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Analysis of Respirator Cartridge Performance Testing on a Hanford AW Tank Farm Exhauster Slipstream

March 2017

SK Nune CK Clayton J Liu CJ Freeman TM Brouns LA Mahoney



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March 2017

Prepared for the U.S. Department of Energy under Contract DE-AC05-76RL01830

Pacific Northwest National Laboratory Richland, Washington 99352

Executive Summary

Washington River Protection Solutions (WRPS) conducted tests using two types of chemical cartridges for use in air-purifying respirators (APR) to determine the period of time that the cartridges would provide adequate performance for APRs used to protect workers when exposed to a mixture of Chemicals of Potential Concern (COPCs) from vapors exiting the exhauster for the Hanford AW tank farm. The Occupational Safety and Health Administration (OSHA) identifies cartridge testing as a valid approach for establishing a cartridge service life. Testing is commonly applied in situations where mixtures of COPCs exist, and where other approaches, such as manufacturer recommendations and modeling, are less reliable. The tests were designed and conducted to assure measurement and/or control of the key variables OSHA identified as important to estimate cartridge service-life, including temperature, humidity, COPC concentration, breathing rate, and cartridge adsorption capacity.

Testing was conducted from September 23–25, 2016, on a slipstream from the AW exhauster, under static conditions fed to a respirator cartridge test stand developed by WRPS in collaboration with HiLine Engineering (Richland, Washington). Multipurpose respirator cartridges, SCOTT 7422-SD1 and SCOTT 7422-SC1 (SCOTT Safety, Monroe, North Carolina), were assessed on separate days. Sample media (sorbent tubes) were used to collect samples of the vapor stream entering and exiting the respirator cartridge, and were subsequently analyzed for COPC concentrations. Pacific Northwest National Laboratory was tasked with conducting an independent analysis of the analytical results and making recommendations based on the results for respiratory cartridge performance and service life. The key conclusions from the analysis are described below:

- Based on measured cartridge inlet vapor concentrations from the AW exhauster, two COPCs, ammonia and N-Nitrosodimethylamine (NDMA), exceeded their corresponding Occupational Exposure Limits (OEL).¹ One COPC, N-Nitrosomethylethylamine (NMEA), had one or more inlet concentration measurements greater than 10% of its OEL, but less than 100%. N-Nitrosodiethylamine had a detection limit (DL) of approximately 24% of the OEL, but all inlet and outlet measurements were less than DL. All other COPC inlet and outlet measurements did not exceed 10% of their OELs.
- Ammonia concentrations at the respirator cartridge inlet reached a maximum of 106% of its OEL (26.5 ppm) during the testing, which was lower than average (158%) and maximum (644%) historical measurements from the exhauster. The lowest concentration observed was 41.8% of the OEL for the SCOTT 7422-SD1 cartridge for the 12 hour measurement. For the SCOTT 7422-SC1 cartridge, ammonia appeared to break through the cartridge above 10% of the OEL after 12 hours. For the SCOTT 7422-SD1 cartridge, the outlet concentrations were less than the detection limit (DL) initially, began increasing gradually after 12 hours, but remained below 10% of the OEL through the end of the test.
- Cartridge inlet concentration measurements for NDMA reached 1638% of its OEL (4.9 ppb), which was higher than the average (963%) and slightly lower than the maximum (2163%) historical concentration measurements from the exhauster. However, all outlet concentrations were less than the analytical reporting limit (RL) of approximately 11% of the OEL, indicating no breakthrough for either cartridge.

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¹ Occupational Exposure Limits accepted for Hanford Tank Farm use are based on OELs established by a U.S. governmental agency or national professional organization (e.g., OSHA, National Institute for Occupational Safety and Health, American Conference of Governmental Industrial Hygienists), or if no U.S. OEL exists, standard toxicological practices are applied to develop OELs using non-U.S. exposure limits, other established OELs for chemical surrogates when available, or other standard procedures. The OEL for NDMA was established in 2005 based on the MAK (Maximale Arbeitsplatzkonzentration) Commission standard adopted in Europe.

- Cartridge inlet concentration measurements for NMEA reached a maximum of 14% of its OEL (0.04 ppb) and average concentration of approximately 12% of OEL. The average concentration was slightly lower than average historical measurements from the exhauster. All outlet concentrations were less than the analytical RL of approximately 9.2% of the OEL, indicating no breakthrough for either cartridge.
- All inlet and outlet concentrations for NDEA were less than the analytical RL of approximately 24% of the OEL, indicating no breakthrough for either cartridge.
- The experimental results in this study support a 12-hour service life for the use of SCOTT 7422-SC1 and 7422-SD1 cartridges in APRs employed to protect workers at the Hanford AW tank farm, under the same conditions as those tested. Additional respirator cartridge and respirator selection evaluations by Industrial Hygiene professionals are recommended to determine proper respiratory protection requirements. Variations in humidity, temperature, or cartridge inlet concentration for any COPCs, compared to those measured in the current study, could impact the experimentally derived cartridge service life, especially if OEL thresholds are exceeded. These factors, along with the measured breakthrough, should be used to inform an Industrial Hygiene determination of an appropriate respirator cartridge change-out schedule for adequate worker protection.

Acronyms and Abbreviations

ALS Environmental Salt Lake City

APR Air Purifying Respirator

CBAL Columbia Basin Analytical Laboratory, part of the RJ Lee Group

CFR Code of Federal Regulations
COPC Chemicals Of Potential Concern
CVAA Cold Vapor Atomic Absorption

DL Detection Level

EPA U.S. Environmental Protection Agency

GC-FID Gas Chromatography-Flame Ionization Detector

GC/MS Gas Chromatography/Mass Spectrometry

GC-TEA Gas Chromatrography-Thermal Energy Analyzer

HPLC High Performance Liquid Chromatography

HPLC-UV High Performance Liquid Chromatography-Ultraviolet

IC Ion Chromatography
NDEA N-Nitrosodiethylamine
NDMA N-Nitrosodimethylamine

NIOSH National Institute of Occupational Safety and Health

NMEA N-Nitrosomethylethylamine
OEL Occupational Exposure Level

OSHA Occupational Safety and Health Administration

SCBA Self-Contained Breathing Apparatus

ppm Parts Per Million

PNNL Pacific Northwest National Laboratory

RL Reporting Level

SWIHD Site-Wide Industrial Hygiene Database

TIC Tentatively Identified Compound

TWINS Tank Waste Information Network System

VOC Volatile Organic Compound

WC Water Column

WHL Wastren Hanford Laboratory (222S)
WRPS Washington River Protection Solutions

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1.0 Introduction/Project Description

As the Tank Operations Contractor for U.S. Department of Energy operations at the Hanford site, Washington River Protection Solutions (WRPS) is responsible for managing highly radioactive wastes stored in tanks at Hanford. WRPS recently identified the need to test air-purifying respirator (APR) chemical cartridges commonly used at Hanford Tank Farms. The tests were conducted to determine the period of time that the cartridges would provide adequate performance for APRs used to protect workers when exposed to a mixture of Chemicals of Potential Concern (COPCs) from any vapors exiting headspaces in the tanks. Occupational Safety and Health Administration (OSHA) Standard 29 Code of Federal Regulations (CFR) 1910.134(d)(3)(iii)(b)(2) specifies that for protection against gases and vapors, employers shall implement a schedule for cartridges to ensure that change-outs occur before the end of service life.[1-4] The change schedule can be based on objective information or data that ensures cartridge change-outs occur before the end of their service life.[2-5] The primary function of the WRPS APR Cartridge Test Program is to obtain objective data to determine service lives for the APR cartridges in use at Hanford Tank Farms. WRPS contracted Pacific Northwest National Laboratory (PNNL) to analyze the test data and offer an independent analysis and any recommendations. This report summarizes data analysis of cartridge testing on vapors from the exhauster on the Hanford AW tank farm.

2.0 Regulatory Requirements

2.1 Background on Regulatory Requirements

OSHA Respiratory Protection Standard (29 CFR 1910.134) mandates/requires that employers provide protective equipment, including respirators, to their employees to protect them against potential exposure to contaminants at or above documented Occupational Exposure Limits (OELs) and establish cartridge change-out schedules to ensure cartridges are changed before the end of service life.[1] End of service life is the time when a respirator cartridge can no longer filter/capture harmful contaminants (i.e., the cartridge no longer functions effectively).

Protective respirator cartridges are frequently used in workplaces with low contaminant concentrations, and where respirators provide essential protection for longer periods of time (>2 hours). If the contaminant concentration in a workplace is high, supplied air respirators (SAR) or self-contained breathing apparatuses (SCBA) must be used to provide additional protection. While the use of SARs or SCBAs offers more protection, a tradeoff exists, particularly for SCBAs that employ a large, heavy (~30 pounds), back-mounted compressed air cylinder.[1]

2.2 OSHA-Approved Methods for Determining Cartridge Change-Out Times

The National Institute of Occupational Safety and Health (NIOSH) certifies organic vapor cartridges using the criteria in 42 CFR 84, Approval of Respiratory Protective Devices. Still, there is no widely accepted, standard protocol for performing service-life testing.[4] However, OSHA has identified three valid approaches for establishing cartridge service lives.[3] These approaches are described below.

- Conduct experimental tests First, gather all available information about the nature of all contaminants present in the workplace. Obtain breathing rates of workers and estimate worst-case exposures. For most employers, this approach is the most time consuming, and resources needed to perform these tests may not be available. If an employer has the resources needed to pursue this approach, it is the most reliable method of estimating cartridge service life. Concentrations at different points in time are obtained using actual respirator cartridges exposed to actual or simulated gases to gather service-life information. A safety factor that includes the assumptions made, variable factors, or conditions needs to be applied to the service life and used in the respiratory protection program. This approach is commonly used in situations where mixtures of contaminants are present and can also be used to validate an existing cartridge change-out schedule.
- *Use the manufacture's recommendation* Once information about airborne contaminants (including concentrations, temperature, and humidity) has been obtained, contact the manufacturer of the respirator to be used and provide all the information. Manufacturers should be able to provide be able to provide the exact objective information they used to project the service life. Using the information obtained, service lives are proposed. This approach is not as reliable as conducting application-specific experiments, and manufacturers may not have all the information for workplace hazards and user factors. If any safety factor is applied considering all the variable factors, it must be clearly identified in the respiratory protection program. For complex mixtures such as those present in the storage tanks at Hanford, manufacturer recommendations may be of limited value, and experimental testing is recommended.

- *Use mathematical models* Mathematical models are usually applicable for single contaminant exposure situations. OSHA and NIOSH have worked over the years with researchers and industrial partners to develop mathematical models for predicting respirator cartridge service life.[3, 5-11] OSHA offers guidance on using mathematical models to estimate respirator cartridge service life based on single components, but the models have not been adopted for mixtures. NIOSH has developed a computer tool for estimating breakthrough times and service lives of respirator cartridges. Manufacturers can use those results to make service-life recommendations for their products (canister/cartridge) in multi-gas environments. Two types of mathematical models are used: 1) predictive models[3, 5-7] and 2) descriptive models.[9] Each model has its own mathematical basis for its estimations. To estimate the service lives of cartridges, the following information is needed:
 - the number of cartridges used by the respirator
 - the mass of the sorbent used in each cartridge
 - the carbon micro-pore volume
 - the density of the packed bed
 - the maximum temperature
 - the maximum relative humidity
 - the maximum concentration of the contaminants and the work (volumetric flow) rate.

The primary advantages of using mathematical models are that they are relatively inexpensive and take little time. However, the estimates are not as accurate as testing; sometimes modeling might result in a service-life estimate that is shorter than it needs to be because of conservative assumptions used during calculations.

In addition to the methods described above, "rules of thumb" can be allowed as part of the overall workplace organic vapor assessment for determining a cartridge change-out schedule. Chapter 36 of the American Industrial Hygiene Association publication, *The Occupational Environment: Its Evaluation and Control and Management*, outlines the approach.[12] The "rules of thumb" may not work for every chemical or situation, but provide an estimation of cartridge life. The following are rules of thumb outlined in the publication:

- If the compound's boiling point is >70°C and the concentration is <200 ppm, a service life of 8 hours at a normal work rate can be expected.
- Service life is inversely proportional to worker breathing rate.
- Reducing the concentration of a contaminant by a factor of 10 will increase service life by a factor of 5.
- Relative humidity above 85% will reduce the service life by 50%.

These rules of thumb do not apply in certain situations, including for mixtures of hazardous contaminants (e.g., Hanford Tank Farm vapors) and inorganic gases such as ammonia, sulfur dioxide, and hydrogen sulfide, compositions that vary with time and, location, and contaminants that undergo continuous reactions. However, some of the general drivers can help in interpreting the results obtained from experimental testing of respirator cartridges.

3.0 Description of Testing Program

Based on the OSHA guidance described in the previous section, a sample testing approach was pursued for quantifying respirator cartridge effectiveness for Hanford tank vapors. WRPS developed a sampling approach outlined in TFC-PLN-168, "Industrial Hygiene Sampling and Analysis Plan for Respirator Cartridge Testing," and "Air Purifying Respirator Cartridge Test Apparatus, RPP-STE-59226."[13,14]

Appendix A provides a description of the respirator cartridge testing setup developed by WRPS and used for measurements of vapors from the AW exhauster.[13-15] The test system and methodology were developed in consultation with recognized subject matter experts to follow the example of tank farm headspace field sampling for the purposes of cartridge testing.

The Sampling and Analysis Plan was developed under the direction and oversight of the Industrial Hygienist in conjunction with the Tank Farms Operations Contractor Retrieval and Closure, and Tank Farms Project and/or Production Operations Project Management Team, as applicable. Trained Industrial Hygiene Technicians under the direction of a qualified Industrial Hygienist collected chemical vapor samples from the influent and effluent sides of the cartridge test apparatus. Training was performed at HiLine Engineering (Richland, Washington) on the test stands for WRPS Sampling Equipment Operators, Industrial Hygiene Technicians, and the Field Work Supervisors, prior to transport of the stands to tank farms.

The APR cartridge test assembly was designed and constructed to operate without negative effects on performance to the following environmental conditions:

• Temperature: 32 to 115°F

• Relative Humidity: 5% to 100%

• Precipitation: Up to 4 inches in 6 hours

• Wind: Up to 20 mph with blowing dust.

To ensure the cartridges effectively protect the worker, WRPS developed a testing program with the following conservative conditions:

- The flow rate through each cartridge was set at 30 L/min (equivalent to 60 L/min for a pair of cartridges), which corresponds to more than twice the normal breathing rate and is slightly higher than OSHA recommended testing flow rate of 53.3 L/min.[3,5]
- Tank farm vapors source sampling was performed on headspace vapors rather than from Hanford Tank Farm atmospheric concentrations (i.e., source sampling vs. the breathing zone).
- 10% of the OEL for each COPC was considered as a threshold concentration.

Using the cartridge testing setup described in Appendix A, separate test surveys were performed on two NIOSH-approved respiratory protection twin cartridges: SCOTT 7422-SD1 for Survey 1, and SCOTT 7422-SC1 for Survey 2.[16] These cartridges were chosen because they are suitable for capturing organic vapors, acid gases, ammonia, formaldehyde, and particulates.[16]

Vapor concentrations upstream and downstream of the APR cartridge were monitored with an array of sorbent tubes (see Appendix B). Influent (upstream) concentrations were measured at the beginning and end of each 16-hour verification survey. Downstream sorbent tubes were changed out every 2 hours until the experiment was finished. A measured quantity of sample air was drawn in through the sorbent tube (see Appendix A).[13,14] Compounds from the sorbent tubes were extracted and analyzed using analytical methods referenced in Appendix B.

The characteristics of 59 COPCs were the primary focus of the testing. The 59 COPCs represent a set of tank vapor chemicals found in a tank farm source greater than 10% of the OEL, or are considered "known" or "probable" carcinogens by the International Agency for Research Cancer or other regulatory agencies. [17,18] A full listing of these COPCs is shown in Section 4.0.

4.0 Data Analysis

Respirator cartridge testing on the AW exhauster was conducted from September 23–25, 2016. Each cartridge was tested for approximately 16 hours of continuous run time. Testing and analyses focused on the 59 COPCs identified in Table 1 and other hazardous airborne contaminants. Sorbent tubes were changed every 2 hours, and more than 200 sorbent tubes were sent to the 222S Laboratory at Hanford and dispositioned for analyses. Appendix C lists the raw data for all of contaminants analyzed during the tests, and Appendix D lists the corresponding calculated concentrations. Appendix C also gives the average temperatures of the sample slipstream during testing, which ranged from 57 to 76°F, and the average relative humidity ranged from 55 to 89%. Table 1 provides an overview of the results for each of the 59 COPCs. Note that nitrous oxide was not analyzed as it is not susceptible to respirator filtration, and there are no known NIOSH-approved respirator filtration cartridges approved for nitrous oxide. Additionally, methanol was not quantified as part of the COPC data set because it is used as a standard solvent and calibration standard in the analytical procedure for volatile organic compounds (VOC).

Table 1 shows the measured concentrations in the current study for all of the COPCs tested. Inlet concentrations of two COPCs, ammonia and N-Nitrosodimethylamine (NDMA), exceeded their corresponding OELs. The inlet (or outlet) concentrations of two additional COPCs were lower than their corresponding OELs or detection limits (DL) but still exceeded 10%. These COPCs were N-Nitrosodiethylamine (NDEA) and N-Nitrosomethylethylamine (NMEA). All four of these COPCs are highlighted in yellow in Table 1. All four COPCs identified above with measured concentrations or DLs exceeding 10% of their respective OELs are assessed in more detail in Section 5.0. Appendix E shows similar detailed assessments for an additional 13 COPCs with respirator cartridge inlet (or outlet) concentrations or DLs less than 10% of their OELs but greater than 2%. These COPCs were mercury, 1,3-butadiene, formaldehyde, furan, 2,3-dihydrofuran, 2,5-dihydrofuran, 2-methylfuran, 2,5-dimethylfuran, 2-pentylfuran, 2-heptylfuran, 2-propylfuran, N-Nitrosomorpholine and dibutyl butylphosphonate. All of the other COPCs had inlet (or outlet) concentrations less than 2% of their OELs or their DLs.¹

4.1

¹ The term "detection limit" is used here to refer either to analytical reporting limit (RL) or DL. The use of either an RL or a DL varied among analytical laboratories. An RL (equivalent to a limit of quantification) was used instead of an analytical method DL by several laboratories for specific COPC analyses. See Appendix C and F for additional information on the specific use of the RL or DL for each COPC.

Table 1. Summary of Analyzed COPCs

COPC Number and Name	CAS Number	Highest Measured Value (this study)	Occupational Exposure Limit (OEL)	Approximate Analytical Detection Limit, DL ¹ (% of OEL)	All Data Values (inlet and outlet) < Detection Limit	Highest Detected Value Compared to OEL
Inorganic					ļ ļ	
1 Ammonia	7664-41-7	26.5 ppm	25 ppm	2.49%		Up to 106% of OEL for inlet values. All outlets <16.6%.
2 Nitrous Oxide	10024-97-2	Not Measured	50 ppm			
3 Mercury	7439-97-6	2.47 ug/m3	25 ug/m3	9.89%		Up to 7.3% of OEL for inlet values. All outlets <dl.< td=""></dl.<>
Hydrocarbons			!			
4 1,3-Butadiene	106-99-0	0.0203 ppm	1 ppm	2.03%	х	
5 Benzene	71-43-2	0.0002 ppm	0.5 ppm	0.026%		Up to 0.04% of OEL for inlet values. All outlets <dl.< td=""></dl.<>
6 Biphenyl	92-52-4	0.0003 ppm	0.2 ppm	0.141%	х	
Alcohols	1			1		
7 1-Butanol	71-36-3	0.213 ppm	20 ppm	0.004%		Up to 1.1% of OEL for inlet values. All outlets <0.007%.
8 Methanol	67-56-1	Not Measured	200 ppm			
Ketones				! I		
9 2-Hexanone	591-78-6	0.0003 ppm	5 ppm	0.003%		Up to 0.005% of OEL for inlet values. All outlets <dl.< td=""></dl.<>
10 3-Methyl-3-butene-2-one	814-78-8	Not Detected	0.02 ppm	TIC ²	х	
11 4-Methyl-2-hexanone	105-42-0	0.0002 ppm	0.5 ppm	0.031%	х	
12 6-Methyl-2-heptanone	928-68-7	Not Detected	8 ppm	TIC	х	
13 3-Buten-2-one	78-94-4	0.0006 ppm	0.2 ppm	0.092%		Up to 0.31% of OEL for inlet values. All outlets <dl.< td=""></dl.<>
Aldehydes						
14 Formaldehyde	50-00-0	0.0079 ppm	0.3 ppm	0.607%		Up to 2.6% of OEL for inlet values. All outlets <0.95%.
15 Acetaldehyde	75-07-0	0.0170 ppm	25 ppm	0.005%		Up to 0.07% of OEL for inlet values. All outlets <0.05%.
16 Butanal	123-72-8	0.0021 ppm	25 ppm	0.001%		Up to 0.009% of OEL for inlet values. All outlets < DL.
17 2-Methyl-2-butenal	1115-11-3	Not Detected	0.03 ppm	TIC	х	
18 2-Ethyl-hex-2-enal	645-62-5	Not Detected	0.1 ppm	TIC	х	

¹ Approximate Detection Limit (DL) is calculated using the reported DLs (or RLs) from the analytical laboratory and the average volume (from flowrate x time) of vapor exposed to the sorbent tube.

² Tentatively Identified Compound (TIC) indicates that a mass spectrometry "peak" not associated with calibrated compounds has been tentatively assigned to a compound based on an adequate match to the analytical methods reference library. Reference standards for the compound are not available to accurately quantify, assign an analytical DL, or definitively confirm the identity of the TIC. TICs are reported when the peak area is sufficiently large, estimated as ≥5 nanograms of TIC mass, and other analytical criteria are met. For the respirator cartridge testing, this mass of TIC represents an approximate concentration of <1.0 ppb, based on the average of all TICs in the COPC list.

 Table 1. (continued)

COPC Number and Name	CAS Number	Highest Measured Value (this study)	Occupational Exposure Limit (OEL)	Approximate Analytical Detection Limit, DL ¹ (% of OEL)	All Data Values (inlet and outlet) < Detection Limit	Highest Detected Value Compared to OEL
Furans				ı	1	
19 Furan	110-00-9	0.06 ppb	1 ppb	5.65%	х	
20 2,3-Dihydrofuran	1191-99-7	0.03 ppb	1 ppb	3.03%		Up to 2.5% OEL for inlet values. All outlets <dl.< td=""></dl.<>
21 2,5-Dihydrofuran	1708-29-8	0.04 ppb	1 ppb	4.26%	х	
22 2-Methylfuran	534-22-5	0.04 ppb	1 ppb	3.58%	х	
23 2,5-Dimethylfuran	625-86-5	0.05 ppb	1 ppb	4.99%	х	
24 2-Ethyl-5-methylfuran	1703-52-2	Not Detected	1 ppb	TIC	х	
25 4-(1-Methylpropyl)-2,3-dihydrofuran	34379-54-9	Not Detected	1 ppb	TIC	х	
26 3-(1,1-Dimethylethyl)-2,3-dihydrofuran	34314-82-4	Not Detected	1 ppb	TIC	х	
27 2-Pentylfuran	3777-69-3	0.04 ppb	1 ppb	4.16%	х	
28 2-Heptylfuran	3777-71-7	0.03 ppb	1 ppb	3.31%	х	
29 2-Propylfuran	4229-91-8	0.04 ppb	1 ppb	3.60%	х	
30 2-Octylfuran	4179-38-8	Not Detected	1 ppb	TIC	х	
31 2-(3-Oxo-3-phenylprop-1-enyl)furan	717-21-5	Not Detected	1 ppb	TIC	х	
32 2-(2-Methyl-6-oxoheptyl)furan	51595-87-0	Not Detected	1 ppb	TIC	х	
Phthalates				ļ-		
33 Diethylphthalate	84-66-2	0.0003 mg/m3	5 mg/m3	0.062%	х	
Nitriles 34 Acetonitrile	75-05-8	0.256 ppm	20 ppm	0.001%		Up to 0.5% of OEL for all inlet values. Al outlet values <1.3%.
35 Propanenitrile	107-12-0	0.0004 ppm	6 ppm	0.004%		Up to 0.006% of OEL for inlet values. All outlets <dl.< td=""></dl.<>
36 Butanenitrile	109-74-0	0.0002 ppm	8 ppm	0.003%		Up to 0.003% of OEL for inlet values. All outlets <dl.< td=""></dl.<>
37 Pentanenitrile	110-59-8	0.0002 ppm	6 ppm	0.004%	х	
38 Hexanenitrile	628-73-9	0.0002 ppm	6 ppm	0.003%		Up to 0.002% of OEL for inlet values. All outlets <dl.< td=""></dl.<>
39 Heptanenitrile	629-08-3	Not Detected	6 ppm	TIC	х	
40 2-Methylene butanenitrile	1647-11-6	Not Detected	0.3 ppm	TIC	х	
41 2,4-Pentadienenitrile	1615-70-9	Not Detected	0.3 ppm	TIC	х	

 Table 1. (continued)

COPC Number and Name	CAS Number	Highest Measured Value (this study)	Occupational Exposure Limit (OEL)	Approximate Analytical Detection Limit, DL ¹ (% of OEL)	All Data Values (inlet and outlet) < Detection Limit	Highest Detected Value Compared to OEL
Amines						
42 Ethylamine	75-04-7	0.0049 ppm	5 ppm	0.099%	х	
Nitrosamines						
43 N-Nitrosodimethylamine	62-75-9	4.91 ppb	0.3 ppb	10.7%		Up to 1638% of OEL for inlet values. All outlets <dl.< td=""></dl.<>
44 N-Nitrosodiethylamine	55-18-5	0.02 ppb	0.1 ppb	23.8%	x	All inlet and oulet values <dl. (23.8%)<="" td=""></dl.>
45 N-Nitrosomethylethylamine	10595-95-6	0.04 ppb	0.3 ppb	9.18%		Up to 14% of OEL for inlet values. All outlets <dl.< td=""></dl.<>
46 N-Nitrosomorpholine	59-89-2	0.04 ppb	0.6 ppb	3.48%		Up to 6.2% of OEL for inlet values. All outlets <dl.< td=""></dl.<>
Organophospates						
47 Tributyl phosphate	126-73-8	0.23 ppb	200 ppb	0.114%	х	
48 Dibutyl butylphosphonate	78-46-6	0.16 ppb	7 ppb	2.23%	x	
Halogenated	-			· I		
49 Chlorinated Biphenyls	Varies	Not Detected	1 mg/m3	TIC	х	
50 2-Fluoropropene	1184-60-7	Not Detected	0.1 ppm	TIC	x	
Pyridines				· I		
51 Pyridine	110-86-1	0.35 ppb	1000 ppb	0.035%	х	
52 2,4-Dimethylpyridine	108-47-4	0.26 ppb	500 ppb	0.052%	x	
Organonitrites						
53 Methyl nitrite	624-91-9	Not Detected	0.1 ppm	TIC	х	
54 Butyl nitrite	544-16-1	Not Detected	0.1 ppm	TIC	x	
Organonitrates						
55 Butyl nitrate	928-45-0	Not Detected	2.5 ppm	TIC	х	
56 1,4-Butanediol, dinitrate	3457-91-8	Not Detected	0.05 ppm	TIC	x	
57 2-Nitro-2-methylpropane	594-70-7	Not Detected	0.3 ppm	TIC	х	
58 1,2,3-Propanetriol, 1,3-dinitrate	623-87-0	Not Detected	0.05 ppm	TIC	х	
Isocyanates	-					
59 Methyl Isocyanate	624-83-9	Not Detected	20 ppb	TIC	х	

5.0 Plots of COPCs with Significant Detected Values

Of the 59 COPCs in Table 1, only ammonia and NDMA exceeded their OELs. Two additional COCPs, NDEA and NMEA, had measured concentrations or DLs less than their corresponding OELs but greater than 10% (see COPCs highlighted in yellow in Table 1). This section provides more detail on these four COPCs, along with plots of the corresponding data. Note that Appendix E shows plots and descriptions for other COPCs with measured inlet or outlet concentrations or DLs between 2% and 10% of their corresponding OELs.

Ammonia (see Figure 1) – The DL for ammonia corresponds to approximately 2.5% of its OEL. The inlet concentrations for both cartridges stayed relatively constant, 90% to 106% of the OEL, but each cartridge had decreased values for their corresponding 12-hour samples (42% and 56% of the OEL, respectively). For the SCOTT 7422-SD1 cartridge, the initial outlet ammonia concentrations were below the DL and gradually increased by the end of testing. However, these concentrations still remained below 10% of the OEL through the end of the test period. For the SCOTT 7422-SC1 cartridge, concentrations were also below the DL at the beginning of the test but increased above the DL toward the end of the test, and above 10% of the OEL after 12 hours.

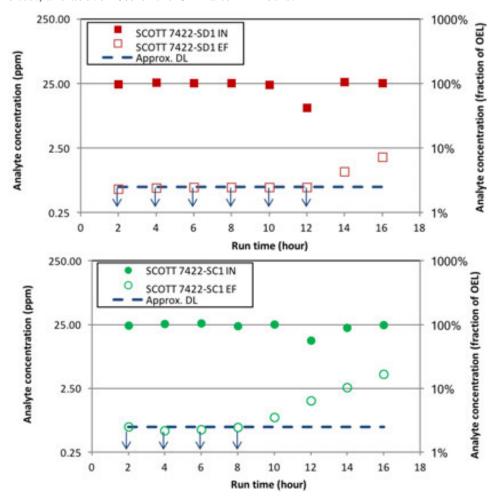


Figure 1. Plot of Measured Ammonia Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL.

N-Nitrosodimethylamine (see Figure 2) – The DL for NDMA corresponds to approximately 11% of its OEL. All inlet measurements for both cartridge tests were significantly greater than the DL. Except for one inlet concentration of 576% of OEL after 4-hours for SCOTT 7422-SC1, all other inlet concentrations for both cartridges were relatively constant throughout testing, ranging from 1284% to 1638% of the OEL. All of the outlet measurements were below the analytical DL for both respirator cartridges. Thus, there is no evidence of breakthrough over the measured time period for either cartridge tested.

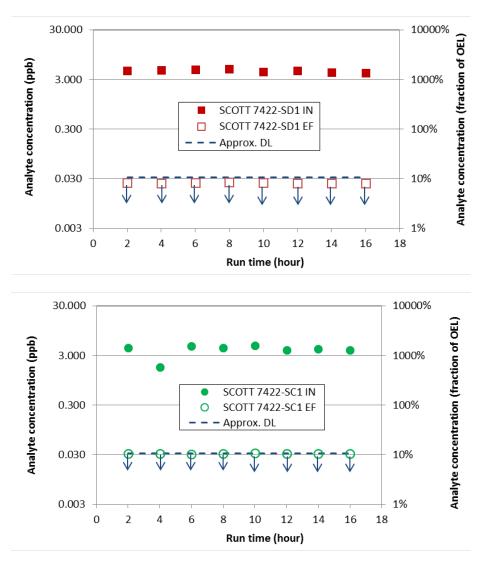


Figure 2. Plot of Measured N-Nitrosodimethylamine Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL.

N-Nitrosodiethylamine (see Figure 3) – The DL for NDEA corresponds to approximately 24% of its OEL. All inlet measurements for both respirator cartridges were less than the DL. All of the respirator outlet measurements also were below detection limits. Even though the DL is greater than 10% of OEL, the outlet measurements do not indicate breakthrough over the measured time period for either cartridge tested.

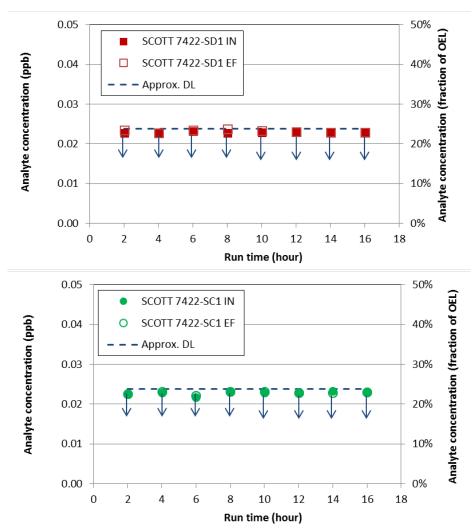


Figure 3. Plot of Measured N-Nitrosodiethylamine Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL. Outlet data points not visible are obscured by the inlet data points.

N-Nitrosomethylethylamine (see Figure 4) – The DL for NMEA corresponds to approximately 9.2% of its OEL. All inlet measurements for both respirator cartridges were higher than the DL, with most measurements exceeding 10% of the OEL. All of the respirator outlet measurements were below the DL. Therefore, there is no evidence of breakthrough over the measured time period for either cartridge tested.

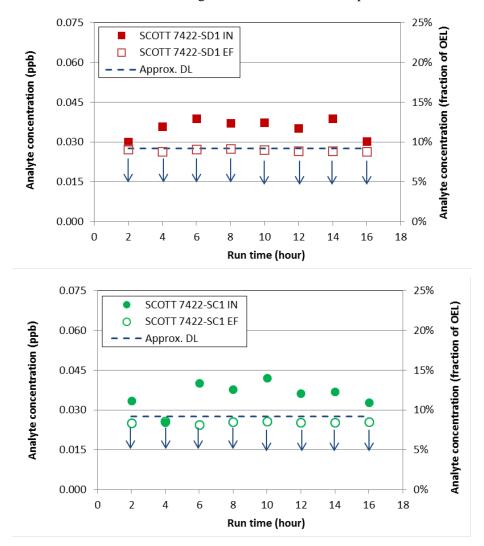


Figure 4. Plot of Measured N-Nitrosomethylethylamine Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL. Outlet data points not visible are obscured by the inlet data points.

6.0 Factoring in Historical Concentration Data

To fully assess respirator performance for COPC removal, historical data were reviewed to determine if the recent inlet measurements were representative of typical values. Historical AW exhauster data from TWINS and the Site-Wide Industrial Hygiene Database were used for this assessment.

A complete table with historical and measured results for all 59 COPCs and their boiling point data is shown in Appendix F, along with a description of the historic source data that were used. Table 2 shows a subset of data for COPCs with boiling points below 70°C because a low boiling point can be a general indicator of poor adsorption on solid media.

In total, 10 COPCs have been previously measured in the AW exhauster stack at concentrations above 10% of their respective OELs and above analytical RLs. These COPCs include ammonia, nitrous oxide, mercury, furan, 2,5-dihydrofuran, ethylamine, NDMA, NDEA, NMEA, and N-Nitrosomorpholine. Of these 10 COPCs:

- Ammonia and NDMA average inlet concentrations measured in this cartridge study were generally consistent¹ with historic exhauster stack measurements. The average inlet concentration for ammonia was approximately 40% less than the historic average, while the NDMA average inlet concentration was 45% higher than historic average. The NDMA maximum inlet concentration (1638% of its OEL) was 24% less than the maximum historic concentration. However, maximum ammonia inlet concentrations were 84% lower (26.5 ppm) compared to the historic AW exhauster stack maxima of 161 ppm.
- The maximum mercury inlet concentration measured in this study (7.3% of the OEL) was substantially lower than both average and maximum historic concentrations of 117% and 1184% of its OEL, respectively.
- Furan and 2,5-dihydrofuran average inlet concentrations from cartridge testing were consistently less than their DLs (approximately 6% and 4% of OEL), while historic concentrations averaged 127% and 58%, respectively. In addition, ethylamine average and maximum cartridge inlet concentrations were less than their RLs (~0.1% of OEL) compared to historic average and maxims of 1.3% and 12%, respectively.

Although NDMA concentrations were generally consistent with historic measurements, average inlet concentrations for other nitrosamines including NDEA, NMEA, and N-Nitrosomorpholine were substantially lower than historic average concentrations. NDEA inlet concentrations were consistently less than the DL (~24% of the OEL), and both NMEA and N-Nitrosomorpholine average inlet concentrations were approximately 70% lower than historic averages.

.

¹ Inlet concentrations were considered generally consistent if they were within a factor of 2 (-50% to +100%) of historic maximum or average exhauster stack measurements.

Table 2. Historical AW Exhauster Data for COPCs with Boiling Points less than 70°C (158°F)

				Historical Measurements ¹			Measurements in this Study			
COPC Number and Name	CAS Number	Boiling Point (°F)	Occupational Exposure Limit (OEL)	# of Values	Max. Value	Average Value	Max. Value (% OEL)	Average Value (% OEL)	Max Inlet Value (% OEL)	Highest Value from Respirator Outlet (% OEL)
2 Nitrous Oxide	10024-97-2	-127	50 ppm	2 4	11.3 < <i>RL</i>	8 29*	23% < <i>RL</i>	16% 58%*	Not N	1easured
1 Ammonia	7664-41-7	-28	25 ppm	25	161	39.5	644%	158%	106%	16.6%
50 2-Fluoropropene	1184-60-7	-11	0.1 ppm	0	n/a	n/a	n/a	n/a	Not De	tected - TIC
14 Formaldehyde	50-00-0	-6	0.3 ppm	32	<rl< td=""><td>0.0215*</td><td><rl< td=""><td>7.2%*</td><td>2.6%</td><td>0.95%</td></rl<></td></rl<>	0.0215*	<rl< td=""><td>7.2%*</td><td>2.6%</td><td>0.95%</td></rl<>	7.2%*	2.6%	0.95%
53 Methyl nitrite	624-91-9	10	0.1 ppm	0	n/a	n/a	n/a	n/a	Not De	tected - TIC
4 1,3-Butadiene	106-99-0	24	1 ppm	27	<rl< td=""><td>0.0846</td><td><rl< td=""><td>8.5%</td><td>2.0% (RL)</td><td>2.0 (RL)²</td></rl<></td></rl<>	0.0846	<rl< td=""><td>8.5%</td><td>2.0% (RL)</td><td>2.0 (RL)²</td></rl<>	8.5%	2.0% (RL)	2.0 (RL) ²
42 Ethylamine	75-04-7	62	5 ppm	17	0.609	0.0644*	12%	1.3%*	0.098% (RL)	0.099% (RL)
15 Acetaldehyde	75-07-0	69	25 ppm	17	<rl< td=""><td>0.0774*</td><td><rl< td=""><td>0%*</td><td>0.068%</td><td>0.047%</td></rl<></td></rl<>	0.0774*	<rl< td=""><td>0%*</td><td>0.068%</td><td>0.047%</td></rl<>	0%*	0.068%	0.047%
19 Furan	110-00-9	88	1 ppb	22	<rl< td=""><td>1.27</td><td><rl< td=""><td>127%</td><td>5.7% (DL)</td><td>3.9% (DL)</td></rl<></td></rl<>	1.27	<rl< td=""><td>127%</td><td>5.7% (DL)</td><td>3.9% (DL)</td></rl<>	127%	5.7% (DL)	3.9% (DL)
59 Methyl Isocyanate	624-83-9	103	0.02 ppm	1	<rl< td=""><td><rl< td=""><td><rl< td=""><td><rl< td=""><td>Not De</td><td>tected - TIC</td></rl<></td></rl<></td></rl<></td></rl<>	<rl< td=""><td><rl< td=""><td><rl< td=""><td>Not De</td><td>tected - TIC</td></rl<></td></rl<></td></rl<>	<rl< td=""><td><rl< td=""><td>Not De</td><td>tected - TIC</td></rl<></td></rl<>	<rl< td=""><td>Not De</td><td>tected - TIC</td></rl<>	Not De	tected - TIC
20 2,3-Dihydrofuran	1191-99-7	130	1 ppb	9	<rl< td=""><td><rl< td=""><td><rl< td=""><td><rl< td=""><td>2.5%</td><td>2.1% (DL)</td></rl<></td></rl<></td></rl<></td></rl<>	<rl< td=""><td><rl< td=""><td><rl< td=""><td>2.5%</td><td>2.1% (DL)</td></rl<></td></rl<></td></rl<>	<rl< td=""><td><rl< td=""><td>2.5%</td><td>2.1% (DL)</td></rl<></td></rl<>	<rl< td=""><td>2.5%</td><td>2.1% (DL)</td></rl<>	2.5%	2.1% (DL)
22 2-Methylfuran	534-22-5	147	1 ppb	22	<rl< td=""><td><rl< td=""><td><rl< td=""><td><rl< td=""><td>3.6% (DL)</td><td>2.4% (DL)</td></rl<></td></rl<></td></rl<></td></rl<>	<rl< td=""><td><rl< td=""><td><rl< td=""><td>3.6% (DL)</td><td>2.4% (DL)</td></rl<></td></rl<></td></rl<>	<rl< td=""><td><rl< td=""><td>3.6% (DL)</td><td>2.4% (DL)</td></rl<></td></rl<>	<rl< td=""><td>3.6% (DL)</td><td>2.4% (DL)</td></rl<>	3.6% (DL)	2.4% (DL)
8 Methanol	67-56-1	148	200 ppm	17	<rl< td=""><td>0.829*</td><td><rl< td=""><td>0.41%*</td><td>Not N</td><td>1easured</td></rl<></td></rl<>	0.829*	<rl< td=""><td>0.41%*</td><td>Not N</td><td>1easured</td></rl<>	0.41%*	Not N	1easured
21 2,5-Dihydrofuran	1708-29-8	152	1 ppb	22	<rl< td=""><td>0.576*</td><td><rl< td=""><td>58%*</td><td>4.3% (DL)</td><td>2.9% (DL)</td></rl<></td></rl<>	0.576*	<rl< td=""><td>58%*</td><td>4.3% (DL)</td><td>2.9% (DL)</td></rl<>	58%*	4.3% (DL)	2.9% (DL)

¹ Historical data from TWINS industrial hygiene vapor database and SWIH database; see text for links and dates of queries. Values in italics include those data plus data from the TWINS headspace database, all samples earlier than May 2005.

Plain font in the table indicates that only the recent databases (SWIHD headspace and TWINS Industrial Hygiene) were included. Italics mean that the pre-2006 TWINS headspace data were also included.

^{*} indicates that the value of the average would differ by a factor of 2 or more (in either direction) if non-reports were excluded.

[&]quot;< RL" indicates that all pertinent measurements of the analyte were less than the reporting level

[&]quot;n/a" indicates no historical data was found in the databases

² "(DL)" indicates value represents approximate detection limit (DL), which is calculated using the reported detection limit (or reporting limit - RL, where noted) from the analytical laboratory and the average volume (from flowrate x time) of vapor exposed to the sorbent tube

7.0 Conclusions

Testing was conducted during the September 23–25, 2016 period using a slipstream from the exhauster in the Hanford AW tank farm under static conditions. The vapors were fed to a respirator cartridge test stand developed by WRPS in collaboration with HiLine Engineering (Richland, Washington). Multipurpose respirator cartridges SCOTT 7422-SD1 and SCOTT 7422-SC1 (SCOTT Safety, Monroe, North Carolina) were each assessed with the tank farm exhauster vapors in tests conducted on separate days. Sorbent tubes were used to collect samples of the vapor stream entering and exiting the respirator cartridge, and were subsequently analyzed for COPC concentrations. PNNL was tasked to conduct independent analysis of the analytical results, and make recommendations based on the results for respiratory cartridge performance and change-out frequency.

The AW exhauster data are expected to provide conservatively high COPC concentrations compared to the ambient concentrations inside and outside the tank farm. Further, the flow rate through each respirator cartridge was maintained conservatively high compared to normal human breathing rates. The average temperatures of the sample slipstream during testing ranged from 57 to 76°F, and the average relative humidity ranged from 55 to 89%. The inlet concentrations measured are shown in Table 1. Thus, any conclusions on respirator cartridge performance pertain to the above-stated conditions.

The following are the key conclusions from the assessment of the 59 COPCs in the current analysis:

- Based on measured cartridge inlet vapor concentrations from the AW exhauster, only two of the measured COPCs exceeded their corresponding OELs, ammonia and NDMA. One COPC, NMEA, had one or more inlet concentration measurements greater than 10% of its OEL, but less than 100%. N-Nitrosodiethylamine had a DL of approximately 24% of the OEL, but all inlet and outlet measurements were less than the DL. All other COPCs' inlet and outlet measurements did not exceed 10% of their OELs.
- Ammonia concentrations at the respirator cartridge inlet reached a maximum of 106% of its OEL (26.5 ppm) during testing, which was lower than average (158%) and maximum (644%) historical measurements from the exhauster. The lowest concentration observed was 41.8% of the OEL for the SCOTT 7422-SD1 cartridge for the 12 hour measurement. For the SCOTT 7422-SC1 cartridge, ammonia appeared to break through the cartridge above 10% of the OEL after 12 hours. For the SCOTT 7422-SD1 cartridge, the outlet concentrations were less than the detection limit (DL) initially, began increasing gradually after 12 hours, but remained below 10% of the OEL through the end of the test
- Cartridge inlet concentration measurements for NDMA reached 1638% of its OEL (4.9 ppb), which was higher than the average (963%) and slightly lower than the maximum (2163%) historical concentration measurements from the exhauster. However, all outlet concentrations were less than the analytical RL of approximately 11% of the OEL, indicating no breakthrough for either cartridge.

based on the MAK (Maximale Arbeitsplatzkonzentration) Commission standard adopted in Europe.

7.1

¹ Occupational Exposure Limits accepted for Hanford Tank Farm use are based on OELs established by a U.S. governmental agency or national professional organization (e.g., OSHA, National Institute for Occupational Safety and Health, American Conference of Governmental Industrial Hygienists), or if no U.S. OEL exists, standard toxicological practices are applied to develop OELs using non-U.S. exposure limits, other established OELs for chemical surrogates when available, or other standard procedures. The OEL for NDMA was established in 2005

- Cartridge inlet concentration measurements for NMEA reached a maximum of 14% of its OEL (0.04 ppb) and average concentration of approximately 12% of OEL. The average concentration was slightly lower than average historical measurements from the exhauster. All outlet concentrations were less than the analytical RL of approximately 9.2% of the OEL, indicating no breakthrough for either cartridge.
- All inlet and outlet concentrations for NDEA were less than the analytical RL of approximately 24% of the OEL, indicating no breakthrough for either cartridge.

8.0 Recommendations

- Based on the measurements taken for this study, ammonia breakthrough, above 10% of its OEL, occurred after 12 hours for SCOTT 7422-SC1 cartridge. The average inlet concentration of ammonia was 94% of the OEL. While breakthrough above 10% OEL was not observed for the SCOTT 7422-SD1 cartridge, its outlet concentration measurement were increasing by the end of the test. This experimental result supports a 12-hour service life for the use of SCOTT 7422-SC1 and 7422-SD1 cartridges in APRs employed to protect workers at the Hanford AW tank farm, under the same conditions as those tested. Additional respirator cartridge and respirator selection evaluations by Industrial Hygiene professionals are recommended to determine proper respiratory protection requirements. Variations in humidity, temperature, or cartridge inlet concentration for any COPCs, compared to those measured in the current study, could impact the experiment-derived cartridge service life, especially if OEL thresholds are exceeded. These factors, along with the measured breakthrough, should be used to inform an Industrial Hygiene determination of an appropriate respirator cartridge change-out schedule for adequate worker protection.
- Additional recommendations related to NDMA and NDEA DLs, TICs, further data assessments, and
 future testing documented in PNNL-25860¹ for respirator cartridge testing on a slipstream from the
 Hanford AP tank exhauster are also relevant to the AW exhauster. Future testing and multi-tank
 analysis of cartridge performance with a wider range of COPC concentrations and test conditions
 should help improve understanding of overall cartridge performance.

8.1

¹ Nune, SK, J Liu, CJ Freeman, and TM Brouns. 2016. *Analysis of Respirator Cartridge Performance Testing on a Hanford AP Tank Farm Primary Exhauster Slipstream*. PNNL-25860, Pacific Northwest National Laboratory, Richland, Washington. (Unpublished)

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Appendix A Description of Respirator Cartridge Testing Setup

Appendix A

Description of Respirator Cartridge Testing Setup

The respirator cartridge testing system was developed by Washington River Protection Solutions and HiLine Engineering as a means to comprehensively test respirator cartridge performance with actual Hanford tank headspace gases. The system was designed to draw vapors from a tank or exhauster and flow the vapors through the respirator cartridge being tested.[13,14] The test equipment allows for sampling the vapor stream both before and after the cartridge, so that performance for a given COPC can be quantified. Sorbent media tubes were used to capture the COPCs and other hazardous contaminants. After a given test segment, the sorbent tubes were removed and analyzed. Sampling of the exhaust gas was performed every 2 hours, but this timing can be modified as necessary.

Figure A.1 provides a general schematic diagram for the respirator cartridge test apparatus, and Figure A.2 shows photographs of the actual equipment. The test system operates using vacuum to draw tank gases/vapors into the unit so that the potential for leakage to atmosphere is minimized until the gases/vapors are under positive pressure downstream of the vacuum pumps. By the time gases reach the vacuum pump, the COPCs are essentially captured/removed by either the sorbent tubes or the respirator cartridge.[13,14]

Flows through the respirator cartridge and through each sorbent tube are set and controlled/maintained using manual flow control valves on the outlet of each rotameter, and rotameters were calibrated against DryCal primary flow calibrators before and after testing. All equipment connections were leak tested prior to initiation of the test. Temperature, relative humidity, and pressure of the inlet gas/vapor stream are monitored by calibrated instrumentation.

Using Industrial Hygiene-approved materials, cartridge test equipment was constructed so that it would not influence/interfere with vapor analysis. Stainless steel or Teflon tubing and fittings were incorporated into the design where possible because of their relatively inert nature to the vapors being analyzed. Limited portions of the assembly used acrylic, Viton, glass, and Masterflex C-flex tubing, which are commonly used for various vapor-sampling applications.

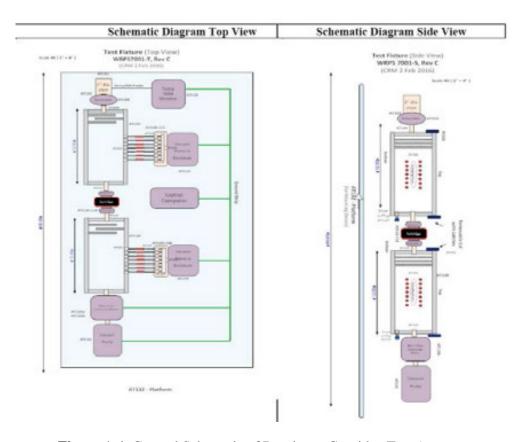


Figure A.1. General Schematic of Respirator Cartridge Test Apparatus



Figure A.2. Photographs of the Respirator Cartridge Test Equipment

Appendix B Analytical Testing

Appendix B

Analytical Testing

The Sampling and Analysis Plan was developed under the direction and oversight of the Industrial Hygienist in conjunction with the Tank Farms Operations Contractor Retrieval and Closure, and Tank Farms Project and/or Production Operations Project Management Team.

Chemical compounds in the tank samples were analyzed using approved industrial hygiene methods or National Institute of Occupational Safety and Health-approved methods for quantifying hazardous airborne contaminants in the tank farm vapors. Methods including gas chromatography/mass spectrometry were used as the primary analytical techniques for identifying hazardous airborne contaminants (see Table B.1).

Table B.1. Information on Sorbent Media used to Capture Contaminants, Flow Rates Used, Analytical Methods to Extract Analyte from Sorbent Media, and Method Analysis to Quantify or Estimate the Concentrations of Hazardous Contaminant

Analyte	Media	Flow Rate (mL/min)	Analytical Method ^a	Instrument Used ^b	Analysis Location ^c
Acetonitrile	Charcoal Tube, SKC- 226-09	100	NIOSH 1606	GC-FID	ALS
Acetonitrile	Carbotrap 300 TDU Tube	33	EPA TO-17 Modified	GC/MS	WRPS
Furans	TDU Tenax TA	33	EPA TO-17 Modified	GC/MS	WRPS
Semivolatile Organic Compounds	Carbotrap 150 TDU Tube	33	EPA TO-17 Modified	GC/MS	WRPS
Volatile Organic Compounds	Carbotrap 300 TDU tube	33	EPA TO-17 Modified	GC/MS	WRPS
Mercury	Anasorb C300, SKC- 226-17-1A	250	NIOSH-6009	CVAA	WHL
Ammonia	Anasorb 747 (sulfuric acid), SKC- 226-29	200	OSHA-ID-188	IC	WHL
1,3-butadiene	Charcoal, SKC-226-37, (Parts A and B)	200	NIOSH-1024	GC-FID	ALS
Aldehyde	DNPH Treated Silica Gel, SKC-226-119	200	EPA TO-11A	HPLC	ALS
Pyridine	Coconut Shell Charcoal, SKC-226-01offsite	1000	NIOSH-1613	GC-FID	ALS

Analyte	Media	Flow Rate (mL/min)	Analytical Method ^a	Instrument Used ^b	Analysis Location ^c
Nitrosamines	Thermosorb/N	2000	NIOSH-2522 Modified	GC-TEA	CBAL
Ethylamine	XAD-7 (NBD) Chloride), SKC 226-96	200	OSHA-ID-34, 36, 40,and 41	HPLC-UV	ALS

^a Analytical Method

NIOSH: National Institute of Occupation Safety and Health

EPA: U.S. Environmental Protection Agency

OSHA: Occupational Safety and Health Administration

^b Instrument Used

GC-FID: Gas Chromatography-Flame Ionization Detector

GC/MS: Gas Chromatography–Mass Spectrometry

CVAA: Cold Vapor Atomic Absorption

IC: Ion Chromatography

HPLC: High Performance Liquid Chromatography

GC-TEA: Gas Chromatography-Thermal Energy Analyzer

HPLC-UV: High Performance Liquid Chromatography-Ultraviolet Detector

^c Analysis Location

ALS: ALS Environmental Salt Lake City

WRPS-222S: Washington River Protection Solutions, Organic Studies Group

WHL-222S: Wastren Hanford Laboratory

CBAL: Columbia Basin Analytical Laboratory, part of the RJ Lee Group

Appendix C Raw Analytical Data

Appendix C

Raw Analytical Data

Table of Contents

Description	
Experiment parameters	
Flow rates	
Temperature, pressure and relative humidity	
Raw analytical data	
SVOC and SVOCTIC	
VOC and VOCTIC	
Furans	
Amines	
Acetonitrile	
Mercury	
Ammonia	
Aldehydes	
1, 3-Butadiene	
Pyridines	
Nitrosamines	

Description

This appendix includes raw data of flow rate, temperature, pressure, and humidity, and analytical data for the AW data set. Calculations using this data are given in Appendix D.

The raw analytical data is only given in this appendix. Washington River Protection Solutions (WRPS) converted these data into Excel data spreadsheets that were transmitted to Pacific Northwest National Laboratory. Comments on that conversion are provided below.

The analytical measurement results listed in results spreadsheet columns were transferred from entries labeled 'result' in the raw analytical .pdf files. The results were transferred into three rows in the spreadsheets. The first row contained the relevant information with the appropriate units. Where a results entry was given as 'ND' in the .pdf, a '<' symbol was used. Where a detection/reporting limit (RL) was listed as 'n/a,' the result entry in the spreadsheet was given as '0.0.'

The use of the RL or detection limit (DL) varied among analytical laboratories. The term RL (equivalent to a limit of quantification) was used instead of a DL by ALS Environmental Salt Lake City, Columbia Basin Analytical Laboratory, and 222S–Wastren Hanford Laboratory (see Table F.1 in Appendix F for a complete correlation of which Chemicals of Potential Concern used an RL or a DL). The WRPS laboratory provided a DL, in contrast to an RL. Neither RLs nor DLs were provided for tentatively identified compounds (TICs).

Chain of custody information is provided clearly in the raw analytical data .pdf files, including analyte name, sample numbers, and laboratory-assigned numbers. Chemical Abstract Service numbers were not provided.

The nomenclature of the sample identification (ID) is the same for every set of chemicals. It is generally composed of a survey number, tank farm ID, test location, sample line, and tube bundle ID. Descriptions of these nomenclatures are given as follows:

'BLANK' means measurements obtained from sorbent tubes that have not had any vapor stream passed through them. 'BASE' means measurements obtained for ambient air (fresh air vs. tank vapor) running through the test system before initiation of tank vapor testing.

'8635' designations correspond to testing with the SCOTT 7422-SD1 respirator cartridge, whereas '8636' designations correspond to testing with the SCOTT 7422-SC1 respirator cartridge.

Position designations 'IN-A' and 'EFF-A' correspond to the respirator cartridge inlet and outlet measurements, respectively, at the 0- to 2-hour time intervals. Position designations 'B' through 'H' correspond to the subsequent 2-hour measurements for inlet (IN) and outlet (EFF): IN-B/EFF-B (2 to 4 hours), IN-C/ EFF-C (4 to 6 hours), IN-D/ EFF-D (6 to 8 hours), IN-E/ EFF-E (8 to 10 hours), IN-F/ EFF-F (10 to 12 hours), IN-G/ EFF-G (12 to 14 hours), and IN-H/ EFF-H (14 to 16 hours).

