

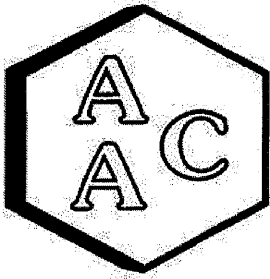
# **Volatile Organic Compound Analysis Results for Samples Collected in Nuiqsut, Alaska**

Sample Location: Nuiqsut Ambient Air Quality Monitoring Station

Date Sample Collected: 3/13/2022

Analysis Conducted by: Atmospheric Analysis & Consulting, Inc.

Analysis Method: EPA Method TO-15



# Atmospheric Analysis & Consulting, Inc.

## Laboratory Analysis Report

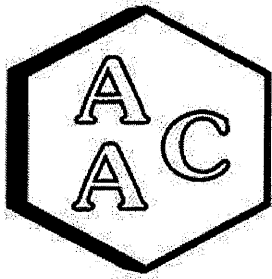
CLIENT : SLR International Corporation  
 PROJECT NO : 220525  
 MATRIX : AIR  
 UNITS : PPB (v/v)

DATE RECEIVED : 03/15/2022  
 DATE REPORTED : 03/16/2022  
 ANALYST : MB/RC

### VOLATILE ORGANIC COMPOUNDS BY EPA TO-15

<i>Client ID</i>	NUI			Sample Reporting Limit (SRL) (MRLxDF's)	Method Reporting Limit (MRL)
<i>AAC ID</i>	220525-28952				
<i>Date Sampled</i>	03/13/2022				
<i>Date Analyzed</i>	03/15/2022				
<i>Can Dilution Factor</i>	1.62				
<i>Compound</i>	Result	Qualifier	Analysis DF		
Chlorodifluoromethane	<SRL	U	1	0.81	0.50
Propene	<SRL	U	1	1.62	1.00
Dichlorodifluoromethane	<SRL	U	1	0.81	0.50
Chloromethane	<SRL	U	1	0.81	0.50
Dichlorotetrafluoroethane	<SRL	U	1	0.81	0.50
Vinyl Chloride	<SRL	U	1	0.81	0.50
Methanol	<SRL	U	1	8.08	5.00
1,3-Butadiene	<SRL	U	1	0.81	0.50
Bromomethane	<SRL	U	1	0.81	0.50
Chloroethane	<SRL	U	1	0.81	0.50
Dichlorofluoromethane	<SRL	U	1	0.81	0.50
Ethanol	<SRL	U	1	3.23	2.00
Vinyl Bromide	<SRL	U	1	0.81	0.50
Acetone	<SRL	U	1	3.23	2.00
Trichlorofluoromethane	<SRL	U	1	0.81	0.50
2-Propanol (IPA)	<SRL	U	1	3.23	2.00
Acrylonitrile	<SRL	U	1	3.23	2.00
1,1-Dichloroethene	<SRL	U	1	0.81	0.50
Methylene Chloride (DCM)	<SRL	U	1	1.62	1.00
Allyl Chloride	<SRL	U	1	1.62	1.00
Carbon Disulfide	<SRL	U	1	3.23	2.00
Trichlorotrifluoroethane	<SRL	U	1	0.81	0.50
trans-1,2-Dichloroethene	<SRL	U	1	0.81	0.50
1,1-Dichloroethane	<SRL	U	1	0.81	0.50
Methyl Tert Butyl Ether (MTBE)	<SRL	U	1	0.81	0.50
Vinyl Acetate	<SRL	U	1	1.62	1.00
2-Butanone (MEK)	<SRL	U	1	1.62	1.00
cis-1,2-Dichloroethene	<SRL	U	1	0.81	0.50
Hexane	<SRL	U	1	0.81	0.50
Chloroform	<SRL	U	1	0.81	0.50
Ethyl Acetate	<SRL	U	1	0.81	0.50
Tetrahydrofuran	<SRL	U	1	0.81	0.50
1,2-Dichloroethane	<SRL	U	1	0.81	0.50
1,1,1-Trichloroethane	<SRL	U	1	0.81	0.50
Benzene	<SRL	U	1	0.81	0.50





