) Reviewed by: Rebecca Kiser (eSignature) 16-Jan-14 (Date)

Matrices: Water
Carrier name: Client

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
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 ☐	
Container/Temp Blank temperature in compliance?	Yes ☐	No ☑	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	16C	IR	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:			
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:			

Login Notes: Client only supplied one amber liter per site per analysis requested instead of two one liter ambers per site per analysis.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

Freedom_0006035_0036

Ex. 5 - Deliberative

Starting sequence Wed Jan 22 14:50:50 2014

Instrument Name: O8-5973N
Sequence File: C:\msdchem\1\sequence\VEL_MID_SCREEN.S
Comment: Mid Level Screening
Operator: PZ O8-5973N BB Screening: MCHM Ref. Material
Data Path: D:\DATA\2013\S01222014\
Method Path: D:\METHODS\

Line	Type	Vial	DataFile	Method	Sample Name
1)	COMMENT: 'SAMPLE VOLUME = 5ML PURGED; IS/SS = 20PPB'				
2)	COMMENT: 'STANDARDS' 1400052				
3)	COMMENT: 'SEE ANALYSIS LOG FOR MORE INFORMATION'				
4)	Blank	1	0122RIN1	MID_5ML	Blank
5)	Sample	2	0122BFB	MID_5ML	50ng BFB, 10uL-50mL
6)	PAUSE: ' '				

Sequence paused Wed Jan 22 15:43:58 2014

D:\DATA\2013\S01222014\ Quality Log 2014 Jan 22 1450.LOG
D:\DATA\2013\S01222014\Sequence Log 2014 Jan 22 1450.LOG

Resuming sequence Wed Jan 22 16:27:37 2014

Instrument Name: O8-5973N
Sequence File: C:\msdchem\1\sequence\VEL_MID_SCREEN.S
Comment: Mid Level Screening
Operator: PZ O8-5973N
Data Path: D:\DATA\2013\S01222014\
Method Path: D:\METHODS\

Line	Type	Vial	DataFile	Method	Sample Name
7)	Sample	3	0122S00A	MID_5ML	0.5uL Soln#2 to 100mL Ex. 5 - Deliberative
8)	Sample	4	0122S00B	MID_5ML	5uL Soln#2 to 100mL
9)	Sample	5	0122S00C	MID_5ML	50uL Soln#2 to 100mL
10)	Sample	6	0122S00D	MID_5ML	100uL Soln#2 to 100mL
11)	Blank	7	0122RIN2	MID_5ML	Blank
12)	Blank	8	0122RIN3	MID_5ML	Blank
13)	Sample	9	0122BLK	MID_5ML	Batch-BLK1
14)	COMMAND: 'PRINTSEQLOG'				

Executing Command: PRINTSEQLOG

Ex. 5 - Deliberative

Freedom_0006035_0038

Ex. 5 - Deliberative

Ex. 5 - Deliberative

Ex. 5 - Deliberative

Response To: _____ *Subject:* _____

From: _____ *Date:* _____

Quantitation Report (QT Reviewed)

Data Path : D:\Data\2013\S01222014\
Data File : 0122S00B.D
Acq On : 22 Jan 2014 16:59
Operator : PZ 08-5973N
Sample : 5uL Soln#2 to 100mL
Misc :
ALS Vial : 4 Sample Multiplier: 1

Ex. 5 - Deliberative

Quant Time: Jan 23 08:03:54 2014
Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method
QLast Update : Tue Jan 14 13:41:50 2014
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) 1,4-DIFLUOROBENZENE	5.878	114	217110	20.00	ug/L	0.00
37) CHLOROBENZENE-D5	9.680	117	180887	20.00	ug/L	0.00
56) 1,4-DICHLOROBENZENE-D4	12.322	152	70769	20.00	ug/L	0.00
System Monitoring Compounds						
23) 1,2-DICHLOROETHANE-D4	4.853	65	83672	20.65	ug/L	0.00
Spiked Amount 20.000	Range 76 - 114		Recovery = 103.25%			
41) TOLUENE-D8	7.962	98	259778	21.15	ug/L	0.00
Spiked Amount 20.000	Range 88 - 110		Recovery = 105.75%			
59) 4-BROMOFLUOROBENZENE	11.113	95	86447	21.23	ug/L	0.00
Spiked Amount 20.000	Range 86 - 115		Recovery = 106.15%			

Target Compounds Qvalue

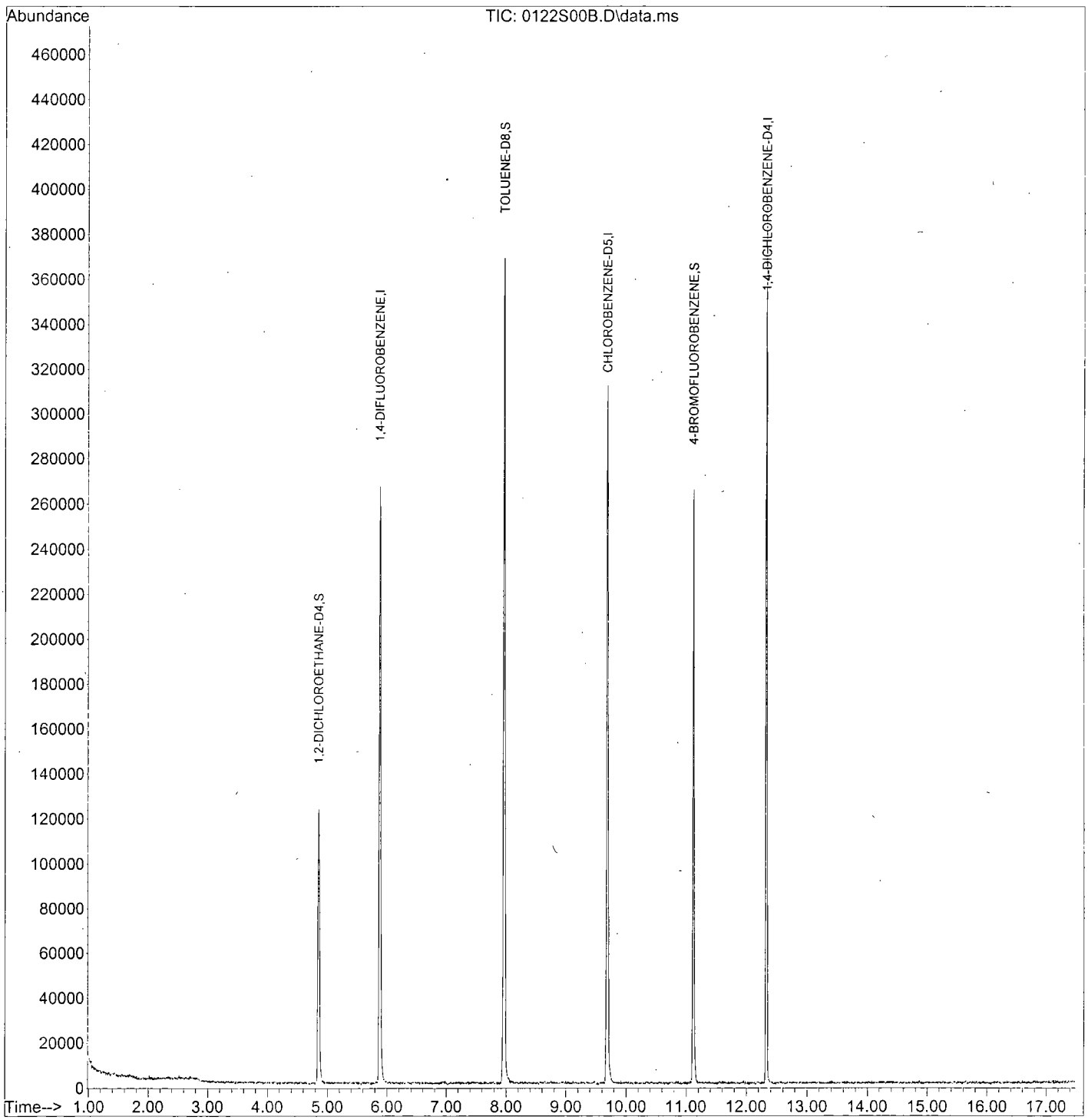
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Freedom_0006035_0043

Quantitation Report (QT Reviewed)

Data Path : D:\Data\2013\S01222014\
Data File : 0122S00B.D
Acq On : 22 Jan 2014 16:59
Operator : PZ 08-5973N
Sample : 5uL Soln#2 to 100mL
Misc :
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Jan 23 08:03:54 2014
Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method
QLast Update : Tue Jan 14 13:41:50 2014
Response via : Initial Calibration



Freedom_0006035_0044

LSC Area Percent Report

Data Path : D:\Data\2013\S01222014\
Data File : 0122S00B.D
Acq On : 22 Jan 2014 16:59
Operator : PZ O8-5973N
Sample : 5uL Soln#2 to 100mL
Misc :
ALS Vial : 4 Sample Multiplier: 1

Integration Parameters: CLOSE.P
Integrator: RTE
Smoothing : ON Filtering: 5
Sampling : 1 Min Area: 100 Area counts
Start Thrs: 0.2 Max Peaks: 20
Stop Thrs : 0 Peak Location: TOP

If leading or trailing edge < 100 prefer < Baseline drop else tangent >
Peak separation: 5

Method : D:\Methods\MID_SCREEN.M
Title : VOA Purge and Trap MID LEVEL Aqueous Method

Signal : TIC: 0122S00B.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	4.460	926	929	933	rBV2	1706	1725	0.26%	0.061%
2	4.853	1024	1034	1050	rVB2	121998	226688	33.62%	8.037%
3	5.594	1226	1232	1236	rBV	1398	2132	0.32%	0.076%
4	5.736	1267	1270	1271	rVB	1805	987	0.15%	0.035%
5	5.878	1299	1308	1327	rBV2	265558	493796	73.23%	17.506%
6	6.234	1400	1403	1407	rBV	1462	1547	0.23%	0.055%
7	6.982	1600	1603	1606	rBV	1825	1223	0.18%	0.043%
8	7.962	1853	1865	1890	rBV	367574	674317	100.00%	23.906%
9	8.303	1951	1956	1957	rBV	1433	1103	0.16%	0.039%
10	9.684	2314	2325	2344	rBV	311156	547787	81.24%	19.420%
11	10.129	2440	2444	2448	rBV2	1862	2343	0.35%	0.083%
12	10.350	2498	2503	2509	rBV	1360	2195	0.33%	0.078%
13	10.417	2516	2521	2524	rBV2	1142	1211	0.18%	0.043%
14	10.840	2631	2634	2636	rBV	1526	1035	0.15%	0.037%
15	11.113	2699	2707	2725	rBV	264408	379700	56.31%	13.461%
16	11.551	2821	2824	2830	rVB	1229	1374	0.20%	0.049%
17	11.982	2936	2939	2942	rBV2	1669	1162	0.17%	0.041%
18	12.262	3011	3014	3019	rVB	1422	1210	0.18%	0.043%
19	12.322	3022	3030	3042	rBV	392059	478048	70.89%	16.948%
20	12.921	3189	3190	3194	rBV	1610	1112	0.16%	0.039%

Sum of corrected areas: 2820695

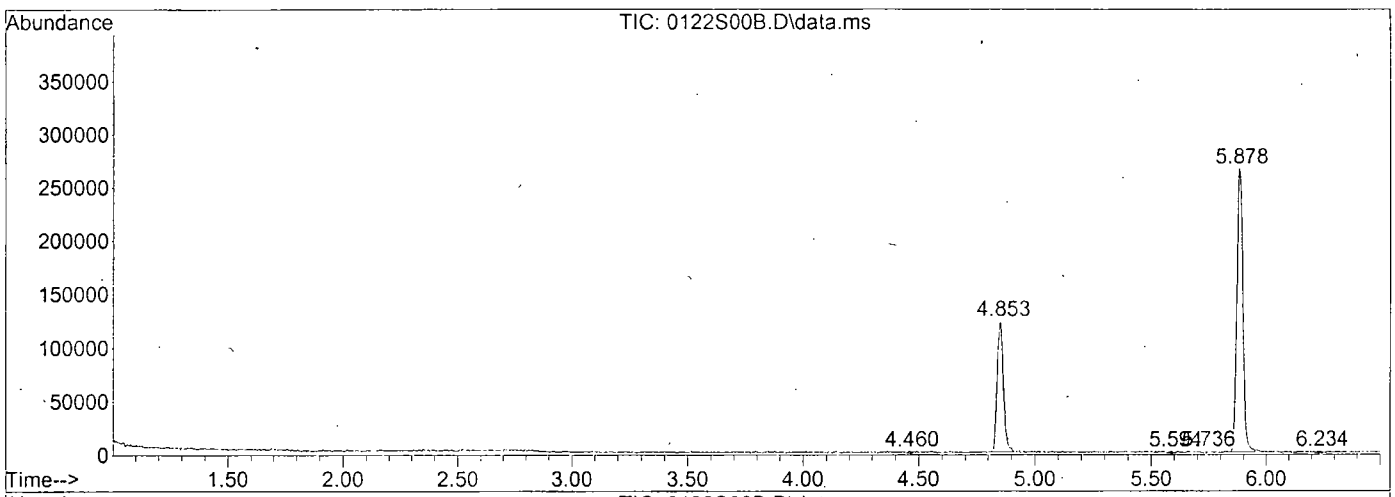
Freedom_0006035_0045

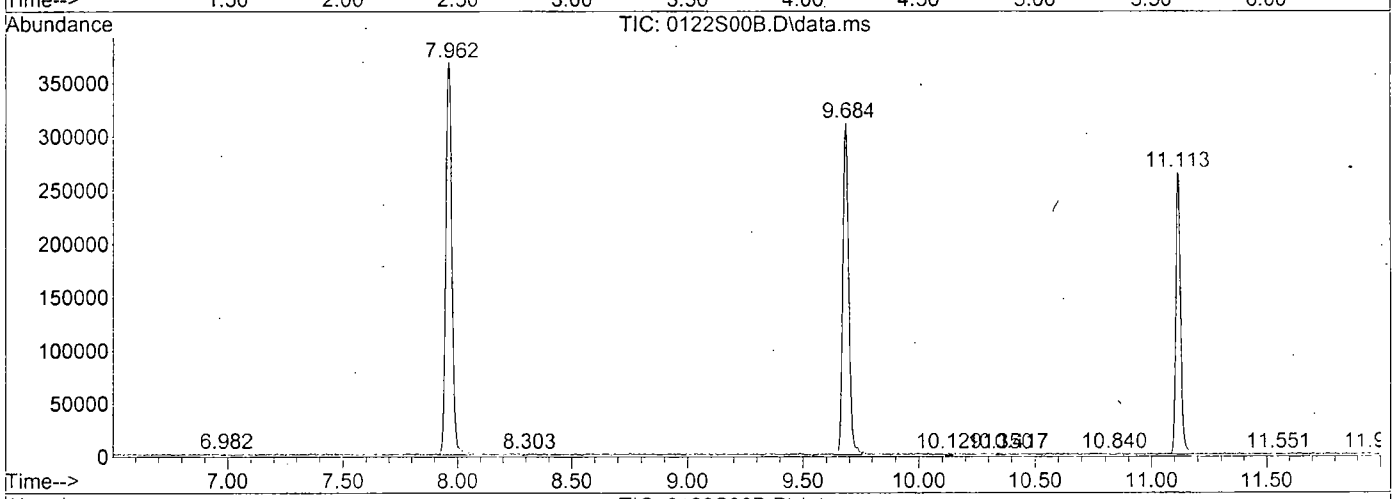
LSC Report - Integrated Chromatogram

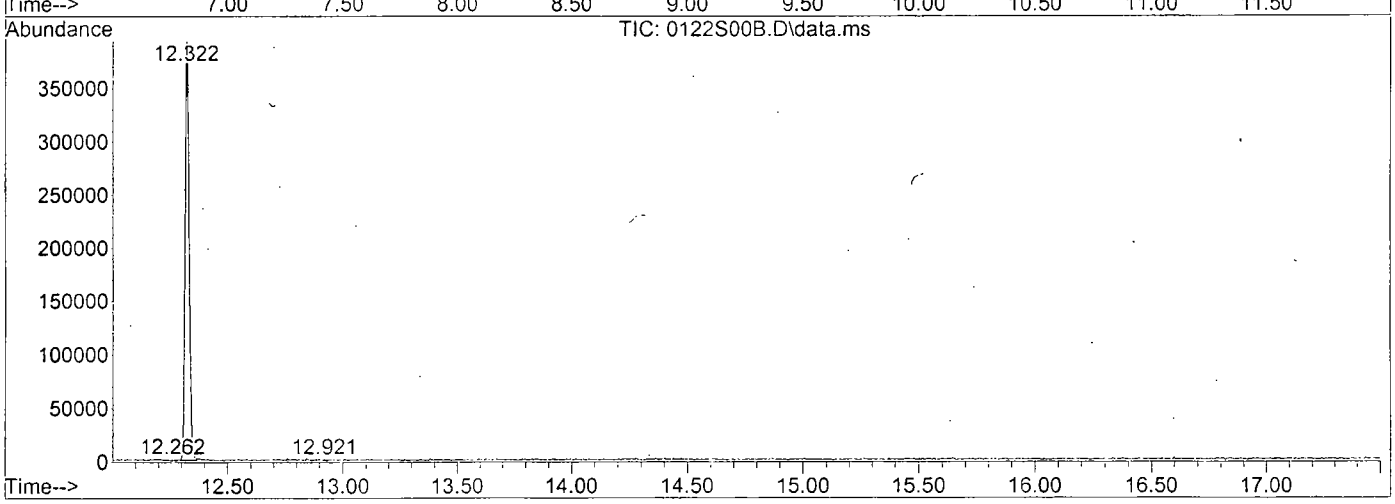
Data Path : D:\Data\2013\S01222014\
Data File : 0122S00B.D
Acq On : 22 Jan 2014 16:59
Operator : PZ 08-5973N
Sample : 5uL Soln#2 to 100mL
Misc :
ALS Vial : 4 Sample Multiplier: 1

Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method

TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P







Library Search Compound Report

Data Path : D:\Data\2013\S01222014\
Data File : 0122S00B.D
Acq On : 22 Jan 2014 16:59
Operator : PZ 08-5973N
Sample : 5uL Soln#2 to 100mL
Misc :
ALS Vial : 4 Sample Multiplier: 1

Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method

TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P

No Library Search Compounds Detected
****

Tentatively Identified Compound (LSC) summary

Data Path : D:\Data\2013\S01222014\
Data File : 0122S00B.D
Acq On : 22 Jan 2014 16:59
Operator : PZ 08-5973N
Sample : 5uL Soln#2 to 100mL
Misc :
ALS Vial : 4 Sample Multiplier: 1

Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method

TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc

Freedom_0006035_0048

Quantitation Report (QT Reviewed)

Ex. 5 - Deliberative

Data Path : D:\Data\2013\S01222014\
Data File : 0122S00C.D
Acq On : 22 Jan 2014 17:25
Operator : PZ O8-5973N
Sample : 50uL Soln#2 to 100mL
Misc :
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Jan 23 08:04:12 2014
Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method
QLast Update : Tue Jan 14 13:41:50 2014
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) 1,4-DIFLUOROBENZENE	5.878	114	214755	20.00	ug/L	0.00
37) CHLOROBENZENE-D5	9.684	117	176813	20.00	ug/L	0.00
56) 1,4-DICHLOROBENZENE-D4	12.322	152	68353	20.00	ug/L	0.00
System Monitoring Compounds						
23) 1,2-DICHLOROETHANE-D4	4.849	65	84243	21.02	ug/L	0.00
Spiked Amount 20.000	Range 76 - 114		Recovery = 105.10%			
41) TOLUENE-D8	7.959	98	256603	21.37	ug/L	0.00
Spiked Amount 20.000	Range 88 - 110		Recovery = 106.85%			
59) 4-BROMOFLUOROBENZENE	11.114	95	84985	21.61	ug/L	0.00
Spiked Amount 20.000	Range 86 - 115		Recovery = 108.05%			

Target Compounds Qvalue

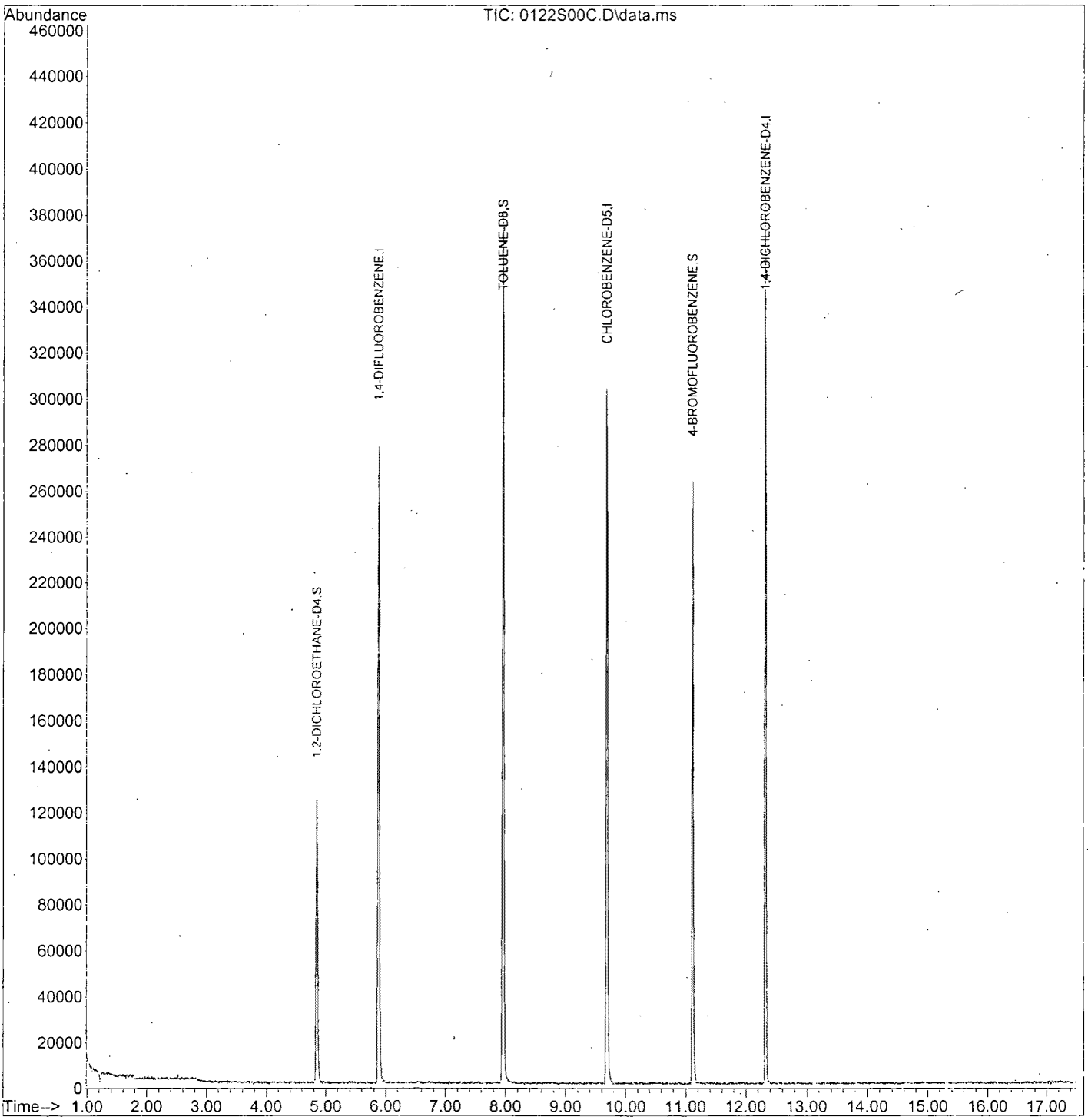
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Freedom_0006035_0049

Quantitation Report (QT Reviewed)

Data Path : D:\Data\2013\S01222014\
Data File : 0122S00C.D
Acq On : 22 Jan 2014 17:25
Operator : PZ 08-5973N
Sample : 50uL Soln#2 to 100mL
Misc :
ALS Vial : 5 Sample Multiplier: 1

Quant Time: Jan 23 08:04:12 2014
Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method
QLast Update : Tue Jan 14 13:41:50 2014
Response via : Initial Calibration



Freedom_0006035_0050

LSC Area Percent Report

Data Path : D:\Data\2013\S01222014\
Data File : 0122S00C.D
Acq On : 22 Jan 2014 17:25
Operator : PZ O8-5973N
Sample : 50uL Soln#2 to 100mL
Misc :
ALS Vial : 5 Sample Multiplier: 1

Integration Parameters: CLOSE.P
Integrator: RTE
Smoothing : ON Filtering: 5
Sampling : 1 Min Area: 100 Area counts
Start Thrs: 0.2 Max Peaks: 20
Stop Thrs : 0 Peak Location: TOP

If leading or trailing edge < 100 prefer < Baseline drop else tangent >
Peak separation: 5

Method : D:\Methods\MID_SCREEN.M
Title : VOA Purge and Trap MID LEVEL Aqueous Method

Signal : TIC: 0122S00C.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	4.658	980	982	986	rBV	1569	1318	0.20%	0.047%
2	4.845	1022	1032	1052	rBV2	123901	231945	34.65%	8.255%
3	4.961	1061	1063	1071	rBV2	1536	1795	0.27%	0.064%
4	5.399	1174	1180	1184	rVB2	1433	1871	0.28%	0.067%
5	5.878	1298	1308	1328	rBV	277318	490766	73.32%	17.466%
6	7.008	1604	1610	1613	rBV	1317	1657	0.25%	0.059%
7	7.061	1622	1624	1628	rBV2	1599	1500	0.22%	0.053%
8	7.959	1853	1864	1883	rBV	379901	669376	100.00%	23.822%
9	8.363	1968	1972	1976	rBV	1247	1320	0.20%	0.047%
10	8.636	2041	2045	2048	rBV	1702	1675	0.25%	0.060%
11	9.684	2315	2325	2348	rBV	302643	547015	81.72%	19.467%
12	11.114	2697	2707	2724	rVV2	262465	373277	55.76%	13.284%
13	11.465	2798	2801	2805	rBV2	1516	1372	0.20%	0.049%
14	11.997	2941	2943	2952	rBV2	1330	1639	0.24%	0.058%
15	12.322	3022	3030	3042	rVV	383656	474911	70.95%	16.901%
16	13.400	3315	3318	3322	rBV	1482	1368	0.20%	0.049%
17	15.930	3992	3994	4002	rVB2	1533	1528	0.23%	0.054%
18	16.667	4188	4191	4197	rBV2	2168	1654	0.25%	0.059%
19	17.056	4289	4295	4298	rVB2	1892	2309	0.34%	0.082%
20	17.468	4403	4405	4409	rBV2	1828	1609	0.24%	0.057%

Sum of corrected areas: 2809905

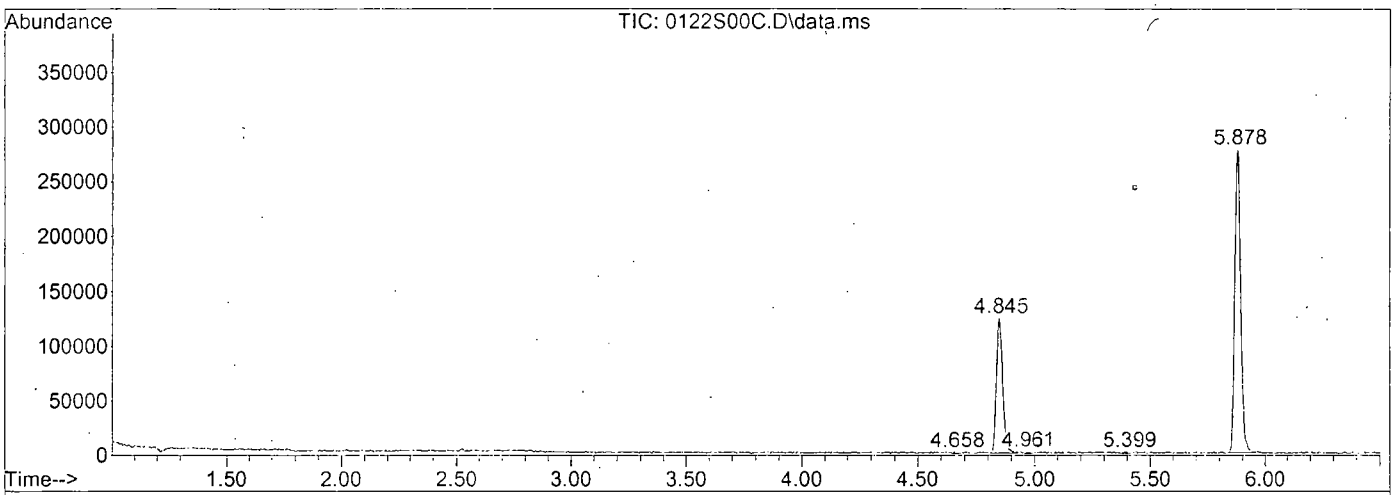
Freedom_0006035_0051

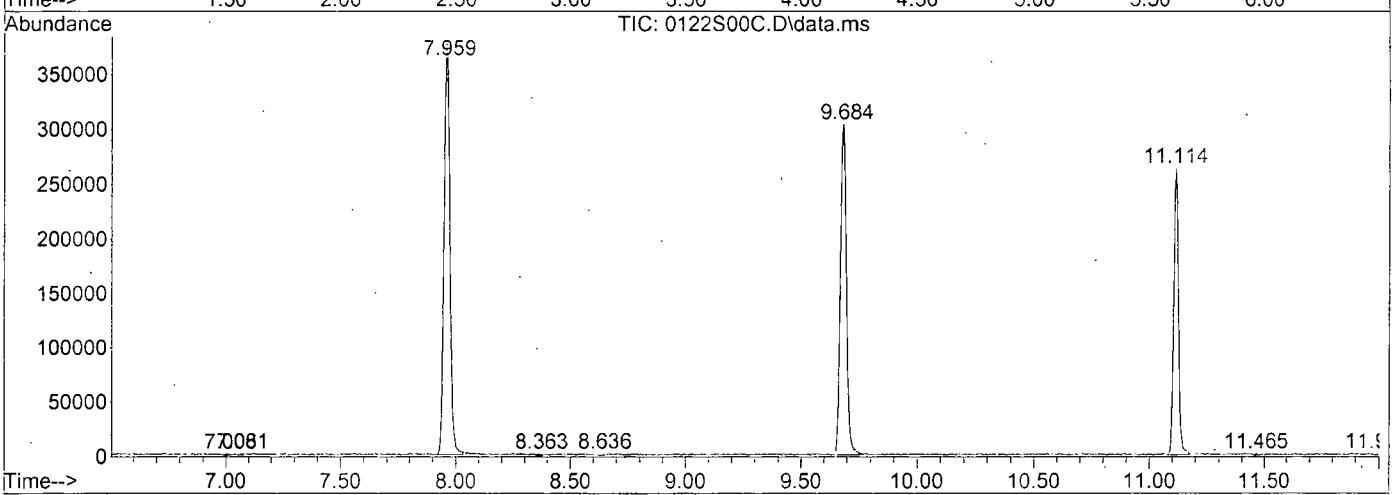
LSC Report - Integrated Chromatogram

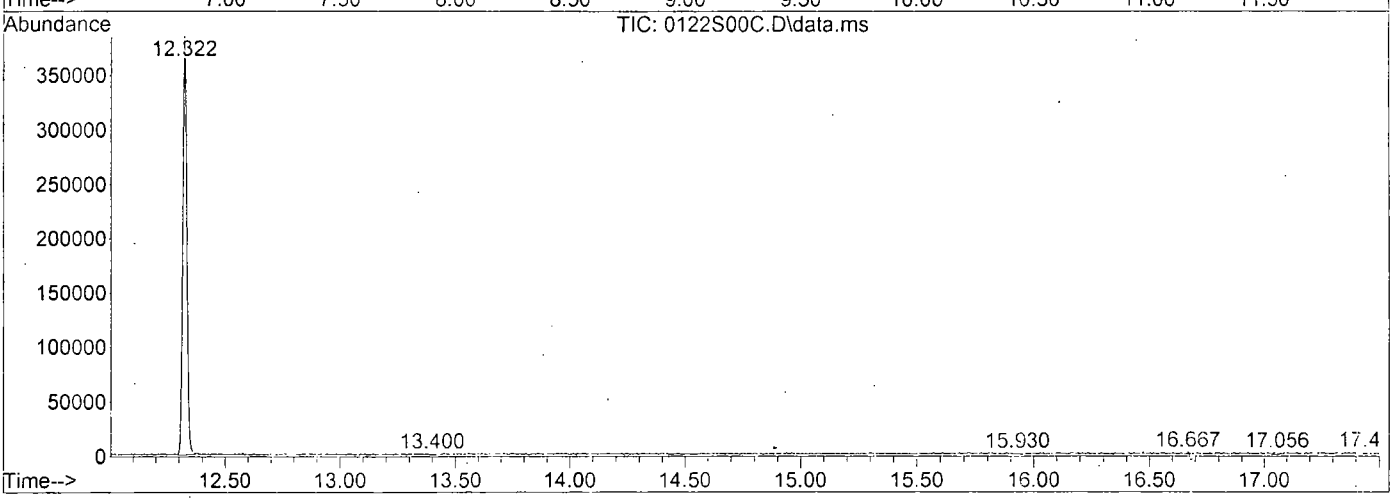
Data Path : D:\Data\2013\S01222014\
Data File : 0122S00C.D
Acq On : 22 Jan 2014 17:25
Operator : PZ 08-5973N
Sample : 50uL Soln#2 to 100mL
Misc :
ALS Vial : 5 Sample Multiplier: 1

Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method

TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P







Freedom_0006035_0052

Library Search Compound Report

Data Path : D:\Data\2013\S01222014\
Data File : 0122S00C.D
Acq On : 22 Jan 2014 17:25
Operator : PZ O8-5973N
Sample : 50uL Soln#2 to 100mL
Misc :
ALS Vial : 5 Sample Multiplier: 1

Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method

TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P

No Library Search Compounds Detected
****

Tentatively Identified Compound (LSC) summary

Data Path : D:\Data\2013\S01222014\
Data File : 0122S00C.D
Acq On : 22 Jan 2014 17:25
Operator : PZ O8-5973N
Sample : 50uL Soln#2 to 100mL
Misc :
ALS Vial : 5 Sample Multiplier: 1

Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method

TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc

Freedom_0006035_0054

Quantitation Report (QT Reviewed)

Ex. 5 - Deliberative

Data Path : D:\Data\2013\S01222014\
Data File : 0122S00D.D
Acq On : 22 Jan 2014 17:50
Operator : PZ O8-5973N
Sample : 100uL Soln#2 to 100mL
Misc :
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Jan 23 08:04:21 2014
Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method
QLast Update : Tue Jan 14 13:41:50 2014
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) 1,4-DIFLUOROBENZENE	5.878	114	211642	20.00	ug/L	0.00
37) CHLOROBENZENE-D5	9.680	117	173163	20.00	ug/L	0.00
56) 1,4-DICHLOROBENZENE-D4	12.322	152	69123	20.00	ug/L	0.00
System Monitoring Compounds						
23) 1,2-DICHLOROETHANE-D4	4.845	65	82831	20.97	ug/L	0.00
Spiked Amount 20.000	Range 76 - 114		Recovery = 104.85%			
41) TOLUENE-D8	7.959	98	251387	21.38	ug/L	0.00
Spiked Amount 20.000	Range 88 - 110		Recovery = 106.90%			
59) 4-BROMOFLUOROBENZENE	11.114	95	83377	20.96	ug/L	0.00
Spiked Amount 20.000	Range 86 - 115		Recovery = 104.80%			

Target Compounds Qvalue

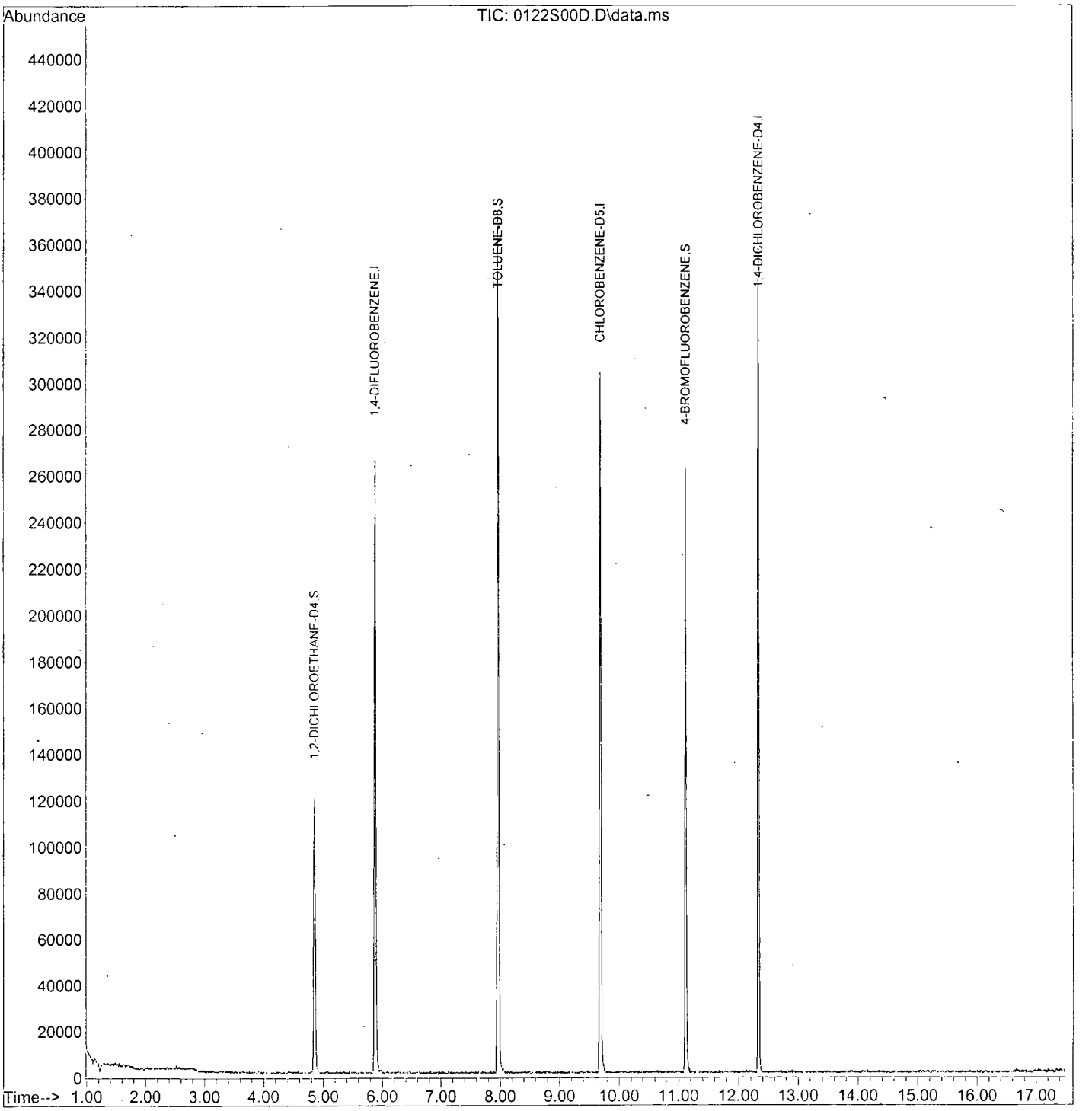
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Freedom_0006035_0055

Quantitation Report (QT Reviewed)

Data Path : D:\Data\2013\S01222014\
Data File : 0122S00D.D
Acq On : 22 Jan 2014 17:50
Operator : PZ 08-5973N
Sample : 100uL Soln#2 to 100mL
Misc :
ALS Vial : 6 Sample Multiplier: 1

Quant Time: Jan 23 08:04:21 2014
Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method
QLast Update : Tue Jan 14 13:41:50 2014
Response via : Initial Calibration



Freedom_0006035_0056

LSC Area Percent Report

Data Path : D:\Data\2013\S01222014\
Data File : 0122S00D.D
Acq On : 22 Jan 2014 17:50
Operator : PZ 08-5973N
Sample : 100uL Soln#2 to 100mL
Misc :
ALS Vial : 6 Sample Multiplier: 1

Integration Parameters: CLOSE.P
Integrator: RTE .
Smoothing : ON Filtering: 5
Sampling : 1 Min Area: 100 Area counts
Start Thrs: 0.2 Max Peaks: 20
Stop Thrs : 0 Peak Location: TOP

If leading or trailing edge < 100 prefer < Baseline drop else tangent >
Peak separation: 5

Method : D:\Methods\MID_SCREEN.M
Title : VOA Purge and Trap MID LEVEL Aqueous Method

Signal : TIC: 0122S00D.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	4.067	821	824	830	rBV	1994	2262	0.34%	0.082%
2	4.849	1023	1033	1048	rVB3	118168	220194	33.45%	7.970%
3	5.878	1296	1308	1327	rBV	265008	486116	73.85%	17.595%
4	6.361	1435	1437	1442	rVB	1661	1141	0.17%	0.041%
5	7.959	1854	1864	1883	rBV	373672	658259	100.00%	23.826%
6	8.363	1971	1972	1978	rVB2	1305	1153	0.18%	0.042%
7	9.355	2229	2237	2239	rBV	1529	1774	0.27%	0.064%
8	9.684	2315	2325	2343	rBV	303323	536285	81.47%	19.411%
9	11.114	2698	2707	2725	rVB	261304	369632	56.15%	13.379%
10	11.518	2809	2815	2818	rVB	1416	1430	0.22%	0.052%
11	12.322	3023	3030	3044	rBV	377221	471580	71.64%	17.069%
12	13.318	3294	3296	3301	rBV2	1311	1138	0.17%	0.041%
13	13.546	3354	3357	3364	rBV2	1366	1538	0.23%	0.056%
14	13.741	3407	3409	3414	rBV	1286	1164	0.18%	0.042%
15	14.164	3519	3522	3525	rBV	1766	1134	0.17%	0.041%
16	15.092	3765	3770	3775	rBV	1226	1349	0.20%	0.049%
17	16.065	4027	4030	4039	rBV	1422	2065	0.31%	0.075%
18	16.390	4113	4117	4121	rBV	1549	1811	0.28%	0.066%
19	17.311	4361	4363	4367	rBV	1830	1476	0.22%	0.053%
20	17.337	4369	4370	4373	rBV2	1977	1235	0.19%	0.045%

Sum of corrected areas: 2762736

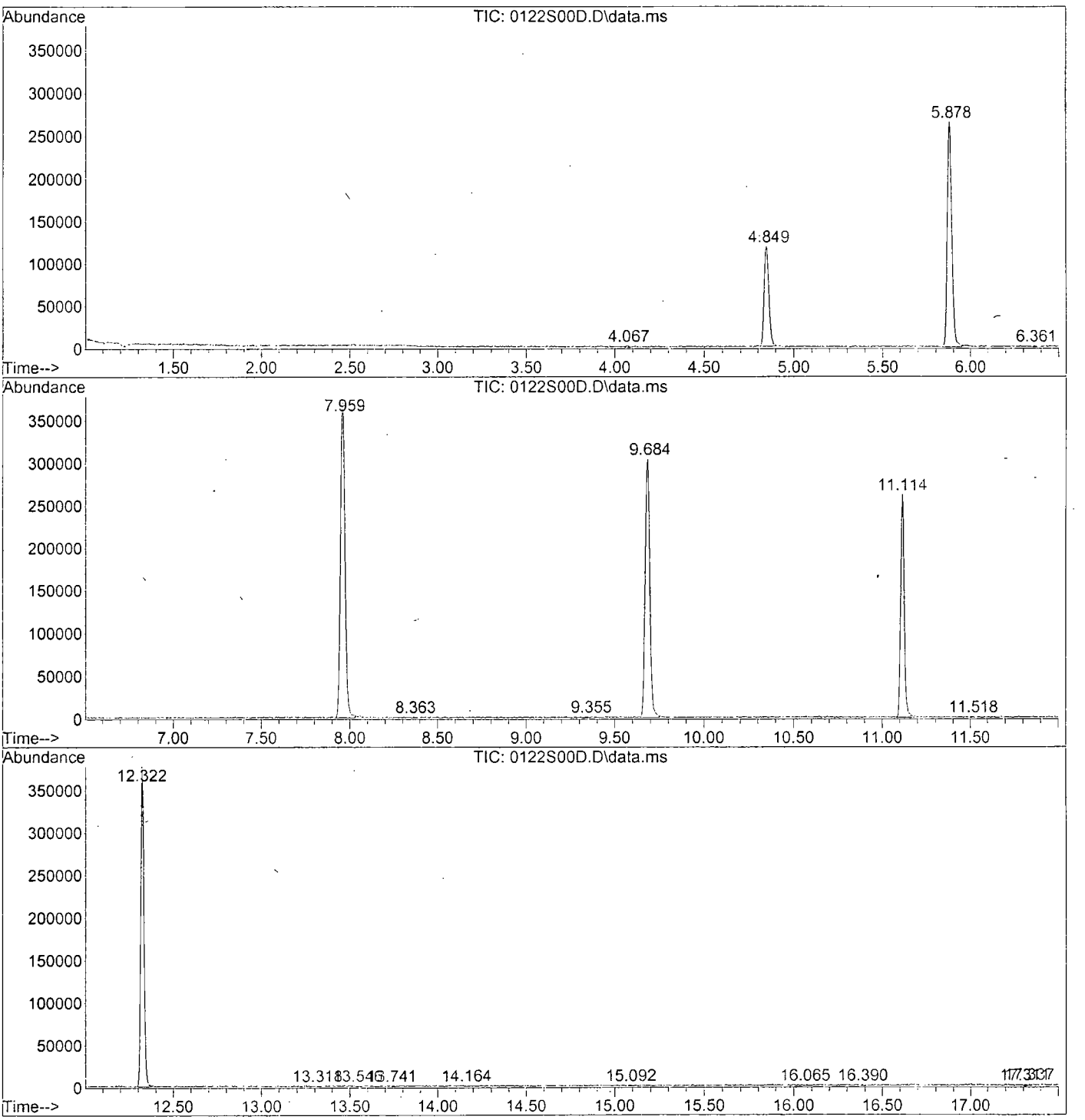
Freedom_0006035_0057

LSC Report - Integrated Chromatogram

Data Path : D:\Data\2013\S01222014\
Data File : 0122S00D.D
Acq On : 22 Jan 2014 17:50
Operator : PZ 08-5973N
Sample : 100uL Soln#2 to 100mL
Misc :
ALS Vial : 6 Sample Multiplier: 1

Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method

TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P



Freedom_0006035_0058

Library Search Compound Report

Data Path : D:\Data\2013\S01222014\
Data File : 0122S00D.D
Acq On : 22 Jan 2014 17:50
Operator : PZ 08-5973N
Sample : 100uL Soln#2 to 100mL
Misc :
ALS Vial : 6 Sample Multiplier: 1

Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method

TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P

No Library Search Compounds Detected
****

Tentatively Identified Compound (LSC) summary

Data Path : D:\Data\2013\S01222014\
Data File : 0122S00D.D
Acq On : 22 Jan 2014 17:50
Operator : PZ O8-5973N
Sample : 100uL Soln#2 to 100mL
Misc :
ALS Vial : 6 Sample Multiplier: 1

Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method

TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc

Freedom_0006035_0060

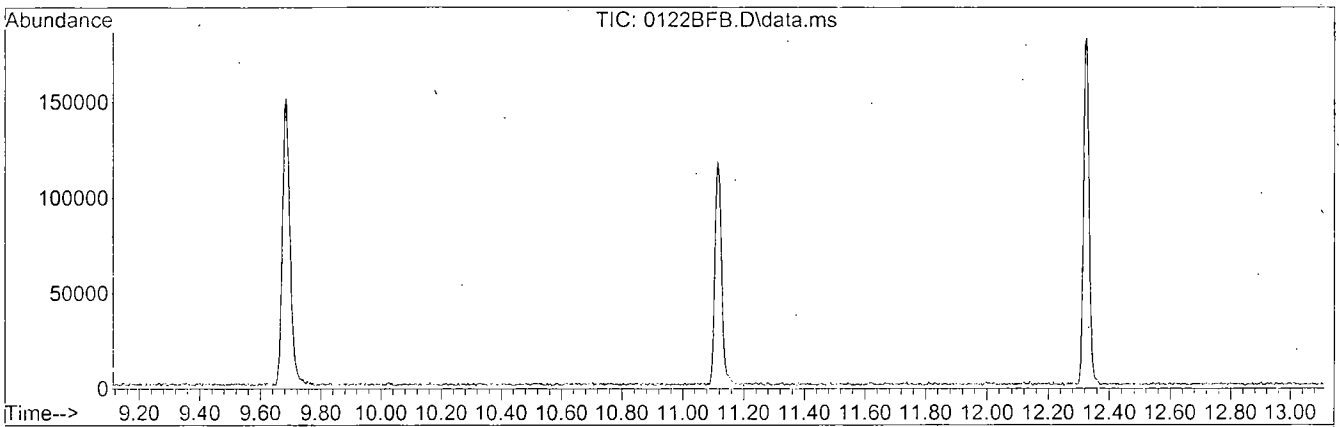
Analysis Log

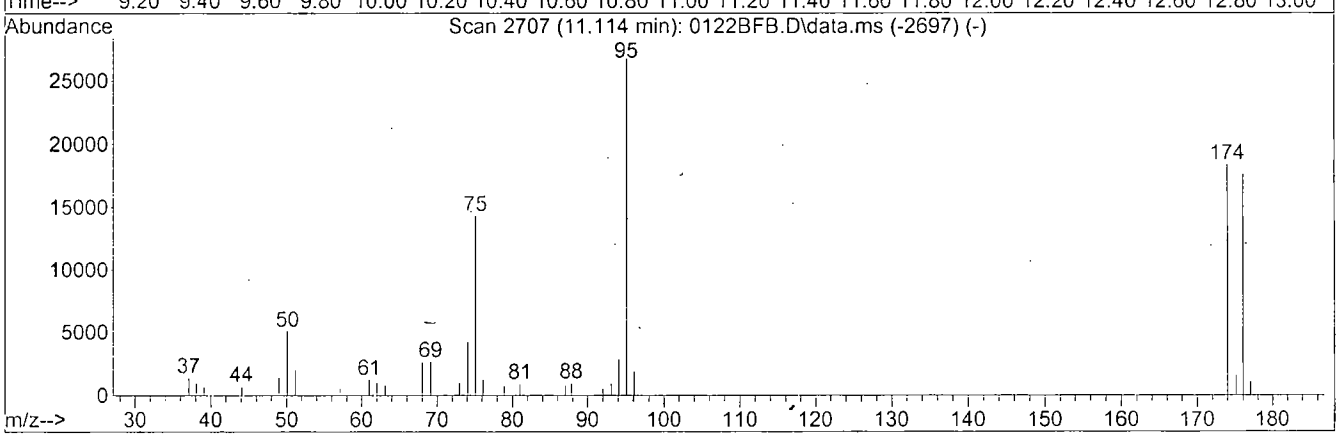
Date	Filename	Lab ID	Sample Info
22 Jan 2014 15:00	0122RIN1.D	Blank	
22 Jan 2014 15:26	0122BFB.D	50ng BFB, 10uL-50mL	
22 Jan 2014 16:32	0122S00A.D	0.5uL Soln#2 to 100mL	
22 Jan 2014 16:59	0122S00B.D	5uL Soln#2 to 100mL	
22 Jan 2014 17:25	0122S00C.D	50uL Soln#2 to 100mL	
22 Jan 2014 17:50	0122S00D.D	100uL Soln#2 to 100mL	
22 Jan 2014 18:16	0122RIN2.D	Blank	
22 Jan 2014 18:42	0122RIN3.D	Blank	
22 Jan 2014 19:07	0122BLK.D	Batch-BLK1	

Data Path : D:\Data\2013\S01222014\
Data File : 0122BFB.D
Acq On : 22 Jan 2014 15:26
Operator : PZ 08-5973N
Sample : 50ng BFB, 10uL-50mL
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: CLOSE.P

Method : D:\Methods\MID_SCREEN.M
Title : VOA Purge and Trap MID LEVEL Aqueous Method
Last Update : Tue Jan 14 13:41:50 2014





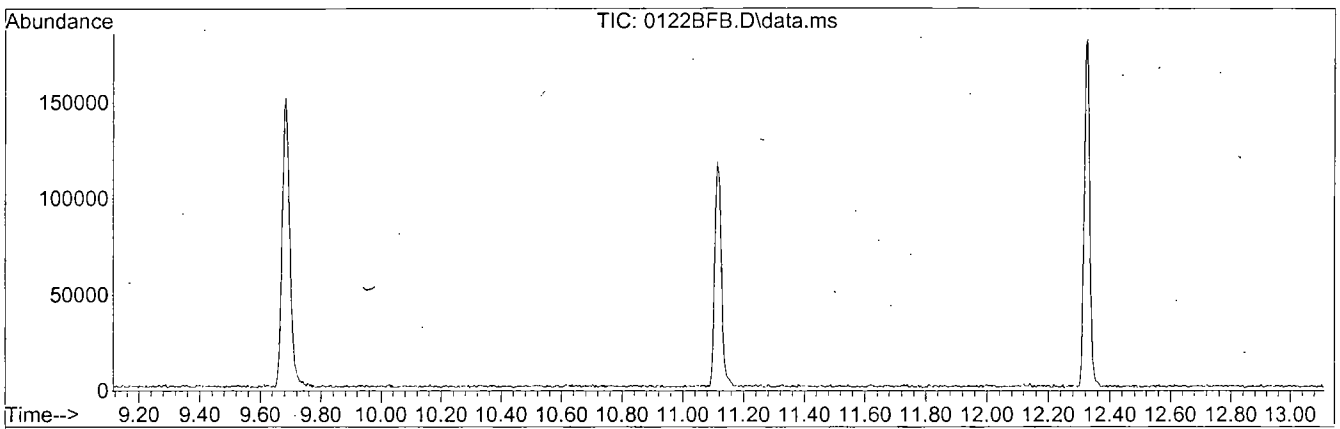
Spectrum Information: Scan 2707

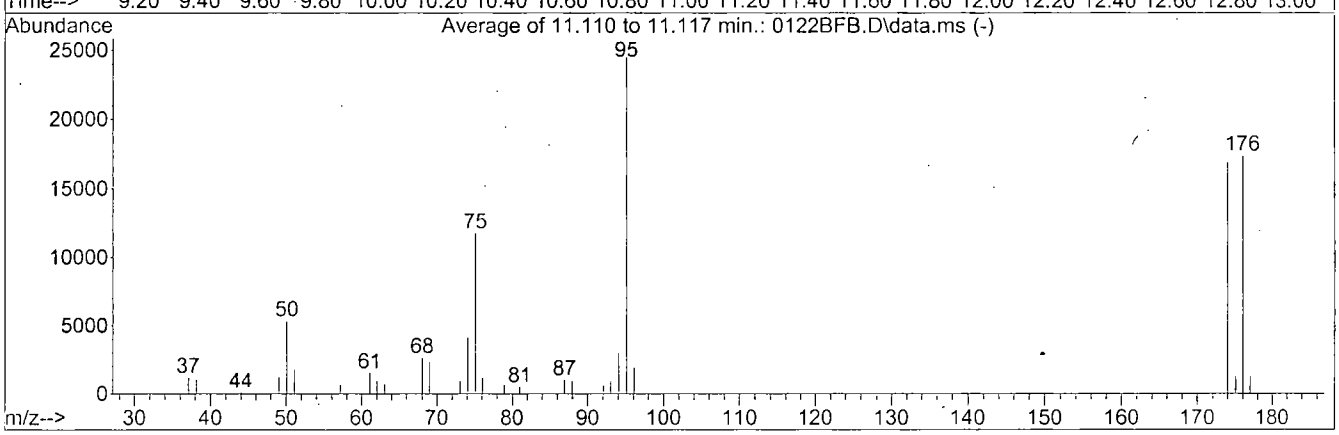
Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	18.8	5079	PASS
75	95	30	60	53.0	14317	PASS
95	95	100	100	100.0	27008	PASS
96	95	5	9	6.9	1869	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	120	68.0	18368	PASS
175	174	5	9	8.7	1599	PASS
176	174	95	101	95.8	17592	PASS
177	176	5	9	6.0	1056	PASS

Data Path : D:\Data\2013\S01222014\
Data File : 0122BFB.D
Acq On : 22 Jan 2014 15:26
Operator : PZ 08-5973N
Sample : 50ng BFB, 10uL-50mL
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: CLOSE.P

Method : D:\Methods\MID_SCREEN.M
Title : VOA Purge and Trap MID LEVEL Aqueous Method
Last Update : Tue Jan 14 13:41:50 2014





AutoFind: Scans 2706, 2707, 2708; Background Corrected with Scan 2699

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	21.6	5324	PASS
75	95	30	60	47.5	11736	PASS
95	95	100	100	100.0	24685	PASS
96	95	5	9	7.6	1882	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	120	68.4	16883	PASS
175	174	5	9	7.7	1305	PASS
176	174	95	101	102.6	17329	FAIL*
177	176	5	9	7.5	1300	PASS

TCI AMERICA
SAFETY DATA SHEET

Revision number: 1
Revision date: 11/19/2013

1. IDENTIFICATION

Product name: 4-Methyl-1-cyclohexanemethanol (cis- and trans- mixture)
Product code: M1412

Product use: For laboratory research purposes.
Restrictions on use: Not for drug or household use.

Company:
TCI America
9211 N. Harborgate Street
Portland, OR 97203 U.S.A.
Telephone:
+1-800-423-8616 / +1-503-283-1681
Fax:
+1-888-520-1075 / +1-503-283-1987
e-mail:
sales@tciamerica.com
www.TCIchemicals.com

Emergency telephone number:
Chemical Emergencies:
TCI America (8:00am - 5:00pm) PST
+1-503-286-7624
Transportation Emergencies:
Chemtrec 24-Hour
+1-800-424-9300 (U.S.A.)
+1-703-527-3887 (International)
Responsible department:
TCI America
Environmental Health Safety and Security
+1- 503-286-7624

2. HAZARD(S) IDENTIFICATION

OSHA Haz Com: CFR 1910.1200: Flammable Liquids [Category 4]

Signal word: Warning!

Hazard Statement(s): Combustible liquid

Pictogram(s) or Symbol(s): None

Precautionary Statement(s):

[Prevention] Keep away from heat, sparks, open flames or other hot surfaces. - No smoking. Wear protective gloves, eye protection and face protection.

[Response] In case of fire: Use dry chemical, CO2, water spray or alcohol-resistant foam to extinguish.

[Storage] Store in well-ventilated place. Keep cool.

[Disposal] Dispose of contents and container in accordance with US EPA guidelines for the classification and determination of hazardous waste listed in 40 CFR 261.3. (See Section 13)

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance/Mixture: Substance
Components: 4-Methyl-1-cyclohexanemethanol (cis- and trans- mixture)
Percent: >98.0%(GC)
CAS Number: 34885-03-5
Molecular Weight: 128.22
Chemical Formula: $C_8H_{16}O$
Synonyms: 1-(Hydroxymethyl)-4-methylcyclohexane

4. FIRST-AID MEASURES

Inhalation: Call emergency medical service. Move victim to fresh air. Give artificial respiration if victim is not breathing. Administer oxygen if breathing is difficult. Keep victim warm and quiet. Treat symptomatically and supportively. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

4. FIRST-AID MEASURES

Skin contact: Call a poison center or doctor if you feel unwell. In case of contact with substance, immediately flush skin with running water for at least 20 minutes. Treat symptomatically and supportively. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

Eye contact: In case of contact with substance, immediately flush eyes with running water for at least 20 minutes. If eye irritation persists get medical advice/attention. Move victim to fresh air. Check for and remove any contact lenses. Keep victim warm and quiet. Treat symptomatically and supportively. Effects of exposure to substance may be delayed. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

Ingestion: If swallowed, seek medical advice immediately and show the container or label. Loosen tight clothing such as a collar, tie, belt or waistband. If a person vomits place them in the recovery position so that vomit will not reenter the mouth and throat. Rinse mouth. Keep victim warm and quiet. Treat symptomatically and supportively. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

Symptoms/effects:

Acute: No data available

Delayed: No data available

Immediate medical attention: If breathing has stopped, perform artificial respiration. Use first aid treatment according to the nature of the injury. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media: Dry chemical, CO_2, water spray, or alcohol-resistant foam. Consult with local fire authorities before attempting large scale fire fighting operations.

Specific hazards arising from the chemical

Hazardous combustion products: These products include: Carbon oxides

Other specific hazards: Closed containers may explode from heat of a fire.

Special precautions for fire-fighters:

CAUTION: All these products have a very low flash point: Use of water spray when fighting fire may be inefficient. Use water spray or fog; do not use straight streams. Do not use straight streams. Runoff to sewer may create fire or explosion hazard. Containers may explode when heated. Move containers from fire area if you can do it without risk.

Special protective equipment for fire-fighters:

Wear positive pressure self-contained breathing apparatus (SCBA). Structural fire fighters' protective clothing provides limited protection in fire situations ONLY; it may not be effective in spill situations. Wear chemical protective clothing which is specifically recommended by the manufacturer. It may provide little or no thermal protection.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Use spark-proof tools and explosion-proof equipment. Remove all sources of ignition. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing (Section 8). Warn unnecessary personnel to move away. Stop leak if you can do it without risk. Ensure adequate ventilation. Isolate the hazard area and deny entry to unnecessary and unprotected personnel.

Personal protective equipment: Splash goggles. Lab coat. Vapor respirator. Be sure to use a MSHA/NIOSH approved respirator or equivalent. Wear protective gloves (nitrile).

