

2/15/2018

Mr. Curt Lueckenhoff
Missouri Dept. of Natural Resources
2710 West Main

Jefferson City MO 65109

Project Name: Bridgeton Landfill

Project #:

Workorder #: 1802086

Dear Mr. Curt Lueckenhoff

The following report includes the data for the above referenced project for sample(s) received on 2/5/2018 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Brian Whittaker

Project Manager

WORK ORDER #: 1802086

Work Order Summary

CLIENT:	Mr. Curt Lueckenhoff Missouri Dept. of Natural Resources 2710 West Main Jefferson City, MO 65109	BILL TO:	Accounts Payable Missouri Dept. of Natural Resources P.O Box 176 Jefferson City, MO 65102
PHONE:	573-526-3363	P.O. #	3ESP180552
FAX:	573-526-3350	PROJECT #	Bridgeton Landfill
DATE RECEIVED:	02/05/2018	CONTACT:	Brian Whittaker
DATE COMPLETED:	02/15/2018		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	D1 (180979)	Modified TO-15	4.9 "Hg	4.6 psi
02A	U1 (180980)	Modified TO-15	5.1 "Hg	4.7 psi
03A	Lab Blank	Modified TO-15	NA	NA
04A	CCV	Modified TO-15	NA	NA
05A	LCS	Modified TO-15	NA	NA
05AA	LCSD	Modified TO-15	NA	NA

CERTIFIED BY:



Technical Director

DATE: 02/15/18

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-16-11, UT NELAP CA0093332016-7, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2016, Expiration date: 10/17/2017.

Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

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LABORATORY NARRATIVE
Modified TO-15
Missouri Dept. of Natural Resources
Workorder# 1802086

Two 6 Liter Summa Canister (100% Certified) samples were received on February 05, 2018. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the ATL modifications.

<i>Requirement</i>	<i>TO-15</i>	<i>ATL Modifications</i>
Initial Calibration	$\leq 30\%$ RSD with 2 compounds allowed out to $< 40\%$ RSD	$\leq 30\%$ RSD with 4 compounds allowed out to $< 40\%$ RSD
Blank and standards	Zero Air	UHP Nitrogen provides a higher purity gas matrix than zero air

Receiving Notes

The Chain of Custody (COC) information for samples D1 (180979) and U1 (180980) did not match the information on the canister with regard to canister identification. The client was notified of the discrepancy and the information on the canister was used to process and report the samples.

Analytical Notes

All Quality Control Limit exceedances and affected sample results are noted by flags. Each flag is defined at the bottom of this Case Narrative and on each Sample Result Summary page.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

Summary of Detected Compounds

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: D1 (180979)

Lab ID#: 1802086-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.16	0.50	0.78	2.4
Freon 11	0.16	0.24	0.88	1.3
Ethanol	0.78	2.9	1.5	5.4
Acetone	0.78	2.5	1.9	6.0
2-Propanol	0.78	6.6	1.9	16
Hexane	0.16	0.39	0.55	1.4
Benzene	0.16	0.20	0.50	0.65
Heptane	0.16	0.31	0.64	1.3
Toluene	0.16	0.29	0.59	1.1
m,p-Xylene	0.16	0.18	0.68	0.80

Client Sample ID: U1 (180980)

Lab ID#: 1802086-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.16	0.56	0.79	2.8
Freon 11	0.16	0.26	0.89	1.4
Ethanol	0.80	3.2	1.5	6.1
Acetone	0.80	3.3	1.9	7.8
2-Propanol	0.80	7.8	2.0	19
Hexane	0.16	1.7	0.56	6.1
Benzene	0.16	0.76	0.51	2.4
Heptane	0.16	1.4	0.65	5.8
Toluene	0.16	0.49	0.60	1.9
m,p-Xylene	0.16	0.22	0.69	0.94



Air Toxics

Client Sample ID: D1 (180979)