# Atmospheric Analysis & Consulting, Inc.

## Laboratory Analysis Report

**CLIENT :** SLR International Corporation  
**PROJECT NO :** 220525  
**MATRIX :** AIR  
**UNITS :** PPB (v/v)

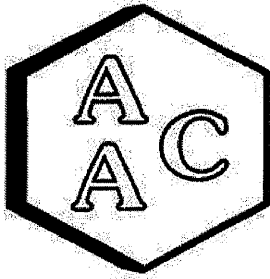
**DATE RECEIVED :** 03/15/2022  
**DATE REPORTED :** 03/16/2022  
**ANALYST :** MB/RC

### VOLATILE ORGANIC COMPOUNDS BY EPA TO-15

<i>Client ID</i>	NUI			Sample Reporting Limit (SRL) (MRLxDF's)	Method Reporting Limit (MRL)
<i>AAC ID</i>	220525-28952				
<i>Date Sampled</i>	03/13/2022				
<i>Date Analyzed</i>	03/15/2022				
<i>Can Dilution Factor</i>	1.62				
<i>Compound</i>	Result	Qualifier	Analysis DF		
Carbon Tetrachloride	<SRL	U	1	0.81	0.50
Cyclohexane	<SRL	U	1	0.81	0.50
1,2-Dichloropropane	<SRL	U	1	0.81	0.50
Bromodichloromethane	<SRL	U	1	0.81	0.50
1,4-Dioxane	<SRL	U	1	1.62	1.00
Trichloroethene (TCE)	<SRL	U	1	0.81	0.50
2,2,4-Trimethylpentane	<SRL	U	1	0.81	0.50
Heptane	<SRL	U	1	0.81	0.50
cis-1,3-Dichloropropene	<SRL	U	1	0.81	0.50
4-Methyl-2-pentanone (MIBK)	<SRL	U	1	0.81	0.50
trans-1,3-Dichloropropene	<SRL	U	1	0.81	0.50
1,1,2-Trichloroethane	<SRL	U	1	0.81	0.50
Toluene	<SRL	U	1	0.81	0.50
2-Hexanone (MBK)	<SRL	U	1	1.62	1.00
Dibromochloromethane	<SRL	U	1	0.81	0.50
1,2-Dibromoethane	<SRL	U	1	0.81	0.50
Tetrachloroethene (PCE)	<SRL	U	1	0.81	0.50
Chlorobenzene	<SRL	U	1	0.81	0.50
Ethylbenzene	<SRL	U	1	0.81	0.50
m & p-Xylene	<SRL	U	1	1.62	1.00
Bromoform	<SRL	U	1	0.81	0.50
Styrene	<SRL	U	1	0.81	0.50
1,1,2,2-Tetrachloroethane	<SRL	U	1	0.81	0.50
o-Xylene	<SRL	U	1	0.81	0.50
4-Ethyltoluene	<SRL	U	1	0.81	0.50
1,3,5-Trimethylbenzene	<SRL	U	1	0.81	0.50
1,2,4-Trimethylbenzene	<SRL	U	1	0.81	0.50
Benzyl Chloride (a-Chlorotoluene)	<SRL	U	1	0.81	0.50
1,3-Dichlorobenzene	<SRL	U	1	0.81	0.50
1,4-Dichlorobenzene	<SRL	U	1	0.81	0.50
1,2-Dichlorobenzene	<SRL	U	1	0.81	0.50
1,2,4-Trichlorobenzene	<SRL	U	1	0.81	0.50
Hexachlorobutadiene	<SRL	U	1	0.81	0.50
BFB-Surrogate Std. % Recovery		95%			70-130%

U - Compound was not detected at or above the SRL.