Emergency procedures: Isolate area until gas has dispersed. In case of a spill and/or a leak, always shut off any sources of ignition, ventilate the area, and excercise caution. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Warn personnel to move away. Prevent entry into sewers, basements or confined areas; dike if needed.

Methods and materials for containment and cleaning up:

ELIMINATE all ignition sources (no smoking, flares, sparks, or flames in immediate area). All equipment used when handling the product must be grounded. Stop leak if without risk. Ventilate the area. Absorb with an inert material and put the spilled material in an appropriate waste disposal container. Use clean non-sparking tools to collect absorbed material.

Environmental precautions:

Prevent further leakage or spillage if safe to do so. Water runoff can cause environmental damage. Prevent entry into sewers, basements or confined areas; dike if needed.

7. HANDLING AND STORAGE

Precautions for safe handling: Do NOT breath gas, fumes, vapor, or spray. Avoid contact with skin and eyes. Keep away from heat and sources of ignition. Use explosion-proof equipment. Use only non-sparking hand tool when handling this product. Ground all equipment containing material. Take measures to prevent build up of electrostatic charge. Good general ventilation should be sufficient to control airborne levels. Keep container dry. Handle and open container with care. Wear suitable protective clothing, gloves and eye/face protection. When using do not eat, drink, or smoke. Keep away from sources of ignition.

7. HANDLING AND STORAGE

Conditions for safe storage: Keep only in the original container in a cool well-ventilated place. Keep away from sources of ignition. Store and use away from heat, sparks, open flame, or any other ignition source. Keep away from incompatibles. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Avoid prolonged storage periods.

Storage incompatibilities: Store away from oxidizing agents

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure limits: No data available

Appropriate engineering controls:
Good general ventilation should be sufficient to control airborne levels. Ventilation is normally required when handling or using this product. Eyewash fountains should be provided in areas where there is any possibility that workers could be exposed to the substance. Follow safe industrial engineering/laboratory practices when handling any chemical.

Personal protective equipment

Respiratory protection: Vapor respirator. Be sure to use a MSHA/NIOSH approved respirator or equivalent.
Hand protection: Wear protective gloves.
Eye protection: Splash goggles.
Skin and body protection: Lab coat.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state (20°C): Liquid
Form: Clear
Color: Colorless - Almost colorless
Odor: No data available
Odor threshold: No data available

Melting point/freezing point:	No data available	**pH:**	No data available
Boiling point/range:	No data available	**Vapor pressure:**	No data available
Decomposition temperature:	No data available	**Vapor density:**	No data available
Relative density:	No data available	**Dynamic Viscosity:**	No data available
Kinematic viscosity:	No data available		
Partition coefficient: n-octanol/water (log P_{ow})	No data available	**Evaporation rate:** (Butyl Acetate = 1)	No data available
Flash point:	No data available	**Autoignition temperature:**	No data available
Flammability (solid, gas):	No data available	**Flammability or explosive limits:**	
		Lower:	No data available
		Upper:	No data available

Solubility(ies):

10. STABILITY AND REACTIVITY

Reactivity: Not Available.
Chemical Stability: Stable under recommended storage conditions. (See Section 7)
Possibility of Hazardous Reactions: In use, may form flammable/explosive vapor-air mixture.
Conditions to avoid: Avoid excessive heat and light.
Incompatible materials: Oxidizing agents
Hazardous Decomposition Products: No data available

11. TOXICOLOGICAL INFORMATION

RTECS Number: No data available

Acute Toxicity:
No data available

Skin corrosion/irritation:
No data available

Serious eye damage/irritation:
No data available

Respiratory or skin sensitization:
No data available

Germ cell mutagenicity:
No data available

Carcinogenicity:

No data available

IARC: No data available **NTP:** No data available **OSHA:** No data available

Reproductive toxicity:
No data available

Routes of Exposure: Inhalation, Eye contact, Ingestion.
Symptoms related to exposure:
No specific information is available in our data base regarding the toxic effects of this material for humans. However, exposure to any chemical should be kept to a minimum. Always follow safe industrial hygiene practices and wear proper protective equipment when handling this compound.
Potential Health Effects:
No specific information available; skin and eye contact may result in irriatation. May be harmful if inhaled or ingested.
Target organ(s): No data available

12. ECOLOGICAL INFORMATION

Ecotoxicity

Fish:	No data available
Crustacea:	No data available
Algae:	No data available

Persistence and degradability:	No data available
Bioaccumulative potential (BCF):	No data available
Mobillity in soil:	No data available
Partition coefficient: n-octanol/water (log P_{ow})	No data available
Soil adsorption (Koc):	No data available
Henry's Law: constant (PaM^3/mol)	No data available

13. DISPOSAL CONSIDERATIONS

Disposal of product: Recycle to process if possible. It is the generator's responsibility to comply with Federal, State and Local rules and regulations. You may be able to dissolve or mix material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber system. This section is intended to provide assistance but does not replace these laws, nor does compliance in accordance with this section ensure regulatory compliance according to the law. US EPA guidelines for Identification and Listing of Hazardous Waste are listed in 40 CFR Parts 261. The product should not be allowed to enter the environment, drains, water ways, or the soil.
Disposal of container: Dispose of as unused product. Do not re-use empty containers.
Other considerations: Observe all federal, state and local regulations when disposing of the substance.

14. TRANSPORT INFORMATION

DOT (US) Non-hazardous for transportation.

IATA Non-hazardous for transportation.

IMDG Non-hazardous for transportation.

15. REGULATORY INFORMATION

Toxic Substance Control Act (TSCA 8b.):
This product is ON the EPA Toxic Substances Control Act (TSCA) inventory.

US Federal Regulations

CERCLA Hazardous substance and Reportable Quantity:

SARA 313:	Not Listed
SARA 302:	Not Listed

State Regulations

State Right-to-Know

Massachusetts	Not Listed
New Jersey	Not Listed
Pennsylvania	Not Listed
California Proposition 65:	Not Listed

Other Information

NFPA Rating:

Health:	0
Flammability:	0
Instability:	0

HMIS Classification:

Health:	0
Flammability:	0
Physical:	0

International Inventories

WHMIS hazard class:	B3: Combustible Liquid.
Notice Through Official Gazettes Reference Number: (Japan)	
ENCS:	Not Listed

16. OTHER INFORMATION

Revision date: 11/19/2013
Revision number: 1
TCI chemicals are for research purposes only and are NOT intended for use as drugs, food additives, households, or pesticides. The information herein is believed to be correct, but does not claim to be all inclusive and should be used only as a guide. Neither the above named supplier nor any of its affiliates or subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All chemical reagents must be handled with the recognition that their chemical, physiological, toxicological, and hazardous properties have not been fully investigated or determined. All chemical reagents should be handled only by individuals who are familiar with their potential hazards and who have been fully trained in proper safety, laboratory, and chemical handling procedures. Although certain hazards are described herein, we can not guarantee that these are the only hazards which exist. Our SDS are based only on data available at the time of shipping and are subject to change without notice as new information is obtained. Avoid long storage periods since the product is subject to degradation with age and may become more dangerous or hazardous. It is the responsibility of the user to request updated SDS for products that are stored for extended periods. Disposal of unused product must be undertaken by qualified personnel who are knowledgeable in all applicable regulations and follow all pertinent safety precautions including the use of appropriate protective equipment (e.g. protective goggles, protective clothing, breathing equipment, face mask, fume hood). For proper handling and disposal, always comply with federal, state and local regulations.

```
Starting sequence Fri Jan 24 14:14:56 2014

  Instrument Name: O8-5973N
    Sequence File: C:\msdchem\1\sequence\VEL_MID_SCREEN.S
          Comment: Mid Level Screening
         Operator: PZ    O8-5973N
        Data Path: D:\DATA\2014\S01242014\
      Method Path: D:\METHODS\

    Line Type        Vial  DataFile  Method    Sample Name
    ---------------------------------------------------------------------
      1) COMMENT: 'SAMPLE VOLUME = 5ML PURGED; IS/SS = 20PPB'
      2) COMMENT: 'STANDARDS'
      3) COMMENT: 'SEE ANALYSIS LOG FOR MORE INFORMATION'

      4) Sample         1  0124S00A  MID_5ML   100uL Soln#1 to 100mL
      5) PAUSE: ' '

    Sequence paused Fri Jan 24 14:42:24 2014

      D:\DATA\2014\S01242014\ Quality Log 2014 Jan 24 1414.LOG
      D:\DATA\2014\S01242014\Sequence Log 2014 Jan 24 1414.LOG

Resuming sequence Fri Jan 24 16:53:53 2014

  Instrument Name: O8-5973N
    Sequence File: C:\msdchem\1\sequence\VEL_MID_SCREEN.S
          Comment: Mid Level Screening
         Operator: PZ    O8-5973N
        Data Path: D:\DATA\2014\S01242014\
      Method Path: D:\METHODS\

    Line Type        Vial  DataFile  Method    Sample Name
    ---------------------------------------------------------------------

      6) Sample         2  0124S00B  MID_5ML   5uL Soln#1 to 100mL
      7) PAUSE: ' '

    Sequence paused Fri Jan 24 17:11:59 2014

      D:\DATA\2014\S01242014\ Quality Log 2014 Jan 24 1653.LOG
      D:\DATA\2014\S01242014\Sequence Log 2014 Jan 24 1653.LOG

Resuming sequence Fri Jan 24 17:17:43 2014

  Instrument Name: O8-5973N
    Sequence File: C:\msdchem\1\sequence\VEL_MID_SCREEN.S
          Comment: Mid Level Screening
         Operator: PZ    O8-5973N
        Data Path: D:\DATA\2014\S01242014\
      Method Path: D:\METHODS\

    Line Type        Vial  DataFile  Method    Sample Name
    ---------------------------------------------------------------------

      8) Sample         3  0124P00C  MID_5ML   100uL PPH#1 to 100mL
      9) COMMAND: 'PRINTSEQLOG'
    Executing Command: PRINTSEQLOG
```

Ex. 5 - Deliberative

Ex. 5 - Deliberative

Ex. 5 - Deliberative

Ex. 5 - Deliberative

Ex. 5 - Deliberative

Ex. 5 - Deliberative

Quantitation Report (QT Reviewed)

Ex. 5 - Deliberative

Data Path : D:\Data\2014\S01242014\
Data File : 0124S00A.D
Acq On : 24 Jan 2014 14:24
Operator : PZ O8-5973N
Sample : 100uL Soln#1 to 100mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Ex. 5 - Deliberative

Quant Time: Jan 24 14:49:55 2014
Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method
QLast Update : Tue Jan 14 13:41:50 2014
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) 1,4-DIFLUOROBENZENE	5.878	114	213300	20.00	ug/L	0.00
37) CHLOROBENZENE-D5	9.680	117	180041	20.00	ug/L	0.00
56) 1,4-DICHLOROBENZENE-D4	12.326	152	71670	20.00	ug/L	0.00
System Monitoring Compounds						
23) 1,2-DICHLOROETHANE-D4	4.842	65	84302	21.18	ug/L	0.00
Spiked Amount 20.000	Range 76 - 114		Recovery = 105.90%			
41) TOLUENE-D8	7.955	98	258999	21.18	ug/L	0.00
Spiked Amount 20.000	Range 88 - 110		Recovery = 105.90%			
59) 4-BROMOFLUOROBENZENE	11.114	95	86429	20.96	ug/L	0.00
Spiked Amount 20.000	Range 86 - 115		Recovery = 104.80%			

Target Compounds Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

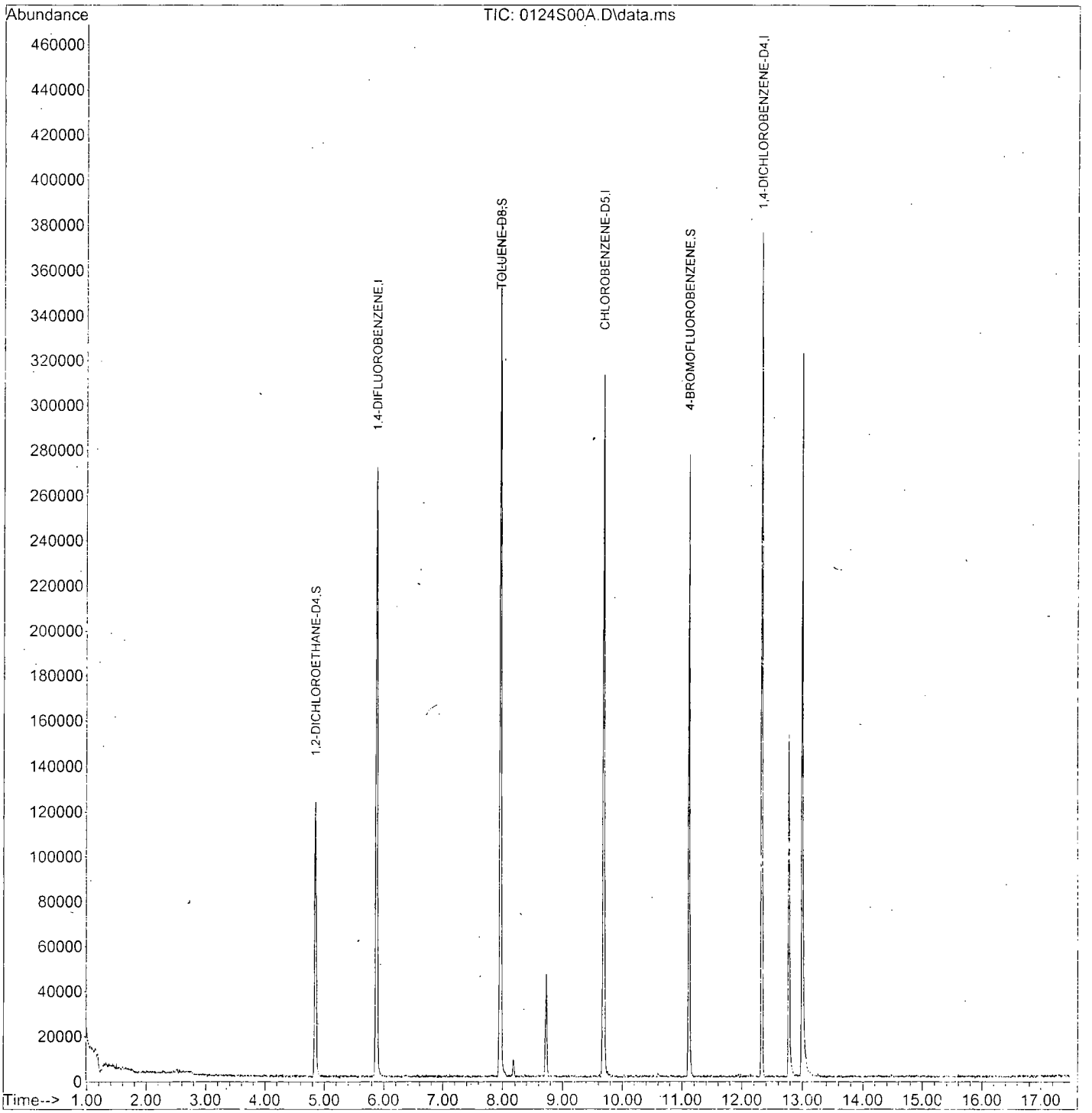
Ex. 5 - Deliberative

Freedom_0006035_0071

Quantitation Report (QT Reviewed)

Data Path : D:\Data\2014\S01242014\
Data File : 0124S00A.D
Acq On : 24 Jan 2014 14:24
Operator : PZ 08-5973N
Sample : 100uL Soln#1 to 100mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Quant Time: Jan 24 14:49:55 2014
Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method
QLast Update : Tue Jan 14 13:41:50 2014
Response via : Initial Calibration



LSC Area Percent Report

Data Path : D:\Data\2014\S01242014\
Data File : 0124S00A.D
Acq On : 24 Jan 2014 14:24
Operator : PZ O8-5973N
Sample : 100uL Soln#1 to 100mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Integration Parameters: CLOSE.P
Integrator: RTE
Smoothing : ON Filtering: 5
Sampling : 1 Min Area: 100 Area counts
Start Thrs: 0.2 Max Peaks: 20
Stop Thrs : 0 Peak Location: TOP

If leading or trailing edge < 100 prefer < Baseline drop else tangent >
Peak separation: 5

Method : D:\Methods\MID_SCREEN.M
Title : VOA Purge and Trap MID LEVEL Aqueous Method

Signal : TIC: 0124S00A.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	4.217	861	864	868	rVB	1194	1235	0.18%	0.034%
2	4.535	947	949	952	rBV	1794	1243	0.18%	0.034%
3	4.842	1022	1031	1051	rVB2	123345	232624	34.08%	6.405%
4	5.272	1144	1146	1148	rBV	1612	1158	0.17%	0.032%
5	5.874	1298	1307	1327	rBV	270206	493240	72.25%	13.580%
6	7.959	1852	1864	1884	rBV	389074	682674	100.00%	18.796%
7	8.176	1918	1922	1930	rVB4	8707	12275	1.80%	0.338%
8	8.722	2061	2068	2078	rVB3	45887	79119	11.59%	2.178%
9	9.096	2166	2168	2173	rVB	1599	1212	0.18%	0.033%
10	9.680	2313	2324	2341	rBV2	312534	555561	81.38%	15.296%
11	10.025	2413	2416	2423	rBV2	1664	1528	0.22%	0.042%
12	10.593	2567	2568	2570	rBV	2259	1180	0.17%	0.032%
13	11.114	2699	2707	2725	rBV2	276488	382037	55.96%	10.519%
14	12.322	3022	3030	3048	rVB	375419	487716	71.44%	13.428%
15	12.566	3092	3095	3098	rBV	1610	1321	0.19%	0.036%
16	12.775	3144	3151	3169	rBV	152741	222618	32.61%	6.129%
17	12.996	3203	3210	3231	rBV	321153	471807	69.11%	12.990%
18	13.995	3472	3477	3479	rBV	1195	1114	0.16%	0.031%
19	16.884	4246	4249	4251	rBV	1550	1058	0.15%	0.029%
20	17.307	4357	4362	4364	rBV	1399	1295	0.19%	0.036%

Sum of corrected areas: 3632015

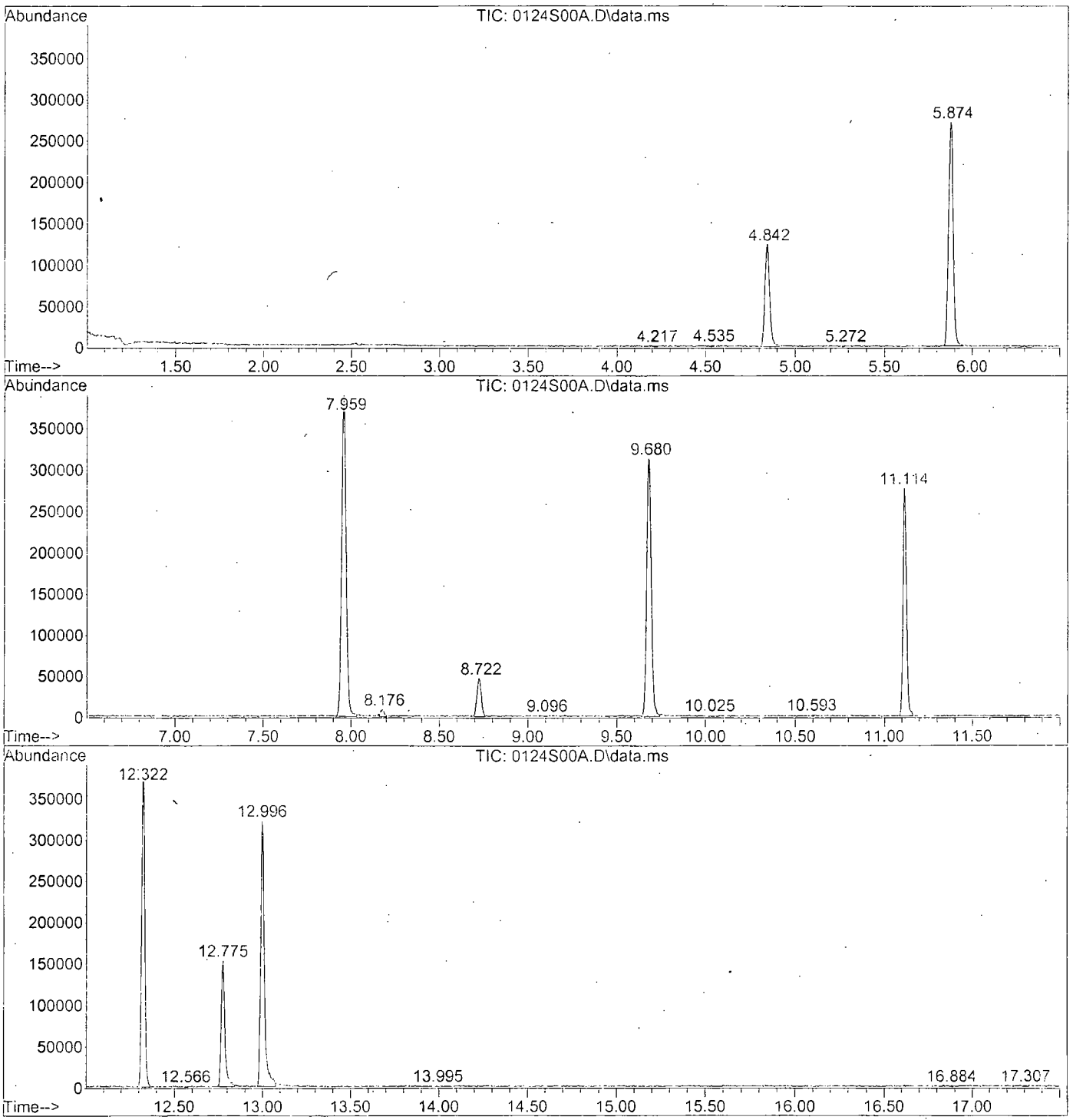
Freedom_0006035_0073

LSC Report - Integrated Chromatogram

Data Path : D:\Data\2014\S01242014\
Data File : 0124S00A.D
Acq On : 24 Jan 2014 14:24
Operator : PZ 08-5973N
Sample : 100uL Soln#1 to 100mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method

TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P



Freedom_0006035_0074

Library Search Compound Report

Data Path : D:\Data\2014\S01242014\
Data File : 0124S00A.D
Acq On : 24 Jan 2014 14:24
Operator : PZ 08-5973N
Sample : 100uL Soln#1 to 100mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method

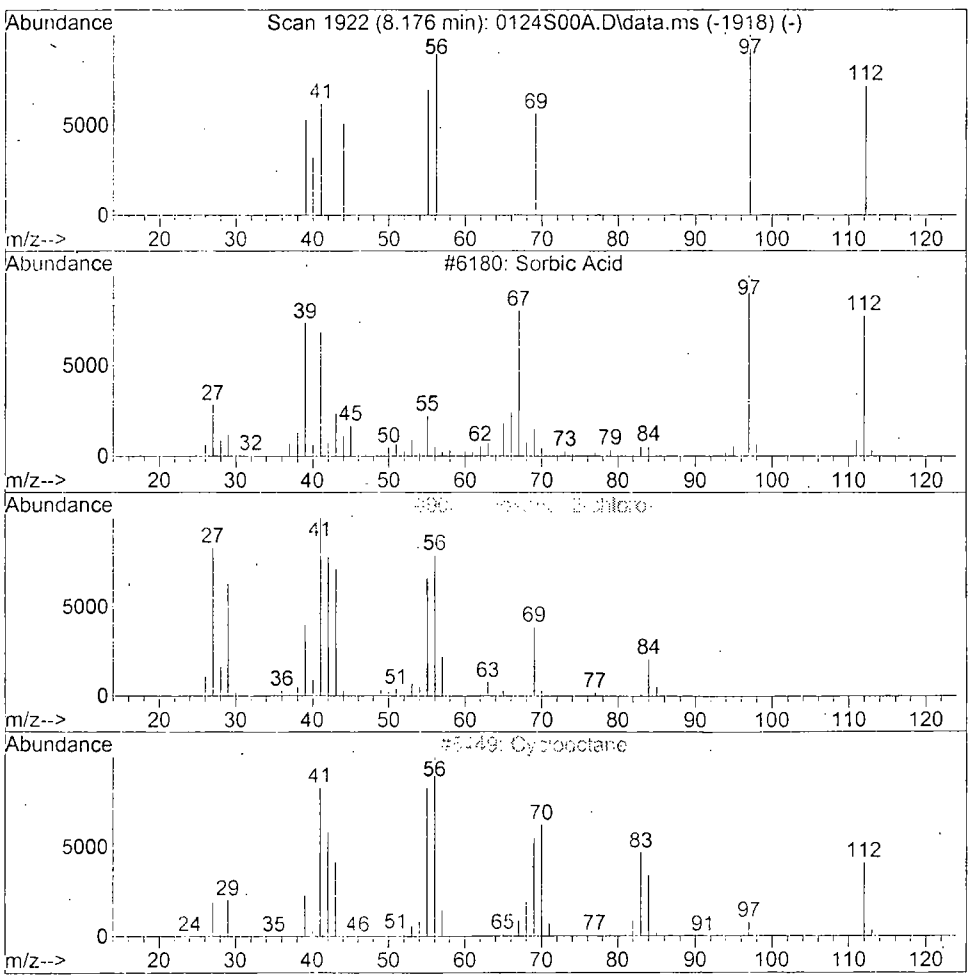
TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P

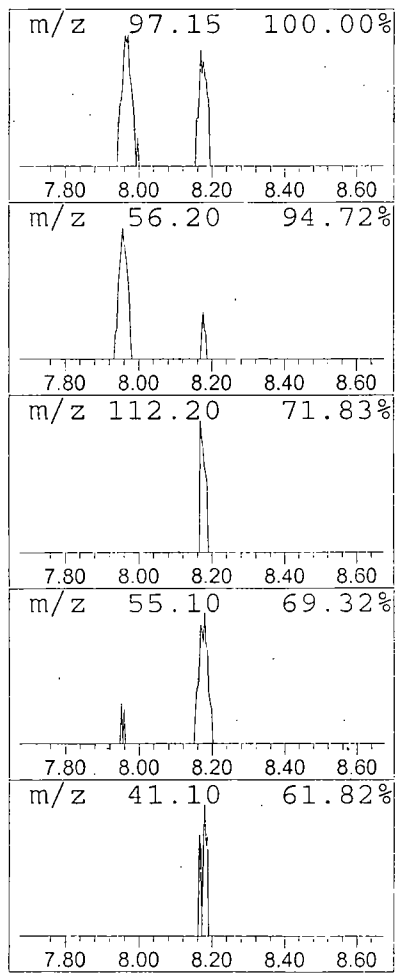
****

Peak Number 1 Sorbic Acid Concentration Rank 4

R.T.	EstConc	Area	Relative to ISTD	R.T.
8.176	0.44 ug/L	12275	CHLOROBENZENE-D5	9.680

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Sorbic Acid	112	C6H8O2	000110-44-1	37
2	Hexane, 2-chloro-	120	C6H13Cl	000638-28-8	9
3	Cyclooctane	112	C8H16	000292-64-8	9
4	Cyclopentane, 1,1-dimethyl-	98	C7H14	001638-26-2	9
5	1-Heptene, 6-methyl-	112	C8H16	005026-76-6	9





Freedom_0006035_0075

Library Search Compound Report

Data Path : D:\Data\2014\S01242014\
Data File : 0124S00A.D
Acq On : 24 Jan 2014 14:24
Operator : PZ O8-5973N
Sample : 100uL Soln#1 to 100mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method

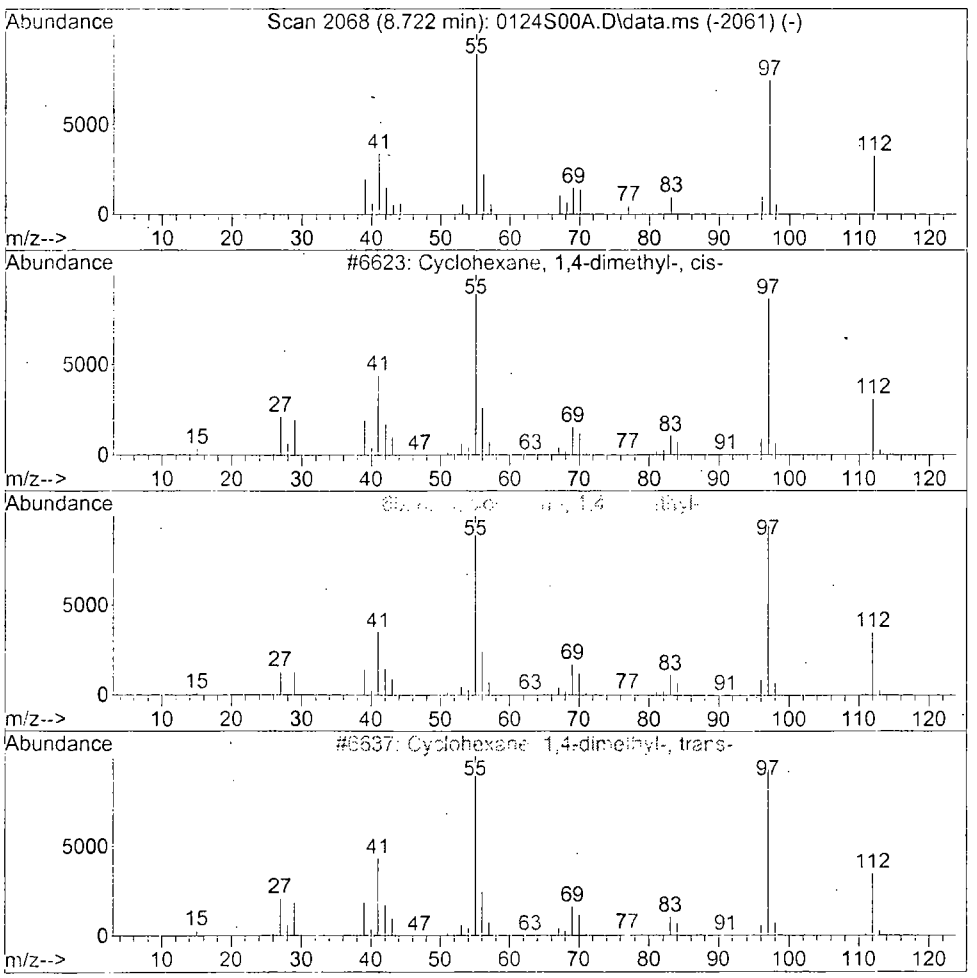
TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P

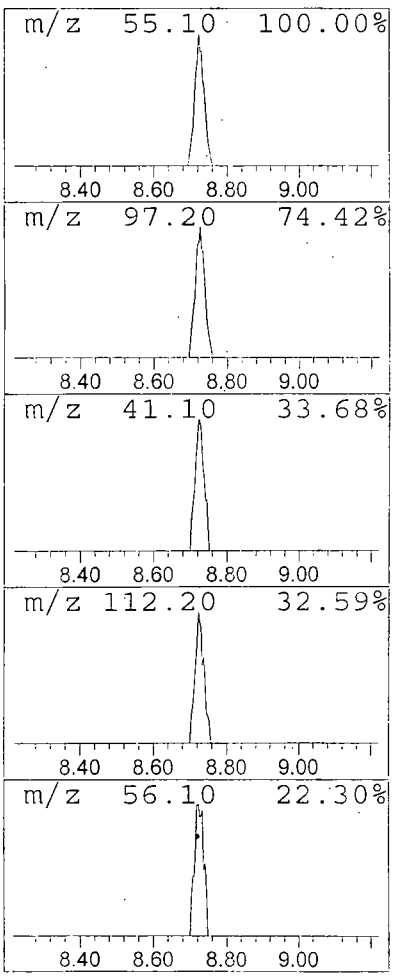
****

Peak Number 2 Cyclohexane, 1,4-dimethyl-,... Concentration Rank 3

R.T.	EstConc	Area	Relative to ISTD	R.T.
8.722	2.85 ug/L	79119	CHLOROBENZENE-D5	9.680

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Cyclohexane, 1,4-dimethyl-, cis-	112	C8H16	000624-29-3	91
2	Cyclohexane, 1,4-dimethyl-	112	C8H16	000589-90-2	91
3	Cyclohexane, 1,4-dimethyl-, trans-	112	C8H16	002207-04-7	90
4	Cyclohexane, 1,3-dimethyl-, trans-	112	C8H16	002207-03-6	83
5	6-Decen-5-one	154	C10H18O	032064-79-2	59





Freedom_0006035_0076

Library Search Compound Report

Data Path : D:\Data\2014\S01242014\
Data File : 0124S00A.D
Acq On : 24 Jan 2014 14:24
Operator : PZ 08-5973N
Sample : 100uL Soln#1 to 100mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method

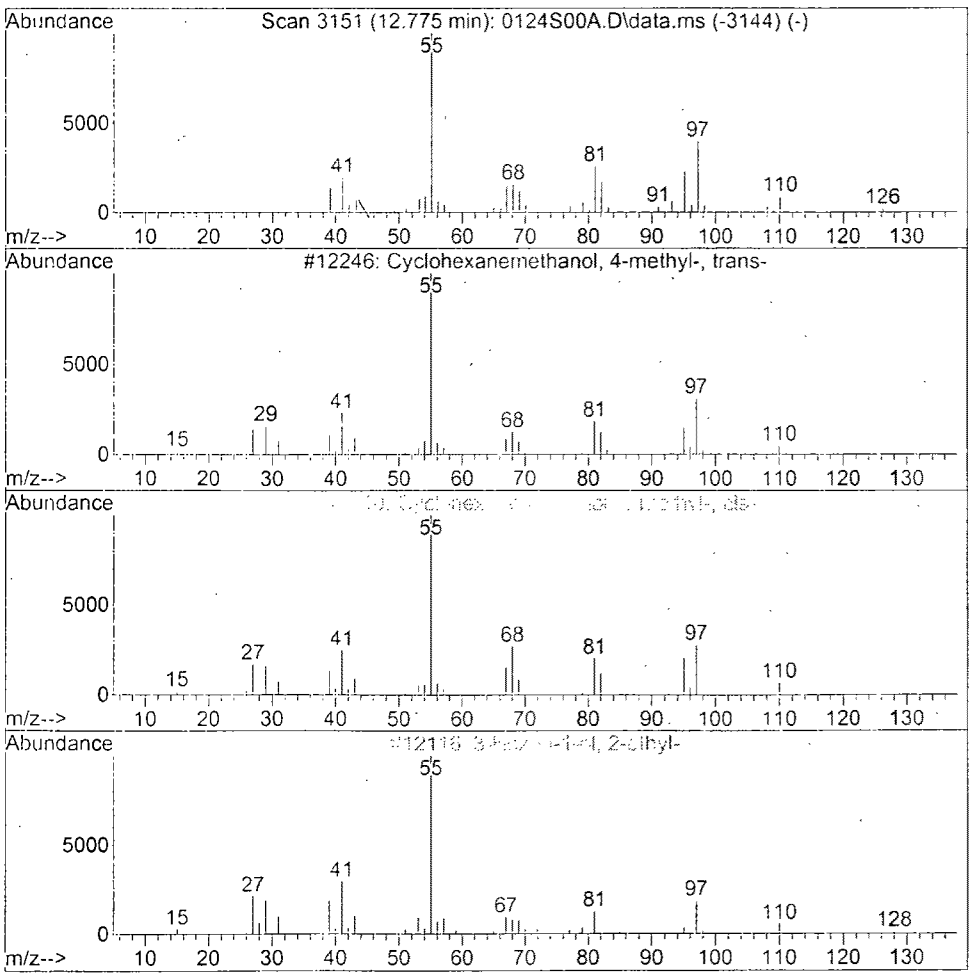
TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P

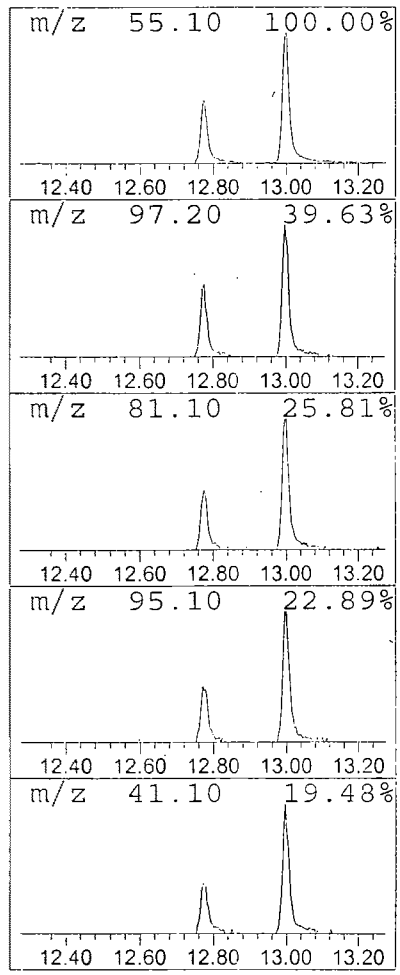
****

Peak Number 3 Cyclohexanemethanol, 4-meth... Concentration Rank 2

R.T.	EstConc	Area	Relative to ISTD	R.T.
12.775	9.13 ug/L	222618	1,4-DICHLOROBENZENE-D4	12.326

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Cyclohexanemethanol, 4-methyl-, ...	128	C8H16O	003937-49-3	86
2	Cyclohexanemethanol, 4-methyl-, ...	128	C8H16O	003937-48-2	72
3	3-Hexen-1-ol, 2-ethyl-	128	C8H16O	053907-73-6	59
4	Cyclohexanemethanol, 2-methyl-	128	C8H16O	002105-40-0	59
5	Cyclopropanemethanol, 2,2,3,3-te...	128	C8H16O	002415-96-5	50





Freedom_0006035_0077

Library Search Compound Report

Data Path : D:\Data\2014\S01242014\
Data File : 0124S00A.D
Acq On : 24 Jan 2014 14:24
Operator : PZ 08-5973N
Sample : 100uL Soln#1 to 100mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

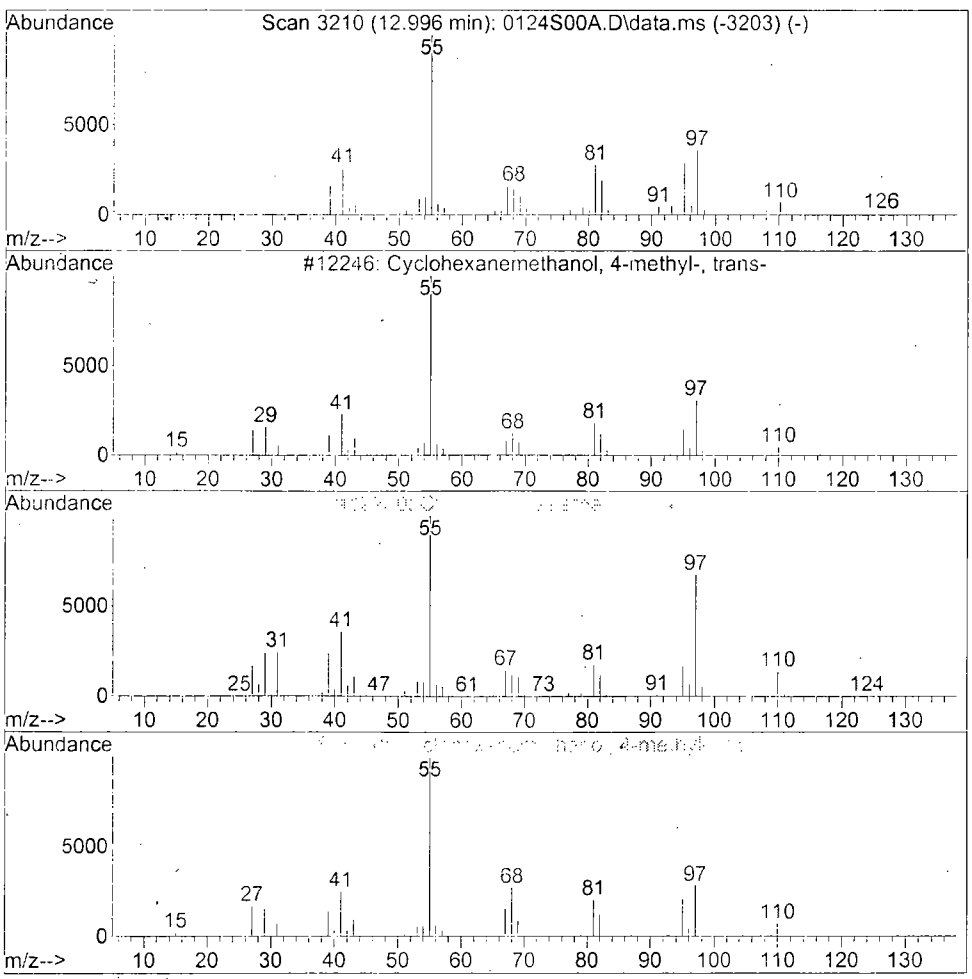
Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method

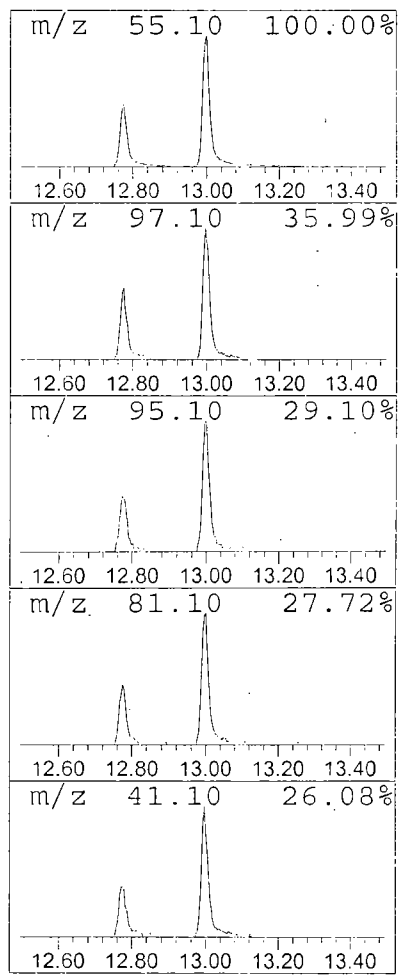
TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P

****
Peak Number 4 Cyclohexanemethanol, 4-meth... Concentration Rank 1

R.T.	EstConc	Area	Relative to ISTD	R.T.
12.996	19.35 ug/L	471807	1,4-DICHLOROBENZENE-D4	12.326

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Cyclohexanemethanol, 4-methyl-, ...	128	C8H16O	003937-49-3	78
2	Cyclohexanemethanol, 2-methyl-	128	C8H16O	002105-40-0	64
3	Cyclohexanemethanol, 4-methyl-, ...	128	C8H16O	003937-48-2	64
4	1,5-Heptadiene, 2-methyl-, (Z)-	110	C8H14	041044-64-8	50
5	Dichloroacetic acid, 1-cyclopent...	224	C9H14Cl2O2	1000282-56-3	50





Freedom_0006035_0078

Tentatively Identified Compound (LSC) summary

Data Path : D:\Data\2014\S01242014\
Data File : 0124S00A.D
Acq On : 24 Jan 2014 14:24
Operator : PZ O8-5973N
Sample : 100uL Soln#1 to 100mL
Misc :
ALS Vial : 1 Sample Multiplier: 1

Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method

TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Sorbic Acid	8.176	0.4	ug/L	12275	2	9.680	555561	20.0
Cyclohexane, 1,...	8.722	2.8	ug/L	79119	2	9.680	555561	20.0
Cyclohexanemeth...	12.775	9.1	ug/L	222618	3	12.326	487716	20.0
Cyclohexanemeth...	12.996	19.3	ug/L	471807	3	12.326	487716	20.0

Freedom_0006035_0079

Ex. 5 - Deliberative

Quantitation Report (QT Reviewed)

Ex. 5 - Deliberative

Data Path : D:\Data\2014\S01242014\
Data File : 0124S00B.D
Acq On : 24 Jan 2014 16:54
Operator : PZ O8-5973N
Sample : 5uL Soln#1 to 100mL
Misc :
ALS Vial : 2 Sample Multiplier: 1

Ex. 5 - Deliberative

Quant Time: Jan 24 17:12:46 2014
Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method
QLast Update : Tue Jan 14 13:41:50 2014
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) 1,4-DIFLUOROBENZENE	5.878	114	210217	20.00	ug/L	0.00
37) CHLOROBENZENE-D5	9.681	117	173623	20.00	ug/L	0.00
56) 1,4-DICHLOROBENZENE-D4	12.323	152	69144	20.00	ug/L	0.00
System Monitoring Compounds						
23) 1,2-DICHLOROETHANE-D4	4.846	65	80843	20.61	ug/L	0.00
Spiked Amount 20.000	Range 76 - 114		Recovery = 103.05%			
41) TOLUENE-D8	7.959	98	248181	21.05	ug/L	0.00
Spiked Amount 20.000	Range 88 - 110		Recovery = 105.25%			
59) 4-BROMOFLUOROBENZENE	11.114	95	83470	20.98	ug/L	0.00
Spiked Amount 20.000	Range 86 - 115		Recovery = 104.90%			

Target Compounds Qvalue

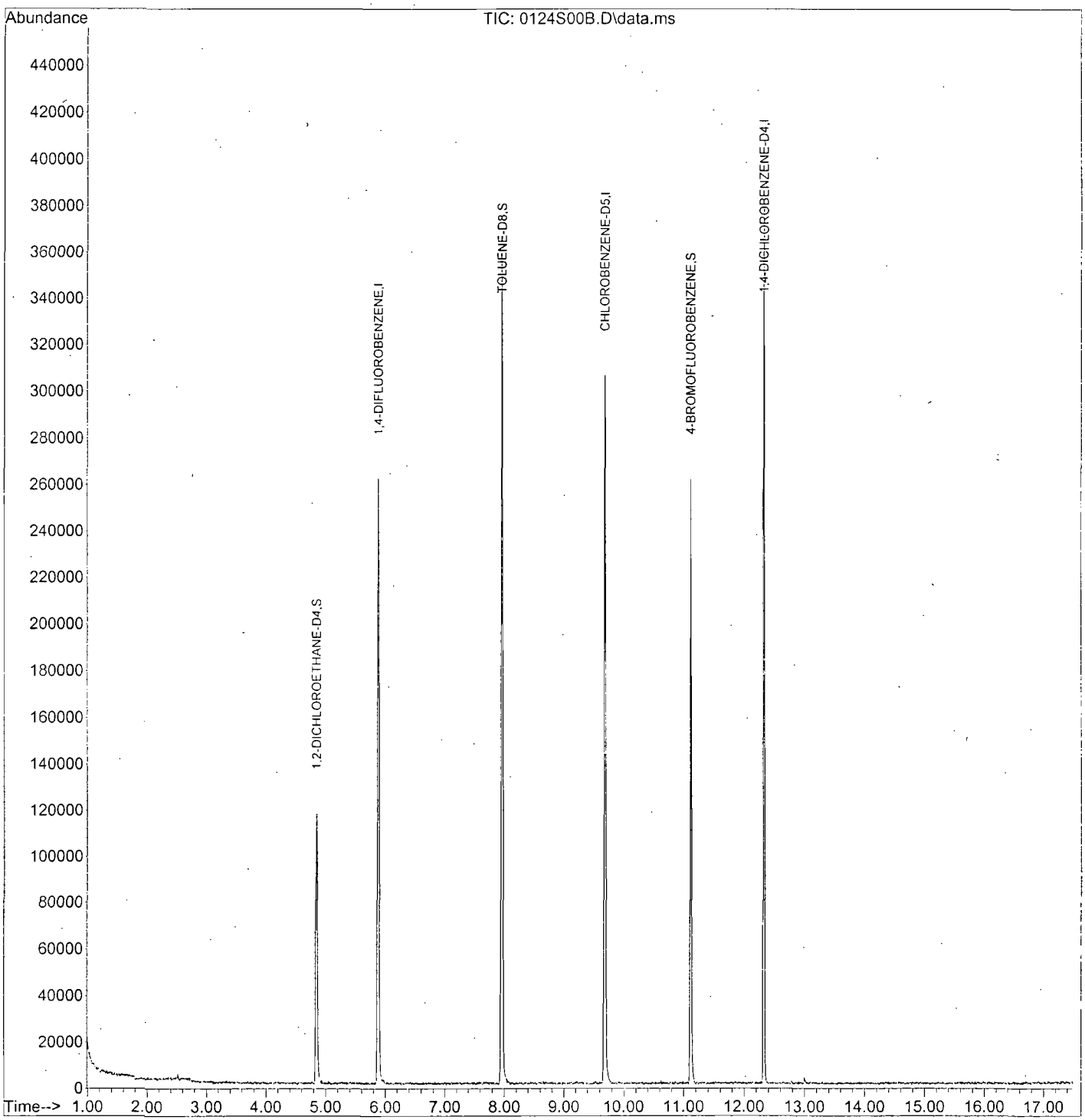
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Freedom_0006035_0081

Quantitation Report (QT Reviewed)

Data Path : D:\Data\2014\S01242014\
Data File : 0124S00B.D
Acq On : 24 Jan 2014 16:54
Operator : PZ 08-5973N
Sample : 5uL Soln#1 to 100mL
Misc :
ALS Vial : 2 Sample Multiplier: 1

Quant Time: Jan 24 17:12:46 2014
Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method
QLast Update : Tue Jan 14 13:41:50 2014
Response via : Initial Calibration



LSC Area Percent Report

Data Path : D:\Data\2014\S01242014\
Data File : 0124S00B.D
Acq On : 24 Jan 2014 16:54
Operator : PZ O8-5973N
Sample : 5uL Soln#1 to 100mL
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration Parameters: CLOSE.P
Integrator: RTE
Smoothing : ON Filtering: 5
Sampling : 1 Min Area: 100 Area counts
Start Thrs: 0.2 Max Peaks: 20
Stop Thrs : 0 Peak Location: TOP

If leading or trailing edge < 100 prefer < Baseline drop else tangent >
Peak separation: 5

Method : D:\Methods\MID_SCREEN.M
Title : VOA Purge and Trap MID LEVEL Aqueous Method

Signal : TIC: 0124S00B.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	3.869	767	771	774	rBV2	1333	1452	0.22%	0.053%
2	4.846	1022	1032	1051	rBV3	116844	224139	34.25%	8.137%
3	5.875	1297	1307	1325	rBV	261307	482408	73.71%	17.512%
4	6.256	1408	1409	1414	rVB	2011	1333	0.20%	0.048%
5	6.417	1450	1452	1456	rBV	1771	1188	0.18%	0.043%
6	6.825	1559	1561	1565	rBV	1663	1097	0.17%	0.040%
7	7.772	1810	1814	1818	rBV2	1268	1440	0.22%	0.052%
8	7.959	1852	1864	1886	rBV	360788	654472	100.00%	23.758%
9	9.681	2315	2324	2353	rVB2	304901	538624	82.30%	19.553%
10	11.114	2698	2707	2723	rBV	260901	369942	56.53%	13.430%
11	11.211	2732	2733	2738	rVB	1618	1246	0.19%	0.045%
12	12.143	2977	2982	2986	rVB	1293	1269	0.19%	0.046%
13	12.323	3023	3030	3043	rBV	378456	464843	71.03%	16.875%
14	13.000	3208	3211	3218	rBV2	3101	3638	0.56%	0.132%
15	14.804	3688	3693	3698	rBV	1059	1305	0.20%	0.047%
16	15.492	3874	3877	3882	rVB	1113	1233	0.19%	0.045%
17	15.784	3952	3955	3957	rBV	1723	1077	0.16%	0.039%
18	15.882	3977	3981	3985	rBV2	1323	1236	0.19%	0.045%
19	17.244	4343	4345	4353	rBV2	1463	1558	0.24%	0.057%
20	17.378	4379	4381	4385	rBV	1434	1188	0.18%	0.043%

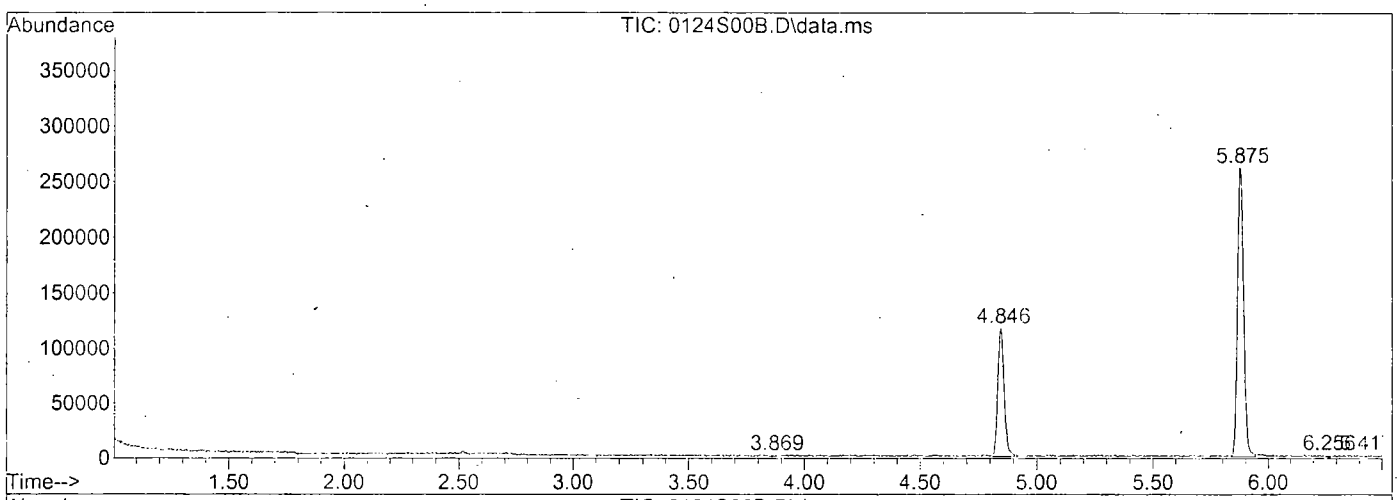
Sum of corrected areas: 2754688

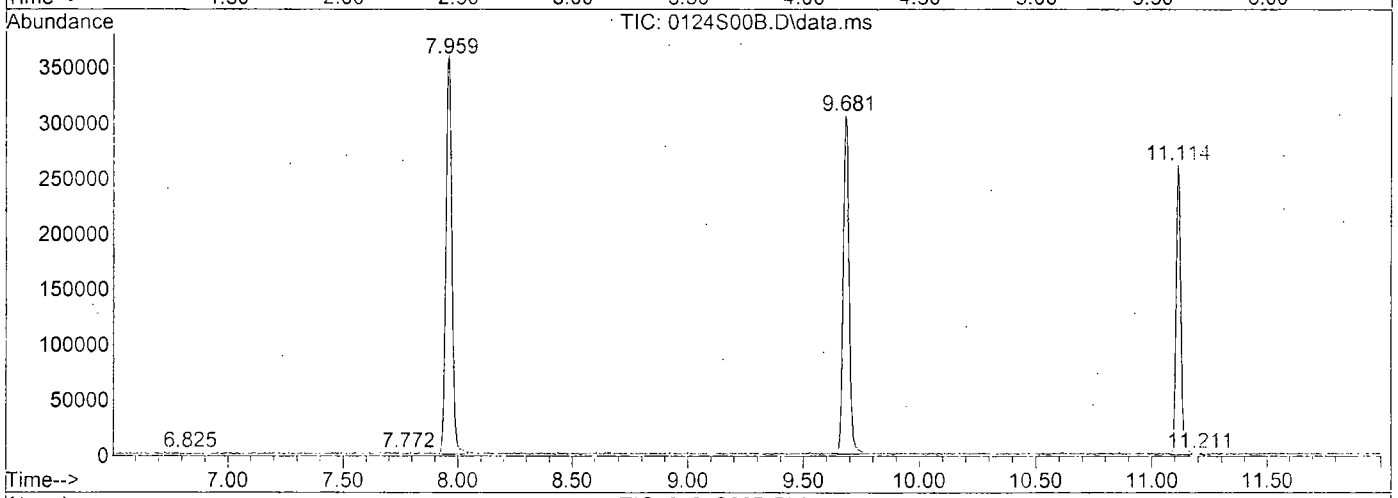
Freedom_0006035_0083

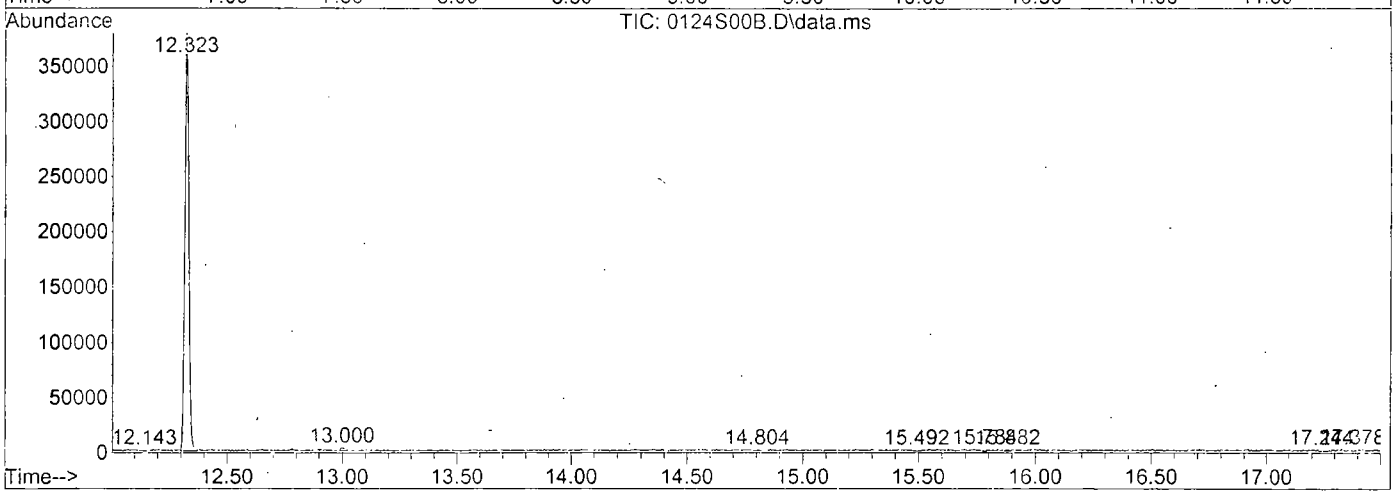
Data Path : D:\Data\2014\S01242014\
Data File : 0124S00B.D
Acq On : 24 Jan 2014 16:54
Operator : PZ 08-5973N
Sample : 5uL Soln#1 to 100mL
Misc :
ALS Vial : 2 Sample Multiplier: 1

Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method

TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P







Freedom_0006035_0084

Tentatively Identified Compound (LSC) summary

Data Path : D:\Data\2014\S01242014\
Data File : 0124S00B.D
Acq On : 24 Jan 2014 16:54
Operator : PZ O8-5973N
Sample : 5uL Soln#1 to 100mL
Misc :
ALS Vial : 2 Sample Multiplier: 1

Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method

TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc

Freedom_0006035_0085

Library Search Compound Report

Data Path : D:\Data\2014\S01242014\
Data File : 0124S00B.D
Acq On : 24 Jan 2014 16:54
Operator : PZ 08-5973N
Sample : 5uL Soln#1 to 100mL
Misc :
ALS Vial : 2 Sample Multiplier: 1

Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method

TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P

No Library Search Compounds Detected
****

Quantitation Report (QT Reviewed)

Ex. 5 - Deliberative

Data Path : D:\Data\2014\S01242014\
Data File : 0124P00C.D
Acq On : 24 Jan 2014 17:31
Operator : PZ O8-5973N
Sample : 100uL PPH#1 to 100mL
Misc : 100 uL JG prep of crude PPH to 100mL
ALS Vial : 3 Sample Multiplier: 1

Ex. 5 - Deliberative

Quant Time: Jan 27 08:01:19 2014
Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method
QLast Update : Tue Jan 14 13:41:50 2014
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) 1,4-DIFLUOROBENZENE	5.878	114	205886	20.00	ug/L	0.00
37) CHLOROBENZENE-D5	9.680	117	171199	20.00	ug/L	0.00
56) 1,4-DICHLOROBENZENE-D4	12.322	152	69665	20.00	ug/L	0.00
System Monitoring Compounds						
23) 1,2-DICHLOROETHANE-D4	4.842	65	77812	20.25	ug/L	0.00
Spiked Amount 20.000	Range 76 - 114		Recovery = 101.25%			
41) TOLUENE-D8	7.959	98	246613	21.21	ug/L	0.00
Spiked Amount 20.000	Range 88 - 110		Recovery = 106.05%			
59) 4-BROMOFLUOROBENZENE	11.114	95	82056	20.47	ug/L	0.00
Spiked Amount 20.000	Range 86 - 115		Recovery = 102.35%			
Target Compounds						Qvalue
18) 2-BUTANONE	3.925	43	1136	0.73	ug/L #	57