Lab ID#: 1802086-01A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	20020720	Date of Collection:	1/30/18 12:35:00 PM
Dil. Factor:	1.57	Date of Analysis:	2/7/18 11:02 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.16	0.50	0.78	2.4
Freon 114	0.16	Not Detected	1.1	Not Detected
Chloromethane	0.78	Not Detected	1.6	Not Detected
Vinyl Chloride	0.16	Not Detected	0.40	Not Detected
1,3-Butadiene	0.16	Not Detected	0.35	Not Detected
Bromomethane	0.78	Not Detected	3.0	Not Detected
Chloroethane	0.78	Not Detected	2.1	Not Detected
Freon 11	0.16	0.24	0.88	1.3
Ethanol	0.78	2.9	1.5	5.4
Freon 113	0.16	Not Detected	1.2	Not Detected
1,1-Dichloroethene	0.16	Not Detected	0.62	Not Detected
Acetone	0.78	2.5	1.9	6.0
2-Propanol	0.78	6.6	1.9	16
Carbon Disulfide	0.78	Not Detected	2.4	Not Detected
3-Chloropropene	0.78	Not Detected	2.4	Not Detected
Methylene Chloride	0.31	Not Detected	1.1	Not Detected
Methyl tert-butyl ether	0.16	Not Detected	0.57	Not Detected
trans-1,2-Dichloroethene	0.16	Not Detected	0.62	Not Detected
Hexane	0.16	0.39	0.55	1.4
1,1-Dichloroethane	0.16	Not Detected	0.64	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.78	Not Detected	2.3	Not Detected
cis-1,2-Dichloroethene	0.16	Not Detected	0.62	Not Detected
Tetrahydrofuran	0.78	Not Detected	2.3	Not Detected
Chloroform	0.16	Not Detected	0.77	Not Detected
1,1,1-Trichloroethane	0.16	Not Detected	0.86	Not Detected
Cyclohexane	0.16	Not Detected	0.54	Not Detected
Carbon Tetrachloride	0.16	Not Detected	0.99	Not Detected
2,2,4-Trimethylpentane	0.78	Not Detected	3.7	Not Detected
Benzene	0.16	0.20	0.50	0.65
1,2-Dichloroethane	0.16	Not Detected	0.64	Not Detected
Heptane	0.16	0.31	0.64	1.3
Trichloroethene	0.16	Not Detected	0.84	Not Detected
1,2-Dichloropropane	0.16	Not Detected	0.72	Not Detected
1,4-Dioxane	0.16	Not Detected	0.56	Not Detected
Bromodichloromethane	0.16	Not Detected	1.0	Not Detected
cis-1,3-Dichloropropene	0.16	Not Detected	0.71	Not Detected
4-Methyl-2-pentanone	0.16	Not Detected	0.64	Not Detected
Toluene	0.16	0.29	0.59	1.1
trans-1,3-Dichloropropene	0.16	Not Detected	0.71	Not Detected
1,1,2-Trichloroethane	0.16	Not Detected	0.86	Not Detected
Tetrachloroethene	0.16	Not Detected	1.1	Not Detected
2-Hexanone	0.78	Not Detected	3.2	Not Detected



Air Toxics

Client Sample ID: D1 (180979)

Lab ID#: 1802086-01A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	20020720	Date of Collection:	1/30/18 12:35:00 PM
Dil. Factor:	1.57	Date of Analysis:	2/7/18 11:02 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	0.16	Not Detected	1.3	Not Detected
1,2-Dibromoethane (EDB)	0.16	Not Detected	1.2	Not Detected
Chlorobenzene	0.16	Not Detected	0.72	Not Detected
Ethyl Benzene	0.16	Not Detected	0.68	Not Detected
m,p-Xylene	0.16	0.18	0.68	0.80
o-Xylene	0.16	Not Detected	0.68	Not Detected
Styrene	0.16	Not Detected	0.67	Not Detected
Bromoform	0.16	Not Detected	1.6	Not Detected
Cumene	0.16	Not Detected	0.77	Not Detected
1,1,2,2-Tetrachloroethane	0.16	Not Detected	1.1	Not Detected
Propylbenzene	0.16	Not Detected	0.77	Not Detected
4-Ethyltoluene	0.16	Not Detected	0.77	Not Detected
1,3,5-Trimethylbenzene	0.16	Not Detected	0.77	Not Detected
1,2,4-Trimethylbenzene	0.16	Not Detected	0.77	Not Detected
1,3-Dichlorobenzene	0.16	Not Detected	0.94	Not Detected
1,4-Dichlorobenzene	0.16	Not Detected	0.94	Not Detected
alpha-Chlorotoluene	0.16	Not Detected	0.81	Not Detected
1,2-Dichlorobenzene	0.16	Not Detected	0.94	Not Detected
1,2,4-Trichlorobenzene	0.78	Not Detected	5.8	Not Detected
Hexachlorobutadiene	0.78	Not Detected	8.4	Not Detected

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	98	70-130



Air Toxics

Client Sample ID: U1 (180980)

