MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY

INTEROFFICE COMMUNICATION

TO: File

FROM: Amy Robinson

DATE: December 10, 2019

SUBJECT: Monthly Ethylene Oxide Sampling at Viant Medical, Inc. for September and October 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 (outdoor) air impacts. Subsequent computer modeling by the Michigan Department of Environment, Great Lakes and Energy's Air Quality Division (AQD) showed impacts above the Initial Risk Screening Level (IRSL) of 0.0002 µg/m^3 and Secondary Risk Screening Level (SRSL) of 0.002 µg/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.

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. From August 2019 through February 2020, the AQD will collect a side by side outdoor (collocated) air sample with Viant at one location. Results of all sampling events are available on the website Michigan.gov/viant.

Sampling Details

Ambient air sampling for ethylene oxide was accomplished using USEPA's TO-15 summa canister method. USEPA's national contract laboratory, Eastern Research Group (ERG), performed the analysis. ERG's laboratory detection limit is 0.045 µg/m^3. Since the screening levels are lower than the detection limit the current sampling method for ethylene oxide allows for, the sampling data will have to be carefully interpreted. For example, if a sample result is reported as non-detect (ND), it is possible the actual level could still be above the screening levels.

The USEPA and ERG are actively working to improve the laboratory test method for ethylene oxide. Recently, ERG performed a trial run of a different method to see if ethylene oxide could be detected at lower levels. The August 2019 sampling report utilized this updated method. However, after analyzing a few months' worth of data using the updated method, ERG determined the older method was more accurate in sensing ethylene oxide at or near the detection limit. Because

accuracy of data is very important, ERG went back to using the previous method of analysis. For consistency of data, the August sample was reprocessed, and the results were included in the laboratory report attached to this memo. The attachment contains August, September and October results.

Ramboll collected five samples over a 24-hour period on September 10, 2019 and on October 16, 2019. The AQD co-located one sample during both Viant sampling events. The AQD used 6-liter evacuated summa canisters which were sampled for 24 hours using fixed orifice regulators.

Results

Ramboll's sample results from September are on page 2 of the report named "Ambient Air Sampling at Viant Medical Facility, Grand Rapids, Michigan September 2019 Sampling Events Results". Ramboll's sampling results from October are on page 2 of the report named "Ambient Air Sampling at Viant Medical Facility, Grand Rapids, Michigan October 2019 Sampling Events Results". Ramboll's results for both months are similar to the AQD's Phase I and Phase II sampling results.

The results from the AQD's collocated canisters are on page 4 and 5 of the ERG lab report. The goal is to collocate the AQD canister in the predicted downwind direction for the day of sampling, therefore the co-located sampling site may change from month to month. September and October sampling locations can be seen in Figure 1.

The USEPA has established criteria for comparing data from different laboratories. If values from two different laboratories are within ± 20%, then the laboratories have good comparability. It is difficult to make any determinations about the laboratories with just a few samples. The September and October sample results, when comparing Ramboll and ERG are outside of the ± 20% criteria. As additional data is received, a better determination of laboratory comparability can be made.

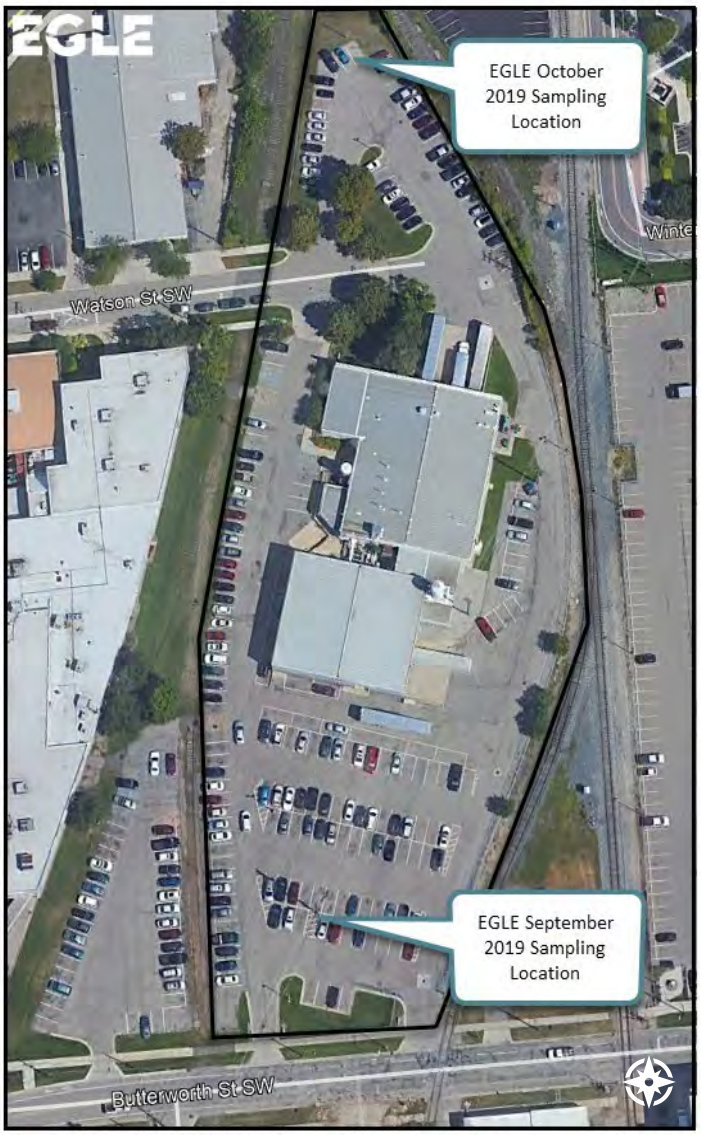

Figure 1: Map of EGLE AQD ethylene oxide sample locations 12/2019

AMBIENT AIR SAMPLING AT VIANT MEDICAL FACILITY, GRAND RAPIDS, MICHIGAN

SEPTEMBER 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 1: Outdoor Air Sampling Results, September 10-11, 2019

Table 2: Indoor Air Sampling Results, September 10-11, 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 September 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 September 10 and 11, 2019, and included the collection of five ambient air samples[1] and one indoor air (IA) sample that were submitted for laboratory analysis of ethylene oxide (EtO). The sampling was the third 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 September 2019 sampling event.

2. SAMPLING LOCATIONS

The five sampling locations selected during this event were the same locations sampled by Ramboll during previous events. 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 previous sampling events for sample collection within the breathing zone (approximately 5-6 feet). The co-located sample canister inlets at Location #4 were located approximately 1 foot[2] 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 southwest and south, during the 24-hour sampling period, which began September 10, 2019 and ended September 11, 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 September 12, 2019 and analyzed them between September 13 and 18, 2019.

Additionally, the Michigan Department of Environment, Great Lakes, and Energy (EGLE) collected one canister sample at Location #4 during the same 24-hour time period as Ramboll's samples and sent the sample to its own contract laboratory for analysis.

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[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 September 2019 sampling event are reported in Table 1 and Table 2.