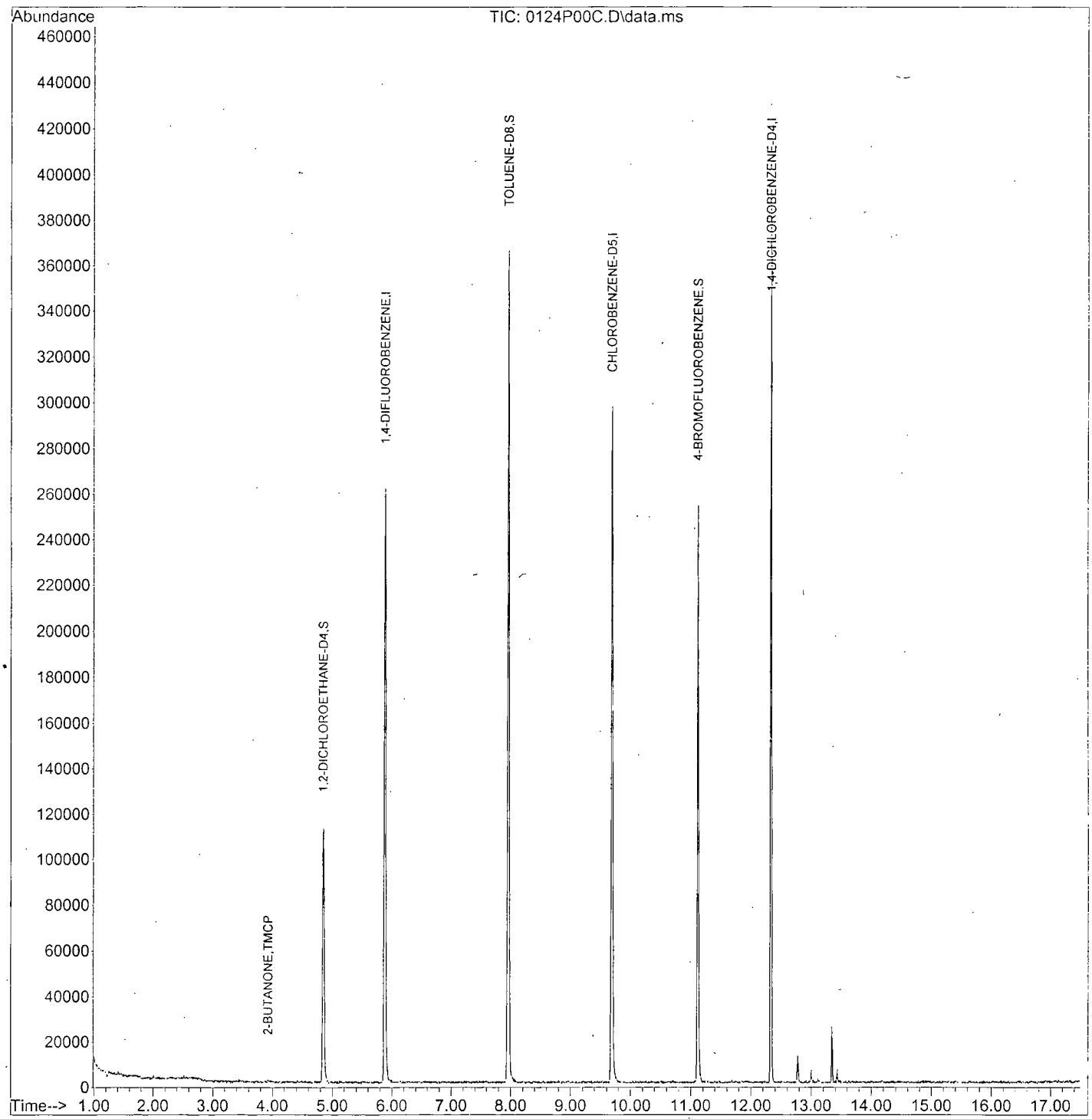
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Freedom_0006035_0087

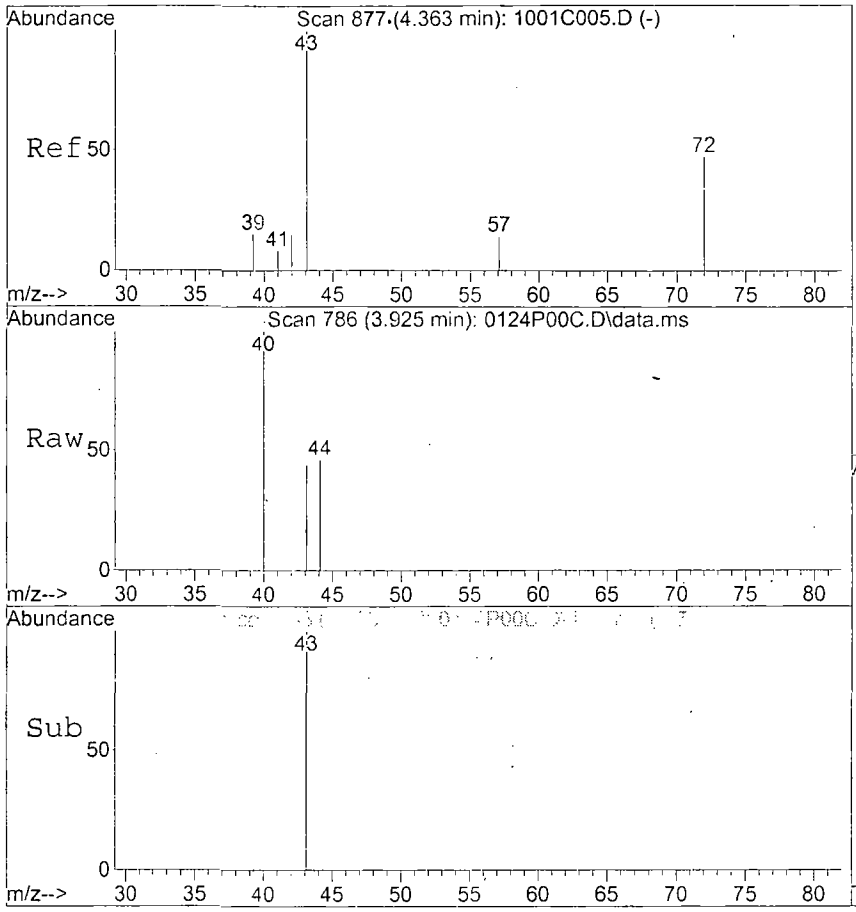
Quantitation Report (QT Reviewed)

Data Path : D:\Data\2014\S01242014\
Data File : 0124P00C.D
Acq On : 24 Jan 2014 17:31
Operator : PZ O8-5973N
Sample : 100uL PPH#1 to 100mL
Misc : 100 uL JG prep of crude PPH to 100mL
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Jan 27 08:01:19 2014
Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method
QLast Update : Tue Jan 14 13:41:50 2014
Response via : Initial Calibration



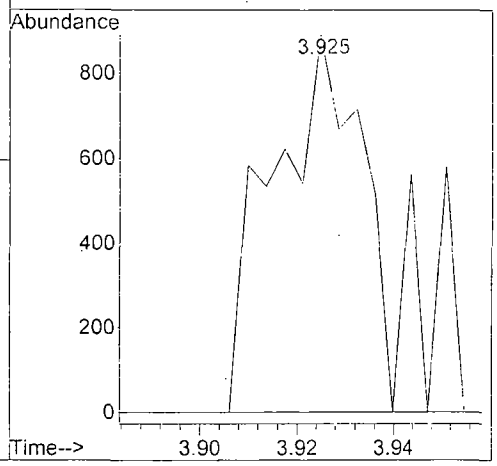
Freedom_0006035_0088



#18
2-BUTANONE
Concen: 0.73 ug/L
RT: 3.925 min Scan# 786
Delta R.T. 0.023 min
Lab File: 0124P00C.D
Acq: 24 Jan 2014 17:31

Tgt Ion: 43 Resp: 1136

Ion	Ratio	Lower	Upper
43	100		
72	0.0	19.6	29.4#
57	0.0	5.5	8.3#



Freedom_0006035_0089

LSC Area Percent Report

Data Path : D:\Data\2014\S01242014\
Data File : 0124P00C.D
Acq On : 24 Jan 2014 17:31
Operator : PZ O8-5973N
Sample : 100uL PPH#1 to 100mL
Misc : 100 uL JG prep of crude PPH to 100mL
ALS Vial : 3 Sample Multiplier: 1

Integration Parameters: CLOSE.P
Integrator: RTE
Smoothing : ON Filtering: 5
Sampling : 1 Min Area: 100 Area counts
Start Thrs: 0.2 Max Peaks: 20
Stop Thrs : 0 Peak Location: TOP

If leading or trailing edge < 100 prefer < Baseline drop else tangent >
Peak separation: 5

Method : D:\Methods\MID_SCREEN.M
Title : VOA Purge and Trap MID LEVEL Aqueous Method

Signal : TIC: 0124P00C.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	4.684	985	989	992	rBV2	1406	1351	0.21%	0.049%
2	4.845	1022	1032	1050	rVB2	111409	212739	33.14%	7.720%
3	4.954	1058	1061	1065	rVB2	1352	1589	0.25%	0.058%
4	5.500	1203	1207	1209	rBV	1569	1611	0.25%	0.058%
5	5.878	1297	1308	1325	rVV2	260039	472516	73.60%	17.147%
6	6.185	1387	1390	1392	rBV	1763	1232	0.19%	0.045%
7	6.788	1545	1551	1553	rBV2	1471	1803	0.28%	0.065%
8	7.959	1853	1864	1883	rBV	364635	642020	100.00%	23.298%
9	9.209	2195	2198	2204	rBV2	1141	1275	0.20%	0.046%
10	9.684	2313	2325	2342	rBV2	296970	531864	82.84%	19.301%
11	10.522	2546	2549	2554	rVB	1587	1251	0.19%	0.045%
12	11.114	2699	2707	2725	rVB	253034	361861	56.36%	13.131%
13	12.322	3022	3030	3048	rBV	385519	465159	72.45%	16.880%
14	12.775	3145	3151	3164	rVB4	12574	16908	2.63%	0.614%
15	13.000	3207	3211	3218	rVB2	5797	5223	0.81%	0.190%
16	13.105	3237	3239	3244	rBV	2330	1578	0.25%	0.057%
17	13.340	3295	3302	3309	rVB3	24985	26382	4.11%	0.957%
18	13.434	3322	3327	3334	rBV3	6351	6323	0.98%	0.229%
19	13.628	3375	3379	3384	rBV2	1445	1671	0.26%	0.061%
20	17.135	4313	4316	4318	rBV2	1760	1321	0.21%	0.048%

Sum of corrected areas: 2755677

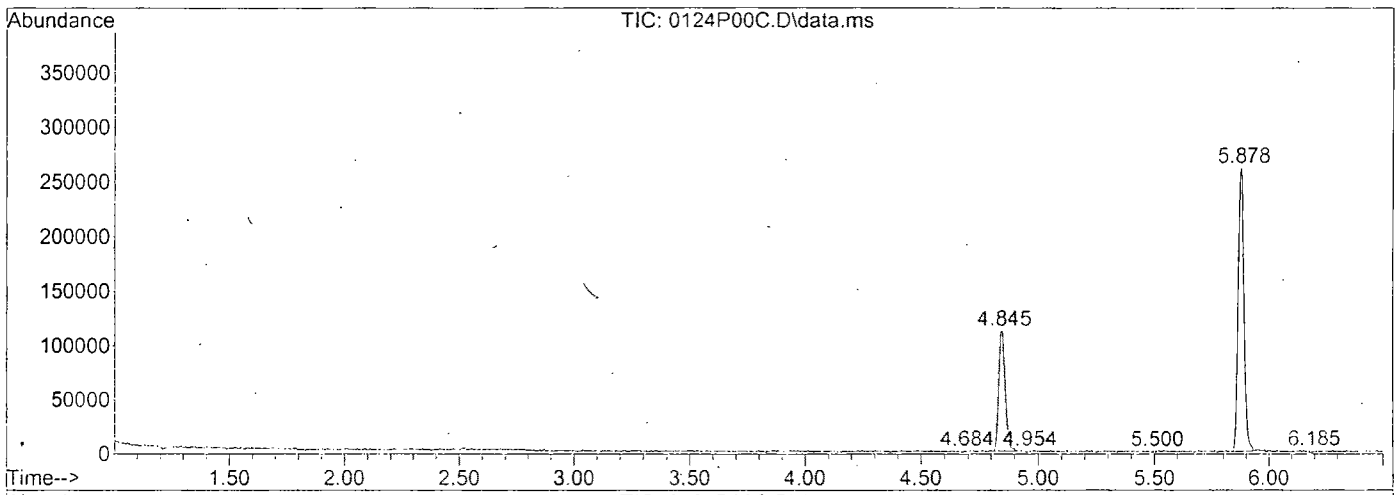
Freedom_0006035_0090

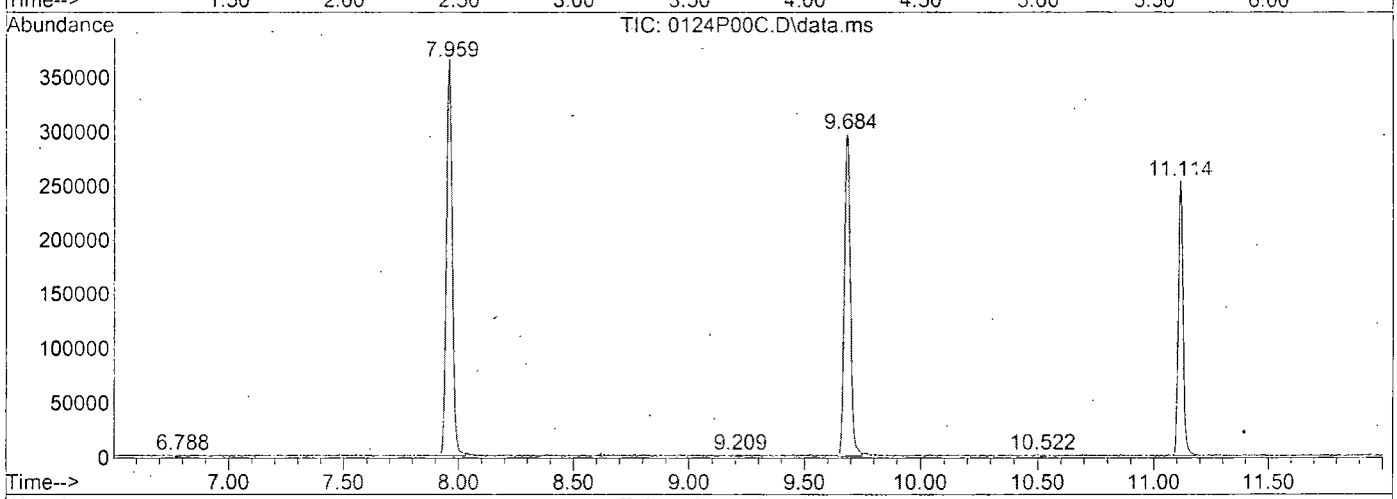
LSC Report - Integrated Chromatogram

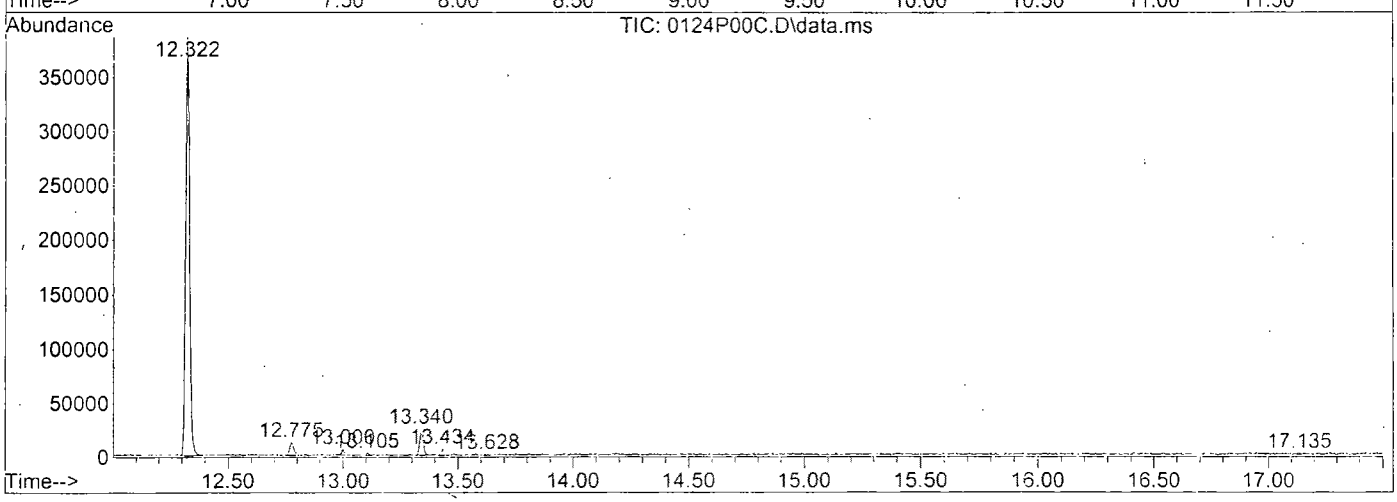
Data Path : D:\Data\2014\S01242014\
Data File : 0124P00C.D
Acq On : 24 Jan 2014 17:31
Operator : PZ 08-5973N
Sample : 100uL PPH#1 to 100mL
Misc : 100 uL JG prep of crude PPH to 100mL
ALS Vial : 3 Sample Multiplier: 1

Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method

TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P







Freedom_0006035_0091

Library Search Compound Report

Data Path : D:\Data\2014\S01242014\
Data File : 0124P00C.D
Acq On : 24 Jan 2014 17:31
Operator : PZ O8-5973N
Sample : 100uL PPH#1 to 100mL
Misc : 100 uL JG prep of crude PPH to 100mL
ALS Vial : 3 Sample Multiplier: 1

Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method

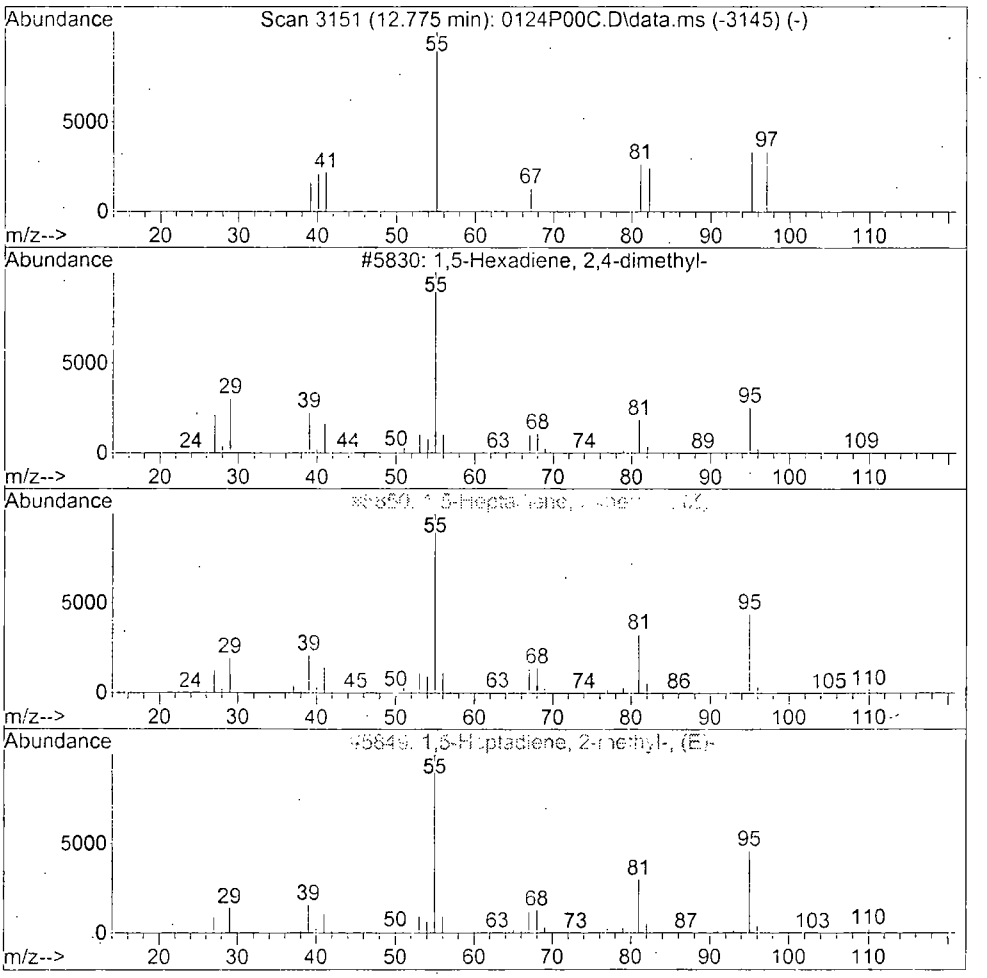
TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P

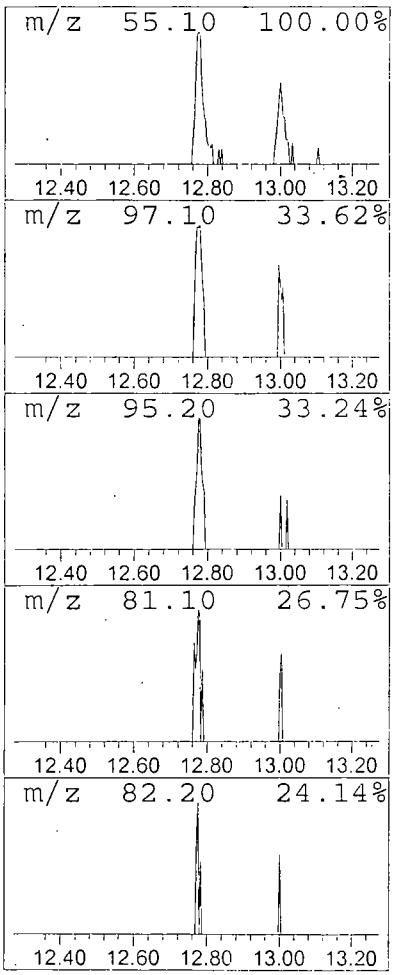
****

Peak Number 1 1,5-Hexadiene, 2,4-dimethyl- Concentration Rank 2

R.T.	EstConc	Area	Relative to ISTD	R.T.
12.775	0.73 ug/L	16908	1,4-DICHLOROBENZENE-D4	12.322

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	1,5-Hexadiene, 2,4-dimethyl-	110	C8H14	068701-71-3	9
2	1,5-Heptadiene, 2-methyl-, (Z)-	110	C8H14	041044-64-8	9
3	1,5-Heptadiene, 2-methyl-, (E)-	110	C8H14	041044-63-7	4
4	2-Methyl-1,5-heptadiene (c,t)	110	C8H14	006766-54-7	4
5	1,4-Pentadien-3-one	82	C5H6O	001890-28-4	4





Freedom_0006035_0092

Library Search Compound Report

Data Path : D:\Data\2014\S01242014\
Data File : 0124P00C.D
Acq On : 24 Jan 2014 17:31
Operator : PZ 08-5973N
Sample : 100uL PPH#1 to 100mL
Misc : 100 uL JG prep of crude PPH to 100mL
ALS Vial : 3 Sample Multiplier: 1

Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method

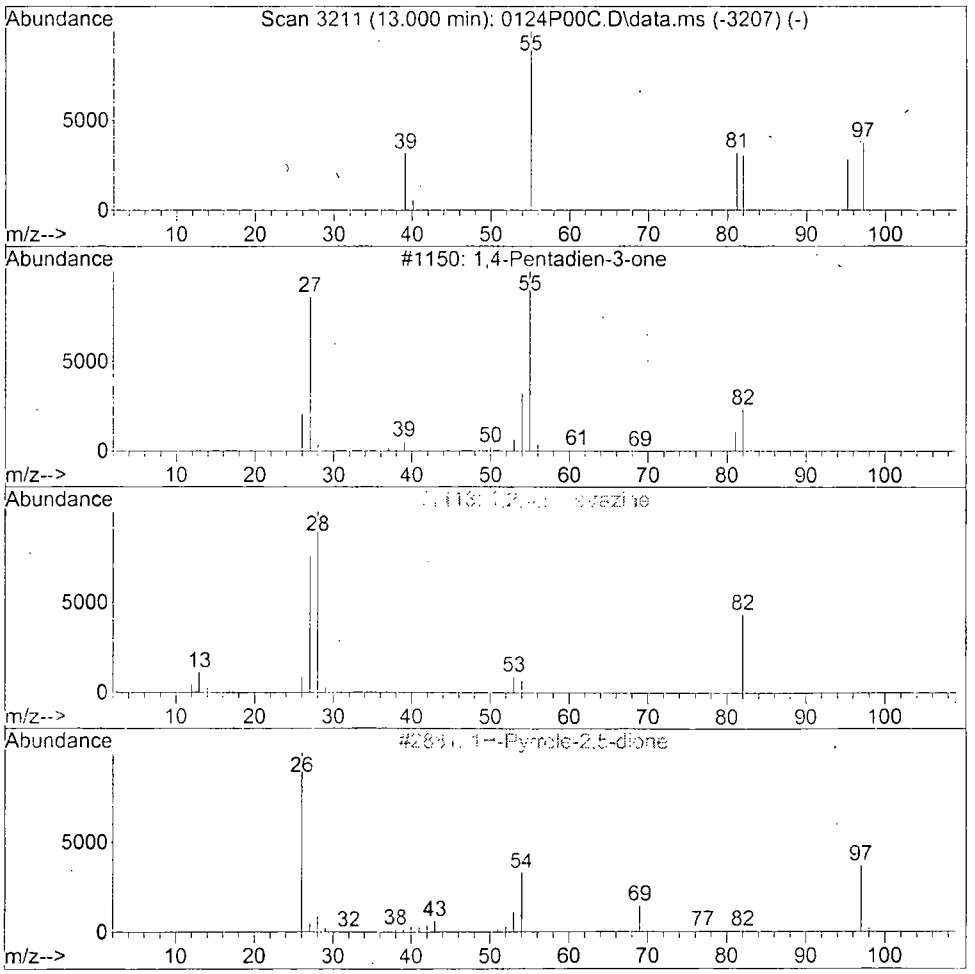
TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P

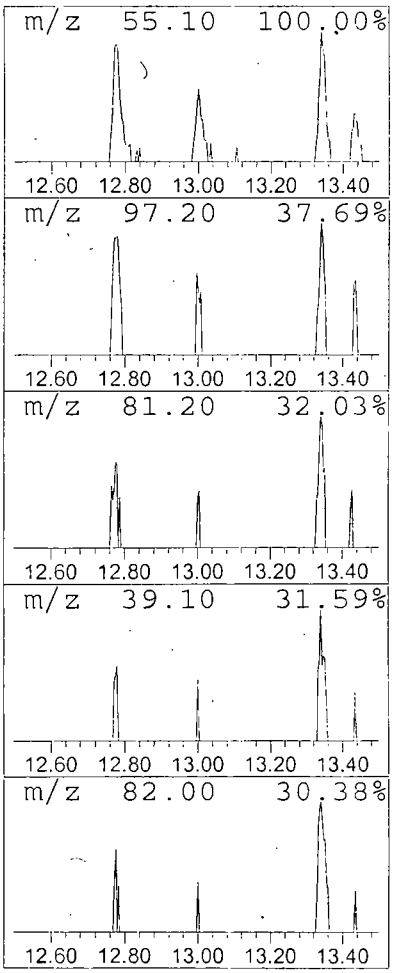
****

Peak Number 2 1,4-Pentadien-3-one Concentration Rank 4

R.T.	EstConc	Area	Relative to ISTD	R.T.
13.000	0.22 ug/L	5223	1,4-DICHLOROBENZENE-D4	12.322

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	1,4-Pentadien-3-one	82	C5H6O	001890-28-4	4
2	1,2,4,5-Tetrazine	82	C2H2N4	000290-96-0	2
3	1H-Pyrrole-2,5-dione	97	C4H3NO2	000541-59-3	2
4	Ethyl isocyanide	55	C3H5N	000624-79-3	1
5	Borane, butyldiethyl-	126	C8H19B	040218-56-2	1





Freedom_0006035_0093

Library Search Compound Report

Data Path : D:\Data\2014\S01242014\
Data File : 0124P00C.D
Acq On : 24 Jan 2014 17:31
Operator : PZ O8-5973N
Sample : 100uL PPH#1 to 100mL
Misc : 100 uL JG prep of crude PPH to 100mL
ALS Vial : 3 Sample Multiplier: 1

Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method

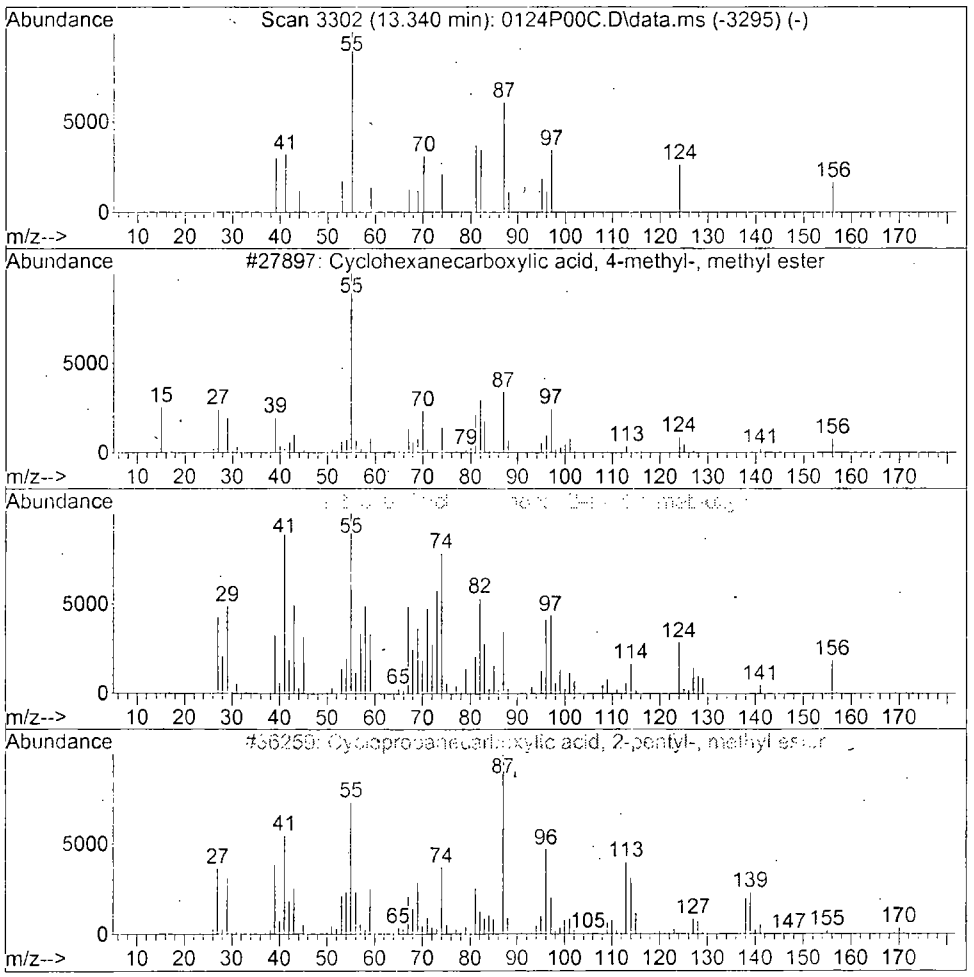
TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P

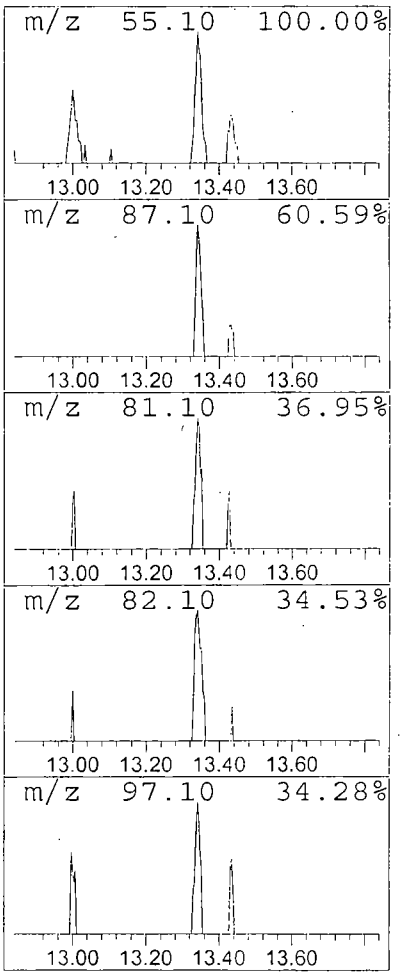
****

Peak Number 3 Cyclohexanecarboxylic acid,... Concentration Rank 1

R.T.	EstConc	Area	Relative to ISTD	R.T.
13.340	1.13 ug/L	26382	1,4-DICHLOROBENZENE-D4	12.322

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Cyclohexanecarboxylic acid, 4-me...	156	C9H16O2	051181-40-9	49
2	Cyclohexanone, 2-ethyl-4-methoxy-	156	C9H16O2	013482-27-4	38
3	Cyclopropanecarboxylic acid, 2-p...	170	C10H18O2	135415-95-1	17
4	Cyclobutanecarboxylic acid, 2-me...	128	C7H12O2	014132-44-6	17
5	1-Tetradecanol, 14-chloro-	248	C14H29ClO	073937-05-0	10





Freedom_0006035_0094

Data Path : D:\Data\2014\S01242014\
Data File : 0124P00C.D
Acq On : 24 Jan 2014 17:31
Operator : PZ 08-5973N
Sample : 100uL PPH#1 to 100mL
Misc : 100 uL JG prep of crude PPH to 100mL
ALS Vial : 3 Sample Multiplier: 1

Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method

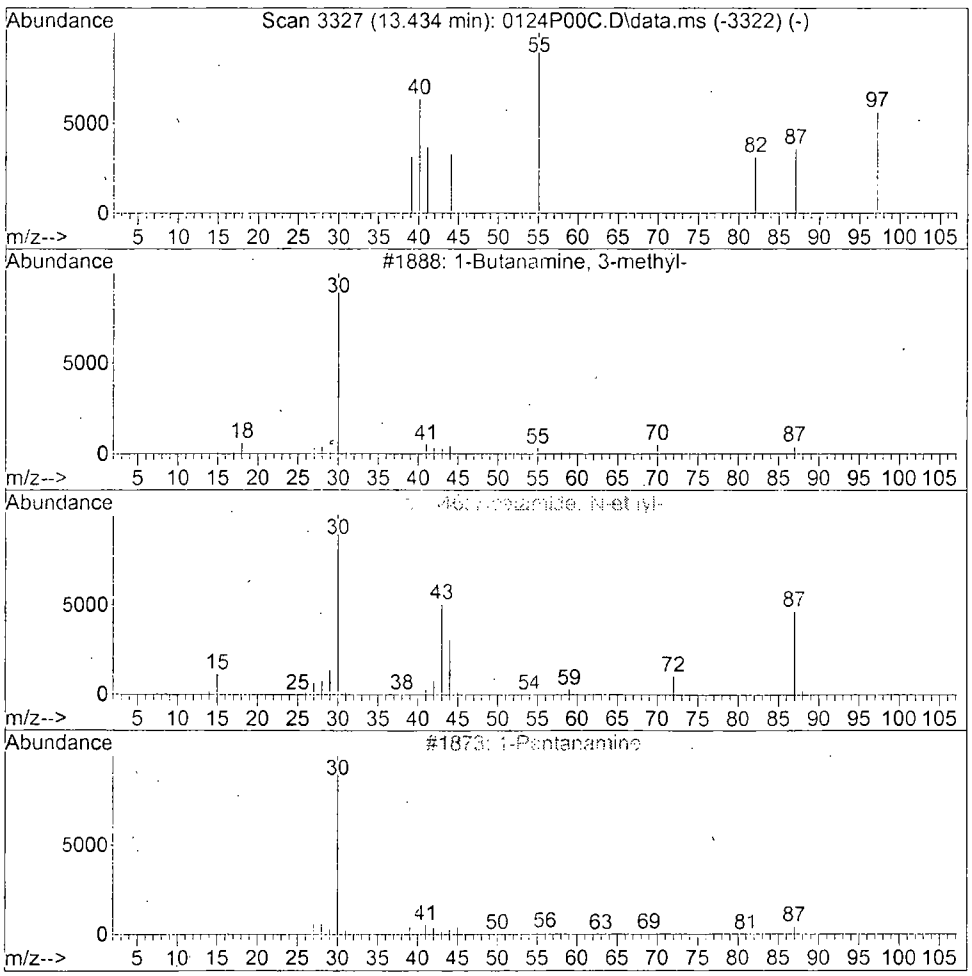
TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P

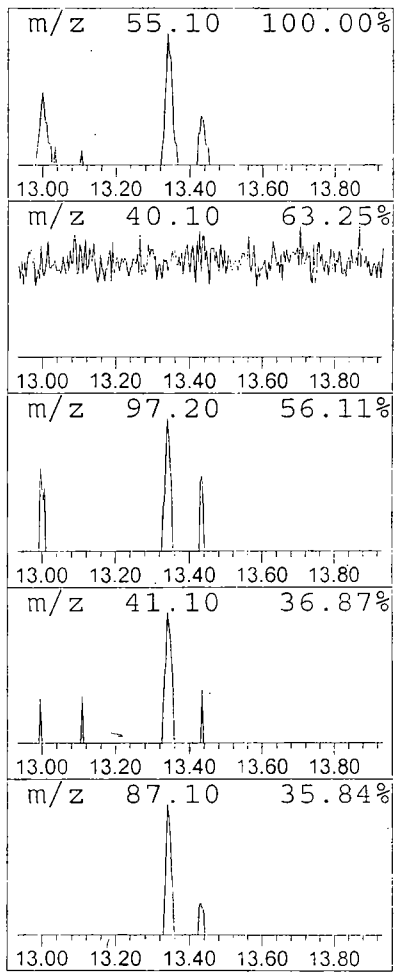
****

Peak Number 4 1-Butanamine, 3-methyl- Concentration Rank 3

R.T.	EstConc	Area	Relative to ISTD	R.T.
13.434	0.27 ug/L	6323	1,4-DICHLOROBENZENE-D4	12.322

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	1-Butanamine, 3-methyl-	87	C5H13N	000107-85-7	4
2	Acetamide, N-ethyl-	87	C4H9NO	000625-50-3	4
3	1-Pentanamine	87	C5H13N	000110-58-7	4
4	Neopentylamine	87	C5H13N	005813-64-9	4
5	1,4-Pentadien-3-one	82	C5H6O	001890-28-4	4





Freedom_0006035_0095

Tentatively Identified Compound (LSC) summary

Data Path : D:\Data\2014\S01242014\
Data File : 0124P00C.D
Acq On : 24 Jan 2014 17:31
Operator : PZ O8-5973N
Sample : 100uL PPH#1 to 100mL
Misc : 100 uL JG prep of crude PPH to 100mL
ALS Vial : 3 Sample Multiplier: 1

Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method

TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
1,5-Hexadiene, ...	12.775	0.7	ug/L	16908	3	12.322	465159	20.0
1,4-Pentadien-3...	13.000	0.2	ug/L	5223	3	12.322	465159	20.0
Cyclohexanecarb...	13.340	1.1	ug/L	26382	3	12.322	465159	20.0
1-Butanamine, 3...	13.434	0.3	ug/L	6323	3	12.322	465159	20.0

Freedom_0006035_0096

METHOD CONTROL PARAMETERS

Ex. 5 - Deliberative

Method Information For: D:\METHODS\MID_5ML_ext.M
Method Sections To Run:

( ) Save Copy of Method With Data
( ) Instrument Control Pre-Run Cmd/Macro =
( ) Data Analysis Pre-Run Cmd/Macro =
(X) Data Acquisition
(X) Data Analysis
( ) Instrument Control Post-Run Cmd/Macro =
( ) Data Analysis Post-Run Cmd/Macro =

Method Comments:
VOA Purge and Trap MID LEVEL Aqueous Method (AquaTek70/Velocity XPT/6890/5973N
)

Ex. 5 - Deliberative

END OF METHOD CONTROL PARAMETERS

Freedom_0006035_0097

INSTRUMENT CONTROL PARAMETERS: 08-5973N

D:\METHODS\MID_5ML_ext.M

Control Information

Sample Inlet : GC
Injection Source : External Device
Injection Location: Front
Mass Spectrometer : Enabled

6890 GC METHOD

OVEN
Initial temp: 30 'C (On)
Initial time: 3.00 min
Maximum temp: 250 'C
Equilibration time: 0.50 min
Ramps:

#	Rate	Final temp	Final time
1	10.00	100	0.00
2	20.00	230	13.50
3	0.0(Off)		

Post temp: 250 'C
Post time: 0.00 min
Run time: 30.00 min

FRONT INLET (SPLIT/SPLITLESS)
Mode: Split
Initial temp: 220 'C (On)
Pressure: 15.83 psi (On)
Split ratio: 50:1
Split flow: 40.4 mL/min
Total flow: 43.6 mL/min
Gas saver: On
Saver flow: 20.0 mL/min
Saver time: 5.00 min
Gas type: Helium

BACK INLET (UNKNOWN)

COLUMN 1
Capillary Column
Model Number: J&W 121-1524
DB-VRX
Max temperature: 250 'C
Nominal length: 20.0 m
Nominal diameter: 180.00 um
Nominal film thickness: 1.00 um
Mode: constant flow
Initial flow: 0.8 mL/min
Nominal init pressure: 16.00 psi
Average velocity: 40 cm/sec
Inlet: Front Inlet
Outlet: (unspecified)
Outlet pressure: vacuum

COLUMN 2
(not installed)

Freedom_0006035_0098

FRONT DETECTOR (NO DET)

SIGNAL 1
Data rate: 20 Hz
Type: test plot
Save Data: Off
Zero: 0.0 (Off)
Range: 0
Fast Peaks: Off
Attenuation: 0

COLUMN COMP 1
(No Detectors Installed)

THERMAL AUX 2
Use: MSD Transfer Line Heater
Description:
Initial temp: 250 'C (On)
Initial time: 0.00 min

#	Rate	Final temp	Final time
1	0.0(Off)		

BACK DETECTOR (NO DET)

SIGNAL 2
Data rate: 20 Hz
Type: test plot
Save Data: Off
Zero: 0.0 (Off)
Range: 0
Fast Peaks: Off
Attenuation: 0

COLUMN COMP 2
(No Detectors Installed)

POST RUN
Post Time: 0.00 min

TIME TABLE

Time	Specifier	Parameter & Setpoint

Ex. 5 - Deliberative

GC Injector

Front Injector:

Sample Washes	0	
Sample Pumps	6	
Injection Volume	1.00	microliters
Syringe Size	10.0	microliters
Nanoliter Adapter	Off	
PostInj Solvent A Washes	0	
PostInj Solvent B Washes	0	
Viscosity Delay	0	seconds
Plunger Speed	Fast	

Back Injector:

Sample Washes	0	
Sample Pumps	6	
Injection Volume	1.00	microliters
Syringe Size	10.0	microliters
Nanoliter Adapter	Off	
PostInj Solvent A Washes	0	
PostInj Solvent B Washes	0	
Viscosity Delay	0	seconds

Freedom_0006035_0099

Plunger Speed Fast

Column 1 Inventory Number : AB001
Column 2 Inventory Number :

MS ACQUISITION PARAMETERS

General Information
--- ---

Tune File : bfb.u
Acquistion Mode : Scan

MS Information
-- ---

Solvent Delay : 0.90 min

EM Absolute : False
EM Offset : 0
Resulting EM Voltage : 1729.4

[Scan Parameters]

Low Mass : 35.0
High Mass : 350.0
Threshold : 500
Sample # : 2 A/D Samples 4
Plot 2 low mass : 50.0
Plot 2 high mass : 550.0

[MSZones]

MS Quad : 150 C maximum 200 C
MS Source : 230 C maximum 250 C

END OF MS ACQUISITION PARAMETERS

END OF INSTRUMENT CONTROL PARAMETERS

Freedom_0006035_0100

Zawodny, Peggy

From: Warner, Sue
Sent: Thursday, January 23, 2014 4:36 PM
To: Caporale, Cynthia; Zawodny, Peggy; wforeman@usgs.gov; dlrose@usgs.gov
Subject: RE: purge conditions

Recommended Operating Conditions for Purge and Trap Apparatus for Volatiles in Soil Analysis (Low Level) Using the Archon Autosampler

Operating Parameter	Setting
Sample Type	Soil
Sample Volume	5 or 10 mL (adds 5 or 10 mL: 10 mL for samples and blanks and 5 mL for standards and spikes)
Rinse Volume	25 mL
Number of Rinses	2
Standard 1	Yes
Standard 2	No
Soil Preheat Stir	Yes
Stir	Yes
Syringe Flushes	2
Preheat	Yes
Preheat Temperature	40 °C
Preheat Time	1.5 min.
Purge Time	11.0 min.
Desorb Time	2.0 min
Operational Mode	Remote
Cycle Timer	38.3 min
Aux Time	0.0 min
Purge Gas Pressure	20 psi
Flow	35-40 mL/min

The trap used is a VOCARB 3000.

From: Caporale, Cynthia
Sent: Thursday, January 23, 2014 4:18 PM

Freedom_0006035_0101

To: Warner, Sue; Zawodny, Peggy
Subject: FW: purge conditions

FYI – feel free to speak to the voc analyst directly or if you want a conference call I'd be willing to help set one up.

From: Foreman, William [mailto:wforeman@usgs.gov]
Sent: Thursday, January 23, 2014 4:10 PM
To: Caporale, Cynthia
Cc: Donna Rose; William Foreman
Subject: purge conditions

Hi Cindy,
I'd appreciate your checking with your P&T analyst regarding the following conditions used:
purge temp
purge time
purge volume
type of trap

I've cc'd our lead VOC analyst, Donna Rose. If your analyst has time for a brief call today or tomorrow, please have them call Donna at Ex. 6 - Personal Privacy Or we can set a time and do it as a conference call.

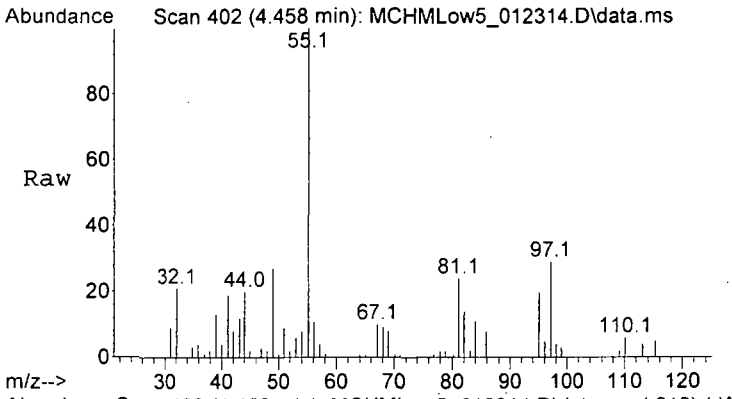
If you happen to have any handy details about the ERT mobile lab's method, that would be helpful.

We greatly appreciate the help/guidance!
Bill

William T. Foreman, Ph.D.
Research Chemist
Methods Research and Development Program
U.S. Geological Survey
National Water Quality Laboratory
P.O. Box 25585
Denver, CO 80225-0585
{For Fedex, delete Box number and add Bldg. 95, Entrance E3}
303-236-3942; FAX: 303-236-3499
email: wforeman@usgs.gov

Freedom_0006035_0102

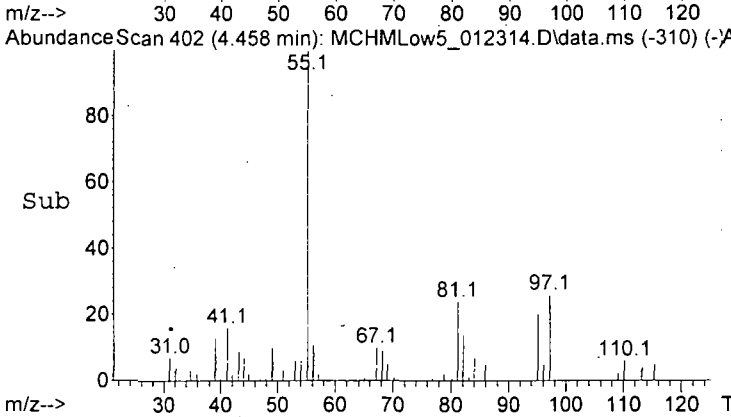
Ex. 5 - Deliberative

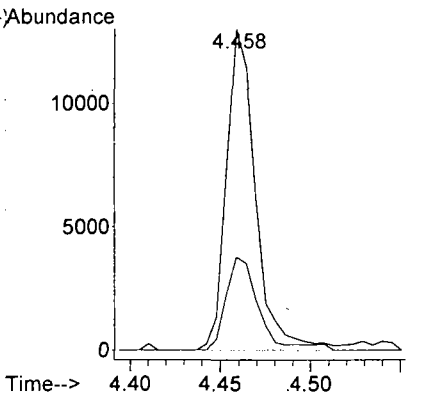


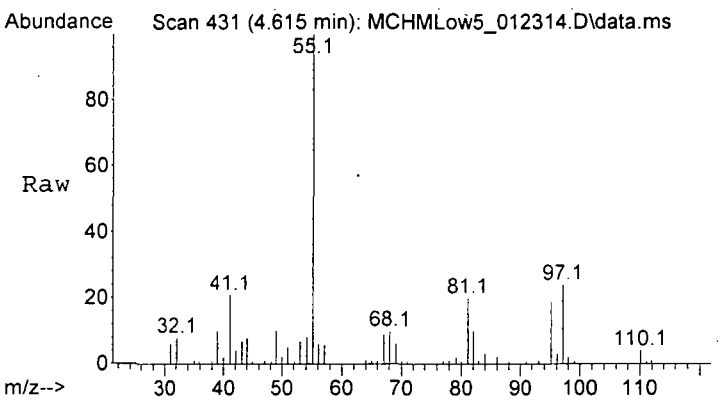
#4
cis-MCHM
Concen: 0.382 ug/mL
RT: 4.458 min Scan# 402
Delta R.T. -0.006 min
Lab File: MCHMLow5_012314.D
Acq: 23 Jan 2014 12:36 pm

Tgt Ion: 55 Resp: 14461

Ion	Ratio	Lower	Upper
55	100		
97	32.6	23.2	34.8



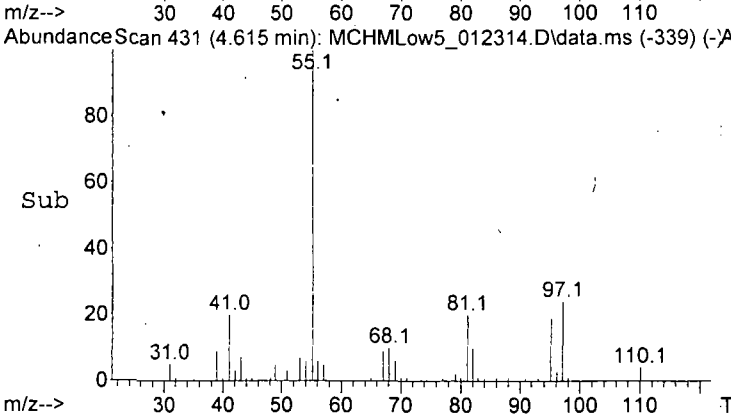


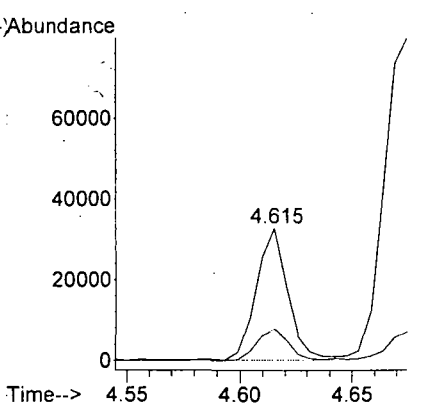


#5
tans-MCHM
Concen: 0.399 ug/mL
RT: 4.615 min Scan# 431
Delta R.T. -0.001 min
Lab File: MCHMLow5_012314.D
Acq: 23 Jan 2014 12:36 pm

Tgt Ion: 55 Resp: 31808

Ion	Ratio	Lower	Upper
55	100		
97	24.7	20.0	30.0





Freedom_0006035_0103

Sequence Log 2014 Jan 27 0929.LOG

Starting sequence Mon Jan 27 09:29:49 2014

Ex. 5 - Deliberative

```
Instrument Name: PZ1-AG5975
  Sequence File: C:\msdchem\1\sequence\test.S
        Comment: Test Screening
       Operator: PZ  PZ1-AG5975
      Data Path: D:\DATA\L01272014\
    Method Path: C:\msdchem\1\METHODS\

  Line Type        Vial  DataFile  Method    Sample Name
  ---------------------------------------------------------------------
    1) COMMENT: '5 ML SAMPLE PURGED; IS/SS = 5 PPB'
    2) COMMENT: 'STANDARDS'
    3) COMMENT: 'SEE ANALYSIS LOG FOR MORE INFORMATION '

    4) Blank          1  0127RIN1  TRACEVOC  Blank

    5) Sample         2  0127BFB   TRACEVOC  25ng BFB, 2uL IS/SS in 5mL

    6) Sample         3  0127T00A  TRACEVOC  25uL PZSoln#1 to 100mL
    7) PAUSE: ' '

  Sequence paused Mon Jan 27 10:53:16 2014

    D:\DATA\L01272014\ Quality Log 2014 Jan 27 0929.LOG
    D:\DATA\L01272014\Sequence Log 2014 Jan 27 0929.LOG
```

Starting sequence Mon Jan 27 12:30:20 2014

Ex. 5 - Deliberative

```
  Instrument Name: PZ1-AG5975
    Sequence File: C:\msdchem\1\sequence\test.S
          Comment: Test Screening
         Operator: PZ  PZ1-AG5975
        Data Path: D:\DATA\L01272014\
      Method Path: C:\MSDCHEM\1\METHODS\

    Line Type        Vial  DataFile  Method    Sample Name
    ---------------------------------------------------------------------
      1) COMMENT: '5 ML SAMPLE PURGED; IS/SS = 5 PPB'
      2) COMMENT: 'STANDARDS'
      3) COMMENT: 'SEE ANALYSIS LOG FOR MORE INFORMATION '

      4) Sample         4  0127T00B  TRACEVOC  1.5uL PZSoln#1 to 100mL
      5) PAUSE: ' '
```

Ex. 5 - Deliberative

Ex. 5 - Deliberative

Sequence paused Mon Jan 27 12:57:41 2014

D:\DATA\L01272014\ Quality Log 2014 Jan 27 1230.LOG
D:\DATA\L01272014\Sequence Log 2014 Jan 27 1230.LOG

Resuming sequence Mon Jan 27 15:17:55 2014

```
  Instrument Name: PZ1-AG5975
    Sequence File: C:\msdchem\1\sequence\test.S
          Comment: Test Screening
         Operator: PZ  PZ1-AG5975
        Data Path: D:\DATA\L01272014\
      Method Path: C:\MSDCHEM\1\METHODS\

    Line Type        Vial  DataFile  Method    Sample Name
    ---------------------------------------------------------------------
      6) COMMAND: 'PRINTSEQLOG'
    Executing Command: PRINTSEQLOG
```


Freedom_0006035_0105

Analysis Log

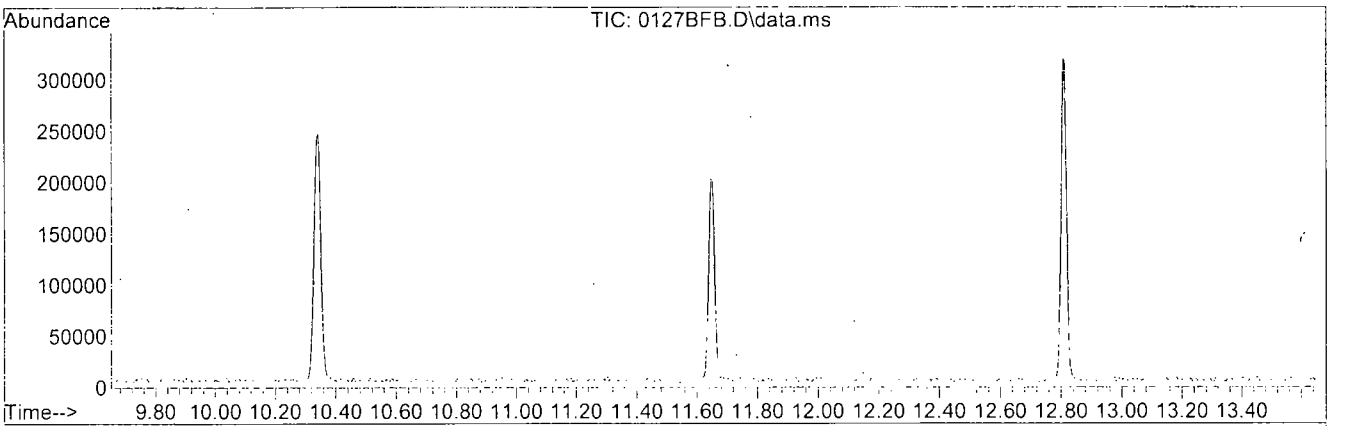
Date	Filename	Lab ID	Sample Info
27 Jan 2014 10:05	0127BFB.D	25ng BFB, 2uL IS/SS in 5mL	
27 Jan 2014 10:33	0127T00A.D	25uL PZSoln#1 to 100mL	PZSoln#1= 32.8mg MCHM
27 Jan 2014 12:38	0127T00B.D	1.5uL PZSoln#1 to 100mL	PZSoln#1= 32.8mg MCHM

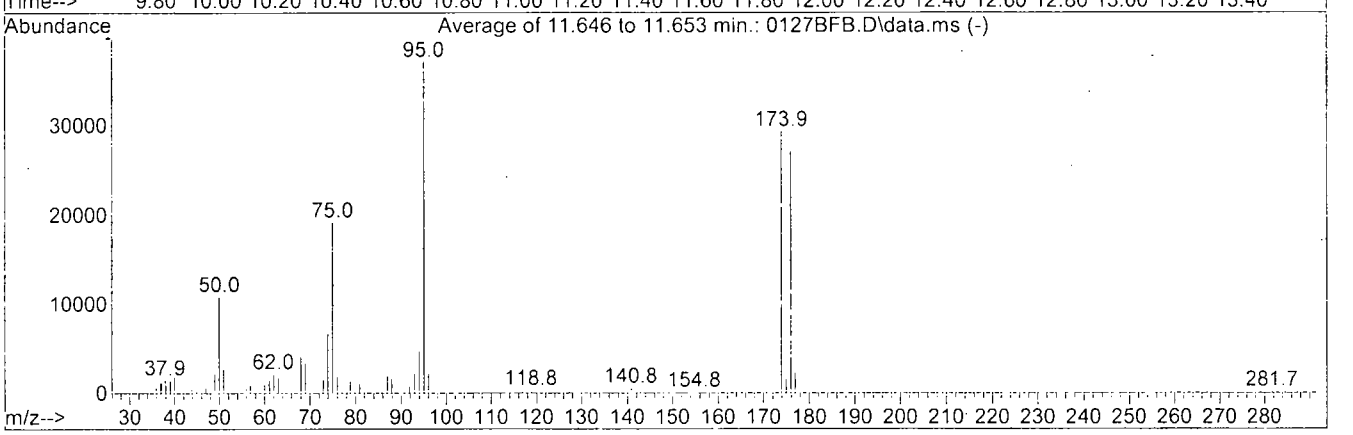
Freedom_0006035_0106

Data Path : D:\DATA\L01272014\
Data File : 0127BFB.D
Acq On : 27 Jan 2014 10:05
Operator : PZ PZ1-AG5975
Sample : 25ng BFB, 2uL IS/SS in 5mL
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: NORMAL.P

Method : D:\METHODS\L_Screen.M
Title : VOA Purge and Trap LOW LEVEL Aqueous Method
Last Update : Tue Jan 14 14:18:43 2014





AutoFind: Scans 2790, 2791, 2792; Background Corrected with Scan 2780

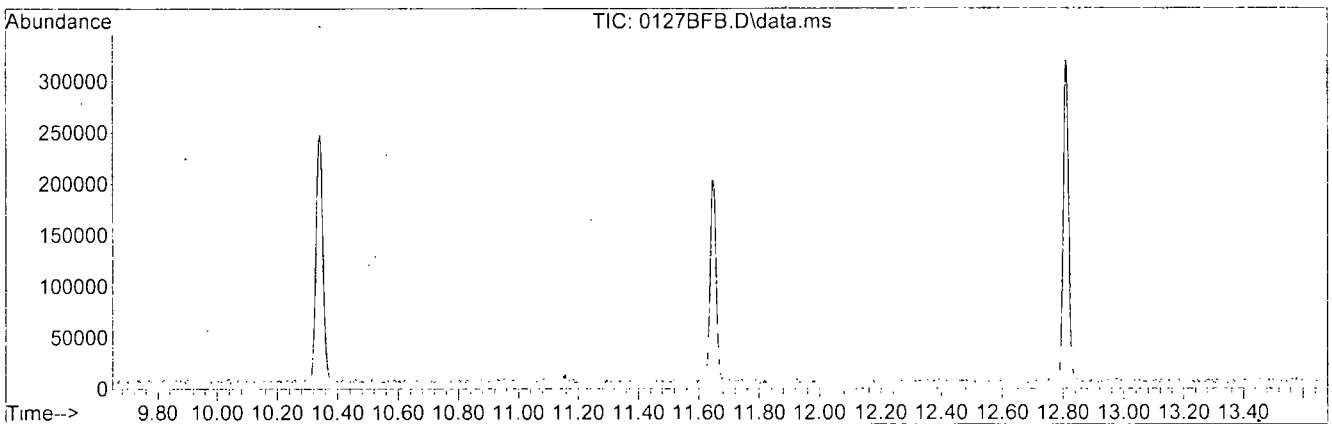
Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	28.6	10839	PASS
75	95	30	60	50.6	19176	PASS
95	95	100	100	100.0	37930	PASS
96	95	5	9	5.9	2229	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	100	77.2	29290	PASS
175	174	5	9	5.4	1582	PASS
176	174	95	101	93.1	27256	FAIL*
177	176	5	9	8.7	2359	PASS

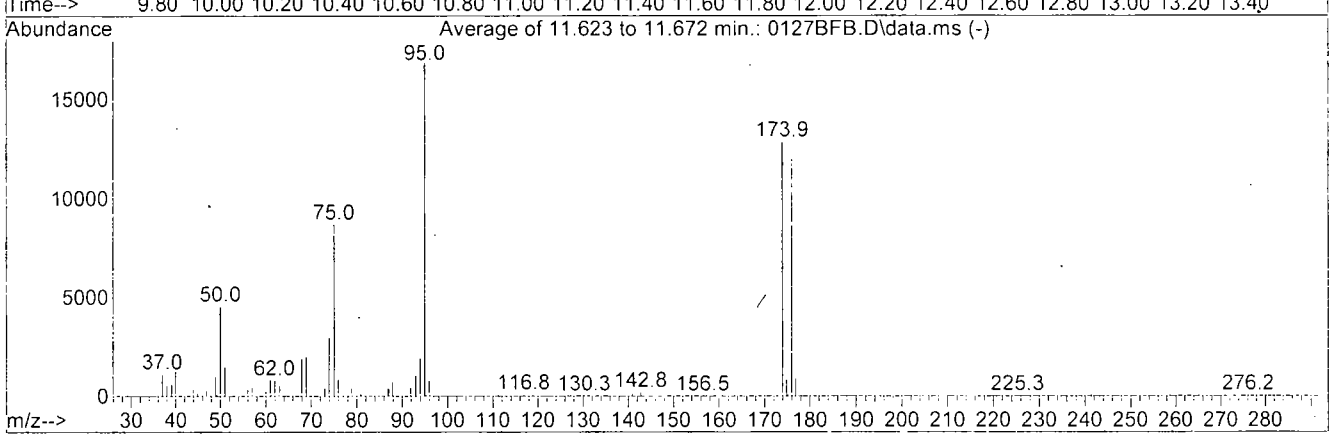
Freedom_0006035_0107

Data Path : D:\DATA\L01272014\
Data File : 0127BFB.D
Acq On : 27 Jan 2014 10:05
Operator : PZ PZ1-AG5975
Sample : 25ng BFB, 2uL IS/SS in 5mL
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: NORMAL.P

Method : D:\METHODS\L_Screen.M
Title : VOA Purge and Trap LOW LEVEL Aqueous Method
Last Update : Tue Jan 14 14:18:43 2014





Spectrum Information: Average of 11.623 to 11.672 min.

