

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

INTEROFFICE COMMUNICATION

TO: File

FROM: Amy Robinson

DATE: October 9, 2019

SUBJECT: Monthly Ethylene Oxide Sampling at Viant Medical, Inc. for August 2019

Overview

Viant Medical, Inc. (Viant) in Grand Rapids, Michigan was identified by the United States Environmental Protection Agency (USEPA) National Air Toxics Assessment (NATA) as having elevated ethylene oxide ambient air impacts. Subsequent computer modeling by the Air Quality Division (AQD) showed impacts above the Initial Risk Screening Level (IRSL) at 0.0002 $\mu\text{g}/\text{m}^3$ and Secondary Risk Screening Level (SRSL) at 0.002 $\mu\text{g}/\text{m}^3$. To ascertain the accuracy of the computer model, the AQD initially conducted a [Phase I](#) (limited monitoring) sampling study for ethylene oxide in the vicinity of Viant in November 2018. A more robust [Phase II](#) sampling effort was conducted in March 2019 near the facility, on the Grand Valley State University campus, locations in the City of Grand Rapids, and several upwind and downwind locations. Results of the Phase I and II sampling are available on the website www.michigan.gov/viant

Ambient air monitoring for ethylene oxide was accomplished using the EPA TO-15 Summa canister method. The EPA's National Contract Laboratory, Eastern Research Group (ERG), performed the analysis. ERG's laboratory detection limit is 0.111 $\mu\text{g}/\text{m}^3$. Since the SRSL is lower than the detection limit of the current method for ethylene oxide, the monitoring data will have to be carefully interpreted. For example, if a sample result is reported as non-detect, it is possible that the actual level could still be above the SRSL.

Sampling Details

As part of a compliance plan related to an enforcement action, Viant has agreed to conduct monthly perimeter sampling for ethylene oxide. Viant contracted with Ramboll US Corporation (Ramboll) to conduct ambient air sampling at four outdoor locations as well as one indoor location on a once per month basis. The monthly sampling began in July 2019 and will continue through February 2020. Starting in August 2019, the AQD will conduct monthly sampling. AQD will collect one side by side, or co-located, outdoor air sample at the same time Viant is sampling. Sampling canisters from Viant are sent to Eurofins Air Toxics, Inc for analysis. Sampling canisters from the AQD are sent to the USEPA's approved ethylene oxide lab, Eastern Research Group (ERG). Both labs use the same analytical methods.

Results

Ramboll collected five samples over a 24-hour period starting on August 12, 2019. The AQD received the report on October 7, 2019 and conducted a thorough review of the data. The results from the August sampling are on page 2 of the report named “Ambient Air Sampling at Viant Medical Facility, Grand Rapids, Michigan August 2019 Sampling Events Results” ([Viant Report](#)) attached to this memo. The results from Viant’s August sampling are similar to the AQD’s Phase I and II sampling results.

The AQD conducted a co-located sample on the same date over the same time period as the sampling conducted by Ramboll for Viant. AQD’s sampling site (labeled 1 on [Figure 1](#) in the [Viant Report](#)) was chosen from Viant’s sampling locations based on weather conditions expected during the sampling time. The goal is to co-locate the AQD canister in the predicted downwind direction for the day of sampling, therefore the co-located site could change monthly. The results from AQD samples are on page 2 of the [ERG report](#) attached to this memo.

The USEPA has established criteria for comparing data from different laboratories. If values from two different laboratories are within $\pm 20\%$, then the laboratories have good comparability. It is difficult to make any determinations about the laboratories with just one sample, but the August samples are meeting the $\pm 20\%$ criteria. As additional data is received, a better determination of laboratory comparability can be made.

AMBIENT AIR SAMPLING AT VIANT MEDICAL
FACILITY, GRAND RAPIDS, MICHIGAN
AUGUST 2019 SAMPLING EVENT RESULTS

Prepared For:
Hogan Lovells US LLP
Denver, CO

On Behalf Of:
Viant Medical
Grand Rapids, MI

Prepared By:
Ramboll US Corporation
Arlington, VA

Date
October 2019

Project Number
1690010876

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Table 2: Indoor Air Sampling Results, August 12-13, 2019

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APPENDICES

Attachment A: Air Sampling Program Results Summary

Attachment B: Photographs of Sampling Locations

Attachment C: Laboratory Analytical Report

Attachment D: Laboratory Chain of Custody

1. INTRODUCTION

Ramboll US Corporation (Ramboll) has prepared this report to summarize the sampling procedures and results of Ramboll's August 2019 air sampling event at the Viant Medical (Viant) facility located at 520 Watson Street Southwest in Grand Rapids, Michigan (the "facility" or the "site"). The sampling event was completed during a 24-hour period between August 12 and 13, 2019, and included the collection of five ambient air samples¹ and one indoor air (IA) sample that were submitted for laboratory analysis of ethylene oxide (EtO). The sampling was the second monthly event performed in accordance with the scope of work in the April 2019 Ambient Air Sampling Work Plan (the "April 2019 Work Plan") prepared by Ramboll. The sections below describe the sampling methodology and results from the August 2019 sampling event.

2. SAMPLING LOCATIONS

The five sampling locations selected during this event were the same locations sampled by Ramboll in July. Location #4 was selected for the placement of co-located samples. Sampling locations are depicted on Figure 1 and photographs of each sample are included in Attachment A.

3. METHODOLOGY

All six samples were collected using individually certified 6-liter stainless steel SUMMA® canisters equipped with individually certified 24-hour mass flow controllers provided by Eurofins Air Toxics (EAT). The canisters were secured to the same fixtures that were used during the July 2019 sampling event for sample collection within the breathing zone (approximately 5-6 feet). The co-located sample canister inlets at Location #4 were located approximately 1 foot² away from each other.

Prior to sample collection at each location, a shut-in test was performed on each canister and mass flow controller using the methods described in the July 2019 sampling report. After the successful completion of the shut-in test at each location, the valve on the canister was opened to begin collection of the 24-hour integrated sample. The recordkeeping and canister pressure monitoring methods used in the field during this event are the same as those described previously. The winds were variable, blowing primarily from the west, northwest, and northeast, and to a lesser extent, from the north, during the 24-hour sampling period, which began August 12, 2019 and ended August 13, 2019.