Table 1: Outdoor Air Sampling Results, September 10-11, 2019				
Sample Location ID	On-Site	Location Description	EtO Concentration (µg/m^3)	*Sample-Specific MDL (µg/m^3)*
1	Yes	South of building in parking lot	0.38	*0.047*
2	Yes	West of building, along western property boundary	0.51	*0.047*
3	No	Northwest of building along Watson Street Southwest	0.40	*0.046*
4 (co-located samples)	Yes	North of building, northern corner of parking lot	0.90; 0.76 (co-located sample)	*0.047;* *0.046*

Table 2: Indoor Air Sampling Results, September 10-11, 2019			
Sample Location ID	Location Description	EtO Concentration (µg/m^3)	*Sample-Specific MDL (µg/m^3)*
IA	Scrubber room	710	*0.77*

EtO was detected in all samples collected during the September 2019 event. The EtO concentration in outdoor ambient air samples ranged from 0.38 micrograms per cubic meter (µg/m^3) at Location #1 to 0.90 µg/m^3 at Location #4[3] (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.[4] According to the meteorological data, winds were generally blowing from the southwest and south (Figure 2). Wind speed varied between 0 and 12 miles per hour (mph). The EtO concentration inside the scrubber room was 710 µg/m^3. A summary of results from this and prior sampling events is provided in Appendix A.

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 difference in concentrations of EtO detected in these co-located samples was 16.9% and within the acceptable range of 25%, as defined in the April 2019 Work Plan.

[3] The detected concentration of EtO in the co-located sample collected at this location was 0.76 µg/m^3.

[4] 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.

Additionally, a laboratory replicate sample analysis of the sample collected at Location #1 was performed. In this replicate analysis, the concentrations of EtO detected in both the original and replicate sample were identical (0.38 µg/m^3); thus, the replicate sample precision fell 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 Limit (MDL) above the target MDL for this sample. A summary of all quality assurance criteria related to the September 2019 sampling event is provided in Table 2 below.

Table 2: Quality Control Criteria for TO-15 Sample Collection and Analysis, September 10-11, 2019

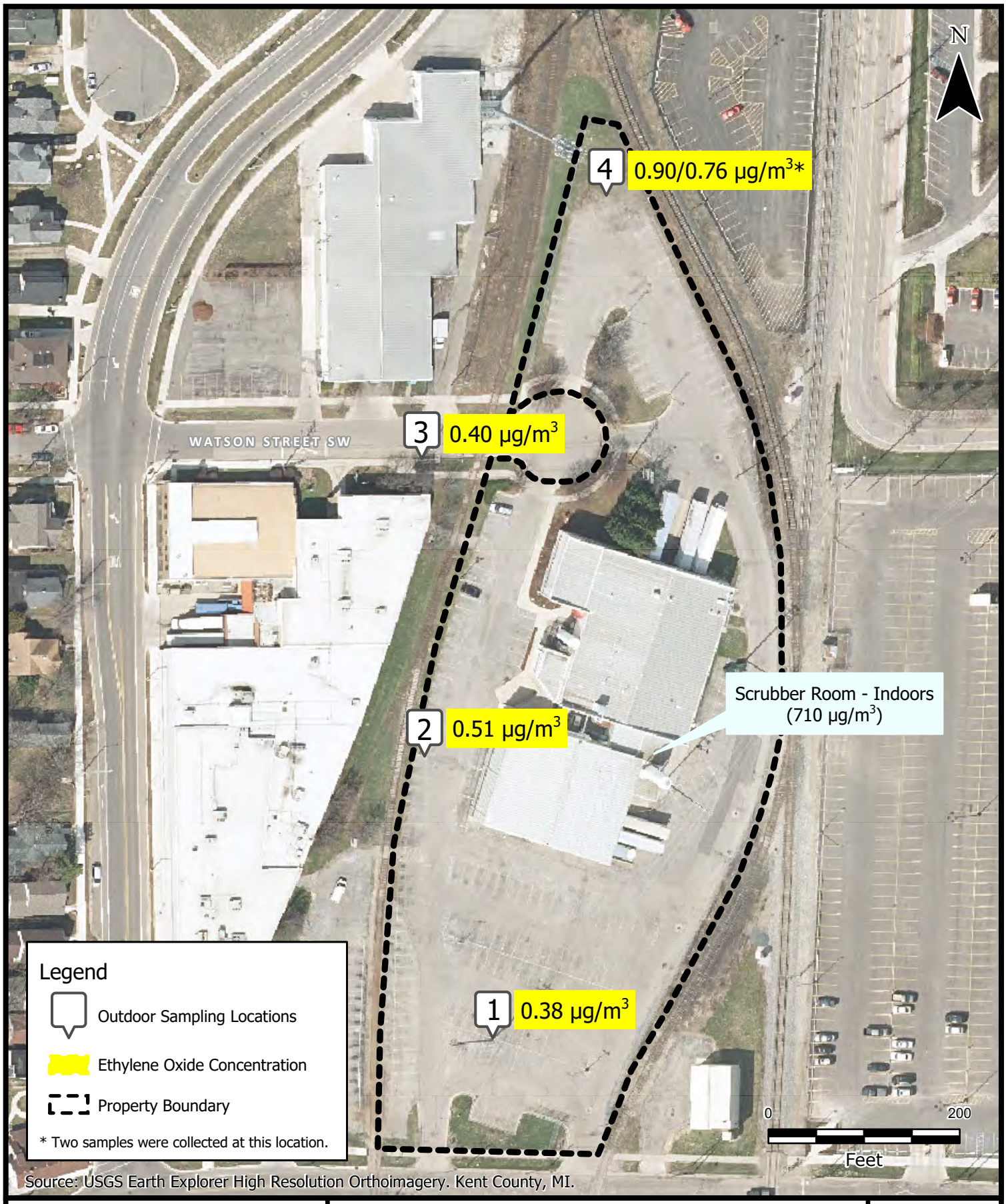
Quality Control Sample	Data Quality Indicators (DQIs)	Frequency	Acceptance Criteria	September 2019 Outcome	Corrective Action
Co-located sample	Precision	1 per day	Within 25%	16.9%	N/A
Replicate sample	Precision	1 per batch	Within 25% for sample concentrations greater than five times reporting limit	0.0%	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 µg/m^3	N/A
Method Detection Limit	Sensitivity	1 per method modification	0.05 ppb (0.09 µg/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 0.38 µg/m^3 and 0.90 µg/m^3 during the September 2019 sampling event, with the highest concentrations observed in the predominant downwind direction relative to the site building.