The sample IDs embed the information given above. For example, sample ID 16-08635-5-IN-A corresponds to the first cartridge survey (16-08635), sample line 5, and the first (0 to 2 hours) influent sample bundle (IN-A).

The flow rate passing through the respirator cartridge was approximately 30 L/min, while the sampling flow rates through the sorption tubes ranged between 30 and 200 mL/min for different chemicals that were being collected. WRPS provided these flow rates in files 'AW Exhauster Flow Rate 9-23-2016.xlsx' for the first survey with SCOTT 7422-SD1 and 'AW Exhauster Flow Rate 9-24-2016.xlsx' for the second

survey with SCOTT 7422-SC1. The information is shown in the tables below. Columns labeled Mach. Base 1 and Mach. Base 2 refer to the 'BASE' baseline samples for influent and effluent, respectively, to verify machine cleanliness prior to experimental measurements.

WRPS provided the temperature and humidity information in files 'AW Exhauster DRI 9-23-2016.xls' and 'AW Exhauster DRI 9-24-2016.xls.' The information is shown in the tables provided in this appendix. Several terms used in the DRI files are described below.

- 'Pre' and 'Post' indicate the general time signature when the direct read instrument measurements were taken. 'Pre' refers to the beginning of the 2-hour sample duration, and 'Post' refers to the end of the 2-hour sample duration.
- 'Influent' and 'Effluent' indicate the location of the measurement within the test system. 'Influent' measurements are taken at the inlet of the system upstream of the respirator cartridge. 'Effluent' measurements are taken downstream of the respirator cartridge. The pressure, temperature, and humidity effluent sensors are located at the end of the test system near the vacuum pump, whereas the DRI measurements for ammonia and volatile organic compounds are from a sampling location between the respirator cartridge and the effluent sorbent tube samples.
- The DRI measurements for ammonia and volatile organic compounds could not be taken while the test system sample pumps were operational. 'After Sample Taken' refers to the time signature for these direct read results (e.g., Sample A DRI measurements were taken immediately after the Sample A sorbent tubes were taken and replaced with Sample B sorbent tubes).

The raw analytical data for chemicals in each category are summarized together. Examples of chemicals in each category follow:

- SVOC (or SVOA): Biphenyl, Diethylphthalate, Tributyl phosphate, Dibutyl butylphosphonate, Dodecane, Hexadecane
- SVOCTIC (or SVOATIC): Undecane, Cyclotetrasiloxane, octamethyl, Decamethlycyclopentasiloxane, Dodecane,4,6-dimethyl
- VOC (or VOA): Acetone, Acetonitrile, Acetophenone, Benzene, Butanal,1-Butanol, Butanenitrile, 3-Buten-2-one, Cyclohexane, Decane, Ethanol, Ethylbenzene, Furan, Hexane, Hexanone, Methylene Chloride, Propanenitrile, Styrene, Tetrachloroethene, Toluene, Trichlorofluoromethane
- VOCTIC (or VOATIC): 2,6-Dimethyldecane, Decane, 2,3,5,8-tetramethyl-, Decane, 3,7-dimethyl-, Methenamine, Undecane, 2,6-dimethyl-
- Furans: 2,3-Dihydrofuran, 2-Pentyfuran, Furan, Tetrafuran
- Ethylamine (amines): Dimethylamine, Ethylamine, Methylamine
- Acetonitrile: Acetonitrile
- Mercury: Mercury
- Ammonia: Ammonia
- Aldehyde: Acetaldehyde, Acetone, Butyraldehyde. Formaldehyde, Hexanal, Propionaldehyde, Valeraldehyde
- 1,3 Butadiene: 1,3-Butadiene
- Pyridines: 2,4-Dimethylpyridine, Pyridine
- Nitrosamines: N-Nitrosodimethylamine.

SCOTT 7422-SD1 Cartridge (9/23/16 to 9/24/16) AW Exhauster

Volumes Air Collected (L)

Sample Box Nu	mber	Mach.	Mach.	A4	42	01	02	.04	00	D1	0.2	E4	E2	E4	E2.	01	02	LIS	на
Analyte	Line	Base 1	Base 2	A1	A2	81	82	C1	CZ	D1	D2	E1	E2	1.1	F2	G1	G2	H1	H2
SVOC	A	3.92	4.07	4.03	4.07	3.88	4.01	3.96	4.00	3.97	3.95	3.85	4.00	3.85	2.32	4.22	4.51	4.12	4.22
VOC	В	4.12	3.92	4.23	3.99	4.24	4.11	3.80	3.80	3.86	3.55	3.85	3.79	3.85	3.85	4.04	3.81	4.01	3.82
Furans	C	4.11	6.22	4.11	6.43	4.21	6.63	4.03	6.40	4.10	6.26	3.92	6.02	3.86	5.80	3.99	6.31	4.01	6.24
Ethylamine	D	12.4	12.8	12.4	13.1	12.6	12.2	12.5	12.5	12.3	12.2	12.0	11.9	11.8	11.6	11.7	12.0	11.7	12.0
Acetonitrile	E	11.7	12.9	11.8	13.0	12.1	12.3	12.1	12.3	12.2	12.3	11.9	11.6	11.6	12.2	11.9	11.9	11.8	12.0
Mercury	F	29.6	30.9	30.6	31.1	29.5	30.6	29.8	30.0	30.1	30.5	29.9	29.3	30.1	30.0	30.1	30.3	29.4	30.0
Ammonia	G	24.6	25.0	24.7	25.5	24.9	24.8	24.3	24.2	24.0	24.0	23.6	23.9	24.4	23.5	24.3	24.5	24.2	24.9
Aldehyde	Н	25.0	24.9	25.1	25.3	24.9	24.6	23.8	23.6	24.1	23.5	23.8	24.2	24.0	24.1	23.9	24.6	23.9	23.9
1,3-Butadiene	1	24.8	23.1	24.3	24.1	24.1	24.2	24.3	24.4	24.3	24.5	23.8	23.7	23.6	23.6	23,8	24.1	23.7	23.9
Pyridine	J	123	124	122	125	124	125	124	125	122	126	124	127	122	127	122	125	122	127
Nitrosamines	K	239	241	242	236	244	245	241	239	244	235	240	238	235	238	234	238	235	238

Flow Rates (ml/min)

Sample Box Nu	mber	Mach.	Mach.		42	D1	0.7	C1	C2	n.	0.2		E2.		F2		00		ш
Analyte	Line	Base 1	Base 2	A1	A2	B1	B2	CI	CZ.	D1	D2	E1	E2	F1	F2	G1	G2	HI	H2
SVOC	A	32.6	33.9	33.6	34.0	32.3	33.4	33.0	33.3	33.0	32.9	32.1	33.3	32.1	19.4	35.2	37.6	34.3	35.2
VOC	В	34.3	32.7	35.2	33.3	35.3	34.3	31.7	31.7	32.2	29.6	32.1	31.6	32.1	32.1	33.7	31.8	33.4	31.8
Furans	C	34.3	51.9	34.3	53.6	35.1	55.3	33.6	53.3	34.1	52.2	32.7	50.1	32.2	48.4	33.3	52.6	33.4	52.0
Ethylamine	D	103	107	104	109	105	102	104	104	102	102	99.7	99.3	98.7	96.6	97.7	100	97.7	99.7
Acetonitrile	E	97.6	107	98	108	101	103	101	102	102	103	99.2	96.9	96.4	101	99.2	99.3	98.3	99.9
Mercury	F	247	258	255	259	246	255	249	250	251	254	249	245	251	250	251	253	245	250
Ammonia	G	205	209	206	213	208	207	202	201	200	200	197	199	203	196	202	204	201	208
Aldehyde	Н	208	208	209	211	207	205	198	197	201	196	198	201	200	201	199	205	199	199
1, 3-Butadiene	-1	207	192	202	201	201	202	202	203	203	204	198	197	196	197	198	201	198	200
Pyridine	J	1025	1035	1020	1040	1036	1043	1035	1040	1020	1050	1030	1055	1020	1055	1020	1045	1015	1060
Nitrosamines	K	1995	2005	2015	1970	2031	2045	2005	1990	2030	1960	2000	1980	1960	1980	1950	1980	1955	1980

Data points highlighted in yellow were identified by the test operator as being low/ suspect due to media tube issues.

SCOTT 7422-SC1 Cartridge (9/24/16) AW Exhauster

Volumes Air Collected (L)

Sample Box Nu	mber	Mach.	Mach.	44	42	04	92		62	01	0.2	64	60	E4.	62	01	02	ш4	un
Analyto	Line	Base 1	Base 2	A1	A2	81	B2	C1	CZ	D1	D2	E1	E2	F1	FZ	G1	G2	H1	H2
SVOC	A	3.85	3.82	4.07	3.79	4.22	3.83	4.17	4.13	3.84	3.80	3.81	4.15	4.03	4.27	4.11	4.24	4.09	4.22
VOC	В	3.84	3.86	3.74	4.03	4.04	4.12	4.19	4.34	3.77	3.91	3.94	3.75	3.86	3.89	4.00	4.05	3.86	4.04
Furans	C	3.83	6.57	3.95	6.53	4.10	5.84	4.41	6.28	3.94	5.68	3.83	5.52	3.71	5.59	3.97	6.27	4.15	5.97
Ethylamine	D	12.8	12.7	12.5	12.3	12.9	12.6	12.9	13.5	11.4	12.2	11.3	11.8	11.1	11.4	11.9	11.1	11.8	11.9
Acetonitrile	E	12.9	12.8	12.9	12.6	12.4	12.9	13.3	13.8	12.0	12.4	11.6	11.5	11.3	11.2	11.6	11.6	11.6	11.3
Mercury	F	29.4	31.6	31.0	30.1	29.7	21.1	31.3	31.5	29.3	30.4	29.2	29.5	28.5	28.5	29.6	29.1	29.7	29.2
Ammonia	G	24.1	25.0	24.6	23.9	24.9	27.5	26.5	26.6	24.3	24.2	23.9	23.6	23.5	22.7	23.6	22.3	23.5	23.3
Aldehyde	Н	24.2	24.6	24.6	24.3	24.0	24.6	25.9	26.6	23.3	24.2	22.5	24.0	22.5	23.6	24.1	23.1	24.3	23.1
1,3-Butadiene	1	23.4	24.3	24.0	24.6	24.3	24.5	26.1	26.2	23.6	23.3	23.1	23.0	22.7	23.2	23.3	22.6	23.4	24.0
Pyridine	J	125	124	127	122	125	124	136	130	123	119	122	119	121	117	122	118	122	120
Nitrosamines	K	243	243	244	245	241	239	255	253	238	240	238	236	236	239	230	238	232	236

Flow Rates (ml/min)

Sample Box Nu	mber	Mach.	Mach.		42	ma	22	-	62	D.	-		-	F4		61		1111	un.
Analyte	Line	Base 1	Base 2	A1	A2	81	82	CI	CZ	D1	D2	E1	E2	F1	F2	G1	G2	H1	H2
SVOC	Α	32.1	31.8	34.0	31.5	35.2	31.9	32.1	31.8	32.0	31.7	31.8	34.6	33.6	35.6	34.2	35.3	34.1	35.2
voc	В	32.0	32.1	31.1	33.6	33.6	34.4	32.2	33.4	31.4	32.5	32.9	31.2	32.2	32.4	33.4	33.8	32.1	33.7
Furans	C	32.0	54.8	32.9	54.5	34.1	48.6	33.9	48.3	32.8	47.3	31.9	46.0	31.0	46.6	33.1	52.2	34.6	49.8
Ethylamine	D	106	106	104	102	108	105	99	104	95.3	102	94.0	98.4	92.4	95.3	99.1	92.4	98.4	99.4
Acetonitrile	E	108	107	108	105	104	108	103	106	100	103	97.0	95.8	94.6	93	96.7	96.6	96.5	93.8
Mercury	F	245	263	258	250	248	176	241	242	244	253	243	246	238	238	247	243	248	243
Ammonia	G	200	208	205	199	207	229	204	205	203	202	199	196	196	189	196	185	195	194
Aldehyde	н	201	205	205	202	200	205	199	205	194	202	187	200	187	197	201	192	203	192
1, 3-Butadiene	1	195	202	200	205	202	204	201	201	197	194	193	192	189	193	194	189	195	200
Pyridine	J	1045	1035	1055	1015	1045	1030	1045	1000	1025	995	1020	988	1010	975	1020	985	1020	1000
Nitrosamines	K	2025	2025	2030	2045	2005	1995	1960	1945	1980	2000	1985	1970	1965	1990	1920	1980	1935	1965

SCOTT 7422-SD1 Cartridge (9/23/16 to 9/24/16) AW Exhauster

Influent- P	re			22	After	Sample T	aken	2	0.000		
Reading	UOM	Baseline	Α	В	С	D	E	F	G	н	
Relative Humidity	%	57.9	83.5	69.4	67.2	64.9	68.5	82.2	84.8	79.5	
Temperature	F	57.8	64	70.2	71.2	72.9	69.8	61.4	59.5	58.2	
Pressure	Torr	737	733	733	733	733	734	735	736	737	
NH3	ppm							8	8 1		
VOC	ppm										
Influent - Po	ost				After :	Sample T	aken		100 100 10		
Reading	UOM	Baseline	Α	В	С	D	E	F	G	Н	
Relative Humidity	%	53.4	69.1	65.5	63.4	65.8	80	83.8	79.6	75.4	
Temperature	F	62.8	70.9	71.9	73.6	69.8	62.9	59.9	58	58.7	
Pressure	Torr	737	733	733	733	734	734	736	737	738	
NH3	ppm	8	24.0	18.0	24.0			8 - 88	8/ 3		
VOC	ppm		0.50	0.00	0.08						
Effluent - P	re	Day 100		And the same	After S	Sample T	aken	01 - 13 C 1 1 1 7 7	100 100 0	V V V V V V V V V V V V V V V V V V V	
Reading	UOM	Baseline	Α	В	С	D	E	F	G	н	
Relative Humidity	%	30.0	33.7	32.7	33.0	32.4	31.0	37.7	40.0	38.0	
Temperature	F	58.6	63.9	70.6	71	73.5	71.7	63.2	60.7	59.7	
Pressure	Torr	421.4	426	434	435	436	429	435	439	436	
NH3	ppm			6 8							
VOC	ppm										
Effluent- Po	st		After Sample Taken								
Reading	UOM	Baseline	A	В	С	D	E	F	G	Н	
Relative Humidity	%	29.5	34.1	32.6	33.2	31	36.6	40.3	39.4	38.7	
Temperature	F	63.5	71.2	72.1	73.4	71.7	65.9	62	60.0	59.6	
Pressure	Torr	431	437	438	441	429	441	440	439	441	
NH3	ppm		0.00	0.00	0.00			1 3			
VOC	ppm		0.00	0.00	0.00						

SCOTT 7422-SC1 Cartridge (9/24/16) AW Exhauster

Influent- P	re		35	91	After	Sample 1	Taken	10-	-17	36		
Reading	UOM	Baseline	A	В	C	D	E	F	G	н		
Relative Humidity	%	64.2	83.5	76.7	57.8	60.4	74.7	79.5	85.4	89.4		
Temperature	F	66.1	70.1	74.4	76.2	73.3	65.8	63.0	60.7	56.6		
Pressure	Torr	743	739	739	738	736	736	738	736	736		
NH3	ppm	8						1				
VOC	ppm	8										
Influent - Po	ost		0,		After	Sample 1	Taken	G40 E	etter	143		
Reading	UOM	Baseline	A	В	c	D	E	F	G	Н		
Relative Humidity	%	61.5	73.4	54.9	59.9	72.1	81.1	83.9	85.4	82.5		
Temperature	F	68.2	75.6	70.0	74.9	66.4	63.1	61.0	56.5	58.5		
Pressure	Torr	744	739	738	738	737	737	738	737	737		
NH3	ppm	W 0000	21.0	28.0	21.0		115.00		2.00	2.00		
voc	ppm		0.81	0.89	0.00	8 3			1.60	1.60		
Effluent - P	re				After	Sample 1	Taken					
Reading	UOM	Baseline	A	В	c	D	E	F	G	Н		
Relative Humidity	%	31.3	33.8	33.4	27.3	28.6	31.0	36.1	39.1	42.5		
Temperature	F	65.2	70.8	75.5	78.5	73.9	69.7	64.6	61.8	58.3		
Pressure	Torr	453	448	439	455	458	453	444	447	435		
NH3	ppm	W - 0100		-	1000	1						
VOC	ppm											
Effluent- Po	ost		After Sample Taken									
Reading	UOM	Baseline	Α	В	c	D	E	F	G	Н		
Relative Humidity	%	28.7	33.7	28.1	28.3	30.8	37.1	39.9	41.6	42.2		
Temperature	F	68.9	78.1	79.1	77.9	71.1	65.4	62.6	59.5	59.9		
Pressure	Torr	456	457	459	460	457	456	456	455	454		
				_	_	-	-	-				
NH3	ppm		0.00	0.00	1.00				0.00	0.00		

Cartridge Evaluation Data Summary Report

Sample Group: 20162992

08 - Nov - 2016 7:58:47 DSRHardcopy/YOLimits 3:0.11b DSRJar v. 3:0,12

SDG Number: Customer Sample ID: 16-08635-1-EFF-A Customer Sample ID: 16-08635-1-EFF-A

Sample® R A	# CAS #	Analyte	unit	% dts	Blank	Result	Duplicate	Arrenge		RPD % Spk Rec %	Det Limit	Det Limit Ont Enr % Qual Flags	ual Flag
VAPOR-TOU SVOA;	SVOA#2												
S16T034222	3891-98-3	2,6,10-Trimethyldodecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	Ulehr	
S16T034222	95-48-7	2-Methylphenol	SON	98	6,45	6.45	n/a	n/a	n/a	nía	4.9		
S16T034222	108-39-4M	Cresol (m & p)	NGS	80	9'5>	9'5>	n/a	n/a	n/a	nla	5.6	n/a U	
S16T034222	92-52-4	Biphenyl	NGS	100	<4.0	<4.0	n/a	n/a	n/a	n/a	4.0	Uela	
S16T034222	78-48-6	Dibuty/ buty/phosphonate	NGS	120	43.6	<3.6	n/a	n/a	nla	n/a	3,6		1
S16T034222	84-86-2	Diethylphthalate	NGS	110	0.75	<7.0	nla	n/a			7.0	-	
S16T034222	112-40-3	Dodecane	NGS	96	99'0>	13	n/a	n/a			0.55		
S16T034222	544-76-3	Hexadecane-	NGS	120	433	<3.3	ela	n/a	nia		3.3		
S16T034222	629-59-4	Tetradecane	NGS	110	<3.9	<3.9	ela	n/a	nie	n/a	3.9		
S16T034222	126-73-8	Tributyl phosphate	NGS	98	45.6	<5.6	n/e	n/a	nla	n/a	5.6		
S16T034222	629-50-5	Tridecane	NGS	56	41.6	6.3	eva	n/a	n/s		1.6		
S16T034222	529-78-7	Heptadecano	NGS	100	424	42.4	ayu	n/a	nla		2.4		
S16T034222	629-62-8	Pentadecane	NGS	120	<3.0	<3.0	na	n/a	nia	n/a	3.0		

NA = Not Analyzed, ND = Not Detected J - Estimated

N - Named TIC

U - Less Than Detection Limit

T - Tentatively Identified Compound

C.7

U - Less Than Detection Limit

Cartridge Evaluation Data Summary Report

08 - Nov - 2016 7:58:47 DSRNardcopyWOLImils 3.0.11b DSR.Jar v. 3.0.12

Sample Group: 20162992 SDG Number: Customer Sample ID: 16-08635-1-EFF-B Customer Sample ID: 16-08635-1-EFF-B

AS DOT-	125				-	-	-	- Barrell				CHI CH CHICAGO LINES	See.
													T
	3891-98-3	2,6,10-Trimethyldodecane	NGS	100	939	3.9	n/a	nla	nla	n/a	3.9	Nalu	Τ
	95-48-7	2-Methylphenol	NGS	98	6,40	649	n/a	e)u	n/a	n/a	4.9		
S16T034223 108	108-39-4M	Cresol (m & p)	NGS	98	45.6	5.6	n/s	ela	nia	n/a	5.6	NeU	T
\$167034223 92-5	12-52-4	Biphenyl	NGS	100	0.40	0.40	n/a	n'e	n/s	n/u	4.0	n/s U	T
S16T034223 78-4	8-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	eva	n/a	nís	3.6	U e/u	Γ
S16T034223 84-6	M-68-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/s	n/a	n/a	n/a	7.0	Ush	Γ
S16T034223 112	12-40-3	Dodecane	NGS	96	<0.60	100	n/a	ale a	rya	n/a	0.55	n/a	Γ
S16T034223 544	544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/n	n/a	rva	n/a	3.3	U ava	Γ
S16T034223 629	829-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/a	2/2	r/a	n/a	3.9	Ush	Γ
S16T03A223 126	26-73-8	Tributyl phosphate	NGS	98	<5.6	45.6	n/a	n/a	n/a	n/a	5.6	U a/u	Γ
\$167034223 629	29-50-5	Tridecane	NGS	96	c1.6	8.4	a/a	n/a	rva	n/a	1,6	U.S.	Γ
S16T034223 629	29-78-7	Heptadecana	NGS	100	<2.4	<2.4	e/u	n/a	n/a	nla	2.4	Uah	Г
S16T034223 629	629-62-9	Pentadecans	NGS	120	<3.0	<3.0	n/a	n/a	n/a	rya	3.0	U s/u	Γ

Sample Group: 20162992 SDG Number: Customer Sample ID: 16-08635-1-EFF-C Customer Sample ID: 16-08635-1-EFF-C

Samples R A	W CAS#	Analyte	Unit	STD %	Blank	Result	Ouplicate	Average	RPD % Spk Rec %	ik Rec %	Det Limit C	Crit Err % Qual Flags
VAPOR-TDU SVDA #2	SVDA #2											
\$167034224	3391-98-3	2,6,10-Trimethyldodecane	NGS	100	<3.9	<3.9	rva	nla	n/a	n/a	3.9	n/a U
\$167034224	95-48-7	2-Methylphenol	NGS	96	6.49	6.4.9	n/s	nla		n/a	6.9	n/a/U
S16T034224	108-39-4M	Cresol (m & p)	NGS	08	979	<5.6	r/a	nla	n/a	n/n	5.6	n/a/U
S16T034224	92-52-4	Sipheryl	NGS	100	0.40	64.0	r/a	nla	n/a	n/a	4.0	n/a/U
\$167034224	78-45-6	Dibutyl butylphosphonate	NGS	120	3.6	3.6	n/s	nla		n/a	3.6	n/a/U
S16T034224	84-68-2	Diethyphthalate	NGS	110	<7.0	<7.0	rVa	nie	nya	n/a	7.0	NaU
\$167034224	112-40-3	Dodecane	NGS	95	<0.60	21	r/a	m/a	nya	nís	0.55	nía
\$167034224	544-76-3	Hexadecane-	NGS	120	433	33	n/a	n/a	nha	n/a	3.3	NaU
\$167034224	629-59-4	Tetradecane	NGS	110	<3.9	6.5	r/a	n/a		n/a	3.9	n/a U
\$167034224	126-73-8	Tributyl phosphate	NGS	98	45.6	6.6	e/u	n's	n/a	n/a	5.6	NaU
\$167034224	829-50-5	Tridocane	NGS	98	41.6	13	n/a	nie		n/a	1.6	n/a
\$167034224	829-78-7	Hoptadecane	NGS	100	42.4	424	n/a	n/a		n/a	2.4	niaU
S16T034224	629-62-8	Pentadecane	NGS	120	<3.0	3.3	n/a	n/a	n/a	n/s	3.0	n/a J

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T - Tentatively Identified Compound

U - Less Than Detection Limit

C.9

Cartridge Evaluation Data Summary Report

Sample Group: 20162992

SDG Number: Customer Sample ID: 16-08635-1-EFF-D Customer Sample ID: 16-08635-1-EFF-D

Sample® R A	W CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit Cot	Cot Err % Qual Flags
VAPOR-TDU SVOA #2	SVOA #2				1							
\$167034225	3891-88-3	2.6.10-Trimethyldodecana	NGS	100	339	9.59	n/a	n/a	n/a	n/a	3.9	n/a/U
\$167034225	95-48-7	2-Methylphenol	NGS	96	6.49	6,45	nla	n/a	n/a	n/a	4.9	n/a U
\$167034225	108-39-4M	Cresof (m & p)	NGS	08	979	6.6	n/a	n/a	nia	n/a	9.5	n/a/U
\$167034225	92-52-4	Bipheryf	NGS	100	0.40	44.0	n/a	n/a	n/a	n/a	4.0	n/a/U
S16T034226	73-46-6	Dibutyf butyfohosphonate	NGS	120	3.6	3.8	n/a	nla	nla	n/8	3.6	U(a)U
S16T034225	84-66-2	Diethyfphthalate	NGS	110	<7.0	<7.0	nya	n/a	n/a	n/a	7.0	n/a/U
S16T034225	112-40-3	Dodecane	NGS	98	<0.60	10	rya	nla	n/s	n/u	0.55	n/a
S16T034225	544-76-3	Hexadecane-	NGS	120	63.3	<3.3	r/a	nla	n/s	n/a	3.3	n/a/U
S16T034225	629-59-4	Tetradecane	NGS	110	<3.9	43.9	n/a	n/a	nya	n/a	3.9	n/a U
\$167034225	126-73-8	Tributyl phosphate	NGS	38	45.6	6.6	n/a	nla	n/a	n/a	5.6	n/a/U
S16T034225	629-50-5	Tridecane	NGS	95	9,15	6.1	r/s	n/a	nya	n/a	1.6	n/a/J
\$167034225	829-78-7	Heptadecane	NGS	100	424	424	rya	n/a	nya	n/a	24	n/a/U
S16T034225	829-62-9	Pontadocana	NGS	120	<3.0	<3.0	n/a	n/a	rita	nia	3.0	n/a U

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Cartridge Evaluation Data Summary Report

Sample Group: 20162392 SDG Number: Customer Sample ID: 16-08635-1-EFF-E Customer Sample ID: 16-08635-1-EFF-E

Samples R.	A# CAS#	Analyto	Unit	STD %	Dlank	Result	Duplicate	Average	RPD %	RPD % Spk Rec %	Det Limit	Det Limit Cnt Err % Qual Flags
VAPOR-TDU SVOA #;	SVOA #2											
S16T034226	3891-98-3	2,6,10-Trimethyldodecane	NGS	100	43.9	<3.9	nya	n/a	n/a	n/a	3.9	Ualu
S16T034226	95-48-7	2-Methylphenol	NGS	96	64.9	673	rya	n/a	n/a	n/a	6.5	Usin
S16T034226	108-39-4M	Cresol (m & p)	NGS	96	45.6	9.5	n/a	n/a	n/a	n/a	5.6	nalu
\$167034226	92-52-4	Biphenyl	NGS	100	0.40	c4.0	rva	n/a	n/a	n/a	4.0	n/all
\$167034226	78-46-6	Dibutyl butylphosphonate	NGS	120	43.8	3.6	nya	n/a	n/a	n/a	3.6	nialii
\$167034226	84-66-2	Diethylphthalate	NGS	110	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	nialu
S16T034226	112-40-3	Dodecane	NGS	98	09'05	8.8	n/a	nla	n/s	n/a	0.55	n/a I
\$167034226	544-76-3	Hosadecare-	NGS	120	<3.3	<3.3	n/a	nya	nla	n/a	3.3	olati
S16T034226	629-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/s	n/a	e)u	n/u	3.0	olali
S16T034226	126-73-8	Tributy phosphate	NGS	98	45.6	45.6	n/a	n/a	n/s	n/a	98	n/a [1
\$167034226	829-50-5	Tridocane	NGS	36	<1.6	80.50	n/a	nya	nla	n/a	1.6	n/a J
S16T034226	629-78-7	Heptadecane	NGS	100	42.4	<2.4	n/a	aju	n/a	n/a	24	n/a U
S16T034226	629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	ala	nla	n/s	3.0	n/a U

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N-Named TIC

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Cartridge Evaluation Data Summary Report

Data Summary

															_	ŕ
		Det Limit Cat Err 5, Qual Flags		n	0	2	n	0	5	7	מ	2	2	2	2	
		Cat Err %		U e/u	U s'vı	U e/u	U s/u	U s/u	U e'v	n/a	n/a U	m/3	Ula U	n/3 J	U a'm	
		Det Limit		3.9	4.9	5.6	4.0	3.6	7.0	0.55	3.3	3.9	5.6	1.6	2.4	
		RPD 1/4 Spk Rec 1/4		n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
		RPD %		n/a	e/u	n/a	n'a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
		Average		nla	n/s	n/a	nla	elva	n/a	n/a	n/a	n/a	n/a	n/a	n/B	
		Duplicate		r/a	n/a	n/a	n/a	n'a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
		Result		<3.9	6.49	<5.6	64.0	<3.6	<7.0	7.5	<3.3	<3.9	<5.6	3.0	<2.4	
		Blank		43.9	6,49	6.6	04.0	3.6	<7.0	00.60	<3.3	<3.9	<5.6	e1.8	42.4	
		% QLES		100	88	8	100	120	110	96	120	110	96	96	100	
		Unit		NGS	NGS	NGS	NGS	NGS	NGS	NGS	NGS	NGS	NGS	NGS	NGS	
): 16-08635-1-EFF-F ID: 16-08635-1-EFF-F	Amalyte		2,6,10-Trimethyldodecane	2-Methylphenol	Cresol (m & p)	Biphenyl	Dibutyl butylphosphonate	Diethylphthalate	Dodecane	Hexadecano-	Tetradecane	Tributyl phosphate	Tridocane	Hoptadecane	
Sample Group: 20162992	DG Number: Customer Sample ID: Customer Sample II	A CAS#	VOA #2	3391-99-3	95-48-7	108-39-4M	92-52-4	7848-6	84-66-2	112-40-3	544-76-3	629-59-4	128-73-8	629-50-5	629-78-7	
1	lumb tome	2	SOO	H	H	H	H	-	H	H	H		H	Н		l
Samula	SDG Number: Customer S Customer S	Samples R	VAPOR-TDU SVOA#2	S16T034227	S16T034227	S16T034227	S16T034227	S16T034227	S16T034227	S16T034227	S16T034227	S16T034227	S16T034227	S16T034227	S16T034227	

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N - Named TIC

T - Tentalively Identified Compound

Cartridge Evaluation Data Summary Report

Sample Group: 20162992

SDG Number:

Result Dupilicate Average RPD % Spk Rec % Det Limit Cnt Err % Qual Flags <3.9 Blank <3.9 STD % NGS SS NOS SS NOS NGS NGS Unit Customer Sample ID: 16-08635-1-EFF-G 2,6,10-Trimethyldodecane Customer Sample ID: 16-08635-1-EFF-G Dibutyl butylphosphonate ributyl phosphata 2-Methylphenol Cresol (m & p) Siethylphthalste fexadecanechadecane Sodecane Lidecane Analyte 95-48-7 106-39-4M 92-52-4 3891-98-3 R Af CAS 8 12-40-3 529-59-4 126-73-8 529-50-5 78-46-6 544-76-3 VAPOR-TDU SVOA #2 316T034228 316T034228 S16T034228 \$167034228 \$167034228 S167034228 S167034228 16T034228 \$167034228 S16T034228 \$167034228

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T - Tentalively Identified Compound

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S167034228 S167034228

Cartridge Evaluation Data Summary Report

Sample Group: 20162992 SDG Number: Customer Sample ID: 16-08635-1-EFF-H Customer Sample ID: 16-08635-1-EFF-H

Sampled R	R All CAS #	Analyte	Unit	\$ OTS	Blank	Result	Duplicate	Average	RPD % Spix Rec %		Det Limit Cot En	Cot Err % Qual Flags
VAPOR-TDU SVOA #2	U SVOA #2									1		
S16T034229	3891-98-3	2,6,10-Trimethyldodecane	NGS	1001	3.9	8.5	n/s	n/a	n/e	nía	3.9	n/a U
\$167034229	95-48-7	2-Methylphenol	NGS	96	64.9	40	n/a	n'a	nya	n/a		n/a U
\$167034229	108-39-4M	Cresol (m 8 p)	NGS	80	9'5'	999	n/a	n'a	n/a	n/a		n/a U
S16T034229	92-52-4	Biphenyl	NGS	100	0.40	0,40	n/a	n'a	eyu	n/a		n/a U
\$167034229	78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	3.6	n/a	n'a	n/s	n/a		n/a U
\$167034229	84-66-2	Diethysphthalate	MGS	110	47.0	47.0	n/a	n/a	n/a	n/s		n/a U
\$167034229	112-40-3	Dodecane	NGS	96	<0.60	=	n/a	n/a	n/a	n/a		n/a
S167034229	544-76-3	Hexadecana-	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/n		n/a U
\$167034229	629-69-4	Tetradecane	NGS	110	<3.9	43.9	n/a	n/a	n/a	e/u		n/a U
8167034229	126-73-8	Tributyl phosphate	NGS	98	<5.6	<5.6	n/a	n/a	n/a	n/a		n/a U
\$167034229	629-50-5	Tridecane	NGS	96	41.6	5.0	n/a	n/a	n/s	n/a		n/a J
\$167034229	629-78-7	Heptadecane	NGS	100	42.4	42.4	n/a	n/a	n/a	nla		n/a U
\$167034229	629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a		m/a U

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T - Tentalively Identified Compound

Cartridge Evaluation Data Summary Report

Sample Group: 20162992 SDG Number: Customer Sample ID: 16-08635-1-IN-A Customer Sample ID: 16-08635-1-IN-A

Samples R	Al CAS #	Analyte	Unit	STD %	Blank	Result	Ouplicate	Average	RPD %	Average RPD % Sak Rec %	Det Limit	Det Limit Cos fire tel Ouri Plans	Qual Plane
VAPOR-TDU SVOA #2	SVOA #2												offer a make
S16T034230	3891-88-3	2,6,10-Trimethyldodecane	NGS	100	43.9	43.9	n/a	n/a	n/a	nka	3.9	Ulahu	
S16T034230	95-48-7	2-Methylphenol	NGS	96	64.9	649	n/a	n's	n/a	nla	4.9	n/a	
S16T034230	108-39-4M	Cresol (m & p)	NGS	80	×5.6	45.6	n/a	n/a	n/a	n/s	5.6	Ualu	
S16T034230	92-52-4	Biphenyl	NGS	100	44.0	0.40	n/a	2,0	n/a	e/u	4.0	n/a L	
S16T034230	78-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	43.6	n/a	9,0	n/a	a/u	3.6		
S16T034230	84-66-2	Diethylphthalate	MGS	110	<7.0	<7.0	n/a	2,0	n/a	nya	7.0		
S16T034230	112-40-3	Dedecane	NGS	96	<0.60	10	n/a	n/a	n/a	n/a	0.55		
S16T034230	544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/u	n/a	n/a	e/u	3.3		
\$167034230	629-59-4	Tetradecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9		
S16T034230	126-73-8	Tributyl phosphate	NGS	98	<5.6	45.6	n/a	n/a	n/n	a/a	5.6		
\$167034230	629-50-5	Tridecane	MGS	96	61,6	6.3	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034230	629-78-7	Heptadecane	MGS	100	42.4	42.4	n/a	n/a	n/a	n/a	2.4	n/a/L	
\$167034230	629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	nya	3.0	Us/u	

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Cartridge Evaluation Data Summary Report

Sample Group: 20162992 SDG Number: Customer Sample ID: 16-08635-1-IN-H Customer Sample ID: 16-08635-1-IN-H

Samples R A	# CAS#	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	RPD % Spk Rec %	Det Limit	Det Limit Crt Err % Qual Flags	100
VAPOR-TDU SVOA#	SVOA #2												T
S16T034231	3891-98-3	2.6.10-Trimethyldodecane	NGS	100	3.9	000	nya	n/s	n/a	n/a	3.9	n/a[U	T
S16T034231	95-48-7	2-Methylphenol	NGS	96	64.9	649	n/a	n/a	e/u	n/a	4.9	Ua/u	T
S16T034231	108-39-4M	Cresol (m & p)	NGS	8	45.8	48.6	n/a	a/a	n/a	n/a	5.6	∪a/u	Γ
S16T034231	92-52-4	Bipheryl	NGS	100	0.40	0.40	n/a	m/a	nla	n/a	4.0	∪a/u	Γ
S16T034231	78-48-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	a/a	n/a	nia	3.6	Ua/u	Т
S16T034231	84-86-2	Diethy/phthalate	NGS	110	<7.0	<7.0	n/a	s,e	n/a	n/a	7.0		Г
S16T034231	112-40-3	Dodecane	NGS	8	<0.60	15	n/a	n'a	n/s	n/s	0.55		Т
\$167034231	544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/a	n'a	eva	nla	3.3	Ua/u	Т
S16T034231	829-59-4	Tetradecane	NGS	110	43.9	<3.9	n/a	n/a	s/u	nla	3.9	Ua/a U	Т
\$167034231	126-73-8	Tributyl phosphate	NGS	88	<5.6	<5.6	n/a	n's	e/u	nla	88	Us/o	Τ
S16T034231	629-50-5	Tridecane	NGS	96	41.8	9.7	n/a	n/a	ala.	n/a	1.6	D'a'd	Т
S16T034231	529-78-7	Heptadecane	NGS	100	<2.4	<2.4	n/a	n/a	n/a	nla	2.4	Us/u	Т
\$167034231	629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	nla	3.0	Ualu	Т

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N - Named TIC

T - Tentalively Identified Compound

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Cartridge Evaluation Data Summary Report

Sample Group: 20162992 SDG Number:

Customer Sample ID: 16-08635-1-EFF-A Customer Sample ID: 16-08635-1-EFF-A

Samples R	2	OC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flacs
VAPOR-TDU SVDA #2	SVOA	1 #2						
S16T034222			Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	TNL SS	INT
S16T034222			Undecane	1120-21-4	90'9	NGS	INI 0'S	INT
S16T034222			Decane, 2,4,6-trimethyf-	62108-27-4	5.44	NGS	24 JNT	INT
S16T034222			Decamethlycyclopentasiloxane	541-02-6	5.71	NGS	S2 JNT	INT
S16T034222			1,2-Senzisothiazole	272-16-2	6.59	NGS	TNL OC	TML
S16T004222			Dodecane, 2,8,11-trimethyl-	31295-56-4	689	NGS	17.	TNL TI
S16T034222			Undecane, 2-methyl-	7045-71-8	7.25	NGS	18	18 JNT
S16T034222		BLNK	Chrysene-D12	1719-03-5	14.03	NGS	17	
8167004222		BLNK	Perylone-D12	1520-95-3	15.80	NOS	3.9	

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N - Named TIC

U - Less Than Detection Limit

T - Tentalively Identified Compound

T - Tentatively Identified Compound

Cartridge Evaluation Data Summary Report

Customer Sample ID: 16-08635-1-EFF-B Customer Sample ID: 16-08635-1-EFF-B

Sample Group: 20162992 SDG Number:

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Sample® R	ş	QC Type	Analyte	CAS No.	(Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2	SVOA	1 #2						
\$167034223			Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	TNL 51	INT
S16T034223			Decane, 2,4,6-trimethyl-	62108-27-4	5.04	NGS	TNL 71	TNC
S16T034223			Acetophenone	96-85-2	5.18	NGS	5.3 JNT	INC
S16T034223			Undecane	1120-21-4	5.44	NGS	INC 08	INT
S16T034223		100	Undecane, 2,8-dimethyl-	17301-23-4	5.50	NGS	TNL 81	INC
\$167034223			Decamethlycyclopentasiaxane	541-02-6	5.71	NGS	1NL 55	INC
S16T034223			1,2-Benzisothiazole	272-16-2	6.59	NGS	34 JNT	TNC
\$167034223			Dodecane, 2,8,11-trimethyl-	31295-56-4	6.89	MGS	20 JNT	TNC
\$167034223			Undocano, 2-methyl-	7045-71-8	7.25	NGS	ZH JNT	INC
\$167034223		BLNK	Chrysene-D12	1719-03-5	14.03	NGS	17	
\$167034223		BLNK	Perylene-D12	1520-96-3	15.80	NGS	3.9	

J - Estimated

T - Tentatively Identified Compound

Cartridge Evaluation Data Summary Report

Data Summary

Sample Group: 20162992

SDG Number:

08-Nov-2016 7:5847 DSRTICHardcopy 2.7.32 DSR.Jar v. 3.0.12 Customer Sample ID: 16-08635-1-EFF-C Customer Sample ID: 16-08635-1-EFF-C

Samples R	2	OC Type	Analyte	CAS No.	Reterdon Time (Minutes)	Unit	Result	Oust Flags
VAPOR-TDU SVOA #2	SWOA	.#2						
S16T034224			Oydotetrasilorane, octamethyl	556-67-2	4.35	NGS	45	45 JNT
S16T034224	H		Acetophenone	98-86-2	5.18	NGS	8.0	5.0 JNT
\$167034224			Undecane	1120-21-4	5.45	NGS	92	28 JNT
S16T034224			Decamethlycyclopentasilexane	541-02-6	5.71	NGS	88	59 JNT
\$167034224			1,2-Benzisothiazole	272:16-2	6.59	NGS	36	36 JNT
\$167034224			Dodecane, 2,6,11-trimethyl-	31295-56-4	6.90	NGS	22	22 JNT
\$167034224		1000	Decano, 2,4,6-trimethyl-	62108-27-4	7.33	NGS	1.7	JNT
S16T034224	Ц		Propanolo acid, 2-methyl-, 1-(74381-40-1	9.18	NGS	33	33 JNT
S16T034224		BLNK	Chrysene-D12	1719-03-5	14,03	NGS	17	
S16T034224		BLNK	Perviene-D12	1520.96.3	15.80	NGS	0.0	

T - Tentatively Identified Compound

Cartridge Evaluation Data Summary Report

Sample Group: 20162992

08-Nov-2016 7:5847 DSRTICHardoopy 2.7.32 DSR.Jar v. 3.0.12

SDG Number:

Custo	omer	Sample ID:	Customer Sample ID: 16-08635-1-EFF-D					
lample# R	2	OC Type Analyte	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2	SVOA	#2						
16T034225			Cyclobatrasilosane, octamelinyl	556-67-2	4.35	SDN	38	INT
16T034225			Undecane	1120-21-4	5.44	NGS	17.3	INT
16T034225			Decamethlycyclopentasiloxane	541-02-6	5.71	NGS	58 J	NT
16T034225			1,2-Benzisothiazale	272-16-2	6.59	NGS	32 JNT	NT
16T034225			Dedecane, 2,6,11-trimethyl-	31295-56-4	6.89	NGS	TNL 11	IN
16T034225		BLNK	Chrysene-D12	1719-03-5	14.03	NGS	17	
S16T034225		BLNK	Pervisas-D12	1520-96-3	15.80	NGS	3.0	

U - Less Than Detection Limit

08-Nov-2016 7:5847 DSRTICHardoopy 2.7.32 DSR.Jar v. 3.0.12

Customer Sample ID: 16-08635-1-EFF-E Customer Sample ID: 16-08635-1-EFF-E

SDG Number:

Cartridge Evaluation Data Summary Report

Sample Group: 20162992

Sample# R	2	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Oual Flags
VAPOR-TDU SVOA #2	SVOA	#2						
S16T034226			Cyclotrislaxane, hexamethyl-	541-05-9	2.85	NGS	35 JNT	INT
\$167034226			Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	52 JNT	INT
\$167034226			Decene, 2,4,6-trimethyl-	62108-27-4	5,44	NGS	TAL ST	INT
S16T034226			Decamethlycyclopontasiloxana	541-02-6	5.71	NGS	46 JNT	INT
S16T034226			Undecane, 2,6-dimethyl-	17301-23-4	6.29	NGS	1NL 8.8	INT
\$167034226			1,2-Benzisothiazolo	272-16-2	6.59	NGS	27 JNT	INT
\$167034226			Dodecane, 2,6,11-trimethyl-	31295-56-4	6.89	NGS	14 JNT	INT
\$167034226			Undecane, 2-methyl-	7045-71-8	7.25	NGS	15 JNT	INT
S16T034226		BUNK	Chrysene-D12	1719-03-5	14.03	NGS	17	
\$167034226		BLNK	Perylene-D12	1520-96-3	15.80	NGS	3.9	

J - Estimated

08-Nov-2016 7:5947 DSRTICHardcopy 2.7.32 DSR.Jar v. 3.0.12

Cartridge Evaluation Data Summary Report

Customer Sample ID: 16-08635-1-EFF-F Customer Sample ID: 16-08635-1-EFF-F

Sample Group: 20162992

SDG Number:

Sampled	2 44	AE OC Type Anabyte	Acabda	CAS No	Retention Time	10-01	Describ	Describe Over Dans	
VAPOR-TD	Τš	A #2					TORSON .	200	
\$167034227	-		Undecane	1120-21-4	5.44	NGS	TNL St	INT	
S16T034227	-		Decamethlycyclopentasiloxana	541-02-6	5.71	NGS	Z7 JNT	INT	
S16T034227	-		Decane, 2,4,6-trimethyl-	62108-27-4	689	NGS	7.1	TAL INT	
S16T034227	-	BLNK	Chrysene-D12	1719-03-5	14.03	NGS	17		
S16T034227	-	BLNK	Pervisora-D12	1620.66.3	15.80	NGS	3.0		

U - Less Than Detection Limit

T - Tentatively Identified Compound

Cartridge Evaluation Data Summary Report

Sample Group: 20162992 SDG Number:

08-Nov-2016 7:5847 DSRTICHardoopy 2.7.32 DSR Jar v. 3.0.12

Customer Sample ID: 16-08635-1-EFF-G Customer Sample ID: 16-08635-1-EFF-G

Samples R	2	OC Type	Analyte	CAS No.	Rotention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SYOA#2	WOA							
S16T034228			Cyclotrasiloxane, octametryl	556-67-2	4.38	NGS	120 JNT	JNT
\$16T034228			D-Limonone	5989-27-5	4.86	NGS	26 JNT	JNT
S16T034228			Undecane	1120-21-4	90'9	NGS	120 JNT	JNT
S16T034228			Decane, 2,4,6-trimethyf-	62108-27-4	5.10	NGS	22	54 JNT
S16T034228			Undecane, 2,6-dimethyl-	17301-23-4	5.14	NGS	18	16 JNT
S16T034228			Acetic acid, trifluoro-, 3,7-d	28745-07-5	5.24	NGS	26	26 JNT
S16T034228			2,3-Dimethyldecane	17312-44-6	5.39	NGS	38	34 JNT
S16T034228			Undecane, 4,7-dimethyl-	17301-32-6	5.46	NGS	160 JNT	JNT
S16T034228			Undecano, 4,6-dinethyl-	17312-62-2	5.50	NGS	42 JN1	INI
S16T034228			Decamethly-cyclopentasiloxane	541-02-6	5.72	NGS	75	TS JNT
\$167034228			Undecane, 3-methyl-	1002-43-3	6.05	NGS	1.8 JMT	JNT
S16T034228			Dodecane, 2,7,10-trimethyl-	74645-98-0	6.90	NGS	38	34 JNT
S16T034228			Tridecane, 2-methyl-	1560-96-9	2.07	NGS	16	16 JNT
\$167034228			Undecane, 3,7-dimethyl-	17301-29-0	7.28	NGS	20 JNT	JNT
S16T034228			Undecane, 2-methyl-	7045-71-8	7.33	NGS	13	13 JNT
S16T034228	_	BUNK	Chrysene-D12	1719-03-5	14.03	NGS	17	
S16T034228	Ť	BLNK	Perylens-D12	1520-96-3	15.80	NGS	3.9	

Sample Group: 20162992

SDG Number:

Cartridge Evaluation Data Summary Report

amples R	2	QC Type	Analyse	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2	SVOA	#2						
6T034229			Cyclotetrasiloxane, octamethyl	556-67-2	4,35	NGS	38	NT
67034229			Decane, 2.4,6-trimethyf-	62108-27-4	5.05	NGS	11	NT
67034229			Undecane	1120-21-4	5,44	NGS	22 JNT	NT .
67034229			Decamethlycyclopentasiloxane	541-02-6	5.71	NGS	36 JNT	INT
5T034229			Undecane, 2-methyl-	7045-71-8	7.25	NGS	TNL E1	NT
67034229		BLNK	Chrysene-D12	1719-03-5	14.03	NGS	17	
116T034229		BLNK	Perylene-D12	1523-95-3	15.80	NGS	3.9	

NA = Not Analyzed, ND = Not Detected

J - Estimated

T - Tentatively Identified Compound

U - Less Than Detection Limit

N - Named TIC

Cartridge Evaluation Data Summary Report

Customer Sample ID: 16-08635-1-IN-A Customer Sample ID: 16-08635-1-IN-A

Sample Group: 20162992 SDG Number:

Sample® R	2	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU SVOA #2	SVOA	#2						ı
S16T034230			2-Butonyethanol	111-76-2	3.70	NGS	21	21 JNT
S16T034230			Cyclotetrasiloxane, octamethyl	558-67-2	435	NGS	93	93 JMT
S16T034230			2,2,7,7-Tetramethyloctane	1071-31-4	4.49	NGS	110 JMT	JMT
S16T034230			Decane, 2,5,9-trimethyl-	62108-22-9	4.76	NGS	31	31 JMT
S16T034230			2,2,4,4-TetramePryloctane	62183-79-3	4.82	NGS	38	36 JNT
S16T034230			3,3-Dimethythexane	563-16-6	4.83	NGS	120 JNT	INI
3167034230			Decane, 2,4,6-trimethyl-	62108-27-4	900	NGS	. 12	12 JNT
S16T034230			Hoptano, 5-ethyl-2,2,3-trimeth	62199-06-8	5.14	NGS	25	S7 JNT
3167034230			Undecane	1120-21-4	5.44	NGS	43	INT EI
161034230			Decamethlycyclopentasloxane	541-02-6	5.71	NGS	57	S7 JNT
116T034230			Dodecane, 2,6,11-trimethyl-	31295-55-4	6.89	NGS	15	IS JNT
316T034230			Undecane, 2-methyl-	7045-71-8	7.26	NGS	12	12 JNT
S16T034230		BLNK	Chrysene-D12	1719-03-5	14.03	NGS	17	
3167034230		BLNK	Perylene-D12	1520-98-3	15.80	NGS	3.9	

NA = Not Analyzed, ND = Not Detected J - Estimated

N - Named TIC

U - Less Than Dexection Limit

T - Tentatively Identified Compound

08-Nov-2016 7:5347 DSRTICHardcopy 2.7.32 DSR.Jar v. 3.0.12 Cartridge Evaluation Data Summary Report

Data Summan

Customer Sample ID: 16-08635-1-IN-H Customer Sample ID: 16-08635-1-IN-H

Sample Group: 20162992

SDG Number:

Qual Flags 21 JMT 42 JNT 25 JNT 11 JNT 26 JNT 47 JNT NGS NGS NGS NGS NGS NGS Retention Time (Minutes) 3.71 4.35 5.45 5.71 6.59 6.89 8.18 15.80 541-02-6 272-16-2 62106-27-4 74381-40-1 1719-03-5 1520-96-3 111-76-2 556-67-2 1120-21-4 CAS No. 2-Butoxyethanol Oydotetrasilosane, octamethyl Decamathlycyclopentasiloxana 1,2-Benzisothiazole Decane, 2,4,6-trimethyl-Propanolo acid, 2-methyl-, 1-(Chrysene-D12 'enylene-D12 OC Type BLNK Sample# R A# VAPOR-TDU SVOA #2 \$16T034231 \$16T034231 \$16T034231 \$16T034231 \$16T034231 S16T034231 S16T034231 S16T034231 S16T034231

NA = Not Analyzed, ND = Not Detected

J - Estimated

T - Tentatively Identified Compound

U - Loss Than Detection Limit

C.26

U - Less Than Detection Limit

16 - Nov - 2016 11:08:41 DSR/sndcop/WOLImits 3.0.11b DSR.Jar v, 3.0.12

Cartridge Evaluation Data Summary Report

Sample Group: 20162993

SDG Number: Customer Sample ID: 16-08635-1-BASE-EFF Customer Sample ID: 16-08635-1-BASE-EFF

Sample® R .	AF CASE	Analyte	Unit	% QLS	Blank	Result	Duplicate	Average	RPD %	RPD % Spk Rec %	Det Limit	Det Limit Ont Err % Qual Flags	basi Flags
VAPOR-TDU	SVOA #2												
8167034232	3891-98-3	2,6,10-Trimefry/dodecane	NGS	100	629	<3.9	n,a	n/a	n/a	n/a	3.9	n(s)u	
\$167034232	95-48-7	2-Methylphanol	NGS	96	6,49	649	n/a	n/a	n/a	n/a	4.9	nía	
\$167034232	108-39-4M	Cresol (m & p)	NGS	06	65.6	<5.6	m _j u	n/8	n/a	n/a	9.6	n/a t	
S16T03A232	92-52-4	Bipheryl	NGS	100	0,00	64.0	n,a	e/u	n/a	n/a	4.0	U BJu	
\$167034232	78-45-8	Dibutyl butylphosphonate	NGS	120	3.6	<3.6	n/a	e/u	n/a	n/a	3.6	U e/u	
8167034232	84-68-2	Diethylphthalate	NGS	110	CT.0	<7.0	n'a	n/a	n/a	n/a	7.0	n/a L	
\$167034232	112-40-3	Dodecane	NGS	96	<0.60	14	n'a	n/a	n/a	n/a	0.55	eju	
\$167034232	544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	ri/a	
\$167034232	829-59-4	Tetradecane	NGS	110	33	<3.9	n'a	n/a	n/a	n/a	3.9	n/a t	
\$167034232	126-73-8	Tributyl phosphate	NGS	96	<5.6	<5.6	m'a	n/a	n/a	n/a	9.6	n/a f	
S16T034232	629-50-5	Tridecane	NGS	96	41.6	8.4	n'a	e/u	n/a	n/a	1,6	rie n	
\$167034232	629-78-7	Heptadecane	NGS	100	424	424	m/a	n/s	n/a	n/a	2.4	n/a L	
S16T034232	629-629	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a U	

U - Less Than Detection Limit

Cartridge Evaluation Data Summary Report

16 - Nov - 2016 11:08:41 DSRHandoop/WDLimis 3.0.11b DSR Jar v. 3.0.12

Sample Group: 20162993
SDG Number:
Customer Sample ID: 16-08635-1-BASE-IN
Customer Sample ID: 16-08635-1-BASE-IN

Samples R	Af CAS#	Analyte	Unit	\$ 0.15	Blank	Result	Duplicate	Average	-	RPD % Spk Rec %	Det Limit	Cnt Err % Qual Flags	bust Flags
VAPOR-TDU	SVOA IIZ												T
S16T034233	3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	e/u	3.9	U a'e	
S16T034233	95-48-7	2-Methylphonol	NGS	110	6.43	64.9	n/a	n/a	n/a	n/a	6.9		
\$167034233	108-39-4M	Cresol (m & p)	NGS	120	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	n'a	
\$167034233	92-52-4	Biphenyi	NGS	100	C4.0	c4.0	n/a	n/a	n/a	n/a	4.0	n'a	
\$167034233	78-46-6	Dibutyf butyfphosphonate	NGS	120	<3.6	<3,6	n/a	n/a	n/a	n/a	3.6	n's	
S16T034233	84-66-2	Diethylphthalate	NGS	100	<7.0	<7.0		n/a	n/a		7.0		
\$167034233	112-40-3	Dodecane	NGS	100	<0.60	5.9	n/a	n/a	n/a		0.55	2,0	
S16T034233	544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	e/a	e/u	n/a		3.3	J. B.W.	
S16T034233	629-59-4	Tetradecane	NGS	100	<3.9	<3.9	n/a	n/a	n/a		3.9		
S16T034233	126-73-8	Tributyl phosphate	NGS	96	<5.8	45.6	n/a	n/a	n/a	n/a	5.6	U B/W	
S16T034233	829-80-8	Triclecane	NGS	100	e1.6	4.0	n/a	n/a	n/a	n/a	1.6	n'a	
S16T034233	629-78-7	Hoptadecane	NGS	120	424	<2.4	n/a	n/a	n/a	n/a	2.4		
S16T034233	829-62-9	Pentadecano	NGS	120	<3.0	<3.0	n/a	n/a	n/a		3.0	U a'm	

J - Essmated

U - Less Than Detection Limit

Cartridge Evaluation Data Summary Report

16 - Nov - 2016 11:08:41 DSRHardcopyWOLImits 3.0.11b DSR.Jer v. 3.0.12

Sample Group: 20162993 SDG Number: Customer Sample ID: 16-08635-1-BLANK1 Customer Sample ID: 16-08635-1-BLANK1