After approximately 24 hours from the start of the event, the valves on the canisters were closed, final field measurements were recorded, and samples were shipped overnight to EAT in Folsom, California for analysis of EtO using the methods specified in the April 2019 Work Plan. The laboratory received the canister samples on August 14, 2019 and analyzed them between August 15 and 20, 2019.

Additionally, the Michigan Department of Environment, Great Lakes, and Energy (EGLE) collected one canister sample at Location #1 during the same 24-hour time period as Ramboll's samples and sent the sample to its own contract laboratory for analysis.

¹ One of the samples was a co-located sample.

² Because of the diameter of the utility pole used to secure the canisters at Location #4, the canister inlets were placed one foot from each other.

4. RESULTS

The results from the August 2019 sampling event are reported in Table 1 and Table 2.

Sample Location ID	On-Site	Location Description	EtO Concentration ($\mu\text{g}/\text{m}^3$)	Sample-Specific MDL ($\mu\text{g}/\text{m}^3$)
1	Yes	South of building in parking lot	2.5	0.047
2	Yes	West of building, along western property boundary	0.22	0.049
3	No	Northwest of building along Watson Street Southwest	0.21	0.052
4 (co-located samples)	Yes	North of building, northern corner of parking lot	0.28; 0.28 (co-located sample)	0.046; 0.046

Sample Location ID	Location Description	EtO Concentration ($\mu\text{g}/\text{m}^3$)	Sample-Specific MDL ($\mu\text{g}/\text{m}^3$)
IA	Scrubber room	460	0.79

EtO was detected in all samples collected during the August 2019 event. The EtO concentration in outdoor ambient air samples ranged from 0.21 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) at Location #3 to 2.5 $\mu\text{g}/\text{m}^3$ at Location #1 (Figure 1). EGLE provided meteorological data collected in five-minute intervals from its Grand Rapids – Monroe Street air monitoring site, which is approximately 1.7 miles north-northeast of Viant.³ According to the meteorological data, the wind direction was variable, blowing primarily from the west, northwest, and northeast, and to a lesser extent, from the north (Figure 2). Wind speed varied between 1 and 8 miles per hour (mph), though for the majority of the 24-hour period, wind speeds varied between 2 and 6 mph. The EtO concentration inside the scrubber room was 460 $\mu\text{g}/\text{m}^3$. A summary of results from this event and the prior July 2019 event is provided in Appendix A.

³ The Grand Rapids – Monroe Street air monitoring site is part of the state's air monitoring network as well as the federal NCore multi-pollutant monitoring network. Meteorological measurements collected at that site are subject to quality assurance procedures in the Quality Assurance Handbook for Air Pollution Measurement Systems, Volume IV: Meteorological Measurements Version 2.0.

