Workplace Monitoring Report - Volatile Organic Compounds July 2019

Cargill Australia Limited

30 July 2019

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1 Introduction

Cargill Australia Limited, herein referred to as Cargill, commissioned MJM Environmental (MJM) to conduct workplace air quality monitoring on 3 July 2019 at Cargill's facility located on Raven Street, Kooragang Island, NSW 2304. Air quality monitoring was performed for volatile organic compounds (VOCs) on employees working in identified areas of Cargill's site. Grab sampling was also conducted at identified areas to monitor background VOC levels. The monitoring was conducted to measure VOCs exposure at identified areas during operations at the facility.

Cargill's site operates 24 hours per day, 7 days per week. Sampling was completed over the period of 07:44 to 15:24 on 3 July 2019.

The sampling points were located in two (2) areas of the facility, which were:

- Solvent Extraction Plant
- Laboratory

This report outlines and evaluates the results from the air quality monitoring performed at Cargill's workplace areas.

2 Methodology

NIOSH 1501 was used as the reference method for the workplace monitoring. NIOSH 1501 applies gas chromatography-mass spectrometry (GC-MS) which covers Aliphatic (aromatic hydrocarbons such as benzene, toluene, ethylbenzene, o-xylene, m-xylene, p-xylene), oxygenated and halogenated compounds, for over 60 target compounds over a duration of 1 shift. The complete list of analytes is shown in Table 2-1.

The equipment used is a pump drawing air through a 2-layered charcoal adsorbent tube at a calibrated flow rate over a period of time. Organic vapours having affinity with the activated charcoal are adsorbed, and the tube is analysed for the target compounds.

Grab samples were taken using a Photo Ionization Detector (PID) measuring VOC concentration in parts per million for the Refinery, Pre- Press and Solvent Extraction Plant.

Table 2-1: Volatile organic compounds covered by NIOSH 1501

Volatile Organic Compounds (NIOSH 1501)	
Halogenated Compounds	**Aliphatic Hydrocarbons**
1,1-Dichloroethane	1-heptene
Chloroform	Decane
Trichloroethene	Heptane
Chlorobenzene	n-Hexane
2-Chlorotoluene	Cyclohexane
4-Chlorotoluene	Isooctane
1,3-Dichlorobenzene	n-Octane
1,4-Dichlorobenzene	n-Nonane
1,2-Dichlorobenzene	**Oxygenated Compounds**
Hexachlorobutadiene	2-Propanone (Acetone)
1,4-Dichlorobenzene	2-Butanone (MEK)
1,2-Dichlorobenzene	4-Methyl-2-pentanone (MIBK)
Hexachlorobutadiene	2-Hexanone (MBK)
trans-1,2-Dichloroethene	**Monocyclic Aromatic Hydrocarbons**
cis-1,2-Dichloroethene	Benzene
Bromochloromethane	Toluene
2,2-Dichloropropane	Ethylbenzene
1,2-Dichloroethane	meta- & para-Xylene
1,1,1-Trichloroethane	Styrene
1,1-Dichloropropene	ortho-Xylene
Carbon Tetrachloride	1,3,5-Trimethylbenzene
Dibromomethane	1,2,4-Trimethylbenzene
1,2-Dichloropropane	n-Butylbenzene
Bromodichloromethane	Isopropylbenzene
cis-1,3-Dichloropropylene	n-Propylbenzene
trans-1,3-Dichloropropene	tert-Butylbenzene
1,1,2-Trichloroethane	sec-Butylbenzene

Volatile Organic Compounds (NIOSH 1501)	
1,3-Dichloropropane	p-Isopropyltoluene
Dibromochloromethane	**Polycyclic Aromatic Hydrocarbons**
1,2-Dibromoethane (EDB)	Naphthalene
Tetrachloroethene	
1,1,1,2-Tetrachloroethane	
Bromoform	
1,1,2,2-Tetrachloroethane	
1,2,3-Trichloropropane	
Bromobenzene	
1,2-Dibromo-3-chloropropane	
1,2,4-Trichlorobenzene	
1,2,3-Trichlorobenzene	

Sampling apparatus included mini pump and two layered charcoal adsorbent tube was calibrated at a flow rate of approximately 0.2 L/min. The samples were preserved and submitted to the laboratory for analysis. The samples were analysed by Gas Chromatography-Mass Spectrometry.

2.1 Potential Health Effects

The following is a summary of the main health effects of exposure to VOCs. For more information, an occupational physician should be consulted for a professional opinion.

VOCs are an irritant to the eyes, nose and throat. They can cause headaches, loss of coordination, nausea, allergic skin reactions, and damage to the liver, kidneys and central nervous system.

2.2 Legislation

The *Work Health and Safety Act 2011* requires employers to protect the health, safety and welfare of employees at work and visitors to workplaces. The *Work Health and Safety Regulation 2011* requires employers to identify hazards then assess and control risks.

2.3 Exposure Standards

Airborne contaminant concentrations can be compared with published exposure standards. The *National Occupational Health and Safety Commission (NOHSC) Exposure Standards for Atmospheric Contaminants in the Occupational Environment* are recognised by WorkSafe NSW. Safe Work Australia has now succeeded the NOHSC.

Samples should be collected in the breathing zone of the operator in accordance with a recognised method. Airborne contaminants are measured in parts per million (ppm) or milligrams per cubic metre (mg/m^3). The time-weighted average (TWA) exposure standards are based on an 8-hour average and generally protect against long-term effects.

2.4 Sampling Device and Monitoring

The sampling performed was to assess and evaluate the workplace air quality at identified locations of Cargill's site. The equipment used for sampling were pre-calibrated SKC Air-Check XR-5000 model pumps or similar, low flow controllers and Anasorb charcoal tubes. Grab sampling was carried out using a Procheck Tiger Portable PID VOC Detector. The sampling apparatus is shown below in Figure 2-1. Sampling was performed in line with:

- NIOSH Manual of Analytical Methods 4th Edition;
- NIOSH 1501 – Hydrocarbons, Aromatic;

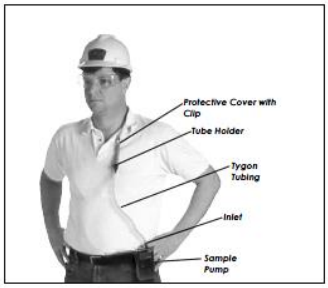
AirChek XR5000 Pump	Adsorbent Media Tube	Apparatus Setup	Procheck Tiger
			

Figure 2-1: NIOSH 1501 monitoring apparatus

One set of the above apparatus was attached to each of the nominated employees. Samples were taken at the 'breathing zone' (the hemisphere of 300 mm radius extending in front of the face and measured from the midpoint of an imaginary line between a person's ears) over the course of one work shift.