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	26.6	4558	PASS
75	95	30	60	50.9	8702	PASS
95	95	100	100	100.0	17107	PASS
96	95	5	9	4.6	780	FAIL*
173	174	0.00	2	0.2	26	PASS
174	95	50	100	75.2	12861	PASS
175	174	5	9	6.4	826	PASS
176	174	95	101	95.1	12232	PASS
177	176	5	9	7.7	941	PASS

Freedom_0006035_0108

Quantitation Report (QT Reviewed)

Ex. 5 - Deliberative

Data Path : D:\DATA\L01272014\
Data File : 0127T00A.D
Acq On : 27 Jan 2014 10:33
Operator : PZ PZ1-AG5975
Sample : 25uL PZSoln#1 to 100mL
Misc : PZSoln#1= 32.8mg MCHM std - 10mL MeOH
ALS Vial : 3 Sample Multiplier: 1

Ex. 5 - Deliberative

Quant Time: Jan 27 10:53:43 2014
Quant Method : D:\METHODS\L_Screen.M
Quant Title : VOA Purge and Trap LOW LEVEL Aqueous Method
QLast Update : Tue Jan 14 14:18:43 2014
Response via : Initial Calibration

Ex. 5 - Deliberative

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) 1,4-DIFLUOROBENZENE	6.532	114	117098	5.00	ug/L	0.00
37) CHLOROBENZENE-d5	10.341	117	109628	5.00	ug/L	0.00
56) 1,4-DICHLOROBENZENE-d4	12.811	152	51188	5.00	ug/L	0.00
System Monitoring Compounds						
23) 1,2-DICHLOROETHANE-d4	5.501	65	64217	5.64	ug/L	0.00
Spiked Amount 5.000	Range 76 - 114		Recovery	=	112.80%	
41) TOLUENE-d8	8.617	98	133106	4.71	ug/L	0.00
Spiked Amount 5.000	Range 88 - 110		Recovery	=	94.20%	
59) 4-BROMOFLUOROBENZENE	11.645	95	49817	5.14	ug/L	0.00
Spiked Amount 5.000	Range 86 - 115		Recovery	=	102.80%	

Target Compounds Qvalue

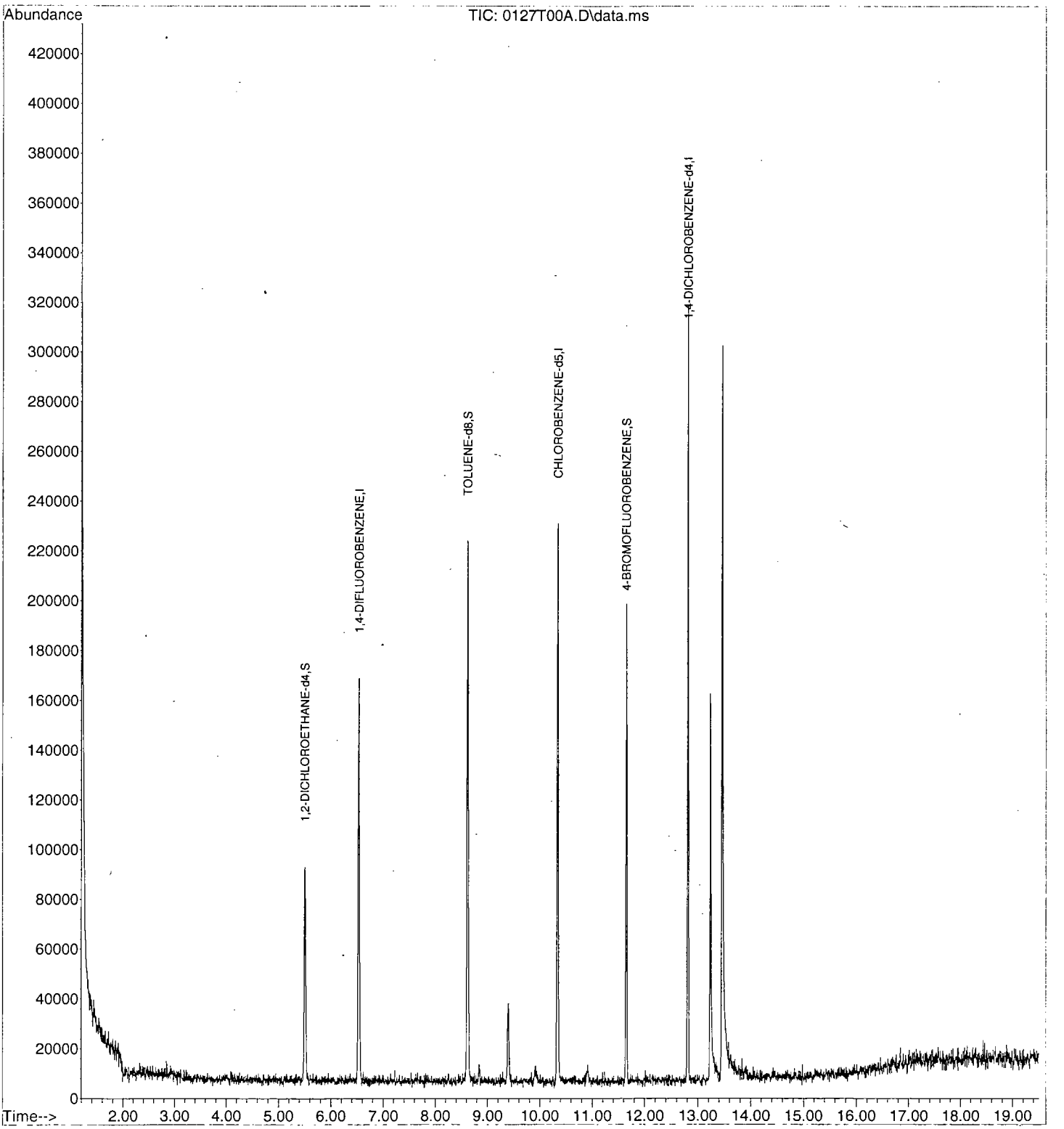
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Freedom_0006035_0109

Quantitation Report (QT Reviewed)

Data Path : D:\DATA\L01272014\
Data File : 0127T00A.D
Acq On : 27 Jan 2014 10:33
Operator : PZ PZ1-AG5975
Sample : 25uL PZSoln#1 to 100mL
Misc : PZSoln#1= 32.8mg MCHM std - 10mL MeOH
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Jan 27 10:53:43 2014
Quant Method : D:\METHODS\L_Screen.M
Quant Title : VOA Purge and Trap LOW LEVEL Aqueous Method
QLast Update : Tue Jan 14 14:18:43 2014
Response via : Initial Calibration



Freedom_0006035_0110

LSC Area Percent Report

Data Path : D:\DATA\L01272014\
Data File : 0127T00A.D
Acq On : 27 Jan 2014 10:33
Operator : PZ PZ1-AG5975
Sample : 25uL PZSoln#1 to 100mL
Misc : PZSoln#1= 32.8mg MCHM std - 10mL MeOH
ALS Vial : 3 Sample Multiplier: 1

Integration Parameters: NORMAL.P
Integrator: RTE
Smoothing : ON Filtering: 5
Sampling : 1 Min Area: 1 % of largest Peak
Start Thrs: 0.2 Max Peaks: 95
Stop Thrs : 0 Peak Location: TOP

If leading or trailing edge < 100 prefer < Baseline drop else tangent >
Peak separation: 5

Method : D:\METHODS\L_Screen.M
Title : VOA Purge and Trap LOW LEVEL Aqueous Method

Signal : TIC: 0127T00A.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	1.854	177	178	184	rVB2	8659	6956	1.40%	0.232%
2	1.888	184	187	190	rBV2	6169	5978	1.21%	0.200%
3	1.925	195	197	204	rVB3	5376	6102	1.23%	0.204%
4	2.113	241	247	249	rVB2	6428	6317	1.27%	0.211%
5	2.146	249	256	257	rBV	4859	6473	1.31%	0.216%
6	3.076	499	504	506	rBV2	5499	6504	1.31%	0.217%
7	3.121	513	516	522	rBV2	5672	6348	1.28%	0.212%
8	4.088	770	774	777	rBV	5832	5220	1.05%	0.174%
9	4.725	941	944	951	rBV	4232	5286	1.07%	0.177%
10	5.501	1140	1151	1164	rBV3	86580	177989	35.89%	5.947%
11	6.532	1415	1426	1440	rVB2	164183	302602	61.02%	10.111%
12	7.541	1689	1695	1699	rVB2	6096	6853	1.38%	0.229%
13	8.617	1972	1982	2000	rVB2	217789	385892	77.82%	12.894%
14	8.838	2037	2041	2049	rBV3	7466	11199	2.26%	0.374%
15	9.396	2179	2190	2201	rBV7	32862	65621	13.23%	2.193%
16	9.696	2265	2270	2275	rBV2	4088	7231	1.46%	0.242%
17	9.895	2318	2323	2325	rBV3	5905	5473	1.10%	0.183%
18	10.341	2430	2442	2458	rBV3	225930	385244	77.68%	12.872%
19	10.914	2589	2595	2603	rVV4	7444	12898	2.60%	0.431%
20	10.967	2603	2609	2614	rVB	4041	6491	1.31%	0.217%
21	11.196	2667	2670	2675	rBV2	6130	5843	1.18%	0.195%
22	11.574	2768	2771	2777	rVB2	3736	5452	1.10%	0.182%
23	11.649	2782	2791	2799	rVB3	193476	261699	52.77%	8.744%
24	12.808	3091	3100	3108	rBV2	313465	381754	76.98%	12.756%
25	12.991	3141	3149	3152	rBV2	4342	5014	1.01%	0.168%
26	13.107	3173	3180	3185	rBV2	4702	8076	1.63%	0.270%
27	13.231	3203	3213	3231	rBV2	156071	250251	50.46%	8.362%
28	13.456	3264	3273	3289	rBV2	295682	495908	100.00%	16.570%
29	13.621	3313	3317	3321	rVB6	5677	5627	1.13%	0.188%
30	13.838	3372	3375	3379	rBV2	8543	5532	1.12%	0.185%
31	14.974	3676	3678	3687	rBV2	8471	8519	1.72%	0.285%
32	15.484	3808	3814	3817	rVB4	4762	6490	1.31%	0.217%
33	16.005	3950	3953	3961	rVB3	6358	7353	1.48%	0.246%
34	16.462	4070	4075	4077	rBV3	7046	5033	1.01%	0.168%
35	16.597	4110	4111	4119	rBV4	6477	8130	1.64%	0.272%
36	16.841	4172	4176	4184	rBV4	8048	6806	1.37%	0.227%
37	16.999	4214	4218	4220	rBV3	7163	5778	1.17%	0.193%
38	17.433	4330	4334	4336	rBV3	7962	6363	1.28%	0.213%
39	17.711	4405	4408	4411	rBV4	6401	5498	1.11%	0.184%

Freedom_0006035_0111

Data Path : D:\DATA\L01272014\
Data File : 0127T00A.D
Acq On : 27 Jan 2014 10:33
Operator : PZ PZ1-AG5975
Sample : 25uL PZSoln#1 to 100mL
Misc : PZSoln#1= 32.8mg MCHM std - 10mL MeOH
ALS Vial : 3 Sample Multiplier: 1

Integration Parameters: NORMAL.P
Integrator: RTE
Smoothing : ON Filtering: 5
Sampling : 1 Min Area: 1 % of largest Peak
Start Thrs: 0.2 Max Peaks: 95
Stop Thrs : 0 Peak Location: TOP

If leading or trailing edge < 100 prefer < Baseline drop else tangent >
Peak separation: 5

Method : D:\METHODS\L_Screen.M
Title : VOA Purge and Trap LOW LEVEL Aqueous Method

40	17.729	4411	4413	4416	rBV4	6649	5731	1.16%	0.191%
41	17.936	4466	4468	4471	rVB4	9215	5682	1.15%	0.190%
42	17.954	4471	4473	4476	rBV3	9631	7013	1.41%	0.234%
43	18.239	4545	4549	4553	rVB2	7689	5825	1.17%	0.195%
44	18.355	4579	4580	4586	rBV3	5715	5321	1.07%	0.178%
45	18.468	4605	4610	4615	rVB4	10891	10815	2.18%	0.361%
46	18.547	4627	4631	4635	rBV5	6806	8547	1.72%	0.286%
47	18.659	4658	4661	4664	rBV4	5288	5550	1.12%	0.185%
48	18.850	4709	4712	4717	rVB5	6578	7343	1.48%	0.245%
49	19.038	4759	4762	4767	rBV5	6614	6428	1.30%	0.215%
50	19.139	4784	4789	4793	rBV5	8070	8957	1.81%	0.299%
51	19.341	4839	4843	4846	rBV3	7644	7835	1.58%	0.262%

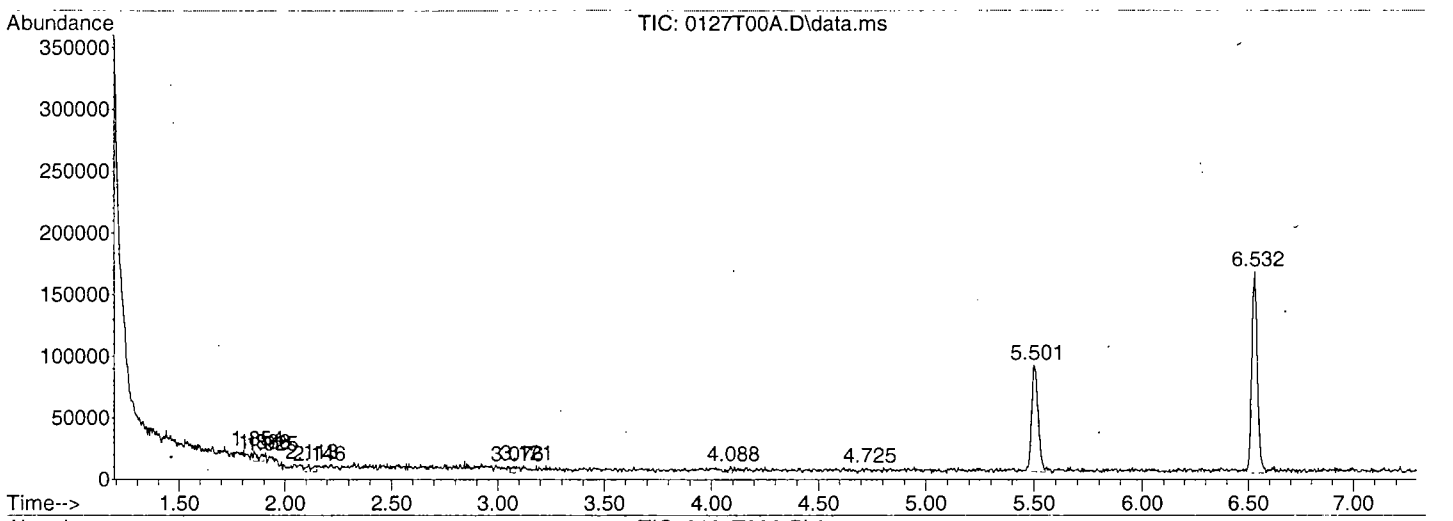
Sum of corrected areas: 2992850

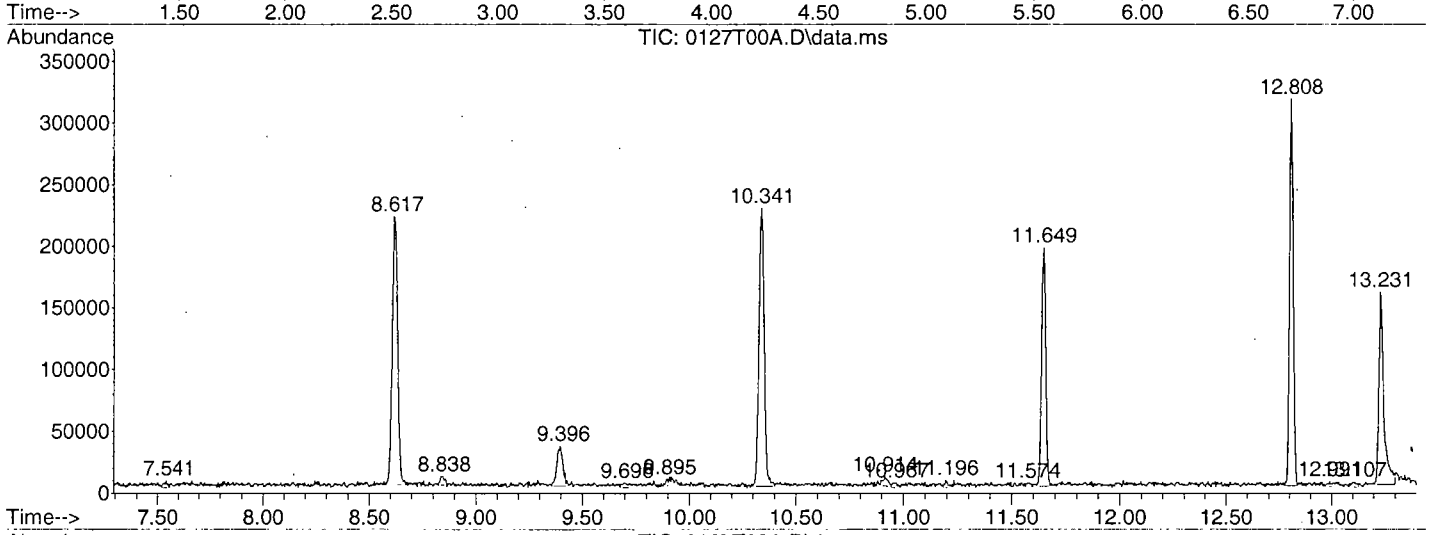
Freedom_0006035_0112

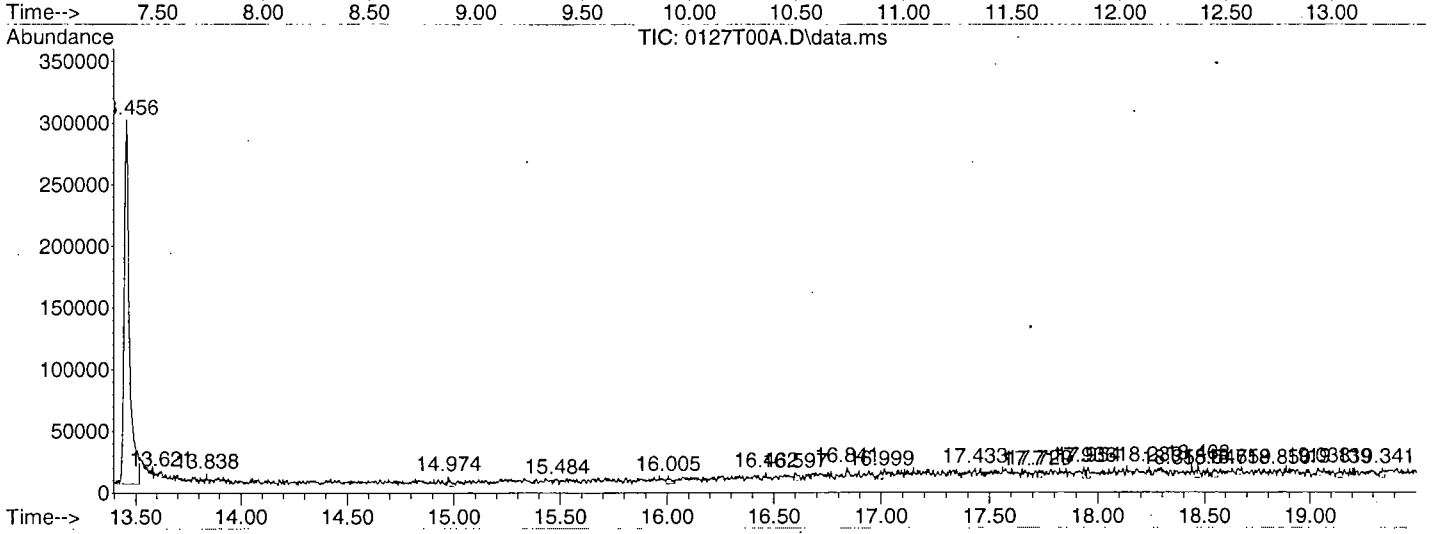
Data Path : D:\DATA\L01272014\
Data File : 0127T00A.D
Acq On : 27 Jan 2014 10:33
Operator : PZ PZ1-AG5975
Sample : 25uL PZSoln#1 to 100mL
Misc : PZSoln#1= 32.8mg MCHM std - 10mL MeOH
ALS Vial : 3 Sample Multiplier: 1

Quant Method : D:\METHODS\L_Screen.M
Quant Title : VOA Purge and Trap LOW LEVEL Aqueous Method

TIC Library : C:\Database\NIST05.L
TIC Integration Parameters: LSCINT.P







Data Path : D:\DATA\L01272014\
Data File : 0127T00A.D
Acq On : 27 Jan 2014 10:33
Operator : PZ PZ1-AG5975
Sample : 25uL PZSoln#1 to 100mL
Misc : PZSoln#1= 32.8mg MCHM std - 10mL MeOH
ALS Vial : 3 Sample Multiplier: 1

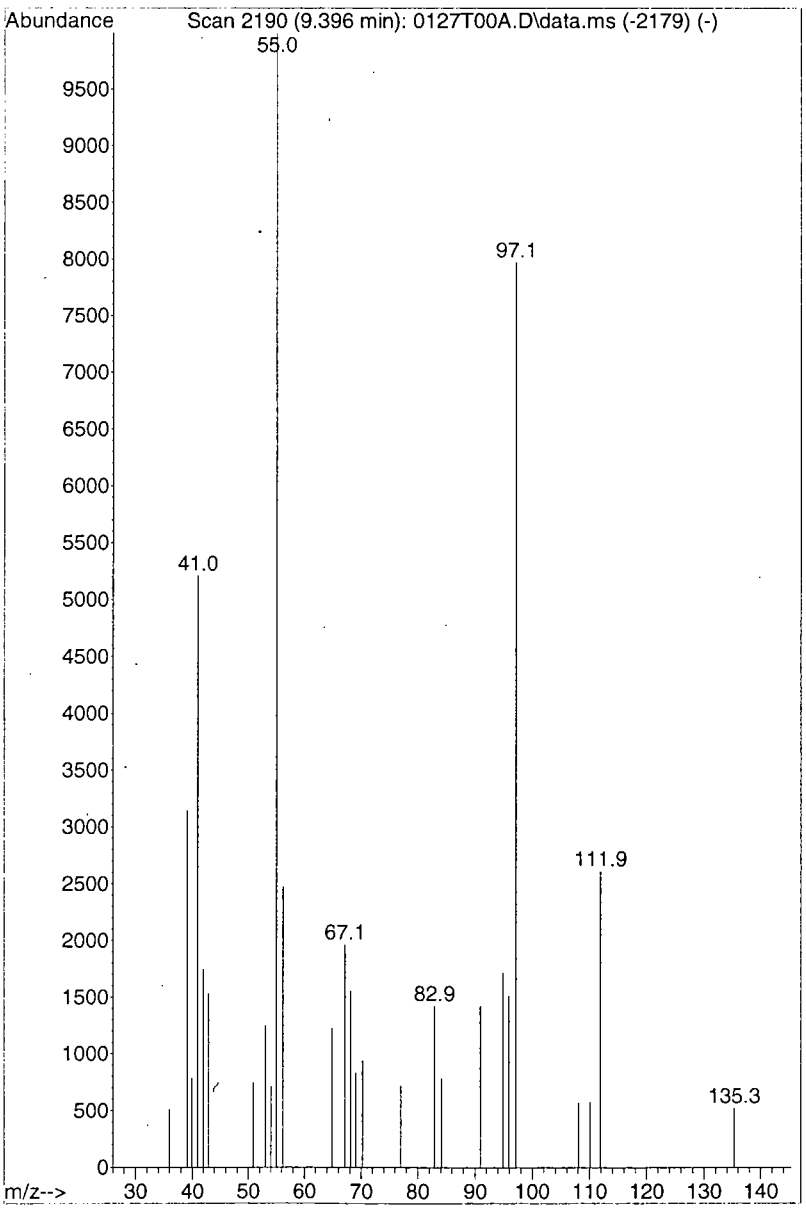
Quant Method : D:\METHODS\L_Screen.M
Quant Title : VOA Purge and Trap LOW LEVEL Aqueous Method

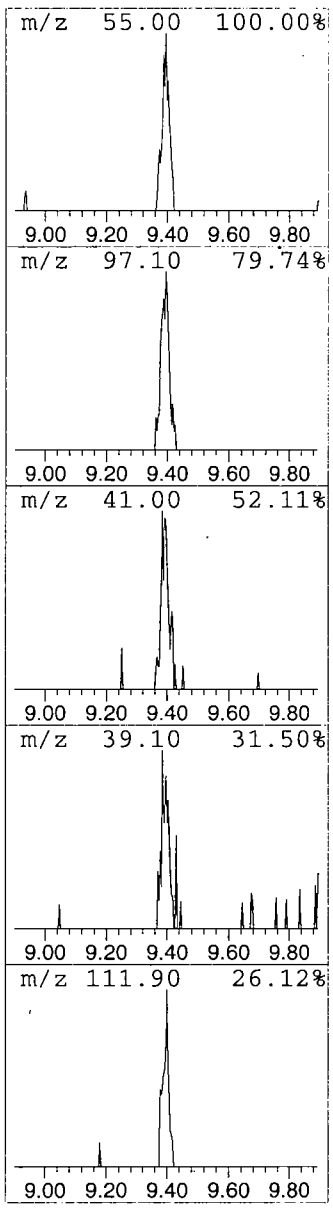
TIC Library : C:\Database\NIST05.L
TIC Integration Parameters: LSCINT.P

****
Peak Number 1 Error searching C:\Database... Concentration Rank 3

R.T.	EstConc	Area	Relative to ISTD	R.T.
9.396	0.85 ug/L	65621	CHLOROBENZENE-d5	10.341

Hit# of 1	Tentative ID	MW	MolForm	CAS#	Qual
1	Error searching C:\Database\NIST...	0			0





Freedom_0006035_0114

Data Path : D:\DATA\L01272014\
Data File : 0127T00A.D
Acq On : 27 Jan 2014 10:33
Operator : PZ PZ1-AG5975
Sample : 25uL PZSoln#1 to 100mL
Misc : PZSoln#1= 32.8mg MCHM std - 10mL MeOH
ALS Vial : 3 Sample Multiplier: 1

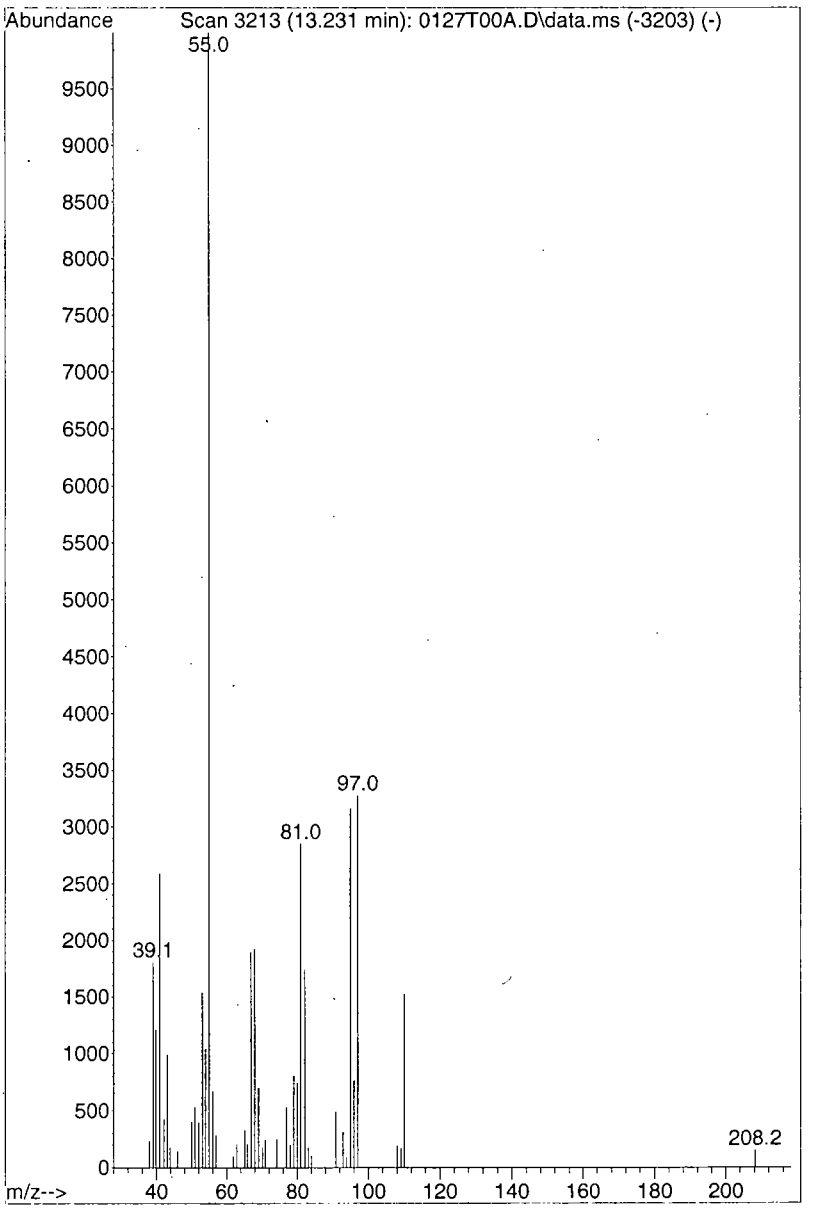
Quant Method : D:\METHODS\L_Screen.M
Quant Title : VOA Purge and Trap LOW LEVEL Aqueous Method

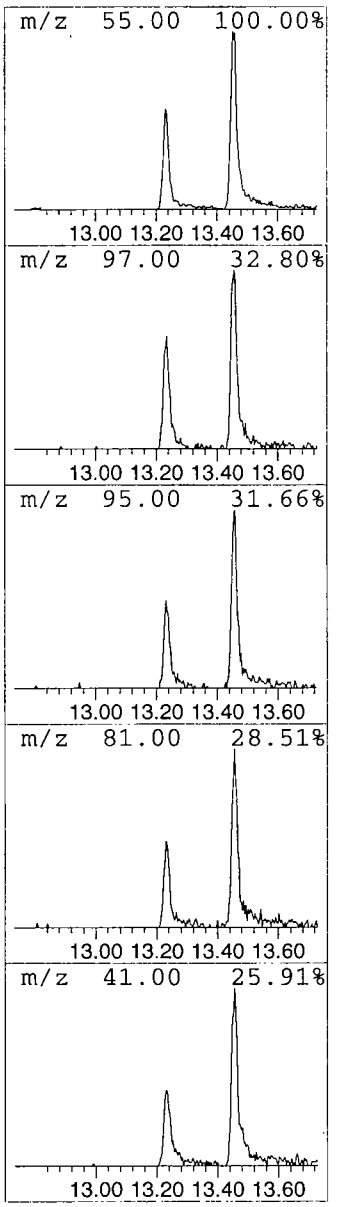
TIC Library : C:\Database\NIST05.L
TIC Integration Parameters: LSCINT.P

****
Peak Number 2 Error searching C:\Database... Concentration Rank 2

R.T.	EstConc	Area	Relative to ISTD	R.T.
13.231	3.28 ug/L	250251	1,4-DICHLOROBENZENE-d4	12.811

Hit# of 1	Tentative ID	MW	MolForm	CAS#	Qual
1	Error searching C:\Database\NIST...	0			0





Freedom_0006035_0115

Data Path : D:\DATA\L01272014\
Data File : 0127T00A.D
Acq On : 27 Jan 2014 10:33
Operator : PZ PZ1-AG5975
Sample : 25uL PZSoln#1 to 100mL
Misc : PZSoln#1= 32.8mg MCHM std - 10mL MeOH
ALS Vial : 3 Sample Multiplier: 1

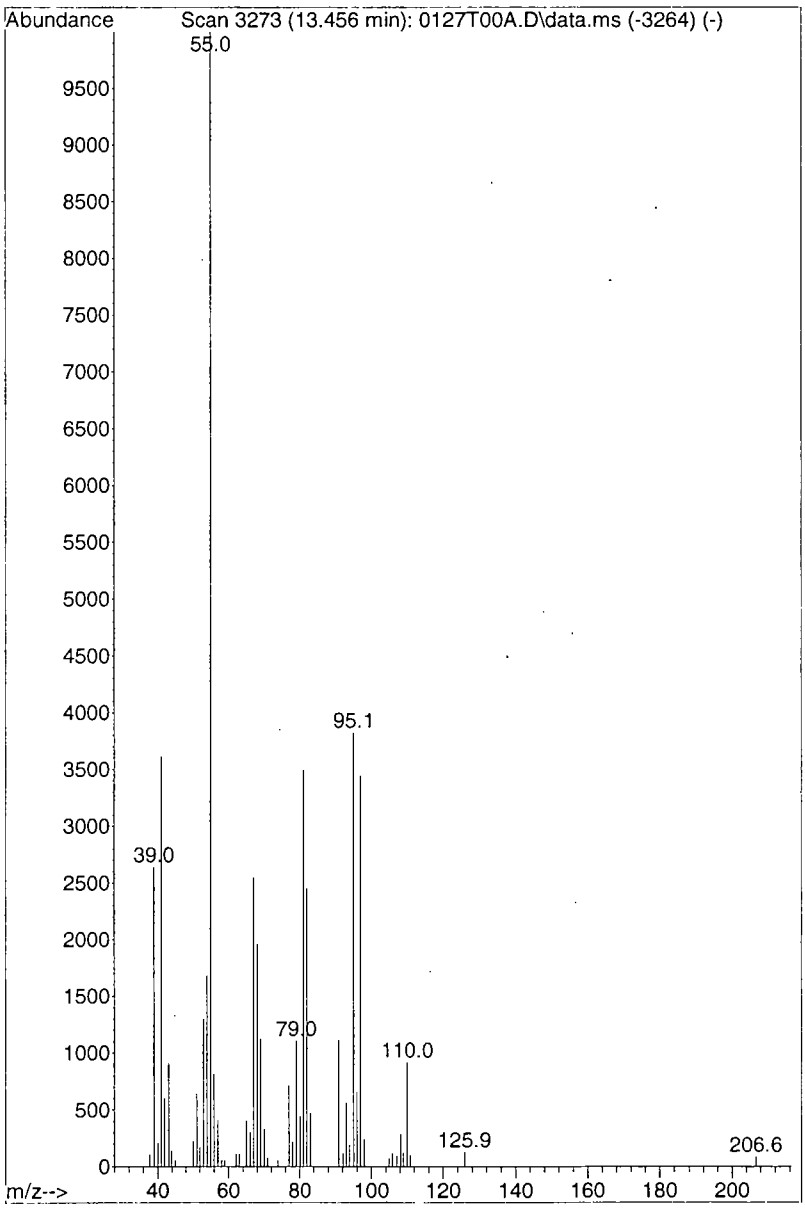
Quant Method : D:\METHODS\L_Screen.M
Quant Title : VOA Purge and Trap LOW LEVEL Aqueous Method

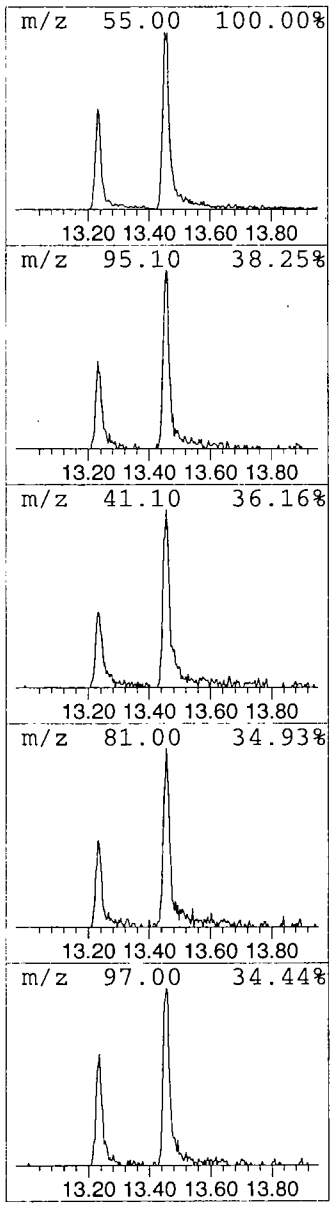
TIC Library : C:\Database\NIST05.L
TIC Integration Parameters: LSCINT.P

****
Peak Number 3 Error searching C:\Database... Concentration Rank 1

R.T.	EstConc	Area	Relative to ISTD	R.T.
13.456	6.50 ug/L	495908	1,4-DICHLOROBENZENE-d4	12.811

Hit# of 1	Tentative ID	MW	MolForm	CAS#	Qual
1	Error searching C:\Database\NIST...	0			0





Freedom_0006035_0116

Tentatively Identified Compound (LSC) summary

Data Path : D:\DATA\L01272014\
Data File : 0127T00A.D
Acq On : 27 Jan 2014 10:33
Operator : PZ PZ1-AG5975
Sample : 25uL PZSoln#1 to 100mL
Misc : PZSoln#1= 32.8mg MCHM std - 10mL MeOH
ALS Vial : 3 Sample Multiplier: 1

Quant Method : D:\METHODS\L_Screen.M
Quant Title : VOA Purge and Trap LOW LEVEL Aqueous Method

TIC Library : C:\Database\NIST05.L
TIC Integration Parameters: LSCINT.P

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Error searching...	9.396	0.9	ug/L	65621	2	10.341	385244	5.0
Error searching...	13.231	3.3	ug/L	250251	3	12.811	381754	5.0
Error searching...	13.456	6.5	ug/L	495908	3	12.811	381754	5.0

Freedom_0006035_0117

Quantitation Report (QT Reviewed)

Ex. 5 - Deliberative

Data Path : D:\DATA\L01272014\
Data File : 0127T00B.D
Acq On : 27 Jan 2014 12:38
Operator : PZ PZ1-AG5975
Sample : 1.5uL PZSoln#1 to 100mL
Misc : PZSoln#1= 32.8mg MCHM std - 10mL MeOH
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Jan 27 13:02:46 2014
Quant Method : D:\METHODS\L_Screen.M
Quant Title : VOA Purge and Trap LOW LEVEL Aqueous Method
QLast Update : Tue Jan 14 14:18:43 2014
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) 1,4-DIFLUOROBENZENE	6.529	114	114947	5.00	ug/L	0.00
37) CHLOROBENZENE-d5	10.341	117	113757	5.00	ug/L	0.00
56) 1,4-DICHLOROBENZENE-d4	12.808	152	51402	5.00	ug/L	0.00
System Monitoring Compounds						
23) 1,2-DICHLOROETHANE-d4	5.498	65	67848	6.07	ug/L	0.00
Spiked Amount 5.000	Range 76 - 114		Recovery	= 121.40%#		
41) TOLUENE-d8	8.620	98	135973	4.64	ug/L	0.00
Spiked Amount 5.000	Range 88 - 110		Recovery	= 92.80%		
59) 4-BROMOFLUOROBENZENE	11.649	95	47849	4.92	ug/L	0.00
Spiked Amount 5.000	Range 86 - 115		Recovery	= 98.40%		

Target Compounds Qvalue

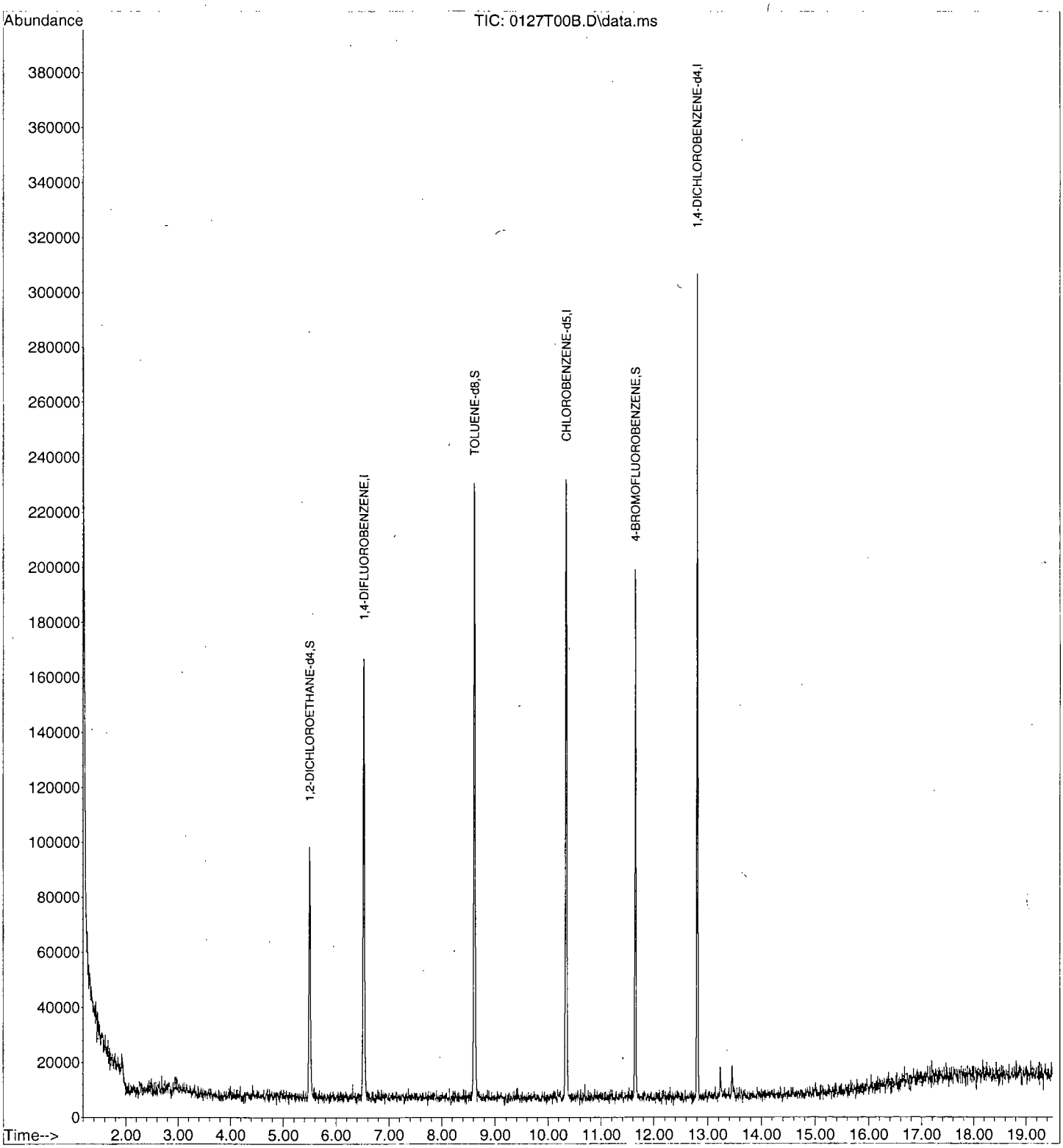
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Freedom_0006035_0118

Quantitation Report (QT Reviewed)

Data Path : D:\DATA\L01272014\
Data File : 0127T00B.D
Acq On : 27 Jan 2014 12:38
Operator : PZ PZ1-AG5975
Sample : 1.5uL PZSoln#1 to 100mL
Misc : PZSoln#1= 32.8mg MCHM std - 10mL MeOH
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Jan 27 13:02:46 2014
Quant Method : D:\METHODS\L_Screen.M
Quant Title : VOA Purge and Trap LOW LEVEL Aqueous Method
QLast Update : Tue Jan 14 14:18:43 2014
Response via : Initial Calibration



LSC Area Percent Report

Data Path : D:\DATA\L01272014\
Data File : 0127T00B.D
Acq On : 27 Jan 2014 12:38
Operator : PZ PZ1-AG5975
Sample : 1.5uL PZSoln#1 to 100mL
Misc : PZSoln#1= 32.8mg MCHM std - 10mL MeOH
ALS Vial : 4 Sample Multiplier: 1

Integration Parameters: NORMAL.P
Integrator: RTE
Smoothing : ON Filtering: 5
Sampling : 1 Min Area: 1 % of largest Peak
Start Thrs: 0.2 Max Peaks: 95
Stop Thrs : 0 Peak Location: TOP

If leading or trailing edge < 100 prefer < Baseline drop else tangent >
Peak separation: 5

Method : D:\METHODS\L_Screen.M
Title : VOA Purge and Trap LOW LEVEL Aqueous Method

Signal : TIC: 0127T00B.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	1.708	137	139	143	rBV	6953	5263	1.29%	0.223%
2	2.165	260	261	269	rVB3	4242	5131	1.26%	0.217%
3	2.221	274	276	280	rVB	4410	4223	1.04%	0.179%
4	2.296	295	296	304	rVB2	4715	5202	1.28%	0.220%
5	2.488	344	347	352	rBV	5740	4634	1.14%	0.196%
6	2.615	378	381	384	rBV2	4912	4274	1.05%	0.181%
7	2.686	397	400	404	rBV3	6951	4487	1.10%	0.190%
8	2.911	455	460	462	rBV2	5399	4722	1.16%	0.200%
9	3.503	613	618	620	rBV2	4349	4416	1.09%	0.187%
10	3.533	623	626	633	rVB2	3265	4502	1.11%	0.191%
11	3.631	649	652	659	rVB2	4342	5600	1.38%	0.237%
12	3.878	713	718	725	rBV2	3883	5794	1.42%	0.245%
13	3.998	745	750	753	rVB2	5225	4229	1.04%	0.179%
14	4.189	796	801	804	rVB	5741	4503	1.11%	0.191%
15	4.264	817	821	824	rBV	4517	4188	1.03%	0.177%
16	4.703	928	938	939	rBV2	4420	7197	1.77%	0.305%
17	4.868	977	982	984	rVB2	4867	5111	1.26%	0.216%
18	5.063	1030	1034	1038	rBV2	4327	4700	1.16%	0.199%
19	5.112	1044	1047	1053	rBV2	4706	6870	1.69%	0.291%
20	5.378	1115	1118	1126	rVB2	4189	4619	1.14%	0.195%
21	5.498	1138	1150	1165	rBV2	92813	190322	46.78%	8.054%
22	5.790	1224	1228	1233	rBV2	3809	4542	1.12%	0.192%
23	6.015	1283	1288	1293	rVB2	2939	4200	1.03%	0.178%
24	6.525	1412	1424	1441	rBV3	161165	302180	74.27%	12.788%
25	6.937	1530	1534	1536	rBV2	4314	4162	1.02%	0.176%
26	7.747	1747	1750	1753	rBV	5455	4705	1.16%	0.199%
27	8.148	1852	1857	1862	rVB	6309	6208	1.53%	0.263%
28	8.455	1934	1939	1942	rVB2	5230	4582	1.13%	0.194%
29	8.617	1968	1982	1995	rVB2	225340	406861	100.00%	17.218%
30	9.194	2133	2136	2140	rBV	4442	4116	1.01%	0.174%
31	9.258	2149	2153	2158	rBV2	4177	4387	1.08%	0.186%
32	9.895	2320	2323	2329	rBV2	4194	4381	1.08%	0.185%
33	10.086	2372	2374	2378	rBV2	4233	4391	1.08%	0.186%
34	10.176	2396	2398	2405	rBV	5077	5978	1.47%	0.253%
35	10.337	2429	2441	2455	rBV3	225653	383775	94.33%	16.241%
36	10.562	2500	2501	2509	rVB2	5465	5776	1.42%	0.244%
37	10.652	2522	2525	2528	rBV	4529	4254	1.05%	0.180%
38	11.391	2720	2722	2729	rVB	4990	5000	1.23%	0.212%
39	11.451	2729	2738	2740	rBV2	3978	5232	1.29%	0.221%

Freedom_0006035_0120

Data Path : D:\DATA\L01272014\
Data File : 0127T00B.D
Acq On : 27 Jan 2014 12:38
Operator : PZ PZ1-AG5975
Sample : 1.5uL PZSoln#1 to 100mL
Misc : PZSoln#1= 32.8mg MCHM std - 10mL MeOH
ALS Vial : 4 Sample Multiplier: 1

Integration Parameters: NORMAL.P
Integrator: RTE
Smoothing : ON Filtering: 5
Sampling : 1 Min Area: 1 % of largest Peak
Start Thrs: 0.2 Max Peaks: 95
Stop Thrs : 0 Peak Location: TOP

If leading or trailing edge < 100 prefer < Baseline drop else tangent >
Peak separation: 5

Method : D:\METHODS\L_Screen.M
Title : VOA Purge and Trap LOW LEVEL Aqueous Method

40	11.646	2779	2790	2802	rBV	192608	257668	63.33%	10.905%
41	12.159	2924	2927	2930	rBV2	5003	4131	1.02%	0.175%
42	12.182	2930	2933	2939	rVV	4689	5284	1.30%	0.224%
43	12.219	2941	2943	2947	rVB2	5092	4209	1.03%	0.178%
44	12.309	2965	2967	2973	rVB	5973	4555	1.12%	0.193%
45	12.808	3092	3100	3111	rBV2	299954	369854	90.90%	15.652%
46	13.231	3208	3213	3224	rVB3	11276	14089	3.46%	0.596%
47	13.452	3265	3272	3279	rBV5	12479	19686	4.84%	0.833%
48	13.587	3305	3308	3312	rBV	5050	4366	1.07%	0.185%
49	13.666	3324	3329	3332	rBV	4831	6060	1.49%	0.256%
50	13.928	3394	3399	3404	rVB2	4562	4581	1.13%	0.194%
51	14.003	3414	3419	3425	rVB	4813	6003	1.48%	0.254%
52	14.693	3597	3603	3608	rBV2	3116	4787	1.18%	0.203%
53	14.854	3641	3646	3653	rVB2	3974	5327	1.31%	0.225%
54	15.004	3679	3686	3688	rBV3	5735	6337	1.56%	0.268%
55	15.109	3711	3714	3717	rBV	5901	4364	1.07%	0.185%
56	15.139	3717	3722	3724	rVB3	5367	4330	1.06%	0.183%
57	15.278	3758	3759	3767	rVB2	3901	5224	1.28%	0.221%
58	15.394	3789	3790	3796	rVB2	5572	4682	1.15%	0.198%
59	15.728	3875	3879	3884	rBV3	3599	4575	1.12%	0.194%
60	15.964	3940	3942	3953	rVB2	6085	8848	2.17%	0.374%
61	16.028	3953	3959	3960	rBV2	3719	4276	1.05%	0.181%
62	16.099	3976	3978	3983	rVB3	4373	4532	1.11%	0.192%
63	16.223	4008	4011	4015	rBV2	4779	4412	1.08%	0.187%
64	16.290	4027	4029	4034	rVB3	5858	4927	1.21%	0.209%
65	16.373	4047	4051	4056	rBV4	6480	6368	1.57%	0.269%
66	16.425	4061	4065	4068	rBV2	6187	5474	1.35%	0.232%
67	16.448	4068	4071	4075	rBV3	5340	5879	1.44%	0.249%
68	16.556	4096	4100	4102	rVB	5071	4209	1.03%	0.178%
69	16.579	4102	4106	4110	rBV4	5848	5943	1.46%	0.252%
70	16.774	4156	4158	4163	rVB3	6135	7416	1.82%	0.314%
71	17.115	4246	4249	4254	rVB4	6755	5267	1.29%	0.223%
72	17.220	4274	4277	4281	rVB2	6023	6315	1.55%	0.267%
73	17.715	4405	4409	4415	rVB4	5391	8120	2.00%	0.344%
74	17.756	4415	4420	4426	rBV6	6588	9606	2.36%	0.407%
75	17.853	4443	4446	4449	rBV2	5213	5243	1.29%	0.222%
76	17.902	4454	4459	4462	rVV3	2964	4091	1.01%	0.173%
77	17.977	4476	4479	4484	rVB3	6153	5662	1.39%	0.240%
78	18.029	4490	4493	4496	rVB3	7430	6909	1.70%	0.292%
79	18.059	4498	4501	4502	rBV3	7161	5040	1.24%	0.213%
80	18.086	4506	4508	4514	rVV3	4175	4115	1.01%	0.174%
81	18.247	4549	4551	4554	rBV2	7194	4662	1.15%	0.197%

Freedom_0006035_0121

Data Path : D:\DATA\L01272014\
Data File : 0127T00B.D
Acq On : 27 Jan 2014 12:38
Operator : PZ PZ1-AG5975
Sample : 1.5uL PZSoln#1 to 100mL
Misc : PZSoln#1= 32.8mg MCHM std - 10mL MeOH
ALS Vial : 4 Sample Multiplier: 1

Integration Parameters: NORMAL.P
Integrator: RTE
Smoothing : ON Filtering: 5
Sampling : 1 Min Area: 1 % of largest Peak
Start Thrs: 0.2 Max Peaks: 95
Stop Thrs : 0 Peak Location: TOP

If leading or trailing edge < 100 prefer < Baseline drop else tangent >
Peak separation: 5

Method : D:\METHODS\L_Screen.M
Title : VOA Purge and Trap LOW LEVEL Aqueous Method

82	18.558	4632	4634	4636	rBV2	7282	4322	1.06%	0.183%
83	18.610	4647	4648	4654	rBV3	3922	4342	1.07%	0.184%
84	18.944	4733	4737	4738	rBV2	5646	4985	1.23%	0.211%
85	19.087	4772	4775	4780	rBV3	6898	5305	1.30%	0.225%
86	19.195	4800	4804	4808	rBV3	4482	4293	1.06%	0.182%
87	19.353	4839	4846	4848	rBV5	8033	12538	3.08%	0.531%
88	19.473	4874	4878	4880	rBV3	7104	5015	1.23%	0.212%

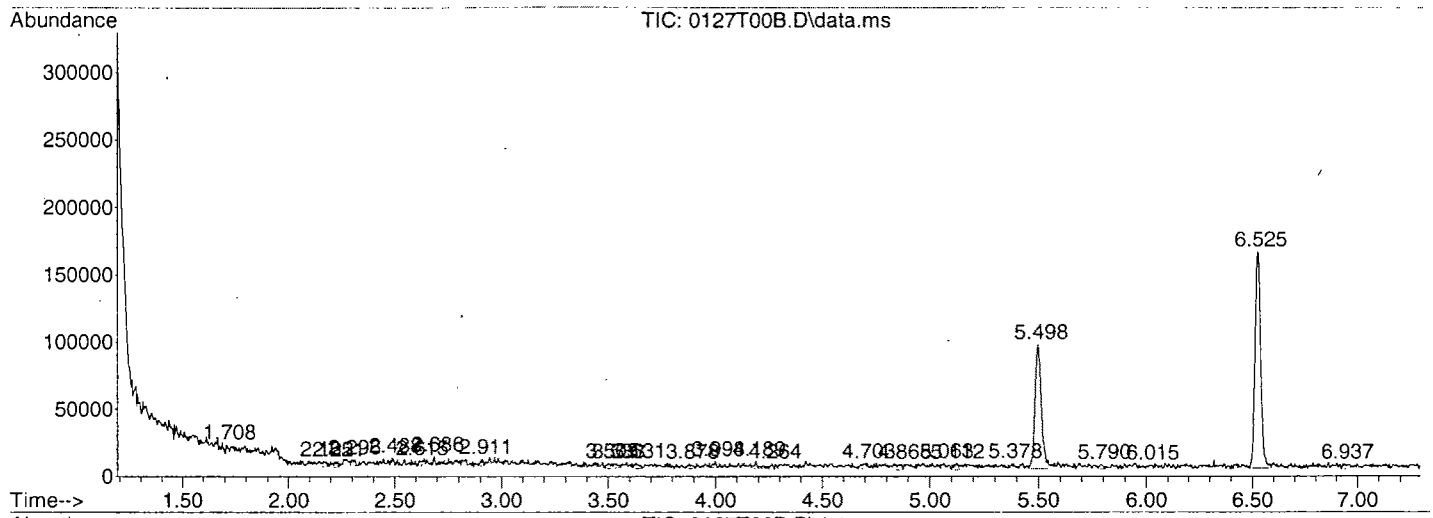
Sum of corrected areas: 2362943

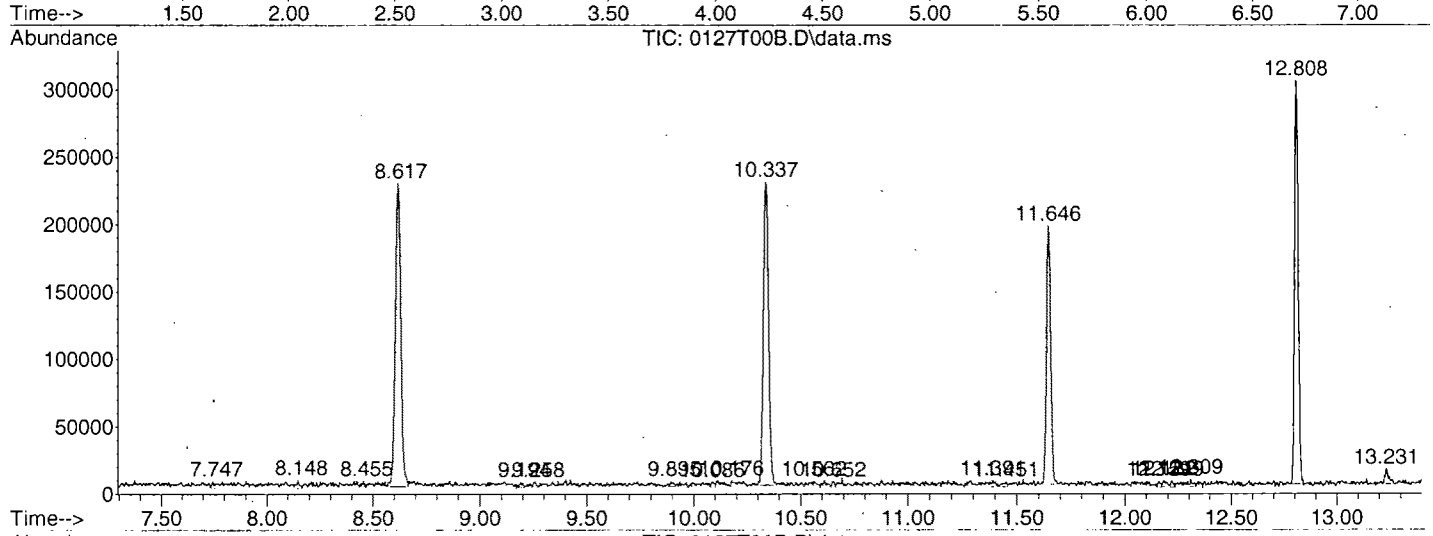
Freedom_0006035_0122

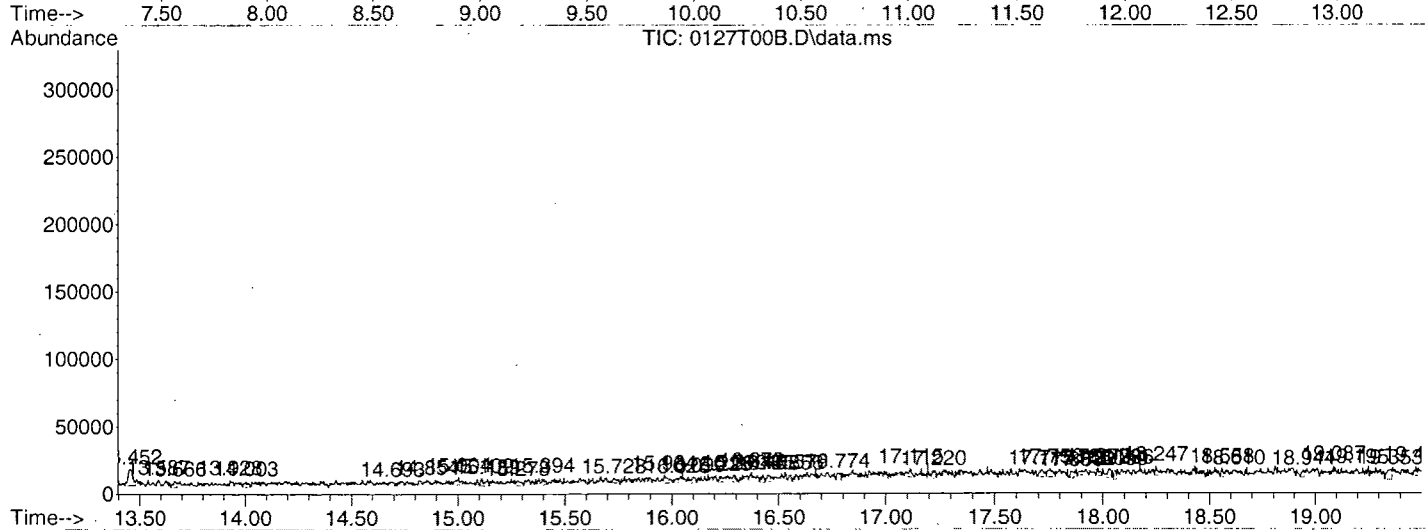
Data Path : D:\DATA\L01272014\
Data File : 0127T00B.D
Acq On : 27 Jan 2014 12:38
Operator : PZ PZ1-AG5975
Sample : 1.5uL PZSoln#1 to 100mL
Misc : PZSoln#1= 32.8mg MCHM std - 10mL MeOH
ALS Vial : 4 Sample Multiplier: 1