Samples R	Ad CASE	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	RPD % Spk Rec %	Det Umit	Crt Err S Qual Flags
VAPOR-TDU SVC	SVON #2										1	
S16T034234	3891-98-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	n/a	n/a	r/a	3.9	n/a U
S16T034234	95-48-7	2-Methylphenol	SDN	110	649	649	nla	n/a	n/a	r/a	4.9	n/a U
\$167034234	108-39-4M	Cresol (m & p)	NGS	120	<5.6	<5.6	alva .	n/a	nla	r/a	6.6	n/a U
S16T034234	92-52-4	Biphenyl	NGS	100	0.40	<4.0	nla	n/a	nla	r/a	4.0	n/a U
S16T034234	78-46-6	Dibutyl butylphosphanate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	r/a	3.6	n/a U
\$167034234	84-66-2	Diethylphthalate	NGS	100	0.70	0.7>	n/a	n/a	nia	rita	7.0	n/a U
S16T034234	112-40-3	Dodecana	NGS	100	09'0>	1.1	n/a	n/a	n/a	n/a	0.55	n/a J
\$167034234	544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/a	n/a	nla	nya	3.3	Uchn
S15T034234	629-59-4	Tetradecane	NGS	100	<3.9	43.9	n/a	n/a	nla	r/a	3.9	n/a U
S16T034234	128-73-8	Tributyl phosphate	NGS	94	<5.6	<5.6	n/a	n/a	nía	n/a	5.6	n/a U
\$167034234	629-50-5	Tridecane	SDN	100	61,6	<1.6	n/a	n/a	nla	ría	1.6	n/a U
S16T034234	629-78-7	Meptadecane	NGS	120	424	<2.4	nla	n/a	n/a	r/a	2.4	n/a U
S16T034234	629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	nla	rya	3.0	n/a U

J - Estimated

U - Less Than Detection Limit

Cartridge Evaluation Data Summary Report

16 - Nov - 2016 11:08:41 DSRHardoop/WOLimits 3.0.11b DSR Jar v. 3.0.12

Sample Group: 20162993
SDG Number:
Customer Sample ID: 16-08635-1-BLANK2
Customer Sample ID: 16-08635-1-BLANK2

Samples R	R AF CAS#	Analyte	Unit	% QTS	Blank	Result	Duplicate	Average	RPD %	RPD % Spk Rec %	Det Limit C	Det Limit Ont Err % Qual Flags
VAPOR-TDU SVOA #	U SVOA #2											
S16T034235	3891-98-3	2.6.10-Trimethy/dodecane	NGS	110	<3.9	<3.9	e/a	n/a	n/a	n/a	3.9	n'a U
S16T034235	95-48-7	2-Methylphenoi	NGS	110	6.43	64.9	n/a		n/a	n/a	6.9	n/a U
S16T034235	108-39-4M	Cresol (m & p)	NGS	120	<5.6	45.6	n/a		n/a	1/8	979	n/a U
S16T034235	92-52-4	Biphenyl	NGS	100	64.0	c4.0	e/a	n/a	n/a	e/a	4.0	n/a U
\$16T034235	73-45-6	Dibutyf butyfphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a	n/a	3.6	n/a U
S16T034235	84-66-2	Diethylphthalate	NGS	100	<7.0	<7.0	n'a	n/a	n/a	n/a	7.0	n/a U
\$16T034235	112-40-3	Dodecane	NGS	100	<0.60	0.80	n/a	n/a	n/a	n/a	0.55	n/a J
S16T034235	544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n'a	n/s	n/a	e/u	3.3	n/a U
S16T034235	629-59-4	Tetradecane	NGS	100	<3.9	<3.9	m/a	n/a	n/a	r/a	3.9	n/a U
\$167034235	126-73-8	Tributyl phosphate	NGS	26	<5.6	<5.6	n/a	nís	n/a	r/a	5.6	n/a U
S16T034235	629-50-5	Tridecane	NGS	100	61.8	<1.6	n'a	n/a	n/a	1/9	1.6	n/a U
\$167034235	629-78-7	Heptadecane	NGS	120	424	424	m's	n/a	n/a	n/a	2.4	n/a U
\$167034235	629-629	Pentadecane	NGS	120	<3.0	<3.0	n'a	nla	8/0	n/a	3.0	n/a lU

U - Loss Than Detection Limit

16 - Nov - 2016 11:08:41 DSRNardoopyWCLmits 3.0.11b DSR.Jar v. 3.0.12

Cartridge Evaluation Data Summary Report

Sample Group: 20162993 SDG Number: Customer Sample ID: 16-08635-1-IN-C Customer Sample ID: 16-08635-1-IN-C

Samples R	Ad CAS #	Analyte	Unit	% OTS	Blank	Result	Duplicate	Average	RPD % Spk Rec %	k Rec %	Dot Umit	Cot Err % Qual Flags
VAPOR-TDU SVOA #	SVOA #2					1				1		
S16T034237	3891-98-3	2,6,10-Trimethyldodecane	NGS	36	<3.9	<3.9	e/u	n/a	e/u	n/a	3.9	Ulahu
S16T034237	85-48-7	2-Methylphenol	MGS	110	6.49	64.9	n/s	n/a	n/a	n/a	4.9	nau
S16T034237	108-39-4M	A Cresol (m & p)	NGS	110	65.8	e5.6	n/a	n/a	e/u	n/a	9.6	ntaU
S16T034237	92-52-4	Biphenyl	NGS	06	0,40	64.0	n/a	nía	n/a	n/a	4.0	n/a U
S16T034237	78-46-6	Dibutyl butylphosphonate	MGS	86	43.6	<3.6	n/a	nía	n/a	n/a	3.6	n/a U
S16T034237	84-66-2	Diethylphthalate	NGS	88	<7.0	67.0	n/s	nla	n/a	n/a	7.0	n/a U
S16T034237	112-40-3	Dedecane	NGS	100	<0.60	20	n/a	nia	n/a	n/a	0.55	nia
S16T034237	544-76-3	Hexadecane-	NGS	76	43	<3.3	n/a	nla	nyu	n/n	3.3	n/a U
S16T034237	629-59-4	Tetradecana	NGS	76	9.5	8.6	n/a	n/a	nía	n/a	3.9	n/a J
S16T034237	126-73-8	Tributyl phosphate	NGS	78	65.6	<6.6	n/a	nía	nís	n/a	5.6	n/a U
S16T034237	629-50-5	Tricecane	NGS	96	41.6	10	n/a	n/a	n/a	n/a	1.6	nja
S16T034237	629-78-7	Haptadecane	NGS	96	42.4	424	n/a	nia	- Byu	n/a	2.4	n/a U
S16T034237	629-62-9	Pentadecane	NGS	88	30	3.2	nka	nla	n/a	n/a	3.0	n/a J

U - Less Than Detection Limit

Cartridge Evaluation Data Summary Report

16 - Nov - 2016 11:08:41 DSR-landcopyWOLImits 3.0:11b DSR-lan v. 3.0:12

Sample Group: 20162993 SDG Number: Customer Sample ID: 16-08635-1-IN-D Customer Sample ID: 16-08635-1-IN-D

Secretary of A	1		Acceptor			1	-	-					I	
anduse v	}	CASB	Antakto	aun	STD %	Blank	Result	Duplicate	Average	RPO %	RPO % Spk Rec %	Det Cimit	Crt Err % Qual Flags	Sual Flags
VAPOR-TDU SVOA #2	USV	OA #2												
S16T034238		3891-98-3	2,6,10-Trimethyldodecane	NGS	85	<3.9	<3.9	ela	n/a	nía	n/a	3.9	n/a L	
S16T034238		95-48-7	2-Methylphenol	NGS	510	642	679	eku	n/a	nía		4.9	n/a l	
S16T034238		108-39-4M	Cresal (m & p)	NGS	110	<5.6	9'5>	n/a	n/a	nía		5.6	n/a	
S16T034238		92-52-4	Biphenyl	NGS	06	0.45	<4.0	alu	n/a	nía	n/a	4.0	n/a L	-
S16T034238		78-46-6	Dibutyl butylphosphonate	NGS	98	<3.6	<3.6	a/u	n/a	n/a		3.6	Ualu	
S16T034238		84-66-2	Diethylphthalate	NGS	88	<7.0	<7.0	9,4	n/a	nía		7.0	Uebu	
S18T034238		11240-3	Dodecane	NGS	100	09'0>	30	n/a	n/a	n/a	nia	0.55	n/a	
S16T034238		544.76.3	Hecadocano-	NGS	8	<3.3	<3.3	e/a	n/a	n/a		3.3	Univ	
S16T034238		629-59-4	Tetradocano	NGS	86	<3.9	42	e/u	n/s	nía		3.9	n/a	
S16T034238		126-73-8	Tributyl phosphate	NGS	78	<5.6	9'5>	9,0	n/a	n/a		5.6	n/a l	
S16T034238		909-629	Tridecane	NGS	86	<1.6	10	n/a	n/a	n/a	n/a	1.6	n/a	
S16T034238		629-78-7	Heptadecene	NGS	96	424	424	2,2	n/a	n/a		2.4	U/s/U	
S16T034238		629-62-9	Pentadecame	NGS	98	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a ∪	-

U - Less Than Detection Limit

Cartridge Evaluation Data Summary Report

16 - Nov - 2016 11:08:41 DSRHardcopy/NOLimits 3.0.11b DSRJar v. 3.0.12

Sample Group: 20162993 SDG Number: Customer Sample ID: 16-08635-1-IN-E Customer Sample ID: 16-08635-1-IN-E

Samples R.	A CAS	Analyte	Unit	% OTS	Blank	Result	Duplicate	Average	RPD %	Spk Red %	Det Limit	Cot Ear % Qual Flags	18
VAPOR-TDU SVOA #	J SVOA #2												T
S16T034239	3891-98-3	2,6,10-Trimethy/dodecane	NGS	92	6.5	<3.9	n/a	n/a	n/a	n/a	3.9	nalu	Т
S16T034239	85-48-7	2-Methylphenol	NGS	110	64.9	<4.9	nla	n/a	n/a	e/u	4.9		Т
S16T034239	108-39-4M	Cresol (m & p)	NGS	110	<5.6	45.8	nla	n/a	nla	n/a	5.6		Г
S16T034239	92-52-4	Biphenyl	NGS	06	0.40	<4.0	n/a	n/a	nla	e/u	4.0		T
S16T034239	78-46-6	Dibutyl butylphosphonate	NGS	88	<3.6	<3.6	chr	n/a	nla	n/a	3.6		Г
S16T034239	84-66-2	Diethylphthalate	NGS	88	<7.0	C.7.0	n/a	n/a	D/G	n/a	7.0		Т
S16T034239	112-40-3	Dodecane	NGS	100	<0.60	9.7	nla	n/a	nla	n/a	0.55		Г
S16T034239	544-76-3	Hexadocane-	NCS	8	33	<3.3	nya	nya	nya	n/a	3.3	Uleyu	Т
S16T034239	629-59-4	Tetradocana	NGS	26	3.9	6.2	nya	n/a	n/a	n/a	3.9		Г
S16T034239	126-73-8	Tributyl phosphate	NGS	7.8	9.6	<6.6	nya	n/a	n/a	n/a	5.6	r/a U	Г
S16T034239	629-50-5	Tridecane	NGS	36	61.8	4.0	n/a	n/a	n/a	n/a	1.6		Г
S16T034239	629-76-7	Heptadecane	NGS	96	424	42.4	n/a	n/a	nla	n/a	2.4	n/a/U	Г
S16T034239	629-62-9	Pentadecane	NGS	96	930	<3.0	rya	nla	nla	n/a	3.0		Т

U - Less Than Detection Limit

Cartridge Evaluation Data Summary Report

16 - Nov - 2016 11:08:41 DSRHardcop/WOLInibs 3:0.11b DSR.Jer v, 3:0.12

Sample Group: 20162993 SDG Number: Customer Sample ID: 16-08635-1-IN-F Customer Sample ID: 16-08635-1-IN-F

Sampled R	A CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPO % Sak Rec %	K Rec %	Det Limit	Cot Err % Oual Flaos
VAPOR-TDU	SVOA #2									1		
S16T034240	3891-98-3	2,6,10-Trimethy/dodecane	NGS	35	6.5	<3.9	na	n/a	nla	nla	3.9	n/alu
S16T034240	95-48-7	2-Methylphenol	NGS	110	44.9	6,45	n/a	n/a	n/a	n/a	4.9	
S16T034240	108-39-4M	Cresol (m 8 p)	NGS	110	45.8	45.6	n/a	n/a	n/a	nla	5.6	
S16T034240	92-52-4	Biphenyl	NGS	80	44.0	64.0	n/a	n/a	nla	nla	4.0	n/a U
S16T034240	78-46-6	Dibutyl butylphosphonate	NGS	98	43.6	43.6	n/a	n/a	n/a	alu	3.6	n/a U
S16T034240	84-66-2	Diethylphthalate	NGS	88	47.0	47.0	n/a	n/a	n/a	nya	7.0	n/a/U
S16T034240	112-40-3	Dodecane	NGS	100	×0.60	29	n/a	n/a		nla	0.65	n/a
S16T034240	544-76-3	Hexadecane-	NGS	26	<3.3	<3.3	n/a	a'a		alu	3.3	n/a U
S16T034240	629-59-4	Tetradecane	NGS	8	63.9	<3.9	n/a	n/a	n/a	alu	3.9	Us/u
S16T034240	126-73-8	Tributyl phosphate	NOS	78	×5.6	<5.6	n/a	n/a	n/a	nla	5.6	Ua/u
S16T034240	629-50-5	Tridecane	NGS	88	41.6	6.5	n/a	9,0	n/a	nla	1.6	n/a J
S16T034240	629-78-7	Heptadecane	NGS	98	42.4	424	n/a	n/a	n/a	nia	2.4	n/a U
S16T034240	629-62-9	Pentadacane	NGS	98	<3.0	<3.0	n/a	n's	n/a	nya	3.0	

U - Less Than Detection Limit

Cartridge Evaluation Data Summary Report

16 - Nov - 2016 11:03:41 DSRHardopy/WCLinits 3:0.11b DSRJar v, 3:0.12

Sample Group: 20162993 SDG Number: Customer Sample ID: 16-08635-1-IN-G Customer Sample ID: 16-08635-1-IN-G

Sample# R	Ad CAS	2 2	Analyte	Unit	S OLS	Blank	Result	Duplicate	Average	RPD 16	Sok Rec %	Det Limit	Det Limit Cot Fay % Ouat Steep
VAPOR-TDU SVOA#2	U SVOA #	22											-
S16T034241	388	3691-96-3	2,6,10-Trimethyldodecane	NGS	35	<3.9	<3.9	n/a	n/a	n/a	nis	3.9	n/alu
S16T034241	85-4	95-48-7	2-Methylphenal	NGS	110	44.9	64.9	n/a	n/a	n/a		4.9	n'a U
S16T034241	108	08-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/8	n/a	n/a		5.6	n/s/U
S16T034241	95-5	2-52-4	Biphenyl	NGS	8	<4.0	<4.0	n/a	n/a	n/s		4.0	n/a U
S16T034241	767	18-45-6	Othurly buty/phosphonate	NGS	150	<3.6	<3.6	n/a	n/a	n/a		3.6	n/a []
S16T034241	84-6	4-66-2	Diethylphthalate	NGS	88	<7.0	<7.0	n/a	n/a	n/a		7.0	n/a [J
\$167034241	112	112-40-3	Dodecane	NGS	1001	<0.60	18	n/a	nía	n/a		0.55	nia
S16T034241	544	44-76-3	Hexadecane-	NGS	8	<3.3	<3.3	slo	nla	n/a		3.3	ria li
S16T034241	629	29-59-4	Tetradecare	NGS	8	<3.9	<3.9	nfa	n/a		n/a	3.9	riali
\$167034241	126	26-73-8	Tributyl phosphate	NGS	78	9'9>	<5.6	n/a	n/a			5.6	rial)
S16T034241	629	29-50-5	Tridecane	NGS	96	×1.6	5.3	nla	nla	e/u		1.8	n/a l
S16T034241	629	529-78-7	Heptadecane	NGS	96	42.4	42.4	n/a		n/a		2.4	riali
S16T034241	629	29-62-9	Pentadocane	NGS	98	<3.0	43.0	nia	n/a	n/a		3.0	n/a/U

22 - Nav - 2016 11:01:54 DSRHerdcopy/VOLIMBs 3.0.13 DSR.Jar v. 3.0.12

Sample Group: 20162994 SDG Number:

Customer Sample ID: 16-08636-1-EFF-A Customer Sample ID: 16-08636-1-EFF-A

Cartridge Evaluation Data Summary Report

ample# R	AU CASE	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	_	RPD 14. Spk Rec 14		Cert Err %	Det Limit Cet Err % Qual Flags
VAPOR-TDU SVOA #2	U SVOA #2												
S16T034242	3891-98-3	2,8,10-Trimethyfdodecane	NGS	110	43.9	<3.9	m'a	e/u	n/a	n/a	3.9	U ava	a
S16T034242	95-48-7	2-Methylphenol	NGS	110	670	64.9	n'a	n/a	n/a	n/a	4.9	n/a	2
167034242	108-39-4M	Cresol (m & p)	NGS	110	5.6	<5.6	m/a	n/a	n/a	n/a	5.6	n/a t	2
S16T034242	92-52-4	Biphenyl	NGS	110	0.40	<4.0	9/6	n/a	n/a	n/a	6.0		2
S16T034242	78-45-6	Dibutyl butylphosphonate	NGS	120	3.6	<3.6	2,0	e/u	a/a	n/a	3.6	U e/u	2
167034242	34-65-2	Diethylphthalate	NGS	120	<7.0	<7.0	B/B	n/a	n/a	n/a	7.0	n/a L	2
16T034242	112-40-3	Dodecane	NGS	100	<0.60	12	2,0	n/a	n/a	n/a	0.55	n/a	
S16T034242	544-76-3	Некабесале-	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	8.8	nia	2
16T034242	829-59-4	Tetradecane	NGS	120	<3.9	<3.9	m/a	n/a	n/a	n/a	3.9	T G/U	2
S16T034242	126-73-8	Tributy/i phosphate	NGS	8	<5.6	<5.6	e,u	e/u	n/a	n/a	5.6		2
S16T034242	829-80-8	Tridecane	NGS	97	c1.6	6.9	m/a	n/a	n/a	n/a	1,6	L Birn	_
S16T034242	829-78-7	Heptadecane	NGS	97	424	<2.4	m/a	n/a	n/a	n/a	2.4	n'a	2
116T034242	629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	U s/u	2

NA = Not Analyzed, ND = Not Detected T - Tentatively Identified Compound

J - Estimated

N - Named TIC

U - Less Than Detection Limit

C.36

Cartridge Evaluation Data Summary Report

Sample Group: 20162994

SDG Number: Customer Sample ID: 16-08636-1-EFF-B Customer Sample ID: 16-08636-1-EFF-B

Sample# R	AF CAS#	Analyte	Unit	% OTS	Edank	Result	Duplicate	Avenge	_	RPD % Spk Rec %	DetLimit	Cot Err % Qual Flags
VAPOR-TDU SVOA #2	U SVOA #2											
5167034243	3891-58-3	2,6,10-Trimethyldodecane	NGS	110	939	639	nla	nla	n/s	n/a	3.9	Ulan
5167034243	95-48-7	2-Methylphenol	NGS	110	6,49	64.9	nta	n/a	nla	n/a	4.9	
316T034243	108-39-4M	Cresol (m & p)	NGS	110	6.65	6.6	n/a	n/a	n/a	n/a	5.6	
161034243	92-52-4	Biphenyl	NGS	110	64.0	64.0	n/a	n/a	nia	n/a	4.0	n/a U
1167034243	78-46-6	Dibutyl butylphosphonate	NGS	120	43.6	3.5	n/a	n/a	n/a	n/a	3.6	n/a U
1167034243	84-66-2	Diethylphthalate	NGS	120	0.0>	67.0	rva	n/a	n/a	n/a	7.0	
16T034243	112-40-3	Dodectine	NGS	100	09′0>	19	n/a	n/a	eku	n/a	0.55	
16T034243	544-76-3	Hexadecane-	NGS	120	43.3	433	n/a	n/a	cyc	n/n	3.3	n/a U
116T034243	629-59-4	Tetradecane	NGS	120	43.9	9.50	n/u	n/a	nya	nta	3.9	n/a U
116T034243	126-73-8	Tributyl phosphate	NGS	26	45.6	45.6	r/a	n/a	nte	n/a	5.6	Nalu
116T034243	829-50-5	Tridecane	NGS	26	61,8	9.2	n/a	n/a	nta	n/8	1.6	Na.J
16T034243	629-78-7	Heptadecane	NGS	26	42.4	2.4	rVa	n/a	cha	n/a	2.4	n/s U
116T034243	629-62-9	Pentadecane	NGS	120	<3.0	<3.0	1/3	n'a	nta	n/a	3.0	

NA = Not Analyzed, ND = Not Detected T - Tentatively Identified Compound

N - Named TIC

J - Estimated

Cartridge Evaluation Data Summary Report

Sample Group: 20162994
SDG Number:
Customer Sample ID: 16-08636-1-EFF-C
Customer Sample ID: 16-08636-1-EFF-C

VADOD-TIN			-			-	Nonday.	- Availage	to many wides at the part			CHI CH 36 WARE FIRST
ALL CALL DA	VAPOR-TDU SVOA #2											
S16T034244	3891-98-3	2,6,10-Trimethyldodecane	NGS	110	939	4.7	n/a	n/a	nia	n/a	3.9	n/a J
S16T034244	95-48-7	2-Methylphenol	NGS	110	6,40	649	n/a	a/u	nla	n/a	4.3	n/a U
S16T034244	108-39-4M	Cresol (m & p)	NGS	110	9.5>	9.8	n/a	n/a	nía	n/a	5.6	Na U
S16T034244	92-52-4	Biphonyl	NGS	110	040	040	n/a	n/a	n/s	n/a	4.0	n/a U
S16T034244	78-46-6	Dibutyl butylphosphonate	NGS	120	979	3.6	n/a	n/a	n/a	n/a	3.6	n/a U
S16T034244	84-66-2	Diethylphthalate	NGS	120	0.70	<7.0	n/a	nle	n/a	n/a	7.0	n/a U
S16T034244	112-40-3	Dodecane	NGS	100	09'0>	19	n/a	nla	nla	n/B	0.55	n/s
S16T034244	544-76-3	Hexadecane-	NGS	120	433	683	n/a	n/e	nfa	e/u	3.3	Na U
S16T034244	829-59-4	Tetradecane	NGS	120	939	8.4	n/a	n/a	nya	n/a	3.9	L eln
S16T034244	126-73-8	Tributyl phosphate	NGS	8	979	45.6	n/a	n/a	rvla	n/a	5.6	n/a/U
S15T034244	629-50-5	Tridecane	NGS	97	<1.6	11	n/a	n/a	n/a	n/a	1.6	n/a
S16T034244	629-78-7	Heptadecane	NGS	16	24	424	n/a	n/a	rya	n/a	24	n/a U
S16T034244	629-62-9	Pentadecane	NGS	120	900	3.0	n/a	n/a	nla	n/a	3.0	n/a J

NA = Not Analyzed, ND = Not Detected T - Tentatively Identified Compound

N - Named TIC

J - Estimated

Sample Group: 20162994
SDG Number:
Customer Sample ID: 16-08636-1-EFF-D
Customer Sample ID: 16-08636-1-EFF-D

sampled R	M CAS#	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	RPD % Spk Rec %	Det Limit	Det Limit Cnt Err 1/2 Qual Flags
VAPOR-TDU SVDA #2	SVOA #2											
316T034245	3391-98-3	2,6,10-Trimethyfdodecane	NGS	110	<3.9	<3.9	n/a	nía	n/a	n/a	3.9	U sku
116T034245	95-48-7	2-Methy/phenol	NGS	110	6,40	6.43	n/a	n/a	n/a	n/a	6.9	D syn
1167034245	108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	D Spu
116T034245	92-52-4	Bipheryl	NGS	110	040	0.40	e/u	n/a	n/a	n/a	4.0	m'a U
116T034245	78-48-6	Dibutyf butyfphosphonate	NGS	120	3.6	<3.6	m/a	nía	n/a	n/a	3.6	n/a U
1167034245	34-66-2	Diethyfphthalate	NGS	120	c7.0	<7.0	n/a	n/a	n/a	n/a	7.0	D s/u
16T034245	112-40-3	Dodecane	NGS	100	<0.60	11	n/a	n/a	n/a	n/a	0.55	n'a
116T034245	544-76-3	Haxadecane-	NGS	120	433	<3.3	n/a	n/a	n/a	n/a	3.3	n/a U
1167034245	629-59-4	Tetradecane	NGS	120	939	<3.9	n/a	nta	n'a	n/a	3.9	ova U
16T034245	126-73-8	Tributyl phosphate	NGS	76	65.6	<5.6	m'a	n/a	6/0	n/a	5.6	n/a U
116T034245	629-50-5	Tridecane	NGS	97	c1.6	6.7	n'a	n/a	m/a	n/a	1.6	L e/n
16T034245	629-78-7	Heptadocane	NGS	16	424	<2.4	n/a	n/a	2/6	n/a	2.4	U alu
1167034245	629-62-9	Pentadecane	NGS	120	3.0	<3.0	10/20	nla	e/u	n/a	3.0	the to

NA = Not Analyzed, ND = Not Detected T - Tentatively Identified Compound

N - Named TIC

J - Estimated

Customer Sample ID: 16-08636-1-EFF-E

S16T034246 S16T034246

167034248

\$16T034246 S16T034246 S16T034246

316T034246 16T034246 16T034246

316T034246

S16T034246 S16T034246

Customer Sample ID: 16-08636-1-EFF-E

Sample Group: 20162994

SDG Number:

N - Named TIC

22 - Nov - 2016 11:01:54 DSRHardospyWOLimits 3.0.13 DSR.Jar v. 3.0.12

Cartridge Evaluation Data Summary Report

Sample Group: 20162994

SDG Number: Customer Sample ID: 16-08636-1-EFF-F Customer Sample ID: 16-08636-1-EFF-F

Samples R	AF CAS#	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	RPD % Spk Rec %	Det Limit	Det Limit Cot Err % Qual Flags	Flags
VAPOR-TDU SVOA #2	J SVON #2												1
S16T034247	3891-98-3	2,6,10-Trimethydodecane	NGS	110	43.9	€3.9	n/a	n/a	n/a	n/a	3.9	U av	l
S16T034247	95-48-7	2-Methylphenol	NGS	110	6,49	6,49	n/a	n/a	n/a	n/a	4.9	n/a U	
S16T034247	108-39-4M		NGS	110	999	9.65	n/a	n/a	n/a	n/a	5.8	n/a U	Г
S16T034247	92-52-4	Biphonyl	NGS	110	0,40	64.0	n/a	n/a	n/a	nía	4.0	UaV	
S16T034247	78-46-6	Dibuty butyphosphonate	NGS	120	3.6	3.6	n/a	n/a	rva	n/a	3.6	Us/u	
S16T034247	84-66-2	Diethylphtralate	NGS	120	47.0	<7.0	n/a	n/a	n/a	n/a	7.0	NeO	ı
S16T034247	112-40-3	Dodecane	NGS	100	40.60	00	n/a	n/a	n/a	n/a	0.55	nla	ı
S16T034247	544-78-3	Hexadecane-	NGS	120	43.3	433	n/a	2/2	n/a	n/s	3.3		
S16T034247	829-59-4	Tetradecane	NGS	120	43.9	43.9	n/a	n/a	n/a	n/a	3.9		
S16T034247	126-73-8	Tributyl phosphate	NGS	26	\$\$	6.68	n/a	n/a	n/a	n/a	5.6	n/a U	
S16T034247	829-50-5	Tridecane	NGS	26	61.6	8.1	n/a	n/a	n/a	n/a	1.6	L'elu	
S16T034247	629-78-7	Heptadecare	NGS	26	424	2.4	n/a	n/a	n/a	n/a	2.4	n/s U	
\$161034247	629-62-8	Pentadecane	NGS	120	3.0	300	n/a	n/a	n/a	n/a	3.0	Dish	

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NA = Not Analyzed, ND = Not Detected T - Tentatively Identified Compound

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J - Estimated

Cartridge Evaluation Data Summary Report

Sample Group: 20162994
SDG Number:
Customer Sample ID: 16-08636-1-EFF-G
Customer Sample ID: 16-08636-1-EFF-G

10-Trimethyldodecare NGS 110 <3.9	Sample# R	2	R Ad CAS #	Analytia	Unit	# ous	Blank	Result	Duplicate	Average	RPD %	RPD % Spk Rec %	Dot Limit	Det Limit Cet Err % Qual Flags
9891-98-3 2.6, 10-Trimethyldodecame NGS 110 <3.9 <3.9 n/a n/a n/a n/a 95-48-7 2-Methylchemol NGS 110 <4.9	VAPOR-TD	SO	/OA #2											
95-48-7 2-Methylphenol NGS 110 <4,9 <4,9 nia	S16T034248	Н	3891-98-3	10-TH	NGS	110	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/s/u
106-39-4M Creasel (m & p) NGS 110 <6.6 <5.6 n/a n/a n/a n/a 92-52-4 Biphrenyl NGS 110 <4.0	S16T034248		95-48-7	2-Methylphenol	NGS	110	67%	64.9	n/a	n/a	n/s		4.9	Ualu
92-52-4 Biphrenyl NGS 110 <4,0 <10 rula rula	S16T034248		106-39-4M	Cresol (m & p)	NGS	110	6.6>	<5.6	n/a		n/B		5.6	Ua/u
78-48-6 Ditutyl butylphosphonate NGS 120 <3.6 <16 nia ni	S16T034248		92-55-4	Biphornyl	NGS	110	0770	0.40	n/s	n/a	e/u		4.0	n/a U
84-68-2 Clienthydpithtialable NGS 120 <7.0 <7.0 nia	S16T034248		78-48-8	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	nía	n/a	n/a	3.6	
112-46-3 Dodecare MGS 100 <0,60 30 n/s	S16T034248		84-69-2	Diethylphthalate	NGS	120	<7.0	<7.0	n/a	n/a	n/a	n/a	7.0	
544-76-3 Hexadecane- MGS 120 <3.3 <3.1 n la n la	S16T034248		112-40-3	Dedecane	NGS	100	<0.60	30	n/a	n/a	n/a	n/a	0.55	n/a
629-59-4 Tetradocane NGS 120 <3.9 <3.0 nIa	S16T034248		544-76-3	Hexadocane-	NGS	120	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	Ualu
126-73-8 Tributyli phosphate NGS 94 <5.6 <5.6 <18 n/s n/s n/s 529-50-5 Tridecane NGS 97 <1.6	S16T034248		629-59-4	Tetradecane	MGS	120	9.5	<3.9	n/a	nla	n/a	n/a	3.9	n/a U
529-50-5 Tridecane NGS 97 <1.6 4.1 n/s n/s n/s n/s 529-76-7 Heptadecane NGS 97 <2.4	S16T034248	27.5	126-73-8	1.00	NGS	76	979	<5.6	. n/a	nía	nía	n/n	5.8	n/a U
S29-76-7 Heptadecare NGS 97 <2.4 <2.4 n/s n/s n/s S29-62-9 Pentadecare NGS 120 <3.0	S16T034248		629-50-5		NGS	97	41.6	4.1	n/a	n/a	n/a	n/a	1.6	nia J
\$29-62-9 Pentadecare NGS 120 <3.0 <10 n/s n/s n/s n/s n/s	S16T034248		629-76-7	Heptadecane	NGS	97	424	42.4	n/a	n/a	n/a	n/n	2.4	niaU
	S16T034248	L	629-629	96	NGS	120	3.0	<3.0	nía	n/a	n/a	n/a	3.0	n/a U

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N - Named TIC

U - Less Than Detection Limit

Cartridge Evaluation Data Summary Report

Sample Group: 20162994
SDG Number:
Customer Sample ID: 16-08636-1-EFF-H
Customer Sample ID: 16-08636-1-EFF-H

Sample# R	Ad CAS #	Analyte	Unit	% QLS	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Det Limit Cot Err % Qual Flags
VAPOR-TDU SVOA #	SVOA #2											
8167034249	3891-98-3	2,6,10-Trimethyldodecane	NGS	110	939	<3.9	rVa	n/a	n/a	n/a	3.9	n/a U
S16T034249	95-48-7	2-Methylphenol	NGS	110	64.9	6.45	nfa	n/a	e/u	nya	4.9	
8167034249	108-39-4M	Cresol (m & p)	NGS	110	<6.6	6.65	rva	n/a	e/u	n/a	5.6	
S16T034249	92-52-4	Biphenyl	NGS	110	64.0	0.50	n/a	n/a	n/a	n/a	4.0	
S16T03A249	78-45-6	Dibutyl butylphosphonate	NGS	120	3.6	43.6	n/a	n/a	e/u	n/a	3.6	
S16T034249	84-66-2	Diethyphthalate	NGS	120	0.7>	<7.0	r/a	n/a	n/a	n/a	7.0	
S16T034249	112-40-3	Dodecane	NGS	100	40.80	12	rya	n/a	e/u	n/a	0.55	
S16T034249	544-76-3	Hexadocano-	NGS	120	433	433	n/a	n/a	n/a	n/a	3.3	
8167034249	629-59-4	Tetradocane	NGS	120	43.9	6.85	e/u	nla	e/u	c/v	3.9	
S16T034249	126-73-8	Tributyl phosphate	NGS	76	999	6.6.8	n/a	n/a	n/a	n/a	5.6	n/a U
S16T034249	629-50-5	Tridecane	NGS	97	61.6	5.5	rVa	n/a	n/a	n/a	1.6	
S16T034249	629-78-7	Heptadecane	NGS	26	424	424	n/a	n/a	n/a	n/a	2.4	
8161034249	629-62-9	Pentadecane	NGS	120	3.0	3.0	n/a	n/a	e)ru	n/a	3.0	

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J - Estimated

Cartridge Evaluation Data Summary Report

Sample Group: 20162994 SDG Number: Customer Sample ID: 16-08636-1-IN-A Customer Sample ID: 16-08636-1-IN-A

Samples 8	Ad CASE	Analyte	Unit	\$40TS	Blank	Result	Duplicate	Average	RPD % 3	RPD % Spk Rec %	Det Limit	Cnt Err % Qual Flags
VAPOR-TDU SVOA IIC	U SVOA #2								1			
8167034250	3891-88-3	2,6,10-Trimethyldodecane	NGS	110	<3.9	<3.9	ala	n/a	nla	nta	3.9	n/a[U
\$167034250	95-48-7	2-Methylphenol	SDN	110	6,50	6,45	n/a	n/a	nia	n/a	4.9	
\$167034250	108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/s	n/a	nla	r/a	5.6	
S16T034250	92-52-4	Biphenyl	SDN	110	<4.0	<4.0	n/a	n/a	nia	n/a	4.0	U eva
S16T034250	78-45-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	nla	n/a	3.6	Ughu
S16T034250	84-68-2	Diethyphthalate	NGS	120	0.75	<7.0	ela	n/a	nla	n/a	7.0	Uleva
S16T034250	112-40-3	Dodecane	NGS	100	09'0>	13	n/a	n/a	nle	n/a	0.55	n/a
S18T034250	544-76-3	Hexadecane-	NGS	120	<33	<3.3	alu a	n/a	n/a	n/a	3.3	n/a U
\$167034250	629-59-4	Tetradecane	NGS	120	<3.9	<3.9	n/a	n/a	nla	n/a	3.9	Ulahu
\$167034250	126-73-8	Tributyl phosphate	NGS	38	e5.6	<5.6	n/a	n/a	nla	n/a	5.8	Ush
\$167034250	629-50-5	Tridecane	NGS	26	41.6	8.0	n/a	n/a	nla	n/a	1.6	Uahn
\$167034250	629-78-7	Heptadecane	NGS	37	424	42.4	n/a	n/a	n/a	n/a	2.4	Ush U
S16T034250	629-62-9	Pentadocane	NGS	120	930	<3.0	n/a	n/a	n/a	n/a	3.0	Ulahu

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N - Named TIC

J - Estimated

Cartridge Evaluation Data Summary Report

Sample Group: 20162994

Customer Sample ID: 16-08636-1-IN-H Customer Sample ID: 16-08636-1-IN-H

SDG Number:

Samples R	AF CAS#	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Average RPD % Spk Red %	DetLimit	Det Limit Cot Err % Qual Flags	Flace
VAPOR-TDU SVOA #2	J SVOA #2										1		
\$167034251	3891-98-3	2.6.10-Trimethyldodecane	NGS	110	<3.9	<3.9	n/a	nla	n/a	nla	3.9	Usu	
S16T034251	95-48-7	2-Methylphonol	SON	110	6,95	64.9	n/a	n/a	n/a		6.9	n/a U	T
\$167034251	108-39-4M	Cresol (m & p)	NGS	110	<5.8	<5.6	n/a	n/a	rva	e/u	5.6	D shu	Γ
\$167034251	92-52-4	Biphergi	NGS	110	C4.0	c4.0	n/a	n/a	n/a		4.0	n/a U	Γ
\$167034251	78-48-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6	n/a	n/a	n/a		3.6	n/a U	Г
\$167034251	84-68-2	Diethyfphthalate	NGS	120	<7.0	<7.0	n/a	n/a	n/a	1/3	7.0	U a/u	Γ
\$167034251	112-40-3	Dodecane	NGS	100	<0.60	18	n/a	n/a	n/a	e/u	0.55	n'a	Γ
\$167034251	544-76-3	Ploxadecane-	NGS	120	<3.3	<3.3	n/a	n/a	n/a	e/u	3.3	D Su.	Г
S16T034251	629-59-4	Tehadecane	NGS	120	<3.9	<3.9	n/a	n/a	n/a	1/3	3.9	O a/a	Г
S16T034251	126-73-8	Tributyl phosphate	NGS	8	<5.6	<5.6	n/a	n/a	n/a	n/a	5.6	O'a O	Γ
\$167034251	629-50-5	Tridecane	NGS	87	41.6	11	n/a	n/a	n/a	n/a	1.6	n/a	Γ
\$167034251	529-78-7	Heptadecane	NGS	97	424	<2.4	n/a	n/a	n/a	1/9	2.4	D e/u	Γ
\$167034251	629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	U alva	Γ

NA = Not Analyzed, ND = Not Detected T - Tentatively Identified Compound

N-Named TIC

J - Essimated

U - Less Than Detection Limit

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Sample Group: 20162994 SDG Number:

Cartridge Evaluation Data Summary Report

Qual Flags 18 JNT 11 JNT 40 JNT 15 JNT Z9 JNT Result NGS S N S N Unit 5.44 5.49 5.70 6.89 556-67-2 1120-21-4 17301-23-4 541-02-6 31295-56-4 CAS No. Undecane, 2,6-dimetryli-Undecane, 2,6-dimetryli-Decarrethlycyclopentasiloxane Cyclotetrasiloxane, octamethyl Dodecane, 2,6,11-trimethyl-Customer Sample ID: 16-08636-1-EFF-A Customer Sample ID: 16-08636-1-EFF-A Amabyte QC Type VAPOR-TDU SVOA #2 16T034242 2 × \$16T034242 \$16T034242 \$16T034242 \$16T034242

T - Tentatively Identified Compound NA = Not Analyzed, ND = Not Detected

N - Named TIC

U - Less Than Detection Limit

Cartridge Evaluation Data Summary Report

Sample Group: 20162994

SDG Number:

Customer Sample ID: 16-08636-1-EFF-B Customer Sample ID: 16-08636-1-EFF-B

ample# R	3	OC Type	Analyte	CAS No.	Retention Time (Mirutes)	Unit	Result	Oust Place
VAPOR-TDU SVDA #	SVOA	472						-
16T034243			Cyclotetrasiloxane, octamethyl	558-67-2	4.35	NGS	34 JNT	INT
16T034243			Decane, 2,4,6-trimethyl-	62108-27-4	900	NGS	16.7	INT
167034243			Acetophenone	98-96-2	5.18	NGS	9.6	INT
16T034243			Undocane	1120-21-4	5.44	NGS	29 7	INT
167034243			Decamethycyclopentasilocano	541-02-6	5.71	NGS	40 7	INT
16T034243			Benzothiazole	95-16-9	629	NGS	27 7	INT
16T034243			Undecane, 2-methyl-	7045-71-8	7.25	NGS	TML 01	M

T - Tentatively Identified Compound NA = Not Analyzed, ND = Not Detected

N - Named TIC

J - Estimated

T - Tentatively Identified Compound

NA = Not Analyzed, ND = Not Detected

Cartridge Evaluation Data Summary Report

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Sample Group: 20162994 SDG Number: Customer Sample ID: 16-08636-1-EFF-C

•	EFF-C
	: 16-08636-1-
	ä
-	Sample
	Customer

Samples R	2	OC Type	Analyte	CAS No.	Rotention Time (Minutes)	Unit	Result	Out Face
VAPOR-TDU SVDA #2	SVOA	1 #2						
S16T034244			1-Hexene, 4-ethyl-	16746-85-3	3.65	NGS	45 JNT	INT
S16T034244			2-Butoxyethanol	111-76-2	371	NGS	TNL 88	INT
S16T034244			Oyolotrasiloxane, octamethyl	556-67-2	4.35	NGS	57 JM	INT
S16T034244			Decane, 2,4,6-trimethyl-	62108-27-4	6:09	NGS	6.9 JNT	INT
S16T034244			Acetophenone	98-96-2	5.18	NGS	TNL 81	INT
S16T034244			Benzene, 1-ethenyl-3-ethyl-	7525-62-4	5.34	NGS	38	INT
S16T034244			Benzenemethanol, 7,2-dimethyl-	617-94-7	5.36	NGS	32	INT
S16T034244			Undecane	1120-21-4	5.44	NGS	TNL 08	INT
S16T034244			Decamethycydopentasiocane	541-02-6	5.71	NGS	INI ES	INT
S16T034244			Benzothlazele	95-16-9	6.59	NGS	35 JNJ	INT
8167034244			Dodecane, 2,6,11-trimethyl-	31295-58-4	689	NGS	25	IMI

Cartridge Evaluation Data Summary Report

Sample Group: 20162994 SDG Number:

Customer Sample ID: 16-08636-1-EFF-D Customer Sample ID: 16-08636-1-EFF-D

Samples R	2	QC Type	Analyte	CAS No.	Retantion Time (Minutes)	Una	Result	Out Page
VAPOR-TD	IU SVOA #2	3 82						П
\$167034245			Cyclotrisloxane, hexamethyl-	841-05-9	2.84	NGS	TNL 29 JNT	TNL
S16T034245			Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	28	TNL 82
S16T034245			Acetophenone	98-86-2	5.18	NGS	6.4	TNL A
S16T03A245			Undecane	1120-21-4	5,44	NGS	17.	TNL
S16T03A245			Decamethlycyclopentasiloxane	541-02-6	5.71	NGS	44	TINT M

T - Tentatively Identified Compound NA = Not Analyzed, ND = Not Detected

N - Named TIC

U - Less Than Detection Limit

Cartridge Evaluation Data Summary Report

Sample Group: 20162994 SDG Number:

Customer Sample ID: 16-08636-1-EFF-E Customer Sample ID: 16-08636-1-EFF-E

Samples R	2	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Read	O.M.B.
VAPOR-TDU	SVOA #2	.#2						П
S16T034246			Undecane	1120-21-4	5,44	NGS	14	14 JNT
S16T034246			Decamethlycyclopentasiloxane	541-02-6	6.70	NGS	32	32 JNT
S16T034246			Dodecane, 2,6,11-trimethyl-	31295-56-4	688	NGS	13	TNL SI

T - Tentatively Identified Compound NA = Not Analyzed, ND = Not Detected

N - Named TIC

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Cartridge Evaluation Data Summary Report

SDG Number:

Sample Group: 20162994

Customer Sample ID: 16-08636-1-EFF-F Customer Sample ID: 16-08636-1-EFF-F

-		The second	The second of th					
Samples R	\$	As QC Type Analyte	Amalyte	CAS No.	Retention Time (Minutes)	Creli	Result	Seault Dud Flans
VAPOR-TDU S	SVOA #2	#2						
\$167034247			Cyclotrisloxane, hexamethyl-	641-05-9	2.85	NGS	30 JNT	5
S16T034247			Cyclohetrasiloxane, octamethyl	556-67-2	4.35	NGS	33 JNT	NT.
\$167034247			Decane, 2,4,6-trimethyl-	62108-27-4	5.09	NGS	5.1 JNT	7
\$167034247			Undecane	1120-21-4	5,44	NGS	30 JNT	F
S16T034247			Decamethycyclopentasicorane	541-02-6	5.71	NGS	TNL 66	5
\$167034247			Benzothiazole	95-16-9	6.59	NGS	TNL 72	5

T - Tentatively Identified Compound NA = Not Analyzed, ND = Not Detected

N - Named TIC

J - Estimated

Sample Group: 20162994 SDG Number:

Cartridge Evaluation Data Summary Report

iample# R	2	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Det	Result	Out Flans
VAPOR-TDU SVOA#2	SVOA	#2						Con a series
167034248			Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	TNC 63	JNT
16T034248			Decane, 3,7-cimethyl-	17312-54-8	5.05	NGS	92 JNT	JNT
167034248			Decane, 2,4,6-trimethyl-	62108-27-4	5.10	NGS	43	43 JNT
16T034248			Undecane	1120-21-4	5,45	NGS	110 JNT	TNC
16T034248			Decamethlycyclopentasiloxane	541-02-6	5.71	NGS	44	TNL 34
167034248			Undecane, 2,6-dimethyl-	17301-23-4	5.91	NGS	10	TNL 0
16T034248			Dodecane, 2,6,11-trimethyl-	31295-56-4	6.89	NGS	20	20 JNT

T - Tentalively Identified Compound NA = Not Analyzed, ND = Not Detected

N-Named TIC

U - Less Than Detection Limit

J - Estimated

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Cartridge Evaluation Data Summary Report

	ustomer Sample ID: 16-08636-1-EFF-H	ustomer Sample ID: 16-08636-1-EFF-H
Sample Group: 20162994 SDG Number:	Customer Sample II	Customer Samp

Sample# R	N	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU	SVOA #2	12						
\$161034249			Cyclotetrasiloxane, octamethyl	556-67-2	4.35	NGS	25	26 JINT
S16T034249			Undecane	1120-21-4	5,44	NGS	30	20 JNT
S16T034249			Undecane, 2,6-dimethyl-	17301-23-4	5,49	NGS	11	1 JNT
\$167034249			Decamethlycyclopentasiloxane	541-02-6	5.70	NGS	27	27 JNT

T - Tentatively Identified Compound NA = Not Analyzed, ND = Not Detected

N-Named TIC

U - Less Than Detection Limit

Cartridge Evaluation Data Summary Report

Sample Group: 20162994 SDG Number:

Customer Sample ID: 16-08636-1-IN-A Customer Sample ID: 16-08636-1-IN-A

Samples R.	2	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Uest	Descrip	Out Bare
VAPOR-TDU SVOA #2	SVO	1.82						
S16T034250			Cyclotrisiloxane, hexamethyl-	541-05-9	2.84	NGS	25 JNT	JNT
\$167034250			Unknown-1	,	3.27	NGS	40 JT	77
\$167034250			Heptanal	111-71-7	3.65	NGS	32 7	JNT
\$167034250			2-Butoxyethanol	111-76-2	3.71	NGS	22	34 JNT
\$167034250			Cyclotetrasiloxane, ectamethyl	556-67-2	4.35	NGS	INC 78	JNT
S16T034250			Applicatione	96-86-2	5.18	NGS	TAL 8.7	JNT
S16T034250			Undecane	1120-21-4	5.44	NGS	Z9 JN1	JNT
\$16T034250			Decamethyroyclopentasiloxane	541-02-6	5.70	NGS	44 JNT	JNT
\$167034250			Dodecane, 2.6.11-trimelhid-	31295-56-4	6.89	MGS	14	TAL INT

T - Tentatively Identified Compound NA = Not Analyzed, ND = Not Detected

N - Named TIC

J - Estimated

22-Nov-2016 11:0154 DSRTICHardoopy 3.0.13 DSR.Jar v. 3.0.12

Cartridge Evaluation Data Summary Report

Sample Group: 20162994

SDG Number:

Customer Sample ID: 16-08636-1-IN-H Customer Sample ID: 16-08636-1-IN-H

Semple® Re Add Analyte CAS No. Resetting Infinity Infinity CAS No. Resetting Infinity Infinity CAS No. Resetting Infinity CAS No. Resetting Infinity CAS No. Additional Infinity Infin									
TDU SNOA #2 2-8utoxyethanol		3	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	O.of Floor
2-Butroxyethanol 111-76-2 3.71 NGS Cyclotefrasiloxane, octamethy 556-67-2 4.35 NGS Decane, 2.4,6-trinethy 62108-27-4 5.27 NGS Undecane, 2.6-dimethy 17301-23-4 5.32 NGS Undecane 1120-21-4 5.44 NGS Decamethycyclopertasioxane 541-02-6 5.71 NGS	VAPOR-T	OV SVO	A #2						
Oydokrtrasilosane, octamethy 556-67-2 4.35 NGS 4 Decane, 2,4,6-t/methy 62108-27-4 5.27 NGS 4 Undecane, 2,6-dimethy 17301-23-4 5.32 NGS 4 Undecane 1120-21-4 5.44 NGS 6 Decamethycyclopertasilosane 541-02-6 5.71 NGS	\$167034251			2-Butoxyethanol	111-76-2	371	NGS	26	. LNI
Decane, 2.4.6-trinethyl- 62108-274 5.27 NGS 7 Undecane, 2.6-dimethyl- 17301-23-4 5.32 NGS	S16T034251			Cyclotetrasiloxane, octametryl	555-67-2	4.35	NGS	35 J	INT
Undecane, 2,6-dimethyl- 17301-23-4 5.32 NGS Undecane 1120-21-4 5.44 NGS Decamethycyclopertasilorane 541-02-6 5.71 NGS	S16T034251	_		Decane, 2,4,6-trimethyl-	62108-27-4	5.27	NGS	8.4	IN
Undecane 1120-21-4 5.44 NGS Decamathycyclopentasiloxane 541-02-6 5.71 NGS	\$167034251			Undecane, 2,6-dimethyl-	17301-23-4	5.32	NGS	1 22	INT
Decamethlycyclopertasiloxane 541-02-6 5.71 NGS	\$167034251			Undecane	1120-21-4	5,44	NGS	35 J	INT
	S16T03A251			Decamethlycyclopentasiloxane	541-02-6	5.71	NGS	32 J	INT

T - Tentatively Identified Compound NA = Not Analyzed, ND = Not Detected

N - Named TIC

U - Less Than Detection Limit

22 - Nov - 2016 11:04:29 DSRHardoopy/VCLinits 3.0.13 DSRJar v. 3.0.12

Cartridge Evaluation Data Summary Report

Sample Group: 20162995

SDG Number: Customer Sample ID: 16-08636-1-BASE-EFF Customer Sample ID: 16-08636-1-BASE-EFF

Sampled R Ad CAS #	Ad CAS		Analyto	Unit	% QLE	Blank	Result	Duplicate	Average		RPD % Spk Rec %	1	Det Umit Cot Err % Qual Flags	I Flans
VAPOR-TDU SVOA #2	U SVOA #	24												I
316T034252	3893	3891-88-3	2,6,10-Trimethyldodecane	NGS	110	939	<3.9	nla	n/a	nla	nin	3.0	Hali	T
3161034252	95-48-7	8-7	2-Methylphenol	NGS	110	64.9	64.9				nia	4.9	n/a II	T
316T034252	108	108-39-4M	Cresol (m & p)	NGS	110	45.6	<5.6				n/a	4.5	n/all	T
316T034252	92-6	24	Biphenyl	NGS	110	0,40	4.0				eju	4.0	nta ii	T
316T034252	78-46-6	99	Dibutyl butylphosphonate	NGS	120	<3.6	3.6				nju		nia ii	T
1167034252	84-66-2	8-2	Diethylphthalate	NGS	120	<7.0	<7.0	1/3		ryka	apa		ala is	T
167034252	112-	112-40-3	Dodecane	NGS	100	<0.60	13			cha		ľ	ala	T
167034252	\$4	544-76-3	Hexadecare-	NGS	120	<3.3	33			nya			Il ala	T
1167034252	629	29-59-4	Tetradecane	NGS	120	<3.9	43.9			n/a			D Spir	T
116T034252	126-	26-73-8	Tributyl phosphate	NGS	26	<5.6	45.6			rya			plain	T
16T034252	629	5-05-629	Tridecane	NGS	126	41.6	8.1	n/a		n/a			o la la	T
1167034252	629	1-81-625	Heptadecane	NGS	87	424	<2.4			n/a	n/a			T
16T034252	629	629-629	Pentadecane	NGS	120	<3.0	<3.0			n/a	n/a	3.0		T

NA = Not Analyzed, ND = Not Detected T - Tentatively Identified Compound

J - Estimated

N - Named TIC

U - Less Than Detection Limit

C.56

Cartridge Evaluation Data Summary Report

Customer Sample ID: 16-08636-1-BASE-IN Customer Sample ID: 16-08636-1-BASE-IN

Sample# R	AF CAS#	Analyte	Unit	% CLS	Blank	Result	Duplicate	Average	RPD % S	Spk Rec %	Det Umit	Cnt Err % Qual Flags	Flags
VAPOR-TDU SVOA #2	J SVOA #2												
S16T034253	3891-98-3	2.6,10-Trimethyldodecane	NGS	110	43.9	6.55	n/s	0/2	na	nla	3.9	Us/u	Γ
S16T034253	95-48-7	2-Methylphenoi	NGS	110	64.9	6.19	n/a	n/a	n/a	nla	4.9		
\$167034253	108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/a	8,0	rya	nya	5.6		
\$167034253	82-52-4	Biphenyi	MGS	110	<4.0	<4.0	n/a	n/a	alu.	n/a	4.0		
S16T034253	78-46-6	Dibutyl butylphosphonate	MGS	120	<3.6	43.6	e/u	n/a	n/a	nva	3.6		
S16T034253	84-66-2	Diethylphthalate	NGS	120	<7.0	<7.0	eju	n'a	n/a	n/a	7.0		
816T034253	112-40-3	Dodecane	NGS	100	<0.60	5.2	uju	n/a	n/s	n/a	0.55		Γ
S16T034253	544.76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/a	e,u	n/a	alu	65.69	-	
S16T034253	829-59-4	Tetradecane	NGS	120	<3.9	<3.9	e/u	n/a	n/a	n/a	3.9		
S16T034253	126-73-8	Tributyl phosphate	NGS	あ	<5.6	<5.8	n/a	n'a	n/e	n/a	5.6		
S16T034253	829-50-5	Tridocane	NGS	97	41.6	3.2	nía	n/a	2/2	n/a	1.6		
S16T034253	629-78-7	Heptadecano	MGS	97	<2.4	<2.4	n/a	n'a	n/a	n/a	2.4		
S16T034253	629-62-9	Pentadecane	NGS	120	<3.0	<3.0	e/u	n'a	n/a	n/a	3.0	ľ	

NA = Not Analyzed, ND = Not Detected T - Tentatively Identified Compound

N - Named TIC

U - Less Than Detection Limit

J - Estimated

C.57

Cartridge Evaluation Data Summary Report

Sample Group: 20162995
SDG Number:
Customer Sample ID: 16-08636-1-BLANK-EFF
Customer Sample ID: 16-08836-1-BLANK-EFF

Samples R.	A CAS 8	Analyte	Unit	\$ OTS	Blank	Result	Duplicate	Average	RPD % Spk Rec %	K Rec %	Det Umit	Cot Err % Qual Flags
VAPOR-TDU SVOA #	SVOA#2									1		
S16T034254	3891-96-3	2,6,10-Trimethyldodecane	NGS	110	43.9	43.9	n/a	n/a	n/a	n/e	3.9	Us/u
S16T034254	95-48-7	2-Methylphenol	NGS	110	64.9	64.9	n/a	n/a	n/a	n/a	4.9	Us/u
S16T034254	108-39-4M	Cresol (m & p)	NGS	110	45.6	45.6	n/a	nia	n/a	n/a	5.6	n'a U
S16T034254	92-52-4	Biphenyl	NGS	110	44.0	44.0	n/a	n/a	n/a	n/a	4.0	n/aU
S16T034254	78-46-6	Dibutyf butyfphosphonate	NGS	120	<3.6	43.6	n/a	n/a	n/s	nia	3.6	D/a/U
S16T034254	84-66-2	Diethylphthalate	NGS	120	<7.0	0.72	n/a	n/a	n/a	elv	7.0	nlaU
S16T034254	112-40-3	Dodecane	NGS	100	<0.60	09'0	n/a	n/a	n/a	n/a	0.55	ntaJ
S16T034254	544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/a	n/a	n/a	nla	3.3	n/a U
S16T034254	629-59-4	Tetradecane	NGS	120	6.00	43.9	nln	nýu	n/s	nka	3.9	n/a U
S16T034254	126-73-8	Tributy! phosphate	NGS	8	<5.6	<5.6	n/a	n/a	n/a	nla	929	n/a U
8167034254	629-50-5	Tridecane	NGS	97	41.8	41.6	n/a	n/a	n/8	n/a	1.6	nlaU
S16T034254	529-78-7	Heptadecana	NGS	97	<2.4	424	n/a	n/a	n/a	nla	2.4	niaU
S16T034254	629-62-9	Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/s	n/a	3.0	n/a U

NA = Not Analyzed, ND = Not Detected T - Tentatively Identified Compound

N - Named TIC

U - Less Than Detection Limit.