Lab ID#: 1802086-02A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	20020721	Date of Collection:	1/30/18 12:25:00 PM
Dil. Factor:	1.59	Date of Analysis:	2/8/18 06:29 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.16	0.56	0.79	2.8
Freon 114	0.16	Not Detected	1.1	Not Detected
Chloromethane	0.80	Not Detected	1.6	Not Detected
Vinyl Chloride	0.16	Not Detected	0.41	Not Detected
1,3-Butadiene	0.16	Not Detected	0.35	Not Detected
Bromomethane	0.80	Not Detected	3.1	Not Detected
Chloroethane	0.80	Not Detected	2.1	Not Detected
Freon 11	0.16	0.26	0.89	1.4
Ethanol	0.80	3.2	1.5	6.1
Freon 113	0.16	Not Detected	1.2	Not Detected
1,1-Dichloroethene	0.16	Not Detected	0.63	Not Detected
Acetone	0.80	3.3	1.9	7.8
2-Propanol	0.80	7.8	2.0	19
Carbon Disulfide	0.80	Not Detected	2.5	Not Detected
3-Chloropropene	0.80	Not Detected	2.5	Not Detected
Methylene Chloride	0.32	Not Detected	1.1	Not Detected
Methyl tert-butyl ether	0.16	Not Detected	0.57	Not Detected
trans-1,2-Dichloroethene	0.16	Not Detected	0.63	Not Detected
Hexane	0.16	1.7	0.56	6.1
1,1-Dichloroethane	0.16	Not Detected	0.64	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.80	Not Detected	2.3	Not Detected
cis-1,2-Dichloroethene	0.16	Not Detected	0.63	Not Detected
Tetrahydrofuran	0.80	Not Detected	2.3	Not Detected
Chloroform	0.16	Not Detected	0.78	Not Detected
1,1,1-Trichloroethane	0.16	Not Detected	0.87	Not Detected
Cyclohexane	0.16	Not Detected	0.55	Not Detected
Carbon Tetrachloride	0.16	Not Detected	1.0	Not Detected
2,2,4-Trimethylpentane	0.80	Not Detected	3.7	Not Detected
Benzene	0.16	0.76	0.51	2.4
1,2-Dichloroethane	0.16	Not Detected	0.64	Not Detected
Heptane	0.16	1.4	0.65	5.8
Trichloroethene	0.16	Not Detected	0.85	Not Detected
1,2-Dichloropropane	0.16	Not Detected	0.73	Not Detected
1,4-Dioxane	0.16	Not Detected	0.57	Not Detected
Bromodichloromethane	0.16	Not Detected	1.1	Not Detected
cis-1,3-Dichloropropene	0.16	Not Detected	0.72	Not Detected
4-Methyl-2-pentanone	0.16	Not Detected	0.65	Not Detected
Toluene	0.16	0.49	0.60	1.9
trans-1,3-Dichloropropene	0.16	Not Detected	0.72	Not Detected
1,1,2-Trichloroethane	0.16	Not Detected	0.87	Not Detected
Tetrachloroethene	0.16	Not Detected	1.1	Not Detected
2-Hexanone	0.80	Not Detected	3.2	Not Detected



Air Toxics

Client Sample ID: U1 (180980)

Lab ID#: 1802086-02A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	20020721	Date of Collection:	1/30/18 12:25:00 PM
Dil. Factor:	1.59	Date of Analysis:	2/8/18 06:29 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	0.16	Not Detected	1.4	Not Detected
1,2-Dibromoethane (EDB)	0.16	Not Detected	1.2	Not Detected
Chlorobenzene	0.16	Not Detected	0.73	Not Detected
Ethyl Benzene	0.16	Not Detected	0.69	Not Detected
m,p-Xylene	0.16	0.22	0.69	0.94
o-Xylene	0.16	Not Detected	0.69	Not Detected
Styrene	0.16	Not Detected	0.68	Not Detected
Bromoform	0.16	Not Detected	1.6	Not Detected
Cumene	0.16	Not Detected	0.78	Not Detected
1,1,2,2-Tetrachloroethane	0.16	Not Detected	1.1	Not Detected
Propylbenzene	0.16	Not Detected	0.78	Not Detected
4-Ethyltoluene	0.16	Not Detected	0.78	Not Detected
1,3,5-Trimethylbenzene	0.16	Not Detected	0.78	Not Detected
1,2,4-Trimethylbenzene	0.16	Not Detected	0.78	Not Detected
1,3-Dichlorobenzene	0.16	Not Detected	0.96	Not Detected
1,4-Dichlorobenzene	0.16	Not Detected	0.96	Not Detected
alpha-Chlorotoluene	0.16	Not Detected	0.82	Not Detected
1,2-Dichlorobenzene	0.16	Not Detected	0.96	Not Detected
1,2,4-Trichlorobenzene	0.80	Not Detected	5.9	Not Detected
Hexachlorobutadiene	0.80	Not Detected	8.5	Not Detected