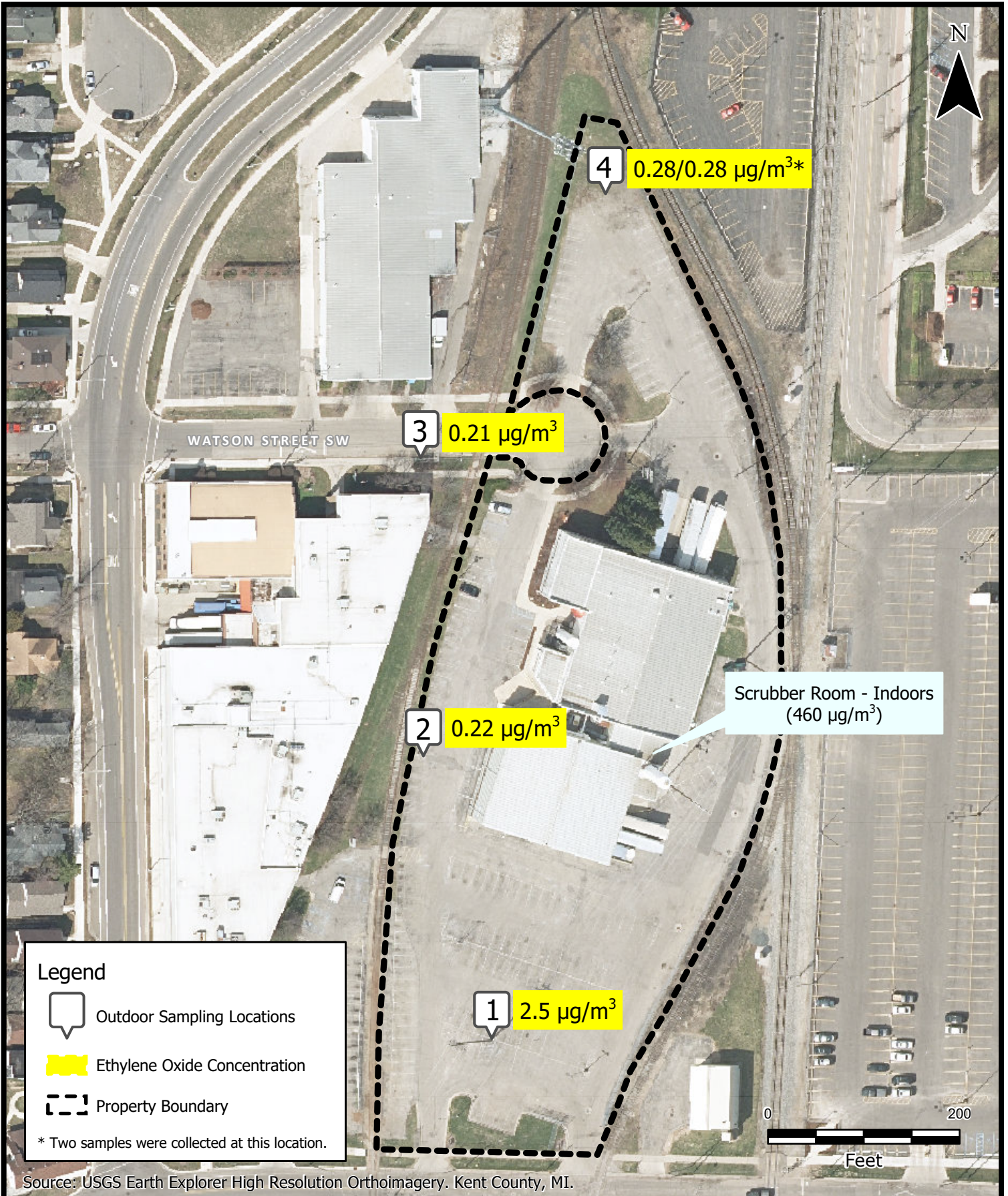
5. QUALITY ASSURANCE

Ramboll evaluated data quality based on acceptable criteria specified by USEPA for precision, completeness, bias, and sensitivity in accordance with the Ambient Air Sampling Work Plan. To evaluate the repeatability of sampling procedures, one co-located sample was collected at Location #4 during this investigation. The same concentration of EtO was detected in both canisters for the co-located sample, thus, the calculated difference in the values (0%) is within the acceptable range of 25%. Additionally, a laboratory replicate sample analysis of the sample collected at Location #3 was performed. In this replicate analysis, the difference in detected EtO was approximately 4.9% (as calculated average detected concentration as the denominator), which also is within the acceptable range of 25%. Given the sensitivity of the laboratory analytical method, the laboratory diluted the sample collected inside the scrubber room, which increased the Minimum Detection Limits (MDL) above the target MDL for this sample. A summary of all quality assurance criteria and a discussion of any deviations and corresponding corrective action related to the August 2019 sampling event are provided in Table 2 below.

Table 2: Quality Control Criteria for TO-15 Sample Collection and Analysis, August 12-13, 2019					
Quality Control Sample	Data Quality Indicators (DQIs)	Frequency	Acceptance Criteria	August 2019 Outcome	Corrective Action
Co-located sample	Precision	1 per day	Within 25%	0.0%	N/A
Replicate sample	Precision	1 per batch	Within 25% for sample concentrations greater than five times reporting limit	4.9%	N/A
Valid sample count	Completeness	N/A	85% or more of total samples	100% (100% for total sampling program)	N/A
Canister batch blank	Bias	After analysis of standards and prior to sample analysis, or when contamination is present.	Below the reporting limit	Below reporting limit of 0.090 $\mu\text{g}/\text{m}^3$	N/A
Method Detection Limit	Sensitivity	1 per method modification	0.05 ppb (0.09 $\mu\text{g}/\text{m}^3$) or less	N/A* (no change to method)	N/A
Sampling period	Field QC	All samples	24 hours +/- 1 hour	All samples	N/A
*Sample-specific MDLs due to dilution are noted in Tables 1 and 2.					

6. CONCLUSIONS

EtO was detected at concentrations in ambient air surrounding the Viant facility at concentrations between 0.21 $\mu\text{g}/\text{m}^3$ and 2.5 $\mu\text{g}/\text{m}^3$ during the August 2019 sampling event, with the highest concentrations observed in one of the predominant downwind directions relative to the site building.



SAMPLING RESULTS (AUGUST 2019)
 VIANT MEDICAL
 GRAND RAPIDS, MICHIGAN

FIGURE 1

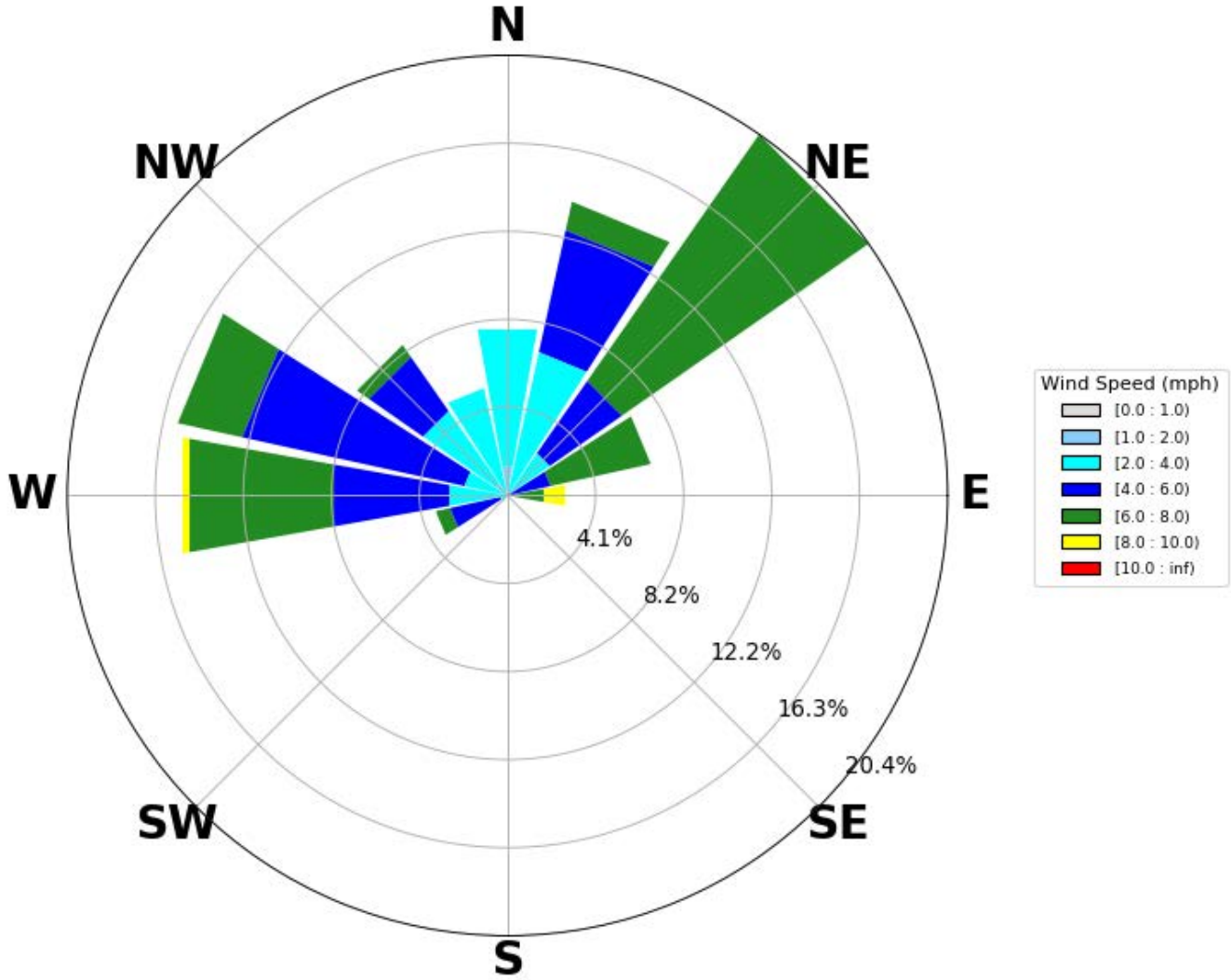
FIGURE 2
WIND ROSE

WIND ROSE PLOT:

EGLE Met Station - Grand Rapids, MI
 Monroe Ave, south of Leonard St.