Cartridge Evaluation Data Summary Report

Sample Group: 20162995 SDG Number:

Customer Sample ID: 16-08636-1-BLANK-IN Customer Sample ID: 16-08636-1-BLANK-IN

Sample® R	S.	CAS#	Analyte	Unit	\$10.%	Blank	Result	Duplicate	Average	RPD %	Average RPD % Spk Red %	Det Limit	Det Limit Cet Err % Qual Flags
VAPOR-TDU SVOA #2	SVO	4 #2											
S167034255	8	1891-88-3	2,6,10-Trimethyldodecane	NGS	110	43.9	<3.9	n/a	n/a	n's	n/a	3.9	n/a/U
\$167034255	36	15-48-7	2-Methylphenol	NGS	110	6,40	64.9	n'a	n/a	2/2	n/a	4.9	U ava
\$167034255	10	38-39-4M	Cresol (m & p)	NGS	110	9.50	65.6	9,0		n/a		9.6	n/a U
\$167034255	8	2-52-4	Siphenyi	NGS	110	040	c4.0	n/a		n/s	n/a	4.0	n/a U
\$167034255	78	8-48-8	Dibutyl butylphosphonate	NGS	120	3.6	9.6	n'a		2/2		3.6	Ua U
\$167034255	9	5-66-2	Diethylphthalate	NGS	120	67.0	0.72	n's	n/a	n/a		7.0	n/a U
\$167034255	-	12-40-3	Dodecane	NGS	100	<0.60	080	e,u		2/2		0.55	n/a J
\$167034255	10	544-76-3	Haxadecane-	NGS	120	433	43	n'a		6/0		33	U8 N
\$167034255	92	29-59-4	Tetradecane	NGS	120	439	43.9	n/a		n/a	e/u	3.9	Uda
\$167034255	12	126-73-8	Tributyl phosphate	NGS	8	<5.6	980	n/a		n's	n/s	9'9	Ualu
\$167034255	95	29-50-5	Tridocane	NGS	97	61.6	41.6	m'a	n/s	m's	n/a	1.6	Uslu
\$167034255	65	629-78-7	Heptadocane	NGS	97	424	424	n'a		m'a	n/a	2.4	n/a U
\$167034255	97	629-629	Pentadecano	NGS	120	<3.0	900	n/a		n's		3.0	Ualu

NA = Not Analyzed, ND = Not Detected T - Tentatively Identified Compound

N - Named TIC

J - Estimated

Cartridge Evaluation Data Summary Report

Sample Group: 20162995 SDG Number: Customer Sample ID: 16-08636-1-IN-B Customer Sample ID: 16-08636-1-IN-B

Samples R All CAS#	\$		Analyta	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	RPD % Spk Rec %	Det Umit	Det Limit Ont Err % Qual Flags
VAPOR-TDU SVOA #2	USV.	OA #2											
S16T034256		3891-88-3	2,6,10-Trimethyldodecane	NGS	110	€3.9	439	n/a	n/a	n/a	n/a	3.9	nalu
S16T034256		95-48-7	2-Methylphenol	NGS	110	64.9	673	r/a	n/a	nfa	n/s	4.9	n/a U
S16T034256		108-39-4M	Crosol (m & p)	NGS	110	9.5	9.65	n/a	nla	n/a	n/a	5.6	n/a U
S16T034256		92-52-4	Biphenyl	NGS	110	0.40	0.40	r/a	n/e	n/a	n/a	4.0	n/a U
S16T034256		78-46-6	Dibutyl butylphosphonate	NGS	120	336	3.6	n/a	n/a	n/a	n/a	3.6	n/a U
S16T034256	00	84-66-2	Diethylphthalate	NGS	120	0.0>	47.0	n/a	n/a	n/a	n/a	7.0	nau
S16T034256		112-40-3	Dodecane	NGS	100	40.60	31	n/a	n/a	n/a	n/a	0.55	nla
S16T034256		544-76-3	Hexadecane-	NGS	120	433	33	n/a	n/a	n/a	n/u	3.3	n/a U
S16T034256		629-59-4	Tetradecane	NGS	120	43.9	5.4	n/a	n/a	n/a	n/u	3.9	n/a J
S16T034256		126-73-8	Tributyl phosphate	NGS	8	9.5	5.6	n/a	nya	nla	n/a	5.6	n/a U
S16T034256		629-50-5	Tridecane	NGS	97	41.8	12	n/a	n/a	n/a	n/a	1.6	nla
S16T034256		629-78-7	Heptadecane	NGS	97	424	424	n/a	n/a	n/a	n/a	24	NaU
S16T034256		629-62-9	Pentadecane	NGS	120	30	<3.0	n/a	ela	n/a	n/a	3.0	

NA = Not Analyzed, ND = Not Detected T - Tentatively Identified Compaund

N - Named TIC

J - Estimated

Cartridge Evaluation Data Summary Report

Sample Group: 20162995 SDG Number:

Customer Sample ID: 16-08636-1-IN-C Customer Sample ID: 16-08636-1-IN-C

Sample# R	\$	CASS	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	RPD % Spk Rec %	Det Limit	Cot Err % Qual Flags
VAPOR-TDU SVOA #2	SUS	VOA #2											
S16T034257	H	3891-88-3	2.6,10-Trimethyldodecane	NGS	110	<3.9	43.9	n/a	n/a	n/a	rya	3.9	Ulelo
S16T034257		95-48-7	2-Methylphenol	NGS	110	6,45	6.49	n/a	n/a	n/a		4.9	
S16T034257		108-39-4M	Cresol (m & p)	NGS	110	<5.6	<5.6	n/s	n/a	n/a		5.6	
\$167034257	_	92-52-4	Biphenyl	NGS	110	0.40	0.40	n/a	n/a	n/a		4.0	Usla
S16T034257	_	78-46-6	Dibuty/ buty/phosphonate	NGS	120	<3.6	<3.6	n/a	e/u	n/a		3.6	Ualu
S16T034257	Ц	84-66-2	Diethylphthalate	NGS	120	0.72	<7.0	n/a	n/a	n/a	r/a	7.0	Ush
S16T034257		112-40-3	Dodecane	NGS	100	<0.60	22	n/s	n/a	n/a		0.55	n/a
S16T034257	L	644-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/a	n/a	n/a		3.3	n/a U
S16T034257		629-59-4	Tetradocane	NGS	120	<3.9	<3.9	n/a	n/n	n/a	nya	3.9	Uelv
S16T034257	_	126-73-8	Tributyl phosphate	NGS	8	9'5>	<5.6	n/a	n/a	n/s	n/a	99	n/a U
\$167034257	L	629-50-5	Tridecane	NGS	87	<1.6	14	2,0	n/a	n/a	n/a	1.6	n/a
S16T034257	L	829-78-7	Hoptadecane	NGS	26	424	42.4	e/n	n/a	n/s	n/a	2.4	n/a U
\$167034257	_	629-62-8	Pentadecane	NGS	120	43.0	3.6	n's	n/a	a/a	n/a	3.0	Le/a J
									-				

NA = Not Analyzed, ND = Not Detected T - Tentatively Identified Compound

N - Named TIC

U - Less Than Detection Limit

Cartridge Evaluation Data Summary Report

Sample Group: 20162995 SDG Number: Customer Sample ID: 16-08636-1-IN-D Customer Sample ID: 16-08636-1-IN-D

Sample® R	R AN CAS#		Analyte	Unit	STD %	Blank	Result	Duplicate	Average		RPD % Spk Rec %	Det Umit	Cnt En % Qual Flags	Al Flags
VAPOR-TDU SVOA #2	JSWC	W #2				1							l	I
S16T034258	2	3891-98-3	2,6,10-Trimethyddodecane	NGS	110	<3.9	689	n/a	nla	n/a	nya	3.9	Ualu	I
S16T034258	00	95-48-7	2-Methylphenol	SDN	110	6.49	6.49	n/a	ala s	n/a	nía	4.9	n/a U	T
S16T034258		08-39-4M	Cresof (m & p)	NGS	110	45.6	45.6	n/a	n/a	r/a		5.6	NaU	
S16T034258	-	92-52-4	Biphenyl	NGS	110	0.40	0,40		n/a	rva		4.0	nau	
S16T034258		8-46-6	Dibutyl butylphosphonate	NGS	120	<3.6	<3.6		ale a	n/a		3.6	NaU	
S16T034258	10	84-66-2	Diethylphthalate	NGS	120	c7.0	67.0	n/a	ale a	r/a		7.0	U a/u	
S16T034258	-	12-40-3	Dodecane	NGS	100	<0.60	26	n/a	n/a	r/a		0.55	n/a	
\$167034258	90	544-76-3	Hexadecane-	NGS	120	<3.3	<3.3	n/a	n/a	n/a		3,3	n/a U	
\$167034258		29-59-4	Tetradecane	NGS	120	<3.9	3.9	n/a	a/u	r/a		3.9	Lala	Γ
S16T034258	-	26-73-8	Tributyl phosphate	NGS	26	45.8	45.6	n/a	1/8	1/3	rya	5.6	Ualu	
S16T034258	-	629-50-5	Tridecane	NGS	87	41.6	9.5	n/a	n/a	n/a		1,8	L'elu	
\$167034258		629-78-7	Hoptsdecane	NGS	26	424	<2.4	n/a	n/a	r/a		2.4	Uelu	
S16T034258		629-62-6	Pentadecana	NGS	120	<3.0	<3.0	n/a	n/a	n/a		3.0	Ulan	

NA = Not Analyzed, ND = Not Detected T - Tentalively Identified Compound

N-Named TIC

J - Estimated

Cartridge Evaluation Data Summary Report

Sample Group: 20162995 SDG Number: Customer Sample ID: 16-08636-1-IN-E Customer Sample ID: 16-08636-1-IN-E

Samples R All CAS#	M CAS		Analyte	Unit	STD %	Blank	Result	Dupficate		RPO %	Average RPD % Spx Rec %	Det Limit	Det Limit Ont Err % Qual Flags	val Flags
VAPOR-TDU SVOA #2	SVOA #2	2												
S16T034259	3891-	3891-98-3	2,6,10-Trimethyldodecane	NGS	110	43.9	43.9	n/a	nia	nla	n/a	3.9	nlalu	I
S16T034259	95-48-7		2-Methylphenol	NGS	110	643	643	n/a	n/a	nha	s/u	4.0	nish	
S16T034259	108-3	08-39-4M	Cresol (m & p)	NGS	110	\$5.6	45.6	n/a	n/s	r/a	c/o	5.6	LI slo	
\$167034259	92-52	7.	Biphenyl	NGS	110	<4.0	0.40	n/a	n/a	rya	nia	40	ndo II	
S16T034259	78-46-6	92	Dibutyl butylohosphonate	NGS	120	43.6	<3.6		n/a	n/a		3.6	nda II	T
\$167034259	84-68	3-2	Diethychthalate	NGS	120	0.0	<7.0		n/a	n/a		7.0	n/a II	T
\$167034259	112-40-3	80-3	Dodecane	NGS	1001	<0.60	10	n/a	n/a	nya		0.86	a/a	T
S16T034259	544-76-3	5-9	Hexadecane-	NGS	120	43.3	<3.3	n/a	n/a	n/a		33	and the	
\$167034259	629-5	28-4	Tetradecane	NGS	120	<3.9	6.4	n/a	n/a	n/a	- Sha	3.9	n/a	T
\$167034259	126-73-8	13-8	Tributyl phosphate	NGS	96	<5.6	<5.6	n/s	n/u	n/a	nya	9.5	I e/u	
S16T034259	829-80-8	5-06	Tridocane	NGS	26	c1.6	4.3	n/a	n/a	n/a	nya	1.6	n/a	T
S16T034259	629-78-7	18.7	Heptadecane	NGS	87	<2.4	424	n/s	n/a	n/a	n/a	2.4	n/a [J	T
S16T034259	629-62-9		Pentadecane	NGS	120	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a U	

NA = Not Analyzed, ND = Not Detected T - Tentatively Identified Compound

N - Named TIC

J - Estimated

U - Less Than Detection Limit

Cartridge Evaluation Data Summary Report

Sample Group: 20162995 SDG Number: Customer Sample ID: 16-08636-1-IN-F Customer Sample ID: 16-08636-1-IN-F

10-Trimothyklobecane NGS 110 <3.9	Samples R	Af CAS#	**	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Liedt	Cod Envisional Flags	of Flags
3891-38-3 2,6,10-Trimethyldodecane NGS 110 <3.9 <3.9 rule rule <t< td=""><td>VAPOR-TE</td><td>NU SVOA#</td><td>2</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>200</td><td></td></t<>	VAPOR-TE	NU SVOA#	2											200	
95-48-7 2-Methylphenol NGS 110 <4.9 <4.9 r.ls	S16T034260	3891	-98-3	2	NGS	110	43.9	<3.9	nia	n/a	ala	nin	30	Mali	
108-39-4M Cresol (m & p) NGS 110 <5.6 <5.6 n/a n/a n/a n/a 92-62-4 Biphenyl NGS 110 <4.0	\$161034260	95-48	2-8		NGS	110	6,4.9	64.9	nla	n/a	alva alva	eju.	40		
92-52-4 Siphenyif NGS 110 <4.0 <4.0 n/a n/a n/a n/a 78-48-6 Dibuty/bht/phthsteb NGS 120 <3.6	3167034250	108-3	39-4M	Cresol (m & p)	NGS	110	<5.6	45.6	nla	2/8	n/a	nla	9.6		
78-46-6 Olbuty/juhosphoration NGS 120 <3.6 <3.6 <3.6 n/s n/s n/s n/s 24-66-2 Obethy/phhatate NGS 120 <7.0	316T034250	92-52	2-4	Biphenyl	NGS	110	44.0	<4.0	n/a	n/a	19/2	n/a	4.0		
84-66-2 Obethylophhalate NGS 120 <7.0 <7.0 n/a	316T034250	78-46	9-6	Dibutyl butylphosphonate	NGS	120	<3.6	43.6	n/a	6,0	n/a	n/a	3.6		
112-40-3 Dodecane NGS 100 <0.00 31 n/b	316T034260	84-66	8-2	Diethylphthalate	NGS	120	<7.0	47.0	n/a	n'a	n/a	n/a	7.0		
544-76-3 Necadecane- NGS 120 <3.3 <1.3 n/h n/h n/h n/h n/h 029-59-4 Tetradecane NGS 120 <3.9	316T034260	112-4	60-3	Dedacane	NGS	100	×0.60	150	n/a	n/a	n/a	n/a	0.55		
629-594 Tothradecame NOS 120 <3.9 <3.6 n/h n/h n/h n/h 126-73-6 Tribunyl phosphate NOS 94 <5.6	167034260	544-7	76-3	Hexadecane-	NGS	120	333	<3.3	n/a	n/a	n/a	a/v	8.8		
126-73-6 Tributyly phosphate NGS 94 <5.6 <5.6 n/s n/s n/s n/s 528-50-5 Tridecane NGS 97 <1.6	316T034280	629-5	594	Tetradecana	NGS	120	43.9	<3.9	n/a	n/a	n/a	a/u	3.0		
\$28-50-5 Tridecane NGS 97 <1.6 6.8 n/ls n/ls n/ls n/ls \$28-78-7 Heptadecane NGS 97 <2.4	16T034260	126-7	73-8	79	NGS	86	<5.6	<5.6	n/a	n/a	n/n	e/v	8.8		
629-78-7 Heptadecene MCS 97 <2.4 <2.4 n/s n/s n/s 629-62-9 Pentadecane MCS 120 <3.0	167034260	629-5	505	Tridecane	NGS	97	41.6	6.8	n/a	nía	n/a	n/u	18		
529-52-9 Pentadecare NGS 120 <3.0 rula rula rula rula	167034280	629-7	7.8.7		MGS	97	424	<2.4	nía	n/a	nju	a/a	2.4		
	167034250	629-6	825		NGS	120	30	<3.0	nla	nia	nia	alva	30		

NA = Not Analyzed, ND = Not Detected T - Tentatively Identified Compound

N-Named TIC

J - Essimated

U - Less Than Detection Limit

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Sample Group: 20162988

Cartridge Evaluation Data Summary Report

SDG Number:

Customer Sample ID: 16-08635-2-EFF-A Customer Sample ID: 16-08635-2-EFF-A

Sample# R	All CAS# Ans	Analyte	Unit	STD %	Blank	Result	Duplicate	Average		RPD % Spk Rec %	Det Limit	Det Limit Ont Em % Qual Flags
VAPOR-TDU VOA #2	J VOA #2											
S16T034182	79-34-5	1,1,2,2-Tetrachloroethane	NGS	110	<1,3	<1.3	n/a	n/a	nia	a/u	1,3	n/a U
S16T034182	79-00-5	1,1,2-Trichloroethane	NGS	110	<1,5	<1.5	nía	n/a	n'a	n/a	1,5	UeAn
S16T034182	75-34-3	1,1-Dichloroethane	NGS	110	<1.2	<1.2	e/u	nya	nia	n'a	1.2	U e/u
S16T034182	75-35-4	1,1-Dichloroethene	NGS	110	<1,3	<1.3	e/u	nis	nia	2,0	1.3	n/a U
S16T034182	107-06-2	1,2-Dichloroethane	NGS	120	41.6	41.6	n/a	nla	n/a	2,0	1,6	U shu
S16T034182	542.75-6	1,3-Dichloropropene (Total)	NGS	ela	n/a	<1.2	n/a	nla	n/a	n'a	1.2	Uelu
S16T034182	106-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n'a	9,0	5.0	n/a U
S16T034182	123-91-1	1,4-Dioxane	NGS	110	<1.7	<1.7	n/a	nla	n'a	n'a	1.7	U alv
S16T034182	71-36-3	1-Butanoi	NGS	120	<8.9	<8.8	n/a	nla	n'a	n'a	60	nto LUY
S16T034182	111-70-6	1-Heptanol	NGS	83	<5.6	<5.6	e/u	n/a	nia	ale	5.6	n/a LU
S16T034182	71-23-8	1-Propanol	NGS	120	7.2	4.8	n/a	n/a	n'a	n/a	3.0	n/a BJ
S16T034182	108-47-4	2,4-Dimethytpyridine	NGS	110	<3.3	<3.3	E/U	e)u	o'c	a'n	3.3	Uelu
S16T034182	1708-29-8	2,5-Dihydrofuran	NGS	110	<2.8	<2.8	n/a	nía	eļu.	nia	2.8	n/a Uc
\$167034182	78-53-3	2-Butanone	NGS	110	41.9	22	n/a	nia	n/a	nla	1.9	L BJu
S16T034182	110-43-0	2-Heptanone	NGS	88	41.6	<1.6	n/a	e)u	n'a	e/u	1.6	U elu
S16T034182	591-78-6	2-Hexanone	NGS	88	<1.2	<1.2	n/a	n/a	n's	nis	1.2	n/a U
S16T034182	634-22-5	2-Methylfuran	NGS	110	41.9	<1.9	e,u	n/a	a/u	nle	9	Ualu
S16T034182	78-94-4	3-Buten-2-cne	NGS	100	<1.7	<1.7	n/a	n/a	n'a	a/n	17	U elu
S16T034182	106-354	3-Heptanone	NGS	100	<1.5	<1.5	mla	nia	a'c	nie	1.5	n/a U
S167034162	106-63-3	3-Octanone	NGS	110	424	424	n/a	n/a	e/u	e/u	2.4	Ualu
S16T034182	105-42-0	4-Methyl-2-hosanone	NGS	80	<1.3	<1.3	n/a	n/a	a'c	nla	1.3	U BJU
S16T034182	108-10-1	4-Methyl-2-Pentanone	NGS	100	¢1.9	41.9	n'a	n/a	a/a	e/u	di.	n/a U
S16T034182	67-64-1	Apatone	NGS	26	<4.3	6.1	n/a	n/a	m'a	e/u	4.3	n/a J
S16T034182	75-05-8	Acetonitriie	NGS	91	<1.8	3.6	nia	n/a	n's	nla	1.8	n/a J
S16T034182	98-86-2	Acetophenone	NGS	100	428	3.4	n'a	n/a	n/a	n/a	26	r/a J
S16T034182	107-13-1	Acrytonistie	NGS	88	<1.7>	<1.7	n/a	nís	a/a	n/a	13	U sin
S16T034182	107-18-6	Allyl Alcohol	NGS	120	<3.9	439	n'a	n/a	n/a	e/u	9	n/a Ue

B - Blank Contamination E - Outside Calibration Range

Y - Comment T - Tentatively Identified Compound L - LLS Outside Range

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NA = Not Analyzed, ND = Not Detected

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Cartridge Evaluation Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-EFF-A
Customer Sample ID: 16-08635-2-EFF-A

VAPOR-TOU VOA #2 VAPOR-TOU VOA #2 C42.8	Sample® R	All CAS #	Analyte	Unit	% QTS	Blank	Result	Duplicate	Average	$\overline{}$	RPO 16 Spix Rec 16	Det Lâmit	Det Limit Ont Err % Qual Flags
107-45-1 Ally Checklee NGS 110 42,8 74,	VAPOR-TDL	J VOA #2											
714-32-2 Bernzeinen NGS 110 <1.2 <1.1 <1.2 <1.4 <1.4 <1.4 <1.4 <1.4 <1.4 <1.5 <1.5 <1.5 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.7 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6 <1.6	3167034162	107-05-1	Allyl Chloride	NGS	110	<2.8	42.8	n/a	n/a	n'a	n/a	2.8	U e/u
100-47-0 Benzoeltite NGS 100 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9	S16T034182	71-43-2	Benzene	NGS	110	<1.2	<1.2	n/a	n/a	n'a	n/a	12	n/a U
123-72-8 Buttanuide NGS 110 <2.1 <2.1 r/a	\$167034162	100-47-0	Benzonitrile	NGS	100	6.12	<1.9	nía	nla	n'a	n/a	1.9	n/a U
109-74-0 Buttanenèrère NGS 100 <1.2 <1.2 <1.2 r/a	316T034182	123-72-8	Butanal	NGS	110	42.1	421	n/a	nla	n'a	n/a	21	n/a U
56-23-5 Carbon letrachloide NGS 130 <1.5 <1.6 r/a r/a <td>316T034182</td> <td></td> <td>Butanenitrile</td> <td>NGS</td> <td>100</td> <td><1.2</td> <td><1.2</td> <td>n/a</td> <td>nla</td> <td>n'a</td> <td>n/a</td> <td>1.2</td> <td>n/a U</td>	316T034182		Butanenitrile	NGS	100	<1.2	<1.2	n/a	nla	n'a	n/a	1.2	n/a U
108-90-7 Chlorobenzene MGS 110 <1.5 <1.9 r/a	5167034182		Carbon tetrachloride	NGS	130	c1.6	c1.6	nía	nia	n'a	n/a	1.6	n/a U
75-00-3 Chloroethane MGS 95 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.9 <1.8 <1.9 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8 <1.8	3167034182		Chlorobenzena	NGS	110	41.5	<1.5	n/a	e/u	n/a	n/a	1.5	n/a U
67-86-3 Chloroform NGS 120 <1.5 <1.6 r/a	316T034182		Chloroethane	NGS	98	c1.9	615	n/a	nla	s,c	n/a	1.9	n/a U
110-62-7 Cyclothexane NGS 110 <1.8 <1.8 r/s	167034182		Chloroform	NGS	120	c1.5	<1.5	nía	nla	e,u	n/a	1.5	n/a U
128-16-5 Decame NGS 96 <2.8 <2.8 r/s r/s <t< td=""><td>167034182</td><td></td><td>Cyclohexane</td><td>NGS</td><td>110</td><td>41.8</td><td><1.8</td><td>n/a</td><td>n/a</td><td>n'a</td><td>n/a</td><td>1.8</td><td>n/a U</td></t<>	167034182		Cyclohexane	NGS	110	41.8	<1.8	n/a	n/a	n'a	n/a	1.8	n/a U
64-17-5 Ethanol NGS 100 <7.4 <7.4 r/a <	167034182		Decane	NGS	96	42.8	428	nia	nla	s,c	n/a	2.8	n/a U
141-78-6 Ethyl acetarie NGS 100 <1.5 <1.5 <1.5 <1.6 n/a n/a n/a n/a 1.5 100-41-4 Ethylbenzene NGS 110 <1.5	167034182		Ethanol	NGS	100	475	474	n/a	nla	n/a	n/a	7.4	n/a U
100-41-4 Ethylbenzene NGS 110 <1.5 <1.5 <1.5 r/a	167034182		Ethyl acetate	NGS	100	c1.5	<1.5	n/a	nla	n/a	n/a	1.5	n/a U
110-Oc9 Furant NGS 100 <1.6 <1.6 <1.6 r/a <	167034182		Ethylbenzene	NGS	110	<1.5	<1.5	nia	nla	n'a	n/a	1.5	n/a U
110-54-3 Hexame NGS 100 <1.7 <1.7 <1.7 r/a	1167034182		Furan	NGS	100	<1,6	<1.6	n/a	nla	n'a	n/a	1.6	n/a U
628-73-9 Hexanentitie NGS 100 <1.5 <1.5 <1.5 r/s	167034182		Hexane	NGS	100	<1.7	<1.7	r/a	nla	n'a	n/a	1.7	n/a U
128-86-7 Methatoxylochlinge NGS 100 <1.6 <1.6 ris ris <td>167034182</td> <td></td> <td>Hexanenitrile</td> <td>NGS</td> <td>100</td> <td><1.5</td> <td><1.5</td> <td>n/a</td> <td>nla</td> <td>n'a</td> <td>n/a</td> <td>1.5</td> <td>n/a U</td>	167034182		Hexanenitrile	NGS	100	<1.5	<1.5	n/a	nla	n'a	n/a	1.5	n/a U
75-08-2 Mottydene Chloride NGS 100 <2.7 <2.7 r/a r/a <td>167034182</td> <td>0</td> <td>Methacyloninile</td> <td>NGS</td> <td>100</td> <td>41.6</td> <td><1.6</td> <td>nía</td> <td>nla</td> <td>n'a</td> <td>n/a</td> <td>1.6</td> <td>U alu</td>	167034182	0	Methacyloninile	NGS	100	41.6	<1.6	nía	nla	n'a	n/a	1.6	U alu
91-20-3 Naphthalene NGS 110 <3.7 <14 <14 <14 <16 <17 <17 <17 <18 r/s	167034182		Methylene Chloride	NGS	100	427	427	n/a	n/a	n/a	n/a	2.7	n/a U
96-95-3 Nitrobenzene NGS 110 <2.6 <2.6 r/a	167034182		Naphthalene	NGS	110	<3.7	<3.7	nia	n/a	n'a	n/a	3.7	n/a U
110-G9-8 Pentanentide NGS 97 <1.6 <1.6 r/a	167034182		Nitrobenzene	NGS	110	<2.6	<2.6	n/a	nla	n'a	n/a	2.6	n/a U
107-12-0 Propanentifie NGS 150 <14 <14 r/a	167034182		Pentanenibile	NGS	87	e1,6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a U
110-86-1 Pyridine NGS 130 <3.8 <3.8 r/a	1167034182		Propanentrile	NGS	100	C1.4	<1.4	nia	n/a	n'a	n/a	1.4	n/a U
100-42-5 Styrene NGS 110 <1.6 1.7 r/a rale r/a r/a 1.8	167034182		Pyridine	NGS	130	<3.8	<3.8	nia	nla	n'a	n/a	3.8	n/a U
127-18-4 Tetrachlorechene NGS 120 <1.6 51 r/a	167034182		Styrene	NGS	110	e1,6	1.7	n/a	elu	e,u	n/a	1.6	n/a J
108-88-3 Toluene NGS 110 <1.5 3.1 n/a n/a n/a n/a 1.5	167034182		Tetrachlorcethene	NGS	120	<1.6	51	n/a	nla	n'a	n/a	1.6	n/a
	167034182	108-88-3	Toluene	NGS	110	<1.5	3.1	n/a	n/a	n'a	n/a	1.5	n/a J

Y - Comment T - Tentalively Identified Compound L - LLS Outside Range

B - Blank Contamination E - Outside Calibration Range

J - Estimated N - Named TIC

NA = Not Analyzed, ND = Not Detected

c - RPD Outside Range U - Less Than Detection Limit

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Cartridge Evaluation Data Summary Report

Sample Group: 20162988 SDG Number:

Customer Sample ID: 16-08635-2-EFF-A Customer Sample ID: 16-08635-2-EFF-A

-	-	constitution complete	- In										
Samples R	2	SAS #	Analyte	Unit	\$ O.S	Blank	Result	Duplicate	Average	_	RPD % Spk Rec %	Det Limit Cr	Det Limit Cnt Err % Qual Flags
VAPOR-TDA	U VOA	#2											
S16T034182	-	9-01-6	Trichloroethene	NGS	120	<1.5	4.5	n/a	n'n	L	r/a	1,5	n/8 U
S16T034182	-	5-69-4	Trichionofluoremethans	NGS	110	e1.6	41.6		n'a	n/a	r/s	1.6	n/a U
S16T094182	-	0061-01-5	cis-1,3-Dichloropropene	NGS	110	61.3	c1.3	n/a	na		1/3	1.3	n/s U
S16T034182		23-86-4	n-Butyl acetate	NGS	88	41.4	1.4			n/a	1/0	1.4	n/a J
S16T034182	-	42-82-5	n-Heptane	NGS	100	K12	41.4	n/a			r/s	1.4	U/a/U
S16T034182	-	0061-02-6	Pans-1 3-Dichloropropane	MGS	110	613	640					0.0	of all 1

NA = Not Analyzed, ND = Not Detected

c - RPD Outside Range U - Less Than Detection Limit

Y - Certiment
T - Tentatively Identified Compound
L - LLS Outside Range

B - Blank Contamination E - Curside Calbration Range

J - Estimated N - Named TIC

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Cartridge Evaluation Data Summary Report

Customer Sample ID: 16-08635-2-EFF-B Customer Sample ID: 16-08635-2-EFF-B

Sample® R	A CAS#	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	RPD % Spk Rec %	Det Limit Cr	Det Limit Cnt Err % Qual Flags
VAPOR-TDU VOA #2	U VOA #2											
167034163	79-34-5	1,1,2,2-Tetrachlovoethane	NGS	110	<1.3	<1.3	n/a	nia	n/s	2/4	1.3	n/a U
\$167034183	2-00-64	1,1,2-Trichloroethane	NGS	110	<1,5	41.5	n'a	eļu	n/a	riva	1,5	n/a U
S16T034183	75-34-3	1,1-Dichloroethane	NGS	110	c1.2	c1.2	n'a	n/a	n/a	rva	1.2	n/a U
S16T034183	75-35-4	1,1-Dichloroethene	NGS	110	<1.3	<1.3	n'a	nia	n/a	r/s	1.3	U/a U
S16T034183	107-06-2	1,2-Dichloroethane	NGS	120	e1,6	41.6	n/a	n/a	n/a	r/a	1.6	n/a U
S16T034183	542-75-6	1,3-Dichloropropene (Total)	NGS	m'a	n/a	<1.2	n'a	n/a	n/a	r/a	1.2	n/a U
S16T034183	106-46-7	1.4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	r/a	2.0	n/a U
16T034183	123-91-1	1,4-Dioxane	NGS	110	c1,7	41.7	n'a	n/a	n/a	e/a	1.7	n/a U
S16T034183	71-38-3	1-Butanol	NGS	120	<8.9	<8.9	n'a	e/u	n/a	1/0	6.8	n/a LUY
\$167034183	111-70-6	1-Heptanol	NGS	83	<5.6	<5.6	n'a	n/a	n/a	r/a	5.6	n/a LU
S16T034183	71-23-8	1-Propanol	NGS	120	7.2	6.0	n/a	n/a	n/a	r/a	3.0	n/a BJ
S16T034163	108-47-4	2,4-Dimethy/pyridine	NGS	110	<3.3	<3.3	n'a	n/a	n/a	1/3	3.3	U e/u
S16T034183	1708-29-8	2,5-Ditydrofuran	NGS	110	<2.8	<2.8	e,c	n/a	n/a	6/1	2.8	n/a Uc
S16T034163	78-93-3	2-Butanone	NGS	110	<1.9	2.2	e,u	n/a	n/a	r/a	1.9	n/a J
S16T034183	110-43-0	2-Heptanone	NGS	68	<1.6	41.8	s,c	n/a	n/a	e/a	1,6	n/a U
S16T034183	591-78-6	2-Hexanone	NGS	88	<1.2	<1.2	n'a	n/a	n/a	n/a	12	n/a U
S16T034183	534-22-5	2-Methythuan	NGS	110	c1,9	41.9	n/a	n/a	n/a	n/a	1.9	U s/u
S16T034183	78-94-4	3-Buten-2-one	NGS	100	<1.7	<1.7	n'a	n/a	n/a	n/a	1.7	n/a U
S16T034183	108-35-4	3-Heptanone	NGS	100	<1.5	<1.5	n/a	e/u	n/a	n/a	1.5	n/a U
\$167034183	106-68-3	3-Octanone	NGS	110	424	<2.4	n/a	n/a	n/a	n/a	2.4	n/a U
\$167034183	105-42-0	4-Methyl-2-hexanone	NGS	88	<1,3	<1.3	n'a	n/a	n/a	n/a	1.3	n/a U
S16T034183	108-10-1	4-Methyl-2-Pentanone	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/a U
S16T034183	87-64-1	Acetone	NGS	97	c4.3	66.3	n/a	n/a	n/a	n/a	4.3	n/a U
\$167034183	75-05-8	Acetonitrile	NGS	16	<1.8	11	n/a	n/a	n/a	n/a	1.8	n/a J
S16T034183	38-96-2	Acetophenone	NGS	100	42.6	<2.6	nia	n/8	n/a	n/a	2.6	Na U
S16T034183	107-13-1	Acrylonitrile	NGS	98	<1.7	<1.7	n/a	e/u	n/a	n/a	1.7	n/a U
S16T034183	107-18-6	Allyl Alcohol	NGS	120	63.9	<3.9	ria	nga	e/n	n/a	30	of all the

B - Blank Contamination E - Outside Calibration Range

Y - Comment T - Tentalively Identified Compound L - LLS Outside Range

J - Estimated N - Named TIC

NA = Not Analyzed, ND = Not Detected

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Cartridge Evaluation Data Summary Report

Customer Sample ID: 16-08635-2-EFF-B Customer Sample ID: 16-08635-2-EFF-B Sample Group; 20162988 SDG Number;

Sample® R	All CAS #	Analyte	Unit	\$10%	Blank	Result	Duplicate	Average	RPD 1/4	RPD % Spk Rec %	Det Limit	Cert Err % Qual Flace
VAPOR-TDU VOA #2	U VOA #2											
S16T034183	107-05-1	Allyl Chloride	NGS	110	<2.8	<2.8	n's	n/a	n/a	n/a	2.8	n/s/u
\$167034183	71-43-2	Benzone	NGS	110	<1.2	<1.2	n'a	n/a	n/a	n/a	12	n/a U
\$167034183	100-47-0	Benzontrie	NGS	100	e,1,9	<1.9	n'a	n/a	n/a	n/a	1,9	n/a U
S16T034183	123-72-8	Butanal	NGS	110	42.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a U
S16T034183	109-74-0	Butanenitrile	NGS	100	<1.2	<1.2	n/a	e/u	n/a	n/a	1.2	U(s)U
S16T034183	56-23-6	Carbon tetrachloride	NGS	130	61.6	<1.6	n'a	n/a	n'a	n/a	1,6	n/a U
S16T034183	108-90-7	Chlorobenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1,5	n/a U
S16T034183	75-00-3	Chloroethane	NGS	98	c1.9	<1.9	n'a	ela	n/a	n/a	1.9	n/a U
S16T034183	67-66-3	Chloroform	NGS	120	<1.5	<1.5	n/a	n/a	n'a	n/a	1.5	n/a U
\$167034183	110-82-7	Oydohexane	NGS	110	<1.8	<1.8	n/a	n/a	n'a	n/a	1.8	n/a/U
S16T034183	124-18-5	Decane	NGS	96	42.8	42.8	n/a	n/a	n'a	n/a	2.8	n/a U
S16T034183	84-17-5	Ethanol	NGS	100	4.75	472	n/a	n/a	n/a	n/a	7.4	n/a U
S16T034183	141-78-6	Ethyl acetate	NGS	100	<1.5	<1.5	nia	n/a	n/a	n/a	1.5	n/a U
\$167034183	100-41-4	Ethylbenzene	NGS	110	<1.5	<1.5	n/a	nla	n/a	n/a	1.5	n/a U
S16T034183	110-00-8	Furan	NGS	100	c1.6	61.6	nía	n/a	n'a	n/a	1.6	n/a U
\$167034183	110-54-3	Hexane	NGS	100	<1.7	C1.7	n/a	nia	n/a	n/a	1.7	n/a U
\$167034183	628-73-9	Hexanentrile	NGS	100	<1.5	<1.5	n/a	nia	n/a	n/a	1.5	n/a U
S16T03A183	126-98-7	Methacylonitrie	NGS	100	c1.6	<1.6	n/a	n/a	nia	n/a	1.6	n/a U
S16T03A183	75-09-2	Methytene Chloride	NGS	100	42.7	2.8	n/a	m/a	n'a	n/a	2.7	n/a J
\$167034183	91.20-3	Naphthalene	NGS	110	<3.7	9.7	n/a	n/a	nía	n/a	3.7	nyaU
S16T034183	98-95-3	Nitrobenzeno	NGS	110	<2.6	426	nla	n/a	n/a	n/a	2.6	n/a U
\$167034183	110-59-8	Pertenentrie	NGS	26	41.8	<1.6	n/a	e/u	n/a	n/a	1.6	n/a U
\$167034183	107-12-0	Propanenitie	NGS	100	41.4	41.4	nla	n/a	n/a	n/a	1.4	n/a U
\$167034183	110-86-1	Pyridine	NGS	130	<3.8	<3.8	n/a	n/a	n/a	e/u	3.8	n/s U
\$167034183	100-42-5	Styrene	NGS	110	41.6	e1.6	n/a	n/a	n/a	e,u	1.6	n/e U
S16T034183	127-18-4	Tetrachloroethene	NGS	120	<1.6	37	n/s	n/a	n/a	n/a	1.6	n/a
\$167034183	108-88-3	Tokene	SDN	110	<1.5	2.0	e/u	n/a	nla	e,u	1.5	n/a J

Y - Comment
T - Tentatively Identified Compound
L - LLS Outside Range

B - Blank Contamination E - Outside Calibration Range

J - Estimated N - Named TIC

NA = Not Analyzed, ND = Not Detected c - RPD Outside Range U - Less Than Detection Limit

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Cartridge Evaluation Data Summary Report

Sample Group: 20162988 SDG Number:

Customer Sample ID: 16-08635-2-EFF-B Customer Sample ID: 16-08635-2-EFF-B

Semple# R	AF CAS #	Analyte	Unit	% CLLS	Blank	Result	Duplicate	Average	RPD % Spk Rec %	pk Rec %	Det Limit Crit	Det Limit Crit Err % Qual Flags
VAPOR-TDU	VOA #2											
S16T034183	79-01-6	Trichlorooffscne	NGS	120	41.5	<1.5	n/a	a _l u	8/4	nta	1.5	O's U
S16T034183	75-69-4	Trichlorofluoremethane	NGS	110	6,15	41.8		nla	n/a	ela	1.6	n/s U
\$167034183	10061-01-5	dis-1,3-Dichloropropene	NGS	110	c1.3	<1.3		e,u	n/a	nya	1.3	Na U
S16T034183	123-86-4	n-Butyl acetate	NGS	88	41.4	4.12		nla	r/a	r/s	1.4	n/a U
\$167034183	142-82-5	n-Heptane	NGS	100	41.4	4,14	n/a	n'a	n/a	nla	1.4	n/s U
S16T034183	10061-02-6	trans-1,3-Dichloropropene	NGS	110	<1.2	41.2		n's		rys	1.2	n/a U

NA = Not Analyzed, ND = Not Detected

c - RPD Outside Range U - Less Than Detection Limit

J - Estimated N - Named TIC

B - Blank Contamination E - Outside Calibration Renge

Y - Comment T - Tentsilvely Identified Compound L - LLS Outside Range

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Cartridge Evaluation Data Summary Report

Customer Sample ID: 16-08635-2-EFF-C Customer Sample ID: 16-08635-2-EFF-C Sample Group: 20162988 SDG Number:

Samples R	AF CAS #	Amalyte	Unit	STD %	Etank	Result	Duplicate	Average	RPD % Spk Rec %	Rec %	DetLimit	Cnt Err % Qual Flags
VAPOR-TDU VOA #2	VOA #2											
S16T034184	79-34-5	1,1,2,2-Tetrachlorosthane	NGS	110	<1.3	A13	n/a	nla	n/a	e/u	1.3	U/a U
S16T034184	79-00-5	1,1,2-Trichloroethane	NGS	110	<1.5	<1.5	n/a	nla	ela	n/a	1.5	U8/U
S16T034184	75-34-3	1,1-Dichleroefrans	NGS	110	<12	<12	n/a	n'e	eyu	n/a	1.2	n/a U
S16T034184	75-35-4	1,1-Dichleroefhene	NGS	110	<1.3	<1.3	n/a	n/a	e/u	e/u	1.3	N8 U
\$167034184	107-06-2	1,2-Dichleroethane	NGS	120	41.6	<1.6	n/a	n'e	n/s	n/s	1.6	Ua'U
S16T034184	542-75-6	1,3-Dichleropropene (Total)	NGS	n/a	elva	<1.2	n/a	n/a	n/a	n/a	1.2	N/8 U
S16T034184	106-46-7	1,4-Dichlarobenzene	NGS	110	420	<2.0	n/a	n'a	nía	n/a	2.0	Ua/u
S16T034184	123-91-1	1,4-Dioxane	NGS	110	C12	C12	n/a	n/a	ela	n/a	1.7	Ua/u
S16T034184	71-36-3	1-Butanol	NGS	120	48.9	48.9	n/a	nla	ry/a	n/a	8.9	N/a LUY
116T034184	111-70-6	1-Heptanol	NGS	83	45.6	<5.6	n/a	n/a	e/u	n/a	5.6	Na LU
S16T034184	71-23-8	1-Propanol	NGS	120	7.2	7.5	n/a	n's	e/u	e/u	3.0	n/s 8J
316T034184	108-47-4	2,4-Dimethylpyridine	NGS	110	93	433	n/a	nla	n/a	n/a	3.3	Us/u
S16T034184	1708-29-8	2,5-Dhydrofuran	NGS	110	28	2.8	n/a	n'a	r/a	n/a	2.8	n/a Uc
S16T034184	78-93-3	2-Butanone	NGS	110	41.9	<1.9	n/a	ala	n/a	ejru	1.9	∪a/n
1167034184	110-43-0	2-Heptanone	NGS	66	<1.8	<1.8	n/a	n'a	n/a	e/u	1.6	U a/n
S16T034184	591-78-6	2-Hexanone	NGS	86	<12	<1.2	n/a	n'e	n/a	n/a	1.2	Us/u
S16T034184	534-22-5	2-Methylfuran	NGS	110	419	41.9	n/a	n'a	nla	nla	1.9	Ua/a
S16T034184	78-94-4	3-Butten-2-ane	NGS	100	C13	<1.7	n/a	ala	eju	n/a	1.7	U/a U
S16T034184	108-35-4	3-Heptanone	NGS	100	41.5	<1.5	n/a	n'a	nla	n/a	1.5	U/s U
S16T034184	106-68-3	3-Octanone	NGS	110	424	424	n/a	19/6	ri/s	n/a	2.4	Ua/u
S16T034184	105-42-0	4-Mathyl-2-haranone	NGS	66	<1.3	<1.3	n/a	n'a	riva	nia	1.3	U/a U
S16T034184	108-10-1	4-Methyl-2-Pentanone	NGS	100	613	41.9	n/a	n/a	n/a	n/a	1.9	Us U
S16T034184	87-64-1	Acetone	NGS	26	643	11	n/a	n'a	nla	nla	4.3	n/a J
S16T034184	75-05-8	Acetonitrile	NGS	16	41.8	20	n/a	n'a	n/a	nla	1.8	n/a
S16T034184	98-66-2	Acetophenone	NGS	100	42.6	2.7	n/a	n/a	r/a	e/u	2.6	n/a J
S16T034184	107-13-1	Acrytonitrillo	NGS	86	C13	<1.7	n/a	2,0	r/a	n/a	1.7	n/a U
S16T034184	107-18-6	Allyl Alcohol	NGS	120	<3.9	<3.9	n/a	nia	r/a	nla	3.9	n's Uc

8 - Blank Contemination E - Outside Calibration Range Y - Comment T - Tentatively Identified Compound L - LLS Outside Range

J - Estimated N - Named TIC

NA = Not Analyzed, ND = Not Detected

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Cartridge Evaluation Data Summary Report

SDG Number: Customer Sample ID: 16-08635-2-EFF-C Customer Sample ID: 16-08635-2-EFF-C

Sample Group: 20162988

Sampled R	AF CAS #	Amalyte	Unit	STD %	Blank	Result	Duplicate	Average	ROOM SEPARAGE SE	Roc %	Det Limit	Cot Err % Qual Flags
VAPOR-TDU VOA #2	1VOA #2											
S16T034184	107-05-1	Allyl Chloride	NGS	110	<2.8	<2.8	n/a	nla	n/a	n/a	2.8	Ulay
S16T034184	71-43-2	Benzere	NGS	110	412	<1.2	e)u	n/a	eyu	n/a	1.2	U syu
S16T034184	100-47-0	Benzoritrile	NGS	100	<1.9	<1.9	nla	n/a	n/a	n/a	1.9	n/a U
S16T034184	123-72-8	Butanal	NGS	110	2.1	42.1	n/a	n/a	n/a	n/a	2.1	Ulayu
S16T034184	109-74-0	Butanenitrile	NGS	100	<12	<1.2	nía	n/a	n/a	n/a	1.2	n/a U
S16T034184	56-23-5	Carbon tetrachloride	MGS	130	e1.6	<1.6	nla	n/a	e/u	n/a	1.6	n/a U
S167034184	108-80-7	Chlorobenzene	NGS	110	<1.5	<1.5	nta	n/a	n/a	n/a	1,5	n/a U
S16T034184	75-00-3	Chloroethane	NGS	98	e1.9	<1.9	eju	n/a	n/a	u/u	1.9	Ulahu
S16T034184	67-66-3	Chloroform	NGS	120	41.5	<1.5	nla	n/a	n/a	n/a	1.5	U syu
8167034184	110-82-7	Cyclohexane	NGS	110	<1.8	<1.8	eju	n/a	n/a	e,ru	1.8	r/a U
S16T034184	124-18-5	Decane	NGS	96	42.8	<2.8	eju	n/a	nla	n/a	2.8	n/a U
8167034184	64-17-5	Ethanol	NGS	100	47.4	21	nla	n/a	n/a	n/a	7.4	n/a J
S16T034184	141-78-6	Ethyl acetate	SON	100	<1.5	<1,5	nis	n/a	n/a	n/a	1.5	r/a U
S16T034184	100-41-4	Ethylbenzene	NGS	110	<1.5	<1.5	nla	nla	n/a	n/a	1.5	n/a U
S16T034184	110-00-9	Furan	NGS	100	41.8	<1.8	rits	n/a	e/u	n/a	1.6	n/a n
8167034184	110-54-3	Hexane	NGS	100	<1.7	<1.7	eya	n/a	n/a	n/a	1.7	n/a U
S16T034184	628-73-9	Hexanenitrite	NGS	100	<1.5	<1.5	rifa	n/a	n/a	n/a	1.5	n/a U
S16T034184	126-98-7	Methacytonitrile	NGS	100	41.6	<1.6	rita	n/a	nía	n/a	1.6	U aVa
S16T034184	75-09-2	Methylene Chloride	NGS	100	42.7	<2.7	nta	n/a	e/u	n/a	2.7	n/a U
S16T034184	91-20-3	Naphthalene	NGS	110	5.7	<3.7	eyu	nla	e/u	n/a	3.7	n/a U
S16T034184	88-85-3	Nitrobenzene	NGS	110	42.8	<2.6	n/a	n/a	n/a	n/a	2.8	U eVu
S16T034184	110-59-8	Pentanentrile	NGS	26	<1.6	<1.6	r/s	nla	nia	nía	1.6	n/a U
S16T034184	107-12-0	Propanentrile	NGS	100	41×	×1.4	nya	nla	eju	nía	1.4	r/a U
S16T034184	110-88-1	Pyridine	NGS	130	3.8	<3.8	n/a	nla	elva	nla	3.8	Ula/u
S16T034184	100-42-5	Styreno	NGS	110	41.6	41.6	e/a	n'a	n/a	nya	1.6	n/a U
S16T034184	127-18-4	Tetrachloroethene	NGS	120	41.6	27	r/a	n'a	rita	n/a	1.6	n/a
S16T03A18A	108-88-3	Toltione	NO.	4+0	20 000		-9-	-				

Y - Comment T - Tentatively Identified Compound L - LLS Outside Range

B - Blank Contamination E - Outside Calibration Range

J - Estimated N - Named TIC

NA = Not Analyzed, ND = Not Detected c - RPD Outside Range U - Less Than Detection Limit

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Cartridge Evaluation Data Summary Report

Sample Group: 20162988

SDG Number:

Customer Sample ID: 16-08635-2-EFF-C Customer Sample ID: 16-08635-2-EFF-C

Sample# R.	A CAS #	Analyte	Unit	# QLS	Blank	Result	Duplicate	Average	RPD %	RPD % Spk Rec %	DetLimit	Det Limit Cut Err % Qual Flags
VAPOR-TD(J VOA #2											
S16T034184	79-01-6	Trichloroethene	NGS	120	<1.5	<1.5	nta	nla	n/a	n/a	1.5	n/a[n
S16T034184	75-69-4	Trichlorofluoromethane	NGS	110	s1.6	41.6	. BJu	n/a	n/a	n/a	1.6	Uleyu
S16T034184	10061-01-5	cis-1,3-Dichlaropropene	NGS	110	e13	×1.3	nla	n/a	n/a	n/a	1.3	n/a U
S16T034184	123-86-4	n-Butyl acetate	NGS	96	414	×1.4	n/a	n/a	n/8	n/a	1.4	n/a U
\$167034184	142-82-5	n-Heptane	NGS	100	414	414	nla	nla	n/8	n/a	1.4	Ulalu
S16T034184	10061-02-6	trans-1,3-Dichloropropene	NGS	110	412	412	rıfa	nía		n/a	12	

NA = Not Analyzed, ND = Not Detected

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Cartridge Evaluation Data Summary Report

Customer Sample ID: 16-08635-2-EFF-D Customer Sample ID: 16-08635-2-EFF-D

ampros N	CASE	Analyte	Unit	\$10%	Blank	Result	Duplicate	Amerage		RPD % Spk Rec %	DetLimit	Det Limit Cer Err % Qual Flags
VAPOR-TOU VOA #2	U VOA #2											
1167034185	79-34-5	1,1,2,2-Tetrachloroethane	NGS	110	<1.3	<1.3	n/a	nla	n/a	r/a	13	n/a lu
S16T034185	79-00-5		NGS	110	41.5	<1.5	nia	nla	n/a	n/a	1.5	n/a U
S16T034185	75-34-3		NGS	110	c1.2	<1.2	n'a	nla	n/a	n/a	12	n/a)U
S16T034185	75-35-4	1,1-Dichloroethene	NGS	110	<1.3	c1.3	n/a	nla	n/a	n/a	13	n/a U
S16T034185	107-06-2	1,2-Dichloroethane	NGS	120	61.6	<1.6	nia	nla	n/a	n/a	1.6	n/alU
16T034185	542-75-6		NGS	n/a	n/a	<1.2	nta	nla	n/a	n/a	12	n/a U
S16T034185	106-46-7		NGS	110	<2.0	420	n/a	n/a	n/a	n/a	2.0	n/a U
3167034185	123-91-1		NGS	110	<1.7	<1.7	r/a	eva	n/a	n/a	1.7	Na U
S16T034185	71-36-3		NGS	120	6.89	<8.9	n/a	nla	e,c	n/a	8.9	n/a LUY
S16T034185	111-70-6		NGS	83	6.58	<5.6	n/a	nya	n'a	n/a	5.6	n/aLU
S16T034185	71-23-8		NGS	120	7.2	6.6	n/a	n/a	n/a	n/a	3.0	n/a BJ
S16T034185	108-47-4		NGS	110	33	<3.3	n/a	nia	n'a	n/a	3.3	n/a U
S16T034185	1708-29-8	-8 2,5-Dihydrofuran	NGS	110	428	428	n/a	nya	n/a	n/a	28	n/a Uc
S16T034185	78-93-3		NGS	110	613	22	rva	nia	n/a	n/n	1.9	n/a J
S16T034185	110-43-0		NGS	88	<1.6	<1.8	n/a	n/a	e,u	n/a	1.6	nau
S16T034185	591-78-6		NGS	96	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a U
S16T034185	534-22-5		NGS	110	c13	<1.9	n/a	n/a	n/a	n/a	1.9	ryaU
S16T03A185	78-94-4		NGS	100	<1.7	<1.7	n/a	nya	n/a	n/s	1.7	n/a U
S16T034185	108-35-4		NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1,5	n/a U
\$167034185	106-68-3		NGS	110	42.4	<2.4	n/a	n/a	n/a	n's	2.4	n/a U
\$167034185	105-42-0		NGS	66	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a U
\$167034185	108-10-1		NGS	100	<1.9	C1.9	n/a	n/a	n/a	e,c	6:1	n/a U
\$167034185	67-64-1	Acetone	NGS	87	<4.3	64.3	n/a	n/a	n/a	n/a	4.3	U a/u
S16T034185	75-05-8	Acetonitrile	SDN	94	<1.8	6.4	n/s	n/a	n/a	rita	1.8	Us/u
S16T034185	98-86-2		NGS	100	<2.8	<2.6	n/a	n/a	n/a	rya	2.6	n/a U
\$167034185	107-13-1		NGS	86	<1.7	<1.7	9,0	n/a	n/a	nfa	1.7	Ush
S16T034185	107-18-6		NGS	120	<3.0	080	200	ajo	ala	afte	00	

B - Blank Contamination E - Outside Calibration Range Y - Comment
T - Tentalively Identified Compound
L - LLS Outside Range

J - Estimated N - Named TIC

NA = Not Analyzed, ND = Not Detected c - RPD Outside Range U - Less Than Detection Limit

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Cartridge Evaluation Data Summary Report

Customer Sample ID: 16-08635-2-EFF-D Customer Sample ID: 16-08635-2-EFF-D Sample Group: 20162988 SDG Number:

ample# R	AF CAS #	Amabyte	Cali	STD %	Blank	Result	Duplicate	Average	RPD %	RPD % Spk Rec %	DetLimit	Cot Err % Qual Flace
VAPOR-TDU VOA #2	J VOA #2											
S16T034185	107-05-1	Allyl Chloride	NGS	110	<2.8	<2.8	n/a	2,0	n/a	r/a	2.8	U s/u
S16T034185	71-43-2	Benzone	NGS	110	c1.2	<1.2	n/a	nia	n/a	11/3	1.2	
S16T034185	100-47-0	Benzonitrie	NGS	100	6,19	6.1.9	n/a	nia	n/a	n/a	1.9	
S16T034185	123-72-8	Buteral	NGS	110	42.1	<2.1	n/a	nia	n/a	n/a	2.1	
S16T034185	109-74-0	Butarienitrile	NGS	100	c1.2	41.2	n/a	n/a	n/a	n/a	12	
16T034185	56-23-5	Carbon tetrachloride	SDN	130	6,1%	41.6	n/a	nís	n/a	n/a	1.6	
S16T034185	108-90-7	Chlorobenzene	NGS	110	c1.5	41.5	n/a	n/a	n/a	n/a	1.5	
S16T034185	75-00-3	Chlorosthane	NGS	98	6,12	41.9	n/a	n/a	n/a	n/a	1.9	
S16T034185	67-66-3	Chloroform	NGS	120	<1.5	41.5	n/a	n/a	n/a	n/a	1.5	
S16T034185	110-82-7	Oyclohexane	NGS	110	c1.8	c1.8	n/a	n/a	n'a	n/a	1.8	
316T034185	124-18-5	Decane	NGS	96	428	<2.8	n/a	n/s	n/a	n/a	2.8	
S16T034185	84-17-5	Ethanol	NGS	100	4.75	38	n/a	n/a	n/a	n/a	7.4	
\$16T034185	141-78-6	Ethyl acetate	NGS	100	<1.5	<1.5	n'a	n/a	n/a	n/a	1.5	n/a U
316T034185	100-414	Ethylbenzene	NGS	110	<1.5	<1.5	r,u	nla	n'a	n/a	1.5	
S16T034185	110-00-9	Furan	NGS	100	c1.6	41.8	n/a	nla	n'a	n/a	1.6	
S16T034185	110-54-3	Hexans	NGS	100	<1.7	<1.7	n/a	n/a	n's	n/a	1.7	
S16T034185	628-73-9	Hexamenitrile	NGS	100	<1.5	<1.5	n'a	nla	n'a	n/a	1.5	
\$16T034185	126-98-7	Methacylonitrile	NGS	100	41.6	<1.6	n/a	n/a	n'a	n/a	1.6	
316T034185	75-09-2	Methylene Chloride	NGS	100	42.7	427	r/a	nla	nta	n/a	27	n/a U
S16T034185	91-20-3	Naphthalone	NGS	110	<3.7	9.7	n/u	n/a	nia	n'a	3.7	n/a U
1167034185	96-95-3	Nitrobenzene	NGS	110	<2.6	426	nia	nla	nia	n'a	26	
3167034185	110-59-8	Portonenitrile	NGS	87	<1.6	41.6	rila	n/a	nta	e,u	1.6	n/a U
S167034185	107-12-0	Propanentifile	NGS	100	4.15	41.4	n/a	nia	n/a	r/a	1.4	n/a U
187034185	110-86-1	Pyridine	NGS	130	<3.8	<3.8	eyu	n/a	n/a	riva	3.8	ryaU
S16T034185	100-42-5	Styrene	NGS	110	<1.6	6,15	n/a	n/a	n/a	r/a	1.6	
S16T034185	127-18-4	Tetrachiceoethene	NGS	120	<1,6	30	n/a	n/a	n/a	r/a	1.6	
S16T034185	108-88-3	Toluene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	ola	1.5	rist!