Container Type: 6 Liter Summa Canister (100% Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	98	70-130



Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 1802086-03A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	20020707	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 2/7/18 12:36 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.10	Not Detected	0.49	Not Detected
Freon 114	0.10	Not Detected	0.70	Not Detected
Chloromethane	0.50	Not Detected	1.0	Not Detected
Vinyl Chloride	0.10	Not Detected	0.26	Not Detected
1,3-Butadiene	0.10	Not Detected	0.22	Not Detected
Bromomethane	0.50	Not Detected	1.9	Not Detected
Chloroethane	0.50	Not Detected	1.3	Not Detected
Freon 11	0.10	Not Detected	0.56	Not Detected
Ethanol	0.50	Not Detected	0.94	Not Detected
Freon 113	0.10	Not Detected	0.77	Not Detected
1,1-Dichloroethene	0.10	Not Detected	0.40	Not Detected
Acetone	0.50	Not Detected	1.2	Not Detected
2-Propanol	0.50	Not Detected	1.2	Not Detected
Carbon Disulfide	0.50	Not Detected	1.6	Not Detected
3-Chloropropene	0.50	Not Detected	1.6	Not Detected
Methylene Chloride	0.20	Not Detected	0.69	Not Detected
Methyl tert-butyl ether	0.10	Not Detected	0.36	Not Detected
trans-1,2-Dichloroethene	0.10	Not Detected	0.40	Not Detected
Hexane	0.10	Not Detected	0.35	Not Detected
1,1-Dichloroethane	0.10	Not Detected	0.40	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.50	Not Detected	1.5	Not Detected
cis-1,2-Dichloroethene	0.10	Not Detected	0.40	Not Detected
Tetrahydrofuran	0.50	Not Detected	1.5	Not Detected
Chloroform	0.10	Not Detected	0.49	Not Detected
1,1,1-Trichloroethane	0.10	Not Detected	0.54	Not Detected
Cyclohexane	0.10	Not Detected	0.34	Not Detected
Carbon Tetrachloride	0.10	Not Detected	0.63	Not Detected
2,2,4-Trimethylpentane	0.50	Not Detected	2.3	Not Detected
Benzene	0.10	Not Detected	0.32	Not Detected
1,2-Dichloroethane	0.10	Not Detected	0.40	Not Detected
Heptane	0.10	Not Detected	0.41	Not Detected
Trichloroethene	0.10	Not Detected	0.54	Not Detected
1,2-Dichloropropane	0.10	Not Detected	0.46	Not Detected
1,4-Dioxane	0.10	Not Detected	0.36	Not Detected
Bromodichloromethane	0.10	Not Detected	0.67	Not Detected
cis-1,3-Dichloropropene	0.10	Not Detected	0.45	Not Detected
4-Methyl-2-pentanone	0.10	Not Detected	0.41	Not Detected
Toluene	0.10	Not Detected	0.38	Not Detected
trans-1,3-Dichloropropene	0.10	Not Detected	0.45	Not Detected
1,1,2-Trichloroethane	0.10	Not Detected	0.54	Not Detected
Tetrachloroethene	0.10	Not Detected	0.68	Not Detected
2-Hexanone	0.50	Not Detected	2.0	Not Detected