2.5 Station Identification and Locations

The nominated Cargill employees were fitted with the sampling apparatus during their shift. The locations of the employees are identified in Table 2-2.

Table 2-2: Sampling locations and identification

Location No.	Personnel	Area	Description
1	Matt Biscoe	Solvent Extraction Plant/Pre-press	Extraction Plant operator
2	Joel Crawford	Oil Laboratory	Laboratory technician

2.6 Quality Assurance & Quality Control

MJM employed the following to ensure quality assurance and quality control during the sampling program:

- Employed appropriate test method (NIOSH 1501) and analysis
- Proper handling and recovery of samples was ensured
- The MJM air quality management team was comprised of experienced technical personnel

2.7 Analysis

At the completion of sampling, the adsorbent media tube was capped at both ends, sealed with Parafilm, labelled and placed into a secure cold storage container for transport.

The VOC samples for analysis were submitted to Australian Laboratory Services (ALS), a NATA accredited laboratory with accreditation number 825 located at Mayfield West, Newcastle, 2304.

Raw laboratory results are presented in Appendix A.

3 Assessment Criteria and Calculations

The samples were assessed and compared in line with the *Work Health and Safety Act 2011* standard time-weighted average (TWA). Each analyte varies in terms of its effect to human health, therefore each organic analyte was assessed and compared individually based on the best available standard under *Workplace Exposure Standards for Airborne Contaminants* (April 2018). If the number of hours worked per day is different than 8 hours the standard exposure limit can be adjusted using the Adjusted Exposure Standard TWA calculation below.

$$TWA = \frac{C_1T_1 + C_2T_2 + C_3T_3 \ldots\ldots C_nT_n}{8\ hr}$$

where TWA = Time Weighted Average concentrations (mg/m^3 or ppm)

C = Concentration of contaminant during an incremental exposure time (mg/m^3)

T = Time: Incremental exposure time

$$\text{Adjusted Exposure Standard TWA} = \frac{8(24-h)\ (8\ \text{hour TWA}_{standard})}{16h}$$

where h = hours worked per day

4 Results

The following sections present the results for the monitoring conducted at Cargill's workplace on 3 July 2019.

4.1 Solvent Extraction Plant Personnel VOC Results

Table 4-1 presents the VOC monitoring results for the Solvent Extraction Plant. The results are compared against an adjusted Exposure Standard Threshold Limit as the Solvent Extraction Plant Operator works a 12 hour shift.

Table 4-1: Solvent Extraction Plant VOC monitoring results – 3 July 2019

Area	Analyte	Result mg/m³	Adjusted Exposure Standard Threshold Limit[2] (TWA 12h) mg/m³	Exposure Standard Threshold Limit[1] (TWA 8h) mg/m³
Solvent Extraction Plant	1-heptene	N/D	N/A	N/A
	Decane	N/D	N/A	N/A
	Heptane	N/D	820	1,640
	n-Hexane	11	36	72
	Cyclohexane	2.1	175	350
	Isooctane	N/D	N/A	N/A
	n-Octane	N/D	700	1,400
	n-Nonane	N/D	525	1,050
	Benzene	N/D	1.6	3.2
	Toluene	0.04	96	191
	Ethylbenzene	N/D	217	434
	meta- & para-Xylene	N/D	175	350
	Styrene	N/D	107	213
	ortho-Xylene	N/D	175	350
	1.3.5-Trimethylbenzene	N/D	62	123
	1.2.4-Trimethylbenzene	N/D	62	123
	n-Butylbenzene	N/D	N/A	N/A
	Isopropylbenzene	N/D	N/A	N/A
	n-Propylbenzene	N/D	N/A	N/A
	tert-Butylbenzene	N/D	N/A	N/A
	sec-Butylbenzene	N/D	N/A	N/A
	p-Isopropyltoluene	N/D	N/A	N/A
	2-Propanone (Acetone)	0.07	593	1,185
	2-Butanone (MEK)	N/D	223	445
	4-Methyl-2-pentanone (MIBK)	N/D	103	205
	2-Hexanone (MBK)	N/D	10	20
	1.1-Dichloroethane	N/D	206	412
	Chloroform	N/D	5	10
	Trichloroethylene	N/D	27	54
	Chlorobenzene	N/D	23	46
	2-Chlorotoluene	N/D	130	259
	4-Chlorotoluene	N/D	130	259
	1.3-Dichlorobenzene	N/D	N/A	N/A
	1.4-Dichlorobenzene	N/D	75	150
	1.2-Dichlorobenzene	N/D	75	150
	Hexachlorobutadiene	N/D	0.11	0.21
	trans-1.2-Dichloroethene	N/D	N/A	N/A
	cis-1.2-Dichloroethene	N/D	N/A	N/A

Area	Analyte	Result mg/m³	Adjusted Exposure Standard Threshold Limit[2] (TWA 12h) mg/m³	Exposure Standard Threshold Limit[1] (TWA 8h) mg/m³
	Bromochloromethane	N/D	530	1,060
	2.2-Dichloropropane	N/D	N/A	N/A
	1.2-Dichloroethane	N/D	20	40
	1.1.1-Trichloroethane	N/D	278	555
	1.1-Dichloropropene	N/D	N/A	N/A
	Carbon Tetrachloride	N/D	0.32	0.63
	Dibromomethane	N/D	N/A	N/A
	1.2-Dichloropropane	N/D	174	347
	Bromodichloromethane	N/D	N/A	N/A
	cis-1.3-Dichloropropylene	N/D	N/A	N/A
	trans-1.3-Dichloropropene	N/D	N/A	N/A
	1.1.2-Trichloroethane	N/D	28	55
	1.3-Dichloropropane	N/D	N/A	N/A
	Dibromochloromethane	N/D	N/A	N/A
	1.2-Dibromoethane (EDB)	N/D	N/A	N/A
	Tetrachloroethene	N/D	N/A	N/A
	1.1.1.2-Tetrachloroethane	N/D	N/A	N/A
	Bromoform	N/D	2.6	5.2
	1.1.2.2-Tetrachloroethane	N/D	3.5	6.9
	1.2.3-Trichloropropane	N/D	30	60
	Bromobenzene	N/D	N/A	N/A
	1.2-Dibromo-3-chloropropane	N/D	N/A	N/A
	1.2.4-Trichlorobenzene	N/D	19	37
	1.2.3-Trichlorobenzene	N/D	N/A	N/A
	Naphthalene	N/D	26	52

N/A refers to threshold limit information not available
N/D refers to result being not detectable
[1] Exposure Standard Threshold Limit – 8 hours
[2] Adjusted Exposure Standard Threshold Limit – 12 hours

4.2 Laboratory Personnel VOC Results

Table 4-2 presents the VOC monitoring results for the Laboratory.