Y - Comment T - Tentatively Identified Compound L - LLS Outside Range

B - Blank Contamination E - Outside Calibration Range

J - Estimated N - Named TIC

NA = Not Analyzed, ND = Not Detected

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Cartridge Evaluation Data Summary Report

Sample Group: 20162938
SDG Number:
Customer Sample ID: 16-08635-2-EFF-D
Customer Sample ID: 16-08635-2-EFF-D

Sample# R	A# CASS		Analyte	Unit	STD %	Blank	Result	Duplicate	Arrorage	RPO %	RPD % Spk Rec %	Det Umit	Det Umit Ont Enr % Qual Flags
VAPOR-TDU	VOA #2												
S16T034185	79-01-6	9	Trichiproethene	NGS	120	<1,5	<1,5	nla	r/a	n/a	n/a	1.5	n/a U
\$167034185	75-69-4	*	Trichlorofluoromethano	NGS	110	41,8	2.3	eyu	nía	n/a	n/a	1.6	r/a J
S16T034185	10061-01-5	01-6	cis-1,3-Dichloropropene	NGS	110	61.3	<1.3	nla	nla		n/a	1.3	n/a U
\$167034185	123-86	I	n-Butyl acetate	NGS	88	41.4	41.4	rya	n/a	-	n/a	1.4	r/a U
S16T034185	142-82-5	92	n-Heptane	NGS	100	41.4	41.4	n/a	n/a	n/a	n/a	1.4	n/a U
S16T034185	10061-02-6	-02-6	trans-1,3-Dichloropropone	NGS	110	<12	<1.2	rys	n/a		n/a	1.2	n/a U

NA = Not Analyzed, ND = Not Delected c - RPD Contide Renew

c - RPD Outside Range U - Less Than Detection Limit

J - Estimated N - Named TIC

B - Blank Contamination E - Outside Calibration Range

Y - Comment T - Tertatively Identified Compound L - LLS Outside Range

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Cartridge Evaluation Data Summary Report

Customer Sample ID: 16-08635-2-EFF-E Customer Sample ID: 16-08635-2-EFF-E

VAPOR-TDU VOA #2	-	ardina pro	Unit	310 %	Dlank	Result	Duplicate	Acretage	_	RPD % Sok Rec %	Det Limits	Cut For % Qual Flags	at Flans
	VOA #2												
3167034188	79-34-5	1,1,2,2-Tetrachloroethane	NGS	110	×1.3	<1,3	nia	n/a	n/B	n/a	1.3	Ulahu	l
167034186	79-00-5	1,1,2-Trichloroethane	NGS	110	<1.5	<1.5	nla	n/a	n/a	n/n	1.5		
S16T034188	75-34-3	1,1-Dichloroethane	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2		
S16T034186	75-35-4	1,1-Dichloroethene	NGS	110	<13	<1.3	rita	n/a	n/a	n/a	1.3	r/a U	
3167034186	107-06-2	1,2-Dichloroethane	NGS	120	41.8	41.6	r/a	nla	n/a	n/a	1.6	Ulahu	
316T034186	542-75-6	1,3-Dichleropropene (Total)	NGS	n/a	n/s	<1.2	rva	nla	nia	n/n	1.2	n/a U	ı
S16T034188	106-46-7	1,4-Dichlorobenzene	NGS	110	200	<2.0	r/a	nla	rva	n/a	2.0	n/a U	l
S16T034186	123-91-1	1,4-Dioxane	NGS	110	C1.7	<1.7	r/a	nla	eya	nfa	1.7	Unda	l
167034186	71-36-3	1-Butanol	NGS	120	6.89	<8.9	r/a	n/a	r/a	n/a	8.9	Na LUY	
5167034186	111-70-6	1-Heptanol	NGS	83	45.6	5.6	n/a	n/a	r/a	nía	5.6		
167034186	71-23-8	1-Propanol	NGS	120	7.2	7.8	n/a	9,0	1/3	n/a	3.0	N/8 BJ	
316T034186	108-47-4	2,4-Dimethylpyridine	NGS	110	933	33	n/a	n'a	n/a	nla	3.3	U e/u	
167034186	1708-29-8	2,5-Dihydrofuran	NGS	110	42.8	2.8	n/a	n'a	r/a	n/a	28	n/s Uc	
S16T034186	78-93-3	2-Butanone	NGS	110	6.19	2.1	n/a	n'a	n/a	eyu	1.9	L e/n	
1167034186	110-43-0	2-Heptanone	NGS	86	41.8	<1.6	n/a	a'er	n/a	chn	1.6	∪ a/n	
S16T034186	591-78-6	2-Hexanone	NGS	88	<1.2	<1.2	n/a	nia	n/a	nta	1.2	Us/u	
S16T034186	534-22-5	2-Methyffuran	NGS	110	6.1.9	6,12	n/a	nia	n/a	r/a	1.9	∪ a/a	
167034186	78-94-4	3-Buten-2-one	NG\$	100	<1.7	C13	n/a	nia	n/a	rya	1.7	O €/W	
\$16T034186	108-35-4	3-Heptanone	NGS	100	<1.5	<1.5	n/a	nia	n/a	1/3	1.5	U g/m	
3167034186	106-68-3	3-Octanone	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	U s/u	
16T034166	105-42-0	4-Methyl-2-hexanone	NGS	66	c1.3	<1.3	n/a	n/a	n/a	r/a	1.3	U/a U	
S16T034186	108-10-1	4-Methyl-2-Pentanone	NGS	100	41.9	6.12	n/a	n/a	n/a	n/a	1.9	O E,u	
316T034188	67-84-1	Apetone	NGS	97	<4.3	8.0	n/a	n/a	n/a	n/a	4.3	L'eyu	
316T034188	75-05-8	Acetonitrile	NGS	91	<1.8	7.4	n/a	n/a	n/a	n/a	1,8	n/a J	
167034188	98-86-2	Acetophenane	NGS	100	<2.6	<2.8	n'a	nla	n/a	n/a	2.6	n/a U	
167034186	107-13-1	Acrylonitrile	NGS	86	<1.7	<1.7	ria	n/s	n'a	n/a	1.7	n/a U	
\$167034188	107-18-8	Allyl Alcohol	NGS	120	<3.9	6.65	n/a	n/a	n'a	n/a	3.9	n/a Uc	

Y - Comment T - Tentainely Identified Compound L - LLS Outside Range

B - Blank Contamination E - Cutside Calibration Range

J - Estimated N - Named TIC

NA = Not Analyzed, ND = Not Detected

c - RPD Outside Range U - Less Than Detection Limit

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Cartridge Evaluation Data Summary Report

Customer Sample ID: 16-08635-2-EFF-E Customer Sample ID: 16-08635-2-EFF-E Sample Group: 20162988 SDG Number:

amples R	Af CAS #	Analyte	Unit	STD%	Cllank	Result	Duplicate	Average	RPD %	Average RPD % Spk Rec %	Det Lâmit	Det Limit Ont fire % Qual Flags
VAPOR-TDU VOA #2	1 VOA #2											
167034188	107-05-1	Allyl Chloride	NGS	110	528	528	n'a	n/a	n/a	n/a	28	n/a U
316T034185	71-43-2	Benzene	NGS	110	<1.2	c12	n'a	n/a	n/a	n/a	12	
S16T034186	100-47-0	Benzonitrile	NGS	100	61.9	61.9	n/a	nis	n'a	n/a	1.9	
316T034166	123-72-8	Butanel	NGS	110	21	421	n'a	nla	n/a	n/a	2.1	
316T034188	109-74-0	Butanenitrile	NGS	100	<1.2	<1.2	n'a	n/a	n/a	n/a	1.2	L
S16T034185	56-23-5	Carbon tetrachloride	NGS	130	6,15	<1.6	n/a	nla	n'a	n/a	1.6	
S16T034186	108-90-7	Chlorobenzene	NGS	110	c1.5	c1.5	riva	nla	n/a	n/a	1.5	
S16T034186	75-00-3	Chloroethane	NGS	98	6.19	619	n/a	elva	n/a	n/a	1.8	
S16T034186	67-66-3	Chloroform	NGS	120	<1.5	<1.5	n/a	nla	n'a	n/s	1.5	
316T034186	110-82-7	Cyclohexane	NGS	110	<1.8	c1.8	n/a	n/a	n/a	1/2	1.8	
S16T034185	124-18-5	Docum	NGS	86	<2.8	<2.8	nya	nla	nía	n/a	2.8	
5167034186	84-17-5	Ethanol	NGS	100	4.7>	99	n/a	nla	nía	n'a	7.4	
S16T034185	141-78-6	Ethyl acetate	NGS	100	<1.5	<1.5	n/a	elva	nía	n'a	1.5	n/a U
\$167034186	100-41-4	Ethylbenzone	NGS	110	<1.5	<1.5	n/a	n/a	nfa	n/a	1.5	
S16T034186	110-00-9	Furan	NGS	100	<1.8	<1.6	n/a	n/s	n/a	n'a	1.6	n/a U
S16T034186	110-54-3	Hexane	NGS	100	<1.7	<1.7	n/a	elva	n/a	e,c	1.7	
167034186	628-73-9	Hoanentrie	NGS	100	<1.5	<1.5	n/a	n/a	n/a	nla	1.5	Ulan
S16T034186	126-98-7	Methacryfonitrile	NGS	100	<1.8	<1.6	n/a	n/a	n/a	e/u	1.6	
167034186	75-09-2	Methylene Chloride	NGS	100	<2.7	<2.7	n/a	n/a	nýu	nla	2.7	n/a U
S16T034186	91-20-3	Naphthalene	NGS	110	<3.7	<3.7	n/a	e/u	n/a	r/a	3.7	
S16T034186	98-96-3	Mtrobenzene	NGS	110	<2.6	<2.6	n/a	n/a	nla	n/a	2.6	U e/u
S16T034186	110-59-8	Pentanenibile	NGS	82	61.6	<1.6	n/a	n/a	n/a	n/a	1.8	
S16T034186	107-12-0	Proparenitrie	NGS	100	414	<1.4	n/a	n/a	n/a	n/a	1.4	n/a U
S16T034186	110-85-1	Pyeldine	NGS	130	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	U/a/U
S16T034186	103-42-5	Styrene	NGS	110	41.5	41.6	n'a	n/a	n/a	n/a	1.6	U a/u
S16T034186	127-18-4	Tetrachioroethene	NGS	120	<1.6	20	n/a	n/a	nla	n/a	1.6	
S16T034186	108-88-3	Toluene	NGS	110	<1.5	2.1	9,00	n/a	n/a	n/a	1.5	n/a/J

Y - Comment
T - Tentatively Mentified Compound
L - LLS Outside Range

B - Blank Contamination E - Outside Calibration Range

J - Estimated N - Named TIC

NA = Not Analyzed, ND = Not Detected

c - RPD Outside Range U - Less Than Detection Limit

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Cartridge Evaluation Data Summary Report

Customer Sample ID: 16-08635-2-EFF-E Customer Sample ID: 16-08635-2-EFF-E

Sample# R	AF CAS #	Arralyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD % Spk Rec %	pk Rec %	DetLimit	Det Limit Cot Err % Qual Flace	and Flaces
VAPOR-TD	UVDA#2									1			
S16T034185	79-01-6	Trichloroethene	NGS	120	415	41.5	n/a	nla	n/a	nta	1.5	Ula'vu	l
S16T034186	75-69-4	Trichlorofluoromethane	NGS	110	61.8	3.4	n/a	9,6		n/a	1.6	0/8	
S16T034186	10061-01-5	cis-1,3-Dichianopropene	NGS	110	513	61.9	n/a	nia	n/a	n/a	13	U e/o	
8167034186	123-86-4	n-Butyl acetate	NGS	86	412	4.1.4	n/a	n/s	n/a	nla	14		
S16T034186	142-82-5	n-Meptane	NGS	100	4.12	4,12	n/a	n/a	n/a	rila	14		
S16T034186	10061-02-6	trans-1,3-Dichloropropene	NGS	110	<1.2	<1.2	n/a	n/a		refer	12	Dia U	

NA = Not Analyzed, ND = Not Detected c - RPD Outside Range U - Less Than Detection Limit

Y - Comment T - Testatively Identified Compound L - LLS Outside Range

B - Blank Contemination E - Outside Calibration Range

J - Estimated N - Named TIC

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Cartridge Evaluation Data Summary Report

Customer Sample ID: 16-08635-2-EFF-F Customer Sample ID: 16-08635-2-EFF-F

	200	Pullet you	dun	STD %	Blank	Result	Duplicate	Average	NPD %	NPD 76 SOK Red 76	Det Umit	Det Umit Cot Err 5/Out Flags
VAPOR-TDU VOA #2	VOA #2											
S16T034187	79-34-5	1,1,2,2-Totrachiceoethane	NGS	110	<1.3	<1.3	n/a	n/a	nla	n/a	13	Maku
S16T034187	79-00-5	1,1,2-Trichloroethane	NGS	110	<1.5	<1.5	n/a	n/a	nla	n/s	1.5	
161034187	75-34-3	1,1-Dichloroethane	NGS	110	<1.2	<12	n/a	n/a	a/a	alv	12	
S16T034187	75-35-4	1,1-Dichloroethene	NGS	110	<1.3	<1.3	n/a	nla	n/a	n/a	1,3	
S16T034187	107-06-2	1,2-Dichloroethane	NGS	120	<1.6	41.6	n/a	n/a	n/a	a/a	1.6	
16T034187	542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	s,u	412	n/s	n'a	n/a	m/a	12	
167034187	106-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	42.0	n/a	n/a	n/a	2/4	2.0	
167034187	123-91-1	1,4-Dioxane	NGS	110	<1.7	<1.7	n/a	n/a	n/a	2/0	1.7	
S16T034187	71-36-3	1-Butanol	NGS	120	<8.9	<8.9	n/a	nia	n/a	n/a	8.9	
167034187	111-70-6	1-Heptanol	NGS	83	e5.6	<5.6	n/a	n/a	n/a	n/a	5.6	nla
S16T004187	71-23-8	1-Propanol	NGS	120	7.2	8.2	n/a	rva	n/a	6/4	3.0	
S167034187	108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	e/u	3.3	nfa
S16T034187	1708-29-8	2,5-Dihydroflaran	NGS	110	<2.8	<2.8	nía	n/a	nía	n/a	2.8	rvalue
S16T034187	78-93-3	2-Butarone	NGS	110	6/1>	6.15	nia	n/a	n/a	n/a	1.9	U S/u
S16T034187	11043-0	2-Heptanone	NGS	86	<1.6	41.6	eju	n/a	n/a	n/a	1.6	r/a U
S167034187	591-78-6	2-Hexanone	NGS	86	<1.2	<1.2	e/u	n/a	n/a	n/a	1.2	
S16T034187	534-22-5	2-Methyffuran	NGS	110	6.15	41.9	nla	n/a	n/a	n/a	1.9	r/a U
S16T034187	78-94-4	3-Buten-2-one	NGS	100	C1.3	<1.7	e/u	n/a	nla	e/u	1.7	n/a U
167034187	106-35-4	3-Heptanone	NGS	100	<1.5	<1.5	e/u	n/a	nis	n/a	1.5	n/a U
S16T034187	106-68-3	3-Octanone	NGS	110	424	42.4	1/3	nla	n/a	n/a	2.4	n/s U
5167034187	105-42-0	4-Methyl-2-hexarrona	NGS	66	<13	<1.3	r/a	n/a	n/a	n/a	1.3	Na U
167034187	108-10-1	4-Methyl-2-Pentanone	NGS	100	613	6.1.9	6/13	n'a	rita	n/a	1.9	n/a U
S16T034187	67-64-1	Acetone	NGS	26	64.3	5.7	n/a	a,e	r/s	nta	4.3	n/a J
167034187	75-05-8	Acetonitrile	NGS	16	c1.8	5.8	n/a	nla	e/a	r/a	1.8	n/s.J
5167034187	98-86-2	Acetophenone	NGS	100	<2.6	42.6	n/a	n's	n/a	r/a	2.8	Us'n
S16T034187	107-13-1	Acrylonitrile	NGS	88	41.7	C13	n/a	nha	n/a	r/a	1.7	O/a U
S16T034187	107-18-6	Allyl Alcohol	MGS	120	<3.0	0.50	- Par		-			

Y - Comment T - Tertatively Identified Compound L - LLS Outside Range

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NA = Not Analyzed, ND = Not Delected

c - RPD Outside Range U - Less Than Detection Limit

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Cartridge Evaluation Data Summary Report

Customer Sample ID: 16-08635-2-EFF-F Customer Sample ID: 16-08635-2-EFF-F Sample Group: 20162988 SDG Number:

Samples R.	Ad CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average		RPD % Sak Rec %	DetLlenit	Det Limit Cut Err % Oual Flans
VAPOR-TDU VOA #2	J VOA #2											
S16T034187	107-05-1	Allyl Chloride	MGS	110	428	428	r/a	n/a	n/a	n/a	2.8	Ua/u
S16T034187	71-43-2	Benzere	NGS	110	<12	<12	8/4	n/a	n/a	uyu	1.2	n/a U
S16T034187	100-47-0		NGS	100	61.9	41.9	r/a	n/a	n/s	n/a	1.9	U/s/U
S16T034187	123-72-8		NGS	110	42.1	421	n/a	n/a	n/8	n/a	21	Us/u
S16T034187	109-74-0		NGS	100	42	<12	n/a	n/a	n/a	nia	1.2	Uk/u
S16T034187	56-23-5	Carbon tetrachloride	NGS	130	61.8	<1.6	n/a	n/a	r/a	n/a	1.6	U/s/U
167034187	108-90-7	Chlorobenzene	NGS	110	51.5	41.5	n/a	n/a	riva	nla	1.5	n/s/U
S16T034187	75-00-3	Chloroethane	NGS	56	612	615	n/a	nla	n/a	nla	1.9	U.\$/U
S16T034187	67-66-3		NGS	120	41.5	<1.5	n/a	n/a	rva	n/a	1.5	Us/u
316T034187	110-82-7		NGS	110	61.8	6,12	n/a	n/a	r/a	n/a	1.8	U(a)U
S16T034187	124-18-5		NGS	96	<2.8	<2.8	n/a	s,u	1/3	r/a	2.8	D's C
S16T034187	84-17-5	Ethanol	NGS	100	<7.4	98	n/a	n/a	n/a	r/a	7.4	n/a
S16T034187	141-78-6	Ethyl acetabs	NGS	100	<1.5	<1.5	n/a	n'a	r/a	r/a	1.5	m/a U
316T034187	100-41-4	Ethylbenzane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	r/a	1.5	Ula U
\$167034187	110-00-9	Furan	NGS	100	41.8	<1.6	n/a	2,0	r/a	r/a	1.6	n/a U
S16T034187	110-54-3	Hexane	NGS	100	<1.7	<1.7	n/a	n's	n/a	1/9	1.7	n/a U
S16T034187	828-73-9	~	NGS	100	<1.5	<1,5	n/a	n/a	n/a	1/8	1.5	n/a U
\$16T034187	126-98-7		NOS	100	41.8	<1.6	n/a	nia	n/a	n/a	1.6	n/a U
S16T034187	75-09-2	Methylene Chloride	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	U e/u
S16T034187	91-20-3	Naphthalono	NGS	110	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a U
S16T034187	98-95-3		NGS	110	<2.8	<2.6	n'a	n/a	n/a	n/a	2.6	n/a U
S16T034187	110-59-8		NGS	16	41.6	<1,6	n/a	n/a	n/a	n/a	1,6	n/a)U
S16T034187	107-12-0	- 1	NGS	100	41.A	<1.4	n/a	n/a	n/a	n/a	1.4	n/a U
S16T034187	110-85-1		NGS	130	<3.8	<3.8	n'a	n/a	n/s	n/a	3.8	nau
S16T034187	100-42-5	Stynene	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a U
\$167034187	127-18-4	Tetrachlorcethene	NGS	120	c1.8	100	n/a	n/a	s,u	n/a	1.6	rva
S16T034187	108-88-3	Toluene	NGS	110	<1.5	c1.5	n/a	n/a	n/a	n/a	1.5	n/a U

B - Blank Contamination E - Outside Calibration Range

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L - LLS Outside Range

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Cartridge Evaluation Data Summary Report

SDG Number:

Sample Group: 20162988

Customer Sample ID: 16-08635-2-EFF-F Customer Sample ID: 16-08635-2-EFF-F

Sample® R	All CAS #	Analyte	Unit	STD %	Blank	Result	Ouplicate	Average	RPD % Spk Rec %		Set Clerifi o	Det Limit Ont Err % Qual Flags
VAPOR-TD	NU VIDA #2									1	1	
S16T034187	79-01-6	Trichloroethene	NGS	120	41.5	<1.5	1/3	n'a	rita	n/a	1.6	Ula/u
S16T034187	75-69-4	Trichlorofluoromethane	NGS	110	812	12	n/a	alu	rvs	n/a	1.6	n/a J
S16T034187	10061-01-5	cis-1,3-Dichlaropropene	NGS	110	613	413	n/a	n'a	r/a	n/a	1.3	n/s U
S16T034187	123-86-4	n-Butyl acetate	NGS	88	K12	41.4	n/a	nia	r/a	n/a	1.4	n/a/U
S16T034187	142-82-5	n-Heptana	NGS	100	414	414	n/a	9,0	1/3	n/a	1.4	O'a'U
S16T034187	10061-02-6	trans-1,3-Dichloropropene	NGS	110	<12	412	n/a	n'a		nin	12	Nati

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Y - Comment T - Tentatively Identified Compound L - LLS Outside Range

B - Blank Contamination E - Outside Celibration Range

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Cartridge Evaluation Data Summary Report

Customer Sample ID: 16-08635-2-EFF-G Customer Sample ID: 16-08635-2-EFF-G Sample Group: 20162988 SDG Number:

Samples R	R AS CAS #	Analyte	Unit	\$10%	Blank	Result	Duplicate	Average	RPD %	RPD % Spk Rec %	Det Limit Cn	Cnt Err % Qual Flags
VAPOR-TDU VOA #2	VOA #2											
S16T034188	79-34-5	1,1,2,2-Tetrachloroethane	NGS	110	<1.3	c1.3	n/a	n'a	n/a	r/a	1.3	M/a [U
S16T034188	29-00-8	1,1,2-Trichloroethane	NGS	110	c1,5	<1.5	n/a	n/a	n/a	1/3	1.5	Us U
316T034188	75-34-3	1,1-Dichloroethane	NGS	110	c1.2	<1.2	n/a	n'a	n/a	n/8	12	U(a)U
S16T034188	75-35-4	1,1-Dichloroethene	NGS	110	<1,3	<1.3	n/a	n/a	n/a	r/a	1.3	m/a U
S16T034188	107-06-2	1,2-Dichloroethane	NGS	120	<1.6	41.8	n/a	n'a	n/a	n/a	1.6	n/s U
S16T034188	542-75-6	1,3-Dichloropropene (Total)	SDN	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	12	n/a U
316T034188	106-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	m/s C
S16T034188	123-91-1	1,4-Dioxane	NGS	110	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a C
316T034188	71-36-3	1-Butanol	NGS	120	6.89	<8.9	n/a	n/a	n/a	n/a	8.9	n/a LUY
316T034188	111-70-6	1-Hepterol	NGS	83	6.58	<5.6	n/a	n/a	n/a	n/a	5.6	n/a LU
16T034188	71-23-8	1-Propanol	NGS	120	7.2	7.4	n/a	n/a	n/a	n/a	3.0	n/a BJ
\$16T034188	108-47-4	2,4-Dimethylpyridine	NGS	110	93	<3.3	e,u	n/a	n/a	n/a	3.3	n/a U
1167034188	1708-29-8	2,5-Dihyelofuran	NGS	110	428	<2.8	n'a	elu	n/a	n/a	2.8	n/a Uc
316T034188	78-83-3	2-Butanone	NGS	110	c1.9	<1.9	n/a	n/a	n/a	n/a	1.9	n/s U
316T034188	110-43-0	2-Hoptanone	NGS	86	<1.6	<1.6	0/3	n/a	n/a	n/a	1.6	n/a U
\$16T034188	591-78-8	2-Hexanone	NGS	88	<1.2	<1.2	n'a	n/a	n/a	n/a	1.2	n/a U
167034188	534-22-5	2-Methyffuran	NGS	110	613	<1.9	n/a	n/a	n'a	n/a	1.0	n/a U
\$16T034188	78.94.4	3-Buten-2-one	NGS	100	<1.7	<1.7	n'a	n/a	n/a	n/a	1.7	n/a U
316T034188	106-35-4	3-Heptanone	NGS	100	<1.5	<1.5	ב,ונו	n/a	n/a	n/a	1.5	n/a U
167034188	106-68-3	3-Octanone	NGS	110	42.4	424	ri/a	eyu	n/a	n'a	2.4	n/a U
3167034188	105-42-0	4-Methyl-2-hexanone	NGS	8	c1.3	<1.3	nla	n/a	n/a	e/u	1.3	n/a U
S16T034188	108-10-1	4-Methyl-2-Pentanone	NGS	100	6.19	<1.9	n/a	n/a	n/a	n'a	1.9	n/a U
\$167034188	67-64-1	Acetone	NGS	26	c4.3	12	n/a	n/a	n/a	e,u	4.3	L eln
S16T034183	75-05-8	Acetonitrile	NGS	16	<1.8	5.3	n/a	n/a	n/a	n/a	1.8	n/a J
\$167034188	98-86-2	Acetophenone	NGS	100	<2.6	<2.6	n/a	B/u	r/a	nía	2.6	nisiu
S16T034188	107-13-1	Acrylonitrile	NGS	96	<1.7	4.7	n/a	n/a	n/a	ría	1.7	rva U
\$167034188	107-18-8	Allyl Alcohol	NGS	120	<3.9	63.0	nla	200	-	-		- 1-1-

Y - Comment
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Cartridge Evaluation Data Summary Report

Customer Sample ID: 16-08635-2-EFF-G Customer Sample ID: 16-08635-2-EFF-G

Sample® R	All CAS F	Analyte	Unit	% OTS	Blank	Result	Duplicate	Average	RPD 1/4	Spk Rec %	Det Limit	Cnt En 1/4 Qual Flags
VAPOR-TDU VOA #2	J VOA #2							1				
S16T034188	107-05-1	Allyl Chloride	NGS	110	42.8	528	r/a	nla	n/a	n/a	2.8	nalu
S16T034188	71-43-2	Benzene	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a U
S16T034188	100-47-0	Benzonitrile	NGS	100	6.19	<1.9	n/a	s/a	s,c	n/a	9.5	n/a U
S16T034168	123-72-8	Butanel	NGS	110	421	12	n/a	n/a	n'a	n/a	21	n/a U
3167034188	109-74-0	Butanenitrile	NGS	100	<1.2	<1.2	n/a	n/s	n'a	n/a	1.2	n/a U
S16T034188	58-23-5	Carbon tetrachloride	NGS	130	61.6	<1.6	n/a	s/u	n'a	n/a	1.6	n/a U
S16T034188	108-90-7	Chlorobenzene	NGS	110	4.5	61.5	n/a	nla	n's	n/a	1.5	Ualu
5167034183	75-00-3	Chlomethane	NGS	88	615	613	n/a	eyu	n'a	n/a	1.9	n/a U
5167034188	67-66-3	Chloroform	NGS	120	c1.5	<1.5	n/a	e/u	n/a	n/a	1.5	Uela
\$167034188	110-82-7	Cyclohexane	NGS	110	c1.8	c1.8	n/a	eyu	n'a	n/a	1.8	Uelu
S16T034188	124-18-5	Decane	NGS	96	<2.8	<2.8	nVa	e/u	n/a	n/a	2.8	Ush
\$167034188	84-17-5	Ethanol	NGS	100	4.0	110	n/a	eyu	e,c	n's	7.4	n/a
S16T034188	141-78-6	Ethyl acetate	NGS	100	c1.5	<1.5	n/a	ala	n/a	n/a	1.5	U stra
\$167034188	100-41-4	Ethylbenzene	NGS	110	<1.5	<1.5	n/a	e/u	n/a	n'a	1.5	U ava
S16T034188	110-00-9	Furan	NGS	100	<1.6	c1.6	n/s	n/a	n/a	e,c	1,6	n/a U
\$167034188	110-54-3	Hexane	NGS	100	<1.7	<1.7	n/a	e/u	n/a	n'a	1.7	U ava
1167034188	628-73-9	Hexanentrile	NGS	100	<1.5	<1,5	nla	n/a	ria	nta	1,5	Ustra
\$167034188	128-98-7	Methacrylonitrile	NGS	100	<1.8	<1.6	n/a	n/a	n/a	n/a	1.6	n/a U
\$167034188	75-09-2	Methylene Chloride	NGS	100	<2.7	<2.7	n/a	n/a	n/a	n'a	2.7	n/a U
S16T034188	91-20-3	Naphthalene	NGS	110	<3.7	<3.7	nla	n/a	n/a	ría	3.7	U e/u
\$167034188	98-95-3	Nitrobenzene	NGS	110	<2.6	<2.6	n/a	n/a	n/a	e/u	2.6	Usu
\$167034188	110-59-8	Pentanenitrile	NGS	26	6.1.8	<1,6	n/a	n/a	n/a	n/a	1.6	Uava
S16T034188	107-12-0	Propanentrile	NGS	100	41.5	414	nla	e/u	n/a	nía	1.4	Ualu
S16T034188	110-86-1	Pyridine	NGS	130	<3.8	<3.8	n/a	n/a	n/a	n/a	8,8	Ulahu
S16T034188	100-42-5	Styrene	NGS	110	41.6	61,6	n'er	n/a	n/a	r/a	1,6	Ulahu
\$167034188	127-18-4	Tetrachionoethene	NGS	120	61.6	43	a'e	n/a	n/a	r/a	1.6	n/s
S16T034188	108-88-3	Toluene	NGS	110	<1.5	<1.5	n/a	e/u	n/a	r/a	1.5	U s/u
											ı	1

B - Blank Contamination E - Outside Calibration Range Y - Comment
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Cartridge Evaluation Data Summary Report

Sample Group: 20162988 SDG Number: Customer Sample ID: 16-08835-2-EF

Customer Sample ID: 16-08635-2-EFF-G Customer Sample ID: 16-08635-2-EFF-G

Sample® R	A# CAS #	Analyto	Unit	% OTS	Blank	Result	Duplicate	Average	RPD % Spk Rec %	ok Rec %	Det Limit	Cnt Err % Qual Flags	Flace
VAPOR-TDU	I VOA #2												1
S16T034188	79-01-6	Trichlonoethene	NGS	120	c1.5	41.5	n/a	2,0	n/a	ria	1.5	N8 U	
S16T034188	75-69-4	Trichlorofluoromethane	NGS	110	61.8	92		n'a		n/a	1.6		
S16T034188	10061-01-5	dis-1,3-Dichlanopropene	NGS	110	c1.3	e1.3		n'a	n/a	nla	1.3		
S16T034188	123-86-4	n-Butyl acetate	NGS	88	41.5	41.4		n'a		rita	1.4		
S16T034188	142-82-5	n-Heptano	NGS	1001	41.4	41.2	n/a	n'a	n/a	rya	1.4	n/s C	
S16T034188	10061-02-6	trans-1,3-Dichioropropene	NGS	110	<1.2	c12				ela	1.0		l

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L - LLS Outside Range

B - Blank Confernination E - Outside Calibration Range

J - Estimated N - Named TIC

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Cartridge Evaluation Data Summary Report

Customer Sample ID: 16-08635-2-EFF-H Customer Sample ID: 16-08635-2-EFF-H Sample Group: 20162988 SDG Number:

Samples R	R AS CAS 8	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD % 18	Spk Rec %	DetLimit	Cot Err % Dust Flag	Ocal Flag
VAPOR-TDU VOA #2	J VOA #2						1						
S16T034189	79-34-5	1,1,2,2-Tetrachloroethane	NGS	110	×1.3	6.12	nto	n/a	n/a	n/a	1.3	n/a	٦
S16T034189	79-00-5	1.1.2-Trichloroethane	NGS	110	515	41.5	e/u	n/a	n/s	n/a	1.5	U8/u	2
S16T034189	75-34-3	1,1-Dichlaroefrane	NGS	110	<12	412	rva	n/a	n/a	n/a	1.2	n/a	7
S16T034189	75-35-4	1,1-Dichlaroethene	NGS	110	e13	513	rys	n/a	n/a	n/a	1.3	n/a	2
S16T034189	107-06-2	1,2-Dichloroethama	NGS	120	41.6	61.6	r/a	n/a	n/s	nla	1.6	n/a	0
S16T034189	542-75-6	1,3-Dichleropropene (Total)	NGS	n/a	n/a	412	1/8	nla	n/a	n/a	1.2	n/a	0
S16T034189	106-46-7	1,4-Dichlarobanzane	NGS	110	<2.0	<2.0	r/a	nla	r/a	n/a	2.0	n/a	0
S16T034189	123-91-1	1.4-Dioxane	NGS	110	417	C1.7	n/a	ala	r/s	eln	1.7	n/a	0
S16T034189	71-36-3	1-Butanol	NGS	120	48.9	6.85	n/a	n's	r/a	n/a	8.9	m/a	m/s LUY
S16T034189	111-70-6	1-Heptanol	NGS	83	<5.6	<5.6	n/a	n'a	1/8	n/a	5.6	n'a	3
S16T034189	71-23-8	1-Propanol	NGS	120	7.2	8.7	n/a	n/a	r/a	n/a	3.0	n/a	28
S16T034189	108-47-4	2.4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n'e		nla	3.3	n/s	0
S16T034189	1708-29-8	2.5-Dihydrofutan	NGS	110	<2.8	<2.8	n/a	nla	n/a	n/a	2.8	n/a	20
S16T034189	78-93-3	2-Butanone	NGS	110	41.9	41.9	n/a	n'a	n/a	r/a	1.9	n/a	2
S16T034189	110-43-0	2-Heptanone	NGS	66	6,1,6	61.8	n/a	n'e	M/B	r/a	1.6	n/a	0
S16T034189	591-78-6	2-Hexanone	NGS	88	<1.2	<1.2	n/a	n'a	n/a	1/3	1.2	n'a	2
S16T034189	834-22-5	2-Methylfuran	NGS	110	6.1.9	41.9	n/a	n's	n/a	r/a	1.9	n/a	5
\$167034189	78-94-4	3-Buten-2-one	NGS	100	<1.7	<1.7	n/a	n'a	n/a	r/8	1.7	nía	0
S16T034189	106-35-4	3-Heptanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a	2
S16T034189	106-68-3	3-Octanone	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a	5
S16T034189	105-42-0	4-Methyl-2-hexanone	NGS	68	<1.3	<1.3	n/a	n/a	n/n	n/a	1.3	U s/u	2
S16T034189	108-10-1	4-Methyl-2-Pentanone	NGS	100	c1.9	<1.9	n/a	n/a	n/s	n/a	1.9	U/a N	5
S16T034189	67-64-1	Apetone	NGS	97	C4,3	18	n/a	e/u	n/a	n/a	43	n/a	
S16T034189	75-05-8	Acetonitrile	NGS	91	<1.8	5.7	n/a	n/a	n/a	n/a	1.8	n/a	,
\$16T034189	98-86-2	Acotophenone	NGS	100	42.8	42.8	n'a	e/u	n's	n/a	2.6	n/a	2
S16T034189	107-13-1	Actylonitille	NGS	98	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a U	2
S16T034189	107-18-6	Allyl Alcohol	NGS	120	339	6.89	n/a	nla	n/a	n/a	3.9	n/a Uc	on on

Y - Comment T - Tentatively Identified Compound L - LLS Outside Range

B - Blank Contamination E - Outside Calibration Range

J - Estimated N - Named TIC

NA = Not Analyzed, ND = Not Detected

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Cartridge Evaluation Data Summary Report

Sample Group: 20162988
SDG Number:
Customer Sample ID: 16-08635-2-EFF-H
Customer Sample ID: 16-08635-2-EFF-H

Samples R	All CASE	Analyte	Unit	STO %	Blank	Result	Duplicate	Amerage	RPD %	Spk Rec %	Det Limit	Cott Err % Qual Flags
VAPOR-TDU VOA #2	J VOA #2						1					
S16T034189	107-05-1	Allyl Chloride	NGS	110	<2.8	<2.8	n/a	n/a	n/s	n/a	2.8	Ulan
S16T034189	71-43-2	Benzone	NGS	110	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	Ulahu
S16T034189	100-47-0	Benzonitrile	NGS	100	<1.9	<1.9	ula	nla	n/a	nis	1.9	U e/u
S16T034189	123-72-8	Butanal	NGS	110	421	42.1	n/a	n/a	n/a	nla	2.1	n/a U
S16T034189	109-74-0	Butanenitrile	NGS	100	<1.2	<1.2	eju	n/a	n/a	nia	1.2	n/a U
S16T034189	56-23-5	Carbon tetrachloride	NGS	130	41.6	<1.6	nía	n/a	n/a	rie	1.6	U s/u
S16T034189	108-90-7	Chlevobenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	a/u	1.5	n/a U
S16T034189	75-00-3	Chloroefhane	NGS	8	<1.9	41.9	n/a	n/a	n/a	n/a	9.5	n/a U
S16T034189	87-86-3	Chloroform	NGS	120	<1.5	<1.5	nía	n/a	n/a	nla	1.5	n/a U
S16T034189	110-82-7	Cyclohexane	NGS	110	<1.8	<1.8	nia	n/a	n/a	m/a	1.8	n/a U
S16T034189	124-18-5	Decane	NGS	96	<2.8	<2.8	nla	n/a	n/a	n/a	2.8	n/a U
S16T034189	64-17-5	Ethanol	NGS	100	47.4	110	nia	n/a	e/u	n/a	7.4	r/a
S16T034189	141-78-6	Ethyl acotate	NGS	100	<1.5	<1.5	ela	n/a	n/a	n/a	1.5	U e/u
S16T034189	100-41-4	Ethyberzene	NGS	110	<1.5	<1.5	chr	n/a	n/a	e/u	1.5	n/a U
S16T034189	110-00-9	Furan	NGS	100	<1.6	<1.8	nla	n/a	n/a	n/a	1.6	n/a U
\$167034189	110-54-3	Hexane	NGS	100	<1.7	<1.7	nla	n/a	n/a	n/a	1.7	n/a U
S16T034189	628-73-9	Hexanenitrile	NGS	100	<1.5	<1.5	r/a	n/a	n/a	n/a	1.5	r/a U
S16T034189	126-98-7	Methacrytenitrile	NGS	100	<1.6	<1.8	rita	n/a	n/B	n/a	1.6	U e/u
\$16T034189	75-09-2	Mathylene Chloride	NGS	100	42.7	42.7	r/a	n/a	n/n	n/a	2.7	n/a U
S16T034189	91-20-3	Naphthalene	NGS	110	<3.7	43.7	rya	n/a	n/a	e/u	3.7	U S/v
S16T034189	98-95-3	Nitrobenzene	NGS	110	<2.8	42.6	r/a	n/a	n/a	n/a	2.6	U aVn
S16T034189	110-59-8	Pentanenitrile	NGS	97	<1.5	41.8	1/3	n/a	n/a	e/u	1.6	n/a U
S16T034189	107-12-0	Propanentrile	NGS	100	<1.4	41.4	r/a	nta	n/a	e/u	1.4	n/a U
S16T034189	110-86-1	Pyvidine	NGS	130	43.8	43.8	n/a	n/a	eyu	n/a	3.8	Udv
8167034189	100-42-5	Styrene	NGS	110	<1.6	41.6	e/u	n/a	nha	n/a	1.6	n/s U
S16T034189	127-18-4	Tetrachloroethene	NGS	120	41.8	12	n/a	a/a	n/a	n/a	1.6	n/a J
S16T034189	108-88-3	Toluene	NGS	110	41.5	41.5	n/a	a'm	r/a	n/a	1.5	n/s U

Y - Comment T - Tentatively Identified Compound L - LLS Outside Range

8 - Blank Contamination E - Outside Calibration Range

J - Estimated N - Named TIC

NA = Not Analyzed, ND = Not Detected

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Cartridge Evaluation Data Summary Report

Customer Sample ID: 16-08635-2-EFF-H Customer Sample ID: 16-08635-2-EFF-H

Sample® R	A# CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD % Se	Spk Rec %	Det Limit C	Det Limit Ces Err % Qual Flags
VAPOR-TDU VOA	U VOA #2											
S16T034189	79-01-8	Trichlaroathene	NGS	120	<1.5	<1.5	n'a	nla	n/s	n/a	1.5	niaki
S16T034189	75-69-4	TrichloroBucomethane	NGS	110	<1.6	17	n'a		n/a	n/a	18	n/a
S16T034189	10061-01-5	cis-1,3-Dichloropropene	NGS	110	c13	<1.3	n/a		5,0	P.	13	n/a ii i
\$167034189	123-86-4	n-Butyl acetate	NGS	88	412	<1.4	n/a	nla	n/a	o'a	17	n/a B1
S16T034189	142-82-5	n-Heptane	NGS	100	415	51.4	n/a	nla	e/u	e/u	14	nialii
S16T034189	10061-02-6	trans-1,3-Dichlonopropene	NGS	110	c1.2	<1.2			e/u	2,0	1.5	Malti

NA = Not Analyzed, ND = Not Detected

c - RPD Outside Range U - Less Than Detection Limit

J - Estimated N - Named TIC

B - Blank Contamination E - Outside Calibration Range

Y - Comment
T - Tentatively Identified Compound
L - LLS Outside Range

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Cartridge Evaluation Data Summary Report

Customer Sample ID: 16-08635-2-IN-A Customer Sample ID: 16-08635-2-IN-A Sample Group: 20162988 SDG Number:

Tig24-5 11,12,2-Techachionethane NGS 110 C13 C13 NAs NAs	Sample® R	All CAS#	Analyto	Unit	STD %	Blank	Result	Duplicate	Average	RPO 14	Spk Rec %	DetLimit	CretErr %	Cret Err S. Qual Flags
1,1,2,2-Tetrachloroethane NGS 110 <1,3 <1,1 mb ria ria </td <td>VAPOR-TDL</td> <td>I VOA #2</td> <td></td>	VAPOR-TDL	I VOA #2												
179-00-5 11,2-Trickhoroethane NGS 110 C1,5 C1,	\$167034190	79-34-5	1,1,2,2-Tetrachioroethane	NGS	110	<1.3	C1.3		ala	n/a	nla	1.3	L	In the
175-34-3 11-Occidence thate	3167034190	79-00-5	1,1,2-Trichloroethane	NGS	110	41.5	<1.5		n/a	n/a	e/u	1.5		2
107-05-2 1,1-Dickloroethane MGS 110 c1.3 c1.3 c1.3 ria	3167034190	75-34-3	1,1-Dichloroethane	NGS	110	<1.2	42	n/a	n/a	n/a	E/u	1.2		2
107-06-2 1,2-Dichloroethane NGS 120 <1,6-Dichloroethane NGS 120 <1,6-Dichloroethane NGS 120 <1,6-Dichloroethane NGS 120 <1,2-Dichloroethane NGS 110 <1,2-Dichloroethane NGS 120 <2,0-Dichloroethane NGS NGS 120 <2,0-Dichloroethane NGS	5167034190	75.354	1,1-Dichloroethene	NGS	110	<1.3	c13	n/e	n/a	n/a	ria	1,3		2
542-75-6 1,3-Dichleropenpene (Total) NGS rule rule c12 rule	167034190	107-06-2	1,2-Dichleroethane	NGS	120	<1.6	c1.6	n/a	n/a	n/a	n/a	1,6		2
108-46-7 14-Dichlerobenzence NGS 110 <2.0 <2.0 n/a n/a n/a n/a n/a n/a n/a 1.7 112-91-1 14-Dicanne NGS 110 <1.7	167034190	542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<12	n/s	n/a	n/a	nja	1.2		2
123-91-1 1,4-Dicoane NGS 110 <1,7 <1,7 mb nb nb nb nb nb 1,7 11-35-3 1-Buttanol NGS 120 <8.9	167034190	106-46-7	1,4-Dichlerobenzene	NGS	110	<2.0	<2.0	n'a	n/a	nia	n/a	2.0		2
71-36-3 1-Butanol NGS 120 <8.9 2.5E+03 n/a	16T034190	123-91-1	1,4-Dioxane	NGS	110	<1.7	c1.7	4,0	n/a	n/a	n/a	1.7		2
111-70-6 144gytanol NGS 83 <5.6 <5.6 nh nh </td <td>167034190</td> <td>71-36-3</td> <td>1-Butanol</td> <td>NGS</td> <td>120</td> <td>c8.9</td> <td>2.5E+03</td> <td>3,0</td> <td>n/a</td> <td>n/a</td> <td>n/a</td> <td>8.9</td> <td></td> <td>ELY</td>	167034190	71-36-3	1-Butanol	NGS	120	c8.9	2.5E+03	3,0	n/a	n/a	n/a	8.9		ELY
71-23-8 1-Propancial NGS 120 7.2 93 m/s	16T034190	111-70-6	1-Heptanol	NGS	83	<5.6	65.6	a,u	n/a	nla	r/a	8.6		n
108-47-4 2,4-Directly/gy/idfine NGS 110 <3.3 nh	16T034190	71-23-8	1-Propanol	NGS	120	7.2	93	n's	n/a	n/a	n/a	3.0		8
1708-29-8 2.5-Ohydrothuran NGS 110 <2.8 <2.8 nh	167034190	108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	93	n/a	n/a	n/s	n/a	3.3		2
78-93-3 2-Butanone NGS 110 <19 11 nh	16T034190	1708-29-8	2,5-Dhydrafuran	NGS	110	428	<2.8	n'a	n/a	n/a	n/a	2.8		3
110-43-0 24-legstancee NGS 99 <1.6 4.1 n/a n/a n/a 1.6 1	167034190	78-93-3	2-Butanone	NGS	110	<1.9	11	nja	n/a	n/a	n/a	1.9		,
391-78-6 2-Hexanone NGS 98 <12 32 n/a n/a n/a 12 334-22-5 2-Methyflutan NGS 110 <1.9	16T034190	110-43-0	2-Heptanone	NGS	66	<1.6	4.1	n/a	n/a	n/s	n/a	1.6		2
334-22-5 2-Methylkutanh NGS 110 <1.9 r18 r19	16T034190	591-78-6	2-Hexanone	NGS	86	<1.2	32	nia	n/a	n/a	n/a	12	n/a	,
78-94-4 3-Buten-2-one NGS 100 <1.7 6.8 n/a n/a n/a 1.7 106-35-4 3-Buten-2-one NGS 100 <1.5	16T034190	834-22-5	2-Methylluran	NGS	110	615	<1.9	n/a	e)ru	a/c	n/a	1.9		2
108-35-4 3-Higktanche NGS 100 <1.5 7.0 n/a n/a n/a 1.5 108-88-3 3-Octanone NGS 110 <2.4	16T034190	78-94-4	3-Buten-2-one	NGS	100	<1.7	6.8	n/a	e)u	n'a	n/a	1.7	ghu	,
108-88-3 3-Octanone NGS 110 <24 <24 r/s	16T034190	105-35-4	3-Heptanone	NGS	100	<1.5	7.0	n/a	n/a	n's	n/a	1.5	nla	,
105-42-0 4-Methyl-2-hexanone NGS 99 <1.3 <1.3 n/a n/a n/a n/a 1.3 108-10-1 4-Methyl-2-Pentilanone NGS 100 <1.9	16T034190	106-68-3	3-Octanone	NGS	110	424	424	n/a	n/a	n'e	nle	2.4	s)u	2
108-10-1 4-Methyl-2-Pentlatnone NGS 100 <1.9 7.3 n/a n/a n/a n/a n/a n/a n/a 1.9 67-64-1 Acetone NGS 97 <4.3	16T034190	105-42-0	4-Methyl-2-hexanone	NGS	88	<1.3	<1.3	n/a	nís	n'a	n/a	1.3	nls	2
S7-64-1 Acetone NGS S7 <4.3 470 rula rula rula rula 4.3 4.5	16T034190	108-10-1	4-Methyl-2-Pentanane	NGS	100	<1.9	7.3	n/a	nla	n'a	n/a	1.9	cla	,
75-05-8 Acatomitrile NGS 91 <1.8 44 n/a n/a n/a n/a 1.8 1.8 1.8	167034190	67-64-1	Acetone	NGS	87	<4.3	470	n/a	n/a	n/a	n'e	4.3	cyc	В
98-86-2 Acatophanone NGS 100 <2.6 2.9 rula rula rula 2.8 107-13-1 Acayloridrile NGS 98 <1.7 <1.7 <1.7 rula rula rula rula 1.7 1.7	167034190	75-05-8	Acetonitrile	NGS	91	<1.8	44	n/a	nta	n/a	e,w	1.8	nfa	
107-13-1 Acrytocitrile	167034190	98-86-2	Acetophenone	NGS	100	<2.6	2.9	nía	r/a	n/s	n'a	2.6	n/a	_
107-18-6 Allyl Acohol NGS 120 <3.9 <3.9 rula rula rula a nia 3.9	167034190	107-13-1	Acrytonitrile	NGS	98	<1.7	<1.7	n/a	r/a	n/a	n/a	1.7	n/a	2
	167034190	107-18-6	Allyf Alcohol	NGS	120	<3.9	<3.9	n/a	n/a	n/8	u,s	3.9	nya	no no

Y - Comment
T - Tentatively Identified Compound
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J - Estimated N - Named TIC

NA = Not Analyzed, ND = Not Detected

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Cnt Err % Qual Flags

D,a €

D's C

78,00

n/a U

n/a

n/a

n/a U

n/a U

Na U U Va U U Va U U Va U

Na V

n/a U D e/u

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Cartridge Evaluation Data Summary Report

Customer Sample ID: 16-08635-2-IN-A Customer Sample ID: 16-08635-2-IN-A SDG Number:

Sample Group: 20162988

ample# R	Aff CAS #	Amalyto	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Average RPD % Spk Rec %	Det Limit
VAPOR-TDU VOA #2	I VOA #2										
167034190	107-06-1	Allyl Chloride	NGS	110	42.8	42.8	n/a	n/a	n/a	n/a	2.8
167034190	71-43-2	Benzene	NGS	110	41.2	1.8	n/a	n/a	n/a		1.2
16T034190	100-47-0	Benzonitrile	NGS	100	6.15	61.9	n/a	n/a	n/a		1.9
167034190	123-72-8	Butarai	NGS	110	<2.1	15	n/a	n/a	n/a	r/a	2.1
16T034190	109-74-0	Butanenitrile	NGS	100	c1.2	1.9	n/a	n/a	n/a	n/a	1.2
S16T034190	56-23-5	Carbon tetrachloride	NGS	130	41.6	41.6	n/a	n/a	n/a	r/a	1,6
167034190	108-90-7	Chlorobenzene	NGS	110	512	61.5	n'a	n/a	n/a	r/a	1.5
S16T034190	75-00-3	Chloroethane	NGS	98	41.9	41.9	n/a	e/u	n/a	r/a	1.9
167034190	87-68-3	Chloroform	NGS	120	51,5	<1.5	n's	n/a	n/a	n/a	1.5
316T034190	110-82-7	Cyclohexane	NGS	110	e1.8	41.8	n/a	n/a	n/a	n/a	1.8
16T034190	124-18-5	Decane	NGS	96	<2.8	<2.8	n's	e/u	n/a	n/a	2.8
316T034190	84-17-5	Ethanol	NGS	100	47.4	200	nia	n/a	n/a	n/a	7.4
167034190	141-78-6	Ethyl acetate	NGS	100	5,15	<1.5	n'a	n/a	n/a	n/a	1.5
S16T034190	100-41-4	Ethylbenzene	NGS	110	<1.5	<1.5	r/a	n/a	n'a	n/a	1.5
167034190	110-00-9	Furan	NGS	100	41.8	20	n/a	n/a	n/s	n/a	1.6
5167034190	110-54-3	Hexane	NGS	100	<1.7	13	nía	n/s	n/a	n/a	1.7
167034190	628-73-9	Hexanentrile	NGS	100	<1.5	1.5	n/a	n/a	n'a	n/a	1.5
1167034190	128-98-7	Methacryfonlinite	NGS	100	<1.6	<1.6	n/a	n/a	n'a	n/a	1.6
167034190	75-09-2	Methylene Chloride	NGS	100	47	427	n/a	e/u	n'a	n/a	2.7
1167034190	91-20-3	Naphthalene	NGS	110	43.7	43.7	r/a	n/a	nía	n/a	3.7
167034190	98-95-3	Nitrobenzene	NGS	110	42.6	528	n/a	n/a	nía	n/a	2.6
167034190	110-59-8	Pentanentrile	NGS	87	c1.8	<1.6	n/a	n/a	n/a	n/a	1,6
187034190	107-12-0	Propanentitie	NGS	100	41.5	3.0	n/a	n/a	n/a	n/a	1.4
\$167034190	110-86-1	Pyridine	NGS	130	<3.8	<3.8	n/a	n/a	nia	E,C	3.8
167034190	103-42-5	Styrrente	NGS	110	61.6	c1.6	nla	n/a	n/a	n/a	1,6
\$167034190	127-18-4	Tetrachlosoethene	NGS	120	<1.6	81	n/a	n/a	n/a	n'a	1.6
\$167034190	103-88-3	Tokuene	SDN	110	<1.5	10	a'u	e/u	nka	n/a	1.5

J - Estimated N - Named TIC

B - Blank Contamination E - Outside Calibration Range

Y - Comment T - Tentatively Mentified Compound L - LLS Outside Range

NA = Not Analyzed, ND = Not Detected c - RPD Outside Range U - Less Than Detection Limit

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Cartridge Evaluation Data Summary Report

Customer Sample ID: 16-08635-2-IN-A Customer Sample ID: 16-08635-2-IN-A

Sample# R	A# CAS #	Amatyto	Unit	% OTS	Blank	Result	Duplicate	Average	RPD %	RPD % Spk Rec %	Det Limit	Det Limit Cut Err % Qual Flags	I Flags
VAPOR-TDU VOA	NU VOA #2									1			
S16T034190	79-01-6	Trichlonoethene	NGS	120	41.5	41.5	rva	n/a	nla	n/a	1.5	Ulan	l
S16T034190	75-69-4	Trichlorofluoromethane	NGS	110	41.8	23	nla	n/a	nla	n/s	1.6		l
S16T034190	10061-01-5	cis-1,3-Dichiaropropene	NGS	110	43	513	e/u	nla	rya	n/s	1.3		
S16T034190	123-86-4	n-Butyl acetata	NGS	88	4.12	412	s/u	n/a	e/a	nla	1.4		
S16T034190	142-82-5	n-Heptane	NGS	100	414	15	r/a	ala	rva	n/a	1.4		
S16T034190	10061-02-6	trans-1,3-Dichloropropene	NGS	110	<1.2	412	r/a	n'a	rys	nta	1.2		ı