Client Sample ID: Lab Blank

Lab ID#: 1802086-03A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	20020707	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 2/7/18 12:36 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	0.10	Not Detected	0.85	Not Detected
1,2-Dibromoethane (EDB)	0.10	Not Detected	0.77	Not Detected
Chlorobenzene	0.10	Not Detected	0.46	Not Detected
Ethyl Benzene	0.10	Not Detected	0.43	Not Detected
m,p-Xylene	0.10	Not Detected	0.43	Not Detected
o-Xylene	0.10	Not Detected	0.43	Not Detected
Styrene	0.10	Not Detected	0.42	Not Detected
Bromoform	0.10	Not Detected	1.0	Not Detected
Cumene	0.10	Not Detected	0.49	Not Detected
1,1,2,2-Tetrachloroethane	0.10	Not Detected	0.69	Not Detected
Propylbenzene	0.10	Not Detected	0.49	Not Detected
4-Ethyltoluene	0.10	Not Detected	0.49	Not Detected
1,3,5-Trimethylbenzene	0.10	Not Detected	0.49	Not Detected
1,2,4-Trimethylbenzene	0.10	Not Detected	0.49	Not Detected
1,3-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
1,4-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
alpha-Chlorotoluene	0.10	Not Detected	0.52	Not Detected
1,2-Dichlorobenzene	0.10	Not Detected	0.60	Not Detected
1,2,4-Trichlorobenzene	0.50	Not Detected	3.7	Not Detected
Hexachlorobutadiene	0.50	Not Detected	5.3	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	97	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	102	70-130

Client Sample ID: CCV

Lab ID#: 1802086-04A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	20020702	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 2/7/18 08:53 AM

Compound	%Recovery
Freon 12	96
Freon 114	100
Chloromethane	89
Vinyl Chloride	93
1,3-Butadiene	86
Bromomethane	98
Chloroethane	101
Freon 11	100
Ethanol	87
Freon 113	95
1,1-Dichloroethene	99
Acetone	87
2-Propanol	83
Carbon Disulfide	96
3-Chloropropene	101
Methylene Chloride	93
Methyl tert-butyl ether	92
trans-1,2-Dichloroethene	96
Hexane	84
1,1-Dichloroethane	91
2-Butanone (Methyl Ethyl Ketone)	93
cis-1,2-Dichloroethene	94
Tetrahydrofuran	84
Chloroform	75
1,1,1-Trichloroethane	94
Cyclohexane	90
Carbon Tetrachloride	72
2,2,4-Trimethylpentane	90
Benzene	97
1,2-Dichloroethane	101
Heptane	88
Trichloroethene	103
1,2-Dichloropropane	96
1,4-Dioxane	100
Bromodichloromethane	102
cis-1,3-Dichloropropene	99
4-Methyl-2-pentanone	90
Toluene	100
trans-1,3-Dichloropropene	94
1,1,2-Trichloroethane	103
Tetrachloroethene	105
2-Hexanone	92

Client Sample ID: CCV

Lab ID#: 1802086-04A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	20020702	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 2/7/18 08:53 AM

Compound	%Recovery
Dibromochloromethane	102
1,2-Dibromoethane (EDB)	102
Chlorobenzene	105
Ethyl Benzene	103
m,p-Xylene	101
o-Xylene	99
Styrene	101
Bromoform	103
Cumene	102
1,1,2,2-Tetrachloroethane	100
Propylbenzene	103
4-Ethyltoluene	105
1,3,5-Trimethylbenzene	100
1,2,4-Trimethylbenzene	98
1,3-Dichlorobenzene	103
1,4-Dichlorobenzene	104
alpha-Chlorotoluene	102
1,2-Dichlorobenzene	103
1,2,4-Trichlorobenzene	96
Hexachlorobutadiene	106

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	92	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	102	70-130

Client Sample ID: LCS

Lab ID#: 1802086-05A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	20020703	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 2/7/18 09:31 AM

Compound	%Recovery	Method Limits
Freon 12	99	70-130
Freon 114	105	70-130
Chloromethane	89	70-130
Vinyl Chloride	95	70-130
1,3-Butadiene	84	70-130
Bromomethane	104	70-130
Chloroethane	104	70-130
Freon 11	104	70-130
Ethanol	93	70-130
Freon 113	96	70-130
1,1-Dichloroethene	96	70-130
Acetone	87	70-130
2-Propanol	88	70-130
Carbon Disulfide	86	70-130
3-Chloropropene	84	70-130
Methylene Chloride	92	70-130
Methyl tert-butyl ether	92	70-130
trans-1,2-Dichloroethene	83	70-130
Hexane	86	70-130
1,1-Dichloroethane	91	70-130
2-Butanone (Methyl Ethyl Ketone)	90	70-130
cis-1,2-Dichloroethene	104	70-130
Tetrahydrofuran	85	70-130
Chloroform	76	70-130
1,1,1-Trichloroethane	96	70-130
Cyclohexane	91	70-130
Carbon Tetrachloride	68 Q	70-130
2,2,4-Trimethylpentane	90	70-130
Benzene	96	70-130
1,2-Dichloroethane	96	70-130
Heptane	89	70-130
Trichloroethene	101	70-130
1,2-Dichloropropane	97	70-130
1,4-Dioxane	89	70-130
Bromodichloromethane	104	70-130
cis-1,3-Dichloropropene	90	70-130
4-Methyl-2-pentanone	82	70-130
Toluene	97	70-130
trans-1,3-Dichloropropene	92	70-130
1,1,2-Trichloroethane	103	70-130
Tetrachloroethene	105	70-130
2-Hexanone	72	70-130