Table 4-2: Laboratory VOC monitoring results – 3 July 2019

Area	Analyte	Result mg/m³	Exposure Standard Threshold Limit[1] (TWA - 8h) mg/m³
Laboratory	1-heptene	N/D	N/A
	Decane	0.02	N/A
	Heptane	0.1	1,640
	n-Hexane	1.5	72
	Cyclohexane	0.2	350
	Isooctane	0.3	N/A
	n-Octane	N/D	1,400
	n-Nonane	0.01	1,050
	Benzene	N/D	3.2
	Toluene	N/D	191
	Ethylbenzene	N/D	434
	meta- & para-Xylene	N/D	350
	Styrene	N/D	213
	ortho-Xylene	N/D	350
	1.3.5-Trimethylbenzene	N/D	123
	1.2.4-Trimethylbenzene	N/D	123
	n-Butylbenzene	N/D	N/A
	Isopropylbenzene	N/D	N/A
	n-Propylbenzene	N/D	N/A
	tert-Butylbenzene	N/D	N/A
	sec-Butylbenzene	N/D	N/A
	p-Isopropyltoluene	N/D	N/A
	2-Propanone (Acetone)	0.7	1,185
	2-Butanone (MEK)	N/D	445
	4-Methyl-2-pentanone (MIBK)	N/D	205
	2-Hexanone (MBK)	N/D	20
	1.1-Dichloroethane	N/D	412
	Chloroform	N/D	10
	Trichloroethylene	N/D	54
	Chlorobenzene	N/D	46
	2-Chlorotoluene	N/D	259
	4-Chlorotoluene	N/D	259
	1.3-Dichlorobenzene	N/D	N/A
	1.4-Dichlorobenzene	N/D	150
	1.2-Dichlorobenzene	N/D	150
	Hexachlorobutadiene	N/D	0.21
	trans-1.2-Dichloroethene	N/D	N/A
	cis-1.2-Dichloroethene	N/D	N/A
	Bromochloromethane	N/D	1,060
	2.2-Dichloropropane	N/D	N/A
	1.2-Dichloroethane	N/D	40
	1.1.1-Trichloroethane	N/D	555
	1.1-Dichloropropene	N/D	N/A
	Carbon Tetrachloride	N/D	0.63
	Dibromomethane	N/D	N/A
	1.2-Dichloropropane	N/D	347
	Bromodichloromethane	N/D	N/A
	cis-1.3-Dichloropropylene	N/D	N/A
	trans-1.3-Dichloropropene	N/D	N/A
	1.1.2-Trichloroethane	N/D	55
	1.3-Dichloropropane	N/D	N/A
	Dibromochloromethane	N/D	N/A
	1.2-Dibromoethane (EDB)	N/D	N/A
	Tetrachloroethene	N/D	N/A
	1.1.1.2-Tetrachloroethane	N/D	N/A

Area	Analyte	Result mg/m³	Exposure Standard Threshold Limit[1] (TWA - 8h) mg/m³
	Bromoform	N/D	5.2
	1.1.2.2-Tetrachloroethane	N/D	6.9
	1.2.3-Trichloropropane	N/D	60
	Bromobenzene	N/D	N/A
	1.2-Dibromo-3-chloropropane	N/D	N/A
	1.2.4-Trichlorobenzene	N/D	37
	1.2.3-Trichlorobenzene	N/D	N/A
	Naphthalene	N/D	52

N/A refers to threshold limit information not available
N/D refers to result being not detectable
[1] Exposure Standard Threshold Limit – 8 hours
* The analysis reported breakthrough of multi-bed sample tube for acetone. Therefore the concentration presented should be considered as a minimum value.

4.3 Background PID VOC Results

Table 4-3 outlines the PID VOC grab sample results for the Refinery and Solvent Extraction Plant areas.

Table 4-3: Background PID VOC results

Area	Specific Location	Result (ppm)
Refinery	Bottom Level – Glycol port	0.9
	Tank – TK832B	2.8
	H.P. Boiler Burner Fan	0.9
	Perfector	3.2
Solvent Extraction Plant	Workstation near Separator Area	0.8
	Above meal sample port (closed)	0.9
	Extractor rake (at seal)	0.9
Terminal Room	Close to meal testing	11

5 Discussion

The air inhaled at workplaces should not contain chemical agents at concentrations that produce adverse effects on health, safety or wellbeing. To assist occupational health and safety practitioners, employers and employees or their representatives, and regulatory agencies to secure workplace atmospheres which are as free as practicable from risks associated with hazardous contaminants, the *Work Health and Safety Act 2011* has produced a *Workplace Exposure Standards for Airborne Contaminants (April 2018)*.

The exposure standards are largely based upon the threshold limit value (TLV) determined by the American Conference of Government Industrial Hygienists (ACGIH). The TLV represents airborne concentrations of individual chemical substances, which according to current knowledge, should neither impair the health of nor cause undue discomfort to nearly all workers. Additionally, the exposure standards are believed to guard against narcosis or irritation, which could precipitate industrial accidents. Exposure standards apply to long-term exposure to a substance over an eight-hour day, for a five-day working week, over an entire working life, except where modified by consideration of excursion limits.

The exposure standards do not represent 'no-effect' levels that guarantee protection to every worker. Given the nature of biological variation and the range of individual susceptibility, it is inevitable that a very small proportion of workers who are exposed to concentrations around or below the exposure standard may suffer mild and transitory discomfort. An even smaller number may exhibit symptoms of illness. It follows that the exposure standards are not fine dividing lines between satisfactory and unsatisfactory working conditions, but rather that they are best used to assess the quality of the working environment and indicate where appropriate control measures are required.

Whenever possible engineering controls are a better option for the management of workplace health and safety concerns, rather than personnel protective equipment.

The measured results from Cargill's workplace have been compared with recognised Work Health and Safety Exposure Standards. Australian Exposure Standards are published by Safe Work Australia in the document *Workplace Exposure Standards for Airborne Contaminants* (April 2018). The recommended exposure standard for the analytes were tabulated and are shown in Section 4.

The results from the Laboratory were compared with the 8-hour exposure standard. The Solvent Extraction Plant Operator works 12-hour shifts and therefore the results were compared to an adjusted TWA.

VOC results from both the Solvent Extraction Plant and Laboratory were below the prescribed TWA threshold limits.

6 Conclusion

Workplace monitoring for airborne exposure to VOCs has been conducted at the Cargill site at 51 Raven Street, Kooragang Island, NSW 2304.