# Atmospheric Analysis & Consulting, Inc.

## QUALITY CONTROL / QUALITY ASSURANCE REPORT

ANALYSIS DATE : 03/15/2022  
 MATRIX : High Purity N<sub>2</sub>  
 UNITS : PPB (v/v)

INSTRUMENT ID : GC/MS-03  
 CALIBRATION STD ID : MS1-020722-01  
 ANALYST : MB

### VOLATILE ORGANIC COMPOUNDS BY EPA METHOD TO-15 Continuing Calibration Verification of the 03/09/2022 Calibration

Analyte Compounds	Source <sup>1</sup>	CCV <sup>2</sup>	% Recovery <sup>3</sup>
4-BFB (surrogate standard)	9.80	9.39	96
Chlorodifluoromethane	10.40	12.96	125
Propene	10.60	11.73	111
Dichlorodifluoromethane	10.40	12.07	116
Dimethyl Ether	10.20	10.08	99
Chloromethane	10.40	11.52	111
Dichlorotetrafluoroethane	10.30	9.03	88
Vinyl Chloride	10.50	10.95	104
Acetaldehyde	21.10	22.99	109
Methanol	18.80	17.39	93
1,3-Butadiene	10.60	10.88	103
Bromomethane	10.40	10.64	102
Chloroethane	10.30	11.02	107
Dichlorofluoromethane	10.20	9.86	97
Ethanol	11.20	9.90	88
Vinyl Bromide	10.10	10.15	100
Acrolein	11.10	10.54	95
Acetone	10.60	9.21	87
Trichlorofluoromethane	10.50	9.03	86
2-Propanol (IPA)	11.00	9.38	85
Acrylonitrile	11.20	10.85	97
1,1-Dichloroethene	10.40	9.55	92
Methylene Chloride (DCM)	10.50	10.35	99
TertButanol (TBA)	11.10	9.58	86
Allyl Chloride	10.20	9.50	93
Carbon Disulfide	10.50	9.88	94
Trichlorotrifluoroethane	10.40	9.35	90
trans-1,2-Dichloroethene	10.60	9.62	91
1,1-Dichloroethane	10.50	9.42	90
Methyl Tert Butyl Ether (MTBE)	10.50	9.83	94
Vinyl Acetate	11.00	10.36	94
2-Butanone (MEK)	10.60	9.68	91
cis-1,2-Dichloroethene	10.50	9.51	91
Hexane	10.70	11.48	107
Chloroform	10.60	9.31	88
Ethyl Acetate	10.60	9.88	93
Tetrahydrofuran	10.20	8.78	86
1,2-Dichloroethane	10.50	9.14	87
1,1,1-Trichloroethane	10.40	9.07	87
Benzene	10.60	10.00	94
Carbon Tetrachloride	10.20	9.42	92
Cyclohexane	10.50	9.97	95