Client Sample ID: LCS

Lab ID#: 1802086-05A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	20020703	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 2/7/18 09:31 AM

Compound	%Recovery	Method Limits
Dibromochloromethane	103	70-130
1,2-Dibromoethane (EDB)	101	70-130
Chlorobenzene	103	70-130
Ethyl Benzene	100	70-130
m,p-Xylene	100	70-130
o-Xylene	101	70-130
Styrene	100	70-130
Bromoform	106	70-130
Cumene	102	70-130
1,1,2,2-Tetrachloroethane	101	70-130
Propylbenzene	104	70-130
4-Ethyltoluene	104	70-130
1,3,5-Trimethylbenzene	99	70-130
1,2,4-Trimethylbenzene	96	70-130
1,3-Dichlorobenzene	102	70-130
1,4-Dichlorobenzene	102	70-130
alpha-Chlorotoluene	99	70-130
1,2-Dichlorobenzene	103	70-130
1,2,4-Trichlorobenzene	90	70-130
Hexachlorobutadiene	101	70-130

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	96	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	104	70-130

Client Sample ID: LCSD

Lab ID#: 1802086-05AA

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	20020704	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 2/7/18 10:11 AM

Compound	%Recovery	Method Limits
Freon 12	96	70-130
Freon 114	104	70-130
Chloromethane	88	70-130
Vinyl Chloride	95	70-130
1,3-Butadiene	83	70-130
Bromomethane	102	70-130
Chloroethane	102	70-130
Freon 11	104	70-130
Ethanol	88	70-130
Freon 113	94	70-130
1,1-Dichloroethene	96	70-130
Acetone	84	70-130
2-Propanol	86	70-130
Carbon Disulfide	83	70-130
3-Chloropropene	84	70-130
Methylene Chloride	89	70-130
Methyl tert-butyl ether	90	70-130
trans-1,2-Dichloroethene	80	70-130
Hexane	84	70-130
1,1-Dichloroethane	90	70-130
2-Butanone (Methyl Ethyl Ketone)	88	70-130
cis-1,2-Dichloroethene	100	70-130
Tetrahydrofuran	83	70-130
Chloroform	82	70-130
1,1,1-Trichloroethane	93	70-130
Cyclohexane	90	70-130
Carbon Tetrachloride	65 Q	70-130
2,2,4-Trimethylpentane	90	70-130
Benzene	92	70-130
1,2-Dichloroethane	97	70-130
Heptane	85	70-130
Trichloroethene	100	70-130
1,2-Dichloropropane	94	70-130
1,4-Dioxane	88	70-130
Bromodichloromethane	103	70-130
cis-1,3-Dichloropropene	90	70-130
4-Methyl-2-pentanone	83	70-130
Toluene	98	70-130
trans-1,3-Dichloropropene	93	70-130
1,1,2-Trichloroethane	104	70-130
Tetrachloroethene	102	70-130
2-Hexanone	69 Q	70-130

Client Sample ID: LCSD

Lab ID#: 1802086-05AA

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	20020704	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 2/7/18 10:11 AM

Compound	%Recovery	Method Limits
Dibromochloromethane	103	70-130
1,2-Dibromoethane (EDB)	99	70-130
Chlorobenzene	102	70-130
Ethyl Benzene	100	70-130
m,p-Xylene	98	70-130
o-Xylene	98	70-130
Styrene	98	70-130
Bromoform	106	70-130
Cumene	100	70-130
1,1,2,2-Tetrachloroethane	102	70-130
Propylbenzene	103	70-130
4-Ethyltoluene	103	70-130
1,3,5-Trimethylbenzene	99	70-130
1,2,4-Trimethylbenzene	96	70-130
1,3-Dichlorobenzene	102	70-130
1,4-Dichlorobenzene	102	70-130
alpha-Chlorotoluene	99	70-130
1,2-Dichlorobenzene	103	70-130
1,2,4-Trichlorobenzene	92	70-130
Hexachlorobutadiene	101	70-130

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	87	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	102	70-130