VOC results recorded for the Solvent Extraction Plant and Laboratory were below the specified exposure standard threshold limits.

7 Limitations

7.1 Scope of Services and Reliance of Data

This Workplace Monitoring Report ("the report") has been prepared in accordance with the scope of work/services agreed, between MJM Environmental Pty Ltd (MJM) and the Client. In preparing the report, MJM has relied upon data and other information provided by the Client and other individuals and organisations. Except as otherwise stated in the report, MJM has not verified the accuracy or completeness of the data. To the extent that the statements, opinions, facts, information, conclusions and/or recommendations in the report ("conclusions/summary") are based in whole or part on the data, those conclusions are contingent upon the accuracy and completeness of the data. MJM will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to MJM.

7.2 Study for Benefit of Client

This report has been prepared for the exclusive benefit of the Client and no other party. MJM assumes no responsibility and will not be liable to any other person or organisation for or in relation to any matter dealt with in this report, or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in this report (including without limitation matters arising from any negligent act or omission of MJM or for any loss or damage suffered by any other party relying upon the matters dealt with or conclusions expressed in this report). Other parties should not rely upon the report or the accuracy or completeness of any conclusions and should make their own inquiries and obtain independent advice in relation to such matters.

7.3 Other Limitations

To the best of MJM's knowledge, the proposal presented and the facts and matters described in this report reasonably represent the Client's intentions at the time of printing of the report. However, the passage of time, the manifestation of latent conditions or the impact of future events (including a change in applicable law) may have resulted in a variation of the Proposal and of its possible environmental or health impact. MJM will not be liable to update or revise the report to take into account any events or emergent circumstances or facts occurring or becoming apparent after the date of the report.

Appendix A NATA Laboratory Results

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EN1904580**	Page	: 1 of 12
Client	: **MJM ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Newcastle
Contact	: MS BRIGID KELLY	Contact	:
Address	: OFFICE 1, 335 WHARF ROAD NEWCASTLE NSW, AUSTRALIA 2300	Address	: 5/585 Maitland Road Mayfield West NSW Australia 2304
Telephone	: +61 49264222	Telephone	: +61 2 4014 2500
Project	: 036 1867	Date Samples Received	: 03-Jul-2019 16:18
Order number	:	Date Analysis Commenced	: 08-Jul-2019
C-O-C number	: ----	Issue Date	: 11-Jul-2019 19:56
Sampler	: ----		
Site	: ----		
Quote number	: EN/222		
No. of samples received	: 12		
No. of samples analysed	: 12		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

Signatories	*Position*	*Accreditation Category*
Dianne Blane	Laboratory Coordinator (2IC)	Newcastle - Inorganics, Mayfield West, NSW
Karinne Gelderman	Analyst	Newcastle - Organics, Mayfield West, NSW

General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP091: Sample EN1904580-011 was received with the cap detached from the end of the charcoal sorbent tube. Results should be scrutinised accordingly.
- EP091: The LOR values for EP091 have been raised due to increased charcoal sample size (400/200 mg) over the standard charcoal sample size (100/50mg) requiring greater extraction volume of solvent.
- EA143-OC: Sampling was not conducted by ALS and may not fall under accredited methods for sampling of inhalable and respirable dusts. Particulates outside the inhalable and respirable dust definitions under AS3640 and AS2985 respectively have the potential to introduce a bias. Results should be scrutinised accordingly.

Analytical Results

Sub-Matrix: **FILTER** (Matrix: **AIR**)			Client sample ID	PVC2512510 PVC2512510	PVC2512511 PVC2512511	PVC2512512 PVC2512512	PVC2512513 PVC2512513	PVC2513241 PVC2513241
			Client sampling date / time	03-Jul-2019 00:00	03-Jul-2019 00:00	03-Jul-2019 00:00	03-Jul-2019 00:00	03-Jul-2019 00:00
Compound	CAS Number	LOR	Unit	EN1904580-001	EN1904580-002	EN1904580-003	EN1904580-004	EN1904580-005
				Result	Result	Result	Result	Result
EA143: Particulates in Air								
Inhalable Dust	----	10	µg/filter	**239**	**----**	**----**	**----**	**----**
Respirable Dust	----	10	µg/filter	**----**	**70**	**595**	**48**	**113**

Analytical Results

Sub-Matrix: **FILTER** (Matrix: **AIR**)				Client sample ID	**PVC2512514 PVC2512514**	**PVC2512515 PVC2512515**	**PVC2512516 PVC2512516**	**PVC2512508 PVC2512508**	**----**
				Client sampling date / time	03-Jul-2019 00:00	03-Jul-2019 00:00	03-Jul-2019 00:00	03-Jul-2019 00:00	----
Compound	*CAS Number*	*LOR*	*Unit*		**EN1904580-006**	**EN1904580-007**	**EN1904580-008**	**EN1904580-009**	**--------**
					Result	Result	Result	Result	----
EA143: Particulates in Air									
Inhalable Dust	----	10	µg/filter		**4940**	**68**	**550**	**----**	**----**
Respirable Dust	----	10	µg/filter		**----**	**----**	**----**	<10	**----**