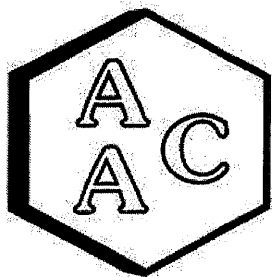
Analyte Compounds (Continued)	Source <sup>1</sup>	CCV <sup>2</sup>	% Recovery <sup>3</sup>
1,2-Dichloropropane	10.50	10.14	97
Bromodichloromethane	10.40	9.32	90
1,4-Dioxane	10.40	8.88	85
Trichloroethene (TCE)	10.40	9.23	89
2,2,4-Trimethylpentane	10.00	10.11	101
Methyl Methacrylate	11.00	10.38	94
Heptane	10.50	10.03	96
cis-1,3-Dichloropropene	10.40	9.75	94
4-Methyl-2-pentanone (MiBK)	10.40	10.11	97
trans-1,3-Dichloropropene	10.50	9.83	94
1,1,2-Trichloroethane	10.50	9.51	91
Toluene	10.60	9.91	93
2-Hexanone (MBK)	10.50	10.33	98
Dibromochloromethane	10.30	9.36	91
1,2-Dibromoethane	10.60	9.82	93
Tetrachloroethene (PCE)	10.40	9.37	90
Chlorobenzene	10.60	9.40	89
Ethylbenzene	10.50	9.54	91
m & p-Xylene	21.00	18.42	88
Bromoform	10.50	9.24	88
Styrene	10.50	9.50	90
1,1,2,2-Tetrachloroethane	10.50	9.96	95
o-Xylene	10.50	9.53	91
1,2,3-Trichloropropane	11.00	9.88	90
Isopropylbenzene (Cumene)	10.30	9.37	91
α-Pinene	10.70	10.21	95
2-Chlorotoluene	10.30	9.16	89
n-Propylbenzene	10.10	9.51	94
4-Ethyltoluene	10.30	9.18	89
1,3,5-Trimethylbenzene	10.30	9.13	89
β-Pinene	11.00	11.47	104
1,2,4-Trimethylbenzene	10.30	9.20	89
Benzyl Chloride (a-Chlorotoluene)	10.40	9.46	91
1,3-Dichlorobenzene	10.40	9.49	91
1,4-Dichlorobenzene	10.30	9.36	91
Sec-ButylBenzene	10.10	9.64	95
1,2-Dichlorobenzene	10.60	9.82	93
n-ButylBenzene	10.20	9.40	92
1,2-Dibromo-3-Chloropropane	10.10	9.19	91
1,2,4-Trichlorobenzene	11.00	10.90	99
Naphthalene	11.50	10.82	94
Hexachlorobutadiene	11.00	10.87	99

<sup>1</sup> Concentration of analyte compound in certified source standard.

<sup>2</sup> Measured result from daily Continuing Calibration Verification (CCV).

<sup>3</sup> The acceptable range for analyte recovery is 100±30%.





# Atmospheric Analysis & Consulting, Inc.

## QUALITY CONTROL / QUALITY ASSURANCE REPORT

ANALYSIS DATE : 03/15/2022

MATRIX : High Purity N<sub>2</sub>

UNITS : PPB (v/v)

INSTRUMENT ID : GC/MS-03

CALIBRATION STD ID : MS1-020722-01

ANALYST : MB

### VOLATILE ORGANIC COMPOUNDS BY EPA METHOD TO-15

Laboratory Control Spike Analysis

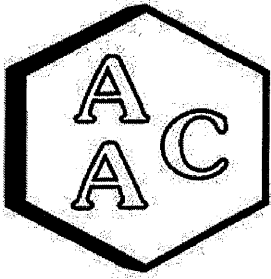
<i>System Monitoring Compounds</i>	<i>Sample Concentration</i>	<i>Spike Added</i>	<i>LCS<sup>1</sup> Recovery</i>	<i>LCSD<sup>1</sup> Recovery</i>	<i>LCS<sup>1</sup> % Recovery<sup>2</sup></i>	<i>LCSD<sup>1</sup> % Recovery<sup>2</sup></i>	<i>RPD<sup>3</sup></i>
4-BFB (surrogate standard)	0.0	9.80	9.39	9.23	96	94	1.7
1,1-Dichloroethene	0.0	10.40	9.55	9.68	92	93	1.4
Methylene Chloride (DCM)	0.0	10.50	10.35	10.74	99	102	3.7
Benzene	0.0	10.60	10.00	9.88	94	93	1.2
Trichloroethene (TCE)	0.0	10.40	9.23	9.46	89	91	2.5
Toluene	0.0	10.60	9.91	9.72	93	92	1.9
Tetrachloroethene (PCE)	0.0	10.40	9.37	9.09	90	87	3.0
Chlorobenzene	0.0	10.60	9.40	9.72	89	92	3.3
Ethylbenzene	0.0	10.50	9.54	9.52	91	91	0.2
m & p-Xylene	0.0	21.00	18.42	18.22	88	87	1.1
o-Xylene	0.0	10.50	9.53	9.45	91	90	0.8

<sup>1</sup> Laboratory Control Spike (LCS) / Laboratory Control Spike Duplicate (LCSD)

<sup>2</sup> The acceptable range for analyte recovery is 100±30%.