Quant Method : D:\METHODS\L_Screen.M
Quant Title : VOA Purge and Trap LOW LEVEL Aqueous Method

TIC Library : C:\Database\NIST05.L
TIC Integration Parameters: LSCINT.P





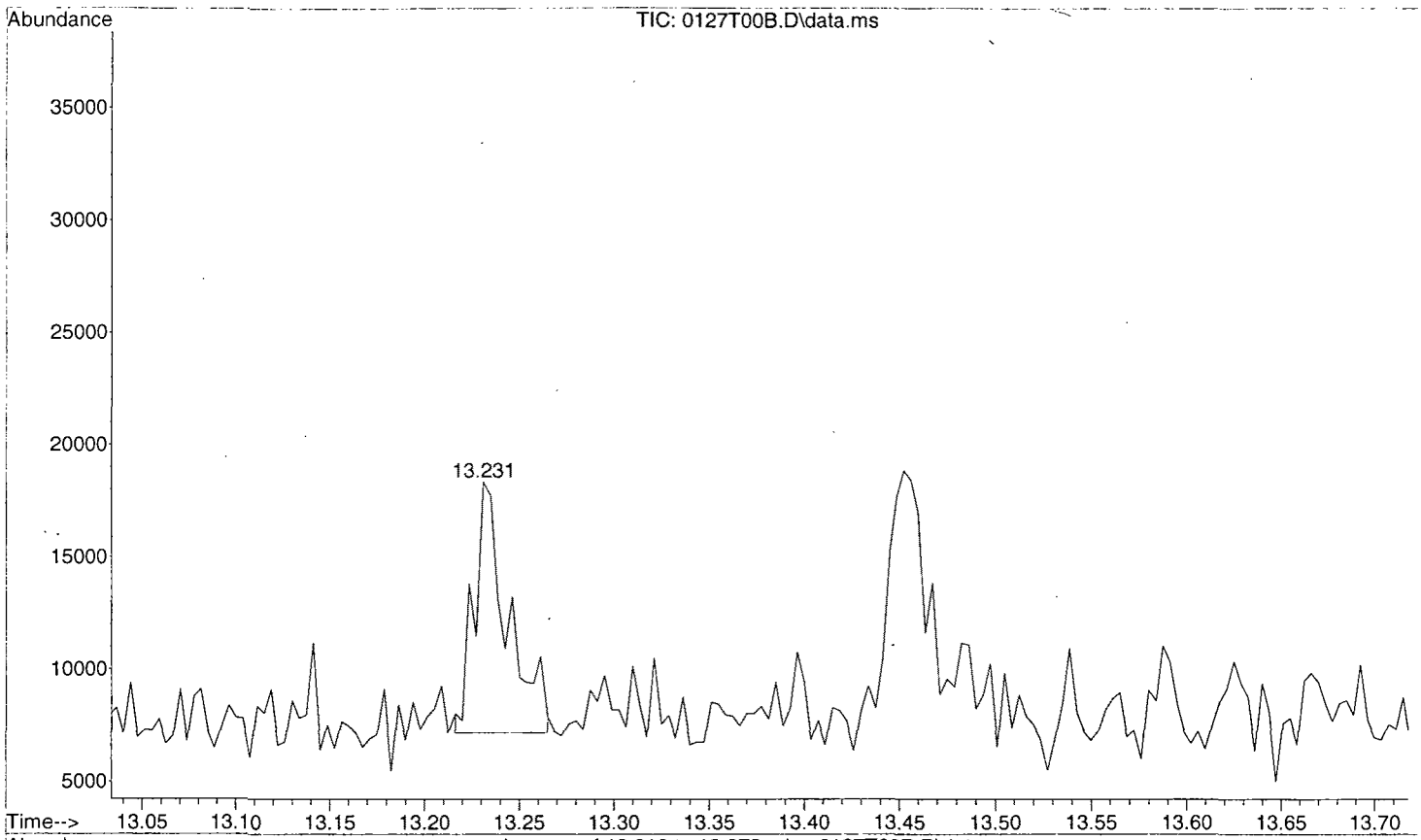


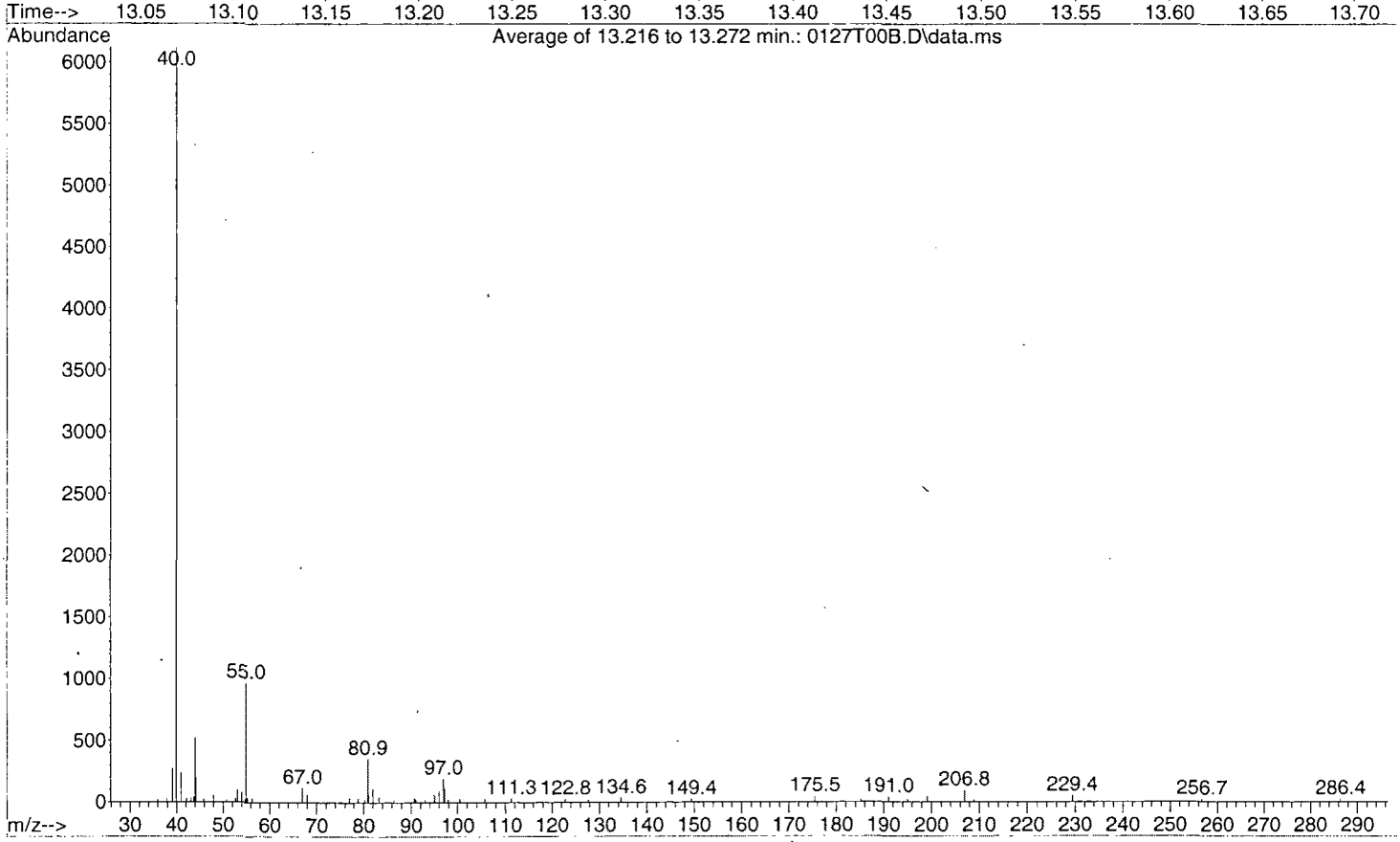
Tentatively Identified Compound (LSC) summary

```
Data Path : D:\DATA\L01272014\\
Data File : 0127T00B.D
Acq On    : 27 Jan 2014  12:388
Operator  : PZ  PZ1-AG59755
Sample    : 1.5uL PZSoln#1 to 100mLL
Misc      : PZSoln#1= 32.8mg MCHM std - 10mL MeOHH
ALS Vial  : 4   Sample Multiplier: 11

Quant Method : D:\METHODS\L_Screen.MM
Quant Title  : VOA Purge and Trap LOW LEVEL Aqueous Methodd

TIC Library   : C:\Database\NIST05.LL
TIC Integration Parameters: LSCINT.PP

                                                  |--Internal Standard---|
TIC Top Hit name      RT  EstConc Units Response |#    RT     Resp  Conc|
-----------------------------------------------------------------------------
```

No Library Search Compounds Detected
****

File :D:\DATA\L01272014\0127T00B.D
Operator : PZ PZ1-AG5975
Acquired : 27 Jan 2014 12:38 using AcqMethod TRACEVOC.M
Instrument : PZ1-AG5975
Sample Name: 1.5uL PZSoln#1 to 100mL
Misc Info : PZSoln#1= 32.8mg MCHM std - 10mL MeOH
Vial Number: 4





Area Percent Report

Data Path : D:\DATA\L01272014\
Data File : 0127T00B.D
Acq On : 27 Jan 2014 12:38
Operator : PZ PZ1-AG5975
Sample : 1.5uL PZSoln#1 to 100mL
Misc : PZSoln#1= 32.8mg MCHM std - 10mL MeOH
ALS Vial : 4 Sample Multiplier: 1

Integration Parameters: NORMAL.P
Integrator: RTE
Smoothing : ON Filtering: 5
Sampling : 1 Min Area: 500 Area counts
Start Thrs: 0.1 Max Peaks: 95
Stop Thrs : 0.1 Peak Location: TOP

If leading or trailing edge < 100 prefer < Baseline drop else tangent >
Peak separation: 5

Method : D:\METHODS\L_Screen.M
Title : VOA Purge and Trap LOW LEVEL Aqueous Method

Signal : TIC: 0127T00B.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	13.231	3209	3213	3222	rM 3	11151	13458	100.00%	100.000%

Sum of corrected areas: 13458

L_Screen.M Mon Jan 27 13:04:45 2014

METHOD CONTROL PARAMETERS

5975

Method Information For: C:\MSDCHEM\1\METHODS\TRACEVOC_ext.M
Method Sections To Run:

```
  ( ) Save Copy of Method With Data
  ( ) Instrument Control Pre-Run Cmd/Macro  =
  ( ) Data Analysis      Pre-Run Cmd/Macro  =
  (X) Data Acquisition
  ( ) Data Analysis
  ( ) Instrument Control Post-Run Cmd/Macro =
  ( ) Data Analysis      Post-Run Cmd/Macro =
```

Method Comments:
ESC VOA Method edited 9/8/2005 after both installations and installation of new column

END OF METHOD CONTROL PARAMETERS

Freedom_0006035_0127

INSTRUMENT CONTROL PARAMETERS: PZ1-AG5975

C:\MSDCHEM\1\METHODS\TRACEVOC_ext.M

Control Information

Sample Inlet : GC
Injection Source : Manual
Injection Location: Front
Mass Spectrometer : Enabled

6890 GC METHOD

OVEN
Initial temp: 30 'C (On)
Initial time: 3.00 min
Maximum temp: 250 'C
Equilibration time: 0.50 min
Ramps:

#	Rate	Final temp	Final time
1	10.00	100	0.00
2	20.00	230	13.00
3	0.0(Off)		

Post temp: 0 'C
Post time: 0.00 min
Run time: 29.50 min

FRONT INLET (SPLIT/SPLITLESS)
Mode: Split
Initial temp: 200 'C (On)
Pressure: 17.31 psi (On)
Split ratio: 30:1
Split flow: 26.6 mL/min
Total flow: 30.1 mL/min
Gas saver: On
Saver flow: 20.0 mL/min
Saver time: 3.00 min
Gas type: Helium

BACK INLET (UNKNOWN)

COLUMN 1
Capillary Column
Model Number: J&W 121-1524
DB-VRX
Max temperature: 260 'C
Nominal length: 20.0 m
Nominal diameter: 180.00 um
Nominal film thickness: 1.00 um
Mode: constant flow
Initial flow: 0.9 mL/min
Nominal init pressure: 17.48 psi
Average velocity: 42 cm/sec
Inlet: Front Inlet
Outlet: MSD
Outlet pressure: vacuum

COLUMN 2
(not installed)

FRONT DETECTOR (NO DET)

BACK DETECTOR (NO DET)

SIGNAL 1
Data rate: 20 Hz
Type: test plot
Save Data: Off
Zero: 0.0 (Off)
Range: 0
Fast Peaks: Off
Attenuation: 0

SIGNAL 2
Data rate: 20 Hz
Type: test plot
Save Data: Off
Zero: 0.0 (Off)
Range: 0
Fast Peaks: Off
Attenuation: 0

Freedom_0006035_0128

COLUMN COMP 1
(No Detectors Installed)

COLUMN COMP 2
(No Detectors Installed)

THERMAL AUX 2
Use: MSD Transfer Line Heater
Description:
Initial temp: 250 'C (On)
Initial time: 0.00 min

#	Rate	Final temp	Final time
1	0.0(Off)		

POST RUN
Post Time: 0.00 min

TIME TABLE

Time	Specifier	Parameter & Setpoint

GC Injector

Front Injector:
Injector not configured, use these parameters if it becomes configured

Sample Washes	2
Sample Pumps	4
Injection Volume	1.00 microliters
Syringe Size	10.0 microliters
PostInj Solvent A Washes	2
PostInj Solvent B Washes	2
Viscosity Delay	0 seconds
Plunger Speed	Fast

Back Injector:
No parameters specified

Column 1 Inventory Number : VRX001
Column 2 Inventory Number :

MS ACQUISITION PARAMETERS

General Information
------- -----------

Tune File : bfb.u
Acquistion Mode : Scan

MS Information
-- -----------

Solvent Delay : 1.10 min

EM Absolute : False
EM Offset : 106
Resulting EM Voltage : 1776.5

[Scan Parameters]

Low Mass : 35.0
High Mass : 350.0
Threshold : 300
Sample # : 2 A/D Samples 4
Plot 2 low mass : 50.0
Plot 2 high mass : 550.0

[MSZones]

MS Quad	: 150 C	maximum 200 C
MS Source	: 230 C	maximum 250 C

END OF MS ACQUISITION PARAMETERS

END OF INSTRUMENT CONTROL PARAMETERS

Freedom_0006035_0130

Compound List Report

Method Path : C:\MSDCHEM\1\METHODS\
Method File : TRACEVOC_ext.M
Title :
Last Update : Mon Nov 20 15:48:49 1995
Response Via : Initial Calibration

Total Cpnds : 4

PK#	Compound Name	QIon	Exp_RT	Rel_RT	Cal	#Qual	A/H	ID
1	mass 284	284	7.280	1.000	A	0	A	B
2	mass 283	284	7.280	1.000	A	0	A	B
3	mass 247	247	7.280	1.000	A	0	A	B
4	mass 212	212	7.280	1.000	A	0	A	B

Cal A = Average L = Linear LO = Linear w/origin Q = Quad QO = Quad w/origin
#Qual = number of qualifiers
A/H = Area or Height
ID R = R.T. B = R.T. & Q Q = Qvalue L = Largest A = All

Freedom_0006035_0131

```
Starting sequence Mon Jan 27 09:21:23 2014

  Instrument Name: O8-5973N
    Sequence File: C:\msdchem\1\sequence\TEST_SCREEN.S
          Comment: Mid Level Screening
         Operator: PZ     O8-5973N
        Data Path: D:\DATA\2014\S01272014\
      Method Path: D:\METHODS\

    Line Type        Vial  DataFile  Method    Sample Name
    ---------------------------------------------------------------------
      1) COMMENT: 'SAMPLE VOLUME = 5ML PURGED; IS/SS = 20PPB'
      2) COMMENT: 'STANDARDS'
      3) COMMENT: 'SEE ANALYSIS LOG FOR MORE INFORMATION'

      4) Sample         1  0127BFB   MID_5ML   50ng BFB, 10uL-50mL

      5) Sample         2  0127BFB2  MID_5ML   50ng BFB, 10uL-50mL

      6) Sample         3  0127P00B  MID_5ML   250ppb uL PPH#1 to 100mL
      7) PAUSE: ' '

    Sequence paused Mon Jan 27 10:43:07 2014

      D:\DATA\2014\S01272014\ Quality Log 2014 Jan 27 0921.LOG
      D:\DATA\2014\S01272014\Sequence Log 2014 Jan 27 0921.LOG

Resuming sequence Mon Jan 27 12:49:32 2014

  Instrument Name: O8-5973N
    Sequence File: C:\msdchem\1\sequence\TEST_SCREEN.S
          Comment: Mid Level Screening
         Operator: PZ     O8-5973N
        Data Path: D:\DATA\2014\S01272014\
      Method Path: D:\METHODS\

    Line Type        Vial  DataFile  Method    Sample Name
    ---------------------------------------------------------------------

      8) Sample         4  500ppb uL PPH#1 to 50mL
          Datafile         0127P00C
          Method           MID_5ML_EXT
      9) COMMENT: 'SOME FOAMING OBSERVED DURING PURGE; FOLLOW W/'

     10) Blank          5  0127RIN1  MID_5ML   Blank

     11) Blank          6  0127RIN2  MID_5ML   Blank

     12) Blank          7  0127RIN3  MID_5ML   Blank
     13) PAUSE: ' '

    Sequence paused Mon Jan 27 14:57:52 2014

      D:\DATA\2014\S01272014\ Quality Log 2014 Jan 27 1249.LOG
      D:\DATA\2014\S01272014\Sequence Log 2014 Jan 27 1249.LOG

Resuming sequence Mon Jan 27 15:15:13 2014

  Instrument Name: O8-5973N
    Sequence File: C:\msdchem\1\sequence\TEST_SCREEN.S
          Comment: Mid Level Screening
```


Freedom_0006035_0132

Operator: PZ 08-5973N
Data Path: D:\DATA\2014\S01272014\
Method Path: D:\METHODS\

Line	Type	Vial	DataFile	Method	Sample Name

14) COMMAND: 'PRINTSEQLOG'

Executing Command: PRINTSEQLOG

Freedom_0006035_0133

Analysis Log

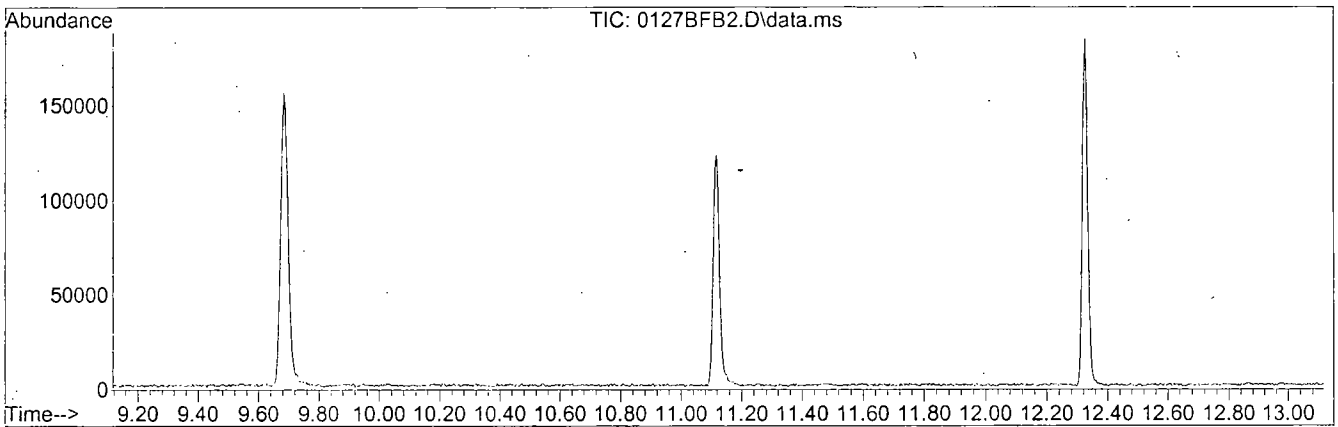
Date	Filename	Lab ID	Sample Info
27 Jan 2014 9:31	0127BFB.D	50ng BFB, 10uL-50mL	
27 Jan 2014 9:58	0127BFB2.D	50ng BFB, 10uL-50mL	
27 Jan 2014 10:25	0127P00B.D	250ppb uL PPH#1 to 100mL	PPH#1 = JG prep of 10
27 Jan 2014 13:03	0127P00C.D	500ppb uL PPH#1 to 50mL	PPH#1 = JG prep of 10
27 Jan 2014 13:45	0127RIN1.D	Blank	
27 Jan 2014 14:12	0127RIN2.D	Blank	
27 Jan 2014 14:40	0127RIN3.D	Blank	

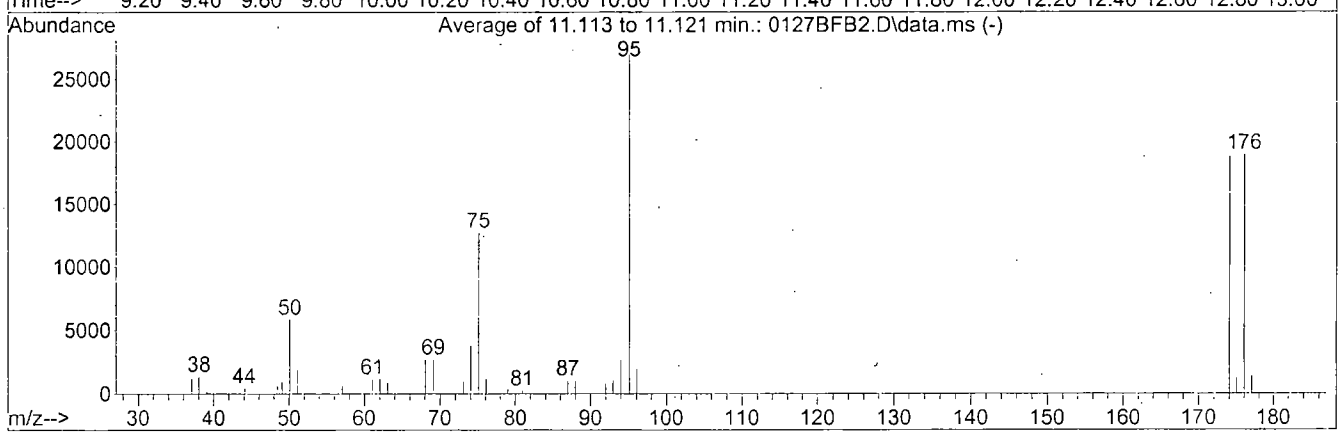
Freedom_0006035_0134

Data Path : D:\Data\2014\S01272014\
Data File : 0127BFB2.D
Acq On : 27 Jan 2014 9:58
Operator : PZ 08-5973N
Sample : 50ng BFB, 10uL-50mL
Misc :
ALS Vial : 2 Sample Multiplier: 1

Integration File: CLOSE.P

Method : D:\Methods\MID_SCREEN.M
Title : VOA Purge and Trap MID LEVEL Aqueous Method
Last Update : Tue Jan 14 13:41:50 2014





AutoFind: Scans 2707, 2708, 2709; Background Corrected with Scan 2698

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	21.7	5858	PASS
75	95	30	60	47.3	12759	PASS
95	95	100	100	100.0	26984	PASS
96	95	5	9	7.4	2003	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	120	69.6	18786	PASS
175	174	5	9	6.7	1253	PASS
176	174	95	101	100.9	18960	PASS
177	176	5	9	7.4	1405	PASS

Ex. 5 - Deliberative

Ex. 5 - Deliberative

Quantitation Report (QT Reviewed)

Ex. 5 - Deliberative

Data Path : D:\Data\2014\S01272014\
Data File : 0127P00B.D
Acq On : 27 Jan 2014 10:25
Operator : PZ 08-5973N
Sample : 250~~ppb~~ uL PPH#1 to 100mL
Misc : PPH#1 = JG prep of 100uL crude to 100mL 30%Me
ALS Vial : 3 Sample Multiplier: 1

Ex. 5 - Deliberative

Quant Time: Jan 27 10:53:26 2014
Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method
QLast Update : Tue Jan 14 13:41:50 2014
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) 1,4-DIFLUOROBENZENE	5.882	114	200872	20.00	ug/L	0.00
37) CHLOROBENZENE-D5	9.684	117	169109	20.00	ug/L	0.00
56) 1,4-DICHLOROBENZENE-D4	12.322	152	70076	20.00	ug/L	0.00
System Monitoring Compounds						
23) 1,2-DICHLOROETHANE-D4	4.849	65	79233	21.14	ug/L	0.00
Spiked Amount 20.000	Range 76 - 114		Recovery = 105.70%			
41) TOLUENE-D8	7.959	98	241561	21.03	ug/L	0.00
Spiked Amount 20.000	Range 88 - 110		Recovery = 105.15%			
59) 4-BROMOFLUOROBENZENE	11.117	95	78195	19.39	ug/L	0.00
Spiked Amount 20.000	Range 86 - 115		Recovery = 96.95%			
Target Compounds						Qvalue
18) 2-BUTANONE	3.914	43	8460	5.54	ug/L #	57

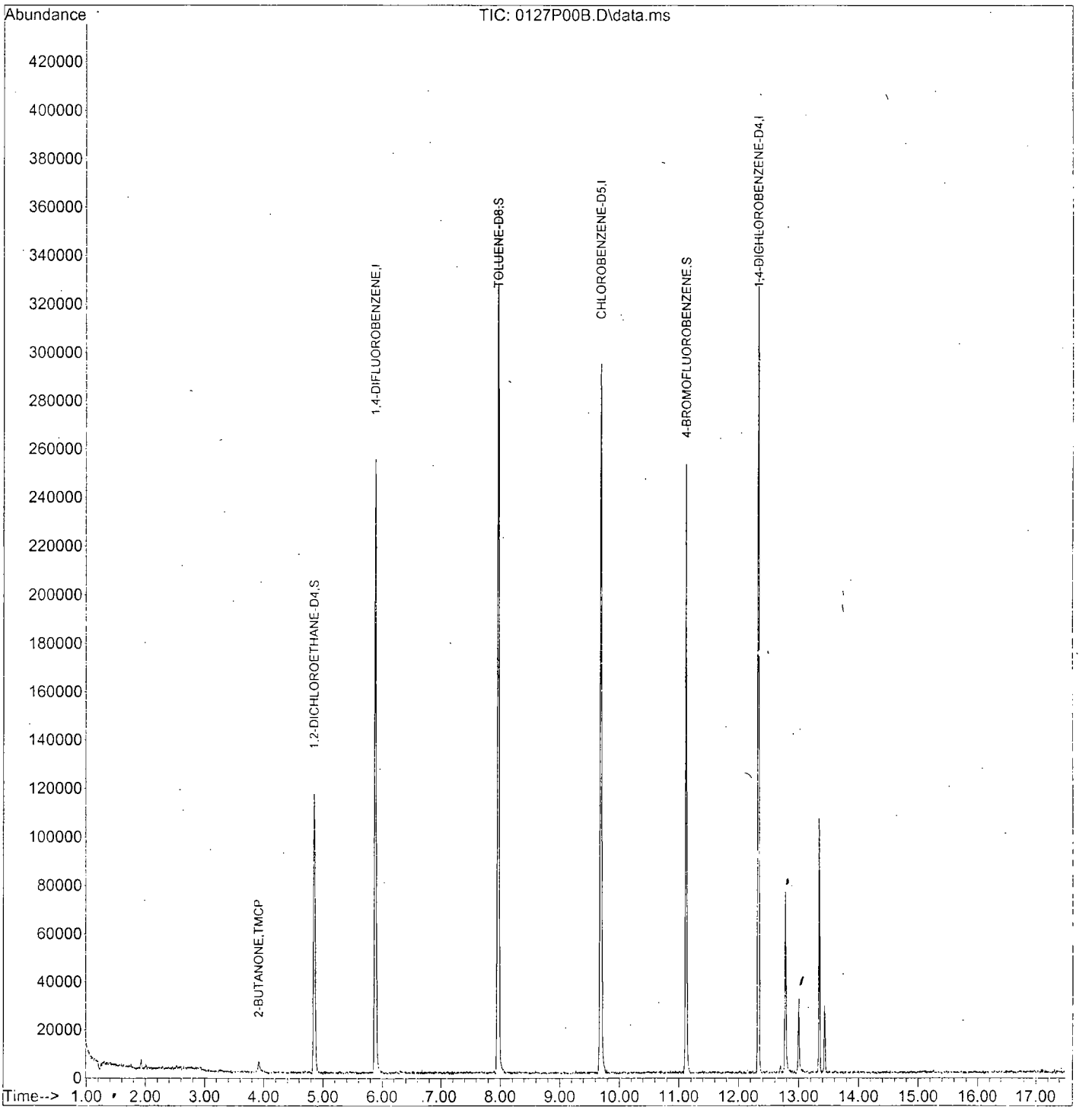
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Freedom_0006035_0137

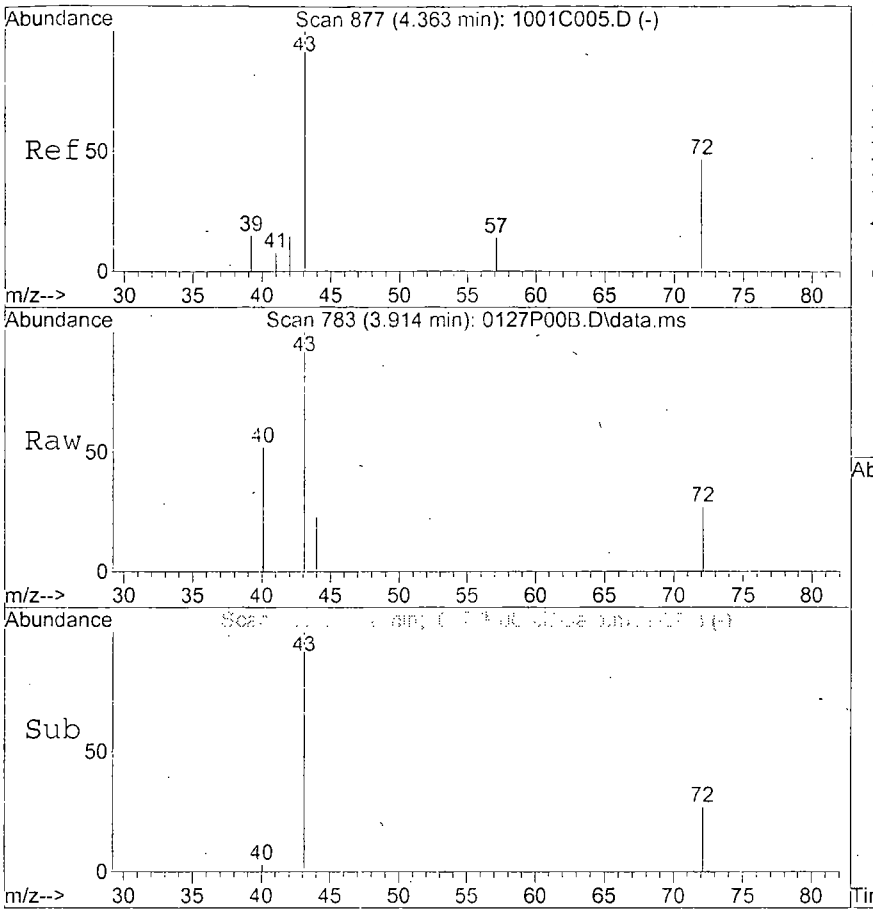
Quantitation Report (QT Reviewed)

Data Path : D:\Data\2014\S01272014\
Data File : 0127P00B.D
Acq On : 27 Jan 2014 10:25
Operator : PZ 08-5973N
Sample : 250ppb uL PPH#1 to 100mL
Misc : PPH#1 = JG prep of 100uL crude to 100mL 30%Me
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Jan 27 10:53:26 2014
Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method
QLast Update : Tue Jan 14 13:41:50 2014
Response via : Initial Calibration



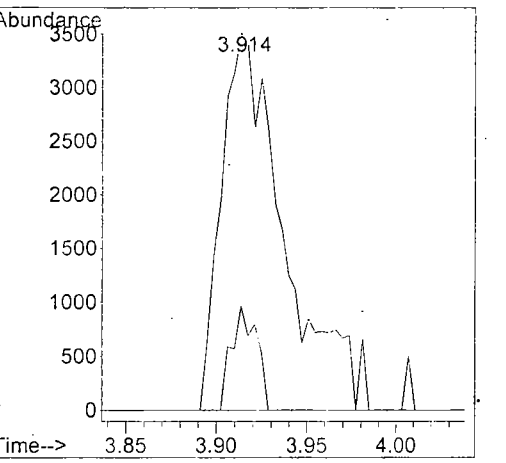
Freedom_0006035_0138



#18
2-BUTANONE
Concen: 5.54 ug/L
RT: 3.914 min Scan# 783
Delta R.T. 0.011 min
Lab File: 0127P00B.D
Acq: 27 Jan 2014 10:25

Tgt Ion: 43 Resp: 8460

Ion	Ratio	Lower	Upper
43	100		
72	0.0	19.6	29.4#
57	0.0	5.5	8.3#



Freedom_0006035_0139

LSC Area Percent Report

Data Path : D:\Data\2014\S01272014\
Data File : 0127P00B.D
Acq On : 27 Jan 2014 10:25
Operator : PZ O8-5973N
Sample : 250ppb uL PPH#1 to 100mL
Misc : PPH#1 = JG prep of 100uL crude to 100mL 30%Me
ALS Vial : 3 Sample Multiplier: 1

Integration Parameters: CLOSE.P
Integrator: RTE
Smoothing : ON Filtering: 5
Sampling : 1 Min Area: 100 Area counts
Start Thrs: 0.2 Max Peaks: 20
Stop Thrs : 0 Peak Location: TOP

If leading or trailing edge < 100 prefer < Baseline drop else tangent >
Peak separation: 5

Method : D:\Methods\MID_SCREEN.M
Title : VOA Purge and Trap MID LEVEL Aqueous Method

Signal : TIC: 0127P00B.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	4.763	1005	1010	1014	rBV	1468	1591	0.25%	0.054%
2	4.849	1024	1033	1047	rBV2	116334	216813	34.10%	7.306%
3	5.882	1299	1309	1324	rBV2	253488	463057	72.83%	15.604%
4	6.106	1367	1369	1376	rBV2	1215	1420	0.22%	0.048%
5	6.159	1380	1383	1386	rBV	1701	1366	0.21%	0.046%
6	6.301	1418	1421	1423	rBV	1800	1411	0.22%	0.048%
7	7.959	1853	1864	1881	rBV	361007	635773	100.00%	21.424%
8	8.314	1955	1959	1964	rBV	1906	1858	0.29%	0.063%
9	9.684	2314	2325	2348	rBV	293679	521668	82.05%	17.579%
10	10.002	2407	2410	2414	rBV2	1291	1379	0.22%	0.046%
11	11.114	2699	2707	2730	rBV	252116	353929	55.67%	11.926%
12	12.154	2979	2985	2987	rBV	2047	2350	0.37%	0.079%
13	12.322	3023	3030	3045	rBV	358009	460353	72.41%	15.513%
14	12.693	3126	3129	3136	rVB2	3468	3281	0.52%	0.111%
15	12.775	3143	3151	3166	rBV3	75230	101047	15.89%	3.405%
16	13.000	3202	3211	3222	rBV2	30765	43406	6.83%	1.463%
17	13.340	3296	3302	3310	rVB3	105602	122405	19.25%	4.125%
18	13.430	3320	3326	3334	rVB3	28022	31336	4.93%	1.056%
19	16.514	4147	4150	4154	rBV	1540	1499	0.24%	0.051%
20	17.019	4282	4285	4287	rBV	1943	1650	0.26%	0.056%

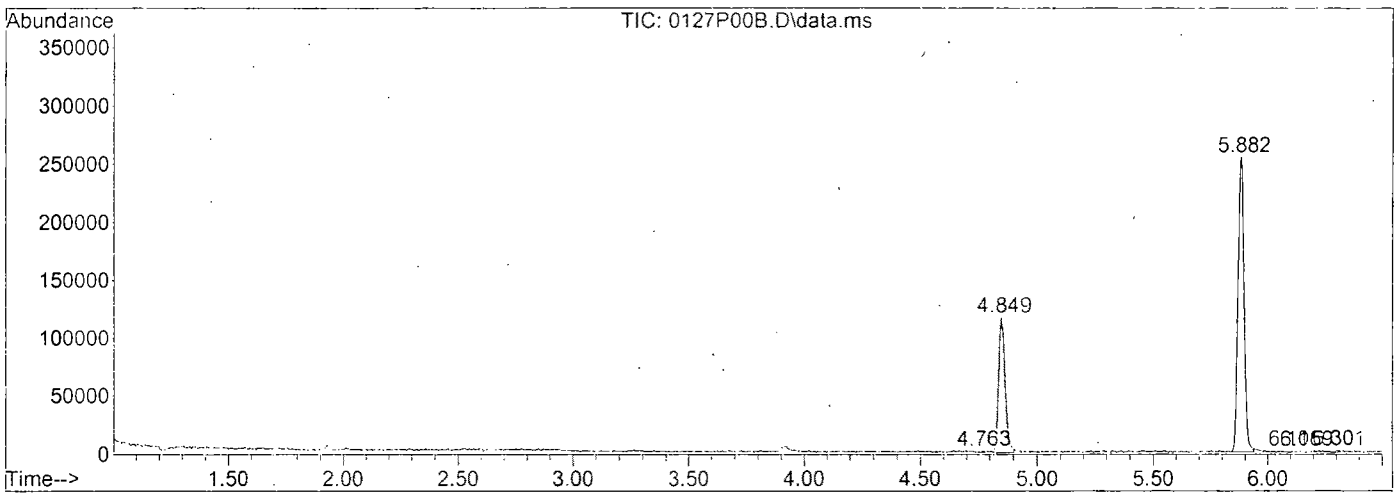
Sum of corrected areas: 2967592

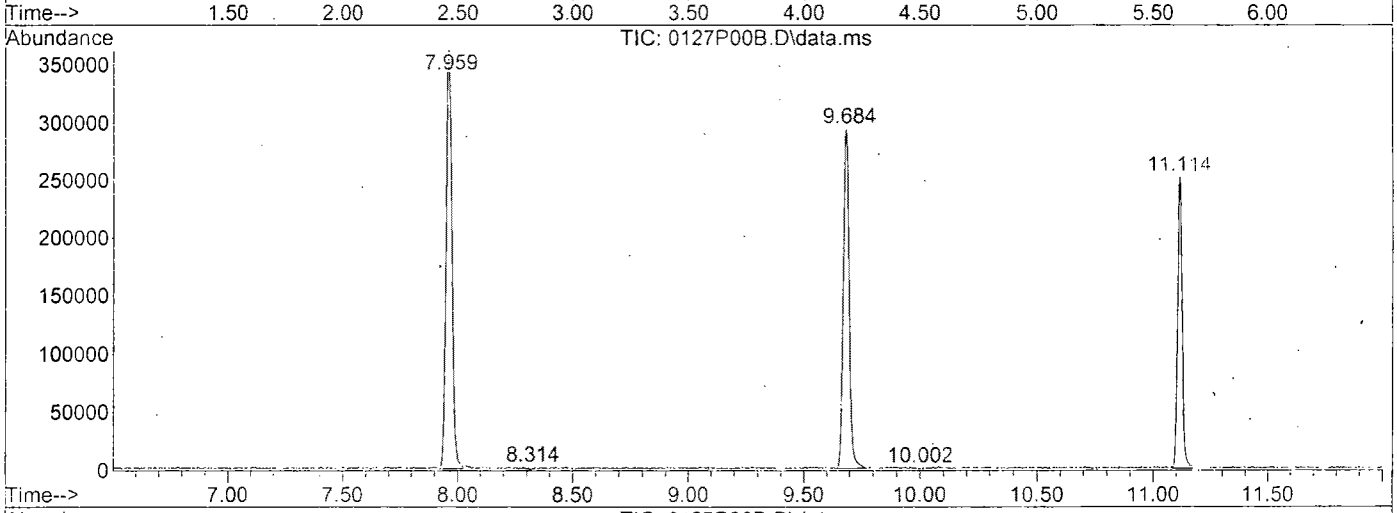
LSC Report - Integrated Chromatogram

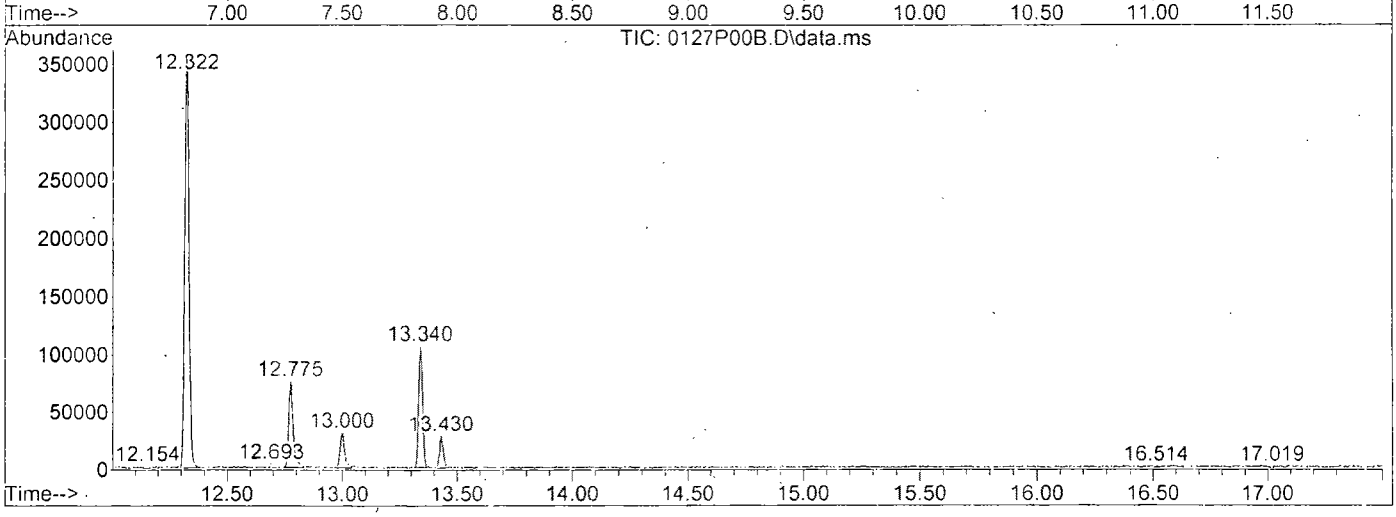
Data Path : D:\Data\2014\S01272014\
Data File : 0127P00B.D
Acq On : 27 Jan 2014 10:25
Operator : PZ 08-5973N
Sample : 250ppb uL PPH#1 to 100mL
Misc : PPH#1 = JG prep of 100uL crude to 100mL 30%Me
ALS Vial : 3 Sample Multiplier: 1

Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method

TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P







Library Search Compound Report

Data Path : D:\Data\2014\S01272014\
Data File : 0127P00B.D
Acq On : 27 Jan 2014 10:25
Operator : PZ 08-5973N
Sample : 250ppb uL PPH#1 to 100mL
Misc : PPH#1 = JG prep of 100uL crude to 100mL 30%Me
ALS Vial : 3 Sample Multiplier: 1

Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method

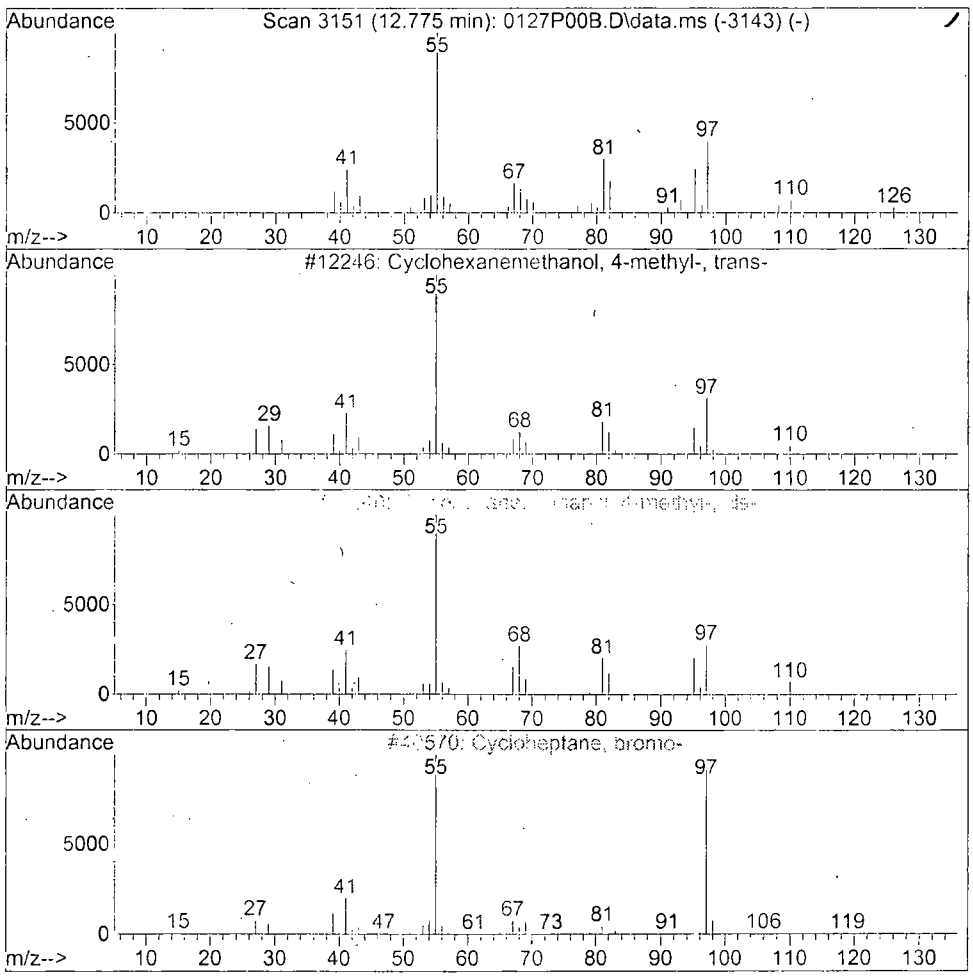
TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P

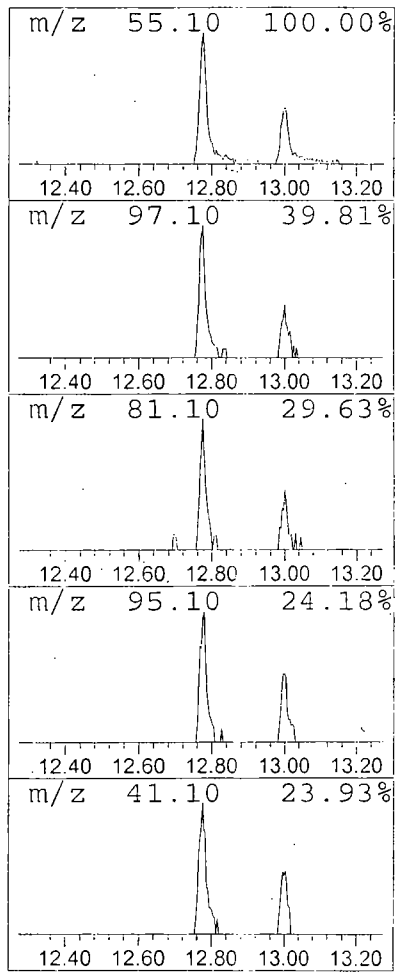
****

Peak Number 1 Cyclohexanemethanol, 4-meth... Concentration Rank 2

R.T.	EstConc	Area	Relative to ISTD	R.T.
12.775	4.39 ug/L	101047	1,4-DICHLOROBENZENE-D4	12.322

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Cyclohexanemethanol, 4-methyl-, ...	128	C8H16O	003937-49-3	72
2	Cyclohexanemethanol, 4-methyl-, ...	128	C8H16O	003937-48-2	59
3	Cycloheptane, bromo-	176	C7H13Br	002404-35-5	47
4	1,5-Hexadiene, 2,4-dimethyl-	110	C8H14	068701-71-3	43
5	(5Z)-3-Methyl-1,5-heptadiene	110	C8H14	050763-51-4	43





Freedom_0006035_0142

Data Path : D:\Data\2014\S01272014\
Data File : 0127P00B.D
Acq On : 27 Jan 2014 10:25
Operator : PZ 08-5973N
Sample : 250ppb uL PPH#1 to 100mL
Misc : PPH#1 = JG prep of 100uL crude to 100mL 30%Me
ALS Vial : 3 Sample Multiplier: 1

Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method

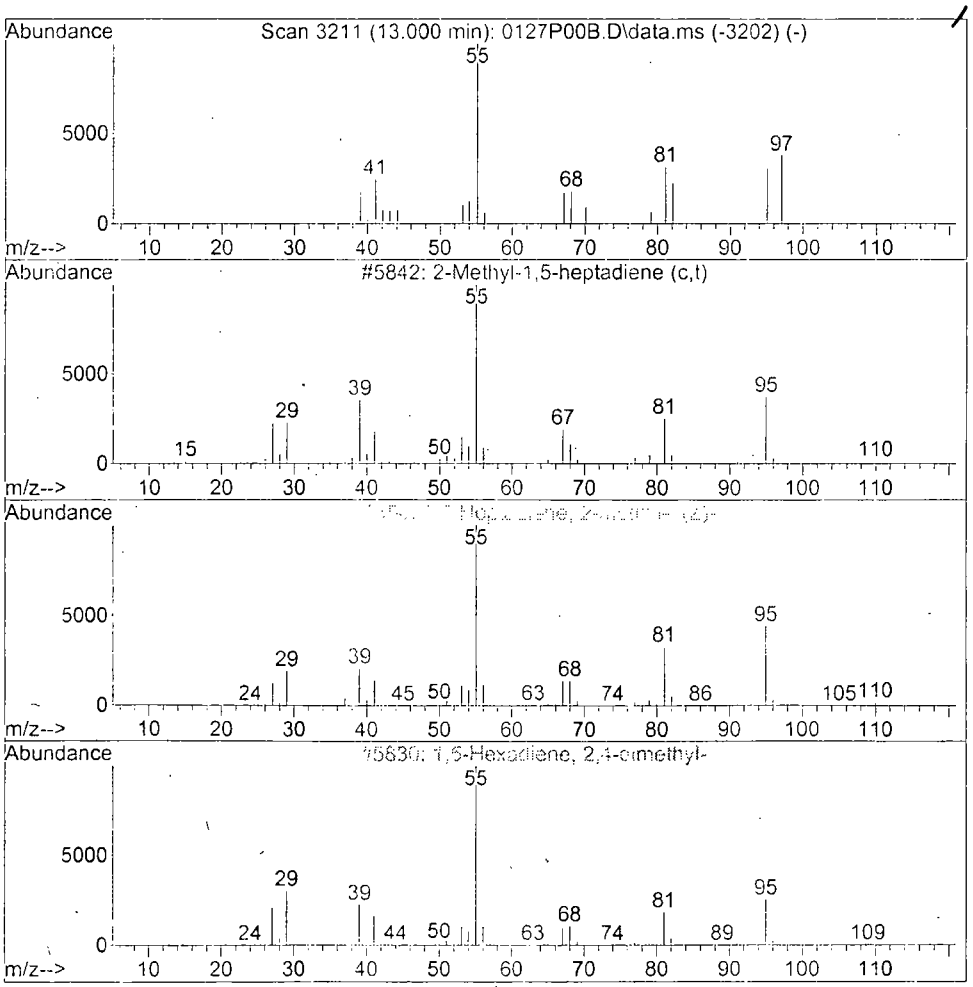
TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P

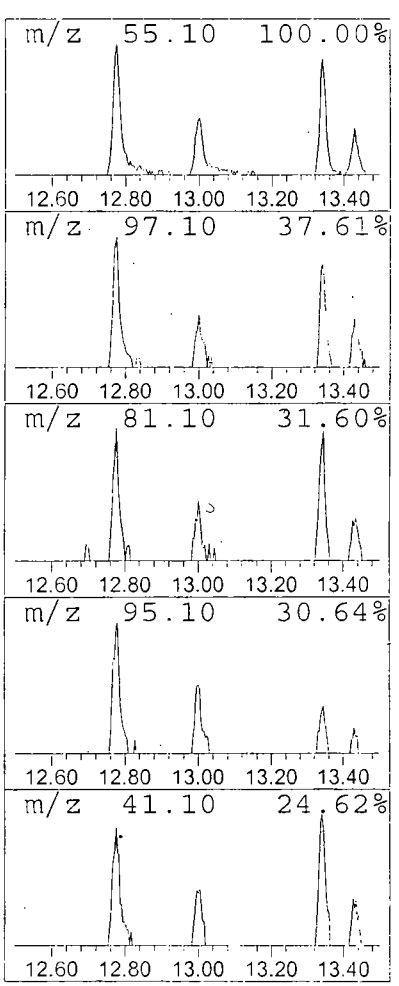
****

Peak Number 2 2-Methyl-1,5-heptadiene (c,t) Concentration Rank 3

R.T.	EstConc	Area	Relative to ISTD	R.T.
13.000	1.89 ug/L	43406	1,4-DICHLOROBENZENE-D4	12.322

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	2-Methyl-1,5-heptadiene (c,t)	110	C8H14	006766-54-7	50
2	1,5-Heptadiene, 2-methyl-, (Z)-	110	C8H14	041044-64-8	50
3	1,5-Hexadiene, 2,4-dimethyl-	110	C8H14	068701-71-3	50
4	1,5-Heptadiene, 2-methyl-, (E)-	110	C8H14	041044-63-7	50
5	(5Z)-3-Methyl-1,5-heptadiene	110	C8H14	050763-51-4	42





Freedom_0006035_0143

Library Search Compound Report

Data Path : D:\Data\2014\S01272014\
Data File : 0127P00B.D
Acq On : 27 Jan 2014 10:25
Operator : PZ O8-5973N
Sample : 250ppb uL PPH#1 to 100mL
Misc : PPH#1 = JG prep of 100uL crude to 100mL 30%Me
ALS Vial : 3 Sample Multiplier: 1

Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method

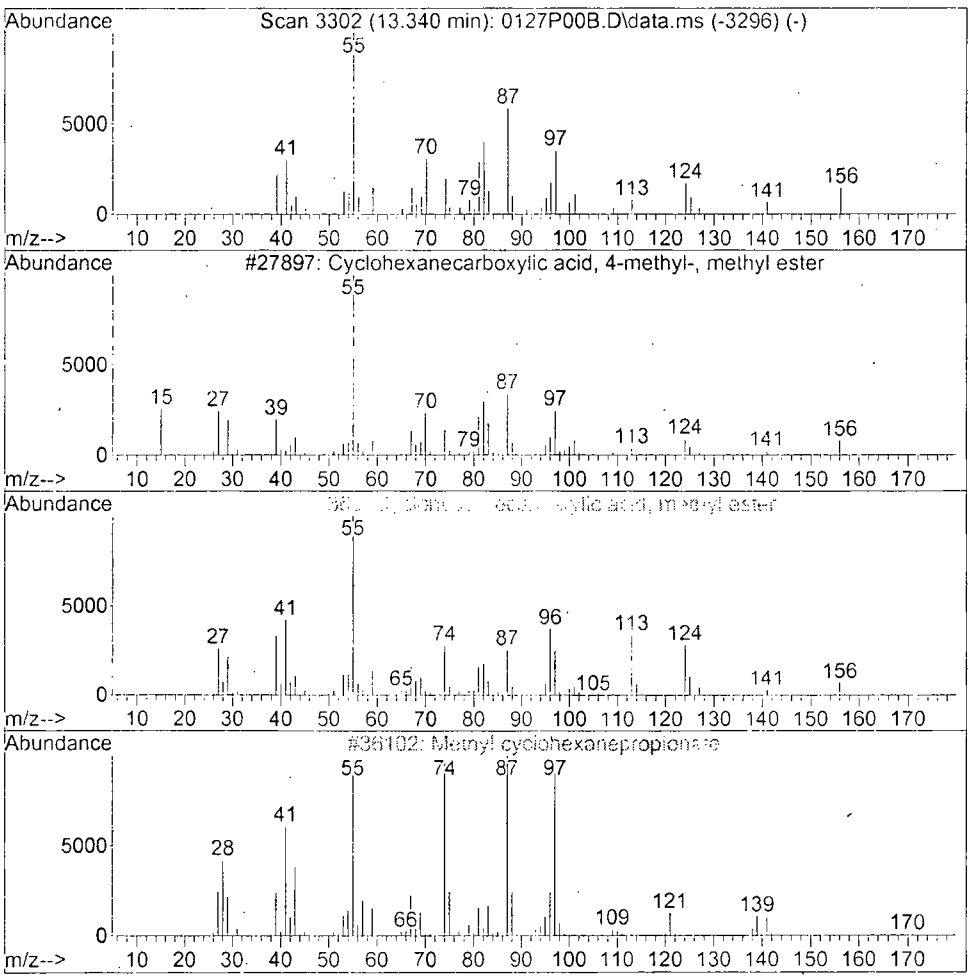
TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P

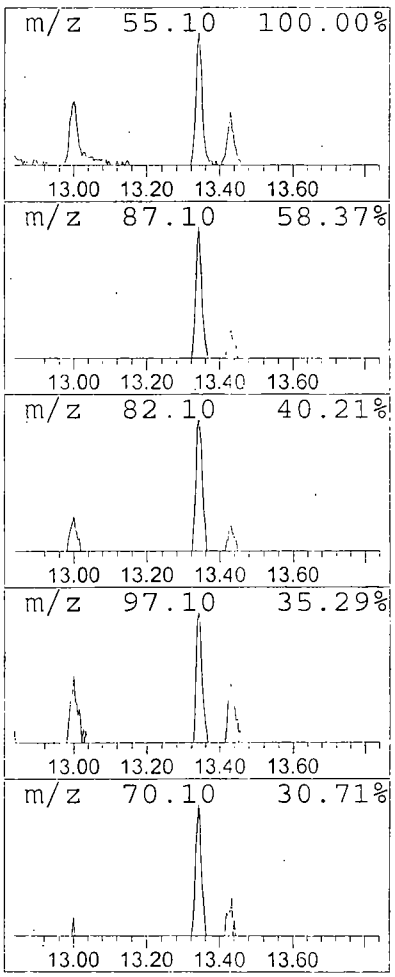
****

Peak Number 3 Cyclohexanecarboxylic acid,... Concentration Rank 1

R.T.	EstConc	Area	Relative to ISTD	R.T.
13.340	5.32 ug/L	122405	1,4-DICHLOROBENZENE-D4	12.322

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Cyclohexanecarboxylic acid, 4-me...	156	C9H16O2	051181-40-9	94
2	Cycloheptanecarboxylic acid, met...	156	C9H16O2	060433-00-3	22
3	Methyl cyclohexanepropionate	170	C10H18O2	020681-51-0	22
4	3-Octenoic acid, methyl ester, (E)-	156	C9H16O2	035234-16-3	17
5	Cycloheptanemethanol	128	C8H16O	004448-75-3	17





Freedom_0006035_0144

Library Search Compound Report

Data Path : D:\Data\2014\S01272014\
Data File : 0127P00B.D
Acq On : 27 Jan 2014 10:25
Operator : PZ 08-5973N
Sample : 250ppb uL PPH#1 to 100mL
Misc : PPH#1 = JG prep of 100uL crude to 100mL 30%Me
ALS Vial : 3 Sample Multiplier: 1