DISPLAY:

Wind Speed
Direction (blowing from)



COMMENTS:

DATA PERIOD:

Start Date:
8/12/2019 - 11:40

End Date:
8/13/2019 - 12:05

CALM WINDS:

0%

AVG. WIND SPEED:

4.47 mph

**WIND ROSE FOR EGLE GRAND RAPIDS
 METEOROLOGICAL STATION**

COMPANY NAME:

Viant Medical

DATE:

9/9/2019

DRAFTED BY:

HA

FIGURE
 2



APPENDIX A
AIR SAMPLING PROGRAM RESULTS
SUMMARY

Viant Medical
520 Watson Street Southwest, Grand Rapids, MI

Ethylene Oxide Concentrations ($\mu\text{g}/\text{m}^3$) in Outdoor Air

Sample Dates (24-Hour Period)	Predominant Wind Direction(s) During Sampling	Location ID and Description			
		#1	#2	#3	#4
		South of Building	West of Building	Northwest of Building (off-site along Watson Street SW)	North of Building
7/9/2019 - 7/10/2019	SE	0.27	0.77	0.98	1.8 (Note 1)
8/12/2019 - 8/13/2019	W, NW, N, NE	2.5	0.22	0.21	0.28 / 0.28 ^c

Notes:

/ = Quality control sampling data is separated by a slash (/)

^c = Co-located sample

Note 1 = Result represents an average concentration over a 21-hour period

Ethylene Oxide Concentrations ($\mu\text{g}/\text{m}^3$) in Indoor Air

	Location ID and Description
Sample Dates (24-Hour Period)	IA (Scrubber Room)
7/9/2019 - 7/10/2019	440 / 450 ^c
8/12/2019 - 8/13/2019	460

Notes:

/ = Quality control sampling data is separated by a slash (/)

^c = Co-located sample

APPENDIX B
PHOTOGRAPHS OF SAMPLING LOCATIONS



Photo 1: View of sample collection at location #1, facing north. Sample collected by the Michigan Department of Environment, Great Lakes, and Energy (EGLE) also pictured (lower canister).



Photo 2: View of sample collection at location #2, facing west.



Photo 3: View of sample collection at location #3, facing north.



Photo 4: View of co-located sample collection at location #4, facing north.



Photo 5: View of sample collection at indoor air (IA) location within scrubber room.

APPENDIX C
LABORATORY ANALYTICAL REPORT

9/12/2019

Ms. Christine Ng
Ramboll Environ
4350 N. Fairfax Drive
Suite 300
Arlington VA 22203

Project Name: Viant Medical Grand Rapids

Project #: 1690010876

Workorder #: 1908283R1

Dear Ms. Christine Ng

The following report includes the data for the above referenced project for sample(s) received on 8/14/2019 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 SIM 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: Ausha Scott at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Ausha Scott
Project Manager

WORK ORDER #: 1908283R1

Work Order Summary

CLIENT:	Ms. Christine Ng Ramboll 4350 N. Fairfax Drive Suite 300 Arlington, VA 22203	BILL TO:	Accounts Payable-Arlington VA Ramboll 4350 N. Fairfax Drive Suite 300 Arlington, VA 22203
PHONE:	703-516-2382	P.O. #	WO-2019-ARL-01
FAX:	703-516-2302	PROJECT #	1690010876 Viant Medical Grand Rapids
DATE RECEIVED:	08/14/2019	CONTACT:	Ausha Scott
DATE COMPLETED:	08/27/2019		
DATE REISSUED:	09/12/2019		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	20190812-IA	Modified TO-15 SIM	8.2 "Hg	4.9 psi
02A	20190812-1	Modified TO-15 SIM	7.1 "Hg	4.8 psi
03A	20190812-2	Modified TO-15 SIM	7.8 "Hg	5.1 psi
04A	20190812-3	Modified TO-15 SIM	9.4 "Hg	4.9 psi
04AA	20190812-3 Lab Duplicate	Modified TO-15 SIM	9.4 "Hg	4.9 psi
05A	20190812-4	Modified TO-15 SIM	6.7 "Hg	5.1 psi
06A	20190812-DUP	Modified TO-15 SIM	6.5 "Hg	5 psi
07A	Lab Blank	Modified TO-15 SIM	NA	NA
07B	Lab Blank	Modified TO-15 SIM	NA	NA
07C	Lab Blank	Modified TO-15 SIM	NA	NA
08A	CCV	Modified TO-15 SIM	NA	NA
08B	CCV	Modified TO-15 SIM	NA	NA
08C	CCV	Modified TO-15 SIM	NA	NA
09A	LCS	Modified TO-15 SIM	NA	NA
09AA	LCSD	Modified TO-15 SIM	NA	NA
09B	LCS	Modified TO-15 SIM	NA	NA
09BB	LCSD	Modified TO-15 SIM	NA	NA
09C	LCS	Modified TO-15 SIM	NA	NA
09CC	LCSD	Modified TO-15 SIM	NA	NA

CERTIFIED BY: 
 Technical Director

DATE: 09/12/19

LABORATORY NARRATIVE
EPA TO-15 Ethylene oxide (SIM)
Ramboll Environ
Workorder# 1908283R1

Six 6 Liter Summa Canister (100% SIM Ambient) samples were received on August 14, 2019. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the SIM acquisition mode for the measurement of Ethylene oxide in ambient air.

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.

Receiving Notes

There were no receiving discrepancies.

The work order was reissued on 9/12/2019 to correct the project name due to laboratory transcription error.

Analytical Notes

Ethylene Oxide is not included on the laboratory's NELAP scope of accreditation for TO-15 SIM. However, TO-15 method and NELAP quality requirements were met.