Analytical Results

Sub-Matrix: SORBENT TUBE (Matrix: AIR)			Client sample ID	VOC4	VOC1	VOC3	----	----
			Client sampling date / time	03-Jul-2019 00:00	03-Jul-2019 00:00	03-Jul-2019 00:00	----	----
Compound	CAS Number	LOR	Unit	EN1904580-010	EN1904580-011	EN1904580-012	--------	--------
				Result	Result	Result	----	----
EP091A: Aliphatic Hydrocarbons - Total								
1-heptene	592-76-7	0.5	µg/sample	<1.0	<1.0	<1.0	----	----
Heptane	142-82-5	0.5	µg/sample	<1.0	**5.8**	<1.0	----	----
Decane	124-18-5	0.5	µg/sample	<1.0	**1.5**	<1.0	----	----
n-Hexane	110-54-3	0.5	µg/sample	<1.0	**131**	**1060**	----	----
Cyclohexane	110-82-7	0.5	µg/sample	<1.0	**19.9**	**202**	----	----
Isooctane	540-84-1	0.5	µg/sample	<1.0	**21.6**	<1.0	----	----
n-Octane	111-65-9	0.5	µg/sample	<1.0	<1.0	<1.0	----	----
n-Nonane	111-84-2	0.5	µg/sample	<1.0	**1.2**	<1.0	----	----
EP091B: Monocyclic Aromatic Hydrocarbons - Total								
Benzene	71-43-2	0.5	µg/sample	<1.0	<1.0	<1.0	----	----
Toluene	108-88-3	0.5	µg/sample	<1.0	<1.0	**3.4**	----	----
Ethylbenzene	100-41-4	0.5	µg/sample	<1.0	<1.0	<1.0	----	----
meta- & para-Xylene	108-38-3 106-42-3	1.0	µg/sample	<2.0	<2.0	<2.0	----	----
Styrene	100-42-5	0.5	µg/sample	<1.0	<1.0	<1.0	----	----
ortho-Xylene	95-47-6	0.5	µg/sample	<1.0	<1.0	<1.0	----	----
1.3.5-Trimethylbenzene	108-67-8	0.5	µg/sample	<1.0	<1.0	<1.0	----	----
1.2.4-Trimethylbenzene	95-63-6	0.5	µg/sample	<1.0	<1.0	<1.0	----	----
n-Butylbenzene	104-51-8	0.5	µg/sample	<1.0	<1.0	<1.0	----	----
Isopropylbenzene	98-82-8	0.5	µg/sample	<1.0	<1.0	<1.0	----	----
n-Propylbenzene	103-65-1	0.5	µg/sample	<1.0	<1.0	<1.0	----	----
tert-Butylbenzene	98-06-6	0.5	µg/sample	<1.0	<1.0	<1.0	----	----
sec-Butylbenzene	135-98-8	0.5	µg/sample	<1.0	<1.0	<1.0	----	----
p-Isopropyltoluene	99-87-6	0.5	µg/sample	<1.0	<1.0	<1.0	----	----
Total Xylenes	----	1.5	µg/sample	<3.0	<3.0	<3.0	----	----
EP091C: Oxygenated Compounds - Total								
2-Propanone (Acetone)	67-64-1	1.0	µg/sample	<2.0	**59.2**	**6.9**	----	----
2-Butanone (MEK)	78-93-3	0.5	µg/sample	<1.0	<1.0	<1.0	----	----
4-Methyl-2-pentanone (MIBK)	108-10-1	0.5	µg/sample	<1.0	<1.0	<1.0	----	----
2-Hexanone (MBK)	591-78-6	0.5	µg/sample	<1.0	<1.0	<1.0	----	----
EP091D: Halogenated Compounds - Total								
1.1-Dichloroethane	75-34-3	0.5	µg/sample	<1.0	<1.0	<1.0	----	----
Chloroform	67-66-3	0.5	µg/sample	<1.0	<1.0	<1.0	----	----
Trichloroethene	79-01-6	0.5	µg/sample	<1.0	<1.0	<1.0	----	----
Chlorobenzene	108-90-7	0.5	µg/sample	<1.0	<1.0	<1.0	----	----

Analytical Results

Sub-Matrix: SORBENT TUBE (Matrix: AIR)				Client sample ID	VOC4	VOC1	VOC3	----	----
				Client sampling date / time	03-Jul-2019 00:00	03-Jul-2019 00:00	03-Jul-2019 00:00	----	----
Compound	CAS Number	LOR	Unit		EN1904580-010	EN1904580-011	EN1904580-012	--------	--------
					Result	Result	Result	----	----
EP091D: Halogenated Compounds - Total - Continued									
2-Chlorotoluene	95-49-8	0.5	µg/sample		<1.0	<1.0	<1.0	----	----
4-Chlorotoluene	106-43-4	0.5	µg/sample		<1.0	<1.0	<1.0	----	----
1.3-Dichlorobenzene	541-73-1	0.5	µg/sample		<1.0	<1.0	<1.0	----	----
1.4-Dichlorobenzene	106-46-7	0.5	µg/sample		<1.0	<1.0	<1.0	----	----
1.2-Dichlorobenzene	95-50-1	0.5	µg/sample		<1.0	<1.0	<1.0	----	----
Hexachlorobutadiene	87-68-3	0.5	µg/sample		<1.0	<1.0	<1.0	----	----
trans-1.2-Dichloroethene	156-60-5	0.5	µg/sample		<1.0	<1.0	<1.0	----	----
cis-1.2-Dichloroethene	156-59-2	0.5	µg/sample		<1.0	<1.0	<1.0	----	----
Bromochloromethane	74-97-5	0.5	µg/sample		<1.0	<1.0	<1.0	----	----
2.2-Dichloropropane	594-20-7	0.5	µg/sample		<1.0	<1.0	<1.0	----	----
1.2-Dichloroethane	107-06-2	0.5	µg/sample		<1.0	<1.0	<1.0	----	----
1.1.1-Trichloroethane	71-55-6	0.5	µg/sample		<1.0	<1.0	<1.0	----	----
1.1-Dichloropropene	563-58-6	0.5	µg/sample		<1.0	<1.0	<1.0	----	----
Carbon Tetrachloride	56-23-5	0.5	µg/sample		<1.0	<1.0	<1.0	----	----
Dibromomethane	74-95-3	0.5	µg/sample		<1.0	<1.0	<1.0	----	----
1.2-Dichloropropane	78-87-5	0.5	µg/sample		<1.0	<1.0	<1.0	----	----
Bromodichloromethane	75-27-4	0.5	µg/sample		<1.0	<1.0	<1.0	----	----
cis-1.3-Dichloropropylene	10061-01-5	0.5	µg/sample		<1.0	<1.0	<1.0	----	----
trans-1.3-Dichloropropene	10061-02-6	0.5	µg/sample		<1.0	<1.0	<1.0	----	----
1.1.2-Trichloroethane	79-00-5	0.5	µg/sample		<1.0	<1.0	<1.0	----	----
1.3-Dichloropropane	142-28-9	0.5	µg/sample		<1.0	<1.0	<1.0	----	----
Dibromochloromethane	124-48-1	0.5	µg/sample		<1.0	<1.0	<1.0	----	----
1.2-Dibromoethane (EDB)	106-93-4	0.5	µg/sample		<1.0	<1.0	<1.0	----	----
Tetrachloroethene	127-18-4	0.5	µg/sample		<1.0	<1.0	<1.0	----	----
1.1.1.2-Tetrachloroethane	630-20-6	0.5	µg/sample		<1.0	<1.0	<1.0	----	----
Bromoform	75-25-2	0.5	µg/sample		<1.0	<1.0	<1.0	----	----
1.1.2.2-Tetrachloroethane	79-34-5	0.5	µg/sample		<1.0	<1.0	<1.0	----	----
1.2.3-Trichloropropane	96-18-4	0.5	µg/sample		<1.0	<1.0	<1.0	----	----
Bromobenzene	108-86-1	0.5	µg/sample		<1.0	<1.0	<1.0	----	----
1.2-Dibromo-3-chloropropane	96-12-8	0.5	µg/sample		<1.0	<1.0	<1.0	----	----
1.2.4-Trichlorobenzene	120-82-1	0.5	µg/sample		<1.0	<1.0	<1.0	----	----
1.2.3-Trichlorobenzene	87-61-6	0.5	µg/sample		<1.0	<1.0	<1.0	----	----
1.1-Dichloroethene	75-35-4	0.5	µg/sample		<1.0	<1.0	<1.0	----	----
EP091E: Polycyclic Aromatic Hydrocarbons - Total									
Naphthalene	91-20-3	0.5	µg/sample		<1.0	<1.0	<1.0	----	----