FIGURE 1
MAP OF SAMPLING RESULTS



RAMBOLL

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

FIGURE
1

DRAFTED BY: HA

DATE: 9/5/2019

PROJECT 1690010876

FIGURE 2
WIND ROSE

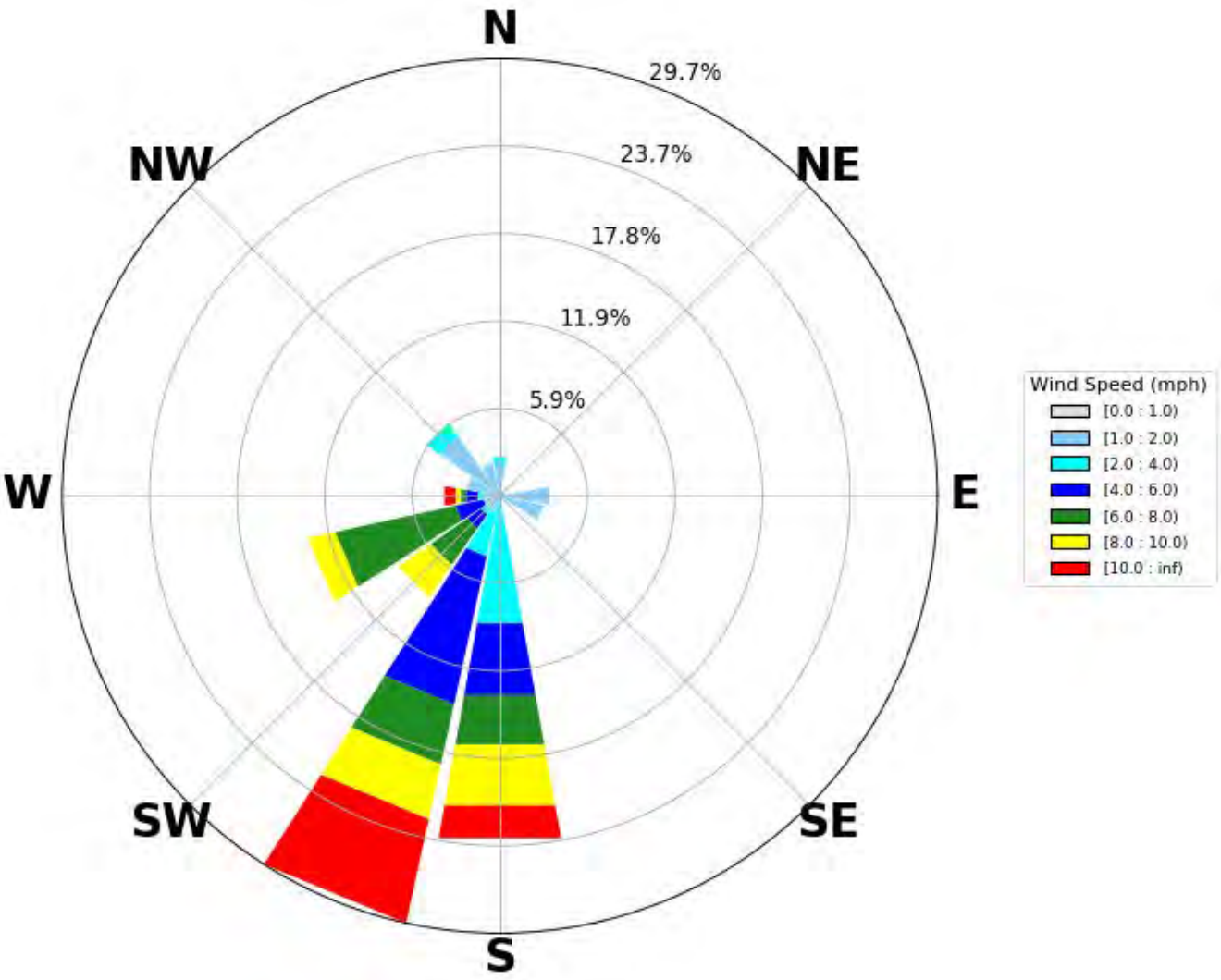
WIND ROSE PLOT:

EGLE Met Station - Grand Rapids, MI

Monroe Ave, south of Leonard St.

DISPLAY:

Wind Speed
Direction (blowing from)



COMMENTS:

DATA PERIOD:

Start Date:
9/10/2019 - 12:10

End Date:
9/11/2019 - 12:25

CALM WINDS:

10%

AVG. WIND SPEED:

4.41 mph

WIND ROSE FOR EGLE GRAND RAPIDS METEOROLOGICAL STATION

COMPANY NAME:

Viant Medical

DATE:

9/18/2019

DRAFTED BY:

HA

FIGURE
2

RAMBOLL

APPENDIX A
AIR SAMPLING PROGRAM RESULTS SUMMARY

Viant Medical
520 Watson Street Southwest, Grand Rapids, MI

Ethylene Oxide Concentrations (µg/m³) in Outdoor Air

		Location ID and Description			
		#1	#2	#3	#4
Sample Dates (24-Hour Period)	Predominant Wind Direction(s) During Event	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]
9/10/2019 - 9/11/2019	SW, S	0.38	0.51	0.40	0.90 / 0.76[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

Viant Medical
520 Watson Street Southwest, Grand Rapids, MI

Ethylene Oxide Concentrations (µg/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
9/10/2019 - 9/11/2019	710

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 south.

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

RAMBOLL

Site Photographs
Viant Medical
520 Watson Street Southwest, Grand Rapids, Michigan
September 2019

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

Photo 4: View of co-located sample collection at location #4, facing north. Sample collected by the Michigan Department of Environment, Great Lakes, and Energy (EGLE) also pictured (center canister).

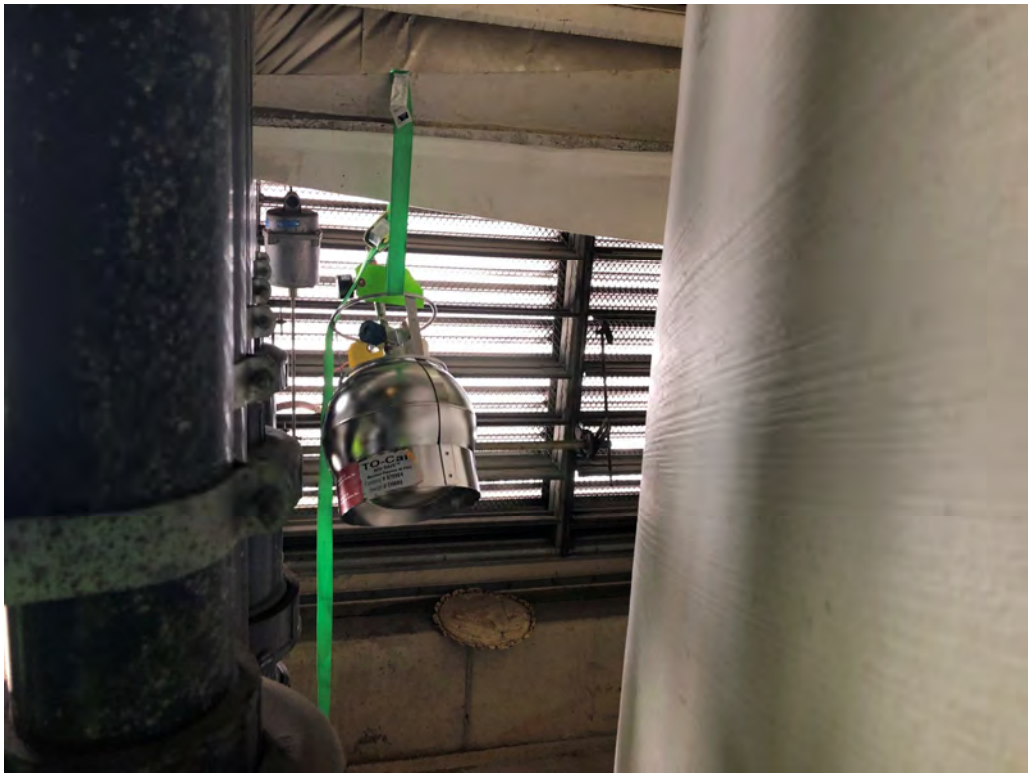


Photo 5: View of sample collection at indoor air (IA) location within scrubber room.