As per project specific client request the laboratory has reported estimated values for target compound hits that are below the Reporting Limit but greater than the Method Detection Limit. The canisters used for this project have been certified to the Reporting Limit for Ethylene Oxide. Concentrations that are below the level at which the canister was certified may be false positives.

Dilution was performed on sample 20190812-IA due to the presence of high level target species.

Definition of Data Qualifying Flags

Nine 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.

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.

CN - See Case Narrative

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

MODIFIED EPA METHOD TO-15 GC/MS SIM

Viant Medical Grand Rapids

Client ID:	20190812-IA	Date/Time Analyzed:	8/20/19 05:43 PM
Lab ID:	1908283R1-01A	Dilution Factor:	29.4
Date/Time Collected:	8/13/19 11:32 AM	Instrument/Filename:	msd30.i / 30082010sim
Media:	6 Liter Summa Canister (100% SIM Ambier)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethylene Oxide	75-21-8	0.79	D	2.6	460

D: Analyte not within the DoD scope of accreditation.

MODIFIED EPA METHOD TO-15 GC/MS SIM
 Viant Medical Grand Rapids

Client ID:	20190812-1	Date/Time Analyzed:	8/15/19 06:22 PM
Lab ID:	1908283R1-02A	Dilution Factor:	1.74
Date/Time Collected:	8/13/19 11:49 AM	Instrument/Filename:	msd30.i / 30081511sim
Media:	6 Liter Summa Canister (100% SIM Ambier)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethylene Oxide	75-21-8	0.047	D	0.16	2.5

D: Analyte not within the DoD scope of accreditation.

MODIFIED EPA METHOD TO-15 GC/MS SIM
 Viant Medical Grand Rapids

Client ID:	20190812-2	Date/Time Analyzed:	8/15/19 07:15 PM
Lab ID:	1908283R1-03A	Dilution Factor:	1.82
Date/Time Collected:	8/13/19 11:55 AM	Instrument/Filename:	msd30.i / 30081512sim
Media:	6 Liter Summa Canister (100% SIM Ambier)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethylene Oxide	75-21-8	0.049	D	0.16	0.22

D: Analyte not within the DoD scope of accreditation.

MODIFIED EPA METHOD TO-15 GC/MS SIM
 Viant Medical Grand Rapids

Client ID:	20190812-3	Date/Time Analyzed:	8/16/19 07:39 PM
Lab ID:	1908283R1-04A	Dilution Factor:	1.94
Date/Time Collected:	8/13/19 12:01 PM	Instrument/Filename:	msd30.i / 30081612sim
Media:	6 Liter Summa Canister (100% SIM Ambier)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethylene Oxide	75-21-8	0.052	D	0.17	0.21

D: Analyte not within the DoD scope of accreditation.

MODIFIED EPA METHOD TO-15 GC/MS SIM
 Viant Medical Grand Rapids

Client ID:	20190812-3 Lab Duplicate	Date/Time Analyzed:	8/16/19 08:24 PM
Lab ID:	1908283R1-04AA	Dilution Factor:	1.94
Date/Time Collected:	8/13/19 12:01 PM	Instrument/Filename:	msd30.i / 30081613sim
Media:	6 Liter Summa Canister (100% SIM Ambier		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethylene Oxide	75-21-8	0.052	D	0.17	0.20

D: Analyte not within the DoD scope of accreditation.

MODIFIED EPA METHOD TO-15 GC/MS SIM
 Viant Medical Grand Rapids

Client ID:	20190812-4	Date/Time Analyzed:	8/16/19 09:08 PM
Lab ID:	1908283R1-05A	Dilution Factor:	1.73
Date/Time Collected:	8/13/19 12:06 PM	Instrument/Filename:	msd30.i / 30081614sim
Media:	6 Liter Summa Canister (100% SIM Ambier)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethylene Oxide	75-21-8	0.046	D	0.16	0.28

D: Analyte not within the DoD scope of accreditation.

MODIFIED EPA METHOD TO-15 GC/MS SIM
 Viant Medical Grand Rapids

Client ID:	20190812-DUP	Date/Time Analyzed:	8/16/19 09:53 PM
Lab ID:	1908283R1-06A	Dilution Factor:	1.71
Date/Time Collected:	8/13/19 12:06 PM	Instrument/Filename:	msd30.i / 30081615sim
Media:	6 Liter Summa Canister (100% SIM Ambier)		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethylene Oxide	75-21-8	0.046	D	0.15	0.28

D: Analyte not within the DoD scope of accreditation.

MODIFIED EPA METHOD TO-15 GC/MS SIM
 Viant Medical Grand Rapids

Client ID:	Lab Blank	Date/Time Analyzed:	8/15/19 02:09 PM
Lab ID:	1908283R1-07A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd30.i / 30081506sima
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethylene Oxide	75-21-8	0.027	D	0.090	Not Detected

D: Analyte not within the DoD scope of accreditation.

MODIFIED EPA METHOD TO-15 GC/MS SIM
 Viant Medical Grand Rapids

Client ID:	Lab Blank	Date/Time Analyzed:	8/16/19 03:57 PM
Lab ID:	1908283R1-07B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd30.i / 30081607sima
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethylene Oxide	75-21-8	0.027	D	0.090	Not Detected

D: Analyte not within the DoD scope of accreditation.

MODIFIED EPA METHOD TO-15 GC/MS SIM
 Viant Medical Grand Rapids

Client ID:	Lab Blank	Date/Time Analyzed:	8/20/19 04:19 PM
Lab ID:	1908283R1-07C	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd30.i / 30082008sima
Media:	NA - Not Applicable		

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethylene Oxide	75-21-8	0.027	D	0.090	Not Detected

D: Analyte not within the DoD scope of accreditation.

MODIFIED EPA METHOD TO-15 GC/MS SIM
 Viant Medical Grand Rapids

Client ID:	CCV	Date/Time Analyzed:	8/15/19 10:02 AM
Lab ID:	1908283R1-08A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd30.i / 30081502sim
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethylene Oxide	75-21-8	71

D: Analyte not within the DoD scope of accreditation.