NA = Not Analyzed, ND = Not Detected

c - RPD Outside Range U - Less Than Detection Limit

J - Estimated N - Named TIC

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Cartridge Evaluation Data Summary Report

Customer Sample ID: 16-08635-2-IN-H Customer Sample ID: 16-08635-2-IN-H Sample Group: 20162988 SDG Number:

amples R	AF CAS #	Amalyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	RPD % Spk Rec %	DetLimit	Det Limit Cot Err % Qual Flace	Flace
VAPOR-TDU VOA #2	1 VOA #2												
S16T034191	79-34-5	1,1,2,2-Tetrachloroethane	NGS	110	<1.3	c1.3	n/a	nia	e/a	nla	1.3	n/a lu	1
S16T034191	79-00-5	1,1,2-Trichlevoethane	NGS	110	41.5	<1.5	n/a	n's	n/a	rla	1.5		
316T034191	75-34-3	1,1-Dichloroethane	NGS	110	<1.2	c1.2	n/a	nia	n/a	1/0	1.2		ı
S16T034191	75-35-4	1,1-Dichlorcethene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	e/u	1.3		
S16T034191	107-06-2	1,2-Dichloroethane	NGS	120	41.6	41.6	n'a	n/a	n/a	1/3	1.6		
S16T034191	542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	2,0	n/a	n/a	n/a	12	Dialu	l
S16T034191	108-48-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a lu	
\$16T034191	123-91-1	1,4-Dioxane	NGS	110	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a U	ı
3167034191	71-36-3	1-Butanol	NGS	120	<8.9	2.4E+03	r/a	n/s	n/a	n/a	8.9	n/a ELY	
\$161034191	111-70-6	1-Heptanoi	NGS	83	<5.6	<5.6	r/a	n/a	n/a	n/a	5.6	NaLU	
S16T034191	71-23-8	1-Properci	NGS	120	7.2	98	n/a	n/a	n/a	n/a	3.0	n/a B	l
\$161034191	108-47-4	2,4-Dimethylpyridine	NGS	110	93	93	r/a	n/a	n/a	n/a	33	n/a U	
S16T034191	1708-29-8	2,5-Dihydrofuran	NGS	110	428	928	n/a	n/a	n/a	n/a	2.8	n/s Uc	
S16T034191	78-83-3	2-Butanone	NGS	110	613	6.2	n/a	n/a	n/a	n/a	1.9	L slu	
\$167034191	110-43-0	2-Heptanone	NGS	88	<1.6	5.0	n/a	nla	n/a	n/a	1.6	Lelva	
S16T034191	591-78-5	2-Hexanona	NGS	96	<1.2	3.1	n/a	n/a	n/a	n/a	1.2	L elu	
S16T034191	534-22-5	2-Methylfuran	NGS	110	615	6.19	n/a	nla	n's	n/a	1.9	n/a U	
161034191	78-94-4	3-Buten-2-one	NGS	100	<1.7	4.8	n/a	nia	n/a	n/a	1.7	Ushr	
S16T034191	106-35-4	3-Heptanone	NGS	100	<1.5	4.7	n/a	n/s	n'a	n/a	1.5	Cala	
5167034191	106-68-3	3-Octanone	NGS	110	42.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a U	
\$167034191	105-42-0	4-Methyl-2-hexanone	NGS	8	<1.3	c1.3	n/a	e/u	n/a	n/a	1.3	Ua'u	
\$167034191	108-10-1	4-Methyl-2-Pentanone	NGS	100	6.1>	41.9	n/s	n/a	nya	n's	1.9	Ualu	
\$167034191	67-64-1	Acetone	NGS	87	c4.3	310	n/s	e/u	n/a	n/a	4.3	n/a	
S16T034191	75-06-8	Acetonitrile	SBN .	91	<1.8	16	n/a	n/a	n/a	rija	1.8	n/a	
161034191	58-86-2	Acetophenone	NGS	100	<2.6	<2.6	2,0	n/a	n/a	nía	2.6	n/a U	
S16T034191	107-13-1	Acrylonitrile	NGS	88	<1.7	<1.7	a'm	e/u	n/a	rija	1.7	U/a C	l
S16T034191	107-18-6	Allyl Alcohol	NGS	120	<3.9	<3.9	ne.	n/a	n/a	ría	3.9	n/a Uc	

Y - Comment
T - Tentatively Identified Compound
L - LLS Outside Range

B - Blank Contamination E - Outside Calibration Range

J - Estimated N - Named TIC

NA = Not Analyzed, ND = Not Detected c - RPD Cutside Range U - Less Than Detection Limit

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Cartridge Evaluation Data Summary Report

Customer Sample ID: 16-08635-2-IN-H Customer Sample ID: 16-08635-2-IN-H Sample Group: 20162968 SDG Number:

ampies R	AN CAS#	Analyte	Unit	\$70 %	Blank	Result	DapScate	Average	RPD %	Average RPD % Sok Ree %	Det Limit	Det Limit Ont En Wildred Flaces
VAPOR-TDU VOA #2	UVOA#2											
S16T034191	107-05-1	Allyl Chloride	NGS	110	<2.8	<2.8	n/a	n/a	nía	ria	28	Ulaha
\$167034191	7143.2	Benzene	NGS	110	c1.2	1.6	n/a	n/a	n/a	n/a	12	
S16T034191	100-47-0	Benzonitrile	NGS	100	6.15	c1.9	n/a	n/a	n/a	ria	1.9	
S16T034191	123-72-8	Butanal	SDN	110	<2.1	12	n/a	n/a	n/a	n/a	2.1	
\$167034191	109-74-0	Butanenitrile	NGS	100	c1.2	1.7	n/e	n/a	n/a	nla	12	
\$167034191	56-23-5	Carbon tetrachloride	NGS	130	41.6	c1.6	n's	n/a	eln	n/a	1.6	
\$167034191	103-90-7	Chlorobenzene	NGS	110	<1,5	<1.5	n/a	n/a	n/a	n/a	1.5	Deva
\$167034191	75-00-3	Chloroethane	NGS	98	41.9	6.15	ale	n/a	e/u	nla	1.9	
S16T034191	67-68-3	Chloroform	NGS	120	<1.5	<1.5	2,0	n/a	ala	nia	1.5	
S16T034191	110-82-7	Cyclohasane	NGS	110	<1.8	<1.8	n'a	n/a	a/a	n/a	1.8	
S16T034191	124-18-5	Decane	NGS	96	428	42.8	n'a	n/a	ala	n/a	2.8	
167034191	64-17-5	Ethanol	NGS	100	47.4	170	n/a	e)u	e/u	alu	7.4	
\$16T034191	141-78-6	Ethyl acetate	NGS	100	<1.5	<1.5	n'a	nla	n'a	n'a	1.5	U B/u
S16T034191	100-41-4	Effylbenzene	NGS	110	<1.5	<1.5	n/a	n/a	9,0	n/a	1.5	
S16T034191	110-00-9	Furan	NGS	100	41.6	18	n/a	n/a	n'a	alu	1.6	
\$16T034191	110-54-3	Hexane	NGS	100	<1.7	9.0	n/a	alu.	n/a	a'e	1.7	Lah
S16T034191	626-73-9	Haxanenitrile	NGS	100	<1.5	<1.5	e/u	n/s	n'a	a'c	1.5	
\$167034191	128-98-7	Methacrytonitrite	NGS	100	41.6	<1.6	n/a	r/a	n/a	n/a	1.6	
S16T034191	75-09-2	Methylene Chloride	NOS	100	<2.7	427	n/a	n/a	n/a	n/s	2.7	U SAU
S16T034191	91-20-3	Naphthalene	NGS	110	<3.7	97	e/u	n/a	n/a	e,u	3.7	Ulahu
S16T034191	98-95-3	Nitrobenzene	NGS	110	<2.6	<2.8	e/u	n/a	n/a	nia	2.6	
S16T034191	110-59-8	Pentanenitrile	NGS	26	41.6	41.6	n/a	n/a	n/a	n/a	1.6	
S16T034191	107-12-0	Propanentrilo	NGS	100	×1.4	2.7	n/a	n/a	n/a	e/u	1.4	L/a/1
\$167034191	110-88-1	Pyridine	NGS	130	<3.8	<3.8	nia	n/a	e/u	n/a	3.8	Ula/u
S16T034191	100-42-5	Styrono	NGS	110	<1.6	41,6	eva	8/4	n/s	n/a	1,6	Ulan
S16T034191	127-18-4	Tetrachloroethene	NGS	120	41.6	10	e/u	n/a	e/u	n/a	1.6	L B/u
S16T034191	108-88-3	Toluene	NGS	110	<1.5	3.1	n/a	n/a	n/a	n/a	1.5	L elva

B - Blank Contamination E - Outside Calibration Range Y - Comment
T - Tentatively Identified Compound
L - LLS Outside Range

J - Estimated N - Named TIC

NA = Not Analyzed, ND = Not Detected

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Cartridge Evaluation Data Summary Report

Customer Sample ID: 16-08635-2-IN-H Customer Sample ID: 16-08635-2-IN-H Sample Group: 20162988 SDG Number:

Samples R	-			-			The second second						
	A CAS #	Analyte	Unit	\$ OTS	Blank	Result	Duplicate	Average	RPD %	Average RPD % Spk Rec %	Det Umit	Dot Unit Cat Err % Qual Flaces	ual Flaces
VAPOR-TOU	VOA #2												
S16T034191	79-01-6	Trichloroethene	NGS	120	<1.5	<1.5	n/a	ala a	n/a	r/a	1.5	n/a ti	
\$167034191	75-69-4	Trichlorofluoromethane	NGS	110	41.6	100	n/a	nia	n/a		1.6	n/a	
S16T034191	10061-01-5	cis-1,3-Dichloropropene	NGS	110	<1.3	<13	n/a	n/a	n/a	n/a	13		
S16T034191	123-86-4	n-Butyl acetate	NGS	88	41.4	41.4	n/a	n/a	n/a		14	1	
S16T034191	142-82-5	n-Hoptone	NGS	100	412	12	n/a	n/a	n/a		14	n/a	
S16T034191	10061-02-6	trans-1,3-Dichloropropene	NGS	110	<1.2	<1.2	n'a	n/a	n/a		12	Li eju	

NA = Not Analyzed, ND = Not Detected

c - RPD Outside Range U - Less Than Detection Limit

J - Estimated N - Named TIC

Y - Comment T - Tentatively Identified Compound L - LLS Outside Range

B - Blank Contamination E - Outside Calibration Range

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Cartridge Evaluation Data Summary Report

Sample Group: 20162988

SDG Number:

The second of th								
Sample# R	2	OC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Beaut	Ousl Flags
VAPOR-TDU VOA #2	VOA #2							
S16T034182			Methyl formate	107-31-3	4.73	NGS	26 JNT	INT
S16T034182			Unknown-1	_	8.30	NGS	140 BJT	3AT
S16T034182			Cyclotetrasiloxane, octamethyl	556-87-2	20.44	NGS	TNL SE	INT
S16T034182			Decane, 2,4,6-trimethyt-	82108-27-4	22.98	SDN	7.5 JNT	INT
S16T034182			Undecane	1120214	23.71	NGS	7.2 JNT	INT
S16T034182			Nonanal	124-19-6	23.95	NGS	26 JNT	INT
S16T034182			Unknowm-3	_	24.22	NGS	140 JT	TI.
S16T034182			Dodecane	112-40-3	25.26	NGS	14 JNT	INT
S16T034182			Mothenamino	100-97-0	26.22	NGS	1MC 8.9	INT
S16T034182			Benzothiszole	85-16-9	26.34	NGS	62 JNT	INT
S16T034182			Dodecane, 4,5-dimethyl-	61141728	26.43	NGS	16 JNT	INT
\$167034182			Tetradecane	629594	27.01	NGS	TNL 11	INT
S16T034182	8	BLNK	Unknown-1		8.25	NGS	38	
S16T034182	8	BLNK	1,1,1,3,5,5,7,7,7-Nonamethyl-3	38146-99-5	25.26	NGS	41	
S16T034182	8	BLNK	Unknown-2		27.44	NGS	350	
S16T034182	8	BLNK	Unknown-3	_	27.51	NGS	86.0	

c - RPD Outside Range U - Less Than Defection Limit NA = Not Analyzed, ND = Not Detected

J - Estimated N - Named TIC

B - Blank Contamination E - Outside Calibration Range

Y - Comment T - Tentatively Identified Compound

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Sample Group: 20162988

SDG Number:

Cartridge Evaluation

Qual Flags

Result

36 JNT

25 JNT 8.0 JNT

5.7 JNT

14 JNT 72,001

35 JT

200 BJT

TNL 65 34 JNT

16 JNT

9.0 JNT 51 JT

39

350

Data Summary Report

NGS S 22.98 24.23 26.01 28.35 28.43 28.57 27.01 8.25 25.25 27,44 8.32 27.51 62108-27-4 38146-99-5 107-31-3 61141728 1120214 112-40-3 100-97-0 556-67-2 CAS No. 86-16-9 629594 Cyclotetras losane, octametry/ .1,1,3,5,5,7,7,7-Nonamothy6-3 Decane, 2,4,6-trimethyf-Jodecane, 4,6-dimethyl-Customer Sample ID: 16-08635-2-EFF-B Customer Sample ID: 16-08635-2-EFF-B Methyl formate enzothiazole etradecane Dodecane Unknown-3 Unknown-4 J-mount-5 Informan-1 Jnhnown-2 Julynown-3 Undecane Amabyte QC Type BLNK BLNK BLNK VAPOR-TDU VOA #2 2 æ 167034183 S16T034183 \$16T034183 \$16T034183 \$16T034183 S16T034183 316T034183 167034183 5167034183 116T034183 16T034183 16T034183 116T034183 \$167034163 amples

c - RPD Outside Range U - Less Than Detection Limit NA = Not Analyzed, ND = Not Detected

J - Estimated N - Named TIC

B - Blank Contamination E - Outside Calibration Range

Y - Comment T - Tentatively identified Compound

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Cartridge Evaluation Data Summary Report

Sample Group: 20162988

SDG Number:

Customer Sample ID: 16-08635-2-EFF-C Customer Sample ID: 16-08635-2-EFF-C

ample# R	5	OC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Oust Flace
VAPOR-TDU VOA #2	VOAR	2						ı
16T034184			Methyl formate	107-31-3	4.73	NGS	28	84 JNT
16T034184			Methyl Acetalla	79-20-9	7.46	NGS	30	30 JNT
16T034184			Unknown-1	_	8.32	NGS	240 BJT	BUT
16T034184			Decane, 2,4,6-trimethyf-	62108-27-4	22.98	NGS	7.6	7.6 JNT
16T034184			Undeceme	1120214	23.72	NGS	10	10 JNT
67034184			Undecane, 2,8-dimethyl-	17301-23-4	23.83	NGS	11	11 JNT
6T034184			Unknown-3	_	24.23	NGS	130 JT	71
6T034184			Dodecane	112-40-3	25.26	NGS	21 JNT	JNT
67034184			Methenamine	100-97-0	26.22	NGS	Z8 JNT	JNT
67034184			Benzothiazole	95-16-9	26.34	NGS	TNL 63	JNT
16T034184			Dodecane, 4,6-dimethyl-	61141728	26.42	NGS	19	19 JNT
16T034184			Tridecane	629505	26.57	NGS	24 JNT	INT
16T034184			Tetradocane	629594	27.01	NGS	12	12 JNT
6T034184		BUNK	Unknown-1		8.25	NGS	30	
6T034184		BLNK	1,1,1,3,5,5,7,7,7-Nonamethyl-3	38146-99-5	25.28	NGS	41	
6T034184	_	BLNK	Unknown-2	,	27.44	NGS	350	
16T034184		BLNK	Unknown-3		27.51	NGS	860	

c - RPD Outside Range U - Less Than Detection Limit NA = Not Analyzed, ND = Not Detected

Y - Comment T - Tentatively Identified Compound

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B - Blank Contamination E - Outside Calibration Range

J - Estimated N - Named TIC

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Cartridge Evaluation Data Summary Report

Customer Sample ID: 16-08635-2-EFF-D Sample Group: 20162988 SDG Number:

Customer Sample ID: 16-03635-2-EFF-D

samples R	2	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Bass-19	Out Base
VAPOR-TDU VOA #2	VOA #	2					-	
3167034185			Wethyl formate	107-31-3	4.73	NGS	52	52 JNT
1167034185			Unknown-1		8.32	NGS	240 BJT	BUT
167034185			Unknown-2	_	24.22	NGS	TL 17	75
316T034185			Dedecane	112-40-3	25.26	NGS	5.6 JN	JNT
116T034185			Unknown-3	,	25.89	NGS	39 JT	JT.
3167034185			Methonamine	100-97-0	2824	NGS	22	22 JNT
316T034185			Benzothiazele	96-16-9	26.35	NGS	. 29	Z9 JNT
16T034185			Dodecane, 4,6-dimethyl-	61141728	28.45	NGS	11	JNT
167034185			Propanoic acid, 2-methyl-, 1-(74381-40-1	26.58	NGS	32	32 JNT
167034185			Tetradecane	629594	27.03	NGS	7.0	T/0 JNT
167034165		BLNK	Unknown-1	,	8.25	NGS	39	
167034185		BLNK	1,1,1,3,5,5,7,7-Nonamothyf-3	38146-99-5	25.26	NGS	41	
167034185		BLNK	Unknown-2		27.44	NGS	350	
167034185		BLNK	Unknown-3	,	27.51	NGS	860	

c - RPD Outside Range U - Less Than Detection Limit NA = Not Analyzed, ND = Not Detected

J - Estimated N - Named TIC

Y - Comment
T - Tertatively Identified Compound

8 - Blank Contamination E - Outside Calibration Range

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Cartridge Evaluation Data Summary Report

Customer Sample ID: 16-08635-2-EFF-E Customer Sample ID: 16-08635-2-EFF-E

Sample Group: 20162988

SDG Number:

Samples R	8	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
VAPOR-TDU VOA #2	I VOA#	12						
167034186			Methyl formate	107-31-3	4.73	NGS	65	65 JNT
167034186			Unionewn-1	1	8,32	NGS	280	280 BJT
167034186			2,2,7,7-Tetrametryloctane	1071-31-4	21.50	NGS	62	62 JNT
16T034186			Octane, 2,3,6,7-tetramethyl-	62670-34-5	22.70	NGS	35	35 JNT
16T034186			Decane, 2,4,6-trimethyl-	62108-27-4	22.99	NGS	7.2	7.2 JNT
16T034186			Undecane, 3-methyl-	1002-43-3	23.53	NGS	14	14 JNT
16T034186			Undecane	1120214	23.71	NGS	970	5.0 JNT
167034186			Unknown-2		24.22	NGS	19	51 JT
167034188			Dodecane	112-40-3	25.26	NGS	8.8	8.3 JNT
167034186			Methenamine	100-97-0	26.23	NGS	33	39 JNT
167034186			Benzothiazole	95-16-9	26.34	NGS	41	41 JNT
16T034185			Dodecane, 4,6-dimethyl-	61141728	26.43	NGS	12	12 JNT
167034188			Unknown-3	1	26.58	NGS	120 JT	15
167034188			Tetradocana	629594	27.01	NGS	5.7	5.7 JNT
16T034186		BLNK	Unknowm-1		8.25	NGS	39	
167034188		BLNK	1,1,1,3,5,5,7,7,7-Nonamethyl-3	38146-99-5	25.26	NGS	. 41	
16T034185		BLNK	Unknown-2	,	27.44	NGS	350	
16T034188		BLNK	Unknown-3	_	27.51	NGS	960	

c - RPD Outside Range U - Less Than Detection Limit NA = Not Analyzed, ND = Not Detected

J - Estimated N - Named TIC

B - Blank Contamination E - Outside Calibration Range

Y - Comment T - Tentalively Identified Compound

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Cartridge Evaluation Data Summary Report

Sample Group: 20162988

SDG Number:

Customer Sample ID: 16-08635-2-EFF-F Customer Sample ID: 16-08635-2-EFF-F

ample# R	2	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Oval Flans
VAPOR-TDU VOA #2	VOA #							1
167034187			Methyl formste	107-31-3	4.73	NGS	88	TML 69
167004187			Unknown-1		8.33	NGS	290 BJT	BJT
16T034187			Decane, 2,4,6-trimethyl-	62108-27-4	22.98	NGS	TAL DAY	JMT
16T034187			Undecane	1120214	23.72	NGS	7.8 JNT	JMT
16T034187			Undecane, 2,6-dimethyl-	17301-23-4	23.83	NGS	11	11 JNT
167034187			Unknown-2		24.23	NGS	TL 06	15
167034187			Dodecane	112-40-3	25.26	NGS	15	IS JNT
167034187			Methenamina	100-97-0	26.22	NGS	39	39 JNT
16T034187			Benzothiazola	95-16-9	26.34	NGS	TNL 16	JNI
167034187			Dodecane, 4,8-dimethyl-	81141728	26.42	NGS	14	4 JNT
187034187			Tetradecane	629594	27.00	NGS	6.2 JNT	JNT
167034187		BLNK	Unknown-1	-	8.25	NGS	39	
167034187		BLNK	1,1,1,3,5,5,7,7,7-Nonamethyl-3	38146-99-5	25.26	NGS	41	
16T034187	-	BLNK	Unknown-2	_	27.44	NGS	350	
16T034187	-	BLNK	Unknown-3	,	27.51	NGS	860	

c - RPD Outside Range U - Less Than Detection Limit NA = Not Analyzed, ND = Not Detected

Y - Comment T - Tentatively identified Compound

B - Blank Contamination E - Outside Calibration Range

J - Estimated N - Named TIC

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Cartridge Evaluation Data Summary Report

Sample Group: 20162988 SDG Number:

Customer Sample ID: 16-08635-2-EFF-G Customer Sample ID: 16-08635-2-EFF-G

lample# R	2	QC Type	Analyto	CAS No.	Retention Time (Minutes)	Unit	Desire	Out Diese
VAPOR-TDU VOA #2	VOA#						-	1
S16T034188			Methyl formate	107:31:3	4,73	MGS	67	67 JMT
16T034188			Unknown-1	-	8.33	NGS	250 BJT	BJT
167034188			Cyclotetrasilaxane, octamethyl	556-67-2	20.44	NGS	16	1NT 18
16T034188			3-Ethyl-3-methylheptane	17302-01-1	22.99	NGS	TML 001	JMT
16T034188			Decane, 2,4,6-trimethyl-	62108-27-4	23.12	NGS	388	38 JNT
167034188			Undecane	1120-21-4	23.72	NGS	27	27 JNT
16T034188			Undecane, 4,7-dimethyl-	17301-32-5	23.83	NGS	77	TV JNT
16T034188			Undecane, 4,8-dimethyl-	17312-82-2	23.93	NGS	SS	SO JNT
167034188			Unknown-2	1	24.23	NGS	TL 011	75
167034188			Undecane, 3-methyl-	1002-43-3	24,89	NGS	6.2 JNT	JMT
167034188			Dodecane	112-40-3	25.26	NGS	21	21 JNT
167034188			Methenamine	0-25-001	26.24	NGS	68	1NT 89
16T034188			Dodecane, 4,8-dimethyl-	61141728	26.44	NGS	17.	17 JNT
167034188			Tetradecane	629594	27.02	NGS	6.1 JNT	JNT
167034188	8	BLNK	Unknown-1		8.25	NGS	39	
16T034188	EÚ.	BLNK	1.1.1,3,5,5,7,7,7-Nonamethyl-3	38146-99-5	25.26	NGS	41	
16T034188	m	BLNK	Unknown-2		27.44	NGS	350	
167034188	m	BLNK	Unknown-3	_	27.51	NGS	098	

8 - Blank Contamination E - Outside Calibration Range

J - Estimated N - Named TIC

c - RPD Outside Range U - Less Than Detection Limit NA = Not Analyzed, ND = Not Detected

Y - Comment T - Tentatively Identified Compaund

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Cartridge Evaluation Data Summary Report

Sample Group: 20162988

SDG Number:

Customer Sample ID: 16-08635-2-EFF-H Customer Sample ID: 16-08635-2-EFF-H

Samples R	5	QC Type	Analyte	CAS No.	(Minutes)	Unde	- Dane	Out Base
VAPOR-TDU VOA #2	VOAR	2						1
3167034189			Methyl formate	107-31-3	4,72	NGS	53 JNT	JNT
3167034189			Unknown-1	ì	8.32	NGS	280 BJT	BJT
3167034189			Unknown-2	,	24.22	NGS	48 JT	17
316T034189			Dodecane	112403	25.26	NGS	6.5 JNT	JNT
167034189			Mothenamine	100-97-0	26.22	NGS	TNL 88	JNT
167034189			Benzothiazole	95-16-9	26.35	NGS	28 JNT	JNT
167034189			Dodecane, 4,6-dimethyf-	61141728	26.43	NGS	1NL 6.7 JNT	JNT
167034189		BLNK	Unknown-1	,	8.25	NGS	38	
167034189	Ĩ	BLNK	1,1,1,3,5,5,7,7,7-Nonamothyl-3	38145-99-5	25.25	NGS	41	
167034189		BLNK	Unknown-2	-	27.44	NGS	350	
516T034189		BLNK	Unknown-3		27.51	NGS	098	

c - RPD Outside Range U - Less Than Detection Limit NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Outside Calbration Range

J - Estimated N - Named TIC

Y - Comment T - Tentatively Identified Compound

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Cartridge Evaluation Data Summary Report

Customer Sample ID: 16-08635-2-IN-A

Sample Group: 20162988

SDG Number:

Sample# R	2	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	200	Out Bear
VAPOR-TDU VOA #2	VOA #	2					100,000	diam man
16T034190			Methyl trifluoroscotate	43147-0	4.72	NGS	130 JNJ	JNU
167034190			Unknown-1		8.30	NGS	150 BJT	BJT
16T034190			Methosytrimethylsilane	1825-61-2	8.70	NGS	TNL 88	INT
16T034190			Tetrahydrofuran	103-89-9	11.97	NGS	32 JNT	JMT
16T034190			N-Nitrosodimethylamine	62-75-9	15.69	NGS	8.2 JNT	INT
16T034190			Hexanal	66-25-1	16.82	NGS	29 JNT	INT
167034190			Oydotetrasiloxane, octamethyl	556-67-2	20.44	NGS	59 JNT	INT
16T034190			Decarre, 2,4,6-trimethyl-	62108-27-4	22.98	NGS	TALIN	INT
167034190			Undecane, 2,6-dimethyl-	17301-23-4	23.83	NGS	13 JNT	INT
16T034190			Unknown-2	_	24.23	NGS	120 JT	15
167034190			Dodecane	112403	25.26	NGS	10 JNT	JNT
167034190			Methenamine	100-97-0	26.21	NGS	350 JNT	INT
16T034190			Dedecane, 4,6-dimethyl-	61141728	28.42	NGS	14 JNT	TNI
167034190			Tetradecane	629594	27.00	NGS	TNL Of	INT
167034190		BLNK	Unknown-1	,	8.25	NGS	39	
167034190		BLNK	1,1,1,3,5,5,7,7,7-Nonamethyl-3	38146-99-5	25.28	NGS	41	
167034190	w.	BUNK	Unknown-2		27.44	NGS	350	
167034190	3	BLNK	Unlonown-3		27.65	MCS	000	

c - RPD Outside Range U - Less Than Detection Limit NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Oufside Calibration Range

J - Estimated N - Named TIC

Y - Commont T - Tentatively Identified Compound

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Cartridge Evaluation Data Summary Report

Customer Sample ID: 16-08635-2-IN-H Sample Group: 20162988 SDG Number:

Customer Sample ID: 16-08635-2-IN-H

Samples R	2	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Beenth	Outd Flans
VAPOR-TDU VOA #2	VOA #	2						-
16T034191			Wethyr formate	107-31-3	4.73	NGS	78 JNT	NT
16T034191			Unknown-1	_	8.30	NGS	140 BJT	TA
1611034191			Methoxytrimethy/slane -	1825-61-2	8.70	NGS	TNL 52	NT
161034191			Tetrahydeofuran	109-99-9	11.98	NGS	TNL 87	NT.
16T034191			Undecane	1120214	23.71	NGS	6.1 JNT	IN
167034191			Unknown-2	,	2423	NGS	S3 JT	-
16T034191			Dodocane	112-40-3	25.26	NGS	1NL 8.8	INT
16T034191			Methenamine	100-97-0	28.22	NGS	270 JNT	NT
167034191			Borczothiozole	95-16-9	26.35	NGS	25 JNT	TM
167034191			Dodecane, 4,6-dimethyf-	61141728	26.43	NGS	8.2 JNT	N.
167034191			Proponoic acid, 2-methyl-, 1-(74381-40-1	28.57	NGS	130 JNT	IM
161034191			Tetradecane	629594	27.01	NGS	5.0 JNT	-N
167034191	-	BLNK	Unknown-1	,	8.25	NGS	39	
167034191		BLNK	1,1,1,3,5,5,7,7,7-Nonamethyl-3	38146-99-5	25.26	NGS	41	
161034191		BLNK	Unknown-2	,	27.44	NGS	350	
167034191	83	BLNK	Unknown-3	,	27.51	NGS	960	

c - RPD Outside Range U - Less Than Detection Limit NA = Not Analyzed, ND = Not Detected

B - Blank Contamination E - Outside Calibration Range

J - Estimated N - Named TIC

Y - Comment T - Tentatively Identified Compound

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Cartridge Evaluation Data Summary Report

Sample Group: 20162989
SDG Number:
Customer Sample ID: 16-08635-2-BASE-EFF
Customer Sample ID: 16-08635-2-BASE-EFF

Sample® R A	A# CAS#	Analyte	Unit	s ors	Blank	Result	Duplicate	Average	RPD %	RPD % Spk Rec %	Det Umit	Det Limit Ont Err % Qual Flags
VAPOR-TDU VOA#2	/OA #2											
S16T034192	79-34-5	1,1,2,2-Tetrachioroethane	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1,3	Uleva
S16T034192	2-00-62	1,1,2-Trichloroothane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a U
S16T034192	75-34-3	1,1-Dichloroethane	NGS	110	41,2	42	n/a	n/a	n/a	rva	1.2	n/a U
\$167034192	75-35-4	1,1-Dichloroethene	NGS	110	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	Ulahu
S16T034192	107-06-2	1,2-Dichloroethane	SDN	120	41,6	41.6	n/a	n/a	n/a	rVa	1.6	U s/u
S16T034192	542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	n/a	1.2	n/a U
\$167034192	106-46-7	1,4-Dichlarobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	rva	2.0	Ua'u
S16T034192	123-91-1	1.4-Dioxane	NGS	110	<1.7	4.7	n/a	n/a	n/a	nya	1.7	Uato
\$167034192	71-36-3	1-Butanol	NGS	120	€8.9	<6.9>	n/a	n/a	n/a	n/a	8.9	n/s LUY
\$167034192	111-70-6	1-Heptanol	SDN	83	<5.8	<5.6	n/a	n/a	n/a	e/u	5.6	n/a LU
S16T034192	71-23-8	1-Propanol	NGS	120	7.2	<3.0	n/a	n/a	n/a	n/a	3.0	n/a BU
S16T034192	108-47-4	2.4-Dimethylpyridine	SDN	110	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a U
\$167034192	1708-29-8	2.5-Dihydrofuran	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a Uc
\$167034192	78-93-3	2-Butanone	NGS	110	<1.9	2.2	n/8	n/a	n/a	n/a	1.9	L a/n
S16T034192	110-43-0	2-Heptanone	NGS	66	61.6	<1.6	n/a	n/a	n/a	n/a	1,6	U e/u
\$167034192	591-78-6	2-Hexanone	NGS	86	<1.2	<1.2	n/s	n/a	e/u	n/a	1,2	n/a U
S16T034192	534-22-5	2-Methythan	NGS	110	41.9	<1.9	n/a	n/a	n/a	n/a	1,9	n/a U
\$167034192	78-94-4	3-Buten-2-one	NGS	100	<1.7	<1.7	n/a	n/a	n/a	o√a	1.7	n/a U
\$167034192	105-35-4	3-Heptanone	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	U e/u
S16T034192	105-58-3	3-Octanone	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a U
\$167034192	105-42-0	4-Methyl-2-hexanone	NGS	66	<1.3	<1.3	n/a	n/a	e/u	n/a	1,3	n/s U
\$167034192	108-10-1	4-Methyl-2-Pentanone	NGS	100	6.19	6.12	n/a	n/a	n/a	n/a	9,1	U s/u
S16T034192	67-64-1	Acetone	NGS	26	4.3	9.0	n/a	n/a	n/s	n/a	4.3	L s/n
S16T034192	15-05-8	Acetanitrile	NGS	91	<1.8	14	m'a	n/a	n/a	n/a	1,8	n/a
\$167034192	98-88-2	Acetaphenane	NGS	100	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	U s/u
S16T034192	107-13-1		NGS	86	<1.7	<1.7	n'a	e/u	n/a	n/a	1.7	U/8/U
S16T034192	107-18-6	Allyl Alcohol	NGS	120	<3.9	<3.9	n/a	n/a	n/a	e/u	3.9	n/a Uc

B - Blank Contamination U - Less Than Detection Limit

J - Estimated L - LLS Outside Range

NA = Not Analyzed, ND = Not Detected c - RPD Outside Range

> Y - Comment E - Outside Calibration Range

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Cartridge Evaluation Data Summary Report

Customer Sample ID: 16-08635-2-BASE-EFF Customer Sample ID: 16-08635-2-BASE-EFF SDG Number:

Sample Group: 20162989

amplet R	AB CAS 8	Analyte	Unit	% OTS	Blank	Result	Duplicate	Average	RPD %	RPD % Spk Rec %	Det Limit	Det Limit Cot Err % Qual Flags
VAPOR-TDU VOA #2	U VOA #2											
S16T034192	107-05-1	Allyl Chloride	NGS	110	<2.8	<2.8	e)u	n/a	E/S	E/A	2.8	Ulaju
S16T034192	71-43-2	Benzene	NGS	110	<1.2	<1.2	n/a	n/a	e/u	n/a	1.2	Uelu
S16T034192	100-47-0	Benzonirile	NGS	100	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	
S16T034192	123-72-8	Butanal	NGS	110	42.1	<2.1	n/a	n/a	n/a	n/a	2.1	U e/u
S16T034192	109-74-0	Butanentifile	NGS	100	<1.2	<1.2	n/a	n/a	n/a	m/a	1.2	
S16T034192	86-23-5	Carbon tetrachloride	MGS	130	6,1%	<1.6	n/a	n/a	n/a	n/a	1.6	
S16T034192	108-90-7	Chlorobenzene	NGS	110	41.5	<1,5	n/a	n/a	n/a	n/a	1.5	
S16T034192	25-00-3	Chlorosthane	NGS	98	41.9	41.9	nla	n/a	n/a	n/a	1,9	
S16T034192	67-66-3	Chloroform	NGS	120	<1.5	<1.5	n/a	n/a	n/a	m/a	1.5	
S16T034192	110-82-7	Cyclohexane	NGS	110	41.8	41.8	n/a	n/a	n/a	n/a	1.8	
S16T034192	124-18-5	Decare	MGS	96	<2.8	<2.8	n/a	n/a	nva	a/u	2.8	
S16T034192	84-17-5	Ethanol	NGS	100	47.5	<7.4	n/a	n/a	n/a	n/a	7.4	U ayu
S16T034192	141-78-6	Ethyl acetate	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1,5	
S16T034192	100-41-4	Ethylbenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	e,ru	1.5	
S16T034192	110-00-9	Furan	NGS	100	41.8	<1.6	nta	n/a	n/a	n/s	1.6	
S16T034192	110-54-3	Hexane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	nva	1.7	n/a U
S16T034192	628-73-9	Hexanenitrie	NGS	100	<1.5	<1.5	nla	n/a	e/u	n/a	1.5	
S16T034192	126-98-7	Methacrytonitrile	NGS	100	41.6	<1.6	n/a	n/a	e/u	n/a	1.6	
S16T034192	75-09-2	Wethylene Chloride	NGS	100	<2.7	<2.7	n/a	n/a	n/a	e/u	2.7	n/a U
S16T034192	91-20-3	Naphthalene	NGS	110	<3.7	<3.7	n/a	n/a	n/a	n/a	3.7	n/a U
S16T034192	89-86-3	Mitrobenziana	NGS	110	<2.6	<2.6	n/a	n/a	n/a	n/a	2.8	
S16T034192	110-59-8	Pentanenitrie	NGS	97	41.6	41.6	rva	n/a	n/a	n/a	1.6	
S16T034192	107-12-0	Propanentrile	NGS	100	41.4	<1.4	e)u	n/a	n/a	n/a	1.4	
S16T034192	110-96-1	Pyridine	NGS	130	<3.8	<3.8	n/a	n/a	n/a	n/a	3.8	
S16T034192	100-42-5	Styrene	NGS	110	41.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a U
S16T034192	127-18-4	Totrachioroethene	NGS	120	<1.6	43	n/a	n/a	n/a	n/a	1.8	n/a
S16T034192	108-88-3	Toluene	MGS	110	<1.5	3.2	nla	n/a	n/a	n/a	1.5	

J - Estimated L - LLS Outside Range

NA = Not Analyzed, ND = Not Detected

a - RPD Outside Range

Y - Comment E - Outside Calibration Range

B - Blank Contamination U - Less Than Detection Limit

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Cartridge Evaluation Data Summary Report

Sample Group: 20162989 SDG Number:

Customer Sample ID: 16-08635-2-BASE-EFF Customer Sample ID: 16-08635-2-BASE-EFF

Samples R	Aff CAS #	Analyto	Unit	% QUS	Blank	Result	Duplicate	Average	Average RPD % Spk Rec %	% 20	Det Limit Co	Det Limit Ont Err % Qual Flags
VAPOR-TDI	J VOA #2											
S16T034192	79-01-6	Trichloroethene	NGS	120	<1.5	<1.5	n/a	6,60	n/s	n/a	1.5	∪'a/∪
S16T034192	75-69-4	Trichiceofluoromethane	NGS	110	8,12	41.8	n/a	19/8	n/a	n/s	1.6	n/a U
S16T034192	10061-01-5	cis-1,3-Dichlaropropene	NGS	110	5	43	n/a	m'a	n/a	n/8	1.3	n/a U
S16T034192	123-85-4	n-Butyl acetate	NGS	88	412	41.4	n/s	n/a	n/a	e/u	1.4	n/a U
S16T034192	142-82-5	n-Heptane	NGS	100	417	412	n/a	n/a	n/a	n/a	1.4	n/a U
S16T034192	10061-02-6	trans-1,3-Dichloropropene	NGS	110	412	412	n/a	m'a	n/a	n/a	1.2	Us/u

NA = Not Analyzed, ND = Not Detected c - RPD Outside Range

J - Estimated L - LLS Outside Range

B - Blank Contamination U - Less Than Detection Limit

Y - Comment E - Outside Calibration Range

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Cartridge Evaluation Data Summary Report

SDG Number:

Sample Group: 20162989

Customer Sample ID: 16-08635-2-BASE-IN Customer Sample ID: 16-08635-2-BASE-IN

Samples R	A# CAS#	Analyte	Unit	STD %	Blank	Result	Duplicate	Average		RPD % Spk Rec %	Det Limit	Det Umit Ont Err % Qual Flags	al Flags
VAPOR-TDU VOA #2	UVOA #2												
\$167034193	79-34-5	1,1,2,2-Tetrachloroethane	NGS	110	<1.3	<1.3	n'a	e)u	nia	aln	4.0	Uelu	Γ
S16T034193	2900-62	1,1,2-Trichloroethane	NGS	110	<1.5	<1.5	n'a	e)u	n'a	nla	1.5	n/a U	
\$167034193	75343	1,1-Dichloroethane	NGS	110	<1.2	<1.2	n'a	n/a	nla	alu	1.2	U B/U	
S16T034193	75-35-4	1,1-Dichloroethene	NGS	110	<1.3	<1.3	m'a	n/a	9,0	n/a	5.5	Ola	
S16T034193	107-08-2	1,2-Dichloroethane	NGS	120	<1.6	<1,6	e,cu	n/a	n'a	nla	1.6	U B/U	
\$167034193	542.75-6	1,3-Dichloropropene (Total)	NGS	e/u	n/a	<1.2	n's	n/a	n'a	n/a	1.2	Organ	
S16T034193	108-48-7	1,4-Dichlorobenzene	NGS	110	<2.0	420	e,u	n/a	e/u	nla	2.0	O BJU	
S16T034193	123-91-1	1,4-Diaxane	NGS	110	<1.7	<1.7	e,w	n/a	a,u	alu	13	Ogh	
S16T034193	71.36.3	1-Butanoi	NGS	120	<8.9	36	n/a	n/a	n'a	n/a	6.8	n/a LY	
S16T034193	111-70-6	1-Heptanol	NGS	83	<5.6	<5.6	nia	n/a	9,0	nla	5.6	Na LU	
\$167034193	71-23-8	1-Prepanol	NGS	120	7.2	8.0	e,u	n/a	e/u	n/a	3.0	n/a BJ	
S16T034193	108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	433	e/cu	n/a	n'e	n/a	33	Ua/u	
S16T034193	1708-29-8	2,5-Dihydrofuran	NGS	110	<2.3	<28	n,u	e/u	n'a	n/e	2.8	n/a Uc	
\$167034193	78-53-3	2-Butanone	NGS	110	<1.9	4.1	n'a	n/a	e/u	n/a	1.9	L B/u	
\$167034193	110-43-0	2-Heptanone	NGS	88	41.6	1.7	n'a	rula	ala	n/s	1.6	L Blu	
\$167034193	591-78-6	2-Hexanone	NGS	98	<1.2	<1.2	s,u	n/a	e,u	n/a	12	Ugh	
S16T034193	534-22-5	2-Methyffuran	NGS	110	<1.9	<1.9	n'a	n/a	30	n/a	1.9	Ua/u	
\$167034193	78-94-4	3-Buten-2-one	NGS	100	<1.7	<1.7	n'a	n/a	n/a	n/e	1.7	U BJU	
\$167034193	106-35-4	3-Heptanone	NGS	100	<1.5	4.4	m'a	n/a	2,0	n/a	1.5	L e/n	
\$167034193	106-63-3	3-Octanone	NGS	110	424	424	2,0	n/a	e/u	n/e	2.4	U/a U	
\$167034193	105-42-0	4-Methyl-2-hexanone	NGS	86	<1.3	<13	e,u	n/a	e,u	n/a	1.3	Unio	
\$167034193	108-10-1	4-Methyl-2-Pentanana	NGS	100	<1.9	12	n/a	n/a	n/a	n/e	1.9	n/a J	
\$167034193	87-64-1	Acetone	NGS	- 97	44.3	48	n/a	n/a	a/a	n/a	4.3	n/a	
\$167034193	25-05-8	Acetonitrile	NGS	91	<1.8	98	n/a	n/a	n/a	n/a	1.8	n/a	
\$167034193	98-86-2	Acetophenone	NGS	100	428	42.6	n/a	n/a	n/a	rva	2.8	Us/u	
\$167034193	107-13-1	Anyfonibile	NGS	98	<1.7	<1.7	a'a	n/a	n/a	nya	1.7	U e/u	
S16T034193	107-18-6	Allyl Alcohol	NGS	120	<3.9	<3.9	n'a	rya	n'e	n/a	3.9	n/a Uc	

B - Blank Contamination U - Less Than Detection Limit

J - Estimated L - LLS Outside Range

NA = Not Analyzed, ND = Not Detected c - RPD Outside Range

Y - Comment E - Outside Calbration Range

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Cartridge Evaluation Data Summary Report

Sample Group: 20162989
SDG Number:
Customer Sample ID: 16-08635-2-BASE-IN
Customer Sample ID: 16-08635-2-BASE-IN

Sample# R	AS CAS #	Analyte	Unit	% QTS	Blank	Result	Duplicate	Average	_	RPD % Spk Rec %	Det Limit	Cnt Err % Qual Flags
VAPOR-TDU VOA #2	VOA #2											
S16T034193	107-05-1	Allyl Chloride	NGS	110	42.8	42.8	n/a	n/a	n/a	n/a	2.8	Ua/u
S16T034193	71-43-2	Benzene	NGS	110	<12	2.5	e/u	n/a	n/a	n/a	1.2	n/a J
S16T034193	100-47-0	Benzonitrie	NGS	100	612	<1.9	n/a	n/a	e/u	n/a	1.9	Ua/u
\$167034193	123-72-8	Butanal	NGS	110	42.1	3.1	n/a	n/a	n/s	n/a	2.1	n/a J
S16T034193	109-74-0	Butanentrile	NGS	100	<12	<12	e/u	n/a	eyu	n/a	1.2	∪ e/u
S16T034193	56-23-5	Carbon tetrachloride	NGS	130	41.6	<1.6	n/a	n/a	n/a	n/a	1.6	∪av
S16T034193	108-90-7	Chlorobenzene	NGS	110	41.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a U
S16T034193	75-00-3	Chloreethans	NGS	96	41.9	<1.9	e/u	n/a	n/a	e/u	1.9	n/a U
\$167034193	67-86-3	Chloroform	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a U
S16T034193	110-82-7	Cyclohexane	NGS	110	<1.8	<1.8	6/4	n/a	n/a	n/u	1.8	U e/u
S167034193	124-18-5	Decane	NGS	96	<2.8	42.8	elva	n/a	n/a	n/a	2.8	n/a U
S16T034193	64-17-5	Ethanol	NGS	100	47.4	28	n/a	n/a	n/a	n/a	7.4	L e/n
S16T034193	141-78-6	Ethyl acetate	NGS	100	<1.5	1,9	eva	n/s	n/a	n/s	1.5	n/a J
S16T034193	100414	Ethylbenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a U
S16T034193	110-00-9	Furan	NGS	100	<1.6	<1.5	e/u	n/a	n/8	n/a	1.6	n/a U
S16T034193	110-54-3	Hecane	NGS	100	<1.7	1.7	n/a	n/a	n/a	n/a	1.7	n/a J
S16T034193	628-73-9	Hecanenitrile	NGS	100	<1.5	<1.5	eva	n/a	n/a	n/a	1.5	n/a U
S16T034193	126-98-7	Methacrytonitrite	NGS	100	<1.8	<1.6	e/u	n/a	n/a	n/a	1.6	n/a U
S16T034193	75-09-2	Methylene Chloride	NGS	100	42.7	42.7	e/u	n/a	n/8	n/a	2.7	n/a U
S16T034193	91-20-3	Naphthalene	NGS	110	<3.7	43.7	n/a	n/a	n/a	nía	3.7	n/a U
S16T034193	98-95-3	Nitrobenzene	NGS	110	<2.6	<2.8	n/a	n/a	n/a	n/a	2.6	n/a U
S16T034193	110-59-8	Pentanenitrile	NGS	26	<1.6	<1,8	e/u	n/a	n/a	n/a	1.6	u a/u
S16T034193	107-12-0	Propanentrile	NGS	100	41.4	<1.4	n/a	n/a	n/a	nia	1.4	U a/u
S16T034193	110-88-1	Pyridine	NGS	130	<3.8	<3.8	n/a	n/a	n/a	nva	3,8	n/a U
S16T034193	100-42-5	Styrene	NGS	110	<1.8	41,8	eva	n/a	n/a	n/a	1.6	U av
S16T034193	127-18-4	Tetrachloroethene	NGS	120	<1.6	78	e/u	n/a	n/B	n/a	1.6	n/a
S16T034193	108-88-3	Toluene	NGS	110	<1.5	13	e/u	n/s	n/a	n/a	1.5	n/a

B - Blank Contamination U - Less Than Detection Limit

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a - RPD Outside Range

NA = Not Analyzed, ND = Not Detected

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Cartridge Evaluation Data Summary Report

Sample Group: 20162989

SDG Number: Customer Sample ID: 16-08635-2-BASE-IN Customer Sample ID: 16-08635-2-BASE-IN

Samples R	All CAS#	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	RPD % Spk Rec %	Det Limit	Det Limit Ont Err % Qual Flags	Qual Flags
VAPOR-TDU	J VOA #2												
S16T034193	3-10-62	Trichloroethene	NGS	120	<1.5	<1.5	e/u	n/a	n/a	n'a	1.5	n/a k	
S16T034193	75-69-4	Trichionofluoromethane	NGS	110	41,6	9.0	n/a	r/a	n/a	aju	1.6	nía	
S16T034193	10061-01-5	cis-1,3-Dichloropropene	NGS	110	×1,3	<1.3	n/a	n/a	n/a	n'a	6.	n/a L	
S16T034193	123-86-4	n-Butyl acetate	NGS	96	×1.4	41.4	e/u	r/a	n/8	n'a	1.4	níalt	
S16T034193	142-82-5	n-Heptane	NGS	100	41.4	3.8	n/a	rVa	n/a	n's	1.4	nla	
S16T034193	10061-02-6	trans-1,3-Dichloropropene	NGS	110	<1.2	<1.2	n/s	n/a	n/a	n/a	12	nía	

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Y - Comment E - Outside Calibration Range

B - Blank Contamination U - Less Than Detection Limit

J - Estimated L - LLS Outside Range

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Cartridge Evaluation Data Summary Report

Sample Group: 20162989
SDG Number:
Customer Sample ID: 16-08635-2-BLANK1
Customer Sample ID: 16-08635-2-BLANK1

	a proper	Paratyte	Chill	STD %	Blank	Result	Dupficate	Average	-	RPD % Spk Rec %	Det Umit C	Det Limit Ont Err % Qual Flags
VAPOR-TDU VOA #2	/OA #2											
516T034194	79-34-5	1,1,2,2-Tetrachloroethane	NGS	110	513	<13	n/a	n/a	nla	n/a	1.3	n/a U
S16T034194	79-00-5	1,1,2-Trichloroethane	NGS	110	415	41.5	e/u	n/a	nis	n/s	1.5	Na U
S16T034194	75-34-3	1,1-Dichloroethans	NGS	110	4.2	412	n/a	n/a	n/s	n/a	12	n/a U
167034194	75.35-4	1,1-Dichloroethene	NGS	110	413	413	n/a	n/a	n/a	n/8	1.3	U a/a
S16T034194	107-06-2	1,2-Dichloroethans	NGS	120	41.6	41.6	n/s	n/a	n/a	n/a	1.6	n/a U
S16T034194	542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	e/u	41.2	n/a	n/a	nis	n/s	12	n/a U
S16T034194	106-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/s	e/u	nla	n/a	2.0	n/a U
S16T034194	123-91-1	1,4-Dioxane	NGS	110	<1.7	417	n/n	n'a	eya	cha	1.7	U e/u
S16T034194	71-36-3	1-Butanol	NGS	120	<8.9	<8.9	n/a	a/a	PAS .	n/a	8.9	n/a LUY
S16T034194	111-70-6	1-Heptanol	NGS	83	9.6>	45.6	n/a	n/a	n/a	nla	5.6	
S16T034194	71-23-8	1-Propanol	NGS	120	7.2	<3.0	n/a	2/0	e/u	n/a	3.0	n/a BU
S16T034194	108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	n/a	n/a	nla	3.3	n/a U
S16T034194	1708-29-8	2,5-Dihydrolutan	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/s	2.8	n/a Uc
S16T034194	78-93-3	2-Butanone	NGS	110	<1.9	41.9	n/a	n/a	n/a	e/u	1.9	n/a U
S16T034194	110-43-0	2-Heptanone	NGS	88	<1.6	41.8	n/a	n/a	n/a	20,4	1.6	n/a U
S16T034194	591-78-6	2-Hexanone	NGS	98	<1.2	<1.2	n/a	n/a	n/a	n/a	1.2	n/a U
S16T034194	534-22-5	2-Methytturan	NGS	110	41.9	41.9	n/a	n/a	n/a	n/a	1.9	n/a U
S16T034194	78-94-4	3-Buten-2-one	NGS	100	<1.7	<1.7	n/a	n/a	e/u	n/a	1.7	n/a U
S16T034194	106-35-4	3-Heptanone	NGS	100	<1.5	<1.5	n/a	n/a	e/u	n/a	1.5	U s/u
S16T034194	106-68-3	3-Octanone	NGS	110	42.4	42.4	n/a	n/a	n/a	n/s	2.4	n/a U
S16T034194	105-42-0	4-Methyl-2-haxanone	NGS	88	<1.3	<1.3	n/a	n/a	n/n	e/u	1.3	n/a U
S16T034194	108-10-1	4-Methyl-2-Pentanono	NGS	100	<1.9	<1.9	n/a	n/a	n/s	n/a	1.9	U/a)U
S16T034194	87-64-1	Acetone	NGS	97	<4.3	54.3	nla	n/a	n/a	n/a	4.3	Uein
S16T034194	75-05-8	Acetonitrile	MGS	91	<1.8	2.3	nla	n/a	n/a	n/a	1.8	n/a J
S16T034194	98-86-2	Acetophenone	NGS	100	42.6	<2.6	nla	n/a	n/a	n/a	2.6	Na U
S16T034194	107-13-1	Acrylonitrile	NGS	96	<1.7	<1.7	n/a	n/a	rya	n/a	1.7	n/a U
S16T034194	107-18-6	Allyl Alcohol	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n/a	3.9	n/a Uc

Y - Commont E - Outside Calbration Range

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Cartridge Evaluation Data Summary Report

SDG Number:

Sample Group: 20162989

Customer Sample ID: 16-08635-2-BLANK1 Customer Sample ID: 16-08635-2-BLANK1

amples R	All CAS #	Amalyto	awn.	STD %	Blank	Result	Duplicate	Awerage	RPD %	RPD % Spk Rec %	Det Limit	Cat Err % Qual Flaes
VAPOR-TDU VOA #2	J VOA #2											
167034194	107-05-1	Allyl Chloride	NGS	110	42.8	428	n'a	n/a	n's	nía	2.8	Ualu
S16T034194	7143-2	Benzene	NGS	110	c12	<12	n/s	n/a	n/a	n/a	12	Uah
S16T034194	100-47-0	Benzonitrile	NGS	100	c1.9	419	n/a	nia	n'a	nla	1.9	n/a U
S16T034194	123-72-8	Butanal	NGS	110	42.1	12	n/a	nya	n'a	n/a	2.1	n/a U
316T034194	109-74-0	Butaneritrile	NGS	100	<1.2	<1.2	e/u	n/s	n'a	n/a	12	n(s)U
S16T034194	56-23-5	Carbon tetrachloride	NGS	130	41.6	41.6	n/a	r/a	n/a	n/a	1.6	Ulalu
S16T034194	108-90-7	Chlorobenzane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	alu	1.5	Ulan
S16T034194	75-00-3	Chlonoefhane	NGS	98	613	<1.9	cju	n/a	n/a	ale	1.9	n/a U
S16T034194	67-66-3	Chievoform	NGS	120	<1.5	<1,5	n/a	n/a	n/8	n's	1.6	U e/u
S16T034194	110-82-7	Cyclohecane	NGS	110	<1.8	<1.8	n/a	n/a	n/a	a/a	1.8	Uklu
S16T034194	124-18-5	Decane	NGS	96	<2.8	<2.8	n/a	n/a	nfa	n'e	2.8	Ulan
S16T034194	64-17-5	Ethanol	NGS	100	47.4	47.4	n/a	n/a	ejru	n'a	7.4	n/a U
S16T034194	141-78-6	Ethyl acetate	NGS	100	<1.5	<1.5	nla	n/a	n/s	n'a	1.5	n/a U
S16T034194	100414	Ethylbenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a U
S16T034194	110-00-9	Furan	NGS	100	<1.6	<1.6	nla	n/a	n/a	n'a	1.6	n/a U
S16T034194	110-54-3	Hexane	NGS	100	<1.7	<1.7	nla	n/a	n/a	nia	1.7	n/a U
\$16T034194	628-73-9	Hexaneritrile	NGS	100	<1.5	<1.5	n/a	n/s	n/a	n/a	1.5	U NA
S16T034194	126-98-7	Methacytonitrile	NGS	100	<1.6	<1.6	e/u	n/a	n/s	n/a	1.6	∪a/u
S16T034194	75-09-2	Methylene Chloride	NGS	100	42.7	42.7	n/a	n/a	n/a	n/a	2.7	U/a U
1187034194	91-20-3	Naphthalene	NGS	110	43.7	5.7	n/a	m/a	n/a	n/a	3.7	n/a U
S16T034194	88-55-3	Nitrobenzene	SDN	110	42.6	42.6	n/a	n'a	e/u	n/a	2.6	∪a/u
S16T034194	110-59-8	Pentanentrile	NGS	26	<1.6	<1.8	n/a	m'a	e/u	n/a	1.6	n/a U
S16T034194	107-12-0	Propanenitrie	NGS	100	×1.4	41.4	n/a	n/a	n/a	n/a	1.4	n/a U
S16T034194	110-86-1	Pyridine	NGS	130	43.8	<3.8	n/a	n'a	n/a	nla	3.8	Dia U
S16T034194	100-42-5	Styrene	NGS	110	41.6	41.6	e/u	n/a	n/a	n/a	1.6	D/s/C
S16T034194	127-18-4	Tetrachloroethene	NGS	120	41.6	41.8	n/a	n'a	n/a	nle	1.6	Organ
S16T034194	108-88-3	Tolueme	NGS	110	41.5	<1.5	n/a	nía	n/a	ala.	1.5	of a Li