APPENDIX C
LABORATORY ANALYTICAL REPORT

eurofins | Air Toxics

9/25/2019
Ms. Christine Ng
Ramboll
4350 N. Fairfax Drive
Suite 300
Arlington VA 22203

Project Name: Viant Medical Grand Rapids
Project #: 1690010876
Workorder #: 1909255

Dear Ms. Christine Ng

The following report includes the data for the above referenced project for sample(s) received on 9/12/2019 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

eurofins | Air Toxics

WORK ORDER #: 1909255

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:	09/12/2019	**CONTACT:**	Ausha Scott
DATE COMPLETED:	09/24/2019		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	20190910-IA	Modified TO-15 SIM	7.6 "Hg	5 psi
02A	20190910-1	Modified TO-15 SIM	7.1 "Hg	4.8 psi
02AA	20190910-1 Lab Duplicate	Modified TO-15 SIM	7.1 "Hg	4.8 psi
03A	20190910-2	Modified TO-15 SIM	6.9 "Hg	5 psi
04A	20190910-3	Modified TO-15 SIM	6.7 "Hg	4.9 psi
05A	20190910-4	Modified TO-15 SIM	7.1 "Hg	5 psi
06A	20190910-DUP	Modified TO-15 SIM	6.5 "Hg	5.1 psi
07A	Lab Blank	Modified TO-15 SIM	NA	NA
07B	Lab Blank	Modified TO-15 SIM	NA	NA
08A	CCV	Modified TO-15 SIM	NA	NA
08B	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

CERTIFIED BY: Heidi Hayes

Technical Director

DATE: 09/24/19

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
EPA TO-15 Ethylene oxide (SIM)
Ramboll
Workorder# 1909255

Six 6 Liter Summa Canister (100% SIM Ambient) samples were received on September 12, 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.

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 20190910-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:	20190910-IA		
Lab ID:	1909255-01A	**Date/Time Analyzed:**	9/18/19 11:11 PM
Date/Time Collected:	9/11/19 12:10 PM	**Dilution Factor:**	28.7
Media:	6 Liter Summa Canister (100% SIM Ambier	**Instrument/Filename:**	msd30.i / 30091819sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethylene Oxide	75-21-8	0.77	D	2.6	710

D: Analyte not within the DoD scope of accreditation.

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

Client ID:	20190910-1		
Lab ID:	1909255-02A	**Date/Time Analyzed:**	9/13/19 07:33 PM
Date/Time Collected:	9/11/19 12:24 PM	**Dilution Factor:**	1.74
Media:	6 Liter Summa Canister (100% SIM Ambier	**Instrument/Filename:**	msd30.i / 30091308sim

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	0.38

D: Analyte not within the DoD scope of accreditation.

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

Client ID:	20190910-1 Lab Duplicate		
Lab ID:	1909255-02AA	**Date/Time Analyzed:**	9/13/19 08:18 PM
Date/Time Collected:	9/11/19 12:24 PM	**Dilution Factor:**	1.74
Media:	6 Liter Summa Canister (100% SIM Ambier	**Instrument/Filename:**	msd30.i / 30091309sim

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	0.38

D: Analyte not within the DoD scope of accreditation.

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

Client ID:	20190910-2		
Lab ID:	1909255-03A	**Date/Time Analyzed:**	9/13/19 09:02 PM
Date/Time Collected:	9/11/19 12:22 PM	**Dilution Factor:**	1.74
Media:	6 Liter Summa Canister (100% SIM Ambier	**Instrument/Filename:**	msd30.i / 30091310sim

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	0.51

D: Analyte not within the DoD scope of accreditation.

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

Client ID:	20190910-3		
Lab ID:	1909255-04A	**Date/Time Analyzed:**	9/13/19 09:46 PM
Date/Time Collected:	9/11/19 12:19 PM	**Dilution Factor:**	1.72
Media:	6 Liter Summa Canister (100% SIM Ambier	**Instrument/Filename:**	msd30.i / 30091311sim

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	0.40

D: Analyte not within the DoD scope of accreditation.

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

Client ID:	20190910-4		
Lab ID:	1909255-05A	**Date/Time Analyzed:**	9/13/19 10:30 PM
Date/Time Collected:	9/11/19 12:16 PM	**Dilution Factor:**	1.76
Media:	6 Liter Summa Canister (100% SIM Ambier	**Instrument/Filename:**	msd30.i / 30091312sim

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	0.90

D: Analyte not within the DoD scope of accreditation.

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

Client ID:	20190910-DUP		
Lab ID:	1909255-06A	**Date/Time Analyzed:**	9/13/19 11:15 PM
Date/Time Collected:	9/11/19 12:16 PM	**Dilution Factor:**	1.72
Media:	6 Liter Summa Canister (100% SIM Ambier	**Instrument/Filename:**	msd30.i / 30091313sim

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	0.76

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		
Lab ID:	1909255-07A	**Date/Time Analyzed:**	9/13/19 05:05 PM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd30.i / 30091307sim

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		
Lab ID:	1909255-07B	**Date/Time Analyzed:**	9/18/19 12:12 PM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd30.i / 30091806sima

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		
Lab ID:	1909255-08A	**Date/Time Analyzed:**	9/13/19 11:41 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd30.i / 30091302sim

Compound	CAS#	%Recovery
Ethylene Oxide	75-21-8	99

D: Analyte not within the DoD scope of accreditation.

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

Client ID:	CCV		
Lab ID:	1909255-08B	**Date/Time Analyzed:**	9/18/19 09:02 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd30.i / 30091802sim

Compound	CAS#	%Recovery
Ethylene Oxide	75-21-8	109

D: Analyte not within the DoD scope of accreditation.

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

Client ID:	LCS		
Lab ID:	1909255-09A	**Date/Time Analyzed:**	9/13/19 12:24 PM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd30.i / 30091303sim

Compound	CAS#	%Recovery
Ethylene Oxide	75-21-8	111

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		
Lab ID:	1909255-09AA	**Date/Time Analyzed:**	9/13/19 04:21 PM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd30.i / 30091306sim

Compound	CAS#	%Recovery
Ethylene Oxide	75-21-8	123

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		
Lab ID:	1909255-09B	**Date/Time Analyzed:**	9/18/19 09:43 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd30.i / 30091803sim

Compound	CAS#	%Recovery
Ethylene Oxide	75-21-8	121

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		
Lab ID:	1909255-09BB	**Date/Time Analyzed:**	9/18/19 10:25 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd30.i / 30091804sim

Compound	CAS#	%Recovery
Ethylene Oxide	75-21-8	125

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

2 boxes in shipment

For Laboratory Use Only

PID: _____ Workorder #: 1909255

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

page 1 of 1

Client: Ramboll
Project Name: Viant Medical Grand Rapids
Project Manager: Christine Ng Project # 1690010676
Sampler: Nick Martin
Site Name: Viant Medical

Special Instructions/Notes: Modified TO-15 SIM

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

Lab ID	Field Sample Identification(Location)	Can #	Flow Controller #	Start Sampling Information		Stop Sampling Information		Canister Vacuum/Pressure		Lab Use Only		Requested Analyses			
				Date	Time	Date	Time	Initial (in Hg)	Final (in Hg)	Receipt	Final (psig) Gas: N_2 / He	Ethylene Oxide			
01A	20190910 - IA	6L0268	21014	9/10/19	1212	9/11/19	1210	29	8			✓			
02A	20190910 - 1	6L1542	22122	9/10/19	1224	9/11/19	1224	29	8			✓			
03A	20190910 - 2	6L2034	20528	9/10/19	1222	9/11/19	1222	29.5	7			✓			
04A	20190910 - 3	6L0720	21935	9/10/19	1219	9/11/19	1219	30	8			✓			
05A	20190910 - 4	6L1609	21373	9/10/19	1216	9/11/19	1216	27	5			✓			
06A	20190910 - DUP	6L0708	22870	9/10/19	1216	9/11/19	1216	30	7			✓			

VGM 9/11

Relinquished by: (Signature/Affiliation) Ramboll	Date 9/11/19	Time 1300	Received by: (Signature/Affiliation) CAT	Date 9/12/19	Time 0930
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time

Lab Use Only

Shipper Name: FedEx | Custody Seals Intact? | Yes | No | None

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, of shipping of samples. D.O.T Hotline (800) 467-4922

AMBIENT AIR SAMPLING AT VIANT MEDICAL FACILITY, GRAND RAPIDS, MICHIGAN

OCTOBER 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
December 2019

Project Number
1690010876

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2.	SAMPLING LOCATIONS	1
3.	METHODOLOGY	1
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Figure 1: Map of Sampling Results

Figure 2: Wind Rose

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Table 1: Outdoor Air Sampling Results, October 16-17, 2019

Table 2: Indoor Air Sampling Results, October 16-17, 2019

Table 3: Quality Control Criteria for TO-15 Sample Collection and Analysis, October 16-17, 2019

APPENDICES

Appendix A: Air Sampling Program Results Summary

Appendix B: Photographs of Sampling Locations

Appendix C: Laboratory Analytical Report

Appendix 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 October 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 October 16 and 17, 2019, and included the collection of five ambient air samples[1] and one indoor air (IA) sample, which were submitted for laboratory analysis of ethylene oxide (EtO). The sampling was performed in accordance with the scope of work outlined 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 October 2019 sampling event.