MODIFIED EPA METHOD TO-15 GC/MS SIM
 Viant Medical Grand Rapids

Client ID:	CCV	Date/Time Analyzed:	8/16/19 10:51 AM
Lab ID:	1908283R1-08B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd30.i / 30081603sim
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethylene Oxide	75-21-8	75

D: Analyte not within the DoD scope of accreditation.

MODIFIED EPA METHOD TO-15 GC/MS SIM
 Viant Medical Grand Rapids

Client ID:	CCV	Date/Time Analyzed:	8/20/19 01:15 PM
Lab ID:	1908283R1-08C	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd30.i / 30082005sim
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethylene Oxide	75-21-8	73

D: Analyte not within the DoD scope of accreditation.

MODIFIED EPA METHOD TO-15 GC/MS SIM
 Viant Medical Grand Rapids

Client ID:	LCS	Date/Time Analyzed:	8/15/19 10:45 AM
Lab ID:	1908283R1-09A	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd30.i / 30081503sim
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethylene Oxide	75-21-8	82

D: Analyte not within the DoD scope of accreditation.

* % Recovery is calculated using unrounded analytical results.

MODIFIED EPA METHOD TO-15 GC/MS SIM
 Viant Medical Grand Rapids

Client ID:	LCSD	Date/Time Analyzed:	8/15/19 11:27 AM
Lab ID:	1908283R1-09AA	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd30.i / 30081504sim
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethylene Oxide	75-21-8	89

D: Analyte not within the DoD scope of accreditation.

* % Recovery is calculated using unrounded analytical results.

MODIFIED EPA METHOD TO-15 GC/MS SIM
 Viant Medical Grand Rapids

Client ID:	LCS	Date/Time Analyzed:	8/16/19 11:34 AM
Lab ID:	1908283R1-09B	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd30.i / 30081604sim
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethylene Oxide	75-21-8	87

D: Analyte not within the DoD scope of accreditation.

* % Recovery is calculated using unrounded analytical results.

MODIFIED EPA METHOD TO-15 GC/MS SIM
 Viant Medical Grand Rapids

Client ID:	LCSD	Date/Time Analyzed:	8/16/19 12:15 PM
Lab ID:	1908283R1-09BB	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd30.i / 30081605sim
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethylene Oxide	75-21-8	85

D: Analyte not within the DoD scope of accreditation.

* % Recovery is calculated using unrounded analytical results.

MODIFIED EPA METHOD TO-15 GC/MS SIM
 Viant Medical Grand Rapids

Client ID:	LCS	Date/Time Analyzed:	8/20/19 01:57 PM
Lab ID:	1908283R1-09C	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd30.i / 30082006sim
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethylene Oxide	75-21-8	94

D: Analyte not within the DoD scope of accreditation.

* % Recovery is calculated using unrounded analytical results.

MODIFIED EPA METHOD TO-15 GC/MS SIM
 Viant Medical Grand Rapids

Client ID:	LCSD	Date/Time Analyzed:	8/20/19 03:35 PM
Lab ID:	1908283R1-09CC	Dilution Factor:	1.00
Date/Time Collected:	NA - Not Applicable	Instrument/Filename:	msd30.i / 30082007sim
Media:	NA - Not Applicable		

Compound	CAS#	%Recovery
Ethylene Oxide	75-21-8	95

D: Analyte not within the DoD scope of accreditation.

* % Recovery is calculated using unrounded analytical results.

APPENDIX D
LABORATORY CHAIN OF CUSTODY



eurofins

Air Toxics

Analysis Request /Canister Chain of Custody

180 Blue Ravine Rd. Suite B, Folsom, CA 95630
Phone (800) 985-5955; Fax (916) 351-8279

PID: NA Workorder #: _____
For Laboratory Use Only

1908283

Client: Rumball II
Project Name: Viet Medel Grand Rapids
Project Manager: Christine My. Project # 1610010876
Sampler: Nick Martin
Site Name: Viet Medel

Special Instructions/Notes:
SIM Analysis of ethylene oxide
2 boxes in sample shipment

Turnaround Time (Rush surcharges may apply)
Standard Rush _____ (specify)

Lab ID	Field Sample Identification(Location)	Can #	Flow Controller #	Start Sampling Information		Stop Sampling Information		Initial (in Hg)	Final (in Hg)	Receipt	Final (psig) Gas: N ₂ / He	Requested Analyses
				Date	Time	Date	Time					
01A	20190812-EA	6L1778	30785	8/12/19	1140	8/13/19	1132	28.5	7		28.5	✓
02A	20190812-1	6L1294	21928	8/12/19	1149	8/13/19	1149	26.5	5		27	✓
03A	20190812-2	6L1222	22464	8/12/19	1154	8/13/19	1153	27	5		28	✓
04A	20190812-3	6L1343	22444	8/12/19	1157	8/13/19	1204	28	10		28	✓
05A	20190812-4	6L1024	22642	8/12/19	1159	8/13/19	1206	28	5		28	✓
06A	20190812-DP	6L1324	22576	8/12/19	1159	8/13/19	1206	28	5		28	✓
Relinquished by: (Signature/Affiliation) <u>Rumball II</u> Date <u>8/13/19</u> Time <u>1330</u> Received by: (Signature/Affiliation) <u>Feder Ex</u> Date _____ Time _____ Relinquished by: (Signature/Affiliation) _____ Date _____ Time _____ Received by: (Signature/Affiliation) _____ Date <u>8/14/19</u> Time <u>0948</u> Relinquished by: (Signature/Affiliation) _____ Date _____ Time _____ Received by: (Signature/Affiliation) _____ Date _____ Time _____												

Lab Use Only

Shipper Name: WGSX Custody Seals Intact? Yes

Yes None No

Sample Transportation Notice: Relinquishing signature on this document indicates that samples are shipped in compliance with all applicable local, State, Federal, and international laws, regulations, and ordinances of any kind. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Eurofins Air Toxics against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T Hotline (800) 467-4922



Eastern Research Group
601 Keystone Park Drive
Suite 700
Morrisville, NC 27560

October 03, 2019

Ms. Amy Robinson
U.S. Environmental Protection Agency, Region 5
PO Box 30260
Lansing, MI 48909
Project Name: Viant EtO

Dear Ms. Amy Robinson,

This report contains the analytical results for the sample(s) received under chain(s) of custody by Eastern Research Group on 08/14/19 10:12.