<sup>3</sup> Relative Percent Difference (RPD) between LCS recovery and LCSD recovery (acceptable range is <25%).





# Atmospheric Analysis & Consulting, Inc.

## QUALITY CONTROL / QUALITY ASSURANCE REPORT

ANALYSIS DATE : 03/15/2022

INSTRUMENT ID : GC/MS-03

MATRIX : High Purity He or N<sub>2</sub>

ANALYST : MB

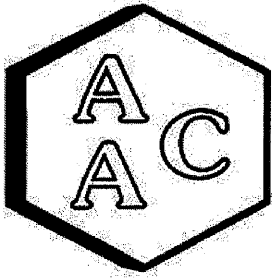
UNITS : PPB (v/v)

### VOLATILE ORGANIC COMPOUNDS BY EPA METHOD TO-15

Method Blank Analysis

Analyte Compounds	MB 031522	Reporting Limit (RL)	Analyte Compounds (Continued)	MB 031522	Reporting Limit (RL)
4-BFB (surrogate standard)	93%	100±30%	1,2-Dichloropropane	<RL	0.5
Chlorodifluoromethane	<RL	0.5	Bromodichloromethane	<RL	0.5
Propene	<RL	1.0	1,4-Dioxane	<RL	1.0
Dichlorodifluoromethane	<RL	0.5	Trichloroethene (TCE)	<RL	0.5
Dimethyl Ether	<RL	0.5	2,2,4-Trimethylpentane	<RL	0.5
Chloromethane	<RL	0.5	Methyl Methacrylate	<RL	0.5
Dichlorotetrafluoroethane	<RL	0.5	Heptane	<RL	0.5
Vinyl Chloride	<RL	0.5	cis-1,3-Dichloropropene	<RL	0.5
Acetaldehyde	<RL	5.0	4-Methyl-2-pentanone (MiBK)	<RL	0.5
Methanol	<RL	5.0	trans-1,3-Dichloropropene	<RL	0.5
1,3-Butadiene	<RL	0.5	1,1,2-Trichloroethane	<RL	0.5
Bromomethane	<RL	0.5	Toluene	<RL	0.5
Chloroethane	<RL	0.5	2-Hexanone (MBK)	<RL	1.0
Dichlorofluoromethane	<RL	0.5	Dibromochloromethane	<RL	0.5
Ethanol	<RL	2.0	1,2-Dibromoethane	<RL	0.5
Vinyl Bromide	<RL	0.5	Tetrachloroethene (PCE)	<RL	0.5
Acrolein	<RL	1.0	Chlorobenzene	<RL	0.5
Acetone	<RL	2.0	Ethylbenzene	<RL	0.5
Trichlorofluoromethane	<RL	0.5	m & p-Xylene	<RL	1.0
2-Propanol (IPA)	<RL	2.0	Bromoform	<RL	0.5
Acrylonitrile	<RL	2.0	Styrene	<RL	0.5
1,1-Dichloroethene	<RL	0.5	1,1,2,2-Tetrachloroethane	<RL	0.5
Methylene Chloride (DCM)	<RL	1.0	o-Xylene	<RL	0.5
TertButanol (TBA)	<RL	0.5	1,2,3-Trichloropropane	<RL	0.5
Allyl Chloride	<RL	1.0	Isopropylbenzene (Cumene)	<RL	0.5
Carbon Disulfide	<RL	2.0	α-Pinene	<RL	0.5
Trichlorotrifluoroethane	<RL	0.5	2-Chlorotoluene	<RL	0.5
trans-1,2-Dichloroethene	<RL	0.5	n-Propylbenzene	<RL	0.5
1,1-Dichloroethane	<RL	0.5	4-Ethyltoluene	<RL	0.5
Methyl Tert Butyl Ether (MTBE)	<RL	0.5	1,3,5-Trimethylbenzene	<RL	0.5
Vinyl Acetate	<RL	1.0	β-Pinene	<RL	0.5
2-Butanone (MEK)	<RL	1.0	1,2,4-Trimethylbenzene	<RL	0.5
cis-1,2-Dichloroethene	<RL	0.5	Benzyl Chloride (α-Chlorotoluene)	<RL	0.5
Hexane	<RL	0.5	1,3-Dichlorobenzene	<RL	0.5
Chloroform	<RL	0.5	1,4-Dichlorobenzene	<RL	0.5
Ethyl Acetate	<RL	0.5	Sec-ButylBenzene	<RL	0.5
Tetrahydrofuran	<RL	0.5	1,2-Dichlorobenzene	<RL	0.5
1,2-Dichloroethane	<RL	0.5	n-ButylBenzene	<RL	0.5
1,1,1-Trichloroethane	<RL	0.5	1,2-Dibromo-3-Chloropropane	<RL	0.5
Benzene	<RL	0.5	1,2,4-Trichlorobenzene	<RL	0.5
Carbon Tetrachloride	<RL	0.5	Naphthalene	<RL	1.0
Cyclohexane	<RL	0.5	Hexachlorobutadiene	<RL	0.5