2. SAMPLING LOCATIONS

The five sampling locations selected during this event were the same locations sampled by Ramboll during previous events. Location #1 was selected for the placement of co-located samples, resulting in the collection of six samples in total. Sampling locations are depicted on Figure 1 and photographs of each sample are included in Appendix B.

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 previous sampling events for sample collection within the breathing zone (approximately 5-6 feet). The co-located canister inlets at Location #1 were approximately 2 feet[2] 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 initial July 2019 sampling report. After the successful completion of each shut-in test, 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 primarily blew from the northwest during the 24-hour sampling period, which began October 16, 2019 and ended October 17, 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 canisters on October 18, 2019 and analyzed the samples between October 21 and 23, 2019.

Additionally, the Michigan Department of Environment, Great Lakes, and Energy (EGLE) collected one canister sample at Location #1 in the same 24-hour time period as Ramboll's samples, which was sent to a different contract laboratory for analysis and will be discussed separately by EGLE.

---

[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 #1, the canister inlets were placed two feet from each other.

4. RESULTS

The results from the October 2019 Ramboll sampling event are reported in Tables 1 and 2.

Table 1: Outdoor Air Sampling Results, October 16-17, 2019				
Sample Location ID	On-Site	Location Description	EtO Concentration (µg/m^3)	*Sample-Specific MDL (µg/m^3)*
1 (co-located samples)	Yes	South of building in parking lot	0.20; 0.20 (co-located sample)	*0.044;* *0.044*
2	Yes	West of building, along western property boundary	0.15 J	*0.054*
3	No	Northwest of building along Watson Street Southwest	0.34	*0.044*
4	Yes	North of building, northern corner of parking lot	0.16	*0.043*
J = Laboratory-estimated value below the Reporting Limit but above the MDL.				

Table 2: Indoor Air Sampling Results, October 16-17, 2019			
Sample Location ID	Location Description	EtO Concentration (µg/m^3)	*Sample-Specific MDL (µg/m^3)*
IA	Scrubber room	590	*0.48*

EtO was detected in all samples collected during the October 2019 event. The EtO concentration in outdoor ambient air samples ranged from 0.15 micrograms per cubic meter (µg/m^3) at Location #2 to 0.34 µg/m^3 at Location #3 (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] As evident from a wind rose prepared using the meteorological data (Figure 2), winds were generally blowing from the northwest during the sampling event. Wind speeds varied between 1 and 16 miles per hour (mph). The EtO concentration inside the scrubber room was 590 µg/m^3. A summary of results from this and prior Ramboll sampling events is provided in Appendix A.

5. QUALITY ASSURANCE

Ramboll evaluated data quality based on acceptance criteria specified by USEPA for precision, completeness, bias, and sensitivity in accordance with the April 2019 Work Plan. To evaluate the repeatability of sampling procedures, one co-located sample was collected at Location #1 during this investigation. The same concentration of EtO was detected in both canisters for the co-located sample; thus, the calculated difference in values (0%) is in the acceptable range of within 25%.

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

Additionally, a laboratory replicate sample analysis of the sample collected at Location #1 was performed. In this replicate analysis, the difference in detected concentration of EtO was approximately 9.5% (using the calculated average detected concentration as the denominator), which also is in the acceptable range of within 25%. Given the sensitivity of the laboratory analytical method, the laboratory diluted the sample collected inside the scrubber room, which increased the Minimum Detection Limit (MDL) above the target MDL for this sample. A summary of all quality assurance criteria related to the October 2019 sampling event is provided in Table 3 below.

Table 3: Quality Control Criteria for TO-15 Sample Collection and Analysis, October 16-17, 2019

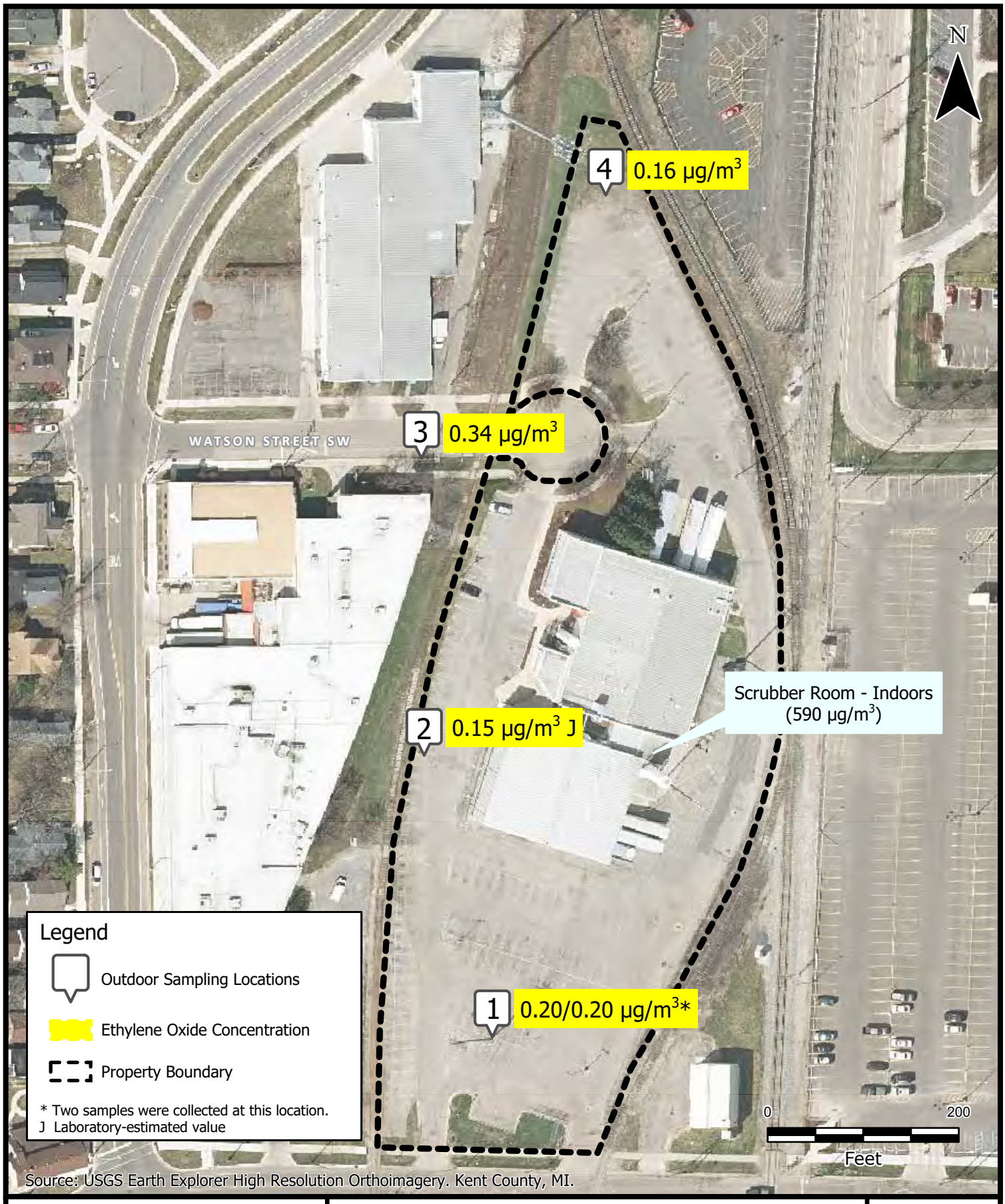
Quality Control Sample	Data Quality Indicators (DQIs)	Frequency	Acceptance Criteria	October 2019 Outcome	Corrective Action
Co-located sample	Precision	1 per day	Within 25%	0.0%	N/A
Replicate sample	Precision	1 per batch	Within 25% for sample concentrations greater than five times reporting limit	9.5%	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 µg/m^3	N/A
Method Detection Limit	Sensitivity	1 per method modification	0.05 ppb (0.09 µg/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 noted in Tables 1 and 2 may be affected by dilution.