The test results in this report are in compliance with NELAC accreditation requirements for the certified parameters. All analyses were performed as described in the US EPA-approved QAPP, under the contract for UATMP, NATTS, CSATAM, PAMS and NMOC support (US EPA Contract No. EP-D-14-030). This cover page is an integral part of this report, and any exceptions or comments are noted on the last page.

Release of the data contained in this data package and in the data submitted in the electronic data deliverable, has been authorized by the Program Manager, or the Program Manager's designee as verified by the following signature.

The issuance of the final Certificate of Analysis takes precedence over any previous Report. If you have any questions, please contact me at 919-468-7924.

Sincerely,

Julie Swift
Program Manager
julie.swift@erg.com

The information contained in this report and its attachment(s) are intended only for the use of the individual to whom it is addressed and may contain information that is privileged, confidential, or exempt from disclosure. If the reader of this message is not the intended recipient, you are hereby notified that any dissemination, distribution, or copying of this report is strictly prohibited. If you have received this report in error, please notify julie.swift@erg.com and delete the report without retaining any copies.



CERTIFICATE OF ANALYSIS

U.S. Environmental Protection Agency, Region 5
 PO Box 30260
 Lansing, MI 48909
 ATTN: Ms. Amy Robinson
 PHONE: (517) 241-2198 FAX: (312) 886-5824

FILE #: 4173.00
 REPORTED: 10/03/19 10:14
 SUBMITTED: 08/14/19
 AQS SITE CODE:
 SITE CODE: Viant EtO

ANALYTICAL REPORT FOR SAMPLES

<u>SampleName</u>	<u>LabNumber</u>	<u>Matrix</u>	<u>Sampled</u>	<u>Received</u>
Viant	9081452-01	Air	08/13/19 12:00	08/14/19 10:12

Description: Viant	Lab ID: 9081452-01	Sampled: 08/13/19 12:00
Pressure @ Receipt: 2.00" Hg	Canister #: SAT032	Received: 08/14/19 10:12
Comments:		Analyzed: 08/19/19 19:51

Air Toxics by EPA Compendium Method TO-15

<u>Analyte</u>	<u>Results</u>		<u>Flag</u>	<u>MDL</u>
	<u>ppbv</u>	<u>ug/m³</u>		<u>ppbv</u>
Ethylene oxide	1.87	3.38		0.0614



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REPORTED: 10/03/19 10:14

SUBMITTED: 08/14/19

AQS SITE CODE:

SITE CODE: Viant EtO

Analyte	Result	Units	Source Result	RPD	RPD Limit	Notes
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Air Toxics by EPA Compendium Method TO-15 - Quality Control

Batch B9H1908 - Summa Canister Prep

Blank (B9H1908-BLK1)

Prepared: 08/14/19 Analyzed: 08/19/19

Analyte	Result	Units	Source Result	RPD	RPD Limit	Notes
Acetylene	ND	ppbv				U
Propylene	ND	ppbv				U
Dichlorodifluoromethane	ND	ppbv				U
Chloromethane	ND	ppbv				U
Dichlorotetrafluoroethane	ND	ppbv				U
Vinyl chloride	ND	ppbv				U
1,3-Butadiene	ND	ppbv				U
Ethylene oxide	ND	ppbv				U
Bromomethane	ND	ppbv				U
Chloroethane	ND	ppbv				U
Acetonitrile	ND	ppbv				U
Acrolein	ND	ppbv				U
Trichlorofluoromethane	ND	ppbv				U
Acrylonitrile	ND	ppbv				U
1,1-Dichloroethene	ND	ppbv				U
Dichloromethane	ND	ppbv				U
Carbon Disulfide	ND	ppbv				U
Trichlorotrifluoroethane	ND	ppbv				U
trans-1,2-Dichloroethylene	ND	ppbv				U
1,1-Dichloroethane	ND	ppbv				U
Methyl tert-Butyl Ether	ND	ppbv				U
Chloroprene	ND	ppbv				U
cis-1,2-Dichloroethylene	ND	ppbv				U
Bromochloromethane	ND	ppbv				U
Chloroform	ND	ppbv				U
Ethyl tert-Butyl Ether	ND	ppbv				U
1,2-Dichloroethane	ND	ppbv				U
1,1,1-Trichloroethane	ND	ppbv				U
Benzene	ND	ppbv				U
Carbon Tetrachloride	ND	ppbv				U
tert-Amyl Methyl Ether	ND	ppbv				U
1,2-Dichloropropane	ND	ppbv				U
Ethyl Acrylate	ND	ppbv				U
Bromodichloromethane	ND	ppbv				U
Trichloroethylene	ND	ppbv				U
Methyl Methacrylate	ND	ppbv				U
cis-1,3-Dichloropropene	ND	ppbv				U

Eastern Research Group

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SITE CODE: Viant EtO

Analyte	Result	Units	Source Result	RPD	RPD Limit	Notes
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Air Toxics by EPA Compendium Method TO-15 - Quality Control

Batch B9H1908 - Summa Canister Prep

Blank (B9H1908-BLK1) Continued

Prepared: 08/14/19 Analyzed: 08/19/19

Methyl Isobutyl Ketone	ND	ppbv				U
trans-1,3-Dichloropropene	ND	ppbv				U
1,1,2-Trichloroethane	ND	ppbv				U
Toluene	ND	ppbv				U
Dibromochloromethane	ND	ppbv				U
1,2-Dibromoethane	ND	ppbv				U
n-Octane	ND	ppbv				U
Tetrachloroethylene	ND	ppbv				U
Chlorobenzene	ND	ppbv				U
Ethylbenzene	ND	ppbv				U
m,p-Xylene	ND	ppbv				U
Bromoform	ND	ppbv				U
Styrene	ND	ppbv				U
1,1,2,2-Tetrachloroethane	ND	ppbv				U
o-Xylene	ND	ppbv				U
1,3,5-Trimethylbenzene	ND	ppbv				U
1,2,4-Trimethylbenzene	ND	ppbv				U
m-Dichlorobenzene	ND	ppbv				U
p-Dichlorobenzene	ND	ppbv				U
o-Dichlorobenzene	ND	ppbv				U
1,2,4-Trichlorobenzene	ND	ppbv				U
Hexachloro-1,3-butadiene	ND	ppbv				U