Analytical Results

Sub-Matrix: SORBENT TUBE (Matrix: AIR)				Client sample ID	VOC4	VOC1	VOC3	----	----
				Client sampling date / time	03-Jul-2019 00:00	03-Jul-2019 00:00	03-Jul-2019 00:00	----	----
Compound	CAS Number	LOR	Unit		EN1904580-010	EN1904580-011	EN1904580-012	--------	--------
					Result	Result	Result	----	----
EP091E: Polycyclic Aromatic Hydrocarbons (Section 2)									
Naphthalene	91-20-3	0.5	µg		<1.0	<1.0	<1.0	----	----
EP091X: VOCs in Air - Extended List (non-NATA)									
Vinyl chloride	75-01-4	2	µg		<2	<2	<2	----	----
Bromomethane	74-83-9	2	µg		<2	<2	<2	----	----
Trichlorofluoromethane	75-69-4	1	µg		<1	<1	<1	----	----
Vinyl chloride	75-01-4	2	µg		<2	<2	<2	----	----
Bromomethane	74-83-9	2	µg		<2	<2	<2	----	----
Trichlorofluoromethane	75-69-4	1	µg		<1	<1	<1	----	----
Vinyl chloride	75-01-4	2	µg/sample		<4	<4	<4	----	----
Bromomethane	74-83-9	2	µg/sample		<4	<4	<4	----	----
Trichlorofluoromethane	75-69-4	1	µg/sample		<2	<2	<2	----	----
EP091A: Aliphatic Hydrocarbons (Section 1)									
1-heptene	592-76-7	0.5	µg		<1.0	<1.0	<1.0	----	----
Heptane	142-82-5	0.5	µg		<1.0	**5.8**	<1.0	----	----
Decane	124-18-5	0.5	µg		<1.0	**1.5**	<1.0	----	----
n-Hexane	110-54-3	0.5	µg		<1.0	**131**	**1060**	----	----
Cyclohexane	110-82-7	0.5	µg		<1.0	**19.9**	**202**	----	----
Isooctane	540-84-1	0.5	µg		<1.0	**21.6**	<1.0	----	----
n-Octane	111-65-9	0.5	µg		<1.0	<1.0	<1.0	----	----
n-Nonane	111-84-2	0.5	µg		<1.0	**1.2**	<1.0	----	----
EP091B: Monocyclic Aromatic Hydrocarbons (Section 1)									
Benzene	71-43-2	0.5	µg		<1.0	<1.0	<1.0	----	----
Toluene	108-88-3	0.5	µg		<1.0	<1.0	**3.4**	----	----
Ethylbenzene	100-41-4	0.5	µg		<1.0	<1.0	<1.0	----	----
meta- & para-Xylene	108-38-3 106-42-3	1	µg		<2	<2	<2	----	----
Styrene	100-42-5	0.5	µg		<1.0	<1.0	<1.0	----	----
ortho-Xylene	95-47-6	0.5	µg		<1.0	<1.0	<1.0	----	----
1.3.5-Trimethylbenzene	108-67-8	0.5	µg		<1.0	<1.0	<1.0	----	----
1.2.4-Trimethylbenzene	95-63-6	0.5	µg		<1.0	<1.0	<1.0	----	----
n-Butylbenzene	104-51-8	0.5	µg		<1.0	<1.0	<1.0	----	----
Isopropylbenzene	98-82-8	0.5	µg		<1.0	<1.0	<1.0	----	----
n-Propylbenzene	103-65-1	0.5	µg		<1.0	<1.0	<1.0	----	----
tert-Butylbenzene	98-06-6	0.5	µg		<1.0	<1.0	<1.0	----	----
sec-Butylbenzene	135-98-8	0.5	µg		<1.0	<1.0	<1.0	----	----

Analytical Results

Sub-Matrix: SORBENT TUBE (Matrix: AIR)				Client sample ID	VOC4	VOC1	VOC3	----	----
				Client sampling date / time	03-Jul-2019 00:00	03-Jul-2019 00:00	03-Jul-2019 00:00	----	----
Compound	CAS Number	LOR	Unit		EN1904580-010	EN1904580-011	EN1904580-012	--------	--------
					Result	Result	Result	----	----
EP091B: Monocyclic Aromatic Hydrocarbons (Section 1) - Continued									
p-Isopropyltoluene	99-87-6	0.5	µg		<1.0	<1.0	<1.0	----	----
EP091C: Oxygenated Compounds (Section 1)									
2-Propanone (Acetone)	67-64-1	1.0	µg		<1.0	**59.2**	**6.9**	----	----
2-Butanone (MEK)	78-93-3	0.5	µg		<1.0	<1.0	<1.0	----	----
4-Methyl-2-pentanone (MIBK)	108-10-1	0.5	µg		<1.0	<1.0	<1.0	----	----
2-Hexanone (MBK)	591-78-6	0.5	µg		<1.0	<1.0	<1.0	----	----
EP091D: Halogenated Compounds (Section 1)									
1.1-Dichloroethane	75-34-3	0.5	µg		<1.0	<1.0	<1.0	----	----
Chloroform	67-66-3	0.5	µg		<1.0	<1.0	<1.0	----	----
Trichloroethene	79-01-6	0.5	µg		<1.0	<1.0	<1.0	----	----
Chlorobenzene	108-90-7	0.5	µg		<1.0	<1.0	<1.0	----	----
2-Chlorotoluene	95-49-8	0.5	µg		<1.0	<1.0	<1.0	----	----
4-Chlorotoluene	106-43-4	0.5	µg		<1.0	<1.0	<1.0	----	----
1.3-Dichlorobenzene	541-73-1	0.5	µg		<1.0	<1.0	<1.0	----	----
1.4-Dichlorobenzene	106-46-7	0.5	µg		<1.0	<1.0	<1.0	----	----
1.2-Dichlorobenzene	95-50-1	0.5	µg		<1.0	<1.0	<1.0	----	----
Hexachlorobutadiene	87-68-3	0.5	µg		<1.0	<1.0	<1.0	----	----
trans-1.2-Dichloroethene	156-60-5	0.5	µg		<1.0	<1.0	<1.0	----	----
cis-1.2-Dichloroethene	156-59-2	0.5	µg		<1.0	<1.0	<1.0	----	----
Bromochloromethane	74-97-5	0.5	µg		<1.0	<1.0	<1.0	----	----
2.2-Dichloropropane	594-20-7	0.5	µg		<1.0	<1.0	<1.0	----	----
1.2-Dichloroethane	107-06-2	0.5	µg		<1.0	<1.0	<1.0	----	----
1.1.1-Trichloroethane	71-55-6	0.5	µg		<1.0	<1.0	<1.0	----	----
1.1-Dichloropropene	563-58-6	0.5	µg		<1.0	<1.0	<1.0	----	----
Carbon Tetrachloride	56-23-5	0.5	µg		<1.0	<1.0	<1.0	----	----
Dibromomethane	74-95-3	0.5	µg		<1.0	<1.0	<1.0	----	----
1.2-Dichloropropane	78-87-5	0.5	µg		<1.0	<1.0	<1.0	----	----
Bromodichloromethane	75-27-4	0.5	µg		<1.0	<1.0	<1.0	----	----
cis-1.3-Dichloropropylene	10061-01-5	0.5	µg		<1.0	<1.0	<1.0	----	----
trans-1.3-Dichloropropene	10061-02-6	0.5	µg		<1.0	<1.0	<1.0	----	----
1.1.2-Trichloroethane	79-00-5	0.5	µg		<1.0	<1.0	<1.0	----	----
1.3-Dichloropropane	142-28-9	0.5	µg		<1.0	<1.0	<1.0	----	----
Dibromochloromethane	124-48-1	0.5	µg		<1.0	<1.0	<1.0	----	----
1.2-Dibromoethane (EDB)	106-93-4	0.5	µg		<1.0	<1.0	<1.0	----	----