6. CONCLUSIONS

EtO was detected at concentrations in ambient air surrounding the Viant facility at concentrations between 0.15 µg/m^3 and 0.34 µg/m^3 during the October 2019 sampling event. No correlation was apparent between sample concentrations and predominant wind direction, as was evident during prior monthly sampling events.

FIGURE 1
MAP OF SAMPLING RESULTS



RAMBOLL

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

FIGURE
1

DRAFTED BY: HA | DATE: 11/11/2019 | PROJECT 1690010876

FIGURE 2
WIND ROSE

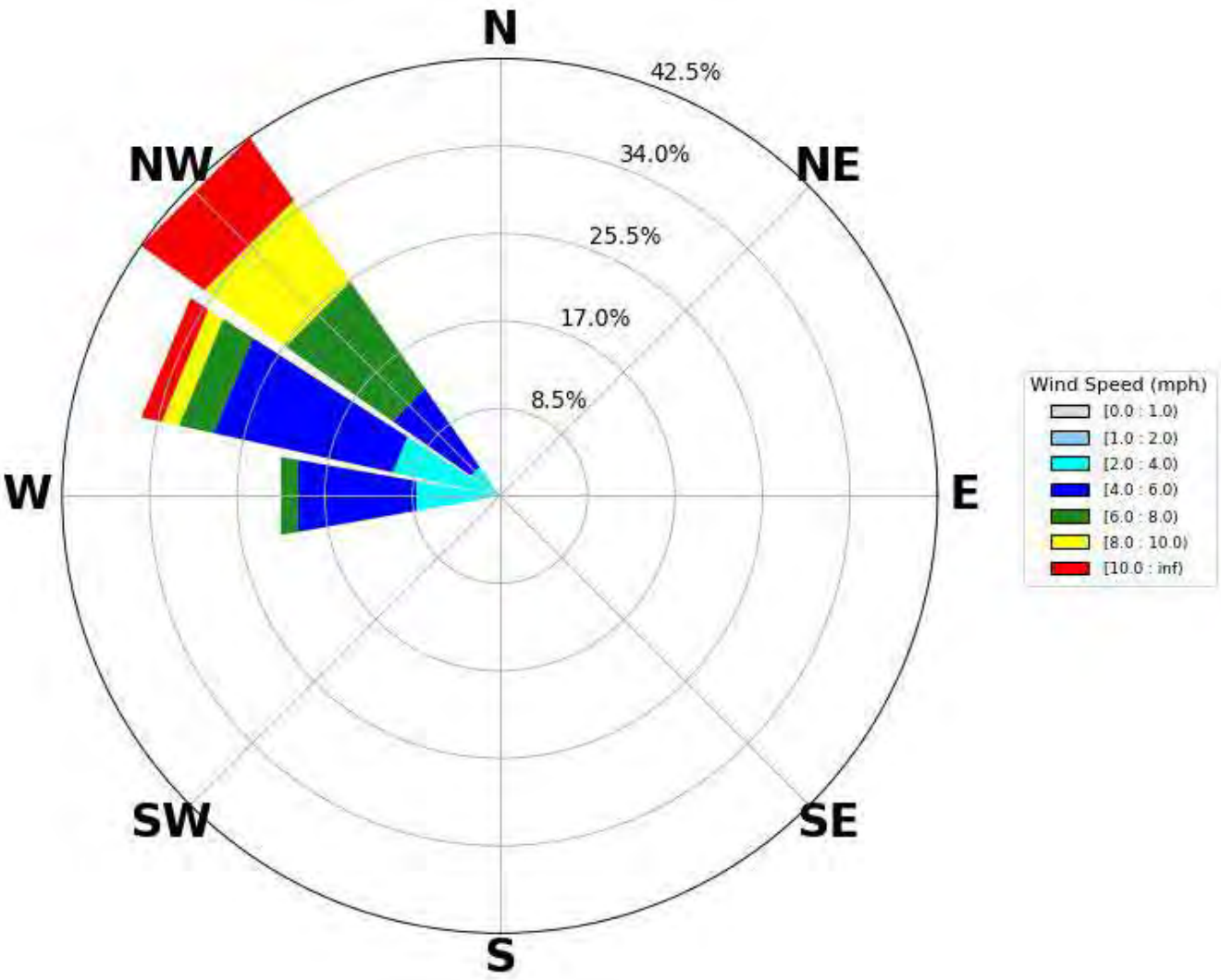
WIND ROSE PLOT:

EGLE Met Station - Grand Rapids, MI

Monroe Ave, south of Leonard St.

DISPLAY:

Wind Speed
Direction (blowing from)



COMMENTS:

DATA PERIOD:

Start Date:
10/16/2019 - 11:45

End Date:
10/17/2019 - 11:59

CALM WINDS:

0%

AVG. WIND SPEED:

5.43 mph

WIND ROSE FOR EGLE GRAND RAPIDS METEOROLOGICAL STATION

COMPANY NAME:

Viant Medical

DATE:

10/18/2019

DRAFTED BY:

HA

FIGURE
2

RAMBOLL

APPENDIX A
AIR SAMPLING PROGRAM RESULTS SUMMARY

Viant Medical
520 Watson Street Southwest, Grand Rapids, MI

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

		Location ID and Description			
		#1	#2	#3	#4
Sample Dates (24-Hour Period)	Predominant Wind Direction(s) During Event	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]
9/10/2019 - 9/11/2019	SW, S	0.38	0.51	0.40	0.90 / 0.76[c]
10/16/2019 - 10/17/2019	NW	0.20 / 0.20[c]	0.15 J	0.34	0.16

Notes:
/ = Quality control sampling data is separated by a slash (/)
[c] = Co-located sample
J = Laboratory-estimated value
Note 1 = Result represents an average concentration over a 21-hour period

Viant Medical
520 Watson Street Southwest, Grand Rapids, MI

Ethylene Oxide Concentrations ($\mu g/m^3$) 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
9/10/2019 - 9/11/2019	710
10/16/2019 - 10/17/2019	590

Notes:
/ = Quality control sampling data is separated by a slash (/)
[c] = Co-located sample

APPENDIX B
PHOTOGRAPHS OF SAMPLING LOCATIONS

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

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

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

Photo 4: View of sample collection at location #4, facing south.