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REPORTED: 10/03/19 10:14
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SITE CODE: Viant EtO

Analyte	Result	Units	% Difference	Limit (%)	Notes
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Air Toxics by EPA Compendium Method TO-15 - Quality Control

Sequence 1908051

Calibration Check (1908051-CCV1)

Prepared & Analyzed: 08/19/19

Analyte	Result	Units	% Difference	Limit (%)
Acetylene	2.10	ppbv	-12.4	30.00
Propylene	2.40	ppbv	-2.0	30.00
Dichlorodifluoromethane	2.34	ppbv	-1.9	30.00
Chloromethane	2.25	ppbv	-9.3	30.00
Dichlorotetrafluoroethane	2.67	ppbv	9.6	30.00
Vinyl chloride	2.32	ppbv	-7.2	30.00
1,3-Butadiene	2.29	ppbv	-7.2	30.00
Ethylene oxide	2.65	ppbv	6.2	30.00
Bromomethane	2.43	ppbv	-3.0	30.00
Chloroethane	2.45	ppbv	-1.9	30.00
Acetonitrile	2.22	ppbv	-12.4	30.00
Acrolein	2.36	ppbv	-2.6	30.00
Trichlorofluoromethane	2.26	ppbv	-9.7	30.00
Acrylonitrile	2.31	ppbv	-7.5	30.00
1,1-Dichloroethene	2.61	ppbv	6.8	30.00
Dichloromethane	2.54	ppbv	2.6	30.00
Carbon Disulfide	2.44	ppbv	-1.7	30.00
Trichlorotrifluoroethane	2.62	ppbv	7.2	30.00
trans-1,2-Dichloroethylene	2.50	ppbv	1.5	30.00
1,1-Dichloroethane	2.57	ppbv	5.8	30.00
Methyl tert-Butyl Ether	2.69	ppbv	5.7	30.00
Chloroprene	2.49	ppbv	0.3	30.00
cis-1,2-Dichloroethylene	2.32	ppbv	-7.3	30.00
Bromochloromethane	2.38	ppbv	-3.7	30.00
Chloroform	2.61	ppbv	4.6	30.00
Ethyl tert-Butyl Ether	2.48	ppbv	-3.5	30.00
1,2-Dichloroethane	2.51	ppbv	0.7	30.00
1,1,1-Trichloroethane	2.28	ppbv	-7.7	30.00
Benzene	2.46	ppbv	-2.1	30.00
Carbon Tetrachloride	2.66	ppbv	5.7	30.00
tert-Amyl Methyl Ether	2.27	ppbv	-12.7	30.00
1,2-Dichloropropane	2.26	ppbv	-10.9	30.00
Ethyl Acrylate	2.09	ppbv	-17.5	30.00
Bromodichloromethane	2.12	ppbv	-17.0	30.00

Eastern Research Group

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FILE #: 4173.00
REPORTED: 10/03/19 10:14
SUBMITTED: 08/14/19
AQS SITE CODE:
SITE CODE: Viant EtO

Analyte	Result	Units	% Difference	Limit (%)	Notes
---------	--------	-------	--------------	-----------	-------

Air Toxics by EPA Compendium Method TO-15 - Quality Control

Sequence 1908051

Calibration Check (1908051-CCV1) Continued

Prepared & Analyzed: 08/19/19

Trichloroethylene	2.19	ppbv	-13.2	30.00
Methyl Methacrylate	2.01	ppbv	-20.7	30.00
cis-1,3-Dichloropropene	2.37	ppbv	-6.7	30.00
Methyl Isobutyl Ketone	2.05	ppbv	-19.1	30.00
trans-1,3-Dichloropropene	2.20	ppbv	-10.5	30.00
1,1,2-Trichloroethane	2.24	ppbv	-9.6	30.00
Toluene	2.45	ppbv	0.5	30.00
Dibromochloromethane	2.43	ppbv	-4.5	30.00
1,2-Dibromoethane	2.40	ppbv	-3.9	30.00
n-Octane	2.39	ppbv	-5.0	30.00
Tetrachloroethylene	2.53	ppbv	1.8	30.00
Chlorobenzene	2.37	ppbv	-3.9	30.00
Ethylbenzene	2.48	ppbv	-0.8	30.00
m,p-Xylene	5.01	ppbv	0.7	30.00
Bromoform	2.49	ppbv	-2.1	30.00
Styrene	2.38	ppbv	-4.8	30.00
1,1,2,2-Tetrachloroethane	2.22	ppbv	-12.3	30.00
o-Xylene	2.54	ppbv	4.1	30.00
1,3,5-Trimethylbenzene	2.42	ppbv	-4.2	30.00
1,2,4-Trimethylbenzene	2.29	ppbv	-3.8	30.00
m-Dichlorobenzene	1.89	ppbv	-21.2	30.00
p-Dichlorobenzene	2.18	ppbv	-16.5	30.00
o-Dichlorobenzene	2.15	ppbv	-13.8	30.00
1,2,4-Trichlorobenzene	2.26	ppbv	-9.0	30.00
Hexachloro-1,3-butadiene	2.32	ppbv	-7.4	30.00



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FILE #: 4173.00

REPORTED: 10/03/19 10:14

SUBMITTED: 08/14/19

AQS SITE CODE:

SITE CODE: Viant EtO

Notes and Definitions

U	Under Detection Limit
ND	Analyte NOT DETECTED
NR	Not Reported
MDL	Method Detection Limit
RPD	Relative Percent Difference

Note: The test results meet all requirements of NELAC; however the following analytes are not accredited: 1,2,4-trimethylbenzene, 1,2-dibromoethane, 1,2-dichloropropane, 1,3,5-trimethylbenzene, 1,3-butadiene, acetylene, acrolein, bromochloromethane, bromodichloromethane, bromoform, carbon disulfide, dibromochloromethane, dichlorodifluoromethane, dichlorotetrafluoroethane, ethyl acrylate, ethyl tert butyl ether, ethylene oxide, hexachloro-1,3-butadiene, n-octane, propylene, tert amyl methyl ether, tetrachloroethylene, trans-1,2-dichloroethylene, trichlorofluoromethane, and trichlorotrifluoroethane.