Analytical Results

Sub-Matrix: SORBENT TUBE (Matrix: AIR)				Client sample ID	VOC4	VOC1	VOC3	----	----
				Client sampling date / time	03-Jul-2019 00:00	03-Jul-2019 00:00	03-Jul-2019 00:00	----	----
Compound	CAS Number	LOR	Unit		EN1904580-010	EN1904580-011	EN1904580-012	--------	--------
					Result	Result	Result	----	----
EP091D: Halogenated Compounds (Section 1) - Continued									
Tetrachloroethene	127-18-4	0.5	µg		<1.0	<1.0	<1.0	----	----
1.1.1.2-Tetrachloroethane	630-20-6	0.5	µg		<1.0	<1.0	<1.0	----	----
Bromoform	75-25-2	0.5	µg		<1.0	<1.0	<1.0	----	----
1.1.2.2-Tetrachloroethane	79-34-5	0.5	µg		<1.0	<1.0	<1.0	----	----
1.2.3-Trichloropropane	96-18-4	0.5	µg		<1.0	<1.0	<1.0	----	----
Bromobenzene	108-86-1	0.5	µg		<1.0	<1.0	<1.0	----	----
1.2-Dibromo-3-chloropropane	96-12-8	0.5	µg		<1.0	<1.0	<1.0	----	----
1.2.4-Trichlorobenzene	120-82-1	0.5	µg		<1.0	<1.0	<1.0	----	----
1.2.3-Trichlorobenzene	87-61-6	0.5	µg		<1.0	<1.0	<1.0	----	----
1.1-Dichloroethene	75-35-4	0.5	µg		<1.0	<1.0	<1.0	----	----
EP091E: Polycyclic Aromatic Hydrocarbons (Section 1)									
Naphthalene	91-20-3	0.5	µg		<1.0	<1.0	<1.0	----	----
EP091A: Aliphatic Hydrocarbons (Section 2)									
1-heptene	592-76-7	0.5	µg		<1.0	<1.0	<1.0	----	----
Heptane	142-82-5	0.5	µg		<1.0	<1.0	<1.0	----	----
Decane	124-18-5	0.5	µg		<1.0	<1.0	<1.0	----	----
n-Hexane	110-54-3	0.5	µg		<1.0	<1.0	<1.0	----	----
Cyclohexane	110-82-7	0.5	µg		<1.0	<1.0	<1.0	----	----
Isooctane	540-84-1	0.5	µg		<1.0	<1.0	<1.0	----	----
n-Octane	111-65-9	0.5	µg		<1.0	<1.0	<1.0	----	----
n-Nonane	111-84-2	0.5	µg		<1.0	<1.0	<1.0	----	----
EP091B: Monocyclic Aromatic Hydrocarbons (Section 2)									
Benzene	71-43-2	0.5	µg		<1.0	<1.0	<1.0	----	----
Toluene	108-88-3	0.5	µg		<1.0	<1.0	<1.0	----	----
Ethylbenzene	100-41-4	0.5	µg		<1.0	<1.0	<1.0	----	----
meta- & para-Xylene	108-38-3 106-42-3	1	µg		<2	<2	<2	----	----
Styrene	100-42-5	0.5	µg		<1.0	<1.0	<1.0	----	----
ortho-Xylene	95-47-6	0.5	µg		<1.0	<1.0	<1.0	----	----
1.3.5-Trimethylbenzene	108-67-8	0.5	µg		<1.0	<1.0	<1.0	----	----
1.2.4-Trimethylbenzene	95-63-6	0.5	µg		<1.0	<1.0	<1.0	----	----
n-Butylbenzene	104-51-8	0.5	µg		<1.0	<1.0	<1.0	----	----
Isopropylbenzene	98-82-8	0.5	µg		<1.0	<1.0	<1.0	----	----
n-Propylbenzene	103-65-1	0.5	µg		<1.0	<1.0	<1.0	----	----
tert-Butylbenzene	98-06-6	0.5	µg		<1.0	<1.0	<1.0	----	----