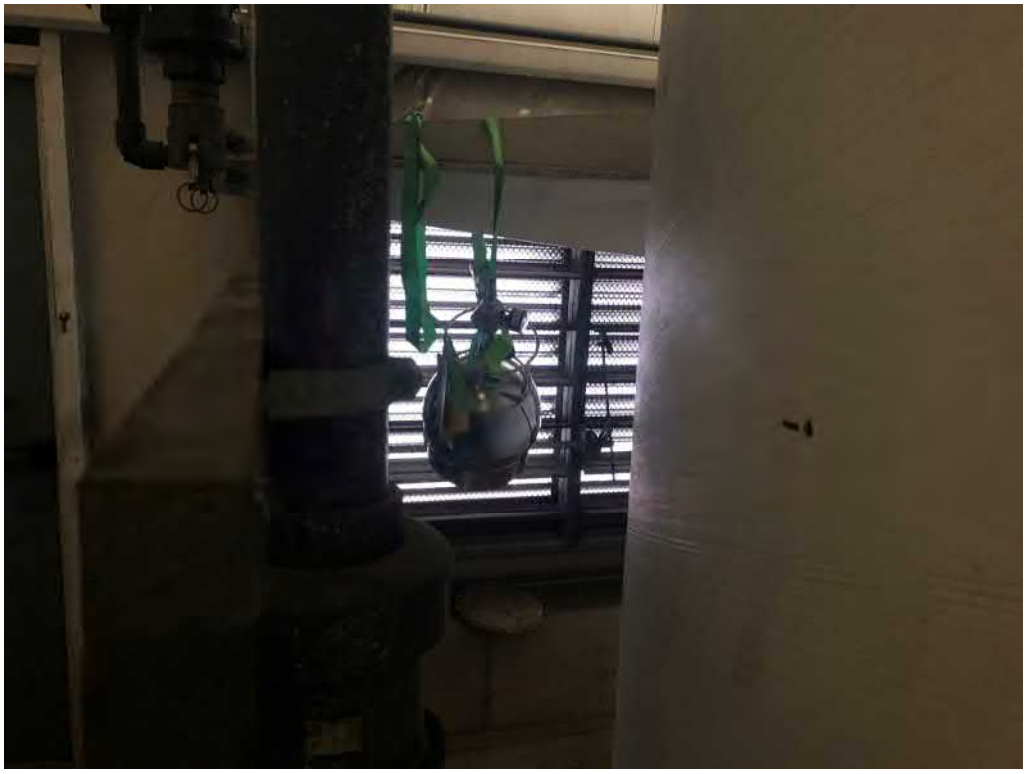


Photo 5: View of sample collection at indoor air (IA) location within scrubber room.

APPENDIX C
LABORATORY ANALYTICAL REPORT

eurofins | Air Toxics

10/31/2019
Ms. Christine Ng
Ramboll
4350 N. Fairfax Drive
Suite 300
Arlington VA 22203

Project Name: Viant Medical-Grand Rapids
Project #: 1690010876
Workorder #: 1910464

Dear Ms. Christine Ng

The following report includes the data for the above referenced project for sample(s) received on 10/18/2019 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

eurofins | Air Toxics

WORK ORDER #: 1910464

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:	10/18/2019	**CONTACT:**	Ausha Scott
DATE COMPLETED:	10/31/2019		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	20191016-IA	Modified TO-15 SIM	7.5 "Hg	5 psi
02A	20191016-1	Modified TO-15 SIM	5.5 "Hg	5 psi
02AA	20191016-1 Lab Duplicate	Modified TO-15 SIM	5.5 "Hg	5 psi
03A	20191016-DUP	Modified TO-15 SIM	5.5 "Hg	5 psi
04A	20191016-2	Modified TO-15 SIM	10.0 "Hg	5 psi
05A	20191016-3	Modified TO-15 SIM	5.5 "Hg	5 psi
06A	20191016-4	Modified TO-15 SIM	5.0 "Hg	5 psi
07A	Lab Blank	Modified TO-15 SIM	NA	NA
07B	Lab Blank	Modified TO-15 SIM	NA	NA
08A	CCV	Modified TO-15 SIM	NA	NA
08B	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

CERTIFIED BY: Heidi Hayes DATE: 10/31/19

Technical Director

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
EPA TO-15 Ethylene oxide (SIM)
Ramboll
Workorder# 1910464

Six 6 Liter Summa Canister (EO) samples were received on October 18, 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.

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 20191016-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:	20191016-IA		
Lab ID:	1910464-01A	**Date/Time Analyzed:**	10/23/19 01:42 AM
Date/Time Collected:	10/17/19 11:38 AM	**Dilution Factor:**	17.9
Media:	6 Liter Summa Canister (EO)	**Instrument/Filename:**	msd30.i / 30102222sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethylene Oxide	75-21-8	0.48	D	1.6	590

D: Analyte not within the DoD scope of accreditation.

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

Client ID:	20191016-1		
Lab ID:	1910464-02A	**Date/Time Analyzed:**	10/21/19 05:22 PM
Date/Time Collected:	10/17/19 11:48 AM	**Dilution Factor:**	1.64
Media:	6 Liter Summa Canister (EO)	**Instrument/Filename:**	msd30.i / 30102110sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethylene Oxide	75-21-8	0.044	D	0.15	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:	20191016-1 Lab Duplicate		
Lab ID:	1910464-02AA	**Date/Time Analyzed:**	10/21/19 06:06 PM
Date/Time Collected:	10/17/19 11:48 AM	**Dilution Factor:**	1.64
Media:	6 Liter Summa Canister (EO)	**Instrument/Filename:**	msd30.i / 30102111sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethylene Oxide	75-21-8	0.044	D	0.15	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:	20191016-DUP		
Lab ID:	1910464-03A	**Date/Time Analyzed:**	10/21/19 06:50 PM
Date/Time Collected:	10/17/19 11:48 AM	**Dilution Factor:**	1.64
Media:	6 Liter Summa Canister (EO)	**Instrument/Filename:**	msd30.i / 30102112sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethylene Oxide	75-21-8	0.044	D	0.15	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:	20191016-2		
Lab ID:	1910464-04A	**Date/Time Analyzed:**	10/21/19 07:33 PM
Date/Time Collected:	10/17/19 11:53 AM	**Dilution Factor:**	2.01
Media:	6 Liter Summa Canister (EO)	**Instrument/Filename:**	msd30.i / 30102113sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethylene Oxide	75-21-8	0.054	D	0.18	0.15 J

J = Estimated value.
D: Analyte not within the DoD scope of accreditation.

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

Client ID:	20191016-3		
Lab ID:	1910464-05A	**Date/Time Analyzed:**	10/21/19 08:17 PM
Date/Time Collected:	10/17/19 11:57 AM	**Dilution Factor:**	1.64
Media:	6 Liter Summa Canister (EO)	**Instrument/Filename:**	msd30.i / 30102114sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethylene Oxide	75-21-8	0.044	D	0.15	0.34

D: Analyte not within the DoD scope of accreditation.