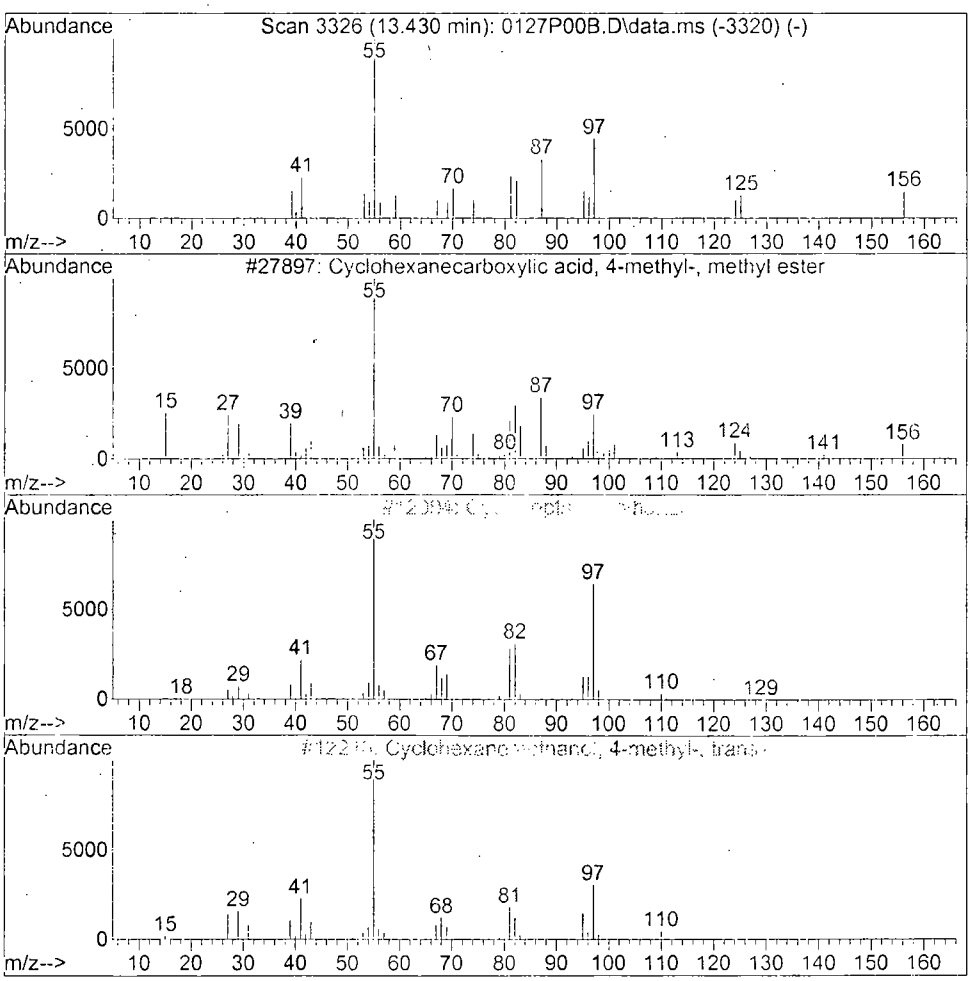
Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method

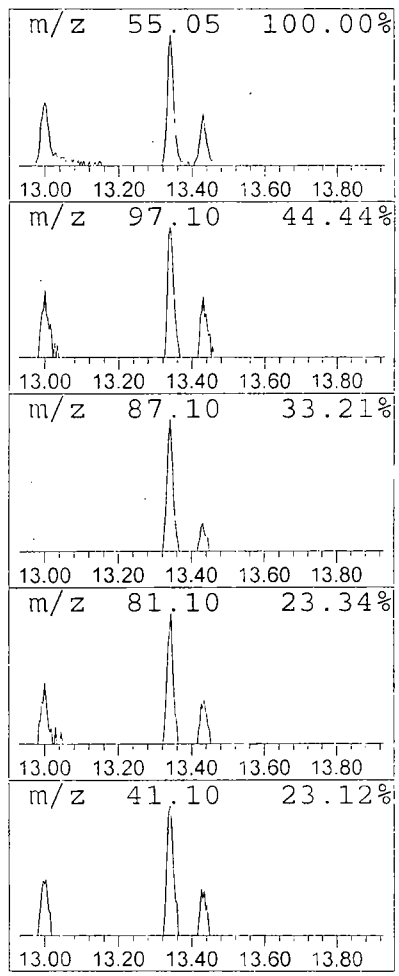
TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P

****
Peak Number 4 Cyclohexanecarboxylic acid,... Concentration Rank 4

R.T.	EstConc	Area	Relative to ISTD	R.T.
13.430	1.36 ug/L	31336	1,4-DICHLOROBENZENE-D4	12.322

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Cyclohexanecarboxylic acid, 4-me...	156	C9H16O2	051181-40-9	50
2	Cycloheptanemethanol	128	C8H16O	004448-75-3	38
3	Cyclohexanemethanol, 4-methyl-, ...	128	C8H16O	003937-49-3	32
4	3-Chloropropionic acid, undec-2-...	260	C14H25ClO2	1000299-21-9	25
5	Cycloheptanecarboxylic acid, met...	156	C9H16O2	060433-00-3	23





Freedom_0006035_0145

Tentatively Identified Compound (LSC) summary

Data Path : D:\Data\2014\S01272014\
Data File : 0127P00B.D
Acq On : 27 Jan 2014 10:25
Operator : PZ O8-5973N
Sample : 250ppb uL PPH#1 to 100mL
Misc : PPH#1 = JG prep of 100uL crude to 100mL 30%Me
ALS Vial : 3 Sample Multiplier: 1

Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method

TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
Cyclohexanemeth...	12.775	4.4	ug/L	101047	3	12.322	460353	20.0
2-Methyl-1,5-he...	13.000	1.9	ug/L	43406	3	12.322	460353	20.0
Cyclohexanecarb...	13.340	5.3	ug/L	122405	3	12.322	460353	20.0
Cyclohexanecarb...	13.430	1.4	ug/L	31336	3	12.322	460353	20.0

Quantitation Report (QT Reviewed)

Ex. 5 - Deliberative

Ex. 5 - Deliberative

Ex. 5 - Deliberative

Data Path : D:\Data\2014\S01272014\
Data File : 0127P00C.D
Acq On : 27 Jan 2014 13:03
Operator : PZ 08-5973N
Sample : 500~~ppb~~ uL PPH#1 to 50mL
Misc : PPH#1 = JG prep of 100uL crude to 100mL 30%Me
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Jan 27 14:23:15 2014
Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method
QLast Update : Tue Jan 14 13:41:50 2014
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) 1,4-DIFLUOROBENZENE	5.875	114	206426	20.00	ug/L	0.00
37) CHLOROBENZENE-D5	9.684	117	174433	20.00	ug/L	0.00
56) 1,4-DICHLOROBENZENE-D4	12.322	152	74247	20.00	ug/L	0.00
System Monitoring Compounds						
23) 1,2-DICHLOROETHANE-D4	4.842	65	80968	21.02	ug/L	0.00
Spiked Amount 20.000	Range 76 - 114		Recovery = 105.10%			
41) TOLUENE-D8	7.959	98	250752	21.17	ug/L	0.00
Spiked Amount 20.000	Range 88 - 110		Recovery = 105.85%			
59) 4-BROMOFLUOROBENZENE	11.114	95	83336	19.51	ug/L	0.00
Spiked Amount 20.000	Range 86 - 115		Recovery = 97.55%			
Target Compounds						Qvalue
8) ACETONE	2.016	43	3873	3.45	ug/L #	44
15) METHYL-TERT-BUTYL ETHER	3.251	73	4377	0.56	ug/L #	55
18) 2-BUTANONE	3.899	43	36651	23.35	ug/L	93

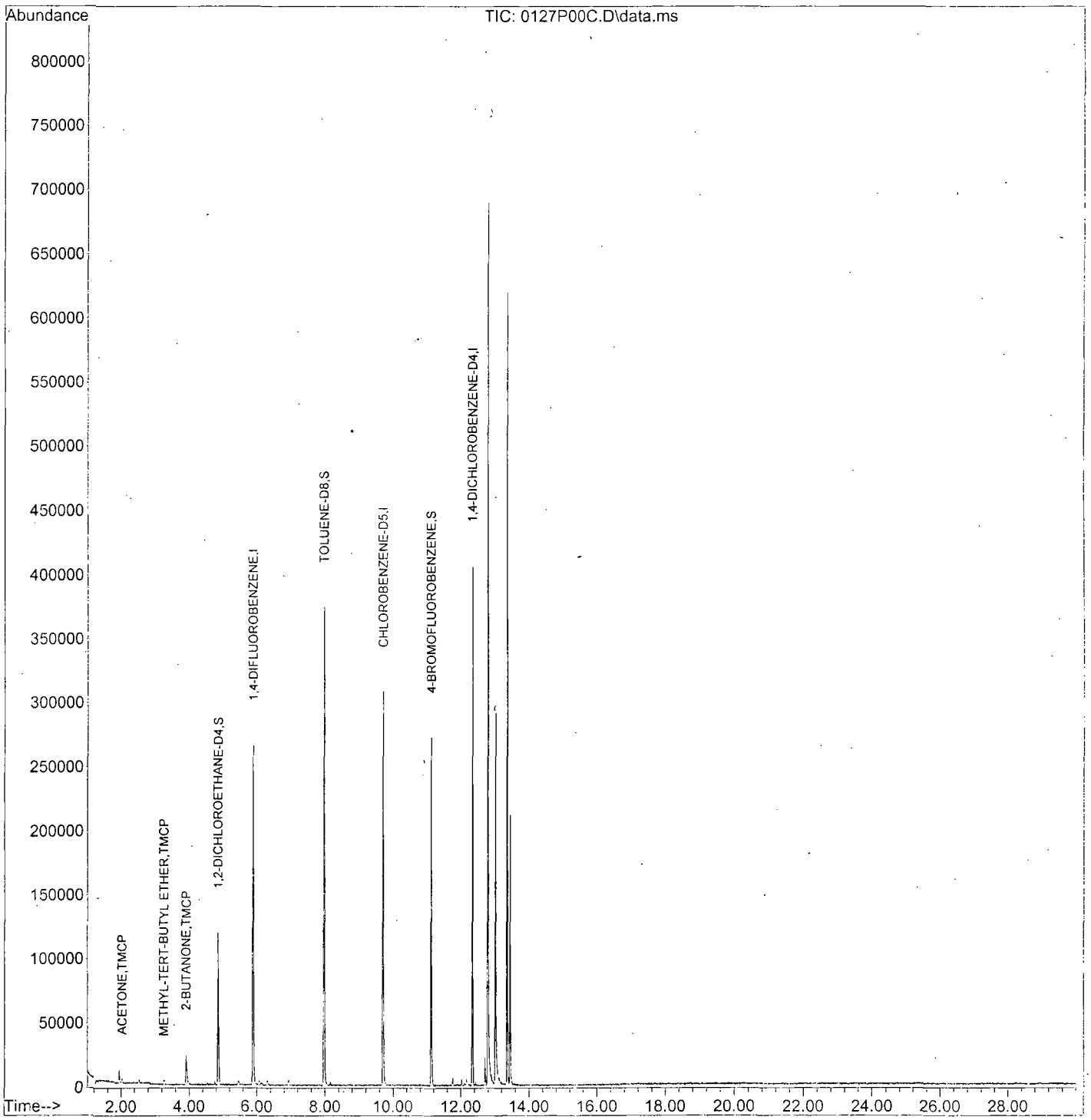
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Freedom_0006035_0147

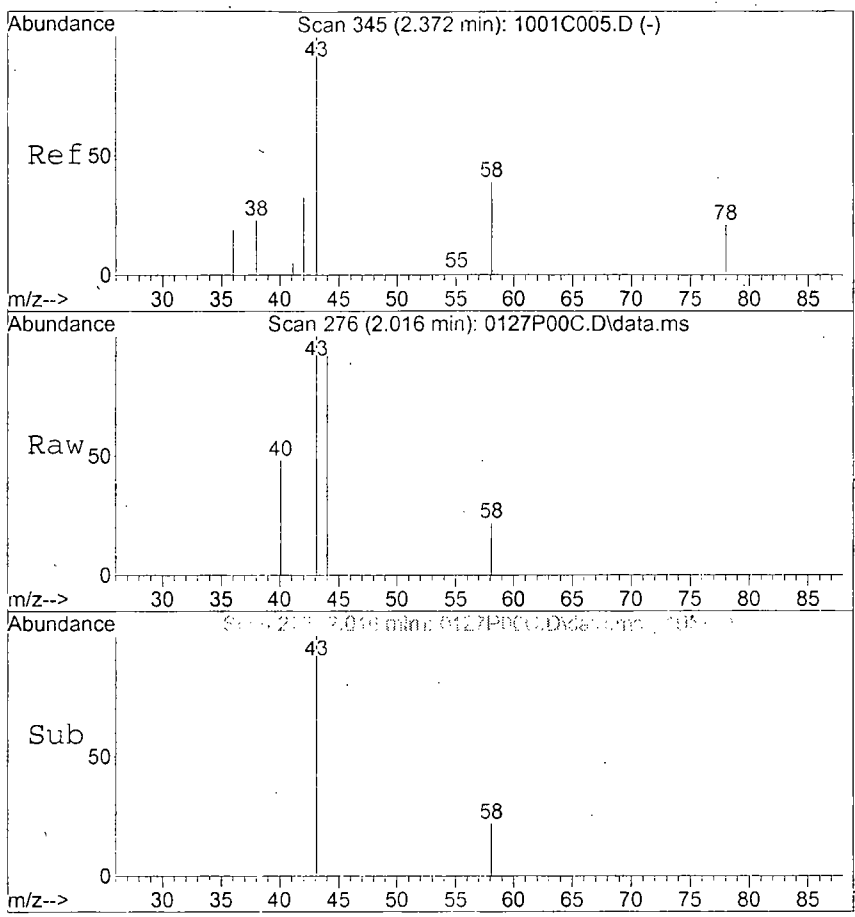
Quantitation Report (QT Reviewed)

Data Path : D:\Data\2014\S01272014\
Data File : 0127P00C.D
Acq On : 27 Jan 2014 13:03
Operator : PZ 08-5973N
Sample : 500ppb uL PPH#1 to 50mL
Misc : PPH#1 = JG prep of 100uL crude to 100mL 30%Me
ALS Vial : 4 Sample Multiplier: 1

Quant Time: Jan 27 14:23:15 2014
Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method
QLast Update : Tue Jan 14 13:41:50 2014
Response via : Initial Calibration



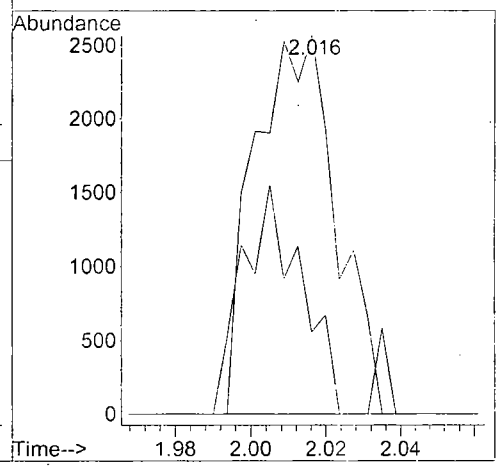
Freedom_0006035_0148

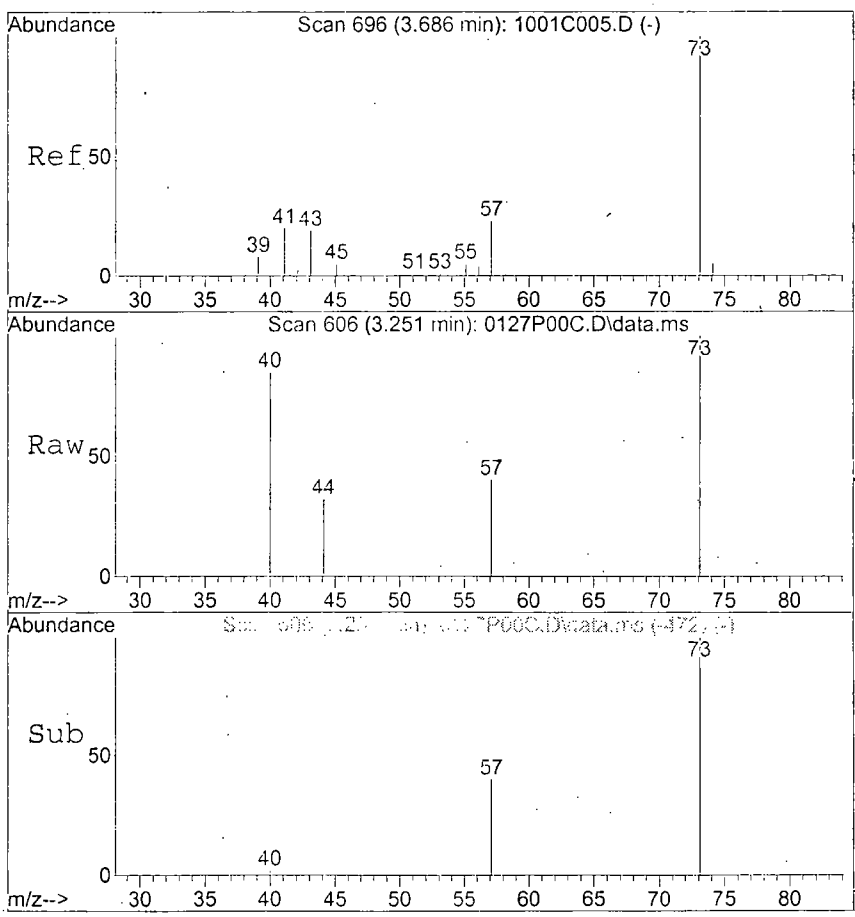


#8
ACETONE
Concen: 3.45 ug/L
RT: 2.016 min Scan# 276
Delta R.T. 0.004 min
Lab File: 0127P00C.D
Acq: 27 Jan 2014 13:03

Tgt Ion: 43 Resp: 3873

Ion	Ratio	Lower	Upper
43	100		
58	0.0	24.4	36.6#

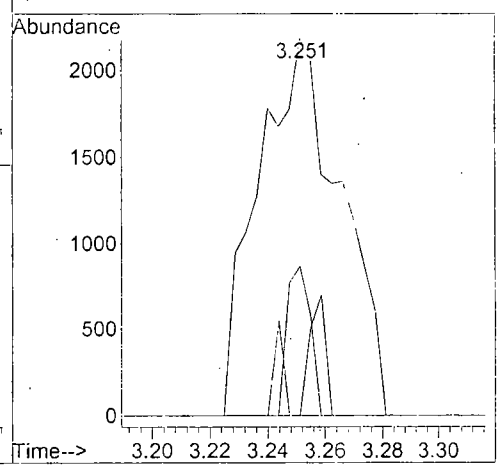




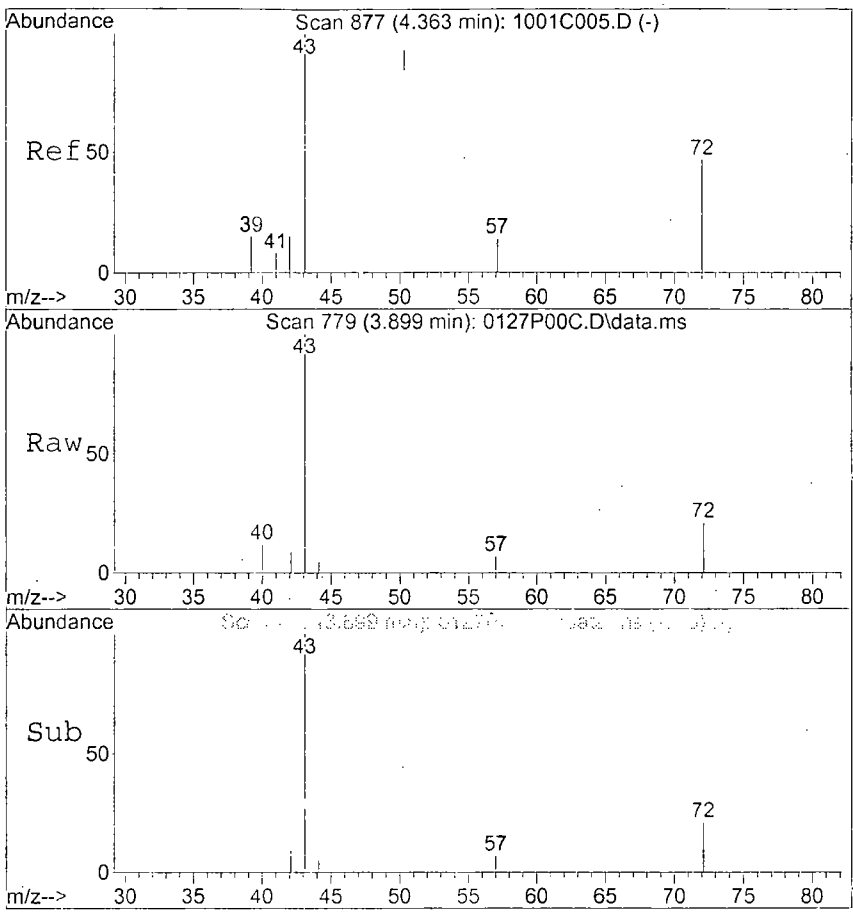
#15
METHYL-TERT-BUTYL ETHER
Concen: 0.56 ug/L
RT: 3.251 min Scan# 606
Delta R.T. 0.000 min
Lab File: 0127P00C.D
Acq: 27 Jan 2014 13:03

Tgt Ion: 73 Resp: 4377

Ion	Ratio	Lower	Upper
73	100		
43	0.0	0.0	39.4
57	0.0	2.2	42.2#



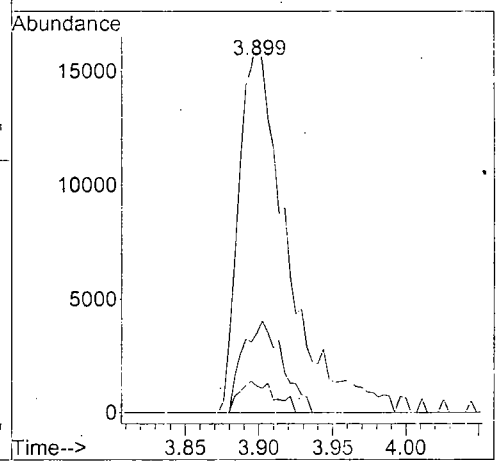
Freedom_0006035_0149



#18
2-BUTANONE
Concen: 23.35 ug/L
RT: 3.899 min Scan# 779
Delta R.T. -0.004 min
Lab File: 0127P00C.D
Acq: 27 Jan 2014 13:03

Tgt Ion: 43 Resp: 36651

Ion	Ratio	Lower	Upper
43	100		
72	20.4	19.6	29.4
57	6.2	5.5	8.3



Freedom_0006035_0150

LSC Area Percent Report

Data Path : D:\Data\2014\S01272014\
Data File : 0127P00C.D
Acq On : 27 Jan 2014 13:03
Operator : PZ 08-5973N
Sample : 500ppb uL PPH#1 to 50mL
Misc : PPH#1 = JG prep of 100uL crude to 100mL 30%Me
ALS Vial : 4 Sample Multiplier: 1

Integration Parameters: CLOSE.P
Integrator: RTE
Smoothing : ON Filtering: 5
Sampling : 1 Min Area: 100 Area counts
Start Thrs: 0.2 Max Peaks: 20
Stop Thrs : 0 Peak Location: TOP

If leading or trailing edge < 100 prefer < Baseline drop else tangent >
Peak separation: 5

Method : D:\Methods\MID_SCREEN.M
Title : VOA Purge and Trap MID LEVEL Aqueous Method

Signal : TIC: 0127P00C.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	1.930	248	253	265	rVB2	10000	14457	1.47%	0.271%
2	3.247	598	605	615	rVB4	4232	8624	0.88%	0.162%
3	3.899	771	779	790	rBV2	22597	45268	4.61%	0.849%
4	4.842	1023	1031	1052	rBV2	119149	225811	22.99%	4.233%
5	5.448	1185	1193	1201	rBV4	4279	8537	0.87%	0.160%
6	5.875	1296	1307	1325	rBV	264483	480334	48.89%	9.005%
7	6.103	1362	1368	1377	rBV3	2691	4317	0.44%	0.081%
8	6.915	1579	1585	1597	rBV3	4892	10107	1.03%	0.189%
9	7.959	1853	1864	1882	rBV	373366	660817	67.26%	12.389%
10	9.684	2314	2325	2342	rBV	306927	543033	55.28%	10.180%
11	11.114	2699	2707	2722	rBV	271469	372089	37.87%	6.976%
12	11.750	2870	2877	2884	rBV3	6449	9269	0.94%	0.174%
13	12.012	2941	2947	2958	rVB3	4971	6920	0.70%	0.130%
14	12.143	2977	2982	2985	rBV3	5657	5228	0.53%	0.098%
15	12.322	3022	3030	3043	rVV	404829	500839	50.98%	9.389%
16	12.693	3123	3129	3137	rBV3	23025	25960	2.64%	0.487%
17	12.775	3142	3151	3177	rBV	688334	982416	100.00%	18.418%
18	13.000	3203	3211	3238	rBV	288906	445889	45.39%	8.359%
19	13.340	3294	3302	3318	rBV2	617606	723736	73.67%	13.568%
20	13.430	3318	3326	3340	rVB2	210402	260443	26.51%	4.883%

Sum of corrected areas: 5334094

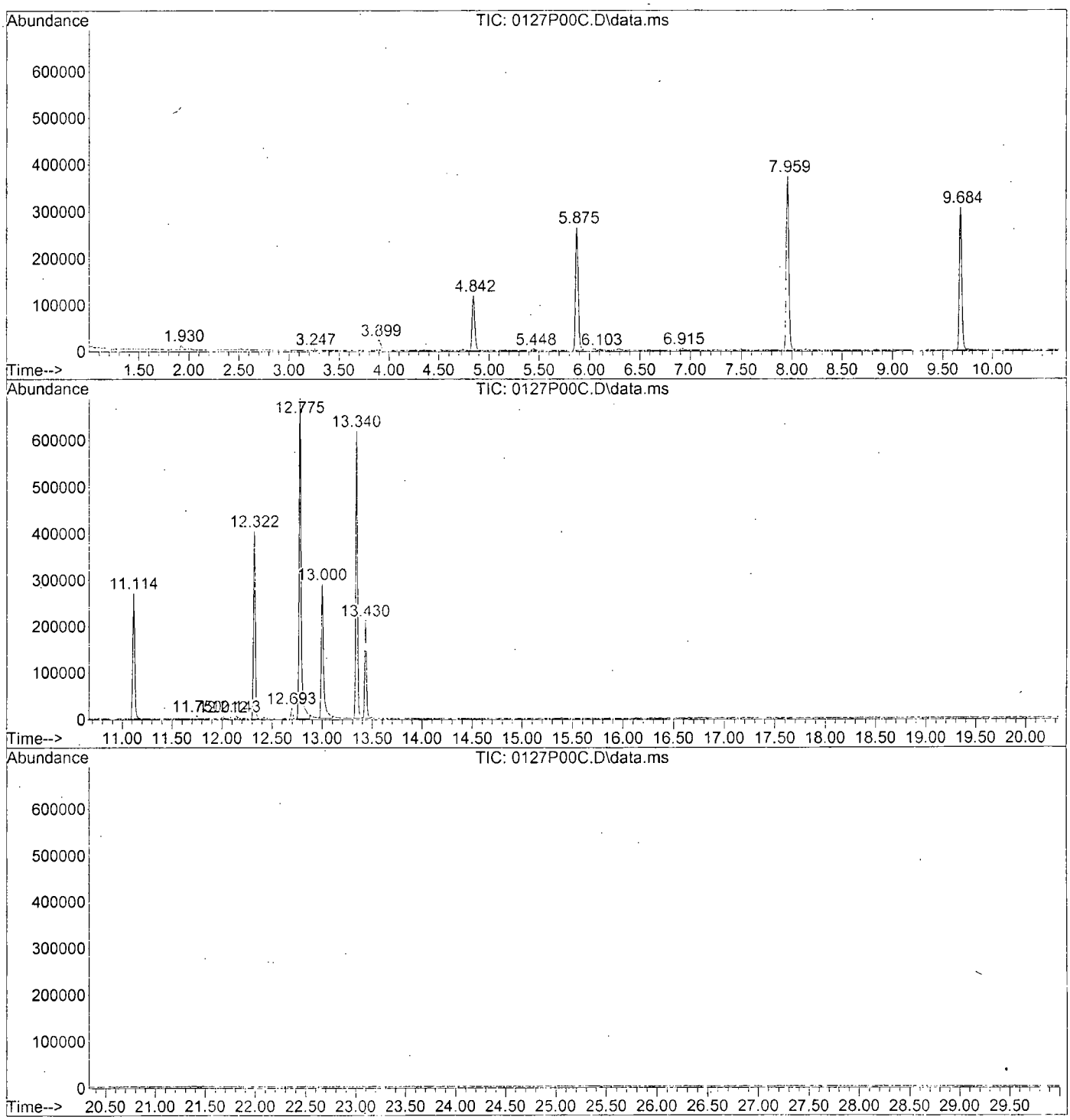
Freedom_0006035_0151

LSC Report - Integrated Chromatogram

Data Path : D:\Data\2014\S01272014\
Data File : 0127P00C.D
Acq On : 27 Jan 2014 13:03
Operator : PZ 08-5973N
Sample : 500ppb uL PPH#1 to 50mL
Misc : PPH#1 = JG prep of 100uL crude to 100mL 30%Me
ALS Vial : 4 Sample Multiplier: 1

Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method

TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P



Library Search Compound Report

Data Path : D:\Data\2014\S01272014\
Data File : 0127P00C.D
Acq On : 27 Jan 2014 13:03
Operator : PZ 08-5973N
Sample : 500ppb uL PPH#1 to 50mL
Misc : PPH#1 = JG prep of 100uL crude to 100mL 30%Me
ALS Vial : 4 Sample Multiplier: 1

Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method

TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P

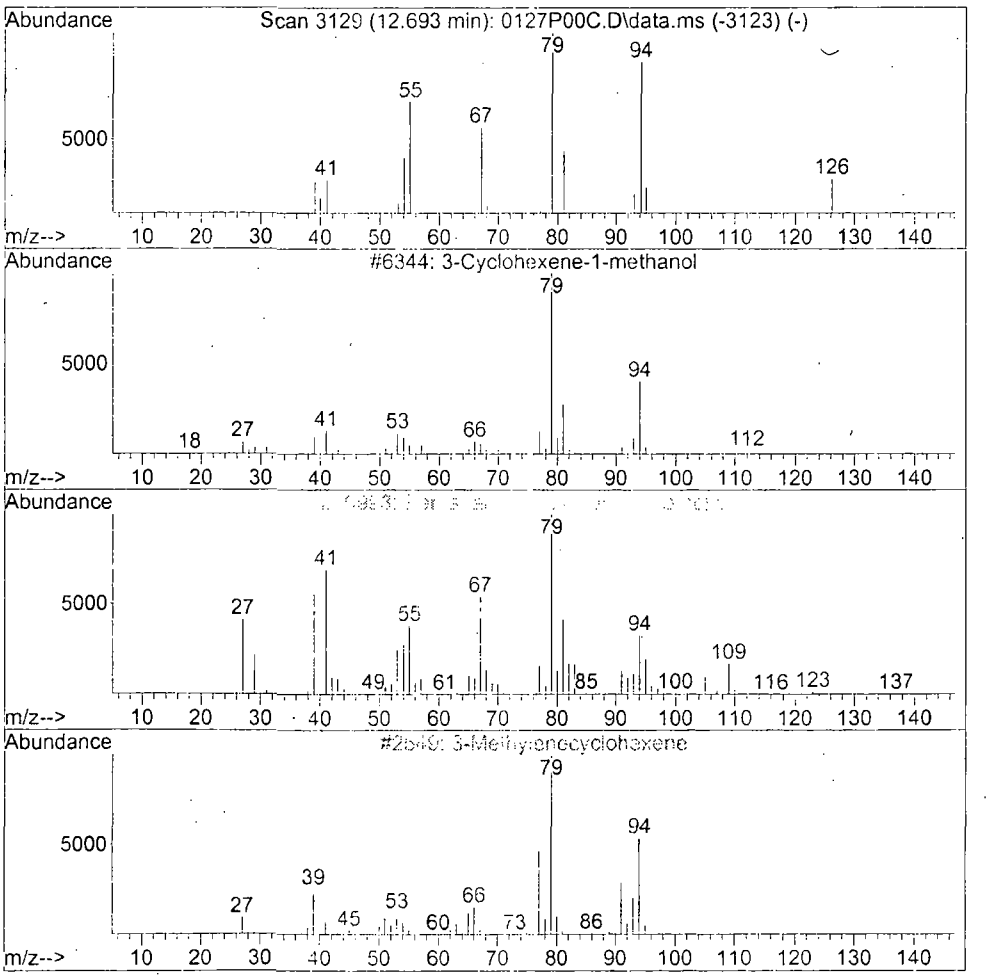
Ex. 5 - Deliberative

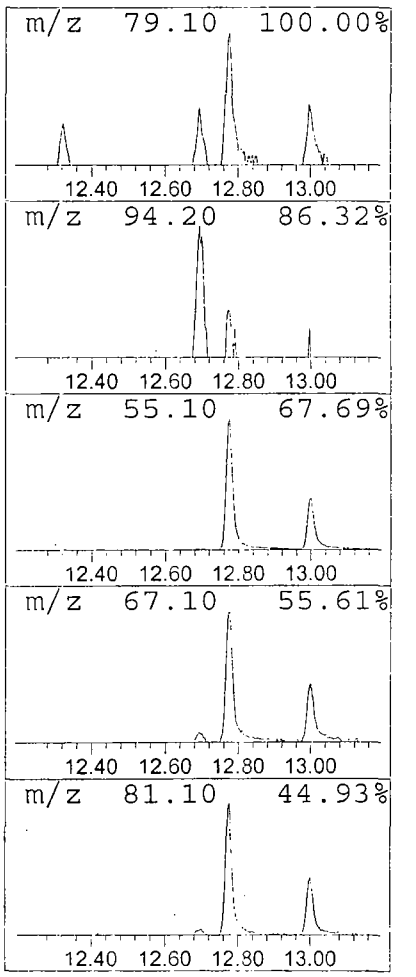
****

Peak Number 1 3-Cyclohexene-1-methanol Concentration Rank 5

R.T.	EstConc	Area	Relative to ISTD	R.T.
12.693	1.04 ug/L	25960	1,4-DICHLOROBENZENE-D4	12.322

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	3-Cyclohexene-1-methanol	112	C7H12O	001679-51-2	50
2	Pentanal, 5-(methylenecyclopropyl)-	138	C9H14O	1000158-49-1	50
3	3-Methylenecyclohexene	94	C7H10	001888-90-0	47
4	Cyclohept-4-enol	112	C7H12O	038607-27-1	47
5	3-Cyclohexene-1-acetaldehyde, .a...	152	C10H16O	029548-14-9	40





Freedom_0006035_0153

Data Path : D:\Data\2014\S01272014\
Data File : 0127P00C.D
Acq On : 27 Jan 2014 13:03
Operator : PZ 08-5973N
Sample : 500ppb uL PPH#1 to 50mL
Misc : PPH#1 = JG prep of 100uL crude to 100mL 30%Me
ALS Vial : 4 Sample Multiplier: 1

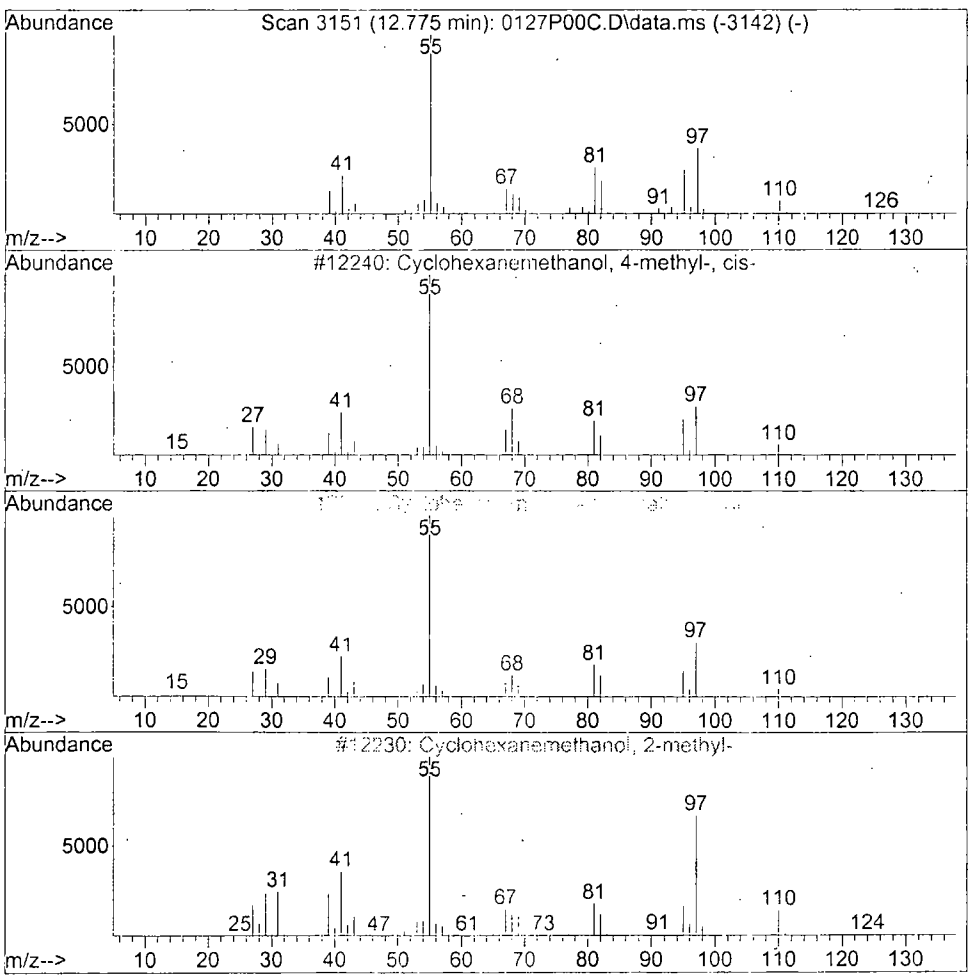
Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method

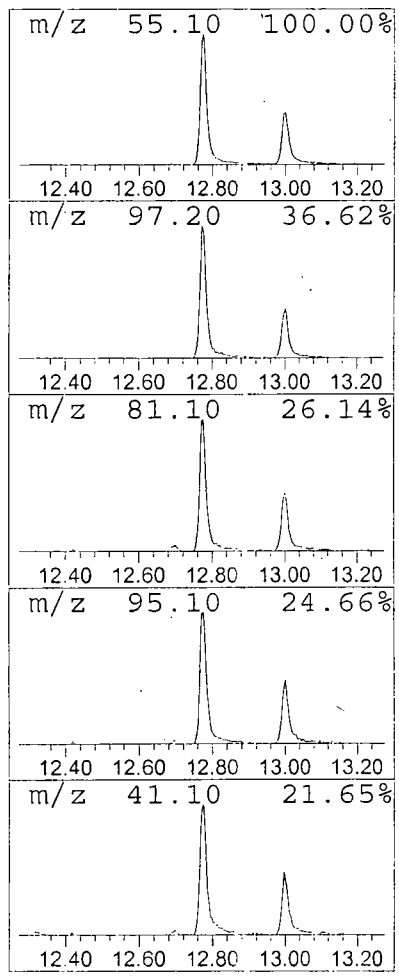
TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P

****
Peak Number 2 Cyclohexanemethanol, 4-meth... Concentration Rank 1

R.T.	EstConc	Area	Relative to ISTD	R.T.
12.775	39.23 ug/L	982416	1,4-DICHLOROBENZENE-D4	12.322

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Cyclohexanemethanol, 4-methyl-, ...	128	C8H16O	003937-48-2	72
2	Cyclohexanemethanol, 4-methyl-, ...	128	C8H16O	003937-49-3	72
3	Cyclohexanemethanol, 2-methyl-	128	C8H16O	002105-40-0	59
4	Oxalic acid, di(cyclohexylmethyl...	282	C16H26O4	1000309-68-5	50
5	Dichloroacetic acid, 1-cyclopent...	224	C9H14Cl2O2	1000282-56-3	50





Freedom_0006035_0154

Library Search Compound Report

Data Path : D:\Data\2014\S01272014\
Data File : 0127P00C.D
Acq On : 27 Jan 2014 13:03
Operator : PZ 08-5973N
Sample : 500ppb uL PPH#1 to 50mL
Misc : PPH#1 = JG prep of 100uL crude to 100mL 30%Me
ALS Vial : 4 Sample Multiplier: 1

Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method

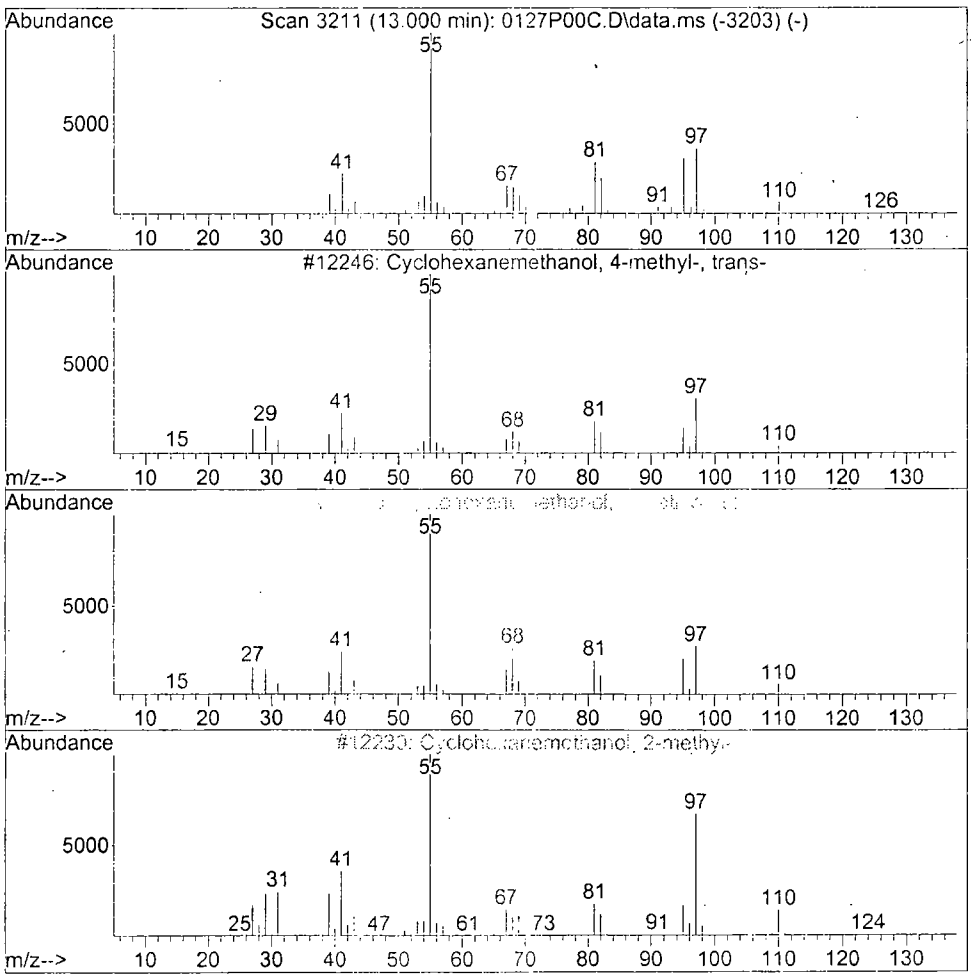
TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P

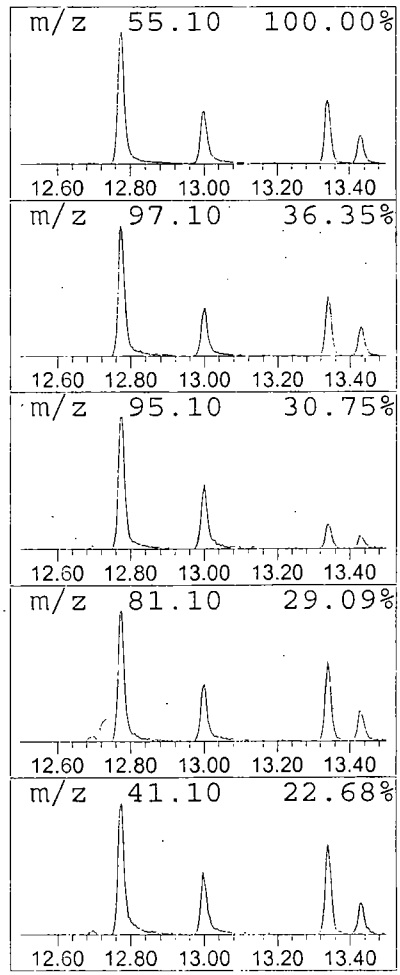
****

Peak Number 3 Cyclohexanemethanol, 4-meth... Concentration Rank 3

R.T.	EstConc	Area	Relative to ISTD	R.T.
13.000	17.81 ug/L	445889	1,4-DICHLOROBENZENE-D4	12.322

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Cyclohexanemethanol, 4-methyl-, ...	128	C8H16O	003937-49-3	72
2	Cyclohexanemethanol, 4-methyl-, ...	128	C8H16O	003937-48-2	72
3	Cyclohexanemethanol, 2-methyl-	128	C8H16O	002105-40-0	53
4	Oxalic acid, cyclohexylmethyl et...	214	C11H18O4	1000309-68-0	50
5	2-Methyl-1,5-heptadiene (c,t)	110	C8H14	006766-54-7	50





Freedom_0006035_0155

Data Path : D:\Data\2014\S01272014\
Data File : 0127P00C.D
Acq On : 27 Jan 2014 13:03
Operator : PZ 08-5973N
Sample : 500ppb uL PPH#1 to 50mL
Misc : PPH#1 = JG prep of 100uL crude to 100mL 30%Me
ALS Vial : 4 Sample Multiplier: 1

Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method

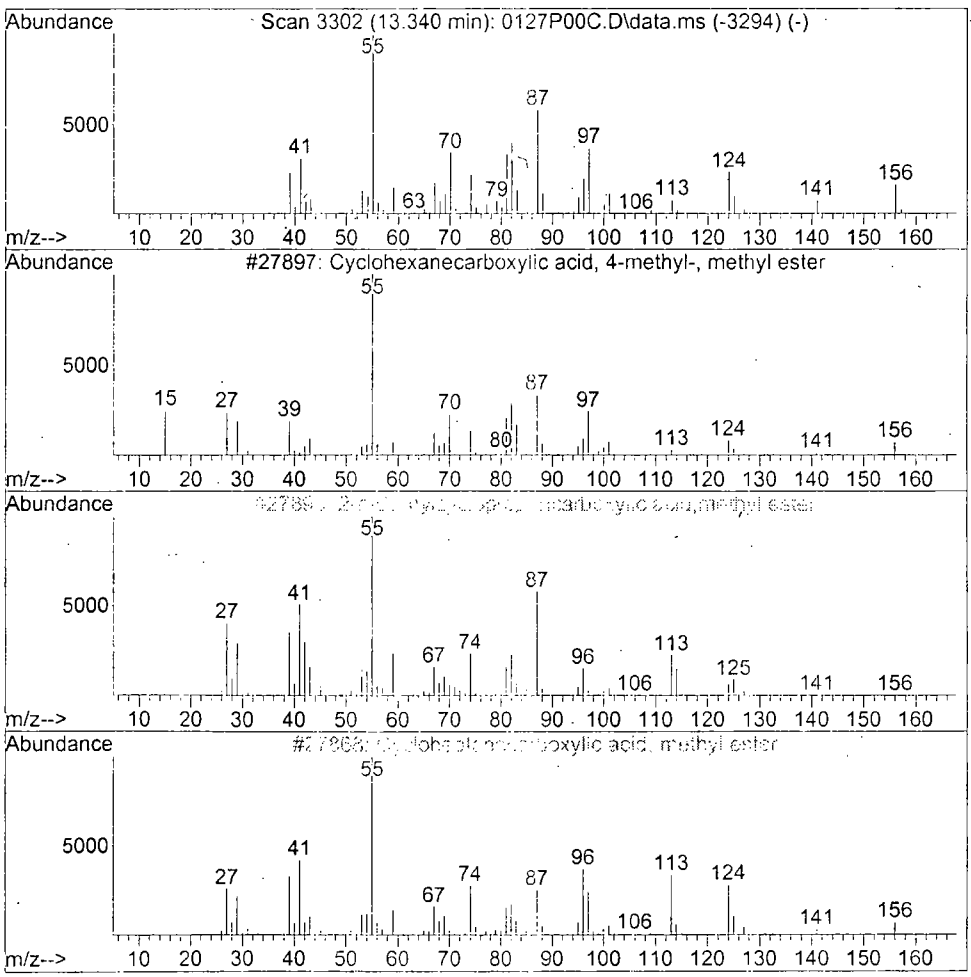
TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P

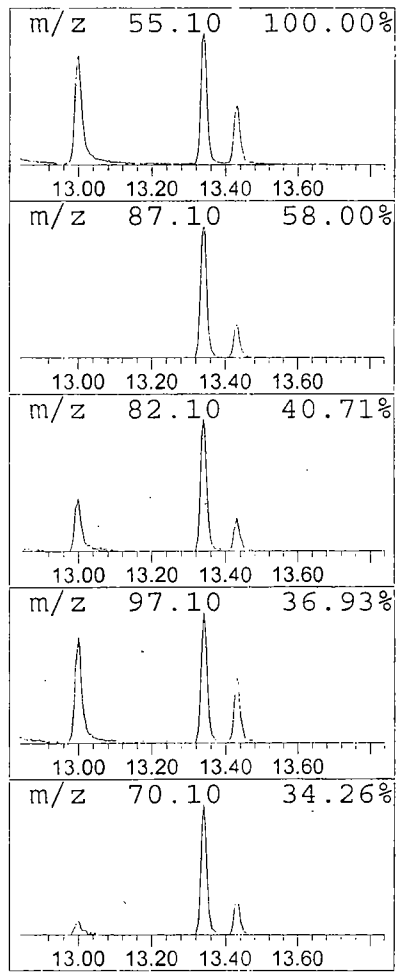
****

Peak Number 4 Cyclohexanecarboxylic acid,... Concentration Rank 2

R.T.	EstConc	Area	Relative to ISTD	R.T.
13.340	28.90 ug/L	723736	1,4-DICHLOROBENZENE-D4	12.322

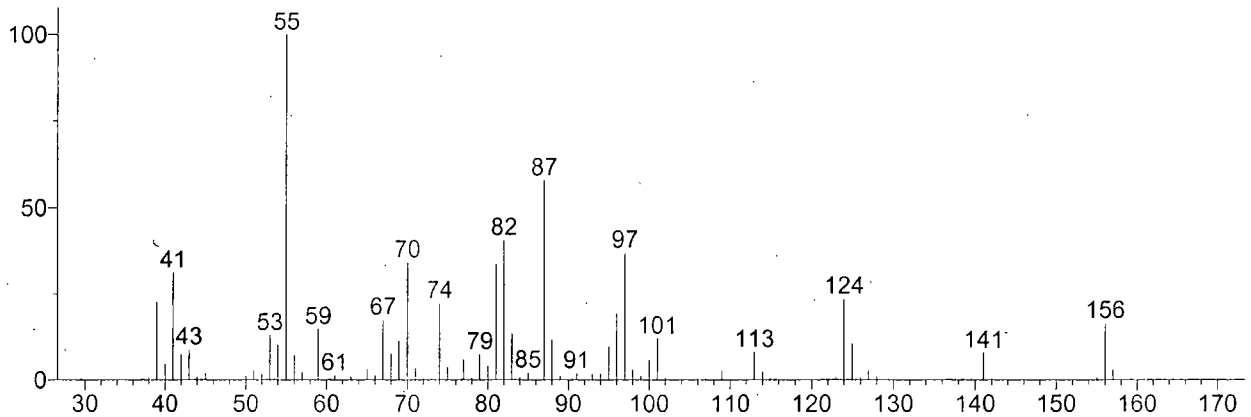
Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Cyclohexanecarboxylic acid, 4-me...	156	C9H16O2	051181-40-9	52
2	2-n-Buthylcyclopropancarboxylic ...	156	C9H16O2	100022-16-5	37
3	Cycloheptanecarboxylic acid, met...	156	C9H16O2	060433-00-3	32
4	2-Octenoic acid, methyl ester	156	C9H16O2	002396-85-2	27
5	2-Nonenoic acid, methyl ester	170	C10H18O2	000111-79-5	25



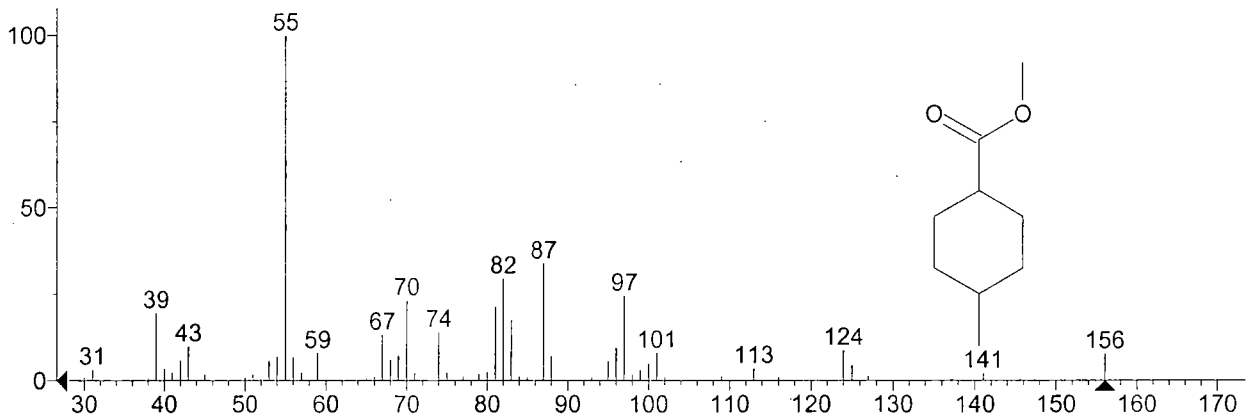


Freedom_0006035_0156

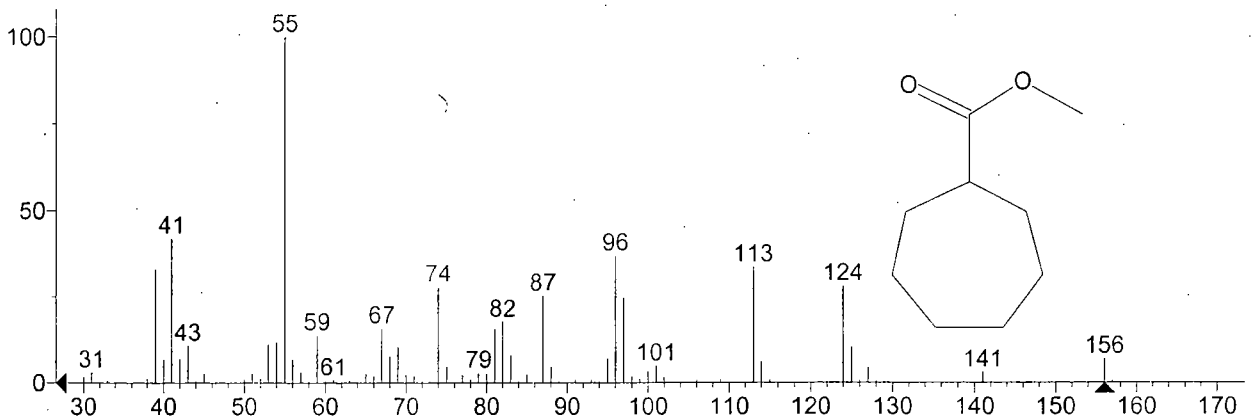
Unknown: Scan 3302 (13.340 min): 0127P00C.D\data.ms (-3295)
Compound in Library Factor = 145



Hit 1 : Cyclohexanecarboxylic acid, 4-methyl-, methyl ester
C9H16O2; MF: 881; RMF: 904; Prob 72.0%; CAS: 51181-40-9; Lib: mainlib; ID: 18094.



Hit 2 : Cycloheptanecarboxylic acid, methyl ester
C9H16O2; MF: 854; RMF: 855; Prob 21.2%; CAS: 60433-00-3; Lib: mainlib; ID: 16873.