# Atmospheric Analysis & Consulting, Inc.

## QUALITY CONTROL / QUALITY ASSURANCE REPORT

ANALYSIS DATE : 03/15/2022  
 MATRIX : Air  
 UNITS : PPB (v/v)

INSTRUMENT ID : GC/MS-03  
 ANALYST : MB  
 DILUTION FACTOR<sup>1</sup> : x16.08

### VOLATILE ORGANIC COMPOUNDS BY EPA METHOD TO-15

Duplicate Analysis of AAC Sample ID: 220517-28879

Analyte Compounds	Sample	Duplicate	RPD <sup>2</sup>
4-BFB (surrogate standard)	9.23	9.33	1.1
Chlorodifluoromethane	<SRL	<SRL	NA
Propene	<SRL	<SRL	NA
Dichlorodifluoromethane	<SRL	<SRL	NA
Dimethyl Ether	<SRL	<SRL	NA
Chloromethane	<SRL	<SRL	NA
Dichlorotetrafluoroethane	<SRL	<SRL	NA
Vinyl Chloride	<SRL	<SRL	NA
Acetaldehyde	<SRL	<SRL	NA
Methanol	<SRL	<SRL	NA
1,3-Butadiene	<SRL	<SRL	NA
Bromomethane	9.49	9.65	1.7
Chloroethane	<SRL	<SRL	NA
Dichlorofluoromethane	<SRL	<SRL	NA
Ethanol	<SRL	<SRL	NA
Vinyl Bromide	<SRL	<SRL	NA
Acrolein	<SRL	<SRL	NA
Acetone	<SRL	<SRL	NA
Trichlorofluoromethane	<SRL	<SRL	NA
2-Propanol (IPA)	<SRL	<SRL	NA
Acrylonitrile	<SRL	<SRL	NA
1,1-Dichloroethene	<SRL	<SRL	NA
Methylene Chloride (DCM)	<SRL	<SRL	NA
TertButanol (TBA)	<SRL	<SRL	NA
Allyl Chloride	<SRL	<SRL	NA
Carbon Disulfide	<SRL	<SRL	NA
Trichlorotrifluoroethane	<SRL	<SRL	NA
trans-1,2-Dichloroethene	<SRL	<SRL	NA
1,1-Dichloroethane	<SRL	<SRL	NA
Methyl Tert Butyl Ether (MTBE)	<SRL	<SRL	NA
Vinyl Acetate	<SRL	<SRL	NA
2-Butanone (MEK)	<SRL	<SRL	NA
cis-1,2-Dichloroethene	<SRL	<SRL	NA
Hexane	<SRL	<SRL	NA
Chloroform	<SRL	<SRL	NA
Ethyl Acetate	<SRL	<SRL	NA
Tetrahydrofuran	<SRL	<SRL	NA
1,2-Dichloroethane	<SRL	<SRL	NA
1,1,1-Trichloroethane	<SRL	<SRL	NA
Benzene	<SRL	<SRL	NA
Carbon Tetrachloride	<SRL	<SRL	NA
Cyclohexane	<SRL	<SRL	NA