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

Client ID:	20191016-4		
Lab ID:	1910464-06A	**Date/Time Analyzed:**	10/21/19 09:01 PM
Date/Time Collected:	10/17/19 11:59 AM	**Dilution Factor:**	1.61
Media:	6 Liter Summa Canister (EO)	**Instrument/Filename:**	msd30.i / 30102115sim

Compound	CAS#	MDL (ug/m3)	LOD (ug/m3)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Ethylene Oxide	75-21-8	0.043	D	0.14	0.16

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		
Lab ID:	1910464-07A	**Date/Time Analyzed:**	10/21/19 03:19 PM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd30.i / 30102108sim

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		
Lab ID:	1910464-07B	**Date/Time Analyzed:**	10/22/19 02:43 PM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd30.i / 30102208sim

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		
Lab ID:	1910464-08A	**Date/Time Analyzed:**	10/21/19 10:37 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd30.i / 30102102sim

Compound	CAS#	%Recovery
Ethylene Oxide	75-21-8	103

D: Analyte not within the DoD scope of accreditation.

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

Client ID:	CCV		
Lab ID:	1910464-08B	**Date/Time Analyzed:**	10/22/19 10:36 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd30.i / 30102203sim

Compound	CAS#	%Recovery
Ethylene Oxide	75-21-8	98

D: Analyte not within the DoD scope of accreditation.

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

Client ID:	LCS		
Lab ID:	1910464-09A	**Date/Time Analyzed:**	10/21/19 01:29 PM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd30.i / 30102106sim

Compound	CAS#	%Recovery
Ethylene Oxide	75-21-8	130

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		
Lab ID:	1910464-09AA	**Date/Time Analyzed:**	10/21/19 02:10 PM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd30.i / 30102107sim

Compound	CAS#	%Recovery
Ethylene Oxide	75-21-8	118

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		
Lab ID:	1910464-09B	**Date/Time Analyzed:**	10/22/19 11:17 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd30.i / 30102204sim

Compound	CAS#	%Recovery
Ethylene Oxide	75-21-8	117

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		
Lab ID:	1910464-09BB	**Date/Time Analyzed:**	10/22/19 11:58 AM
Date/Time Collected:	NA - Not Applicable	**Dilution Factor:**	1.00
Media:	NA - Not Applicable	**Instrument/Filename:**	msd30.i / 30102205sim

Compound	CAS#	%Recovery
Ethylene Oxide	75-21-8	122

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

For Laboratory Use Only

PID: X Workorder #: NA 1910464

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

Client: Ramboll
Project Name: Vant Medical - Grand Rapids
Project Manager: Christine Ng Project # 1690010876
Sampler: Nick Martin
Site Name: Vant Medical

Special Instructions/Notes: Modified TO-15 SIM for ethylene oxide

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

Lab ID	Field Sample Identification(Location)	Can #	Flow Controller #	Start Sampling Information		Stop Sampling Information		Canister Vacuum/Pressure		Lab Use Only		Requested Analyses			
				Date	Time	Date	Time	Initial (in Hg)	Final (in Hg)	Receipt	Final (psig) Gas: N_2 / He	Ethylene Oxide			
01A	20191016-IA	6L0476	20754	10/16/19	1145	10/17/19	1138	28	8			✓			
02A	20191016-1	6L0148	20728	"	1148	"	1148	28	6			✓			
03A	20191016-DUP	6L1671	21388	"	1148	"	1148	26	5			✓			
04A	20191016-2	6L1080	21934	"	1153	"	1153	28	9			✓			
05A	20191016-3	6L0394	22840	"	1157	"	1157	29.5	6.5			✓			
06A	20191016-4	6L0125	22110	"	1159	"	1159	29	6			✓			

	Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
1	Ramboll	10/17/19	1300	ATL	10/18/19	0945
2						
3						

Lab Use Only

Shipper Name: fedex | Custody Seals Intact? | Yes | No | None

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, of shipping of samples. D.O.T Hotline (800) 467-4922

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

December 02, 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 through 10/18/19 10:09.

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

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: 12/02/19 10:32
SUBMITTED: 08/14/19 to 10/18/19
AQS SITE CODE:
SITE CODE: Viant EtO

ANALYTICAL REPORT FOR SAMPLES

SampleName	LabNumber	Matrix	Sampled	Received
Viant	9081452-01	Air	08/13/19 12:00	08/14/19 10:12
Viant	9091304-01	Air	09/11/19 12:16	09/13/19 10:33
Viant	9101801-01	Air	10/17/19 11:48	10/18/19 10:09

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REPORTED: 12/02/19 10:32
SUBMITTED: 08/14/19 to 10/18/19
AQS SITE CODE:
SITE CODE: Viant EtO

Description: Viant
Pressure @ Receipt: 2.00" Hg
Comments:

Lab ID: 9081452-01
Canister #: SAT032

Sampled: 08/13/19 12:00
Received: 08/14/19 10:12
Analyzed: 08/19/19 19:51

Air Toxics by EPA Compendium Method TO-15

Analyte	Results ppbv	Results ug/m³	Flag	MDL ppbv
Ethylene oxide	**1.82**	**3.29**		**0.0250**

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AQS SITE CODE:
SITE CODE: Viant EtO

Description: Viant
Pressure @ Receipt: 11.50" Hg
Comments:

Lab ID: 9091304-01
Canister #: SAT171

Sampled: 09/11/19 12:16
Received: 09/13/19 10:33
Analyzed: 09/17/19 05:10

Air Toxics by EPA Compendium Method TO-15

	Results			MDL
Analyte	**ppbv**	**ug/m³**	**Flag**	**ppbv**
Ethylene oxide	**0.254**	**0.46**		**0.0250**

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REPORTED: 12/02/19 10:32
SUBMITTED: 08/14/19 to 10/18/19
AQS SITE CODE:
SITE CODE: Viant EtO

Description: Viant
Pressure @ Receipt: 0" Hg
Comments:

Lab ID: 9101801-01
Canister #: SAT168

Sampled: 10/17/19 11:48
Received: 10/18/19 10:09
Analyzed: 10/22/19 00:24

Air Toxics by EPA Compendium Method TO-15

	Results			MDL
Analyte	**ppbv**	**ug/m³**	**Flag**	**ppbv**
Ethylene oxide	**0.0656**	**0.12**		**0.0250**

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REPORTED: 12/02/19 10:32
SUBMITTED: 08/14/19 to 10/18/19
AQS SITE CODE:
SITE CODE: Viant EtO

Analyte	Result	Units	Source Result	RPD	RPD Limit	Notes

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

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

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REPORTED: 12/02/19 10:32
SUBMITTED: 08/14/19 to 10/18/19
AQS SITE CODE:
SITE CODE: Viant EtO

Analyte	Result	Units	Source Result	RPD	RPD Limit	Notes

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

Batch B9I1303 - Summa Canister Prep

Blank (B9I1303-BLK1) Prepared: 09/13/19 Analyzed: 09/16/19

Ethylene oxide	ND	ppbv				U

Batch B9J2105 - Summa Canister Prep

Blank (B9J2105-BLK1) Prepared & Analyzed: 10/21/19

Ethylene oxide	ND	ppbv				U

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SUBMITTED: 08/14/19 to 10/18/19
AQS SITE CODE:
SITE CODE: Viant EtO

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 (%)	Notes
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	2.69	ppbv	7.7	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	

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FILE #: 4173.00
REPORTED: 12/02/19 10:32
SUBMITTED: 08/14/19 to 10/18/19
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

Sequence 1909031

Calibration Check (1909031-CCV1) Prepared: 09/13/19 Analyzed: 09/16/19

Ethylene oxide	2.71	ppbv	8.4	30.00

Sequence 1910046

Calibration Check (1910046-CCV1) Prepared & Analyzed: 10/21/19

Ethylene oxide	2.21	ppbv	-10.3	30.00

CERTIFICATE OF ANALYSIS

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FILE #: 4173.00
REPORTED: 12/02/19 10:32
SUBMITTED: 08/14/19 to 10/18/19
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 trichlorotrufluoroethane.