Analytical Results

Sub-Matrix: SORBENT TUBE (Matrix: AIR)				Client sample ID	VOC4	VOC1	VOC3	----	----
				Client sampling date / time	03-Jul-2019 00:00	03-Jul-2019 00:00	03-Jul-2019 00:00	----	----
Compound	CAS Number	LOR	Unit		EN1904580-010	EN1904580-011	EN1904580-012	--------	--------
					Result	Result	Result	----	----
EP091B: Monocyclic Aromatic Hydrocarbons (Section 2) - Continued									
sec-Butylbenzene	135-98-8	0.5	µg		<1.0	<1.0	<1.0	----	----
p-Isopropyltoluene	99-87-6	0.5	µg		<1.0	<1.0	<1.0	----	----
EP091C: Oxygenated Compounds (Section 2)									
2-Propanone (Acetone)	67-64-1	1.0	µg		<1.0	<1.0	<1.0	----	----
2-Butanone (MEK)	78-93-3	0.5	µg		<1.0	<1.0	<1.0	----	----
4-Methyl-2-pentanone (MIBK)	108-10-1	0.5	µg		<1.0	<1.0	<1.0	----	----
2-Hexanone (MBK)	591-78-6	0.5	µg		<1.0	<1.0	<1.0	----	----
EP091D: Halogenated Compounds (Section 2)									
1.1-Dichloroethane	75-34-3	0.5	µg		<1.0	<1.0	<1.0	----	----
Chloroform	67-66-3	0.5	µg		<1.0	<1.0	<1.0	----	----
Trichloroethene	79-01-6	0.5	µg		<1.0	<1.0	<1.0	----	----
Chlorobenzene	108-90-7	0.5	µg		<1.0	<1.0	<1.0	----	----
2-Chlorotoluene	95-49-8	0.5	µg		<1.0	<1.0	<1.0	----	----
4-Chlorotoluene	106-43-4	0.5	µg		<1.0	<1.0	<1.0	----	----
1.3-Dichlorobenzene	541-73-1	0.5	µg		<1.0	<1.0	<1.0	----	----
1.4-Dichlorobenzene	106-46-7	0.5	µg		<1.0	<1.0	<1.0	----	----
1.2-Dichlorobenzene	95-50-1	0.5	µg		<1.0	<1.0	<1.0	----	----
Hexachlorobutadiene	87-68-3	0.5	µg		<1.0	<1.0	<1.0	----	----
trans-1.2-Dichloroethene	156-60-5	0.5	µg		<1.0	<1.0	<1.0	----	----
cis-1.2-Dichloroethene	156-59-2	0.5	µg		<1.0	<1.0	<1.0	----	----
Bromochloromethane	74-97-5	0.5	µg		<1.0	<1.0	<1.0	----	----
2.2-Dichloropropane	594-20-7	0.5	µg		<1.0	<1.0	<1.0	----	----
1.2-Dichloroethane	107-06-2	0.5	µg		<1.0	<1.0	<1.0	----	----
1.1.1-Trichloroethane	71-55-6	0.5	µg		<1.0	<1.0	<1.0	----	----
1.1-Dichloropropene	563-58-6	0.5	µg		<1.0	<1.0	<1.0	----	----
Carbon Tetrachloride	56-23-5	0.5	µg		<1.0	<1.0	<1.0	----	----
Dibromomethane	74-95-3	0.5	µg		<1.0	<1.0	<1.0	----	----
1.2-Dichloropropane	78-87-5	0.5	µg		<1.0	<1.0	<1.0	----	----
Bromodichloromethane	75-27-4	0.5	µg		<1.0	<1.0	<1.0	----	----
cis-1.3-Dichloropropylene	10061-01-5	0.5	µg		<1.0	<1.0	<1.0	----	----
trans-1.3-Dichloropropene	10061-02-6	0.5	µg		<1.0	<1.0	<1.0	----	----
1.1.2-Trichloroethane	79-00-5	0.5	µg		<1.0	<1.0	<1.0	----	----
1.3-Dichloropropane	142-28-9	0.5	µg		<1.0	<1.0	<1.0	----	----
Dibromochloromethane	124-48-1	0.5	µg		<1.0	<1.0	<1.0	----	----

Analytical Results

Sub-Matrix: SORBENT TUBE (Matrix: AIR)				Client sample ID	VOC4	VOC1	VOC3	----	----
				Client sampling date / time	03-Jul-2019 00:00	03-Jul-2019 00:00	03-Jul-2019 00:00	----	----
Compound	CAS Number	LOR	Unit		EN1904580-010	EN1904580-011	EN1904580-012	--------	--------
					Result	Result	Result	----	----
EP091D: Halogenated Compounds (Section 2) - Continued									
1.2-Dibromoethane (EDB)	106-93-4	0.5	µg		<1.0	<1.0	<1.0	----	----
Tetrachloroethene	127-18-4	0.5	µg		<1.0	<1.0	<1.0	----	----
1.1.1.2-Tetrachloroethane	630-20-6	0.5	µg		<1.0	<1.0	<1.0	----	----
Bromoform	75-25-2	0.5	µg		<1.0	<1.0	<1.0	----	----
1.1.2.2-Tetrachloroethane	79-34-5	0.5	µg		<1.0	<1.0	<1.0	----	----
1.2.3-Trichloropropane	96-18-4	0.5	µg		<1.0	<1.0	<1.0	----	----
Bromobenzene	108-86-1	0.5	µg		<1.0	<1.0	<1.0	----	----
1.2-Dibromo-3-chloropropane	96-12-8	0.5	µg		<1.0	<1.0	<1.0	----	----
1.2.4-Trichlorobenzene	120-82-1	0.5	µg		<1.0	<1.0	<1.0	----	----
1.2.3-Trichlorobenzene	87-61-6	0.5	µg		<1.0	<1.0	<1.0	----	----
1.1-Dichloroethene	75-35-4	0.5	µg		<1.0	<1.0	<1.0	----	----
EP091: Chlorinated Organic Surrogates (Section 1)									
1.2-Dichloroethane-D4	17060-07-0	0.5	%		**107**	**91.6**	**102**	----	----
4-Bromofluorobenzene	460-00-4	0.5	%		**78.0**	**65.9**	**72.0**	----	----
EP091: Chlorinated Organic Surrogates (Section 2)									
1.2-Dichloroethane-D4	17060-07-0	0.5	%		**96.4**	**99.8**	**104**	----	----
4-Bromofluorobenzene	460-00-4	0.5	%		**71.6**	**68.1**	**74.6**	----	----
EP091: MAH Surrogates (Section 1)									
Toluene-D8	2037-26-5	0.5	%		**101**	**85.6**	**91.3**	----	----
EP091: MAH Surrogates (Section 2)									
Toluene-D8	2037-26-5	0.5	%		**87.7**	**84.7**	**89.3**	----	----

Surrogate Control Limits

Sub-Matrix: **SORBENT TUBE**

Compound	CAS Number	Recovery Limits (%) Low	High
EP091: Chlorinated Organic Surrogates (Section 1)			
1.2-Dichloroethane-D4	17060-07-0	70	130
4-Bromofluorobenzene	460-00-4	60	130
EP091: Chlorinated Organic Surrogates (Section 2)			
1.2-Dichloroethane-D4	17060-07-0	60	140
4-Bromofluorobenzene	460-00-4	60	140
EP091: MAH Surrogates (Section 1)			
Toluene-D8	2037-26-5	70	130
EP091: MAH Surrogates (Section 2)			
Toluene-D8	2037-26-5	60	140