Analyte Compounds (Continued)	Sample	Duplicate	RPD <sup>2</sup>
1,2-Dichloropropane	<SRL	<SRL	NA
Bromodichloromethane	<SRL	<SRL	NA
1,4-Dioxane	<SRL	<SRL	NA
Trichloroethene (TCE)	<SRL	<SRL	NA
2,2,4-Trimethylpentane	<SRL	<SRL	NA
Methyl Methacrylate	<SRL	<SRL	NA
Heptane	<SRL	<SRL	NA
cis-1,3-Dichloropropene	<SRL	<SRL	NA
4-Methyl-2-pentanone (MIBK)	<SRL	<SRL	NA
trans-1,3-Dichloropropene	<SRL	<SRL	NA
1,1,2-Trichloroethane	<SRL	<SRL	NA
Toluene	<SRL	<SRL	NA
2-Hexanone (MBK)	<SRL	<SRL	NA
Dibromochloromethane	<SRL	<SRL	NA
1,2-Dibromoethane	<SRL	<SRL	NA
Tetrachloroethene (PCE)	<SRL	<SRL	NA
Chlorobenzene	<SRL	<SRL	NA
Ethylbenzene	<SRL	<SRL	NA
m & p-Xylene	<SRL	<SRL	NA
Bromoform	<SRL	<SRL	NA
Styrene	<SRL	<SRL	NA
1,1,2,2-Tetrachloroethane	<SRL	<SRL	NA
o-Xylene	<SRL	<SRL	NA
1,2,3-Trichloropropane	<SRL	<SRL	NA
Isopropylbenzene (Cumene)	<SRL	<SRL	NA
α-Pinene	<SRL	<SRL	NA
2-Chlorotoluene	<SRL	<SRL	NA
n-Propylbenzene	<SRL	<SRL	NA
4-Ethyltoluene	<SRL	<SRL	NA
1,3,5-Trimethylbenzene	<SRL	<SRL	NA
β-Pinene	<SRL	<SRL	NA
1,2,4-Trimethylbenzene	<SRL	<SRL	NA
Benzyl Chloride (a-Chlorotoluene)	<SRL	<SRL	NA
1,3-Dichlorobenzene	<SRL	<SRL	NA
1,4-Dichlorobenzene	<SRL	<SRL	NA
Sec-ButylBenzene	<SRL	<SRL	NA
1,2-Dichlorobenzene	<SRL	<SRL	NA
n-ButylBenzene	<SRL	<SRL	NA
1,2-Dibromo-3-Chloropropane	<SRL	<SRL	NA
1,2,4-Trichlorobenzene	<SRL	<SRL	NA
Naphthalene	<SRL	<SRL	NA
Hexachlorobutadiene	<SRL	<SRL	NA

<sup>1</sup> Dilution factor is the product of the Canister Dilution Factor and the Analysis Dilution Factor.

<sup>2</sup> Relative Percent Difference (RPD) between Sample analysis and Duplicate analysis (acceptable range is <25%).

SRL - Sample Reporting Limit (minimum)