Library Search Compound Report

Data Path : D:\Data\2014\S01272014\
Data File : 0127P00C.D
Acq On : 27 Jan 2014 13:03
Operator : PZ 08-5973N
Sample : 500ppb uL PPH#1 to 50mL
Misc : PPH#1 = JG prep of 100uL crude to 100mL 30%Me
ALS Vial : 4 Sample Multiplier: 1

Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method

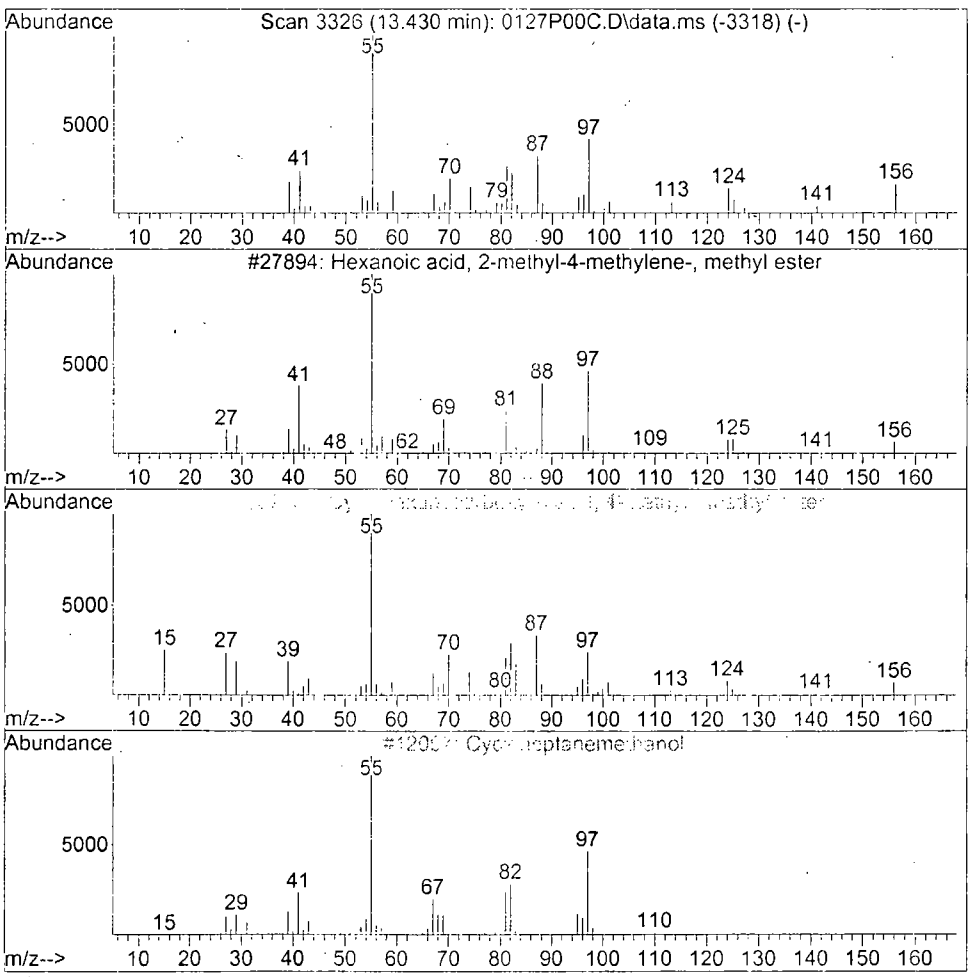
TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P

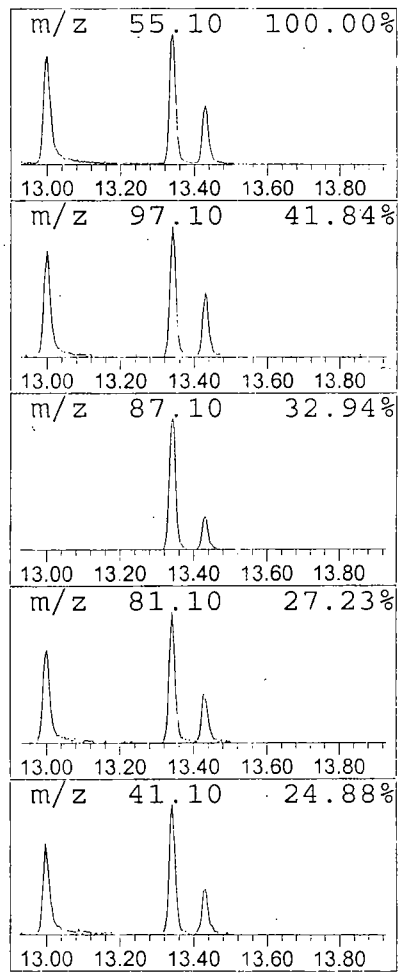
****

Peak Number 5 Hexanoic acid, 2-methyl-4-m... Concentration Rank 4

R.T.	EstConc	Area	Relative to ISTD	R.T.
13.430	10.40 ug/L	260443	1,4-DICHLOROBENZENE-D4	12.322

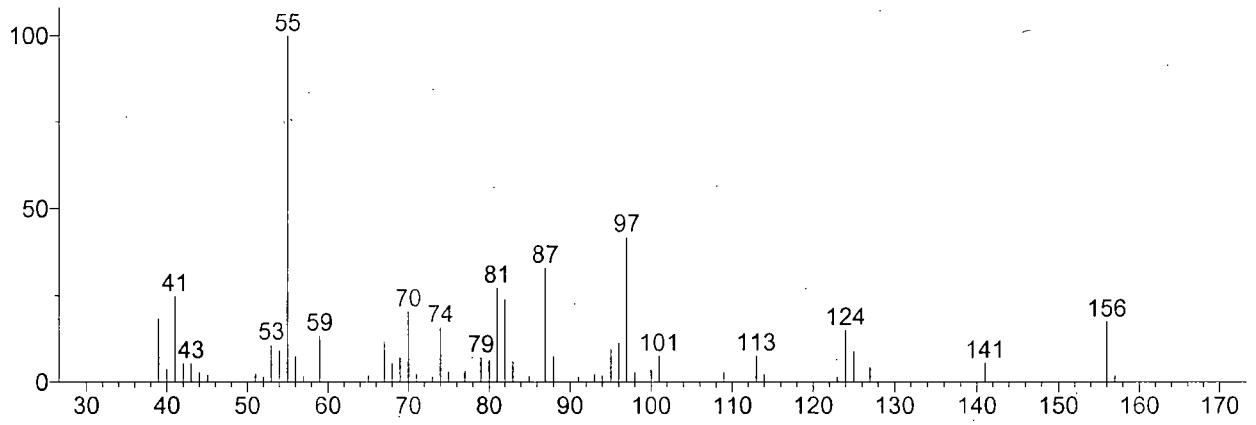
Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Hexanoic acid, 2-methyl-4-methyl...	156	C9H16O2	1000152-05-4	43
2	Cyclohexanecarboxylic acid, 4-me...	156	C9H16O2	051181-40-9	32
3	Cycloheptanemethanol	128	C8H16O	004448-75-3	32
4	2-Hexenoic acid, methyl ester, (E)-	128	C7H12O2	013894-63-8	25
5	Oxalic acid, butyl cyclohexylmet...	242	C13H22O4	1000309-68-2	22



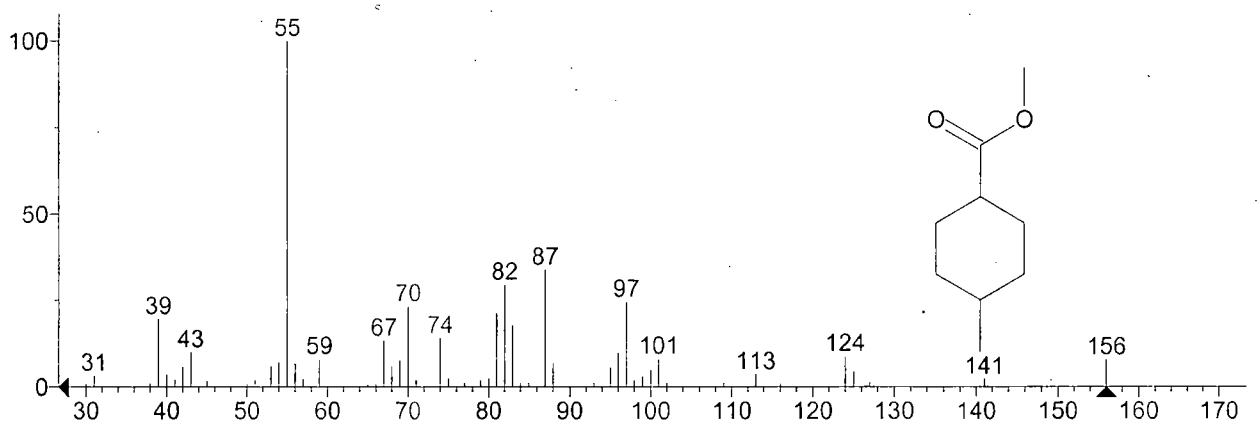


Freedom_0006035_0158

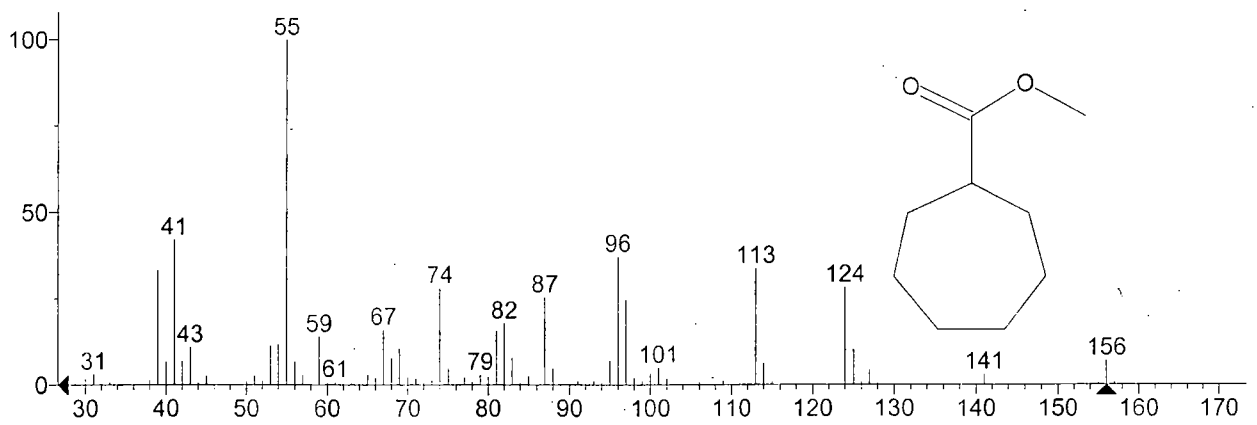
Unknown: Scan 3326 (13.430 min): 0127P00C.D\data.ms (-3318)
Compound in Library Factor = 163



Hit 1 : Cyclohexanecarboxylic acid, 4-methyl-, methyl ester
C9H16O2; MF: 876; RMF: 892; Prob 76.9%; CAS: 51181-40-9; Lib: mainlib; ID: 18094.



Hit 2 : Cycloheptanecarboxylic acid, methyl ester
C9H16O2; MF: 832; RMF: 834; Prob 16.7%; CAS: 60433-00-3; Lib: mainlib; ID: 16873.



Tentatively Identified Compound (LSC) summary

Data Path : D:\Data\2014\S01272014\
Data File : 0127P00C.D
Acq On : 27 Jan 2014 13:03
Operator : PZ O8-5973N
Sample : 500ppb uL PPH#1 to 50mL
Misc : PPH#1 = JG prep of 100uL crude to 100mL 30%Me
ALS Vial : 4 Sample Multiplier: 1

Quant Method : D:\Methods\MID_SCREEN.M
Quant Title : VOA Purge and Trap MID LEVEL Aqueous Method

TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P

TIC Top Hit name	RT	EstConc	Units	Response	--Internal Standard--- #	RT	Resp	Conc
3-Cyclohexene-1...	12.693	1.0	ug/L	25960	3	12.322	500839	20.0
Cyclohexanemeth...	12.775	39.2	ug/L	982416	3	12.322	500839	20.0
Cyclohexanemeth...	13.000	17.8	ug/L	445889	3	12.322	500839	20.0
Cyclohexanecarb...	13.340	28.9	ug/L	723736	3	12.322	500839	20.0
Hexanoic acid, ...	13.430	10.4	ug/L	260443	3	12.322	500839	20.0

Ex. 5 - Deliberative

```
Starting sequence Mon Feb 03 08:46:11 2014

  Instrument Name: PZ1-AG5975
    Sequence File: C:\msdchem\1\sequence\Trace calibration ext.S
          Comment: Trace Level Calibration
         Operator: PZ  PZ1-AG5975
        Data Path: D:\DATA\L02032014\
      Method Path: C:\msdchem\1\METHODS\

    Line Type        Vial  DataFile  Method    Sample Name
    ---------------------------------------------------------------------
      1) COMMENT: '5 ML SAMPLE PURGED. IS/SS = 5 PPB'
      2) COMMENT: 'STANDARDS'
      3) COMMENT: 'SEE ANALYSIS LOG FOR MORE INFORMATION '

      4) Blank          1  0203RIN1  TRACEVOC  Blank

      5) Sample         2  0203BFB   TRACEVOC  25 ng BFB, 2uL IS/SS in 5mL
      6) PAUSE: ' '

    Sequence paused Mon Feb 03 09:38:25 2014

      D:\DATA\L02032014\ Quality Log 2014 Feb 03 0846.LOG
      D:\DATA\L02032014\Sequence Log 2014 Feb 03 0846.LOG

Resuming sequence Mon Feb 03 09:49:18 2014

  Instrument Name: PZ1-AG5975
    Sequence File: C:\msdchem\1\sequence\Trace calibration ext.S
          Comment: Trace Level Calibration
         Operator: PZ  PZ1-AG5975
        Data Path: D:\DATA\L02032014\
      Method Path: C:\msdchem\1\METHODS\

    Line Type        Vial  DataFile  Method    Sample Name
    ---------------------------------------------------------------------

      7) Sample         3  0203BFB2  TRACEVOC  25 ng BFB, 2uL IS/SS in 5mL
      8) PAUSE: ' '

    Sequence paused Mon Feb 03 10:20:27 2014

      D:\DATA\L02032014\ Quality Log 2014 Feb 03 0949.LOG
      D:\DATA\L02032014\Sequence Log 2014 Feb 03 0949.LOG

Resuming sequence Mon Feb 03 10:41:18 2014

  Instrument Name: PZ1-AG5975
    Sequence File: C:\msdchem\1\sequence\Trace calibration ext.S
          Comment: Trace Level Calibration
         Operator: PZ  PZ1-AG5975
        Data Path: D:\DATA\L02032014\
      Method Path: C:\msdchem\1\METHODS\

    Line Type        Vial  DataFile  Method    Sample Name
    ---------------------------------------------------------------------

      9) Blank          4  0203RIN2  TRACEVOC  Blank

     10) Blank          5  0203RIN3  TRACEVOC  Blank
     11) COMMAND: 'PRINTSEQLOG'
    Executing Command: PRINTSEQLOG
```

```
    Starting sequence Mon Feb 03 11:42:50 2014

  Instrument Name: PZ1-AG5975
    Sequence File: C:\msdchem\1\sequence\Trace calibration ext.S
          Comment: Trace Level Calibration
         Operator: PZ  PZ1-AG5975
        Data Path: D:\DATA\L02032014\
      Method Path: C:\msdchem\1\METHODS\

    Line Type        Vial  DataFile  Method    Sample Name
    ---------------------------------------------------------------------
      1) COMMENT: '5 ML SAMPLE PURGED: IS/SS = 5 PPB'
      2) COMMENT: 'STANDARDS'
      3) COMMENT: 'SEE ANALYSIS LOG FOR MORE INFORMATION '
      4) COMMENT: 'SOURCE TUNED TO PFTBA'

      5) Sample         6  0203BFB3  TRACEVOC  25 ng BFB, 2uL IS/SS in 5mL
      6) PAUSE: ' '

    Sequence paused Mon Feb 03 12:07:37 2014

      D:\DATA\L02032014\ Quality Log 2014 Feb 03 1142.LOG
      D:\DATA\L02032014\Sequence Log 2014 Feb 03 1142.LOG

Resuming sequence Mon Feb 03 12:59:17 2014

  Instrument Name: PZ1-AG5975
    Sequence File: C:\msdchem\1\sequence\Trace calibration ext.S
          Comment: Trace Level Calibration
         Operator: PZ  PZ1-AG5975
        Data Path: D:\DATA\L02032014\
      Method Path: C:\msdchem\1\METHODS\

    Line Type        Vial  DataFile  Method    Sample Name
    ---------------------------------------------------------------------

      7) Sample         7  0203BFB4  TRACEVOC  25 ng BFB, 2uL IS/SS in 5mL
      8) PAUSE: ' '

    Sequence paused Mon Feb 03 13:30:55 2014

      D:\DATA\L02032014\ Quality Log 2014 Feb 03 1259.LOG
      D:\DATA\L02032014\Sequence Log 2014 Feb 03 1259.LOG

Resuming sequence Mon Feb 03 13:53:32 2014

  Instrument Name: PZ1-AG5975
    Sequence File: C:\msdchem\1\sequence\Trace calibration ext.S
          Comment: Trace Level Calibration
         Operator: PZ  PZ1-AG5975
        Data Path: D:\DATA\L02032014\
      Method Path: C:\msdchem\1\METHODS\

    Line Type        Vial  DataFile  Method    Sample Name
    ---------------------------------------------------------------------
      9) COMMENT: 'SOURCE TUNED TO PFTBA USING FILAMENT 1'

     10) Sample         8  0203BFB5  TRACEVOC  25 ng BFB, 2uL IS/SS in 5mL
     11) PAUSE: ' '

    Sequence paused Mon Feb 03 14:19:13 2014

      D:\DATA\L02032014\ Quality Log 2014 Feb 03 1353.LOG
      D:\DATA\L02032014\Sequence Log 2014 Feb 03 1353.LOG

Resuming sequence Mon Feb 03 16:41:40 2014

  Instrument Name: PZ1-AG5975
    Sequence File: C:\msdchem\1\sequence\Trace calibration ext.S
          Comment: Trace Level Calibration
         Operator: PZ  PZ1-AG5975
        Data Path: D:\DATA\L02032014\
```


Freedom_0006035_0162

Method Path: C:\msdchem\1\METHODS\

Line Type	Vial	DataFile	Method	Sample Name

12) COMMAND: 'PRINTSEQLOG'
Executing Command: PRINTSEQLOG

Freedom_0006035_0163

Starting sequence Mon Feb 03 16:47:03 2014

Instrument Name: PZ1-AG5975
Sequence File: C:\msdchem\1\sequence\test.S
Comment: Test
Operator: PZ PZ1-AG5975 Ex. 5 - Deliberative
Data Path: D:\DATA\L02032014\
Method Path: C:\msdchem\1\METHODS\

Ex. 5 - Deliberative

Line	Type	Vial	DataFile	Method	Sample Name
1)	COMMENT: '5 ML SAMPLE PURGED; IS/SS = 5 PPB'				
2)	COMMENT: 'TEST RUN TO CHECK AGAINST SCW'				
3)	COMMENT: 'BFB IS JUST OUTSIDE CRITERIA; NO CALIBRATION'				
4)	Sample	9	0203tst1	TRACEVOC	20uL PZSoln#1 to 100mL (SCW)
5)	COMMAND: 'PRINTSEQLOG'				

Executing Command: PRINTSEQLOG

Freedom_0006035_0164

Quantitation Report (QT Reviewed)

Ex. 5 - Deliberative

Data Path : D:\DATA\L02032014\
Data File : 0203tst1.D
Acq On : 3 Feb 2014 16:59
Operator : PZ PZ1-AG5975
Sample : 20uL PZSoln#1 to 100mL (SCW)
Misc : PZSoln#1= 32.8mg MCHM std - 10mL MeOH
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Feb 03 17:19:30 2014
Quant Method : D:\METHODS\L01302014.M
Quant Title : VOA Purge and Trap LOW LEVEL Aqueous Method
QLast Update : Thu Jan 30 13:30:19 2014
Response via : Initial Calibration

Ex. 5 - Deliberative

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) 1,4-DIFLUOROBENZENE	6.525	114	159914	5.00	ug/L	0.00
37) CHLOROBENZENE-d5	10.334	117	154582	5.00	ug/L	0.00
56) 1,4-DICHLOROBENZENE-d4	12.808	152	69668	5.00	ug/L	0.00
System Monitoring Compounds						
23) 1,2-DICHLOROETHANE-d4	5.498	65	86446	5.16	ug/L	-0.01
Spiked Amount 5.000	Range 76 - 114		Recovery = 103.20%			
41) TOLUENE-d8	8.620	98	198426	4.98	ug/L	0.00
Spiked Amount 5.000	Range 88 - 110		Recovery = 99.60%			
59) 4-BROMOFLUOROBENZENE	11.646	95	74292	5.68	ug/L	0.00
Spiked Amount 5.000	Range 86 - 115		Recovery = 113.60%			
Target Compounds						Qvalue
52) M-XYLENE/P-XYLENE	10.907	106	1525	0.07	ug/L #	15

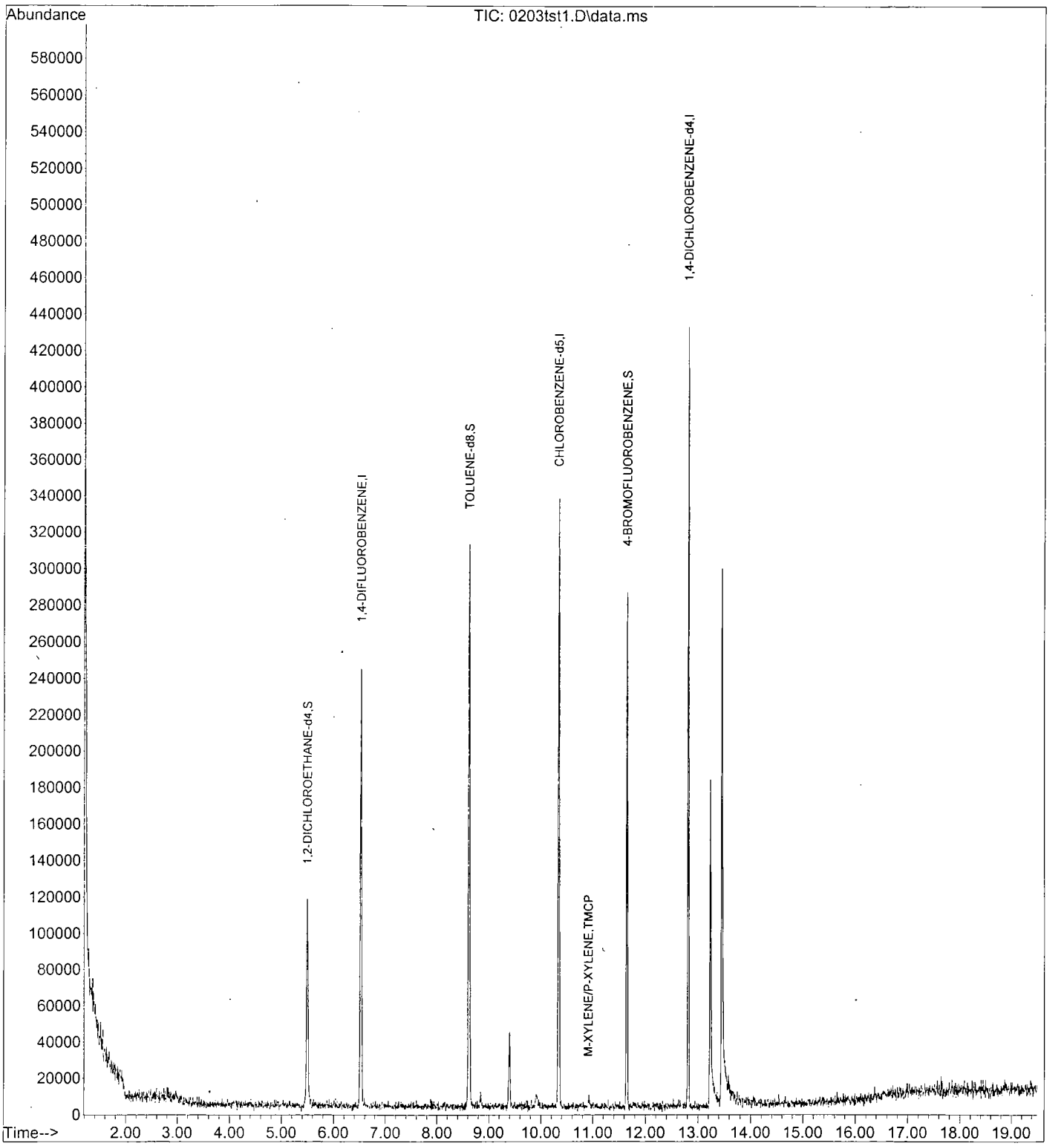
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Freedom_0006035_0165

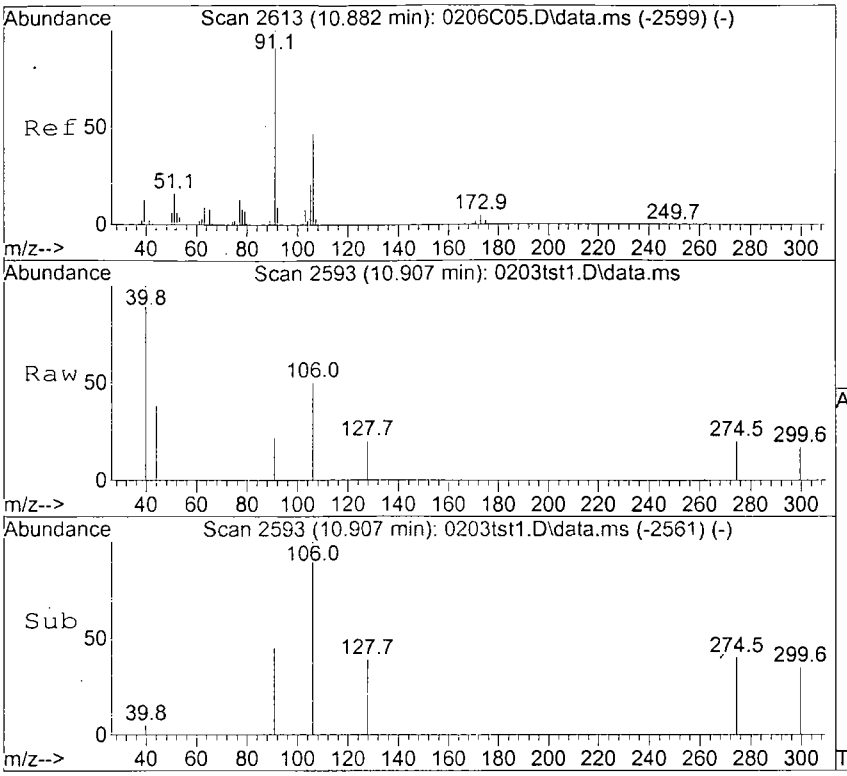
Quantitation Report (QT Reviewed)

Data Path : D:\DATA\L02032014\
Data File : 0203tst1.D
Acq On : 3 Feb 2014 16:59
Operator : PZ PZ1-AG5975
Sample : 20uL PZSoln#1 to 100mL (SCW)
Misc : PZSoln#1= 32.8mg MCHM std - 10mL MeOH
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Feb 03 17:19:30 2014
Quant Method : D:\METHODS\L01302014.M
Quant Title : VOA Purge and Trap LOW LEVEL Aqueous Method
QLast Update : Thu Jan 30 13:30:19 2014
Response via : Initial Calibration



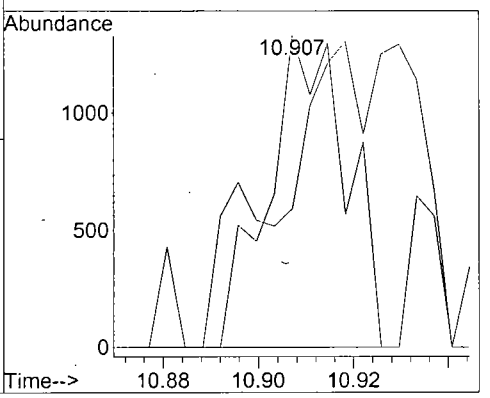
Freedom_0006035_0166



#52
M-XYLENE/P-XYLENE
Concen: 0.07 ug/L
RT: 10.907 min Scan# 2593
Delta R.T. 0.019 min
Lab File: 0203tst1.D
Acq: 3 Feb 2014 16:59

Tgt Ion:106 Resp: 1525

Ion	Ratio	Lower	Upper
106	100		
91	74.5	164.8	247.2#



Freedom_0006035_0167

LSC Area Percent Report

Data Path : D:\DATA\L02032014\
Data File : 0203tst1.D
Acq On : 3 Feb 2014 16:59
Operator : PZ PZ1-AG5975
Sample : 20uL PZSoln#1 to 100mL (SCW)
Misc : PZSoln#1= 32.8mg MCHM std - 10mL MeOH
ALS Vial : 9 Sample Multiplier: 1

Integration Parameters: NORMAL.P
Integrator: RTE
Smoothing : ON Filtering: 5
Sampling : 1 Min Area: 1 % of largest Peak
Start Thrs: 0.2 Max Peaks: 95
Stop Thrs : 0 Peak Location: TOP

If leading or trailing edge < 100 prefer < Baseline drop else tangent >
Peak separation: 5

Method : D:\METHODS\L01302014.M
Title : VOA Purge and Trap LOW LEVEL Aqueous Method

Signal : TIC: 0203tst1.D\data.ms

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	1.580	104	105	110	rBV	8773	8093	1.45%	0.212%
2	2.255	283	285	292	rVB	6762	5902	1.06%	0.155%
3	2.416	325	328	332	rBV3	5245	5655	1.02%	0.148%
4	2.484	342	346	350	rBV3	7419	6327	1.14%	0.166%
5	3.069	501	502	510	rVB2	6098	7095	1.27%	0.186%
6	3.777	684	691	696	rBV	4173	6409	1.15%	0.168%
7	4.043	761	762	769	rBV2	4437	5717	1.03%	0.150%
8	5.494	1139	1149	1163	rVV4	114279	232892	41.80%	6.115%
9	6.525	1411	1424	1437	rBV2	242220	434469	77.99%	11.407%
10	8.617	1970	1982	1995	rBV3	309162	557094	100.00%	14.627%
11	8.845	2035	2043	2049	rBV5	9735	15960	2.86%	0.419%
12	9.393	2179	2189	2196	rBV5	42732	69705	12.51%	1.830%
13	9.906	2318	2326	2328	rBV4	7861	11966	2.15%	0.314%
14	10.337	2429	2441	2453	rBV2	335318	538506	96.66%	14.139%
15	10.918	2588	2596	2602	rBV4	7052	10201	1.83%	0.268%
16	11.646	2781	2790	2800	rBV3	285515	377465	67.76%	9.911%
17	11.717	2804	2809	2813	rBV2	4345	5714	1.03%	0.150%
18	12.189	2931	2935	2940	rBV2	4372	6356	1.14%	0.167%
19	12.324	2969	2971	2977	rBV2	6140	7176	1.29%	0.188%
20	12.388	2983	2988	2994	rBV2	4485	6151	1.10%	0.161%
21	12.699	3065	3071	3075	rVB2	3427	5938	1.07%	0.156%
22	12.808	3089	3100	3109	rBV	430485	517689	92.93%	13.592%
23	13.235	3206	3214	3227	rBV4	182210	291428	52.31%	7.652%
24	13.456	3263	3273	3285	rBV	296129	489378	87.84%	12.849%
25	13.707	3336	3340	3344	rVB4	5849	6600	1.18%	0.173%
26	13.853	3378	3379	3384	rBV3	5157	5828	1.05%	0.153%
27	13.947	3398	3404	3408	rBV3	5048	5904	1.06%	0.155%
28	14.333	3500	3507	3511	rVB2	5319	8389	1.51%	0.220%
29	15.784	3891	3894	3898	rBV2	5958	6174	1.11%	0.162%
30	16.020	3953	3957	3962	rBV3	5444	7062	1.27%	0.185%
31	16.369	4044	4050	4056	rBV4	7627	8132	1.46%	0.214%
32	16.429	4061	4066	4068	rBV	5893	6572	1.18%	0.173%
33	16.845	4174	4177	4182	rBV3	6229	6122	1.10%	0.161%
34	17.182	4265	4267	4274	rVB5	7188	9323	1.67%	0.245%
35	17.325	4301	4305	4308	rVB5	7733	6226	1.12%	0.163%
36	17.422	4329	4331	4336	rBV6	7136	6726	1.21%	0.177%
37	17.557	4362	4367	4369	rBV3	6459	5928	1.06%	0.156%

Freedom_0006035_0168

LSC Area Percent Report

Data Path : D:\DATA\L02032014\
Data File : 0203tst1.D
Acq On : 3 Feb 2014 16:59
Operator : PZ PZ1-AG5975
Sample : 20uL PZSoln#1 to 100mL (SCW)
Misc : PZSoln#1= 32.8mg MCHM std - 10mL MeOH
ALS Vial : 9 Sample Multiplier: 1

Integration Parameters: NORMAL.P
Integrator: RTE
Smoothing : ON Filtering: 5
Sampling : 1 Min Area: 1 % of largest Peak
Start Thrs: 0.2 Max Peaks: 95
Stop Thrs : 0 Peak Location: TOP

If leading or trailing edge < 100 prefer < Baseline drop else tangent >
Peak separation: 5

Method : D:\METHODS\L01302014.M
Title : VOA Purge and Trap LOW LEVEL Aqueous Method

38	17.598	4375	4378	4382	rVB4	6819	6420	1.15%	0.169%
39	17.658	4391	4394	4397	rVB3	10199	7767	1.39%	0.204%
40	17.793	4427	4430	4437	rBV6	7731	8736	1.57%	0.229%
41	17.846	4442	4444	4449	rVB4	9807	8294	1.49%	0.218%
42	17.913	4459	4462	4465	rVB2	8226	5844	1.05%	0.153%
43	18.082	4503	4507	4512	rVB4	8406	8362	1.50%	0.220%
44	18.232	4545	4547	4552	rVB3	11127	8782	1.58%	0.231%
45	18.258	4552	4554	4558	rBV3	10103	8804	1.58%	0.231%
46	18.412	4594	4595	4599	rBV3	10223	7469	1.34%	0.196%
47	18.577	4636	4639	4643	rVB5	6631	6620	1.19%	0.174%
48	18.599	4643	4645	4649	rBV3	7129	7515	1.35%	0.197%
49	18.637	4651	4655	4656	rVB2	7755	5622	1.01%	0.148%
50	19.308	4831	4834	4837	rBV3	7160	6167	1.11%	0.162%

Sum of corrected areas: 3808674

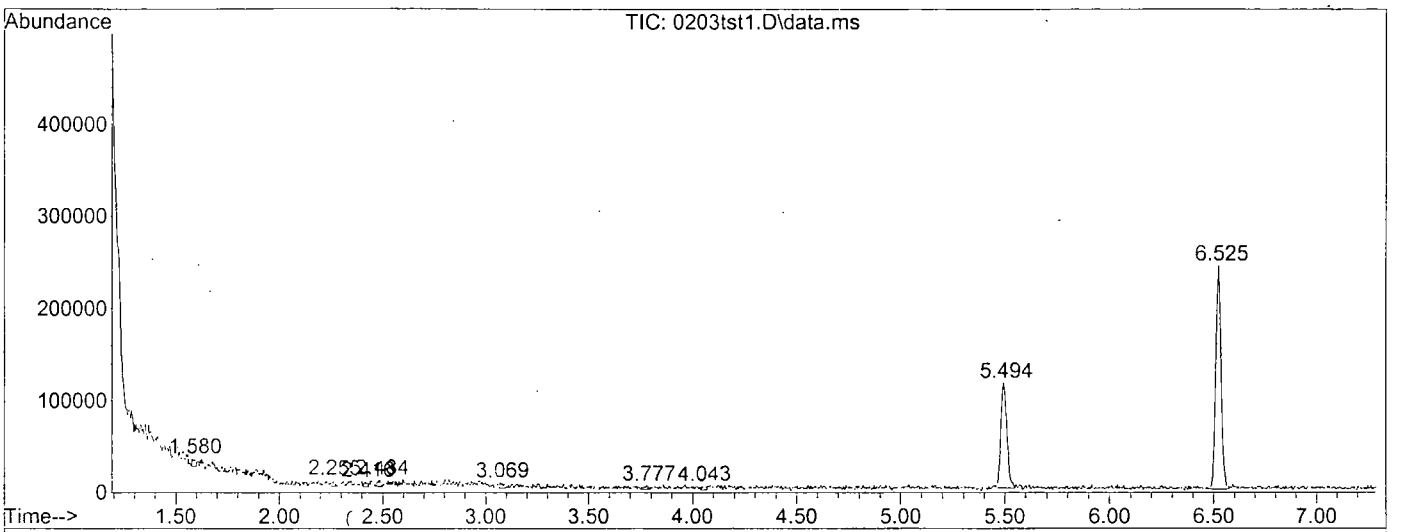
Freedom_0006035_0169

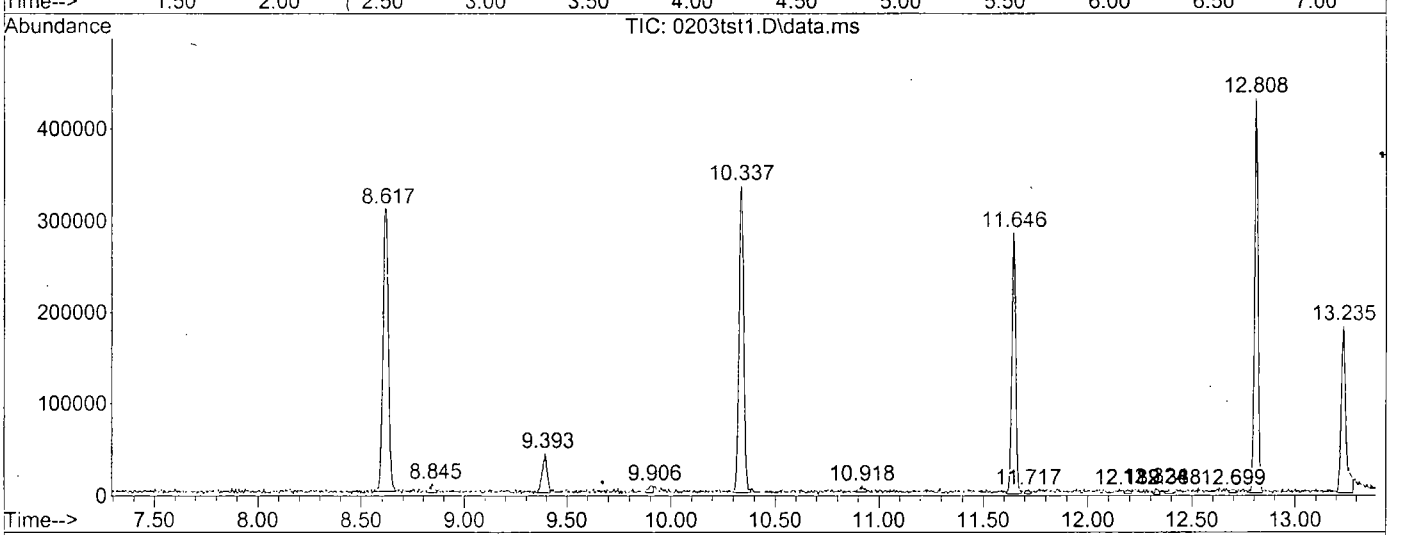
LSC Report - Integrated Chromatogram

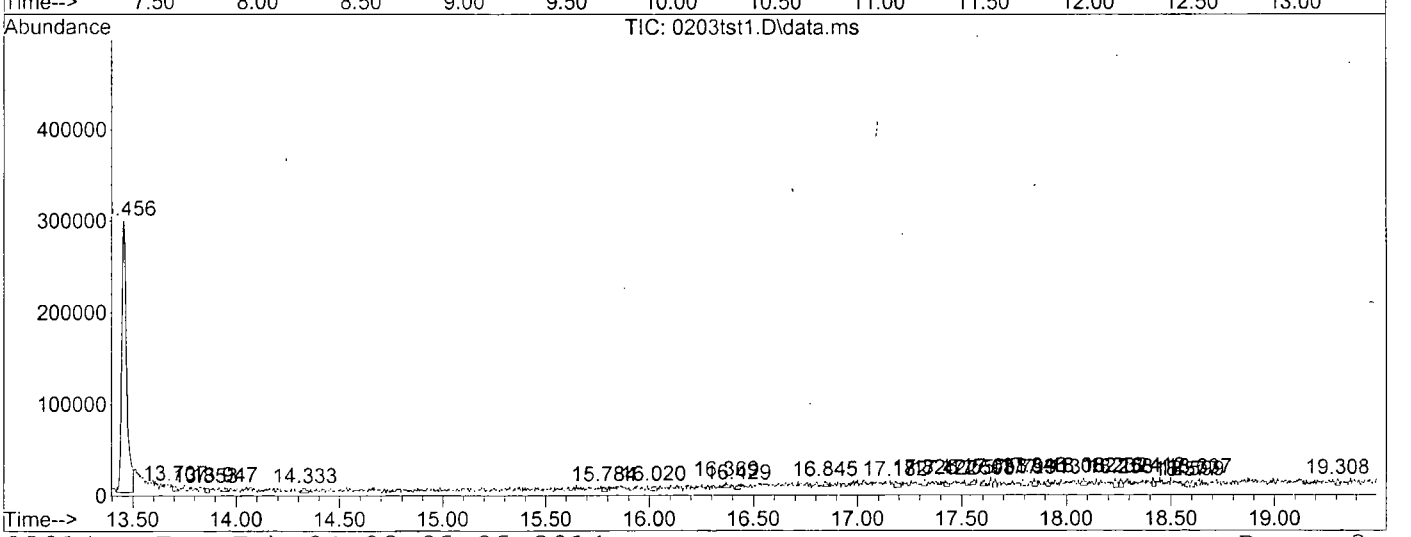
Data Path : D:\DATA\L02032014\
Data File : 0203tst1.D
Acq On : 3 Feb 2014 16:59
Operator : PZ PZ1-AG5975
Sample : 20uL PZSoln#1 to 100mL (SCW)
Misc : PZSoln#1= 32.8mg MCHM std - 10mL MeOH
ALS Vial : 9 Sample Multiplier: 1

Quant Method : D:\METHODS\L01302014.M
Quant Title : VOA Purge and Trap LOW LEVEL Aqueous Method

TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P







Freedom_0006035_0170

Data Path : D:\DATA\L02032014\
Data File : 0203tst1.D
Acq On : 3 Feb 2014 16:59
Operator : PZ PZ1-AG5975
Sample : 20uL PZSoln#1 to 100mL (SCW)
Misc : PZSoln#1= 32.8mg MCHM std - 10mL MeOH
ALS Vial : 9 Sample Multiplier: 1

Quant Method : D:\METHODS\L01302014.M
Quant Title : VOA Purge and Trap LOW LEVEL Aqueous Method

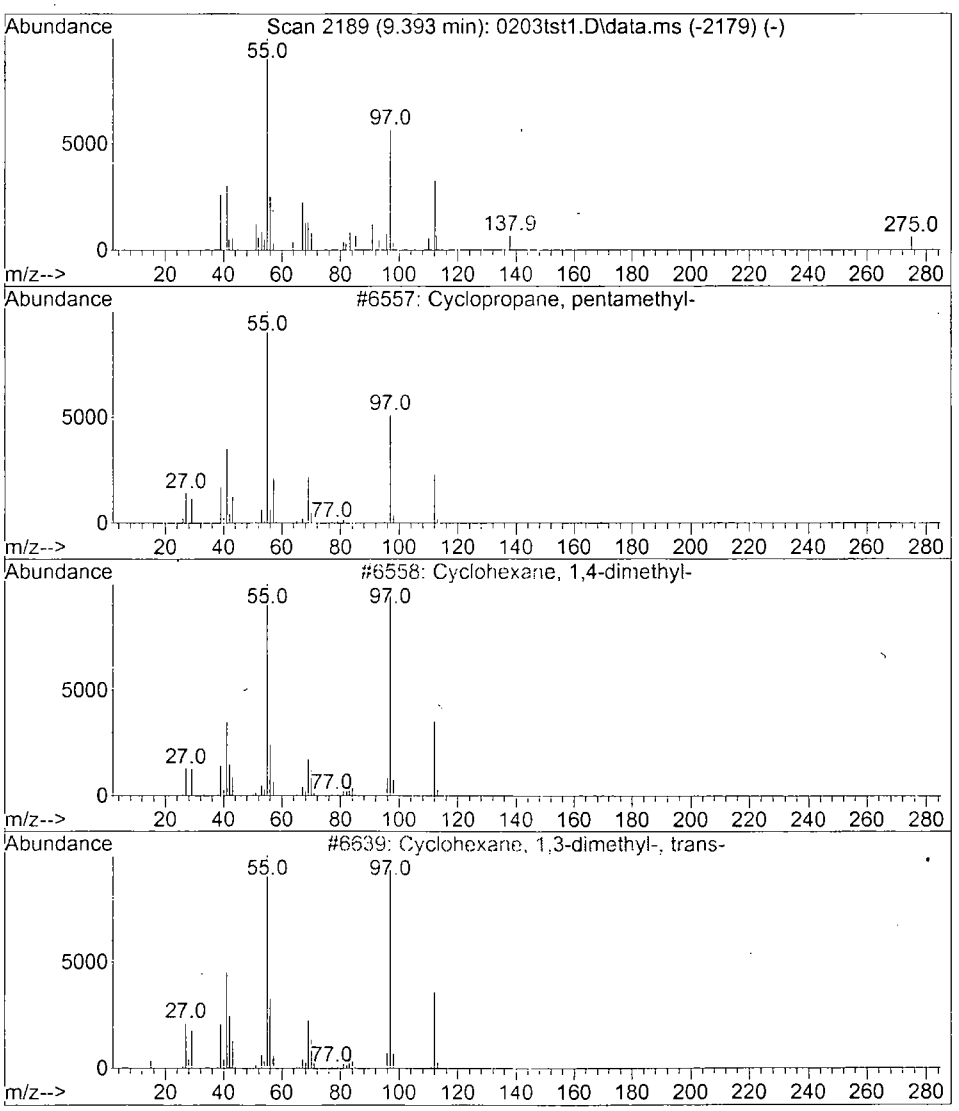
TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P

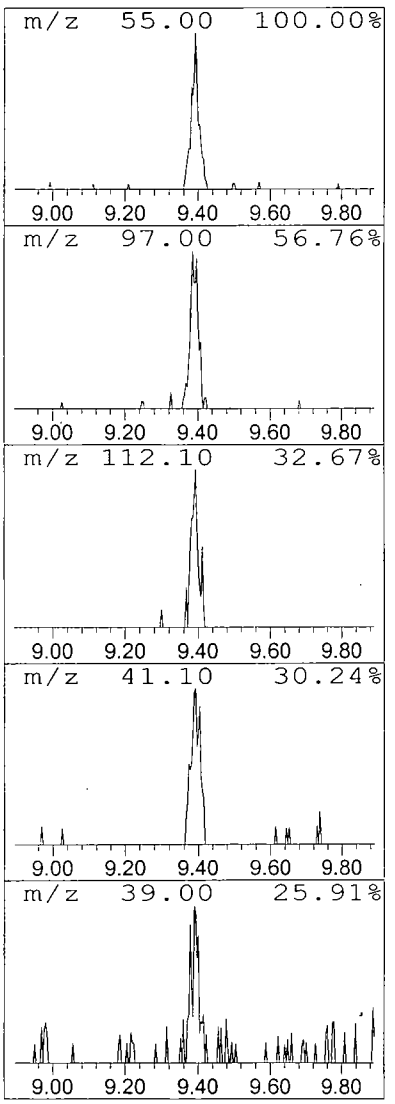
****

Peak Number 1 Cyclopropane, pentamethyl- Concentration Rank 3

R.T.	EstConc	Area	Relative to ISTD	R.T.
9.393	0.65 ug/L	69705	CHLOROBENZENE-d5	10.334

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Cyclopropane; pentamethyl-	112	C8H16	014172-83-9	52
2	Cyclohexane, 1,4-dimethyl-	112	C8H16	000589-90-2	50
3	Cyclohexane, 1,3-dimethyl-, trans-	112	C8H16	002207-03-6	47
4	Cyclohexane, 1,2-dimethyl-, cis-	112	C8H16	002207-01-4	45
5	Cyclohexane, 1-bromo-2-methyl-	176	C7H13Br	006294-39-9	43





Freedom_0006035_0171

Library Search Compound Report

Data Path : D:\DATA\L02032014\
Data File : 0203tst1.D
Acq On : 3 Feb 2014 16:59
Operator : PZ PZ1-AG5975
Sample : 20uL PZSoln#1 to 100mL (SCW)
Misc : PZSoln#1= 32.8mg MCHM std - 10mL MeOH
ALS Vial : 9 Sample Multiplier: 1

Quant Method : D:\METHODS\L01302014.M
Quant Title : VOA Purge and Trap LOW LEVEL Aqueous Method

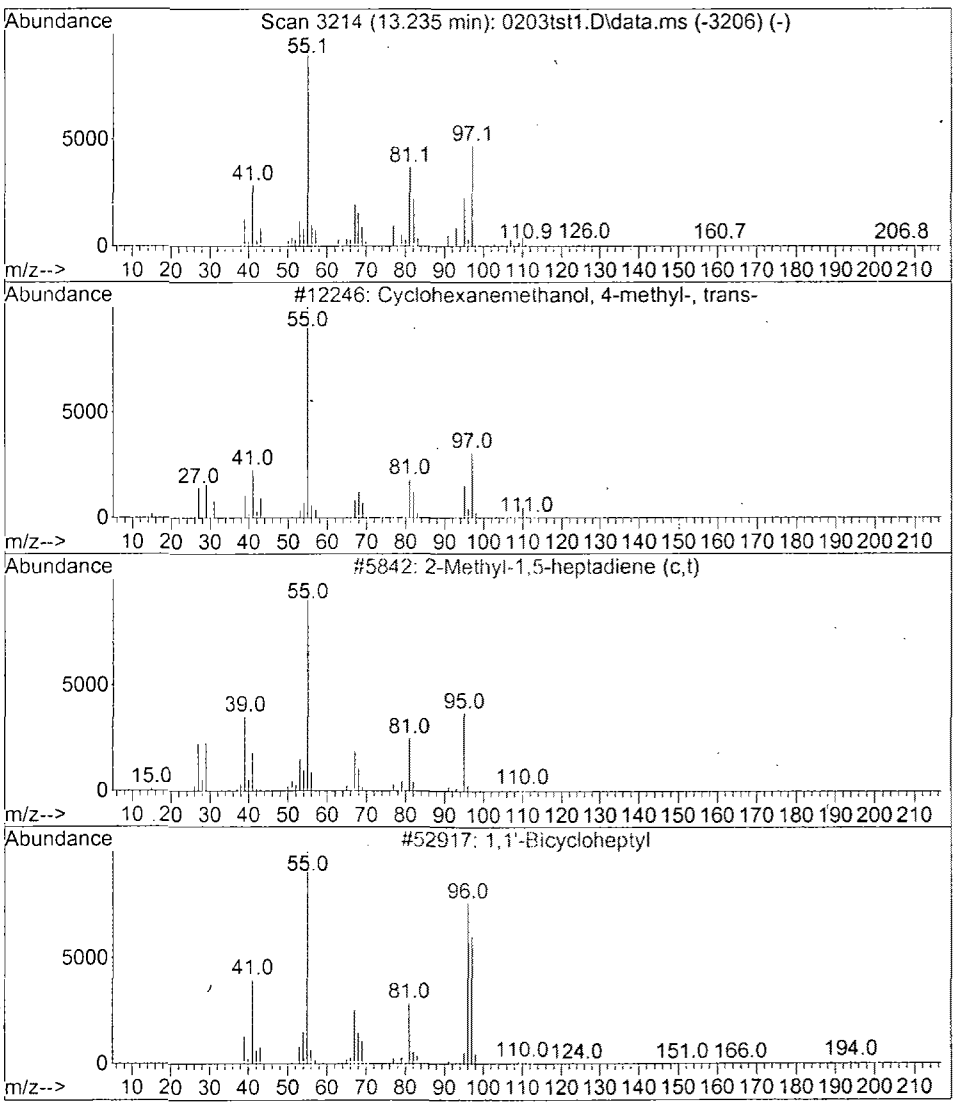
TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P

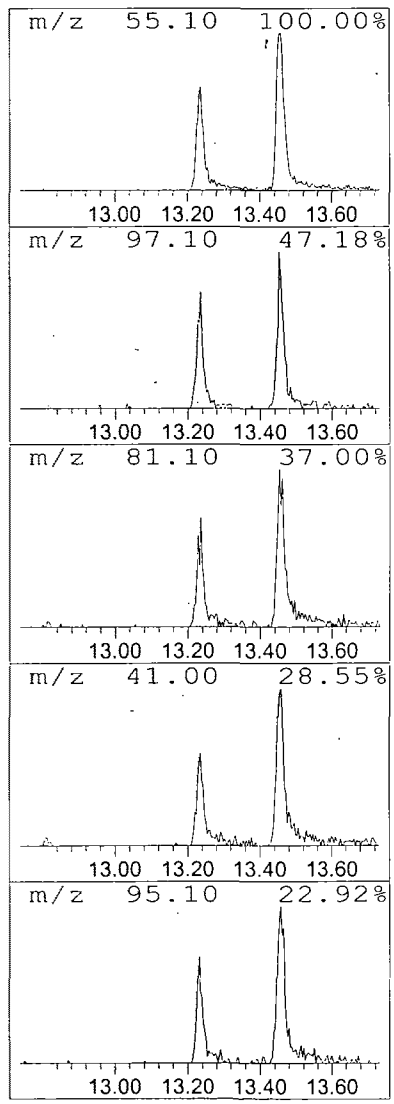
****

Peak Number 2 Cyclohexanemethanol, 4-meth... Concentration Rank 2

R.T.	EstConc	Area	Relative to ISTD	R.T.
13.235	2.81 ug/L	291428	1,4-DICHLOROBENZENE-d4	12.808

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Cyclohexanemethanol, 4-methyl-, ...	128	C8H16O	003937-49-3	72
2	2-Methyl-1,5-heptadiene (c,t)	110	C8H14	006766-54-7	38
3	1,1'-Bicycloheptyl	194	C14H26	023183-11-1	38
4	1,5-Heptadiene, 2-methyl-, (Z)-	110	C8H14	041044-64-8	38
5	Cycloheptane, bromo-	176	C7H13Br	002404-35-5	37





Freedom_0006035_0172

Data Path : D:\DATA\L02032014\
Data File : 0203tst1.D
Acq On : 3 Feb 2014 16:59
Operator : PZ PZ1-AG5975
Sample : 20uL PZSoln#1 to 100mL (SCW)
Misc : PZSoln#1= 32.8mg MCHM std - 10mL MeOH
ALS Vial : 9 Sample Multiplier: 1

Quant Method : D:\METHODS\L01302014.M
Quant Title : VOA Purge and Trap LOW LEVEL Aqueous Method

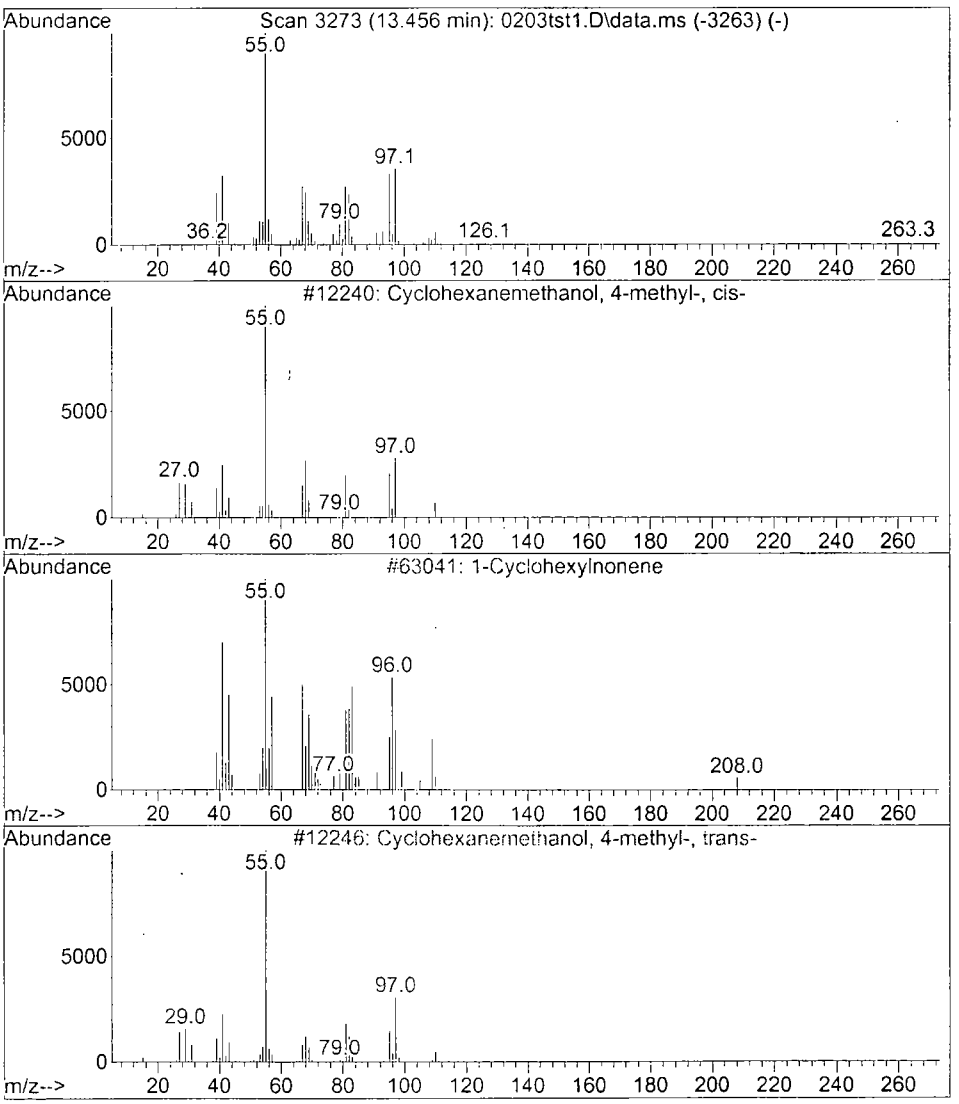
TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P

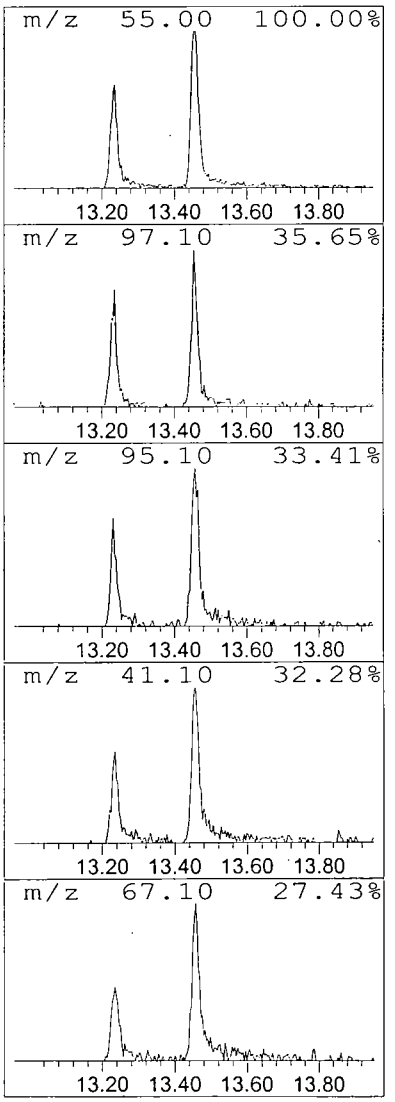
****

Peak Number 3 Cyclohexanemethanol, 4-meth... Concentration Rank 1

R.T.	EstConc	Area	Relative to ISTD	R.T.
13.456	4.73 ug/L	489378	1,4-DICHLOROBENZENE-d4	12.808

Hit# of 5	Tentative ID	MW	MolForm	CAS#	Qual
1	Cyclohexanemethanol, 4-methyl-, ...	128	C8H16O	003937-48-2	53
2	1-Cyclohexylnonene	208	C15H28	114614-84-5	50
3	Cyclohexanemethanol, 4-methyl-, ...	128	C8H16O	003937-49-3	47
4	(5Z)-3-Methyl-1,5-heptadiene	110	C8H14	050763-51-4	43
5	1,5-Hexadiene, 2,4-dimethyl-	110	C8H14	068701-71-3	38





Freedom_0006035_0173

Tentatively Identified Compound (LSC) summary

Data Path : D:\DATA\L02032014\
Data File : 0203tst1.D
Acq On : 3 Feb 2014 16:59
Operator : PZ PZ1-AG5975
Sample : 20uL PZSoln#1 to 100mL (SCW)
Misc : PZSoln#1= 32.8mg MCHM std - 10mL MeOH
ALS Vial : 9 Sample Multiplier: 1

Quant Method : D:\METHODS\L01302014.M
Quant Title : VOA Purge and Trap LOW LEVEL Aqueous Method

TIC Library : C:\Database\NIST05a.L
TIC Integration Parameters: LSCINT.P

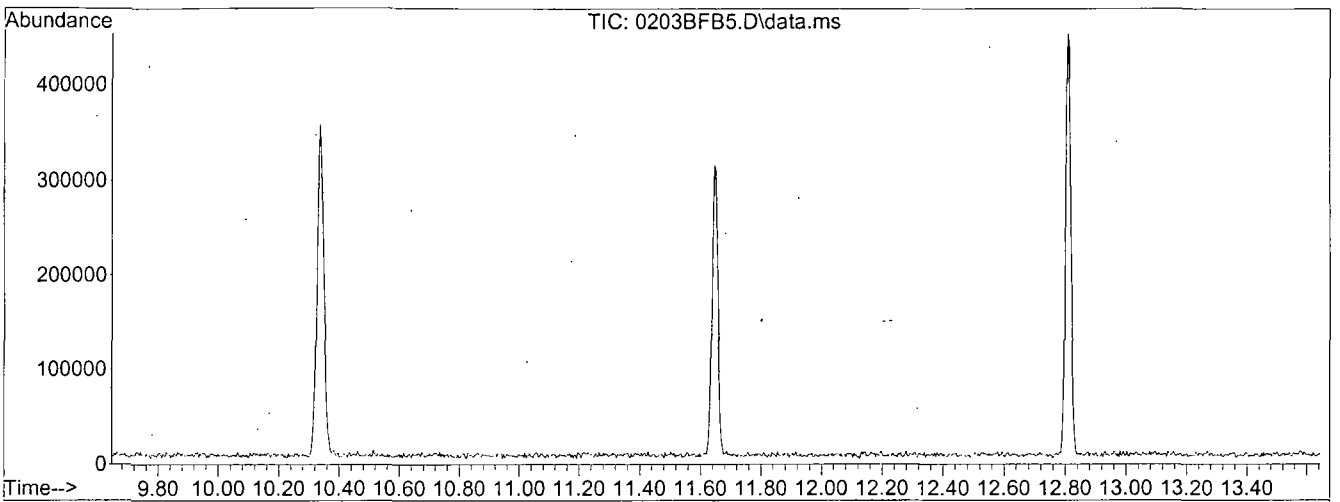
TIC Top Hit name	RT	EstConc	Units	Response	Internal Standard #	RT	Resp	Conc
Cyclopropane, p...	9.393	0.6	ug/L	69705	2	10.334	538506	5.0
Cyclohexanemeth...	13.235	2.8	ug/L	291428	3	12.808	517689	5.0
Cyclohexanemeth...	13.456	4.7	ug/L	489378	3	12.808	517689	5.0

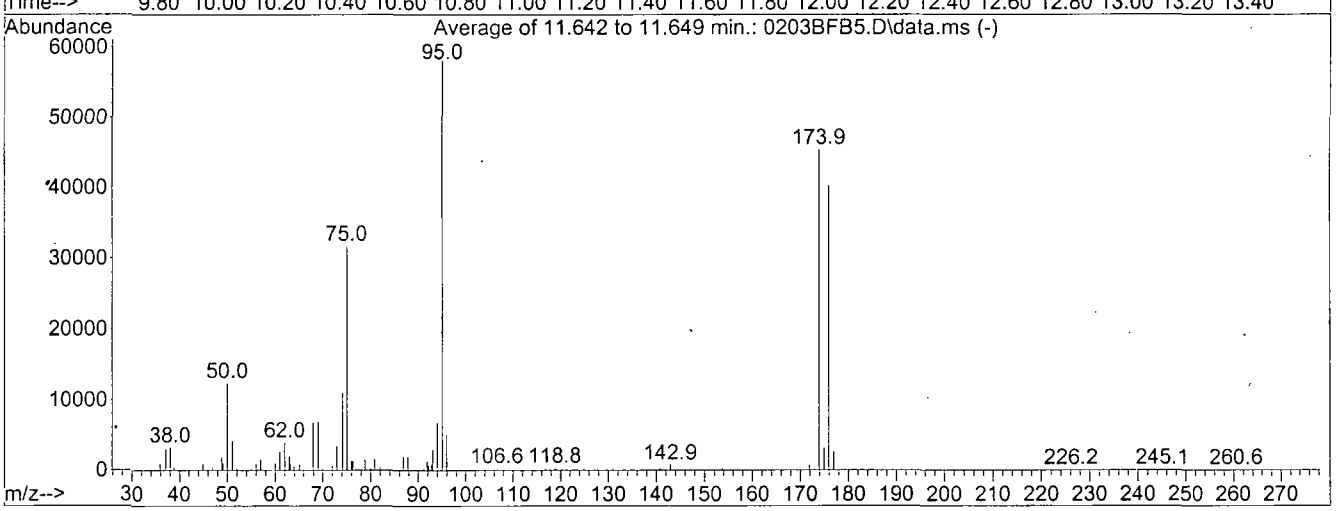
Freedom_0006035_0174

Data Path : D:\DATA\L02032014\
Data File : 0203BFB5.D
Acq On : 3 Feb 2014 13:59
Operator : PZ PZ1-AG5975
Sample : 25 ng BFB, 2uL IS/SS in 5mL
Misc :
ALS Vial : 8 Sample Multiplier: 1

Integration File: NORMAL.P

Method : D:\METHODS\L01302014.M
Title : VOA Purge and Trap LOW LEVEL Aqueous Method
Last Update : Thu Jan 30 13:30:19 2014





AutoFind: Scans 2789, 2790, 2791; Background Corrected with Scan 2781

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	21.4	12424	PASS
75	95	30	60	54.6	31736	PASS
95	95	100	100	100.0	58157	PASS
96	95	5	9	8.8	5135	PASS
173	174	0.00	2	0.7	317	PASS
174	95	50	100	78.2	45450	PASS
175	174	5	9	7.0	3181	PASS
176	174	95	101	88.8	40354	FAIL*
177	176	5	9	6.5	2609	PASS

Records Retrieval Responsive to:

Freedom Industries FOIA

Peggy Zawodny (3EA21)

Zawodny.peggy@epa.gov

410-305-2615

Ex. 5 - Deliberative

Ex. 5 - Deliberative

Zawodny, Peggy

From: Costas, Robin
Sent: Wednesday, March 05, 2014 7:59 AM
To: Zawodny, Peggy; Warner, Sue; Graybill, Eric
Subject: Can someone tell me the CAS number for this compound?