Y - Comment E - Outside Calibration Range

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Cartridge Evaluation Data Summary Report

Sample Group: 20162989

SDG Number: Customer Sample ID: 16-08635-2-BLANK1 Customer Sample ID: 16-08635-2-BLANK1

Samples R	As CAS#	Analyte	ien	STD %	Blank	Result	Duplicate	Average	RPD 44 14	PPO 44 Cat Day 14	Seel lead Sees	Contract to the
VAPOR-TDU	J VOA #2				1			-		ti navi uda	1	Cet err Niqual Flags
S16T034194	79-01-6	Trichloroethene	NGS	120	<1.5	<15	6/0	a/a	alm	olo	100	1900
S16T034194	75-69-4	Trichlorofluoromethane	NGS	110	<1.8	418	s,u	a)u	1	100	0 0	Na C
S16T034194	10061-01-5	cle.1 3-Dichlospessons	MOD	440			-	001	0.11	ING	07	OBO.
N. Owner, and a		and a day and a second	Control of the Control	211	0.17	43.0	rwa rwa	D/a	n'a	n/a	est.	n/a/U
S151034194	123-85-4	n-Butyl acetate	NGS	88	×1,4	41.4	n/u	e)o	ala	ala	17.	
S16T034194	142-82-5	n-Heptane	NGS	100	21.4	200		1	1	-	17	
	1		2001	200	21.0	41.4	E/M	2/3	e c	90	1.4	ntalu
5161034194	10061-02-6	trans-1,3-Dichloropropene	NGS	110	<1.2	41.2	n/a	n/a	9,6	e/w	1.2	Hali

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Cartridge Evaluation Data Summary Report

SDG Number:

Sample Group: 20162989

Customer Sample ID: 16-08635-2-BLANK2 Customer Sample ID: 16-08635-2-BLANK2

Samples R	CASB	Analyte	No.	STD %	Blank	Result	Duplicate	Average	RPD %	Sok Rec %	Det Limit	Cast For % Dead Shoes
VAPOR-TDU VOA #2	U VOA #2											
S16T034195	79-34-5	1,1,2,2-Tetrachloroethane	NGS	110	<1.3	<1.3	n/a	c/a	n/a	2,0	13	otalii
\$167034195	79-00-5	1,1,2-Trichloroethane	NGS	110	41.5	<5.5	n/a	r/a	n/a	w/a	100	Uelo
S16T034195	75-34-3	1,1-Dichloroethane	NGS	110	41.2	<1.2	n/a	n/a	n/a	n/a	1.2	Ushu
S16T034195	75-35-4	1,1-Dichloroethene	NGS	110	<1.3	<1.3	n/a	n/a	e/u	n/a	1.3	Uelo
S16T034196	107-06-2	1,2-Dichlevoethane	NGS	120	41.6	6.1.6	n/a	n/a	n/a	n/a	1.6	Uaho
S16T034195	542-75-6	1,3-Dichleropropene (Total)	NGS	n/a	nla	<1.2	n/a	n/a	n/s	n/a	1.2	Life [1
S16T034195	106-46-7	1,4-Dichlorobenzene	NGS	110	42.0	<2.0	n/s	n/a	n/s	n/a	2.0	n/a U
\$167034195	123-91-1	1,4-Dioxarse	NGS	110	<1.7	£12	n/a	n/a	n/a	n/a	1.7	Ualu
S16T034195	71-36-3	1-Butanol	NGS	120	48.9	6.8>	n/s	n/a	n/a	n/a	8.9	Malun
S16T034195	111-70-6	1-Heptanol	NGS	83	9'5	45.6	nla	n/s	n/s	nla	9.9	Waltu
S16T034195	71-23-8	1-Propanol	NGS	120	7.2	3.0	eyu	n'a	n/a	n/a	3.0	
S16T034195	108-47-4	2.4-Dimethylpyridine	NGS	110	<3.3	633	n/a	2/2	n/a	n/a	33	n/a U
S16T034195	1708-29-8	2,5-Dihydroluran	NGS	110	42.8	428	e/u	n'a	n/a	n/a	2.8	n/a Ue
S16T034195	78-63-3	2-Butanone	NGS	110	6.15	613	n/a	e,w	n/a	e/u	1.9	n/a U
S16T034195	110-43-0	2-Heptanone	NGS	88	41.6	41.6	n/a	n'a	n/a	e/u	1.6	n/a U
S16T004195	891-78-6	2-Hexanone	NGS	99	<1.2	<1.2	e/u	n/a	n/a	e/u	1.2	n/a/U
S16T034195	534-22-5	2-Methylfuran	NGS	110	<1.9	615	n/a	n/a	e/u	n/a	1.9	n/a U
S16T004196	78-94-4	3-Buten-2-one	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a/U
S16T034195	106-35-4	3-Heptanone	NGS	100	<1.5	<1.5	n/a	nía	n/a	n/a	1.5	D/s/U
S16T034195	106-68-3	3-Octanone	NGS	110	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	n/a/U
S16T034195	105-42-0	4-Methyl-2-hexanone	NGS	66	<1,3	<1.3	n/a	nla	n/a	n/a	1.3	n/a/U
S16T034195	108-10-1	4-Methyd-2-Pentanone	NGS	100	<1.9	6,1>	n/a	nla	nia	n/a	1.9	n/a U
S16T034195	67-54-1	Acetone	NGS	87	<4.3	64.3	n/a	n/a	n/a	n/s	4.3	n/a/U
S16T034195	75-05-8	Acetonitrile	NGS	16	<1.8	6.0	ruta	e/u	nya	n/a	1.8	Leju
S16T034195	98-96-2	Acetophenone	NGS	100	979	42.8	n/a	n/a	nta	n/a	2.6	nialU
S16T034195	107-13-1	Acrylonitille	NGS	86	41.7	<1.7	nya	ala	ng	als.	1.7	Uelv
S16T034195	107-18-6	Ally Alcohol	NGS	120	410	000	ngu	1	1		1	

B - Blank Contamination U - Less Than Detection Limit Y - Comment E - Outside Calibration Range

J - Estimated L - LLS Outside Range

NA = Not Analyzed, ND = Not Detected c - RPD Outside Range

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Cartridge Evaluation Data Summary Report

Sample Group: 20162989 SDG Number:

Customer Sample ID: 16-08635-2-BLANK2 Customer Sample ID: 16-08635-2-BLANK2

ample® R	Ad CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average		RPD % Spk Rec %	Det Limit	Det Limit Ont Em % Qual Flags
VAPOR-TDU VOA #2	U VOA #2											
167034195	107-05-1	Allyl Chloride	NGS	110	42.8	<2.8	aya	n/a	n/a	n/a	2.8	n/a[ii
16T034195	7143-2	Benzene	NGS	110	<12	412	n/a	n/a	n/a	n/a	1.2	
167034195	100-47-0	- , .	NGS	100	615	41.9	elva	n/a	n/a	n/a	1.9	
316T034195	123-72-8		NGS	110	421	2.5	n/a	n/a	n/s	n/a	2.1	
S16T034195	109-74-0	5-5	NGS	100	<12	412	n/a	n/a	elva	nju	13	
S16T034195	56-23-5	Carbon tetrachloride	NGS	130	41.6	<1.6	n/a	n/a	n/a	N/a	1.6	
S16T034195	108-90-7		NGS	110	415	415	n/a	n/a	n/s	nia	15	
S16T034195	75-00-3	Chloroethane	NGS	98	61.9	41.9	n/a	n/a	n/a	n/a	1.9	
S16T034195	67-66-3	Chloroform	NGS	120	41.5	<1.5	n/a	2,0	n/a	nla	1.5	
S16T034195	110-82-7		NGS	110	8.1×	41.8	n/s	a'a	e/a	nks	1.8	
S16T034195	124-18-5	5.0	NGS	96	<2.8	<2.8	n/a	n'a	n/a	nla	2.8	
S16T034195	84-17-5		NGS	100	474	47.4	n/a	n'a	n/a	nla	7.4	
S16T034195	141-78-6		NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	
S16T034195	100-41-4	1	NGS	110	41.5	<1.5	n/s	n/a	n/a	n/a	1.5	
3167034195	110-00-9	П	NGS	100	41.8	<1.6	n/a	nía	n/a	n/a	1.6	
S16T034195	110-54-3		NGS	100	<1.7	41.7	nla	n/a	n/a	n/a	1.7	
S16T034195	828-73-9		NGS	100	<1.5	<1,5	n/a	n/a	n/a	N/S	1.5	
S16T034195	126-98-7	1	NGS	100	41.8	41.6	n/a	n/a	n/a	n/a	1.6	
S16T034195	75-09-2	Methylene Chloride	NGS	100	427	427	c/u	n/a	n/a	n/a	2.7	
S16T034195	91-20-3	Naphthalene	NGS	110	43.7	43.7	r/a	n/a	n/a	n/a	3.7	n/a U
5167034195	98-85-3	Nitrobenzene	NGS	110	42.6	42.8	r/a	n/a	n/a	n/a	2.6	n/a U
S16T034195	110-59-8	Pentanenitrilo	NGS	97	6.15	<1.6	r/a	n/a	nía	n/a	1.6	n/a U
S16T034195	107-12-0	ા	NGS	100	4.12	41.4	r/a	n/a	n/a	n/a	1.4	Ush
S16T034195	110-98-1	- 1	NGS	130	3.8	3.8	n/a	nya	n/a	n/a	3.00	n/a U
S16T034195	100-42-5	Styrene	NGS	110	41.6	41.6	n/a	e/u	rya	n/a	1.6	Uava
\$167034195	127-18-4		NGS	120	<1.6	e1.6	n/a	n/e	n/a	n/a	1.6	Ush
S16T034195	108-88-3		SSN	110	41,5	<1.5	n/a	2/4	n/a	nya	1.5	Ulahu

Y - Comment E - Outside Calibration Range

J. Estim

B - Blank Contamination U - Less Than Detection Limit

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Cartridge Evaluation Data Summary Report

Sample Group: 20162989 SDG Number:

Customer Sample ID: 16-08635-2-BLANK2 Customer Sample ID: 16-08635-2-BLANK2

Samples R.	A# CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Sak Rec %	Det Limis c	Det Limit Cot For % Qual Flags
VAPOR-TDU VOA	U VOA #2											
S16T034195	79-01-6	Trichloroethene	NGS	120	<1.5	<1.5	n/a	n/a	n/a	nin	1.6	Hebri
S16T034195	75-69-4	Trichlorofluoromethane	NGS	110	41.6	41.8	n/a	n/a	n/a	o'o	4.8	D Taylor
\$167034195	10061-01-5	cis-1,3-Dichloropropene	NGS	110	<1.3	<1.3	eyu	nya	a)va	s/u	4.9	ada III
S16T034195	123-88-4	n-Butyl acetate	NGS	96	×1.4	41.4	ala.	2/4	spa	olo		1100
S16T034195	142-82-5	n-Heptene	NGS	100	×1.×	41.4	n/s	a/a	ala.	u/u	44	nfa [1
S16T034195	10061-02-6	trans-1,3-Dichloropropene	NGS	110	412	412	ela	n/a	n/a	n/a	1.2	n/a [1

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J - Estimated L - LLS Outside Range

B - Blank Contamination U - Less Than Detection Limit

Y - Comment E - Outside Calbration Range

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Cartridge Evaluation Data Summary Report

Sample Group: 20162989 SDG Number: Customer Sample ID: 16-08635-2-IN-B Customer Sample ID: 16-08635-2-IN-B

2-Tetrachlomethane NGS 110 <1.3	R AS CASE		Analyte	Unit	STO %	Blank	Result	Duplicate	Average	RPD %	RPD % Sok Red %	Det Limit	Cat For % Qual Flans
79-34-5 1,1,2,2-Tetrachionechane NGS 110 <1,3 79-00-5 1,1,2-Triorionechane NGS 110 <1,2	-TDU VOA #2												
79-00-5 1,1,2-Trickloreethane NGS 110 <1,5 75-34-3 1,1-Dichloroethane NGS 110 <1,2		9		NGS	110	<1,3	<1.3	n/a	n/a	n/n	n/a	1.3	nialu
75-34-3 1,1-Dichloroethane NGS 110 <1.2 75-35-4 1,1-Dichloroethane NGS 110 <1.3		2		NGS	110	41.5	<1.5	n/a	nía	n/a	n/a	1.5	n/a/U
75-35-4 1.1-Dichloroethene MSS 110 <1.3 107-06-2 1,2-Dichloroethane MSS 120 <1,6		2	1,1-Dichloroethane	NGS	110	<1.2	<1.2	e/u	n/a	n/a	n/a	1.2	n/a/U
107-06-2 1,2-Dichloroethane NGS 120 <1,6 106-46-7 1,4-Dichloroethane (Toal) NGS 110 <2,0		1-4	1,1-Dichloroethene	MGS	110	<1.3	<1.3	n/a	nía	n/a	n/a	1.3	nau
\$42-75-6 f.3-Dichloropene (Total) NGS rula rula 106-46-7 1.4-Dichloropene (Total) NGS 110 <2.0		18-2		NGS	120	41.6	<1.8	n/a	n/a	nís	n/a	1.6	n/all
106-46-7 1,4-Dichlorobenzene NGS 110 <2.0 71-35-3 1-Butanol NGS 120 <2.0		9-5	1,3-Dichloropropene (Total)	NGS	n/a	e)u	<1.2	n/a	n/a	n/a	n/a	1.2	ntall
123-91-1 1,4-Dioxane NGS 110 <1,7 71-35-3 1-Butanol NGS 120 <2,9		1.9		MGS	110	420	920	n/s	n/a	nla	n/a	20	n/a U
71-36-3 1-Butanol NGS 120 <2.45 71-70-6 1-Heptanol NGS 120 <2.6		1-1	1,4-Diaxane	NGS	110	41.7	<1.7	n/a	n/a	n/a	N/S	1.7	Nalu
111-70-6 1-Nepsarel NGS 83 <5.6 71-23-8 1-Propanol NGS 120 7.2 108-47-4 2-A-Dimethylpytidine NGS 110 <3.3		2	1-Butanol	NGS	120	6.89	2.4E+03	n/a	n/a	nla	nía	6.8	Na ELY
71-23-8 1-Propanol NGS 120 7.2 108-47-4 2-4-Dimethylpytidine NGS 110 <3.3		9-0	1-Hoptsnot	NGS	88	9'99	9.65	nla	nla	nya	n/a	5.6	nyarro
108-47-4 2.4-Dimetrylypticine NGS 110 <3.3 1706-29-6 2.5-Dihydrokuran NGS 110 <2.6		97		MGS	120	7.2	8	nya	n/a	nla	ny	3.0	n/a B
1708-29-8 2.5-Ditydrokuran NGS 110 <2.8 78-93-3 2-Butanone NGS 110 <1.9		2.4	2,4-Dimethylpyricline	NGS	110	<3.3	<3.3	rVa	nla	n/a	nia	3.3	n/a U
78-93-3 2-Butanone NGS 110 110-43-0 2-Hoptanone NGS 99 <1.6		29-8	2,5-Dihydrofuran	NGS	110	42.8	42.8	r/a	nis	nya	ngu	2.8	n/a Uc
110-43-0 2-Hoptanone NGS 99 <1.6 591-78-6 2-Hoxanone NGS 98 <1.2 534-22-5 2-Methythuran NGS 110 <1.9 78-94-4 3-Buten-2-one NGS 110 <1.5 106-35-4 3-Hoptanone NGS 110 <1.5 106-88-3 3-Octanone NGS 110 <2.4 105-42-0 4-Methyt-2-hentanone NGS 190 <1.3 108-10-1 4-Methyt-2-pentanone NGS 97 <4.3 75-05-8 Acetanone NGS 97 <1.8 88-86-2 Acetanone NGS 99 <1.8 106-13-1 Achytoritelle NGS 98 <1.7 107-18-6 Ally Model NGS 120 <2.9 100-18-6 Ally Model NGS 120 <2.9	-	2	2-Butanone	NGS	110	6.13	7.3	r/a	n/a	r/a	nta	1.9	U alu
591-78-6 2-Hexamone NGS 56 <1.2 534-23-5 2-Methylluran NGS 110 <1.9	-	3-0	2-Hoptanone	NGS	56	41.6	5.8	n/a	200	r/a	n/a	1.6	O SAG
634-2-5 2-Methythuran NGS 110 <1,9 78-94-4 3-Buten-2-one NGS 160 <1,7		9-8		NGS	86	<1.2	3.7	n/a	n/a	r/a	nya	1.2	U B/W
78-94-4 3-Buten-2-one NGS 100 <1.7 106-35-4 3-Heptanone NGS 100 <1.5 105-68-3 3-Octanone NGS 110 <2.4 < 105-42-0 4-Methyl-2-hortanone NGS 89 <1.3 < 108-10-1 4-Methyl-2-Portanone NGS 99 <1.3 75-64-1 Acotone NGS 97 <4.3 75-05-8 Acotonhinie NGS 97 <1.8 75-05-8 Acotonhinie NGS 100 <2.6 75-05-8 Acotonhinie NGS 120 <2.6 		2.5	2-Mothyfluran	NGS	110	41.9	41.9	n/a	e/a	n/a	nya	1.9	n/s U
106-35-4 3-Heptanone NGS 100 <1.5 105-88-3 3-Octanone NGS 110 <2.4		4	3-Buten-2-one	NGS	100	4.7	6.9	n/a	n/a	n/a	rya	1.7	L a/u
105-88-3 3-Octanone NGS 110 <2.4 105-42-0 4-Metryk-2-bentanone NGS 99 <1.3	-	5-4	3-Heptanone	NGS	100	<1.5	6.8	n/a	n/a	n/a	r/a	1,5	n/a J
105-42-0		8-3	3-Octanone	NGS	110	<2.4	424	n/a	n/a	n/a	nya	2.4	n/a U
108-10-1 4-Metryk-2-Pentanone NGS 100 <1.9		2-0	4-Methyl-2-hexanone	NGS	68	<1.3	<1.3	n/8	n/a	n/a	r/a	1.3	O/a C
67-64-1 Acetane NGS 97 c4.3 75-05-8 Acetanitrile NGS 91 <1.8		0-1	4-Methyl-2-Pentanone	NGS	100	6.1.9	4.3	n/a	n/a	n/a	nya	1.9	n/a J
75-05-8 Acetantinie NGS 91 <1.8		7	Acetone	NGS	26	64.3	300	n/a	n/a	n/a	n/a	43	n/a
99-86-2 Acetophenone NGS 100 <2.6 107-13-1 Acrylonitrile NGS 98 <1.7 107-18-6 Ally Mondol NGS 120 <3.9	75-05	49	Acetanitrile	NGS	91	<1.8	30	n/a	n/a	n/s	n/s	1.8	n/a
107-13-1 Acrytonthile NGS 98 <1,7 107-18-6 Ally Monhol NGS 120 <3.9		2	Acetophenone	NGS	100	42.6	42.6	n/a	n/s	n/a	n/a	2.8	U(a)U
107-18-6 Alty Abobtol NGS 120 <3.9	-	3-1	Acrytonitrile	NGS	88	<1.7	<1.7×	n/a	n/a	2,0	n/a	17	Ualu
			Allyl Adopted	NGS	120	43.9	439	u/a	n/a	s,e	n/a	3.9	n/a U

Y - Commert E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected

c - RPD Outside Range

J - Estimated L - LLS Outside Range

B - Blank Contamination U - Less Than Detection Limit

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Cartridge Evaluation Data Summary Report

Sample Group: 20162989
SDG Number:
Customer Sample ID: 16-08635-2-IN-B
Customer Sample ID: 16-08635-2-IN-B

ample# R	All CAS #	Analyte	Unit	STD %	Blank	Result	Ouplicate	Average	RPD %	Spk Rec %	Det Limit	Det Limit Ont Enr % Qual Flags
VAPOR-TDU VOA #2	VOA #2						1					
S16T034196	107-05-1	Allyl Chloride	NGS	110	<2.8	<2.8	n/s	n/a	e/u	e,u	2.8	n/a[n
S16T034196	7143-2	Benzene	NGS	110	<1.2	1.5	nla	n/a	n/a	n'a	1.2	
S16T034196	100-47-0	Benzonitrile	NGS	100	615	41.9	n/a	n/a	nía	n'a	1.9	n/a U
S16T034196	123-72-8	Butanal	NGS	110	42.1	17	n/a	n/a	n/a	n's	2.1	n/a
S16T034196	109-74-0	Butanentrile	NGS	100	<1.2	1.7	n/a	n/a	n/a	n/a	1.2	n/a J
S16T034196	56-23-5	Carbon tetrachloride	NGS	130	41.8	41.6	elva	n/a	n/a	n/a	1.6	Na U
S16T034196	108-90-7	Chlorebenzene	NGS	110	<1.5	41.5	n/a	n/a	n/s	n/a	1.5	n/a U
S16T034196	75-00-3	Chlorethane	NGS	96	6.15	6.15	eva	n/a	n/a	n/a	1.9	n/a U
S16T034196	67-66-3	Chloreform	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a U
S16T034196	110-82-7	Cyclohexane	NGS	110	8,1>	4.8	e/u	n/a	elva	n/a	1.8	Na U
S16T034196	124-18-5	Decane	NGS	96	42.8	42.8	e/u	n'a	n/a	n/a	2.8	Na U
S16T034196	84-17-5	Ethanol	NGS	100	47.4	200	e/u	n/a	n/a	n/a	7.4	n/a
S16T034196	141-78-6	Ethyl acetate	NGS	100	<1.5	<1.5	n/a	n/a	n/s	n/a	1.5	U B/u
S16T034196	100-41-4	Ethylbenzene	NGS	110	41.8	41.5	n/a	m/a	n/a	n/8	1.5	n/a U
S16T034196	110-00-9	Furan	NGS	100	<1.8	16	n/a	a's	n/a	n/a	1.6	n/a
S16T034196	110-54-3	Hexane	NGS	100	C12	15	n/a	0,0	n/a	n/a	1.7	n/a
S16T034196	628-73-9	Hexamentrile	NGS	100	41.5	<1.5	n/a	n'a	n/s	n/a	1.5	n/a U
S16T034196	126-53-7	Methacrytonitrile	NGS	100	41.6	41.6	n/a	m'a	eya	n/a	1.6	n/a U
S16T034196	75-09-2	Methylene Chloride	NGS	100	427	427	n/a	n/a	eva	n/s	2.7	O/a U
S16T034196	91-20-3	Naphthalene	NGS	110	<3.7	<3.7	n/a	n'a	n/a	n/a	3.7	n/s U
S16T034196	98-96-3	Nitobenzene	NGS	110	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a U
S16T034196	110-59-8	Pentanenitrile	NGS	97	41.6	<1.6	n/a	n/a	n/a	nla	1.6	n/a U
S16T034196	107-12-0	Propanentifile	NGS	100	41.4	2.8	n/a	n/a	n/a	e/u	1.4	n/a J
S16T034196	110-86-1	Pyridine	MGS	130	<3.8	<3.8	n/a	n/a	n/a	e/u	3.8	n/a U
S16T034196	100-42-5	Styrene	NGS	110	41.6	9,1>	n/a	n/a	n/a	e/u	1.6	U(a)U
S16T034196	127-18-4	Tetrachioroethene	NGS	120	41,6	49	n/a	n/a	n/a	n/a	1.6	n/a
S16T034196	108-88-3	Toluene	NGS	110	41.5	7.4	nla	nia	n/u	e/a	4.6	1 100

B - Blank Contamination U - Less Than Detection Limit

J - Estimated L - LLS Outside Range

NA. = Not Analyzed, ND = Not Detected c - RPD Outside Range

Y - Commont E - Outside Calibration Range

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Cartridge Evaluation Data Summary Report

Sample Group: 20162989

SDG Number:

Customer Sample ID: 16-08635-2-IN-B Customer Sample ID: 16-08635-2-IN-B

Samples R	All CAS#	Amalyte	ALC:	STO %	Biank	Result	Duplicate	Average	R#D %	Study Roan 16	Det Liwit	Det Limit Cost For Michael Stees	And Steel
VAPOR-TD	U VOA #2												200
\$167034196	79-01-6	Trichionethene	NGS	120	<1.5	c1.5	n/a	n/a	n's	nis	1.5	niali	
S16T034196	75-69-4	Trichiorofluoromethane	SDN	110	<1.6	8	n's	n/s			1.6		
\$16T034196	10061-01-5	cls-1,3-Dichlotopropene	NGS	110	<1,3	c13	nia	n/a			6.		
S16T034196	123-88-4	n-Butyf acetate	NGS	88	414	413	n'a	n/a	n/a		1.4		
S16T034196	142-82-5	n-Heptane	NGS	100	41.4	16	n/a	nya			1.4		
\$16T034196	10061-02-6	trans-1,3-Dichloropropene	NGS	110	<1.2	c12		n/a	ole,		6.7	1 lole	

NA = Not Analyzed, ND = Not Detected c - RPD Outside Range

J - Estimated L - LLS Outside Range

Y - Comment E - Outside Calibration Range

B - Blank Contamination U - Less Than Detection Limit

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Cartridge Evaluation Data Summary Report

Customer Sample ID: 16-08635-2-IN-C Customer Sample ID: 16-08635-2-IN-C SDG Number:

Sample Group: 20162989

Sample# R	AB CAS#	Analyto	Unit	% OTS	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Det Limit Cot Err % Qual Flags
VAPOR-TDU VOA #2	VOA #2											
S16T034197	79:34-6	1,1,2,2-Tetrachieroethane	NGS	110	<1.3	<1.3	n'a	n/a	n/a	n/s	13	Ualu
S16T034197	79-00-5	1,1,2-Trichloroethane	NGS	110	<1.5	<1.5	n/s	n/a	n/a	n/a	1,5	n/a U
S16T034197	75.34.3	1,1-Dichloroethane	NGS	110	<1.2	<1.2	n'a	n/a	n/a	n/a	12	Ualu
S16T034197	75-35-4	1,1-Dichloroethene	NGS	110	<1.3	<1.3	n/a	n/a	nla	n/a	1.3	níaU
S16T034197	107-08-2	1,2-Dichloroethane	NGS	120	41.6	<1.6	n'a	n/a	nla	n/a	1.6	Ualu
S16T034197	542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n/a	n/a	n/a	nla	1.2	Ugh
S16T034197	108-48-7	1,4-Dichlorobenzene	NGS	110	420	420	n/a	n/a	ale	nla	20	Ugh
S16T034197	123-91-1	1,4-Dimonno	NGS	110	<1.7	<5.7	n/a	n/a	n/a	n/a	1.7	n/a U
S16T034197	71-36-3	1-Butanol	NGS	120	<8.9	2.2E+03	n/a	n/a	ala .	nla	6.8	n/a ELY
S16T034197	111-70-6	1-Heptanol	NGS	83	<5.6	<5.6	e/u	n/a	a'c	n/a	5.6	n/a LU
S16T034197	71-23-8	1-Propanol	NGS	120	7.2	83	n/a	n/a	n'a	n's	3.0	ntaB
S16T034197	108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	e/u	n/s	n/a	nla	3.3	nlaU
S16T034197	1708-29-8	2,5-Dihydrofuran	NGS	110	<2.8	<2.8	n/a	nya	9,0	nis	2.8	n/a Ue
S16T034197	78-83-3	2-Butanone	NGS	110	<1.9	8.5	n/a	nla	n/a	ala	1.9	L eln
S16T034197	110-43-0	2-Heptanone	NGS	86	<1.8	7.1	n/a	n/a	n'e	n/a	1.6	r/a J
S16T034197	591-78-6	2-Hexanone	NGS	86	<1.2	3.6	nía	nla	n'a	13/8	1.2	L s/u
S16T034197	534-22-5	2-Methyfluran	NGS	110	612	<1.9	e/u	nla	n,u	e,u	1.9	n/a U
S16T034197	78-94-4	3-Buten-2-one	NGS	100	<1.7	6.5	n/a	n/a	n/a	n's	1.7	n/a J
S16T034197	106-35-4	3-Heptanone	NGS	100	<1.5	7.8	n/a	n/a	e,u	n'a	1.5	rys J
S16T034197	106-68-3	3-Octanone	NGS	110	424	42.4	n/a	nya	n/s	2,0	2.4	n/a U
S16T034197	105-42-0	4-Methyl-2-heasnone	NGS	98	<1,3	¢1,3	n/a	n/a	nya	n/a	1.3	n/a U
S16T034197	108-10-1	4-Methyl-2-Pentanone	NGS	100	<1.9	3.0	n/a	rya	n'a	n's	Q,	n/a J
S16T034197	67-64-1	Acetone	NGS	26	54,3	300	n/a	n/a	e,vu	n/a	4.3	n/s
S16T034197	75-05-8	Acetonitrile	NGS	91	<1.8	23	e/u	n/a	n/a	nia	1,8	n/s
S16T034197	98-96-2	Acetophanone	NGS	100	<2.6	3.6	n/a	1/3	e/u	nia	2.6	r/a J
S16T034197	107-13-1	Acrylonitrille	NGS	96	<1.7	<1.7	e/u	n/a	n/a	n/s	1.7	U Na
S16T034197	107-18-6	Allyl Alcohol	NGS	120	6.5	<3.9	e/u	n/a	e/u	n/a	3.9	rValUc

B - Blank Contamination U - Less Than Detection Limit

J - Estimated L - LLS Outside Range

NA = Not Analyzed, ND = Not Detected c - RPD Outside Range

Y - Comment E - Outside Calibration Range

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Cartridge Evaluation Data Summary Report

Sample Group: 20162989
SDG Number:
Customer Sample ID: 16-08635-2-IN-C
Customer Sample ID: 16-08635-2-IN-C

ample® R	Ad CAS#	Analyte	Unit	STD %	Blank	Result	Dupficate	Average		RPD % Spk Rec %	DetUmit	Det Limit Cet Ear 1/2 Dual Flags
VAPOR-TDU VOA #2	VOA#2											
S16T034197	107-05-1	Allyl Chloride	NGS	110	42.8	<2.8	nla	n/a	n/a	n/a	28	Ulahu
\$167034197	71-43-2	Benzene	NGS	110	<1.2	1,3	n/a	n/a	ria	n/a	1.2	Usha
S16T034197	100-47-0	Benzoninie	NGS	100	613	<1.9	n/a	n/a	n/a	n/a	1.9	
S16T034197	123-72-8	Butarral	NGS	110	42.1	23	n/a	n/a	n/a	n's	2.1	n/a
S16T034197	109-74-0	Butamenitrile	NGS	100	<1.2	1.9	n/a	n/a	rva	n/a	1.2	
S16T034197	58-23-5	Carbon tetrachloride	NGS	130	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	
S16T034197	103-90-7	Chlorobanzane	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1,5	
S16T034197	75-00-3	Chloroethane	NGS	98	615	615	nya	n/a	nia	n/a	1.9	
S16T034197	67-66-3	Chloroloem	NGS	120	<1.5	c1.5	n/a	n/a	nla	n/a	1.5	
\$167034197	110-82-7	Cyclohexane	NGS	110	41.8	<1.8	n/a	n/a	n/a	r/a	1,8	
S16T034197	124-18-5	Decane	NGS	96	<2.8	<2.8	n's	n/a	n/a	ria	2.8	
\$167034197	64-17-5	Ethanol	NGS	100	40	190	n'a	n/a	n/a	e/u	7.4	
S16T054197	141-78-6	Ethyl acetate	NGS	100	<1.5	<1.5	a'e	n/a	nla	riva	1.5	
S16T034197	100-41-4	Ethythenzene	NGS	110	<1.5	<1.5	200	n/a	n/a	rva	1,5	
S16T034197	110-00-9	Furan	NGS	100	<1.6	13	n,u	n/a	nla	r/a	1.6	
S16T034197	110-54-3	Mexane	NGS	100	<1.7	16	a,u	n/a	a/u	n/a	1.7	n/a
S16T034197	628-73-9	Hoxaneritrile	NGS	100	<1.5	<1.5	n'a	n/a	aln.	n/a	1.5	
S16T034197	126-98-7	Methacryloninie	NGS	100	<1.6	<1.6	n/a	n/a	n'a	nya	1.8	
\$16T034197	75-09-2	Methylene Chloride	NGS	100	42.7	2.8	nia	n/a	n's	n/a	2.7	n/a J
S16T034197	91-20-3	Naphthalene	NGS	110	<3.7	<3.7	n/a	nya	n'e	n/a	3.7	n/a U
S16T034197	98-95-3	Nitrobenzene	NGS	110	42.6	<2.6	nia	n/a	a/a	n/a	2.6	
S16T034197	110-59-8	Pentanentrile	NGS	- 37	41.6	<1.6	eju	n/a	n,u	n/a	1.6	
S16T034197	107-12-0	Propanenitale	NGS	100	<1.4	2.7	e/u	n/a	9,0	n/a	1.4	
S16T034197	110-86-1	Pyridine	NGS	130	3.8	<3.8	e/u	r/a	n/a	n/a	3.8	
S16T034197	100-42-5	Styrone	NGS	110	<1.8	<1.6	e/u	E/J	n/a	n/a	1.6	
S167034197	127-18-4	Tetrachloroethene	NGS	120	<1.6	36	n/a	n/a	nia	ala	1.6	
S16T034197	108-88-3	Tolvene	NGS	110	41.5	5.4	n/a	r/a	n/a	a/u	1.5	

B - Blank Contamination U - Less Than Detection Limit

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NA = Not Analyzed, ND = Not Detected c - RPD Outside Range

Y - Comment E - Outside Calbration Range

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Cartridge Evaluation Data Summary Report

Sample Group: 20162989
SDG Number:
Customer Sample ID: 16-08635-2-IN-C
Customer Sample ID: 16-08635-2-IN-C

Samples R	Af CAS 8	Analyse	Unit	\$ CLS	Blank	Result	Duplicate	Average	_	RPD % Spk Rec %	Dot Limit (Cert Err % Qual Flags
VAPOR-TD(J VOA #2										1	
S16T034197	79-01-6	Trichloroethene	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/alu
S16T034197	75-69-4	Trichlorofluoromethane	NGS	110	6,15	21	n/a	nía	-	n/a	1.6	n/a
S16T034197	10061-01-5	cis-1,3-Dichloropropene	NGS	110	<1.3	<1.3	n/a	n/a	-	n/a	1.3	n/a lu
S16T034197	123-86-4	n-Butyl acetate	NGS	86	41.4	41.4	n/a	n/a	-	n/a	1.4	U/a/U
S16T034197	142-82-5	n-Heptane	NGS	100	41.4	18	n/a	n/a		n/u	1.4	n/a
S16T034197	10061-02-6	trans-1,3-Dichloropropene	NGS	110	<12	<1.2	[nía	1	2/2	4.5	Uali

NA = Not Analyzed, ND = Not Detected c - RPD Outside Range

C.122

Y - Comment E - Outside Calibration Range

B - Blank Contamination U - Less Than Detection Limit

J - Estimated L - LLS Outside Range

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Cartridge Evaluation Data Summary Report

Sample Group: 20162989 SDG Number: Customer Sample ID: 16-08635-2-IN-D Customer Sample ID: 16-08635-2-IN-D

ample# R	AS CASS	Anatyta	Unit	STD %	Blank	Result	Duplicate	Average	RPO % 18	Average RPD % Sak Ree %	DetLimit	Det Limit Ont for MiDual Flags
VAPOR-TDU VOA #2	J VOA #2										1	
S16T034198	79-34-5	1,1,2,2-Tetrachloroethane	NGS	110	<1.3	51.3	n's	n/a	nía	nla	1.3	Ush
\$167034198	79-00-5	1,1,2-Trichloroefhane	SDN	110	<1.5	<1.5	n'e	n/a	n/a	nia	1,5	Ualu
\$167034198	75-34-3	1,1-Dichloroethane	NGS	110	<1.2	<12	nle	n/a	n/a	rļa	1.2	n/a/U
S16T034198	75-35-4	1,1-Dichloroethene	NGS	110	<1.3	<13	n'a	n/a	n/a	nia	1.3	n/a U
\$167034198	107-08-2	1,2-Dichloroethane	NGS	120	<1.6	c1.6	2,0	n/a	υ/a	nia	1,8	Ualu
\$167034198	542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/s	<12	nla	n/s	n/a	nta	1.2	n/a U
S16T034198	105-46-7	1,4-Dichlaroberzane	NGS	110	<2.0	<2.0	n's	n/a	e/u	n/a	2.0	n/a U
\$16T034198	123-91-1	1,4-Dioxene	NGS	110	<1,7	<1.7	n'a	n/a	n/a	n/a	1.7	U ava
S16T034196	71-36-3	1-Butanol	NGS	120	<8.9	2.3E+03	n'a	n/a	n/a	nía	6.8	n/a ELY
S16T034198	111-70-6	1-Meptanol	NGS	83	65.6	<5.6	n'a	n/a	n/a	r/a	5.8	n/a CU
S16T034198	71-23-8	1-Propanol	NGS	120	7.2	87	n'a	n/a	n/a	n/a	3.0	n/a 8
\$167034198	108-47-4		NGS	110	433	433	n'a	n/a	n/a	n/a	833	U/s/U
S16T034198	1706-29-8		NGS	110	428	<2.8	n'a	n/a	n/a	n/a	2.8	n/a Ue
S16T034198	78-93-3	2-Butanone	NGS	110	<1.9	6.1	nia	n/a	n/a	n/a	1.8	n/a J
S16T034198	110-43-0	2-Heptanone	NGS	88	<1.6	5.3	n/a	n/a	n/a	n/a	1.6	L e/u
S16T034198	591-78-6	2-Hexanone	NGS	96	<1.2	3.0	nin	nla	nla	n/a	12	ry(a)
S16T034198	534-22-5	2-Methylfuran	NGS	110	<1.9	<1.9	e/u	n/a	n/a	n/a	1,9	U s/u
S16T034198	78-94-4	3-Buten-2-cne	NGS	100	<1.7	6.5	e/u	nla	n's	n/a	1.7	L eln
S16T034198	106-35-4	3-Heptanone	NGS	100	<1.5	5.8	n/a	nla	n/a	n/a	1.5	L s/u
S16T034198	106-63-3	3-Octanone	NGS	110	424	424	n/a	n/a	19,0	n/a	2.4	Uela
S16T034198	105-42-0	4-Methyl-2-hexanone	NGS	88	<1.3	<1.3	eju	nla	ale	nla	1.3	Uelu
S16T034198	108-10-1	4-Methyl-2-Pentanone	NGS	100	<1.9	3.3	e/u	nia	9,0	nka	1.9	r/s J
S16T034198	67-64-1	Acetone	NGS	76	<4.3	300	e/u	nia	n'a	n'a	4.3	rita
S16T034198	75-05-8	Acetonitrile	NGS	16	41.8	43	n/a	nya	n'e	sku	1.8	nta
S16T034198	98-86-2	Acetophenone	NGS	100	<2.6	<2.6	n/a	r/s	nia	n/a	2.6	Uelu
S16T034198	107-13-1	Acrylonitrile	NGS	96	<1.7	41.7	n/a	n/a	n/a	3,0	1.7	Ulahu
S16T034198	107-18-6	Allyl Alcohol	NGS	120	<3.9	<3.9	n/a	n/a	nia	a,u	6	rvalli

Y - Comment
E - Outside Calbration Range

B - Blank Contamination U - Less Than Detection Limit

J - Estimated L - LLS Outside Range

NA = Not Analyzed, ND = Not Detected c - RPD Outside Range

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Cartridge Evaluation Data Summary Report

Sample Group: 20162969 SDG Number: Customer Sample ID: 16-08535-2-IN-D Customer Sample ID: 16-08635-2-IN-D

ample® R	All CAS#	Analyte	Unit	2 OTS	Blank	Result	Duplicate	Average		RPD % Spk Rec %	Det Limb	Det Limit Crit Err 14 Dual Flags
VAPOR-TDU VOA #2	J VOA #2				1							
S16T034198	107-05-1	Allyl Chloride	NGS	110	<2.8	42.8	n/a	n/a	n/a	n/a	2.8	n/a U
\$167034198	7143.2	Benzene	NGS	110	<1.2	1,5	n/a	n/a	n/a	nia	1.2	Ugha
\$167034198	100-47-0	Benzonkrije	SDN	100	c1.9	61.9	n/a	n/a	n/a	n/a	1.9	D B/W
S16T034198	123-72-8	Butanal	NGS	110	42.1	*	n/a	n/a	n/a	n/a	2.1	n/a
\$167034198	109-74-0	Butanenitrile	NGS	100	<1.2	1.5	nle	n/a	n/a	n/a	1.2	Ush
\$167034196	56-23-5	Carbon tetrachloride	NGS	130	41.8	c1.6	n'a	n/a	n/a	n/a	1.6	Ush
\$167034198	103-90-7	Chlorobanzene	NGS	110	<1.5	<1.5		n/a	n/a	n/a	1,5	Ugu
\$167034198	75-00-3	Chloroethane	SDN	95	c1.9	41.9	n'a	n/a	n/a	n/a	1.9	Ush
S16T034198	67-68-3	Chloroform	NGS	120	<1,5	<1.5	n/a	n/s	n/s	n/a	1,5	n/a U
S16T034198	110-82-7	Cyclohexane	NGS	110	<1.8	<1.8		n/a	n/a	n/a	1,8	U/a/U
S16T034198	124-18-5	Decane	NGS	96	<2.8	<2.8		n/a	n/a	n/a	2.8	U/8/U
S16T034198	64-17-5	Ethanol	NGS	100	475	170	n/a	n/a	ala	n/a	7.4	n/a
S16T034198	141-78-6	Ethyl acetate	NGS	100	<1.5	<1.5	n'a	n/a	n'a	n/a	1.5	U s/u
\$16T034198	100-41-4	Ethylbenzene	NGS	110	<1.5	<1.5	n/a	n/a	9,0	n/a	1,5	UBV
\$16T034198	110-00-9	Furan	NGS	100	<1.6	21	n'a	n/a	n/a	n/a	1.6	n/a
S16T034198	110-54-3	Hexane	NGS	100	<1.7	15	n,u	n/a	9,0	n/a	1.7	n/a
S16T034198	628-73-9	Haxanenitrilo	NGS	100	<1.5	<1.5	n/a	nla	n'a	n/a	1.5	Ua/u
S16T034198	126-98-7	Methacrylontrie	NGS	100	<1.6	<1.6	n/a	n/a	n'a	n/a	1.6	n/s U
S16T034198	75-09-2	Methylene Chloride	NGS	100	427	427	n/a	n/a	n/a	n/a	2.7	U B/U
S16T034198	91-20-3	Naphthalene	NGS	110	43.7	43.7	e/u	nia	n'a	alu	3.7	U BV
S167034198	98-95-3	Nitrobenzene	NGS	110	42.6	42.6	e/u	nya	nia	n's	2.6	UBJU
S16T034198	110-59-8	Pentanonihilo	NGS	97	<1.6	<1.6	n/a	n/a	nia	ala	1.8	U B)u
S16T034198	107-12-0	Propanentitie	NGS	100	×174	2.8	e/u	n/a	nia	a/a	1.4	n/a J
S16T034198	110-86-1	Pyridine	NGS	130	<3.8	<3.8	e/u	rya	n/a	n'a	3.8	Ush
S16T034198	100-42-5	Stynone	NGS	110	<1.6	1.6	n/a	n/a	ula	a'e	1.6	L S/u
\$167034198	127-18-4	Tetrachlaroethene	NGS	120	<1.6	53	n/a	n/a	n/a	n/a	1.6	nla
S16T034198	106-86-3	Toluene	NGS	110	<1.5	4.6	n/a	n/a	n/a	3,0	1.5	n/s J

Y - Comment E - Outside Calibration Range

B - Blank Contamination U - Less Than Detection Limit

J - Estimated L - LLS Outside Range

c - RPD Outside Range

NA = Not Analyzed, ND = Not Detected

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Cartridge Evaluation Data Summary Report

Sample Group: 20162989 SDG Number:

Customer Sample ID: 16-08635-2-IN-D Customer Sample ID: 16-08635-2-IN-D

Sample® R	AU CAS #	Analyte	Uelt	STD %	Blank	Result	Duplicate	Average	RPD 14 Spk Roc 14	Roc %	Det Limit	Det Limit Ont Err % Qual Fleas
VAPOR-TD	UVOA #2									1		
S16T034198	79-01-6	Trichloroethene	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/alu
S16T034198	75-69-4	Trichlorefluoromethene	NGS	110	41.6	20	n/a	n/a	n/a	n'a	1.6	
S16T034198	10061-01-5	ds-1,3-Dichlaropropena	NGS	110	<1.3	c1.3	n/a	ala	rla	n's	1.3	
S16T034198	123-86-4	n-Butyl acetate	NGS	88	412	415	ría	Sec.	n/a	ria	1.6	n/a II
\$167034193	142-82-5	n-Heptane	NGS	100	4,15	16	n/a	n/s	n/a	e,u	1.4	n/a
S16T034198	10051-02-6	trans-1,3-Dichlorepropene	NGS	110	<1.2	c1.2	rVa	e/u	n/a	n/a	1.2	n/a U

NA = Not Analyzed, ND = Not Detected

c - RPD Outside Range

J - Estimated L - LLS Outside Range

B - Blank Contamination U - Less Than Detection Umit

Y - Conment E - Outside Calibration Range

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Cartridge Evaluation Data Summary Report

Sample Group: 20162989
SDG Number:
Customer Sample ID: 16-08635-2-IN-E
Customer Sample ID: 16-08635-2-IN-E

Samples R	A# CAS#	Analyte	Unit	27 OTS	Blank	Result	Duplicate	Average	RPD %	RPD % Sak Ree %	DetLimit	Ort for Minut Flags
VAPOR-TDU VOA #2	VOA #2											
161034199	79-34-5	1,1,2,2-Tetrachloroethane	SDN	110	<1.3	<1.3	nis	n/a	n/a	n/a	1.3	n/alc
\$167034199	29-00-67	1,1,2-Trichloroethane	NGS	110	4.5	<1.5	n's	n/a	n/a	rija	1.5	n/a ()
S16T034199	75-34-3	1.1-Dichloroethane	NGS	110	c1.2	<12	n'a	n/a	nla	ria	12	Ush
\$167034199	75-35-4	1,1-Dichlaroethene	NGS	110	c1.3	c13	e,u	n/a	nla	n/a	13	n/a/U
\$167034199	107-05-2	1,2-Dichloroethane	NGS	120	<1.6	<1.6	e,w	n/a	n/a	n/a	1.8	nyalu
\$16T034199	542-75-6	1,3-Dichlaropropene (Total)	NGS	n/a	n/a	c12	n'a	n/a	nla	r/a	12	nialis
S16T034199	106-45-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n/a	n/a	n/a	rva	20	Ualu
S16T034199	123-91-1	1,4-Dioxane	NGS	110	<1.7	<1.7	n)a	n/a	nla	r/a	1.7	O(a)O
S16T034199	71-38-3	1-Butanol	NGS	120	<8.9	2.4E+03	n/a	n/a	e/n	n/a	6,8	n/a ELY
S16T034199	111-70-6	1-Heptanol	NGS	83	65.6	950	e/u	n/a	a'a	n/a	5.6	néaLU
S16T034199	71-23-8	1-Propanol	NGS	120	7.2	8	n/a	nya	9,0	n/a	3.0	n/a 8
S16T034199	106-47-4	2,4-Dimethylpyridne	NGS	110	<3.3	433	n/a	n/s	ala	n/a	3.3	ndaU
S16T034199	1708-29-8	2,5-Dihydrofuran	NGS	110	428	428	n/s	r/a	ale.	n/a	2.8	nfaUe
S16T034199	78-93-3	2-Butanone	NGS	110	c1.9	6.2	e/u	r/a	n/a	n/a	1.9	ntaJ
S16T034199	110-43-0	2-Heptanone	NGS	88	41,6	5.4	e/u	1/3	n'a	n/a	1.6	nlad
\$167034199	591-78-6	2-Hexanone	NGS	98	<1.2	3.0	n/a	r/a	n/a	alu	12	r/a J
S16T034199	534-22-5	2-Methyffuran	NGS	110	41.9	41.9	n/a	rva	nia	nla	1.9	nyan
S16T034199	78-94-4	3-Buten-2-ena	NGS	100	<1.7	5.4	e/u	n/a	n/s	n/a	1.7	ryaji
S16T034199	106-35-4	3-Heptanone	NGS	100	<1.5	6.3	e/u	n/a	n/a	a'e	1.5	Lehr
S16T034199	106-68-3	3-Octanone	NGS	110	<2.4	<2.4	e/u	n/a	e/u	n/a	2.4	n/a U
S16T034199	105-42-0	4-Methyl-2-hosanone	NGS	06	<1.3	<1.3	n/a	n/a	u/o	n'a	1.3	n/a U
S16T034199	108-10-1	4-Methyl-2-Pentanone	NGS	100	615	2.0	n/a	n/s	n/a	n/a	1.9	n/a J
S16T034199	67-64-1	Acetone	NGS	97	44.3	240	n/a	n/a	n/8	n,u	4.3	n/a
S16T034199	75-05-8	Acetonitrile	NGS	16	<1.8	11	n/a	n/a	n/a	n/a	1.8	n/a/J
S16T034199	98-86-2	Acetophences	NGS	100	42.6	9.4	nya	n/a	n/a	n/a	2.8	n/a J
S16T034199	107-13-1	Acytonitrile	NGS	86	<1.7	<1.7	n/a	n/a	n/s	n/a	1.7	n/a U
S16T004199	107-18-6	Allyl Alcohol	NGS	120	0.0	900	n/a	0/0	nis	uju	00	al la la

8 - Blank Contamination U - Less Than Detection Limit

J - Estim

J - Estimated L - LLS Outside Range

NA = Not Analyzed, ND = Not Detected c - RPD Outside Range

> Y - Comment E - Outside Calibration Range

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Cartridge Evaluation Data Summary Report

Customer Sample ID: 16-08635-2-IN-E Customer Sample ID: 16-08635-2-IN-E Sample Group: 20162989 SDG Number:

Samples R	Ad CAS#	Analyte	Unit	% GTS	Blank	Result	Ouplicate	Average	RPD % Spk Ree	Spk Rec %	Det Limit.	Ont En % Qual Flags
VAPOR-TDU VOA #2	J VOA #2											
1157034199	107-05-1	Allyl Chloride	NGS	110	<2.8	<2.8	rva	n/a	uyu	r/a	2.8	ntatu
\$167034199	7143-2	Benzene	NGS	110	<1.2	1.6	n/a	n/a	nía	n/a	12	
\$167034199	103-47-0	Benzentrile	NGS	100	<1.9	c1.9	n/a	n/a	nla	r/a	1.9	n/a U
\$167034199	123-72-8	Butanal	NGS	110	1.2	12	n/a	n/a	n/a	nía	2.1	a)u
167034199	109-74-0	Butanenitrile	NGS	100	<1.2	1,5	n/a	n/a	nla	n/a	12	n/a J
\$167034199	56-23-5	Carbon tetrachloride	NGS	130	61,6	c1.6	n/a	n/s	n/a	n/a	1.6	Ush
\$167034199	108-90-7	Chlorobenzene	NGS	110	<1.5	41.5	n/s	n/n	nla	nla	1.5	n/a U
316T034199	75-00-3	Chloroethane	NGS	92	41.9	41.9	n/a	n/a	n/a	n/a	1.9	n/a/U
S16T034199	67-66-3	Chloroform	NGS	130	<1.5	<1.5	n/a	n/a	a/u	n/e	1.5	n/a U
S16T034199	110-82-7	Cyclohexane	NGS	110	<1.8	<1.8	2,0	n/a	n's	n/a	1.8	Ulan
S16T034196	124-18-5	Docume	NGS	96	423	428	n'a	n/a	ale.	nla	2.8	NaN
S16T034199	84-17-5	Ethanol	NGS	100	NA	170	nia	nta	a/a	ala	7.4	n/a
\$16T034199	141-78-6	Ethyl scetate	NGS	100	<1.5	<1.5	n/a	riva	n'a	n/a	1.5	Na V
S16T034199	100-41-4	Ethylbenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	nla	1.5	Us/u
S16T034199	110-00-9	Furan	NGS	100	<1.6	14	e,ru	n/a	e,ec	n'a	1.6	n/a
S16T034199	110-54-3	Hexane	NGS	100	<1.7	14	n/a	rya	nia	a,w	1.7	nla
S16T034199	628-73-9	Hexanenitriie	NGS	100	41.6	<1.5	e/u	r/a	n/a	n'a	1.5	Ush
S16T034199	126-96-7	Methacrytecitrile	NGS	100	9/1>	<1.6	n/a	n/a	n/a	n/a	1.6	n/a U
S16T034199	75-09-2	Mothylene Chloride	NGS	100	<2.7	427	n/a	n/a	n/a	n/a	2.7	Ulan
S16T034199	91-20-3	Naphthalene	NGS	110	<3.7	43.7	n/s	n/a	n/a	n/a	3.7	Ulahu
S16T034199	98-95-3	Nitrobenzene	NGS	110	42.6	<2.8	n/a	n/a	n/a	n/a	2.6	U PA
S16T034199	110-59-8	Pentanentinie	NGS	26	<1.6	41.6	n/a	n/a	n/a	uh	1,6	Ulayu
S16T034199	107-12-0	Propanentrite	NGS	100	41.4	2.4	na	n/s	n/a	n/a	1.4	r/a/J
S16T034199	110-86-1	Pyridine	NGS	130	43.8	<3.8	n/s	n/a	n/a	n/a	3.8	n/a U
S16T034199	100-42-5	Styrene	NGS	110	41.6	6.1%	n/a	n/s	n/s	n/a	1.6	n/a U
S16T034199	127-18-4	Tetrachloroethene	NGS	120	41.6	22	n/a	a/a	n/s	nla	1.6	n/a
S16T034199	108-88-3	Toluene	NGS	110	41.5	52	a/u	6/0	aya	cla	3.6	afe t

Y - Comment
E - Outside Calibration Range

B - Blank Contamination U - Less Than Detection Limit

J - Estimated L - LLS Outside Range

NA = Not Analyzed, ND = Not Detected c - RPD Outside Range

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Cartridge Evaluation Data Summary Report

Sample Group: 20162989

SDG Number:

Customer Sample ID: 16-08635-2-IN-E Customer Sample ID: 16-08635-2-IN-E

Samples R	All CAS#	Analyto	Unit	STIP AL	Slank	Beauth	Dunibata	Accesses	2000	BOOK Sections	Special Section	the same of	
VADAD TOUR	CH ACUT							All mary	2	er nace who	The Person	Center And	vai riags
WATON-IDA	NOW WE												
S16T034199	79-01-6	Trichloroethene	NGS	120	<1.5	41.5	a'm	n/a	n/a	rva	1.5	u/alt/	
S16T034199	75-69-4	Trichtorofluoromethane	NGS	110	<1.6	8	a'e	n/a	n/a	r/a	1.6	n/a	
S16T034199	10061-01-5	cis-1,3-Dichloropropene	NGS	110	c1.3	<13	3,0	n/a	n/a	n/a	100		
S16T034199	123-86-4	n-Butyl acetate	NGS	88	41.4	417	n'a	n/a		nla	14		
S16T034199	142-82-5	n-Meptane	NGS	100	417	4	e,u	n/a	-	n/a	1.4	n/a	
S16T034199	10061-02-6	trans-1,3-Dichlosopropene	NGS	110	<1.2	412	e,u	n/a	-	nla	12		

NA = Not Analyzed, ND = Not Detected c - RPD Outside Range

J - Estimated L - LLS Outside Range

B - Blank Contamination U - Less Than Detection Limit

Y - Comment E - Outside Calibration Range

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Cartridge Evaluation Data Summary Report

Sample Group: 20162989 SDG Number: Customer Sample ID: 16-08635-2-IN-F Customer Sample ID: 16-08635-2-IN-F