Categories: Hmmmm

This is from the West Va. report. I am having trouble finding it.

4,7-Methano-1H-indene, 3a,4,7,7a-t

robin

Robin Costas, Chemist
EPA Reg3, OASQA
Ft. Meade, Md 20755
410-305-2659

Please consider the environment before printing this email

Freedom_0006035_0177

West Virginia Chemical Leak Tentatively Identified Compounds (TICs) (Semi-volatile analysis)

Compound	CAS number
Cyclohexanemethanol	100-49-2
Cyclohexanemethanol, 4-methyl-, trans-	3937-49-3
Cyclohexanemethanol, 4-methyl-, cis-	????
Cyclohexanecarboxylic acid, 4-methyl-, methyl ester	51181-40-9
1-phenoxypropan-2-ol (PPH) (propylene glycol phenyl ether)	770-35-4
Possible 1,4-cyclohexanedimethanol	105-08-8
A compound similar to Ethanol, 2-(4-methylphenoxy)-	NA
1,4-Cyclohexanedicarboxylic acid, dimethyl ester (Dimethyl 1,4-cyclohexane dicarboxylate)	94-60-0
Dipropylene glycol phenyl ether (4 peaks)	51730-94-0
Unknown, masses 108, 107 and 166	NA
Unknown, masses 121, 59, 91and 134	NA
Unknown alcohol, masses 59, 135 and 107	NA
Unknown alcohol, masses 59, 135 and 94	NA
Unknown alcohol, masses 59, 135 and 107	NA
Unknown alcohol, masses 59, 135 and 107	NA
Unknown, masses 59, 135, 107 and 161	NA

WV Spill/Elk River

2/3/14

WO#	Sample/ Material	Objective	Task	Done
1401010	Storage Tank Material	Characterize to fullest extent possible; Determine if Crude MCHM and Crude PPH are present; Identify any additional compounds (extra TICs); Where possible calibrate against MCHM and PPH standards.	Analyze by VOC	
			Analyze by SVOC	
			Analyze by Metals 200.7	
			Analyze by Anions 300.1	
			Analyze by Hg	
			Analyze by HPLC/UV	
			Analyze pH screen	
			Analyze % Water	
			Analyze by IR Screen	
		Comparison to Crude MCHM/Crude PPH – any other compounds present	SVOC	
	Crude MCHM	Determine DL	VOC	
			SVOC	
			GC/FID	
			HPLC/UV	
		Determine Composition (does it match MSDS)	SVOC	
	Crude PPH	Determine DL	VOC	
			SVOC	
			GC/FID	
			HPLC/UV screen	
		Holding Time Study – holding time of PPH compound in Hexane extract and compare to MSDS biodegrade 28 day HT.	GC/FID	
		Determine Composition (does it match MSDS)	SVOC	
	Tank 396 Material (250mL)	Characterize similar to Storage Tank material above except for Anions, Metals and Hg. Where possible calibrate using MCHM and PPH standards	Analyze by VOC	
			Analyze by SVOC	
			Analyze by HPLC/UV	
			Analyze pH screen	

Freedom_0006035_0179

			Analyze % Water	
		Comparison of TICs – compare Tank Material and Tank 396 material and identify any unmatched peaks.	SVOC	
1401014	Site Samples	Analyze for VOCs using target list and identify any TICs to determine presence of any MCHM or PPH material	Analyze by VOC	
		Analyze for SVOC using target list and MCHM & PPH standard to quantitatively determine concentration of MCHM or PPH present; identify TICs and determine which are related to Crude MCHM/PPH material and any other TICs.	Analyze by SVOC	
		Analyze qualitatively to determine presence of PPH compounds found in crude mixtures	Analyze by HPLC/UV screen	

Freedom_0006035_0180

NEXT STEPS

What compounds are in the Crude MCHM/PPh?

GC/MS

HPLC/MS

GC/IR

How do we get there in 24 hours?

Other instrumentation?

Other analysts?

Someone to review spectra?

Was a solubility test done on the MCHM standard? PPh standard? Hydrophobic/hydrophilic? Visual descriptions.

Would any other tests assist in characterization?

Using the MSDS sheets what is the complete list of compounds? Percentages? New Percentage info from other labs?

Summary of other labs' methodology?

What other resources needed?

LC/MS with spectral library?

NEIC?

Other labs?

QA?

What isn't getting done? (workload issues?)

Analytical Support

Detection Limits:

- SVOC analysis yields best results for MCHM and PPh standards and crude mixtures.
  - MCHM and PPh at 0.5 ppb level using 1L sample. (Recoveries were around 80-90% with worst at 70% w for 0.5 ppb, 5 ppb, and 50 ppb.)
- VOC analysis indicates poor purge and trap recovery for MCHM and PPh unless heated during purge cycle. Detection limit around 100ppb. Ex. 5 - Deliberative
- HPLC/UV – PPh mixture detected and limit around 75 ppb.

On Friday 1/24, R3 Lab received material from alternate storage tank containing Crude MCHM and Crude PPh.

Characterization of the storage tank material completed with the exception of running the sample on the GC/IR (next week). Summary report is being compiled.

- GC/MS SVOC preliminary list of constituents submitted
- GC/MS VOC preliminary list of constituents submitted
  - Both show presence of crude MCHM and crude PPh compounds
- Metals not detected; small amount of calcium; no mercury
- No significant amount of anions; small amount of chloride
- pH = 5
- approx. 3.7% water

On Thursday 1/30, R3 Lab received split surface water samples and are currently being analyzed for SVOC and VOCs.

Ex. 5 - Deliberative

Additional samples expected Tuesday 2/4/14.

Ex. 5 - Deliberative

Ex. 5 - Deliberative

WV Spill

Summary of Region 3 Laboratory Support Efforts

1/31/2014
Prepared by : C. Caporale

Compounds of Interest

Material R3 Lab Obtained related to Crude MCHM/Crude PPh mixture in storage tank

- Obtained standards for MCHM and PPh (attached is list of compounds and CAS#)
- Obtained two standards with components in diPPh
- Obtained crude MCHM from Eastman Chemicals
- Obtained crude PPh from National Guard (originally obtained from Dow Chemicals)
- Obtained material from original tank at site from National Guard

Technical Support

R3 Lab personnel provided technical support on chemical nature of compounds of interest and applicable methods.

Assisted USGS National Water Quality Laboratory with methodology and shipment of MCHM standard.

Worked with ERT on source for standards and method performance.
Terry Smith and Trish Tidwell-Shelton notified and updates provided to Trish.

Participated on conference calls organized by National Guard (Lt. Col. Grant) that included WV State Public Health Lab, WV American Water, MATRIC, and REIC.

- In an effort to strengthen laboratory analysis of MCHM and PPH, chemists and lab managers from nine organizations including EPA, are working collaboratively to share information and analytical data about the mixture. Participants include the National Guard, WV American Water, American Water Research, REI Consulting, DuPont Inc., Dow Inc., Matric Inc., ATSDR, and EPA. The group is looking to identify analytical techniques that will allow for lower detection limits for the single compounds, MCHM and PPH, in water. The lower detection limits will increase the capacity of laboratories to detect MCHM and PPH in water at orders of magnitude below the health risk levels.

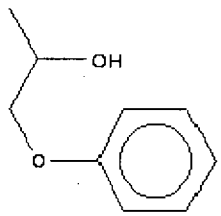
Contacted Marshall University to obtain methodology used to analyze for formaldehyde.

1-Phenoxypropan-2-ol

- **Formula:** $C_9H_{12}O_2$
- **Molecular weight:** 152.1904
- **IUPAC Standard InChI:**
  - `InChI=1S/C9H12O2/c1-8(10)7-11-9-5-3-2-4-6-9/h2-6,8,10H,7H2,1H3`
  - Download the identifier in a file.

InChITRUST CERTIFIED 2011

- **IUPAC Standard InChIKey:** `IBLKWZIFZMJLFL-UHFFFAOYSA-N`
- **CAS Registry Number:** 770-35-4
- **Chemical structure:**



This structure is also available as a 2d Mol file

- **Other names:** Phenyl-β-hydroxypropyl ether; 1-Phenoxy-2-propanol; 2-Propanol, 1-phenoxy-; Phenoxyisopropanol; Propylene phenoxetol; 2-Phenoxy-1-methylethanol; Propylenephenoxythol
- **Permanent link** for this species. Use this link for bookmarking this species for future reference.
- **Information on this page:**
  - Mass spectrum (electron ionization)
  - References
  - Notes / Error Report
- **Other data available:**
  - IR Spectrum
  - Gas Chromatography
- **Options:**
  - Switch to calorie-based units

Mass spectrum (electron ionization)

Go To: Top, References, Notes / Error Report

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Data compiled by: NIST Mass Spec Data Center, S.E. Stein, director

Freedom_0006035_0184

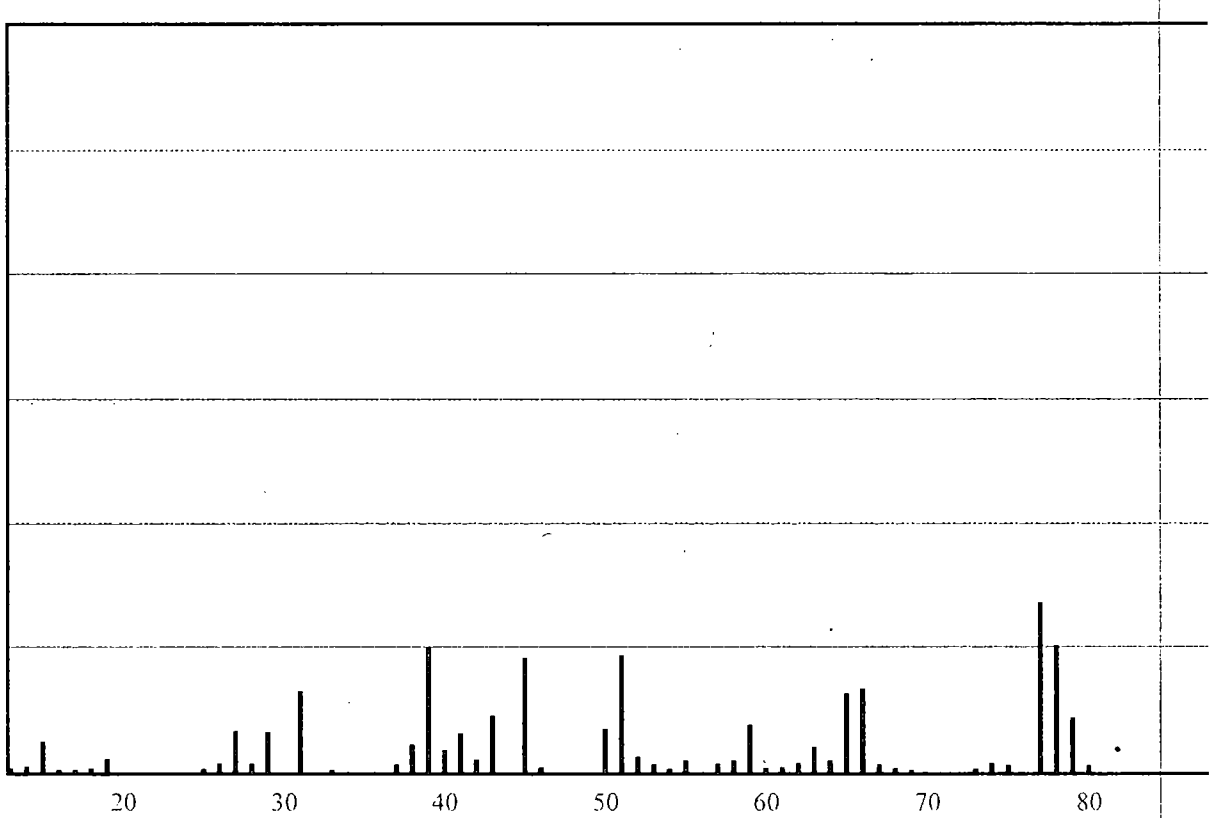
Spectrum

Plot | Help / Software credits

1-Phenoxypropan-2-ol

Mass Spectrum

Relative Intensity vs. m/z



Additional Data

View image of digitized spectrum (can be printed in landscape orientation).

View spectrum image in SVG format.

Download spectrum in JCAMP-DX format.

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Origin	NIST Mass Spectrometry Data Center

Freedom_0006035_0185

NIST MS number 343256

All mass spectra in this site (plus many more) are available from the NIST/EPA/NIH Mass Spectral Library. Please see the following for information about the library and its accompanying search program.

References

Go To: Top, Mass spectrum (electron ionization), Notes / Error Report

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No reference data available.

Notes / Error Report

Go To: Top, Mass spectrum (electron ionization), References

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SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

SDS REVISION #: 001

PRODUCT IDENTIFIER:	PPH, stripped
OTHER IDENTIFIERS:	None
CHEMICAL FORMULA:	Complex mixture
RELEVANT USES:	Mineral flotation
DISTRIBUTED BY:	Freedom Industries, Inc. 1015 Barlow Drive Charleston, WV 25311
PHONE NUMBERS:	Business - (304) 720-8065 (business hours) CHEMTREC - (800) 424-9300 (transportation emergencies)

Ex. 5 - Deliberative

SECTION 2 - HAZARDS IDENTIFICATION

GHS CLASSIFICATION:
Serious eye irritation (Category 2)
Skin irritation (Category 2)

SIGNAL WORD:
Warning!

HAZARD STATEMENTS:
Causes skin irritation and serious eye irritation.

PRECAUTIONARY STATEMENTS:

Prevention
Wear protective gloves, eye protection and face protection. Wash exposed areas thoroughly after handling.

Response
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. If on skin: Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse.

Section 2 continued on next page

SECTION 2 - HAZARDS IDENTIFICATION (continued)

PRECAUTIONARY STATEMENTS (continued):

Storage
Not applicable

Disposal
Not applicable

HAZARDS NOT OTHERWISE CLASSIFIED: None

SECTION 3 - COMPOSITION / INFORMATION ON INGREDIENTS

Component	%	CAS No.
Polyglycol ethers	100	Proprietary*

*The specific chemical identity is being withheld as "trade secret" in accordance with 29 CFR 1910.1200(i)

SECTION 4 - FIRST AID MEASURES

IN CASE OF EYE CONTACT:
Immediately flush with large amounts of water for at least 15 minutes, lifting upper and lower lids occasionally. Remove contact lenses, if present and easy to do. Get immediate medical attention. Do not use chemical antidote.

IN CASE OF SKIN CONTACT:
Wash exposed area with soap and water. Remove contaminated clothing and launder before reuse.

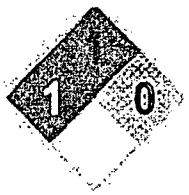
IF SWALLOWED:
If conscious, immediately give two large glasses of water. Call a physician. Never give anything by mouth to an unconscious person.

IF INHALED:
If affected, move to fresh air. If breathing is difficult, contact a physician.

MOST IMPORTANT SYMPTOMS AND EFFECTS:
Contact with skin or eyes causes irritation, which may be severe, especially in sensitive individuals.

NOTE TO PHYSICIAN:
Treat symptomatically.

SECTION 5 - FIRE FIGHTING MEASURES



FLAMMABLE PROPERTIES:

This material is not easily ignited, but will burn if heated sufficiently. It meets the OSHA definition of a Class IIIB – combustible liquid.

EXTINGUISHING MEDIA:

Use water fog, alcohol-resistant foam or dry chemical or carbon dioxide.

PROTECTION OF FIREFIGHTERS:

Keep personnel removed from and upwind. Wear full protective clothing and self-contained breathing apparatus with full face-piece. Cool containers with water. Water or foam may cause frothing which can be violent, especially if sprayed into containers of hot, burning liquid.

SECTION 6 -- ACCIDENTAL RELEASE MEASURES

PRECAUTIONS, PROTECTIVE EQUIPMENT & EMERGENCY PROCEDURES:

Persons not wearing protective equipment should be excluded from the area of the spill until cleanup has been completed.

CONTAINMENT & CLEAN-UP:

Dike area of spill to prevent spreading and pump liquid to salvage tank. Absorb remaining liquid on vermiculite, floor absorbent or other absorbent material and shovel into containers.

SECTION 7 - HANDLING AND STORAGE

HANDLING:

Avoid contact with skin, eyes and clothing. Avoid inhalation of vapors. Wash thoroughly after handling.

STORAGE:

Keep in closed or covered containers when not in use. Store in cool dry place with adequate ventilation. Do not store near strong oxidizing materials.

SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE GUIDELINES:

Not established for product or components

Section 8 continued on next page

SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION (continued)

ENGINEERING CONTROLS:
Provide sufficient ventilation to maintain exposure below level of overexposure.

EYE / FACE PROTECTION:
Chemical splash goggles, in compliance with OSHA regulations, are advised.

SKIN PROTECTION:
Wear protective gloves such as Neoprene or Buna-N.

RESPIRATORY PROTECTION:
Not required under normal conditions of use; however, a NIOSH/MSHA supplied air respirator or canister-type respirator equipped with organic vapor cartridge is recommended if there is insufficient ventilation to maintain exposures below established exposure limits.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Clear, colorless or yellow liquid @ 68° F (20° C)
Odor: Mild
pH: Unavailable
Freezing Point: <32° F (0° C)
Initial Boiling Point: ~477° F (247° C)
Flash Point: >253° F (123° C) PMCC
Evaporation Rate: Slower (Ethyl Ether = 1)
Upper Explosion Limit: Unavailable
Lower Explosion Limit: Unavailable
Vapor Pressure: Unavailable
Vapor Density: Heavier
Relative Density: ~1.06 @ 68° F (20° C)
Weight per Gallon: ~8.84
Solubility in Water: ~2%
Volatile %: >95%
VOC %: Unavailable)
Autoignition Temperature: Unavailable
Decomposition Temperature: Unavailable

SECTION 10 - STABILITY AND REACTIVITY

REACTIVITY:
Reacts violently with strong oxidizers

STABILITY:
Stable under normal conditions of 70° F (21° C) and 14.7 psig (760 mm Hg).

POSSIBILITY OF HAZARDOUS REACTIONS:
Avoid contact with strong oxidizers

CONDITIONS TO AVOID:
None anticipated under normal conditions of use

Section 10 continued on next page

SECTION 10 - STABILITY AND REACTIVITY (continued)

INCOMPATIBILE MATERIALS:
Avoid contact with strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS:
Not anticipated under normal conditions of use.

DECOMPOSITION:
Unknown

SECTION 11 - TOXICOLOGICAL INFORMATION

LIKELY ROUTES OF EXPOSURE:
Skin and eye contact and inhalation

SYMPTOMS:
Eyes: Symptoms include pain and redness.

Skin: Redness

Breathing: Symptoms include irritation of respiratory tract.

Swallowing: Nausea

EFFECTS FROM EXPOSURE:
Immediate: Causes serious irritation to the eyes. May cause skin irritation. Harmful if swallowed.

Delayed: None known

Chronic: None known

TOXICITY DATA:
Acute oral LD_{50} (rat) – >2000 mg/kg (for majority component)
Dermal LD_{50} (rat) – greater than 2000 mg/kg (for majority component)

CARCINOGENICITY
This product is not reported to have any carcinogenic effects. This product (or components) is not listed in IARC Monographs, the current NTP Report on Carcinogens or the current ACGIH TLVs as a carcinogen or potential carcinogen. OSHA does not regulate it as a carcinogen.

SECTION 12 - ECOLOGICAL INFORMATION

ECOTOXICITY:
No data available

PERSISTENCE AND BIODEGRADABILITY
No data available for product

BIOACCUMULATIVE POTENTIAL:
No data available

MOBILITY IN SOIL:
No data available

OTHER ADVERSE EFFECTS:
No data available

SECTION 13 - DISPOSAL CONSIDERATIONS

Incineration is the recommended disposal method for all chemical wastes. Material collected on absorbent material may be deposited in a landfill in accordance with all applicable local, state and federal regulations.

This product, if disposed of, is not considered a hazardous waste under current RCRA definitions.

SECTION 14 - TRANSPORT INFORMATION

Not regulated under current U.S DOT, TDG (Canadian), ICAO (air) or IMO (water) transport regulations.

SECTION 15 - REGULATORY INFORMATION

TSCA INFORMATION:
All components in this product are in compliance with TSCA Inventory requirements.

SARA:
CERCLA/SARA 302: None
CERCLA/SARA 311/312: Acute
CERCLA/SARA 313: None

SECTION 16. - OTHER INFORMATION

PREPARATION DATE: October 15, 2013
SUPERCEDES: Not applicable
REASON FOR REVISION: New SDS

The product information contained herein is believed to be accurate as of the date of the Safety Data Sheet, and is provided without warranty, expressed or implied, as to the results of use of this information or the product to which it relates. Recipient assumes all responsibility for the use of this information and the use (alone or in combination with any other product), storage or disposal of the product, including any resultant personal injury or property damage.

END OF REPORT

Material Safety Data Sheet
The Dow Chemical Company

Product Name: DOWANOL(TM) DiPPH Glycol Ether

Issue Date: 08/20/2012
Print Date: 14 Aug 2013

The Dow Chemical Company encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. Product and Company Identification

Product Name
DOWANOL(TM) DiPPH Glycol Ether

COMPANY IDENTIFICATION
The Dow Chemical Company
2030 Willard H. Dow Center
Midland, MI 48674
United States

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: Colorless to yellow
Physical State: Liquid.
Odor: Odorless to mild
Hazards of product:

WARNING! Causes eye irritation. May be harmful if absorbed through skin. May be harmful if swallowed. 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.
Skin Contact: Brief contact may cause slight skin irritation with local redness.
Skin Absorption: Prolonged skin contact is unlikely to result in absorption of harmful amounts.

Inhalation: At room temperature, vapors are minimal due to low volatility. Vapor from heated material or mist may be hazardous on single exposure. For respiratory irritation and narcotic effects: No relevant data found.
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.
Aspiration hazard: Based on physical properties, not likely to be an aspiration hazard.
Birth Defects/Developmental Effects: For the major component(s): Contains component(s) which caused birth defects in laboratory animals only at doses toxic to the mother.

3. Composition Information

Component	CAS #	Amount
Dipropylene glycol phenyl ether	51730-94-0	>= 60.0 %
Propylene glycol phenyl ether	770-35-4	<= 25.0 %
Polypropylene glycol phenyl ether	28212-40-0	<= 15.0 %

4. First-aid measures

Description of first aid measures

General advice: First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.
Inhalation: Move person to fresh air; if effects occur, consult a physician.
Skin Contact: Wash skin with plenty of water.
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. Suitable emergency eye wash facility should be immediately available.
Ingestion: If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.

Most important symptoms and effects, both acute and delayed

Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), no additional symptoms and effects are anticipated.

Indication of immediate medical attention and special treatment needed

Maintain adequate ventilation and oxygenation of the patient. 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

Suitable extinguishing media

Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. General purpose synthetic foams (including AFFF type) or protein foams are preferred if available. Alcohol resistant foams (ATC type) may function. Water fog, applied gently may be used as a blanket for fire extinguishment.
Extinguishing Media to Avoid: Do not use direct water stream. May spread fire.

Special hazards arising from the substance or mixture

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Hazardous Combustion Products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Carbon monoxide. Carbon dioxide.
Unusual Fire and Explosion Hazards: Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.

Advice for firefighters

Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Do not use direct water stream. May spread fire. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Water fog, applied gently may be used as a blanket for fire extinguishment.
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.

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures: Evacuate area. Keep upwind of spill. Ventilate area of leak or spill. Only trained and properly protected personnel must be involved in clean-up operations. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection. Refer to Section 7, Handling, for additional precautionary measures.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

Methods and materials for containment and cleaning up: Small spills: Absorb with materials such as: Sand. Vermiculite. Collect in suitable and properly labeled containers. Large spills: Contain spilled material if possible. Pump into suitable and properly labeled containers. See Section 13, Disposal Considerations, for additional information.

7. Handling and Storage

Handling
General Handling: Do not get in eyes, on skin, on clothing. Do not swallow. Avoid breathing vapor or mist. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.
Other Precautions: Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion.

Storage
Store in the following material(s): Carbon steel. Stainless steel. Phenolic lined steel drums. Do not store in: Aluminum. Copper. Galvanized iron. Galvanized steel. See Section 10 for more specific information.

Storage Period:
Bulk
6 Months

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Metal drums.
24 Months

8. Exposure Controls / Personal Protection

Exposure Limits

None established

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.

Hand protection: Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Butyl rubber. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl chloride ("PVC" or "vinyl"). 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: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. Use an approved air-purifying respirator when vapors are generated at increased temperatures or when dust or mist is present. The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-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: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

9. Physical and Chemical Properties

Appearance	
Physical State	Liquid.
Color	Colorless to yellow
Odor	Odorless to mild
Odor Threshold	No test data available
pH	Not available
Melting Point	Not applicable to liquids
Freezing Point	< -50 °C (< -58 °F) *Literature*
Boiling Point (760 mmHg)	280 °C (536 °F) *Calculated* .
Flash Point - Closed Cup	138 °C (280 °F) *Pensky-Martens Closed Cup ASTM D 93*
Evaporation Rate (Butyl Acetate = 1)	<0.01 *Literature*
Flammability (solid, gas)	Not applicable to liquids
Flammable Limits In Air	**Lower**: Not available **Upper**: Not available
Vapor Pressure	0.002 mmHg @ 20 °C *Calculated* (based on major component)
Vapor Density (air = 1)	Not available

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Specific Gravity (H2O = 1)	1.0513 25 °C/25 °C *ASTM D4052*
Solubility in water (by weight)	30 g/l 1.5 % @ 25 °C *Measured*
Partition coefficient, n-octanol/water (log Pow)	No data available for this product. See Section 12 for individual component data.
Autoignition Temperature	No test data available
Decomposition Temperature	No test data available
Dynamic Viscosity	36 cps @ 25 °C *ASTM D445*
Kinematic Viscosity	34.3 cSt @ 25 °C *Calculated*
Liquid Density	1.0482 g/cm3 @ 25 °C *Digital density meter*

10. Stability and Reactivity

Reactivity
No dangerous reaction known under conditions of normal use.

Chemical stability
Thermally stable at typical use temperatures.

Possibility of hazardous reactions
Polymerization will not occur.

Conditions to Avoid: Do not distill to dryness. Product can oxidize at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems.

Incompatible Materials: Avoid contact with: Strong acids. Strong bases. Strong oxidizers.

Hazardous decomposition products
Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Aldehydes. Ketones. Organic acids.

11. Toxicological Information

Acute Toxicity
Ingestion
As product: Single dose oral LD50 has not been determined.
For the major component(s): LD50, rat > 2,000 mg/kg
Dermal
As product: The dermal LD50 has not been determined.
For the major component(s): LD50, rat > 2,000 mg/kg
Inhalation
As product: The LC50 has not been determined.
Eye damage/eye irritation
May cause severe eye irritation. May cause slight corneal injury.
Skin corrosion/irritation
Brief contact may cause slight skin irritation with local redness.
Sensitization
Skin
For the major component(s): Did not cause allergic skin reactions when tested in guinea pigs.
Respiratory
No specific, relevant data available for assessment.
Repeated Dose Toxicity
Based on available data, repeated exposures are not anticipated to cause additional significant adverse effects.

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Chronic Toxicity and Carcinogenicity
No specific, relevant data available for assessment.

Developmental Toxicity
For the major component(s): Contains component(s) which caused birth defects in laboratory animals only at doses toxic to the mother.

Reproductive Toxicity
For the major component(s): In animal studies, did not interfere with reproduction.

Genetic Toxicology
In vitro genetic toxicity studies were negative for component(s) tested. For the component(s) tested: Animal genetic toxicity studies were predominantly negative.

12. Ecological Information

Toxicity

Data for Component: **Dipropylene glycol phenyl ether**

Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).

Fish Acute & Prolonged Toxicity
LC50, Oncorhynchus mykiss (rainbow trout), static test, 96 h: 204 mg/l
Aquatic Invertebrate Acute Toxicity
EC50, Daphnia magna (Water flea), static test, 48 h, immobilization: 336 mg/l
Aquatic Plant Toxicity
ErC50, Pseudokirchneriella subcapitata (green algae), Growth rate inhibition, 96 h: 188 mg/l

Data for Component: **Propylene glycol phenyl ether**

Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).

Fish Acute & Prolonged Toxicity
LC50, Pimephales promelas (fathead minnow), static test, 96 h: 280 mg/l
Aquatic Invertebrate Acute Toxicity
LC50, Daphnia magna (Water flea), static test, 48 h, survival: 370 mg/l
Aquatic Plant Toxicity
EC50, Desmodesmus subspicatus (green algae), static test, Growth rate inhibition, 72 h: > 100 mg/l

Data for Component: **Polypropylene glycol phenyl ether**

No data available.

Persistence and Degradability

Data for Component: **Dipropylene glycol phenyl ether**

Material is expected to be readily biodegradable.
OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
100 %	28 d	OECD 301F Test	pass

Data for Component: **Propylene glycol phenyl ether**

Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Biodegradation rate may increase in soil and/or water with acclimation.
OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
72 %	28 d	OECD 301F Test	fail

Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
3.72E-11 cm3/s	3.5 h	Estimated.

Theoretical Oxygen Demand: 2.31 mg/mg

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Data for Component: **Polypropylene glycol phenyl ether**
No data available.

Bioaccumulative potential

Data for Component: **Dipropylene glycol phenyl ether**
Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient, n-octanol/water (log Pow): 1.73 Estimated.
Bioconcentration Factor (BCF): < 1; Estimated.
Data for Component: **Propylene glycol phenyl ether**
Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient, n-octanol/water (log Pow): 1.41 Measured
Data for Component: **Polypropylene glycol phenyl ether**
Bioaccumulation: No data available.

Mobility in soil

Data for Component: **Dipropylene glycol phenyl ether**
Mobility in soil: Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process., Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient, soil organic carbon/water (Koc): 12.36 Estimated.
Henry's Law Constant (H): 4.77E-10 atm*m3/mole
Data for Component: **Propylene glycol phenyl ether**
Mobility in soil: Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient, soil organic carbon/water (Koc): 19 - 21 Estimated.
Henry's Law Constant (H): 4.41E-07 atm*m3/mole; 25 °C Estimated.
Data for Component: **Polypropylene glycol phenyl ether**
Mobility in soil: No data available.

13. Disposal Considerations

DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. 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. AS YOUR SUPPLIER, WE HAVE 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: Incinerator or other thermal destruction device.

14. Transport Information

DOT Non-Bulk
NOT REGULATED

DOT Bulk
NOT REGULATED

IMDG
NOT REGULATED

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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.

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

Hazard Rating System

NFPA	**Health**	**Fire**	**Reactivity**

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Revision

Identification Number: 1062740 / 0000 / Issue Date 08/20/2012 / Version: 1.0
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.

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Material Safety Data Sheet
The Dow Chemical Company

Product Name: DOWANOL™ PPH Glycol Ether

Issue Date: 02/11/2013
Print Date: 12 Feb 2013

The Dow Chemical Company encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. Product and Company Identification

Product Name
DOWANOL™ PPH Glycol Ether

COMPANY IDENTIFICATION
The Dow Chemical Company
2030 Willard H. Dow Center
Midland, MI 48674
United States

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: colourless
Physical State: Liquid.
Odor: Very slight
Hazards of product:

WARNING! Causes eye irritation. 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.
Skin Contact: Prolonged contact may cause slight skin irritation with local redness.
Skin Absorption: Prolonged skin contact is unlikely to result in absorption of harmful amounts.
Inhalation: At room temperature, vapors are minimal due to low volatility. Vapor from heated material or mist may be hazardous on single exposure. For respiratory irritation and narcotic effects: No relevant data found.

®(TM)*Trademark

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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.
Aspiration hazard: Based on physical properties, not likely to be an aspiration hazard.
Birth Defects/Developmental Effects: Has caused birth defects in laboratory animals only at doses toxic to the mother.

3. Composition Information

Component	CAS #	Amount
Propylene glycol phenyl ether	770-35-4	> 99.5 %

4. First-aid measures

Description of first aid measures

General advice: First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.
Inhalation: Move person to fresh air; if effects occur, consult a physician.
Skin Contact: Wash skin with plenty of water.
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. Suitable emergency eye wash facility should be immediately available.
Ingestion: If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.

Most important symptoms and effects, both acute and delayed

Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), no additional symptoms and effects are anticipated.

Indication of immediate medical attention and special treatment needed

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

Suitable extinguishing media

Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective. Water fog, applied gently may be used as a blanket for fire extinguishment.
Extinguishing Media to Avoid: Do not use direct water stream. May spread fire.

Special hazards arising from the substance or mixture

Hazardous Combustion Products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Carbon monoxide. Carbon dioxide.
Unusual Fire and Explosion Hazards: Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.

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Advice for firefighters

Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Do not use direct water stream. May spread fire. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Water fog, applied gently may be used as a blanket for fire extinguishment.
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). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures: 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. Refer to Section 7, Handling, for additional precautionary measures.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

Methods and materials for containment and cleaning up: Small spills: Absorb with materials such as: Sand. Vermiculite. Collect in suitable and properly labeled containers. Large spills: Contain spilled material if possible. Pump into suitable and properly labeled containers. See Section 13, Disposal Considerations, for additional information.

7. Handling and Storage

Handling
General Handling: Do not get in eyes. Avoid contact with skin and clothing. Wash thoroughly after handling. Keep container closed. Use with adequate ventilation. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.
Other Precautions: Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion.

Storage
Store in the following material(s): Carbon steel. Stainless steel. Phenolic lined steel drums. Do not store in: Aluminum. Copper. Galvanized iron. Galvanized steel.
Shelf life: Use within, Metal drums. 24 Months
Bulk 6 Months

8. Exposure Controls / Personal Protection

Exposure Limits

None established

Personal Protection
Eye/Face Protection: Use chemical goggles.
Skin Protection: Wear clean, body-covering clothing.
Hand protection: Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Examples of preferred glove barrier materials

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include: Butyl rubber. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl chloride ("PVC" or "vinyl"). 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: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. Use an approved air-purifying respirator when vapors are generated at increased temperatures or when dust or mist is present. The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-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: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

9. Physical and Chemical Properties

Appearance	
Physical State	Liquid.
Color	colourless
Odor	Very slight
Odor Threshold	No test data available
pH	No test data available
Melting Point	11 °C (52 °F) *Literature*
Freezing Point	11 °C (52 °F) *Literature*
Boiling Point (760 mmHg)	241.2 °C (466.2 °F) *Literature*
Flash Point - Closed Cup	115 °C (239 °F) *Literature*
Evaporation Rate (Butyl Acetate = 1)	No test data available
Flammability (solid, gas)	No
Flammable Limits In Air	**Lower**: 0.8 %(V) *Literature* **Upper**: Not determined
Vapor Pressure	0.01 hPa @ 20 °C *Literature*
Vapor Density (air = 1)	5.27 *Literature*
Specific Gravity (H2O = 1)	1.060 20 °C/20 °C *ASTM D4052*
Solubility in water (by weight)	15.1 g/l @ 20 °C *Literature*
Partition coefficient, n-octanol/water (log Pow)	1.41 *Measured*
Autoignition Temperature	1,013 hPa 480 °C (896 °F) *Literature*
Decomposition Temperature	No test data available
Dynamic Viscosity	22.7 mPa.s @ 25 °C *Literature*
Kinematic Viscosity	21.4 mm2/s *Literature*
Explosive properties	Not explosive
Oxidizing properties	No
Liquid Density	8.83 lb/gal @ 25 °C *Literature*
Molecular Weight	No test data available
Surface tension	67.8 mN/m @ 20 °C *Literature*
Henry's Law Constant (H)	4.41E-07 atm*m3/mole; 25 °C Estimated.

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10. Stability and Reactivity

Reactivity
No dangerous reaction known under conditions of normal use.

Chemical stability
Thermally stable at typical use temperatures.

Possibility of hazardous reactions
Polymerization will not occur.

Conditions to Avoid: Do not distill to dryness. Product can oxidize at elevated temperatures.

Incompatible Materials: Avoid contact with: Strong acids. Strong bases. Strong oxidizers.

Hazardous decomposition products
Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Aldehydes. Ketones. Organic acids.

11. Toxicological Information

Acute Toxicity
Ingestion
LD50, rat > 2,000 mg/kg
Dermal
LD50, rat > 2,000 mg/kg
Inhalation
No deaths occurred following exposure to a saturated atmosphere. , 4 h, Aerosol, rat 5.4 mg/l
Eye damage/eye irritation
May cause severe eye irritation. May cause slight corneal injury.
Skin corrosion/irritation
Prolonged contact may cause slight skin irritation with local redness.
Sensitization
Skin
Did not cause allergic skin reactions when tested in guinea pigs.
Respiratory
No relevant data found.
Repeated Dose Toxicity
Based on available data, repeated exposures are not anticipated to cause additional significant adverse effects.
Chronic Toxicity and Carcinogenicity
No relevant data found.
Developmental Toxicity
Has caused birth defects in laboratory animals only at doses toxic to the mother.
Reproductive Toxicity
In animal studies, did not interfere with reproduction.
Genetic Toxicology
In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were predominantly negative.

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12. Ecological Information

Toxicity

Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).

Fish Acute & Prolonged Toxicity
LC50, Pimephales promelas (fathead minnow), static test, 96 h: 280 mg/l
Aquatic Invertebrate Acute Toxicity
LC50, Daphnia magna (Water flea), static test, 48 h, survival: 370 mg/l
Aquatic Plant Toxicity
EC50, Desmodesmus subspicatus (green algae), static test, Growth rate inhibition, 72 h: > 100 mg/l.

Persistence and Degradability

Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Biodegradation rate may increase in soil and/or water with acclimation.

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
72 %	28 d	OECD 301F Test	fail

Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
3.72E-11 cm3/s	3.5 h	Estimated.

Theoretical Oxygen Demand: 2.31 mg/mg

Bioaccumulative potential

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient, n-octanol/water (log Pow): 1.41 Measured

Mobility in soil

Mobility in soil: Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient, soil organic carbon/water (Koc): 19 - 21 Estimated.
Henry's Law Constant (H): 4.41E-07 atm*m3/mole; 25 °C Estimated.

13. Disposal Considerations

DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. 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. AS YOUR SUPPLIER, WE HAVE 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: Incinerator or other thermal destruction device.

14. Transport Information

DOT Non-Bulk
NOT REGULATED

Freedom_0006035_0208

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.

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.

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16. Other Information

Product Literature
Additional information on this product may be obtained by calling your sales or customer service contact. Ask for a product brochure.

Hazard Rating System

NFPA	Health	Fire	Reactivity
	1	1	0

Recommended Uses and Restrictions
Identified uses
Solvent for consumer and industrial applications.

Revision
Identification Number: 82587 / 0000 / Issue Date 02/11/2013 / 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.

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Ex. 5 - Deliberative

Ex. 5 - Deliberative

Ex. 5 - Deliberative

Ex. 5 - Deliberative

Ex. 5 - Deliberative

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United States National Library of Medicine
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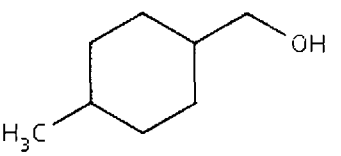
Full Record

4-Methylcyclohexanemethanol
RN: 34885-03-5



Structure Descriptors

InChI
InChI=1S/C8H16O/c1-7-2-4-8(6-9)5-3-7/h7-9H,2-6H2,1H3
Download

InChIKey
InChIKey=OSINZLLLLCUKJH-UHFFFAOYSA-N
Search InChIKey on Web

Smiles
OCC1CCC(CC1)C
Download

Names and Synonyms

Name of Substance
4-Methylcyclohexanemethanol

Synonyms
(4-Methylcyclohexyl)methanol
4-MCHM
4-Methylcyclohexane methanol
4-Methylcyclohexanemethanol
4-Methylcyclohexylcarbinol
AI3-28423
Hexahydro-p-methylbenzyl alcohol
MCHM
p-Methylcyclohexanemethanol

Systematic Name
Cyclohexanemethanol, 4-methyl-

Registry Numbers

CAS Registry Number
34885-03-5

System Generated Number
0034885035

Formulas

Molecular Formula
C8-H16-O

Locators

File Locator

HSDB	Hazardous Substances Data Bank
PubChem	PubChem

Superlist Locator

TSCAINV	EPA Chem. Sub. Inventory

Internet Locator

EPA SRS	EPA Substance Registry System
Google	Google Search Engine
USA.gov	USA.gov Search Engine

U.S. National Library of Medicine, 8600 Rockville Pike, Bethesda, MD 20894.
National Institutes of Health, Department of Health & Human Services
Copyright and Privacy Policy, Freedom of Information Act, Accessibility
Customer Service: tehip@teh.nlm.nih.gov.

Material Safety Data Sheet
The Dow Chemical Company

Product Name: PPH, Basic

Issue Date: 11/15/2011
Print Date: 16 Nov 2011

The Dow Chemical Company encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. Product and Company Identification

Product Name
PPH, Basic

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: Colorless to yellow
Physical State: Liquid.
Odor: Mild
Hazards of product:

DANGER! Causes severe eye burns. Causes severe skin burns. Causes burns of the mouth and throat. Causes respiratory tract irritation. Aspiration hazard. Can enter lungs and cause damage. Evacuate area. Keep upwind of spill.

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 irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur.
Skin Contact: Brief contact may cause skin burns. Symptoms may include pain, severe local redness and tissue damage.

Skin Absorption: Prolonged skin contact is unlikely to result in absorption of harmful amounts.
Inhalation: At room temperature, vapors are minimal due to low volatility. Vapor from heated material or mist may be hazardous on single exposure. Mist may cause severe irritation of upper respiratory tract (nose and throat).
Ingestion: Low toxicity if swallowed. Swallowing may result in irritation or burns of the mouth, throat, and gastrointestinal tract.
Aspiration hazard: Aspiration into the lungs may occur during ingestion or vomiting, causing tissue damage or lung injury.

3. Composition Information

Component	CAS #	Amount
Dipropylene glycol phenyl ether	51730-94-0	<= 85.0 %
Propylene glycol phenyl ether	770-35-4	<= 30.0 %
Propoxylated Impurities	Not applicable	<= 10.0 %
2-Hydroxy-alpha-methyl-benzeneethanol	33206-31-4	<= 5.0 %
2-Hydroxy-beta-methyl-benzeneethanol	134342-25-9	<= 5.0 %
Polypropylene glycol phenyl ether	28212-40-0	<= 5.0 %
Sodium hydroxide	1310-73-2	>= 0.0 - <= 5.0 %

4. First-aid measures

Description of first aid measures

General advice: First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.
Inhalation: *Move person to fresh air; if effects occur, consult a physician.*
Skin Contact: Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing. Seek medical attention if symptoms occur or irritation persists. Wash clothing before reuse. Suitable emergency safety shower facility should be immediately available.
Eye Contact: Wash immediately and continuously with flowing water for at least 30 minutes. Remove contact lenses after the first 5 minutes and continue washing. Obtain prompt medical consultation, preferably from an ophthalmologist. Suitable emergency eye wash facility should be immediately available.
Ingestion: Do not induce vomiting. Give one cup (8 ounces or 240 ml) of water or milk if available and transport to a medical facility. Do not give anything by mouth unless the person is fully conscious.

Most important symptoms and effects, both acute and delayed

Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), no additional symptoms and effects are anticipated.

Indication of immediate medical attention and special treatment needed

Maintain adequate ventilation and oxygenation of the patient. Eye irrigation may be necessary for an extended period of time to remove as much caustic as possible. Duration of irrigation and treatment is at the discretion of medical personnel. If burn is present, treat as any thermal burn, after decontamination. Due to irritant properties, swallowing may result in burns/ulceration of mouth, stomach and lower gastrointestinal tract with subsequent stricture. Aspiration of vomitus may cause lung injury. Suggest endotracheal/esophageal control if lavage is done. No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

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5. Fire Fighting Measures

Suitable extinguishing media

Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. General purpose synthetic foams (including AFFF type) or protein foams are preferred if available. Alcohol resistant foams (ATC type) may function. Water fog, applied gently may be used as a blanket for fire extinguishment.
Extinguishing Media to Avoid: Do not use direct water stream. May spread fire.

Special hazards arising from the substance or mixture

Hazardous Combustion Products: During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Carbon monoxide. Carbon dioxide.
Unusual Fire and Explosion Hazards: Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.

Advice for firefighters

Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Do not use direct water stream. May spread fire. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Water fog, applied gently may be used as a blanket for fire extinguishment.
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.

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures: Evacuate area. Keep upwind of spill. Ventilate area of leak or spill. Only trained and properly protected personnel must be involved in clean-up operations. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection. Refer to Section 7, Handling, for additional precautionary measures.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.

Methods and materials for containment and cleaning up: Small spills: Absorb with materials such as: Sand. Vermiculite. Collect in suitable and properly labeled containers. Large spills: Contain spilled material if possible. Pump into suitable and properly labeled containers. See Section 13, Disposal Considerations, for additional information.

7. Handling and Storage

Handling

Freedom_0006035_0221

General Handling: Do not get in eyes, on skin, on clothing. Do not swallow. Avoid breathing vapor or mist. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.
Other Precautions: Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion.

Storage

Store in the following material(s): Carbon steel. Stainless steel. Phenolic lined steel drums. Do not store in: Aluminum. Copper. Galvanized iron. Galvanized steel. See Section 10 for more specific information.

Storage Period:
Bulk
6 Months
Metal drums.
24 Months

8. Exposure Controls / Personal Protection

Exposure Limits

Component	List	Type	Value
Sodium hydroxide	ACGIH	Ceiling	2 mg/m3
	OSHA Table Z-1	PEL	2 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.

Hand protection: Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Butyl rubber. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl chloride ("PVC" or "vinyl"). 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: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. Use an approved air-purifying respirator when vapors are generated at increased temperatures or when dust or mist is present. In misty atmospheres, use an approved particulate respirator. The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.
Ingestion: Avoid ingestion of even very small amounts; do not consume or store food or tobacco in the work area; wash hands and face before smoking or eating.

Engineering Controls

Ventilation: Use engineering controls to maintain airborne level below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations.

9. Physical and Chemical Properties

Appearance

Freedom_0006035_0222

Physical State	Liquid.
Color	Colorless to yellow
Odor	Mild
Odor Threshold	No test data available
pH	No test data available
Melting Point	No test data available
Freezing Point	< 0 °C (< 32 °F) *Literature*
Boiling Point (760 mmHg)	247 °C (477 °F) *Literature* .
Flash Point - Closed Cup	123 °C (253 °F) *Setaflash Closed Cup ASTMD3278*
Evaporation Rate (Butyl Acetate = 1)	No test data available
Flammability (solid, gas)	Not applicable to liquids
Flammable Limits In Air	**Lower**: No test data available **Upper**: No test data available
Vapor Pressure	0.0155 mmHg @ 25 °C *Literature*
Vapor Density (air = 1)	No test data available
Specific Gravity (H2O = 1)	1.0578 25 °C/25 °C *Literature*
Solubility in water (by weight)	2 % @ 25 °C *Literature*
Partition coefficient, n-octanol/water (log Pow)	No data available for this product. See Section 12 for individual component data.
Autoignition Temperature	No test data available
Decomposition Temperature	No test data available
Dynamic Viscosity	25.7 cps @ 25 °C *Literature*
Kinematic Viscosity	No test data available

10. Stability and Reactivity

Reactivity
No dangerous reaction known under conditions of normal use.

Chemical stability
Thermally stable at typical use temperatures.

Possibility of hazardous reactions
Polymerization will not occur.

Conditions to Avoid: Do not distill to dryness. Product can oxidize at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems.

Incompatible Materials: Avoid contact with: Strong acids. Strong bases. Strong oxidizers.

Hazardous decomposition products
Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Aldehydes. Ketones. Organic acids.

11. Toxicological Information

Acute Toxicity
Ingestion
As product: Single dose oral LD50 has not been determined.
For the major component(s): LD50, rat > 2,000 mg/kg
Dermal
As product: The dermal LD50 has not been determined.
For the major component(s): LD50, rabbit > 2,000 mg/kg

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Inhalation
As product: The LC50 has not been determined.

Eye damage/eye irritation
May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur.

Skin corrosion/irritation
Brief contact may cause skin burns. Symptoms may include pain, severe local redness and tissue damage.

Sensitization
Skin
For the major component(s): Did not cause allergic skin reactions when tested in guinea pigs.
Respiratory
No specific, relevant data available for assessment.

Repeated Dose Toxicity
Based on available data, repeated exposures are not anticipated to cause additional significant adverse effects.

Chronic Toxicity and Carcinogenicity
No specific, relevant data available for assessment.

Developmental Toxicity
No specific, relevant data available for assessment.

Reproductive Toxicity
No specific, relevant data available for assessment.

Genetic Toxicology
In vitro genetic toxicity studies were negative for component(s) tested. For the component(s) tested: Animal genetic toxicity studies were predominantly negative.

12. Ecological Information

Toxicity

Data for Component: **Dipropylene glycol phenyl ether**
Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).

Fish Acute & Prolonged Toxicity
LC50, rainbow trout (Oncorhynchus mykiss), static, 96 h: 204 mg/l
Aquatic Invertebrate Acute Toxicity
EC50, water flea Daphnia magna, static test, 48 h, immobilization: 336 mg/l
Aquatic Plant Toxicity
ErC50, Pseudokirchneriella subcapitata (green algae), Growth rate inhibition, 96 h: 188 mg/l

Data for Component: **Propylene glycol phenyl ether**
Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).

Fish Acute & Prolonged Toxicity
LC50, Pimephales promelas (fathead minnow), static, 96 h: 280 mg/l
Aquatic Invertebrate Acute Toxicity
LC50, water flea Daphnia magna, static test, 48 h, survival: 370 mg/l
Aquatic Plant Toxicity
EC50, Desmodesmus subspicatus (green algae), static test, Growth rate inhibition, 72 h: > 100 mg/l

Data for Component: **2-Hydroxy-alpha-methyl-benzeneethanol**
No data available.

Data for Component: **2-Hydroxy-beta-methyl-benzeneethanol**
No data available.

Data for Component: **Polypropylene glycol phenyl ether**
No data available.

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Data for Component: **Sodium hydroxide**

May increase pH of aquatic systems to > pH 10 which may be toxic to aquatic organisms.

Persistence and Degradability

Data for Component: **Dipropylene glycol phenyl ether**

Material is expected to be readily biodegradable.

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
100 %	28 d	OECD 301F Test	pass

Data for Component: **Propylene glycol phenyl ether**

Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.
Biodegradation rate may increase in soil and/or water with acclimation.

OECD Biodegradation Tests:

Biodegradation	Exposure Time	Method	10 Day Window
72 %	28 d	OECD 301F Test	fail

Indirect Photodegradation with OH Radicals

Rate Constant	Atmospheric Half-life	Method
3.72E-11 cm3/s	3.5 h	Estimated.

Theoretical Oxygen Demand: 2.31 mg/mg

Data for Component: **2-Hydroxy-alpha-methyl-benzeneethanol**

No data available.

Data for Component: **2-Hydroxy-beta-methyl-benzeneethanol**

No data available.

Data for Component: **Polypropylene glycol phenyl ether**

No data available.

Data for Component: **Sodium hydroxide**

Biodegradation is not applicable.

Bioaccumulative potential

Data for Component: **Dipropylene glycol phenyl ether**

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient, n-octanol/water (log Pow): 1.73 Estimated.
Bioconcentration Factor (BCF): < 1; Estimated.

Data for Component: **Propylene glycol phenyl ether**

Bioaccumulation: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient, n-octanol/water (log Pow): 1.41 Measured

Data for Component: **2-Hydroxy-alpha-methyl-benzeneethanol**

Bioaccumulation: No data available.

Data for Component: **2-Hydroxy-beta-methyl-benzeneethanol**

Bioaccumulation: No data available.

Data for Component: **Polypropylene glycol phenyl ether**

Bioaccumulation: No data available.

Data for Component: **Sodium hydroxide**

Bioaccumulation: No bioconcentration is expected because of the relatively high water solubility.

Mobility in soil

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Data for Component: **Dipropylene glycol phenyl ether**

Mobility in soil: Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process., Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient, soil organic carbon/water (Koc): 12.36 Estimated.
Henry's Law Constant (H): 4.77E-10 atm*m3/mole

Data for Component: **Propylene glycol phenyl ether**

Mobility in soil: Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient, soil organic carbon/water (Koc): 19 - 21 Estimated.
Henry's Law Constant (H): 4.41E-07 atm*m3/mole; 25 °C Estimated.

Data for Component: **2-Hydroxy-alpha-methyl-benzeneethanol**

Mobility in soil: No data available.

Data for Component: **2-Hydroxy-beta-methyl-benzeneethanol**

Mobility in soil: No data available.

Data for Component: **Polypropylene glycol phenyl ether**

Mobility in soil: No data available.

Data for Component: **Sodium hydroxide**

Mobility in soil: Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient, soil organic carbon/water (Koc): 14 Estimated.

13. Disposal Considerations

DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. 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. AS YOUR SUPPLIER, WE HAVE 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: Incinerator or other thermal destruction device.

14. Transport Information

DOT Non-Bulk

Proper Shipping Name: CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S.
Technical Name: CONTAINS SODIUM HYDROXIDE
Hazard Class: 8 **ID Number:** UN 3267 **Packing Group:** PG II

DOT Bulk

Proper Shipping Name: CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S.
Technical Name: CONTAINS SODIUM HYDROXIDE
Hazard Class: 8 **ID Number:** UN 3267 **Packing Group:** PG II

IMDG

Proper Shipping Name: CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S.
Technical Name: CONTAINS SODIUM HYDROXIDE
Hazard Class: 8 **ID Number:** UN3267 **Packing Group:** PG II
EMS Number: F-A,S-B
Marine pollutant.: **No**

ICAO/IATA

Proper Shipping Name: CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S.
Technical Name: CONTAINS SODIUM HYDROXIDE

Freedom_0006035_0226

Hazard Class: 8 **ID Number:** UN3267 **Packing Group:** PG II
Cargo Packing Instruction: 855
Passenger Packing Instruction: 851
Additional Information

Reportable quantity: 20,000 lb – SODIUM HYDROXIDE

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:
The following product components are cited in the Pennsylvania Hazardous Substance List and/or the Pennsylvania Environmental Substance List, and are present at levels which require reporting.

Component	CAS #	Amount
Sodium hydroxide	1310-73-2	>= 0.0 - <= 5.0 %

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.

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.

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16. Other Information

Product Literature

Additional information on this product may be obtained by calling your sales or customer service contact. Ask for a product brochure. Additional information on this and other products may be obtained by visiting our web page.

Hazard Rating System

NFPA	Health	Fire	Reactivity
	3	1	0

Recommended Uses and Restrictions

Identified uses

Industrial solvent. We recommend that you use this product in a manner consistent with the listed use. If your intended use is not consistent with the stated use, please contact your sales or technical service representative.

Revision

Identification Number: 1010291 / 0000 / Issue Date 11/15/2011 / Version: 7.0

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.

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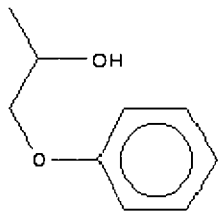
Freedom_0006035_0228

1-Phenoxypropan-2-ol

- **Formula:** $C_9H_{12}O_2$
- **Molecular weight:** 152.1904
- **IUPAC Standard InChI:**
  - InChI=1S/C9H12O2/c1-8(10)7-11-9-5-3-2-4-6-9/h2-6,8,10H,7H2,1H3
  - Download the identifier in a file.
- **IUPAC Standard InChIKey:** IBLKWZIFZMJLFL-UHFFFAOYSA-N
- **CAS Registry Number:** 770-35-4
- **Chemical structure:**



This structure is also available as a 2d Mol file

- **Other names:** Phenyl-β-hydroxypropyl ether; 1-Phenoxy-2-propanol; 2-Propanol, 1-phenoxy-; Phenoxyisopropanol; Propylene phenoxetol; 2-Phenoxy-1-methylethanol; Propylenephenoxythol
- **Permanent link** for this species. Use this link for bookmarking this species for future reference.
- **Information on this page:**
  - Mass spectrum (electron ionization)
  - References
  - Notes / Error Report
- **Other data available:**
  - IR Spectrum
  - Gas Chromatography
- **Options:**
  - Switch to calorie-based units

Mass spectrum (electron ionization)

Go To: Top, References, Notes / Error Report

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Data compiled by: NIST Mass Spec Data Center, S.E. Stein, director

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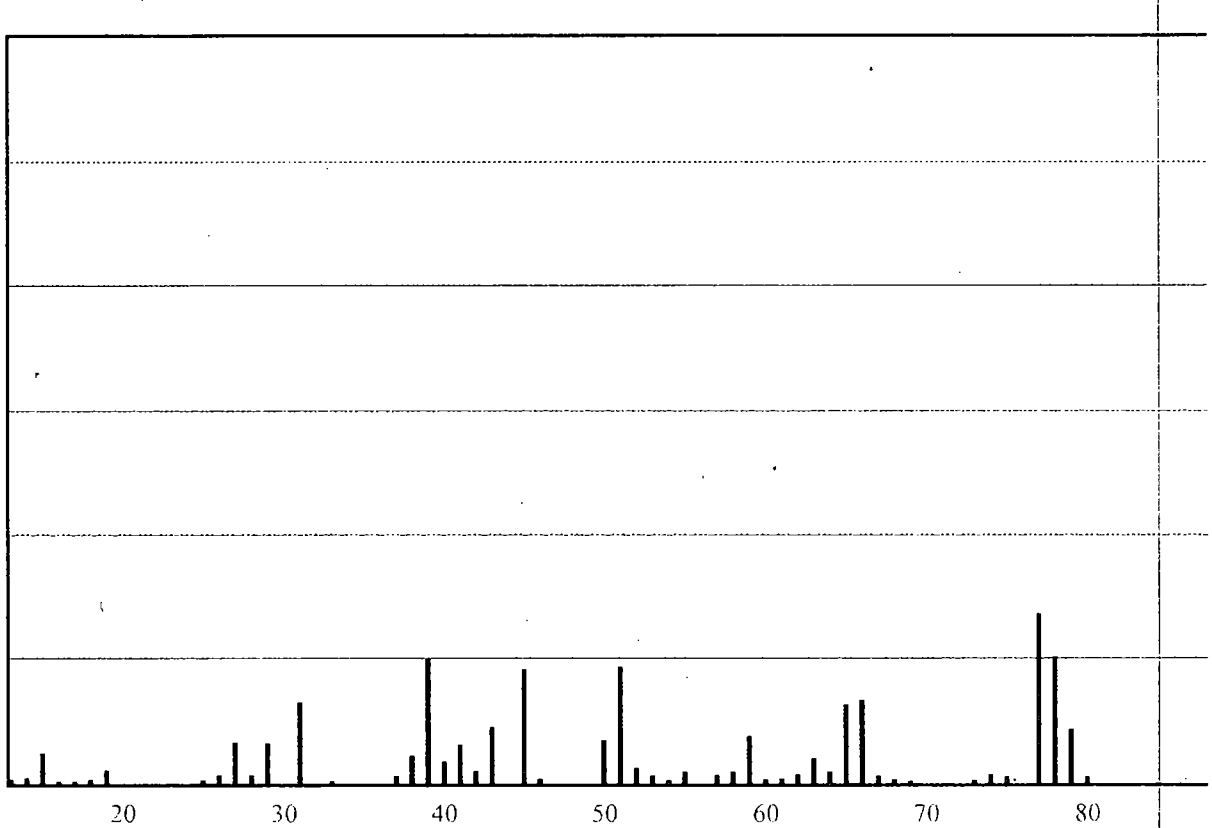
Spectrum

Plot | Help / Software credits

1-Phenoxypropan-2-ol

Mass Spectrum

Relative Intensity vs. m/z



Additional Data

View image of digitized spectrum (can be printed in landscape orientation).

View spectrum image in SVG format.

Download spectrum in JCAMP-DX format.

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Origin	NIST Mass Spectrometry Data Center

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NIST MS number 343256

All mass spectra in this site (plus many more) are available from the NIST/EPA/NIH Mass Spectral Library. Please see the following for information about the library and its accompanying search program.

References

Go To: Top, Mass spectrum (electron ionization), Notes / Error Report

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No reference data available.

Notes / Error Report

Go To: Top, Mass spectrum (electron ionization), References

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