Samples R	R AR CASE	Analyte	Unit	\$10 %	Blank	Result	Duplicate	Avverage	RPD %	Average RPD % Sok Rec %	Det Limit	Cot For % Out Plans
VAPOR-TDU VOA #2	1 VOA #2											
S16T034200	79-34-5	1,1,2,2-Tetrachloroethane	NGS	110	c1.3	<1,3	n/a	n/a	n/a	n/a	1.3	n/a lu
S16T034200	79-00-5	1,1,2-Trichloroethane	NGS	110	41.5	41.5	n/a	n/a	n/a	r/a	1.5	n/a lu
S16T034200	75-34-3	1,1-Dichloroethane	NGS	110	<1.2	41.2	n/a	n/a	n/a	r/a	1.2	n/a lu
S16T034200	75-35-4	1,1-Dichloroethene	NGS	110	<1.3	<1.3	n'a	n/a	n/a	r/a	1.3	n/a lU
S16T034200	107-06-2	1,2-Dichloroethane	NGS	120	61.8	41.6	2/2	n/a	n/a	n/a	1,6	U e/u
S16T034200	542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	c1.2	n'a	n/a	n/a	n/a	12	n/a U
\$167034200	106-46-7	1,4-Dichlorobenzene	NGS	110	<2.0	<2.0	n'a	nla	n/a	n/a	2.0	D/a U
S16T034200	123-91-1	1,4-Dioxane	NGS	110	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a U
\$167034200	71-36-3	1-Butanol	NGS	120	<8.9	2.3E+03	n/a	n/a	n/a	n/a	8.9	n/a ELY
S16T034200	111-70-6	1-Heptanol	NGS	83	<5.6	<5.6	n/a	nla	n/a	n/a	5.6	n/a LU
S16T034200	71-23-8	1-Propanol	NGS	120	7.2	85	ria	nla	n/a	n/a	3.0	n/a/B
S16T034200	108-47-4	2,4-Dimethylpyridine	NGS	110	<3.3	<3.3	n/a	nla	n/a	n/a	3.3	n/a U
S16T034200	1708-29-8	2,5-Dihydrofuran	NGS	110	<2.8	428	n/a	nla	n'a	n/a	2.8	n/a Uc
\$167034200	78-93-3	2-Sutanone	NGS	110	<1.9	6.9	ria	nla	n'a	n/a	1.9	n/a J
S16T034200	110-43-0	2-Hoptanone	NGS	86	<1.6	4.9	n/a	nla	n/a	n/a	1.6	rva J
S16T034200	591-78-5	2-Hexanone	NGS	88	<1.2	2.9	ria	nia	n'a	n/a	1.2	n/a J
S16T034200	634-22-5	2-Methythuran	NGS	110	6.15	41.9	n/a	e/u	s,c	n/a	1.9	U e/u
8167034200	78-94-4	3-Buten-2-one	NGS	100	<1.7	5.4	r/a	nia	n/a	n/a	1.7	n/a J
\$167034200	106-35-4	3-Heptanone	NGS	100	<1.5	4.7	n/a	nya	n/a	n/a	1.5	L slu
S16T034200	106-68-3	3-Octanone	NGS	110	424	924	r/a	n/a	nia	n/a	2.4	n/a U
\$167034200	105-42-0	4-Methyl-2-hexanone	NGS	88	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a U
S16T034200	108-10-1	4-Methyl-2-Pentanone	NGS	100	613	6.19	n/a	nya	n/a	n/a	1.9	n/a U
\$167034200	67-64-1	Acetone	NGS	26	c4.3	230	n/a	n/a	n/a	n/a	4.3	n/a
S16T034200	75-05-8	Acetonitrile	NGS	5	c1.8	oi v-	n/a	n/a	n/a	n/a	4.0	L sin
S16T034200	58-86-2	Acetophenone	NGS	100	42.6	5.2	nla	n/a	n/a	n'a	2.6	L eyu
\$167034200	107-13-1	Acrylonitrile	NGS	86	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a U
S16T034200	107-18-6	Allyl Alcohol	NGS	120	<3.9	<3.9	n/a	n/a	n/a	n'a	3.9	n/a Lic

B - Blank Contamination U - Less Than Detection Limit

J - Estimated L - LLS Outside Range

NA = Not Analyzed, ND = Not Detected c - RPD Outside Range

Y - Comment E - Outside Calibration Range

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Cartridge Evaluation Data Summary Report

Sample Group: 20162989 SDG Number: Customer Sample ID: 16-08635-2-IN-F Customer Sample ID: 16-08635-2-IN-F

ample® R	AP CAS #	Analyte	Deal	STD %	Blank	Result	Ouplicate	Awerage	200	Sak Rec %	Det Limit	Cot fire % Oast Shore
VAPOR-TDU VOA #2	1VOA #2											
\$167034200	107-06-1	Allyl Chloride	NGS	110	42.8	<2.8	rva	n/a	n/a	n/a	2.8	ntalti
\$167034200	7143-2	Berzene	NGS	110	<1.2	1.4	n/a	e/u		e/o	1.2	- Ela
\$167034200	100-47-0	Benzontrile	NGS	100	41.9	41.9	n/a	ala	nía	n/a	6.8	n/a U
\$167034200	123-72-8	Butanal	NGS	110	1.2	15	n/a	n/s	1/3	e,u	2.1	nla
\$167034200	109-74-0	Butanenthile	NGS	100	<1.2	1.5	n/a	a/a	n/u	n/a	13	nda 1
S16T034200	58-23-5	Carbon tetrachtoride	NGS	130	<1.6	<1.6	rVa	n/a	nla	0/9	1.8	ti eta
\$167034200	108-90-7	Chlorobenzene	NGS	110	c1.5	c1.5	n/a	n/a	n/a	n/a	1.5	ryalti
S16T034200	75-00-3	Chloroethane	NGS	96	c1.9	613	n/a	n/a	n/a	n/a	1.9	n/a U
S16T034200	67-66-3	Chloroform	NGS	120	c1.5	<1.5	n/a	n/a	n/a	ría	1.5	Ualu
\$167034200	110-82-7	Cycloherame	NGS	110	<1.8	c1.8	n/a	n/a	n/a	r/a	1.8	ryalti
S16T034200	124-18-5	Decane	NGS	96	<2.8	<2.8	n/a	n/a	n/a	rva	2.8	n/a U
S16T034200	64-17-5	Ethanoi	NGS	100	472	160	n/a	n/a	n'a	r/a	7.4	10/2
S16T034200	141-78-6	Ethyl acetate	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a U
S16T034200	100-41-4	Ethylbenzene	NGS	110	<1.5	<1.5	nla	n/a	nla	n/a	1.5	Ualu
S16T034200	110-00-9	Furan	NGS	100	41.6	14	n/a	n/a	a/c	n/a	1.6	n/a
S16T034200	110-54-3	House	NGS	100	<1.7	14	a's	n/a	ala	n/a	1.7	n/a
S16T034200	828-73-9	Hexanentrile	NGS	100	<1.5	<1.5	n,u	n/a	ale	n/a	15	Ush
S16T034200	126-98-7	Methacrylonitile	NGS	100	61.6	41.6	n's	n/a	n/a	n/s	1.8	Ulahu
S16T034200	75-09-2	Mothylene Chloride	NGS	100	427	427	n/a	n/a	n'a	n/a	2.7	Ushr
S16T034200	91-20-3	Naphthalene	NGS	110	3.7	43.7	n/a	n/a	n/a	n's	3.7	Ualu
S16T034200	88-95-3	Nitrobenzene	NGS	110	<2.6	<2.6	n/a	sh.	n/a	n/a	2.6	n/a U
S16T034200	110-59-8	Pentaneninile	NGS	97	<1.6	<1.6	n/a	nya	n/a	n/a	1.6	U 8/u
S16T034200	107-12-0	Propanentrile	NGS	100	41.4	2.4	n/a	r/a	n/a	3,0	1.4	n/a J
S16T034200	110-86-1	Pyridine	NGS	130	<3.8	<3.8	n/a	1/3	n/a	n'a	3.8	nkaU
S16T034200	100-42-5	Styrone	NGS	110	9'1>	41.8	n/a	n/a	n/a	n/a	1.6	Usla
S16T034200	127-18-4	Tetrachlorosthere	SEN	120	<1.6	14	e/u	n/a	e/u	n/s	1.6	nya
S16T034200	108-88-3	Toluene	NGS	110	<1.5	6.3	n/a	ago.	orio	e/u	3.	1

B - Blank Contamination U - Less Than Detection Limit

J - Estimated L - LLS Outside Range

NA = Not Analyzed, ND = Not Detected c - RPD Outside Range

Y - Comment E - Outside Calbration Range

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Cartridge Evaluation Data Summary Report

Sample Group: 20162989

SDG Number: Customer Sample ID: 16-08635-2-IN-F Customer Sample ID: 16-08635-2-IN-F

SampleS R	All CAS #	Analyte	E PAG	stos.	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	DetLimit	Det Limit Cut Err % Qual Flags
VAPOR-TDU VOA	J VOA #2										1	
S16T034200	79-01-6	Trichlaroethene	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/alu
\$167034200	75-69-4	TrichlaroBuocomethane	NGS	110	61,5	20	rva	nis	n/a	n/a	1,6	nda
\$167034200	10061-01-5	cis-1,3-Dichloropropene	. SON	110	<1.3	c1.3	n/a	nla	n/a	n/a	13	nlati
\$167034200	123-86-4	n-Sutyl acetate	NGS	88	412	<1.4	n/a	nla		n/a	1.4	nlali
\$167034200	142-82-5	n-Hoptane	NGS	100	412	13	n/a	elva		n/a	1.4	n/s
\$167034200	10061-02-6	trans-1,3-Dichloropropene	NGS	110	4.2	4.2	n/a	ela	n'a	n/a	12	Usla

NA = Not Analyzed, ND = Not Detected c - RPD Outside Range

J - Estimated L - LLS Outside Range

Y - Comment E - Outside Calibration Range

B - Blank Contamination U - Less Than Detection Limit

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Cartridge Evaluation Data Summary Report

SDG Number: Customer Sample ID: 16-08635-2-IN-G Customer Sample ID: 16-08635-2-IN-G

Sample Group: 20162989

Kamples R	AF CAS#	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD 1/4 S	Spk Rec %	Det Limit	Det Limit Cot Err % Qual Flags
VAPOR-TDU VOA #2	J VOA #2				1							
\$16T034201	79-34-5	1,1,2,2-Tetrachloroethane	NGS	110	<1,3	<1.3	n/a	n/8	n/a	n/a	1.3	n/a U
S16T034201	79-00-5	1,1,2-Trichforcethans	NGS	110	<1.5	<1,5	n/a	n/a	n/a	n/a	1.5	n/a U
\$167034201	75.34-3	1,1-Dichloroethane	NGS	110	<1.2	<1.2	n'a	n/a	n/a	n/a	12	n/a U
\$167034201	75-35-4	1,1-Dichlosothene	NGS	110	<1.3	c1.3	n's	n/s	n/a	n/a	1.3	n/a U
\$16T034201	107-05-2	1,2-Dichloroethane	NGS	120	61.6	<1.6	n'a	n/a	n/a	n/a	1.6	n/a U
316T034201	542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.2	n'a	n/a	n/a	n/a	12	n/a U
\$16T034201	106-46-7	1,4-Dichlosobenzene	NGS	110	20	<2.0	n/a	nls	s,c	n/a	2.0	n/a U
S16T034201	123-91-1	1,4-Dioxane	NGS	110	<1.7	<1.7	n's	n/a	n'a	n/n	1.7	n/a)U
S16T034201	71-36-3	1-Sutanol	NGS	120	<8.9	2.5E+03	n/a	n/a	n/a	n/a	8.9	n/a ELY
167034201	111-70-6	1-Heptanol	NGS	88	<5.8	<5.6	n/a	n/s	n'a	n/a	5.6	n/a LU
S16T034201	71-23-8	1-Propanol	NGS	120	7.2	100	n/a	n/s	n/a	n/a	3.0	n/a B
S16T034201	108-47-4	2,4-Dimethylpyridine	NGS	110	33	<3.3	n/a	ng en	e,c	n/a	3.3	n/a U
S16T034201	1708-29-8	2,5-Dihydrofuran	NGS	110	2.8	42.8	ría	nla	n/a	n/a	2.8	n/a Uc
S16T034201	78-93-3	2-Butanone	NGS	110	613	6.7	r/a	n/s	n/a	n/a	1.9	n/a J
S16T034201	110-43-0	2-Heptanone	NGS	8	<1.8	5.7	r/a	nla	n/a	n'a	1.6	r/a J
S16T034201	591-78-6	2-Hexanone	NGS	88	<1.2	3.1	n/a	ala	e/u	n/a	1.2	n/a J
167034201	534-22-5	2-Methyfuran	NGS	110	613	<1.9	n/a	n/s	n/a	n/a	1.9	nlaU
167034201	78-94-4	3-Buten-2-one	NGS	100	<1.7	5.1	n/a	ela	rla	n's	1.7	r/a/J
\$167034201	106-35-4	3-Hoptanone	NGS	100	<1.5	5.4	n/a	n/a	n/a	n'a	1.5	n/a J
5167034201	106-68-3	3-Octanone	NGS	110	<2.4	924	n/a	n/a	n/a	n'a	2.4	n/a U
\$167034201	105-42-0	4-Methyl-2-hexanone	NGS	88	<1.3	<1.3	n/a	n/s	n/a	n _t o	1.3	nyaU
S16T034201	108-10-1	4-Mothyl-2-Pentanone	NGS	100	6.19	6.12	n/a	n/a	nía	n/a	1.9	Ualu
\$167034201	67-64-1	Acetone	NGS	87	<4.3	310	n/a	e/u	n/a	n/a	4.3	n/a
\$161034201	75-05-8	Acetonitrile	NGS	84	<1.8	17	n/a	n/a	n/a	n/a	1.8	nie
S16T034201	98-86-2	Acetophenone	NGS	100	<2.6	60	n/a	n/a	n/a	n/a	2.6	nla
S16T034201	107-13-1	Acrylonitrile	NGS	88	<1.7	<1.7	nya	n/a	n/a	r/a	1.7	Ush
S16T034201	107-18-6	Allyl Alcehol	NGS	120	<3.9	<3.9	n/a	n/a	nla	ria	3.9	malific

Y - Comment. E - Outside Calibration Range

B - Blank Contamination U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected

c - RPD Outside Range

J - Estimated L - LLS Outside Range

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Cartridge Evaluation Data Summary Report

Sample Group: 20162989
SDG Number:
Customer Sample ID: 16-08635-2-IN-G
Customer Sample ID: 16-08635-2-IN-G

amplet R	All CAS #	Analyse	Unit	\$ CLUS	Slank	Result	Duplicate	Average	RPD %	RPD % Spk Rec %	Det Limit	Cet Err % Qual Flags
VAPOR-TDU VOA #2	1 VOA #2											
16T034201	107-05-1	Allyl Chloride	NGS	110	<2.8	<2.8	n/a	nia	n/a	r/s	2.8	n/a U
\$167034201	71-43-2	Benzene	NGS	110	<1.2	1.5	n/a	n'a	n/a	n/a	12	n/a J
\$16T034201	100-47-0	Benzonitrile	NGS	100	6,15	41.9	n/a	nia	n/a	n/a	1.9	n/a U
167034201	123-72-8	Butanal	NGS	110	42.1	13	n/a	n/a	n/a	n/a	2.1	n/a
316T034201	109-74-0	Butanenitrile	NGS	100	<1.2	1.5	n/a	n/a	n/a	n/a	12	rva J
\$167034201	56-23-5	Carbon tetrachloride	NGS	130	c1.6	c1.8	n/s	n/a	n/a	n/a	1,6	n/a U
S16T034201	108-90-7	Chlorobanzena	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a U
\$167034201	75-00-3	Chloroethane	NGS	98	6.15	<1.9	n/a	n/a	n/a	n/a	1.9	n/a U
S16T034201	67-66-3	Chloroform	NGS	120	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a U
S16T034201	110-82-7	Cyclohexane	NGS	110	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a U
\$167034201	124-18-5	Decane	NGS	96	42.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a U
S16T034201	84-17-5	Ethanol	NGS	100	47.4	180	e/u	n/a	n/a	n/a	7.4	nía
\$167034201	141-78-6	Ethyl acetste	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a U
S16T034201	100-41-4	Ethylbenzene	NGS	110	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a U
\$167034201	110-00-9	Furan	NGS	100	41.8	20	n/a	n/a	n/a	n/a	1.6	n/a
S16T034201	110-54-3	Hexane	NGS	100	<1.7	11	n/a	n/a	n/a	n/a	1.7	n/a J
S16T034201	626-73-9	Hexanentrile	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a U
\$167034201	126-98-7	Methacrylonitrile	NGS	100	<1,6	<1.6	n'a	n/a	n/a	n/a	1.6	n/a U
S167034201	75-09-2	Methylene Chloride	NGS	100	427	427	n/a	n/a	n/a	n/a	2.7	n/a U
S16T034201	91-20-3	Naphthalene	NGS	110	43.7	9.7	n/a	n/a	n/a	n/a	3.7	n/a U
S16T034201	96-95-3	Nitrobenzene	NGS	110	42.6	928	n/a	n/a	n/a	n/a	2.6	n/a U
\$167034201	110-59-8	Pentanenitrile	NGS	97	<1.8	<1.6	n'a	n/a	2,0	n/a	1.6	n/a U
S16T034201	107-12-0	Propanenitrile	NGS	100	41.4	2.9	n/a	n/a	n'a	n/a	1.4	n/a J
S16T034201	110-86-1	Pyridine	NGS	130	43.8	3.8	n/a	n/a	n'a	n/a	3.8	n/a U
S16T034201	100-42-5	Styrene	NGS	110	<1.8	-c1.6	n/a	nla	n/c	n/a	1.6	n/a U
S16T034201	127-18-4	Tetrachloroethene	NGS	120	<1.6	12	n/a	n/a	n/a	n/a	1.6	n/a
S16T034201	108-88-3	Toluene	NGS	110	<1.5	3.1	c/a	ela	a)a	n/u	9 .	-

Y - Comment E - Outside Calibration Range

B - Stank Contamination U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected

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Cartridge Evaluation Data Summary Report

Sample Group: 20162989 SDG Number: Customer Sample ID: 16-08635-2-IN-G Customer Sample ID: 16-08635-2-IN-G

Sample# R	All case	Analyse	like in		Directo	-	ъ	1		-	-	
	# CHO	and and and	Mana	\$10%	Diana	Kesult	Duplicate	Average	RPD % Spk Rec %	ak Ree %	DetLimit	Det Umit Cot For % Qual Flace
VAPOR-TD	JU VOA #2											B
\$167034201	79-01-6	Trichlaroethene	NGS	120	<1.5	41.5	n/a	eju	ofo	eda	30	- Parket
CARTONADA	200 000	Water Constitution of the same			-			200		2000	0.1	na n
OTOTOPHOL	10.00-4	I richiarofluctomethane	NGS	110	61.6	21	n/a	nin	n/a	m/m	4.6	- Jack
CHETSTANCE	3 +0 +000	All a de Sel al Lancourse and a selection of the selectio			1			2		200	2.0	104
1024501010	2-10-10001	ols-1,3-Uscholopropene	NGS	110	c1.3	<1.3	rya	n/a	n/a	n/a	4.5	of all 1
CASTORAGO	199 00 0	-			1			-		0.61	0.1	nisalo.
O TOTAL ON TOTAL	B-00-671	n-butyl acetate	NGS	88	41.4	<1.4	n/a	eye		nla	14	aria itt
STRT034201	143.89.6	o Mostoo	000	1	1		1		ı			ING O
Concording	0.20.24	mengana	Son	100	4.15	13	rva	m/m		n/a	14	al a
O COTTAGA PAR		A A A							ı	200		944
1024001010	10001-02-6	frans-1,3-Dichlorepropene	NGS	110	<12	<1.2	nya	alea.	n/a	n/n	6.5	afa 11
								200			3.5	

NA = Not Analyzed, ND = Not Detected c - RPD Outside Range

Y - Comment E - Curside Calibration Range

B - Blank Contamination U - Less Than Detection Limit

J - Estimated L - LLS Outside Range

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Cartridge Evaluation Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-EFF-A
Customer Sample ID: 16-08636-2-EFF-A

Sample# R	A CAS 8	Analyte	Unit	STO %	Blank	Result	Duplicate	Aretage	RPD %	RPD % Spk Rec %	Det Limit	Det Limit Cot Err % Qual Flags	ual Flags
VAPOR-TDU VOA #2	J VOA #2												T
S16T034202	79-34-5	1,1,2,2-Tetrachloroethane	NGS	88	<3.0	<3.0	e/u	n/a	n/a	n/a	3.0	U s/u	
S16T034202	9-00-64	1,1,2-Trichloroethane	NGS	100	42.3	<2.3	e/u	n/a	n/a	n/a	2.3	U s/u	
S16T034202	75-34-3	1,1-Dichloepethane	NGS	66	41.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a U	
S16T034202	75-35-4	1,1-Dichlosoethone	NGS	66	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	U alu	
S16T034202	107-06-2	1,2-Dichlosoethane	NGS	100	41.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a U	
S16T034202	542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	U s/u	
S16T034202	106-46-7	1,4-Dichlosobenzene	NGS	100	<4.1	1.99	n/a	n/a	n/a	n/a	4.1	n/a U	
S16T034202	123-91-1	1,4-Dioxane	NGS	86	<2.0	<2.0	nya	n/a	n/s	P.S.	2.0	n/a U	
S16T034202	71-36-3	1-Butanol	SDN	120	44.3	<4.3	n/a	nía	n/a	n/a	4.3	U s/u	
S16T034202	111.70-6	1-Heptanol	NGS	80	<9.1	<9.1	n/a	n/a	n/a	n/a	9.1	Us/u	
S16T034202	71-23-8	1-Propanol	NGS	120	6.8>	27	n/a	n/a	n/a	n/a	8.9	n/a	
S16T034202	108-47-4	2,4-Dimethytpyridine	NGS	66	44.5	44.1	n/a	nía	n/a	n/a	4.1	n/a U	
S16T034202	1706-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	8ju	n/a	n/a	nha	2.2	ntaU	
S16T034202	78-93-3	2-Butanone	NGS	93	43.1	43.1	e/u	n/a	n/a	2/2	3.1	Usin	
S16T034202	110-43-0	2-Heptanone	NGS	26	<2.6	<2.6	n/a	nía	n/a	n/a	2.6	n/a L	
S16T034202	591-78-6	2-Hexanone	NGS	96	<2.5	<2.5	n/a	nía	n/a	n/a	2.5	n/a U	
S16T034202	534-22-5	2-Methyffuran	NGS	97	<1.3	<1.3	n/n	ru'a	n/a	n/a	1.3	n'a L	
S16T034202	78-94-4	3-Buten-2-one	NGS	16	<1.9	<1.9	n/a	n/a	n/a	n/a	1.9	nía	
S16T034202	106-35-4	3-Heptanone	NGS	36	<2.7	2.8	n/a	n/a	n/a	n/a	2.7	n/a J	
S16T034202	106-68-3	3-Octanone	NGS	36	<3.3	<3.3	מיט	n/a	e/u	a/a	3.3	n/a	
S16T034202	105-42-0	4-Methyl-2-haxanona	NGS	98	<2.6	<2.6	n/a	nía	n/a	n/a	2.6	n'a L	
S16T034202	108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	<2.2	מ/ט	n'a	n/s	a/n	2.2	n/a	
S16T034202	67-64-1	Acetone	NGS	91	4.4	5.2	n/a	n'a	n/a	n/a	2.8	n'a B.	2
S16T034202	75-05-8	Acetonitrile	SON	88	<1.6	190	e/u	n/a	n/a	n/a	1.6	n/a	
S16T034202	98-86-2	Acetophenone	NGS	35	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a U	
S16T034202	107-13-1	Acryfonitrile	NGS	100	<2.1	<2.1	n/a	m/a	n/s	n/a	2.1	Us'n	
S16T034202	107-18-6	Allyl Alcohol	NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	D'a U	

T - Tentatively Identified Compound N - Named TIC

J - Estimated U - Less Than Detection Limit

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected B - Stark Contamination

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Cartridge Evaluation Data Summary Report

Sample Group: 20162990 SDG Number: Customer Sample ID: 16-08636-2-EFF-A Customer Sample ID: 16-08636-2-EFF-A

amples R	Ad CAS B	Analyte	Unit	2 QLS	Blank	Result	Duplicate	Average	RPO %	Spk Rec 1/4	Det Limit	Cott Err 16 Qual Flags
VAPOR-TDU VOA #2	J VOA #2										1	
S16T034202	107-05-1	Allyl Chloride	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a U
S16T034202	71-43-2	Benzone	NGS	86	<1.5	<1.5	n/a	n/a	n/a	n/a	1,5	n/a U
S16T034202	100-47-0	Benzonitrile	NGS	96	<4.2	4.2	n/a	n/a	n/a	D,a	4.2	n/a U
S16T034202	123-72-8	Butanal	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a U
S16T034202	109-74-0	Butanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n'a	2.1	n/a U
316T034202	56-23-5	Carbon tetrachloride	NGS	100	<1.5	<1.5	rva	n/a	nía	n/a	1.5	n/a U
S16T034202	108-90-7	Chlorobenzene	NGS	88	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a U
316T034202	75-00-3	Chloroethane	NGS	110	<1.6	9'1>	n/a	n/a	nía	n/a	1.6	n/a U
S16T034202	67-66-3	Chloroform	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1,8	n/a U
S16T034202	110-82-7	Cydohexane	NGS	100	×1×	<1.4	n/a	n/a	n/a	nía	1.4	n/a U
S16T034202	124-18-5	Decane	NGS	88	<3.3	<3.3	2/4	n/a	n/a	n/a	3,3	U/a/U
316T034202	64-17-5	Ethanol	NGS	120	9'9	38	n/a	n/a	n/a	n/a	3.7	n/a B
S16T034202	141-78-6	Ethyl acetate	NGS	85	<1.8	<1.8	10/10	n/a	rva	n/a	1.8	n/a U
16T034202	100414	Ethylbenzene	NGS	88	424	<2.4	n/a	n/a	n/a	n/a	2.4	n/a U
S16T034202	110-00-9	Furan	NGS	96	<1.6	<1.8	m/a	n/a	n/a	n/a	1.6	n/a ∪
S16T034202	110.54-3	Hexane	NGS	100	1.8	1.6	n/a	n/a	n/a	n/a	1.3	Na BJ
S16T034202	628-73-9	Hexanentrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	Ua/u
S16T034202	126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a U
S16T034202	75-09-2	Methylene Chloride	NGS	110	42	4.1	n/a	n/a	n/a	n/a	4.1	n/a BJ
S16T034202	91-20-3	Naphthalene	NGS	98	<53	<5.3	n/a	n/a	n/a	n/a	5.3	Na U
S16T034202	88-86-3	Nitrobenzene	NGS	948	54.7	<4.7	n/a	n/a	n/a	n/a	4.7	∪a/u
S16T034202	110-59-8	Pontanenitrite	NGS	38	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a U
S16T034202	107-12-0	Propanentrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a U
S16T034202	110-86-1	Pyridine	NGS	110	42.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a U
S16T034202	100-42-5	Styrene	NGS	97	427	<2.7	n/a	- n/a	n/a	n/a	2.7	∪'a U
S16T034202	127-18-4	Tetrachloroethene	NGS	66	<1.8	88	n/a	m/a	eva	n/a	1.8	n/a
S16T034202	108-88-3	Toluene	NGS	98	<2.2	5.0	n/a	n/a	n/s	n/a	22	n/a J

T - Tentatively Identified Compound N - Named TIC

J - Estimated U - Less Than Detection Limit

NA = Not Analyzed, ND = Not Detected

E - Outside

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Cartridge Evaluation Data Summary Report

Sample Group: 20162990

SDG Number: Customer Sample ID: 16-08636-2-EFF-A Customer Sample ID: 16-08636-2-EFF-A

Sample® R	All CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Awerage	RPO %	RPD 14 Spk Rec 14	Det Limit	Cet Err % Qual Flags
UAPOR-TD	NU VICA #2											
S167034202	79-01-6	Trichloresthene	NGS	88	41.6	41.6	n/a	n/s	n/s	n/a	1.6	Ulahu
\$167034202	75-89-4	Trichforefluoromethane	NGS	88	c1.9	<1.9	n/a	rys	n/a	n/s	9.	
\$167034202	10081-01-5	cis-1,3-Dichloropropene	NGS	16	6,15	×1.8	n/a	n/a	n/a	n/a	1.8	
S16T034202	123-86-4	n-Butyl acetate	NGS	8	424	424	n/a	n/s	n's		2.4	
\$167034202	142-82-5	n-Hoptone	NGS	100	6,15	41.6	n/a	nya	n/a	n's	1.6	
S16T034202	10061-02-6	trans-1,3-Dichloropropene	NGS	ä	42.1	121	n/a	nya			2.1	n/a U

NA = Not Analyzed, ND = Not Detected B - Blank Contamination

E - Outside Calibration Range

T - Tentatively Identified Compound N - Named TIC

J - Estimated U - Less Than Detection Limit

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Cartridge Evaluation Data Summary Report

SDG Number: Customer Sample ID: 16-08636-2-EFF-B Customer Sample ID: 16-08636-2-EFF-B

Sample Group: 20162990

amples R /	R AS CASS	Analyto	Unit	STO %	Blank	Result	Duplicate	Average	RPD %	Average RPD % Spk Rec %	Det Limit	Det Limit Cot Err % Qual Flags
VAPOR-TDU VOA #2	VOA #2											
S16T034203	79-34-5	1,1,2,2-Tetrachioroethane	NGS	66	<3.0	<3.0	n/n	n/a	aju	n/a	3.0	n/a U
S16T034203	29-00-62	1,1,2-Trichionoethane	SON	100	42.3	423	n/a	n/a	n/a	n/a	2.3	n/a U
S16T034203	75-34-3	1,1-Dichloreethane	NGS	66	<1.7	<1.7	n/s	n'a	n/a	n/a	1.7	Ua/u
S16T034203	75-35-4	1,1-Dichloroethane	NGS	66	<1.7	C1>	n/a	n/a	n/a	nla	1.7	U s/u
S16T034203	107-06-2	1,2-Dichloroethane	NGS	100	<1.7	<1.7	n/a	n/a	2/4	n's	1.7	
S16T034203	542-75-6	1,3-Dichloropropene (Total)	SON	n/a	n/a	<1.8	n/a	n/a	ela	ala	1.8	
S16T034203	106-46-7	1,4-Dichlorobenzene	NGS	100	<4.1	<4.1	n/a	n'a	n/a	n/a	4.1	
167034203	123-91-1	1,4-Diagne	NGS	88	<2.0	<2.0	c/u	n/a	m/a	ava	2.0	Us/u
16T034203	71-36-3	1-Butanol	NGS	120	<4.3	17	n/a	n/a	n/a	nya	4.3	
S16T034203	111-70-6	1-Heptanol	NGS	80	<8.1	<9.1	n/a	n/a	n/a	n/a	9.1	U s/u
S16T034203	71-23-8	1-Propanol	NGS	120	<8.9	19	n/a	n/a	e/u	e/u	8.9	L's/u
167034203	108-47-4	2.4-Dimethylpyridine	NGS	88	64.1	<4.1	n/a	n/a	a/a	ala	4.1	n/a U
S16T034203	1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	nla	2.2	n/a U
167034203	78-93-3	2-Butanone	NGS	83	43.1	3.2	n/a	10/2	n/a	e/u	3.1	n/a J
S16T034203	110-43-0	2-Heptanone	NGS	35	<2.6	<2.8	n/a	n/a	n/a	n/a	2.6	n/a U
S16T034203	591-78-6	2-Hexanone	NGS	96	<2.5	<2.5	n/a	n/a	n/a	e _l ci	2.5	Uah
S16T034203	534-22-5	2-Methyfluran	NGS	26	<1.3	<1.3	e/u	n'a	e/u	n/a	1.3	n'a U
167034203	78-94-4	3-Buten-2-one	NGS	16	6.1>	<1.9	n/a	n'a	n/a	n/a	1.9	U s/u
S16T034203	106-35-4	3-Heptanone	NGS	36	<2.7	<2.7	n/a	n/a	nya	n/a	2.7	U s/u
167034203	106-68-3	3-Octanone	NGS	35	<3.3	<3.3	e/u	n/a	n/a	200	3.3	U s/u
16T034203	105-42-0	4-Methyl-2-haxanone	NGS	96	<2.6	<2.6	n/a	n/a	n/a	nya	2.6	U s/u
167034203	108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	U e/u
S16T034203	67-64-1	Acetone	NGS	16	4.4	6.7	e/u	n/a	n/a	n/a	2.8	n/a BU
167034203	75-05-8	Acetonitrile	NGS	88	<1.6	280	n/a	n/a	n/a	n/a	1.6	n/a
S16T034203	98-88-2	Acetophenone	NGS	35	<6.2	<6.2	eju	n'a	e/a	n/a	6.2	
5167034203	107-13-1	Acrylonitria	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	U e/u
S16T034203	107-18-6	Allyl Alcohol	MGS	120	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	

T - Tentatively Identified Compound N - Named TIC

J - Estimated U - Less Than Detection Limit

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Cartridge Evaluation Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-EFF-B
Customer Sample ID: 16-08636-2-EFF-B

ample8 R	Ad CAS B	Analyte	Unit	% ous	Blank	Result	Duplicate	Average	RPO %	Spk Rec %	Det Umit	Cnt Err % Qual Flags
VAPOR-TDU VOA #2	VOA #2											
16T034203	107-05-1	Allyl Chloride	NGS	1001	<2.5	<2.5	e/u	n/a	n/a	n/a	2.5	n/a U
S16T034203	71-43-2	Benzene	NGS	88	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a U
16T034203	100-47-0	Benzonitrile	NGS	36	4.2	42	n/a	n/a	n/a	n/a	4.2	n/a U
S16T034203	123-72-8	Butenal	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a U
316T034203	109-74-0	Butanenitrile	NGS	100	42.1	<2.1	n/a	n/a	n/a	n/a	2.1	U a/u
1167034203	56-23-5	Carbon tetrachloride	NGS	1001	<1.5	<1.5	n/a	n/a	2/2	n/a	1.5	n/a U
S16T034203	108-90-7	Chlorobenzene	NGS	88	<2.5	<2.5	n/a	m/a	n/a	n/a	2.5	Na U
16T054203	25-00-3	Chloroethane	NGS	110	<1.6	<1.6	n/a	n/a	e/a	uyu	1.6	n/a U
S16T034203	67-66-3	Chloroform	NGS	100	<1.8	<1.8	n/a	n/a	a/u	n/a	1.8	n/a U
S16T034203	110-82-7	Cyclohexane	NGS	100	<1.4	<1.4	n/a	n/a	n/a	n/a	1.4	n/a U
S16T034203	124-18-5	Decane	NGS	88	<3.3	<3.3	n/a	n/a	e/u	n/a	3.3	n/a U
S16T034203	84-17-5	Ethanol	NGS	120	9'9	37	n/a	n/a	ma	n/a	3.7	n/a B
167034203	141-78-6	Ethyl acetale	NGS	85	<1.8	<1.8	n/a	n/a	n/a	n/a	1,8	n/a U
S16T034203	100-41-4	Ethylbenzene	NGS	66	<2.4	<2.4	e/u	n/a	n/a	n/a	2.4	n/a U
S16T034203	110-00-9	Furan	NGS	80	<1.8	<1.6	n/s	n/a	n/a	n/a	1.6	U a/n
16T034203	110-54-3	Hexane	NGS	100	1.5	1.9	e/u	n/a	n/a	n/a	1,3	n/a BJ
167034203	628-73-9	Hexaneninie	NGS	88	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	u/a U
:16T034203	128-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a U
\$161034203	75-09-2	Methylene Chloride	NGS	110	4.2	<4.1	nla	n/a	n/a	nva	4.1	r/a U
S16T034203	91-20-3	Naphthalene	NGS	98	<5.3	<5.3	n/a	n/a	n/a	m/a	5.3	r/a U
S16T034203	58-95-3	Mitrobenzene	NGS	86	<4.7	<4.7	n/a	n/a	n/a	m/a	4.7	r/s U
S16T034203	110-59-8	Pertanentrile	NGS	86	<2.6	<2.8	n/a	n/a	n/a	6,60	2.6	n/a U
S16T034203	107-12-0	Propanentrile	NGS	100	6,1>	<1.8	n/a	n/a	n/a	n'a	1.8	r/s U
S16T034203	110-86-1	Pyridine	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	r/a U
S16T034203	100-42-5	Shrene	NGS	26	42.7	427	n/a	n/s	n/a	n/a	2.7	ula U
S16T034203	127-18-4	Tetrachloroethene	NGS	88	×1.8	31	n/a	n/a	n/a	n/a	1.8	rita
S16T034203	108-88-3	Tokene	NGS	80	000	0.0	olo	afe	- miles	- Par	0.0	1000

J - Estimated E - Outside Calibration Range U - Less Than Detection Limit

T - Tentatively Identified Compound N - Named TIC

NA = Not Analyzed, ND = Not Detected

8 - Blank Contamination

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Cartridge Evaluation Data Summary Report

Sample Group: 20162990

SDG Number:

Customer Sample ID: 16-08636-2-EFF-B Customer Sample ID: 16-08636-2-EFF-B

Samples R	Ag CA	**	Amalyte	Unit	% QLS	Blank	Result	Duplicate	Average	RPD %	RPD 16 Spk Rec 16	Det Limit	Cet Err %	Cet Err % Qual Flags
VAPOR-TD	U VOA#	2												
\$167034203	79.	9-10	Trichloxoethene	NGS	98	<1.6	61.6	n/s	n/a	n/a	n/a	1,6	n/a	2
\$167034203	75-	5-69	Trichtorofluoromethane	NGS	88	6.15	6.1.9		n/a			1.9		2
\$167034203	100	351-01-5	cis-1,3-Dichloroprepene	NGS	26	c1.8	41.8		n/a			1.8		2
\$167034203	123	3-88-4	n-Butyl acetate	NGS	83	424	42.4		n/a			2.4		2
\$167034203	142	3-82-5	n-Heptane	NGS	100	61.6	<1.6	n/a	e/u	n/a	n/a	1,6	U e/u	2
S16T034203	190	361-02-6	trans-1,3-Dichloropropene	NGS	98	42.1	<2.1		n/a			2.1		2

NA = Not Analyzed, ND = Not Detected B - Blank Contamination

E - Outside Calibration Range

T - Tertatively Identified Compound N - Named TIC

J - Estimated U - Less Than Detection Limit

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Cartridge Evaluation Data Summary Report

SDG Number: Customer Sample ID: 16-08636-2-EFF-C Customer Sample ID: 16-08636-2-EFF-C

Sample Group: 20162990

Sample# R	AF CAS#	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	10PD %	Spk Rec 14	Det Limit	Det Limit Ont Err % Qual Flags
VAPOR-TDU VOA #2	J VOA #2											
S167034204	79-34-5	1,1,2,2-Tetrachioroethane	NGS	66	<3.0	930	n/a	nya	2/4	e/u	3.0	Ush
S16T034204	79-00-5	1,1,2-Trichloroethane	NGS	100	423	423	n/a	nla	2,0	n/s	23	n/a U
\$167034204	75-34-3	1,1-Dichloroethane	NGS	88	<1.7	41.7	n/a	nya	2,0	n/a	1.7	n/s U
S167034204	75-35-4	1,1-Dichloroethene	NGS	88	<1.7	<1.7	n/a	n/s	n's	n/a	1.7	Ulan
S16T034204	107-06-2	1,2-Dichloroethane	NGS	100	<1.7	<1.7	n/a	rya	n's	n/s	17	n/a U
\$167034204	542-75-6	1,3-Dichloropropene (Total)	NGS	e/u	n/a	s.1>	n/a	nya	n'a	n/a	1.0	n/s/U
S16T034204	106-46-7	1,4-Dichlorebenzene	NGS	100	04.1	1.40	n/a	nys	9,0	e/u	4.1	n/a U
S16T034204	123-91-1	1,4-Dioxane	NGS	88	<20	<2.0	n/a	n/a	n's	n/a	2.0	ryls U
\$167034204	71-36-3	1-Butanol	NGS	120	c4:3	<4.3	n/a	r/s	n/a	n/a	4.3	nla U
\$167034204	111-70-6	1-Heptanol	NGS	06	<9.1	49.1	n/a	n/a	0,0	n/a	9.1	n/s/u
S16T034204	71-23-8	1-Propanol	NGS	120	<8.9	27	n/a	nya	n's	n/a	8.9	rva
S16T034204	108-47-4	2,4-Dimethylpyridine	NGS	98	1.40	1,40	n/a	n/a	n/a	e/u	4.1	n/a U
\$167034204	1708-29-8	2,5-Dihydrofuran	NGS	110	4.2	<2.2	n/a	n/a	n'a	2/0	2.2	n/a U
S16T034204	78-93-3	2-Butanone	NGS	88	43.1	3.6	n/a	n/a	n/a	n/a	3.1	r/a 1
S16T03A204	110-43-0	2-Heptanone	NGS	8	<2.6	<2.6	nya	n/a	n/a	n/a	2.6	n/a U
S16T034204	591-78-6	2-Hexanone	NGS	98	<2.5	<2.5	n/a	n/a	n'a	e/u	2.5	n/a U
S16T03A20A	534-22-6	2-Methytluran	NGS	87	<1.3	<1.3	n/a	n/a	n/a	e'e	1.3	n/a U
S16T034204	78-94-4	3-Buten-2-one	NGS	16	6:15	<1.9	n/a	n/a	n/a	n/a	1.9	n/s U
S16T034204	106-35-4	3-Heptanone	NGS	8	<2.7	<2.7	n/a	n/a	n/s	e/u	2.7	r/a U
S16T034204	105-68-3	3-Octanone	NGS	35	<3.3	<3.3	n/a	n/a	n/a	m/a	3.3	r/a U
S16T034204	105-42-0	4-Methyl-2-hexanone	NGS	96	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/s/n
S16T034204	108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	r/a U
S16T034204	67-64-1	Acetone	NGS	16	4.4	18	n/a	n/a	nfa	n's	2.8	r/a B
S16T034204	75-05-8	Acetonitrie	NGS	96	<1.6	230	n/e	n/a	n/a	e,u	1.6	n/a
\$167034204	58-86-2	Acetophenone	NGS	85	<6.2	<6.2	e/u	n/a	eju	n/a	6.2	n/a U
S16T034204	107-13-1	Acrytoeitrille	NGS	100	<2.1	42.1	n/a	n/a	n/a	nia	2.1	U a/u
S16T034204	107-18-6	Allyl Alcohol	NGS	120	<2.3	<2.3	n/a	n/a	nía	n/a	2.3	n/a U

T - Tentatively Identified Compound N - Named TIC

J - Estimated U - Less Than Detection Limit

E - Outside Calibration Range

B - Blank Contamination

NA = Not Analyzed, ND = Not Detected

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Cartridge Evaluation Data Summary Report

Sample Group: 20162990 SDG Number: Customer Sample ID: 16-08636-2-EFF-C Customer Sample ID: 16-08636-2-EFF-C

arreled R	AF CAS #	Analyto	Unit	STD %	Blank	Result	Ouplicate	Average	Noon	RPD % Spk Rec %	Det Limit	Det Limit Ont Err % Qual Flags
VAPOR-TDU VOA #2	VOA #2											
S16T034204	107-05-1	Allyf Chloride	NGS	100	425	<2.5	n/a	n/a	e/u	n/a	2.5	UaV
S16T034204	71-43-2	Benzene	NGS .	86	<1.5	<1.5	nya	n/a	e)ra	n/a	1,5	n/a U
S16T034204	100-47-0	Benzonitrile	NGS	98	42	<4.2	nla	n/a	s/u	nla	4.2	n/a U
S16T034204	123-72-8	Butanal	NGS	100	<3.0	<3.0	n/a	n/a	ala	n/a	3.0	n/a U
S16T034204	109-74-0	Butanenitrile	NGS	100	42.1	<2.1	n/a	n/a	ela	nla	2.1	U S/N
S16T034204	56-23-5	Carbon tetrachloride	NGS	100	<1.5	<1.5	nya	n/a	e/u	nía	1.5	n/a U
S16T034204	108-80-7	Chiceobenzene	NGS	88	425	<2.5	n/a	n/a	elva	nla	2.5	U s/u
S16T034204	75-00-3	Chiceoethane	NGS	110	<1.6	41.6	eve	n/a	n/a	n/a	1,6	Uav
S16T034204	67-66-3	Chloroform	NGS	100	<1.8	<1.8	n/a	n/a	2/2	n/a	1.8	∪a ∪
S16T034204	110-82-7	Cyclohexane	NGS	100	<1.4	<1.4	n/a	n/a	e/a	n/a	1.4	n/a U
S16T034204	124-18-5	Decare	NGS	88	<3.3	<3.3	e/u	n/a	2/2	n/a	3.3	U a/u
S16T034204	84-17-5	Ethanol	NGS	120	8.8	90	n/a	n/a	eva	n/a	3.7	n/a B
S16T034204	141-78-6	Ethyl acetate	NGS	85	<1.8	<1.8	n/a	n/a		n/a	1.8	n/a U
S16T034204	100-41-4	Ethylbenzene	NGS	88	424	<2.4	n/a	n/a	n/a	n/a	2.4	n/a U
S16T034204	110-00-9	Furan	NGS	66	<1.6	<1.6	e/a	n/a	eva	n/a	1.6	n/a U
S16T034204	110-54-3	Hozane	NGS	100	1.5	1.4	m/a	n/a	n/a	nla	1.3	rVa BJ
S16T034204	628-73-9	Hexamenitrile	NGS	88	42.6	<2.6	n/a	n/a	e/u	n/a	2.6	n/a U
S16T034204	126-58-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a U
S16T034204	75-09-2	Methylene Chloride	NGS	110	4.2	44.1	n/a	n/a	e/a	n/a	4.1	n/a U
S16T034204	91-20-3	Naphthalene	NGS	88	<53	<5.3	n/a	n/a	n/a	n/a	6.3	∪a/u
S16T034204	88-95-3	Nitrobenzene	NGS	96	<4.7	54.7	m/a	n/a	e/u	n/a	4.7	n/a U
S16T034204	110-59-8	Pentanentrile	NGS	88	<2.6	<2.6	e/u	n/a	nla	n/a	2.6	U a/u
S16T034204	107-12-0	Propanentitrie	NGS	100	<1.8	<1.8	e/u	n/a	e/u	n/a	1.8	n/a U
S16T034204	110-86-1	Pyridine	NGS	110	<2.8	<2.8	n/s	n/a	e/u	nla	2.8	n/a U
S16T034204	100-42-5	Styrene	NGS	46	427	<2.7	ela	n/a	n/a	n/a	2.7	n/a U
\$167034204	127-18-4	Tetrachloroethene	NGS	88	<1.8	35	n/a	n/a	elva	n/a	1.8	n/a
S16T034204	108-88-3	Toluene	NGS	96	<22	3.7	n/a	n/a	e/u	nla	2.2	Light

J - Estimated U - Less Than Detection Limit

T - Tentatively Identified Compound N - Named TIC

NA = Not Analyzed, ND = Not Detected

E - Outside Calibration Range

B - Blank Contamination

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Cartridge Evaluation Data Summary Report

Customer Sample ID: 16-08636-2-EFF-C Customer Sample ID: 16-08636-2-EFF-C SDG Number:

Sample Group: 20162990

Samples R.	All CAS#	Analyte	Unit	% QLS	Blank	Result	Duplicate	Average		RPD % Spk Rec %	Det Limit c	Det Limit Ont Err % Qual Flags
VAPOR-TDI	J VOA #2											
\$167034204	79-01-6	Trichlososthene	NGS	96	<1.6	6.15	nla	n/a	n/a	n/a	1.6	U alu
S16T034204	75-69-4	Trichlorafluoromethane	NGS	88	6,19	6,15	nya	n/a	n/a	n/a	1.9	n/a U
S16T034204	10061-01-5	dis-1,3-Dichloropropene	NGS	16	×1.8	61.8	nla	n/a	e/u	n/8	1.8	U a/u
S16T034204	123-86-4	n-Butyl acetata	NGS	83	424	24	nya	n/a	n/a	n/a	24	n/a U
S16T034204	142-62-5	n-Heptane	NGS	100	41.6	41.6	nla	n/a	n/a	n/a	1.6	n/a U
S16T034204	10061-02-6	trans-1,3-Dichiaropropene	NGS	8	42.1	21	n/a	n/a	n/a	n/a	2.5	U shu

NA = Not Analyzed, ND = Not Detected 8 - Blank Contamination

E - Outside Calibration Range

T - Tentatively Identified Compound N - Named TIC

J - Estimated U - Less Than Detection Limit

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Cartridge Evaluation Data Summary Report

Sample Group: 20162990 SDG Number:

SDG Number: Customer Sample ID: 16-08636-2-EFF-D Customer Sample ID: 16-08636-2-EFF-D

Samples R	R AM CASS	Analyte	Chair	STD %	Blank	Result	Result Duplicate	Average	RPD %	Average RPD % Spk Rec %	Det Umit	Det Umit Ont Err % Qual Flags
VAPOR-TDU VOA #2	U VOA #2										1	
\$167034205	79-34-5	1,1,2,2-Tetrachloroethane	NGS	88	<3.0	<3.0	n/a	n/a	n/a	r/a	3.0	Ulahu
S15T034205	79-00-5	1,1,2-Trichiproethane	NGS	100	<2.3	<23	n/a	nla	n/a	r/a	2.3	Ulahu
\$167034205	75-34-3	1,1-Dichloroethane	NGS	66	<1.7	<1.7	e/u	nla	n/a	n/a	1.7	n/a U
S16T034205	75-35-4	1,1-Dichloroethene	NGS	66	<1.7	<1.7	n/a	n/a	2/4	n/a	1.7	Ua)u
\$167034205	107-05-2	1,2-Dichloroethane	NGS	100	c1.7	<1.7	m'a	nla	n/a	n/a	1.7	n/a U
\$167034205	542-75-6	1,3-Dichloropropene (Total)	NGS	n/s	n/a	<1.8	m'a	n/a	n/s	n/a	1.8	Ua)U
\$167034205	106-46-7	1,4-Dichlorobenzene	NGS	100	c4.1	54.1	m'a	nla	n's	n/s	4.1	n/a U
\$167034205	123-91-1	1,4-Dioxame	NGS	88	<2.0	<2.0	ru'a	nla	2/2	n/a	2.0	U alva
S16T034205	71-36-3	1-Butanol	NGS	120	c4.3	44.3	n/a	ryla	n/a	n/a	4.4	Na U
\$167034205	111-70-8	1-Neptanol	NGS	06	<9.1	<9.1	n/a	nla	n/a	n/a	1.0	U s/u
\$167034205	71-23-8	1-Propanol	NGS	120	<8.9	43	n/a	n/s	2/2	n/a	8.9	rvía
\$167034205	108-47-4	2,4-Dimethy/pyridine	NGS	88	4.1	<4.1	n/a	nta	2/4	n/a	4.1	n/a)U
\$167034206	1708-29-8	2,5-Dihydrofuran	NGS	110	<22	422	n/a	nla	n/a	n/a	22	n/a U
S16T034205	78-93-3	2-Butanone	NGS	83	43.1	<3.1	n/a	nla	n/a	n/a	1.6	U e/u
\$167034205	110-43-0	2-Neptanone	NGS	8	<2.6	<2.6	n/a	nla	6/0	n/a	2.6	n/a U
\$167034205	891-78-6	2-Hexanone	NGS	96	42.5	<2.5	n/a	nla	0/2	n/a	2.5	n/a U
\$167034205	534-22-5	2-Methythran	NGS	25	<1,3	<1.3	n/a	nla	n/a	n/s	1.3	Ualu
\$167034206	78-94-4	3-Buten-2-one	NGS	91	c1.9	<1.9	n/a	nla	e/u	n/a	1.9	U8/u
S16T034205	106-35-4	3-Heptanone	NGS	86	42.7	42.7	n/a	ryla	20	n/a	2.7	U a/u
\$167034206	106-68-3	3-Octanone	NGS	85	433	<3.3	n/a	nla	n/a	n/a	3.3	n/a U
\$167034205	105-42-0	4-Methyl-2-hexanone	NGS	98	<2.8	926	n/a	rvia	e/u	n/s	2.6	U e/u
\$167034205	108-10-1	4-Methyl-2-Pentanone	NGS	100	422	92	e/u	nla	n/a	n/a	22	n/a U
\$167034206	67-64-1	Acetorie	NGS	91	4.4	13	n/a	n/a	n/a	n/a	2.8	n/a 8
S16T034206	75-05-8	Acetoritrie	NGS	88	<1.6	43	rva	rvia	n/a	n/a	1.6	n/a
\$167034205	98-86-2	Acetophenone	NGS	25	<6.2	-6.2	n/a	rya	ra'a	n/a	6.2	n/a U
8167034205	107-13-1	Acryfonitrile	NGS	100	421	421	n/a	rva	n/a	n/a	2.4	n/a U
S16T034205	107-18-6	Allyl Alcohol	NGS	120	423	423	n/a	n/a	n/a	n/a	2.3	n/a U

T - Tentalively Identified Compound

J - Named TIC

U - Named TIC

J - Estimated U - Less Than Detection Limit

E - Outside Calibration Range

B - Blank Conternination

NA = Not Analyzed, ND = Not Detected

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Cartridge Evaluation Data Summary Report

Sample Group: 20162990 SDG Number: Customer Sample ID: 16-08636-2-EFF-D Customer Sample ID: 16-08636-2-EFF-D

Samples R	Af CAS#	Analyte	Unit	310 %	Blank	Result	Duplicate	Average	RPD %	Average RPD 1/4 Spk Rec 1/4	Det Limit	Ont Err % Qual Flags
VAPOR-TDU VOA #2	J VOA #2				1							
S16T034205	107-05-1	Allyl Chloride	NGS	100	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a U
\$167034205	71-43-2	Benzene	NGS	98	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	Us/u
S16T034205	100-47-0	Senzonitrile	NGS	96	545	64.2	n/a	e/u	n/s	n/a	42	n/a U
S16T034205	123-72-8	Butanal	NGS	100	<3.0	<3.0	n/s	n/a	n/a	n/s	3.0	Na U
\$167034205	109-74-0	Butanenihile	NGS	100	42.1	<2.1	a'n	n/a	n/a	n/a	2.1	n/a U
\$167034205	58-23-5	Carbon tetrachionide	NGS	100	<1.5	<1.5	m/a	n/a	n/a	n/a	1.5	Ua/u
S16T034205	108-90-7	Chlorobenzene	NGS	66	42.5	<2.5	n/a	n/a	n/s	e/u	25	n/a U
S16T034205	75-00-3	Chloroethane	NGS	110	61,6	41.6	m/a	n/a	0/3	n/s	1.6	U d/n
S16T034205	67-68-3	Chloroform	NGS	100	<1.8	41.8	n/a	n/a	n/a	e/n	1,8	n/a U
S16T034205	110-82-7	Cyclohexane	NGS	100	51.4	414	n'a	n/a	n/s	n/s	1.4	Ua U
\$167034205	124-18-5	Decane	NGS	66	<3.3	<3.3	n'a	n/a	2/0	n/a	88	n/a U
\$167034205	84-17-5	Ethanol	NGS	120	8.6	98	e,u	n/a	n/s	n/a	3.7	n/a 8
S16T034205	141-78-6	Ethyl acotate	NGS	88	<1.8	<1.8	m'a	n/a	n/a	n/a	1.8	U/a C
S16T034205	100-41-4	Ethylbenzene	NGS	66	424	<2.4	n/a	nla	n/a	n/a	2.4	U e/u
S16T034205	110-00-9	Furan	NGS	06	<1.6	41.6	m'a	nla	m'a	n/a	1,6	Ua U
\$167034205	110-54-3	Hexane	NGS	100	1.5	<1.3	n'a	nla	2,0	e/u	1.3	n/a U
\$167034205	628-73-9	Hexanentrile	NGS	86	<2.6	<2.6	m'a	nta	n/a	n/a	2.6	Us/u
\$167034205	126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n'a	nla	n's	2/4	1.8	n/a U
\$167034205	75-09-2	Methylene Chloride	NGS	110	4.2	c4.1	n/a	nla	e/u	n/a	4.1	U B/U
\$167034205	91-20-3	Naphthalene	NGS	98	<5.3	<5.3	n/a	nla	n/a	n/a	5.3	Ueln
\$167034205	98-95-3	Nitrobenzeno	NGS	8	44.7	44.7	n/a	nya	n/a	n/a	4.7	U a/n
S16T034206	110-59-8	Pentanonitrile	NGS	88	<2.6	978	n/a	nla	n/a	e/u	2.6	n/a U
S16T034205	107-12-0	Propanentrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	Ush
\$167034205	110-86-1	Pyridina	NGS	110	<2.8	428	n/a	n/s	n/a	n'a	2.8	Ush
S16T034205	100-42-5	Styrene	NGS	97	<2.7	427	n/a	n/a	n/a	n/a	2.7	U syu
\$167034205	127-18-4	Tetrachloroethene	NGS	96	<1,8	27	n/a	n/a	nía	n/a	1.8	rya
S16T034205	108-88-3	Toluene	NGS	96	<2.2	2.7	n/a	n/a	n/a	n/a	2.2	r/a J

T - Tentsifvely Identified Compound J - Estimated N - Named TNC U - Less Than Detection Limit

E - Outside Calbration Range

B - Blank Contamination

NA = Not Analyzed, ND = Not Detected

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Cartridge Evaluation Data Summary Report

Sample Group: 20162990

SDG Number: Customer Sample ID: 16-08636-2-EFF-D Customer Sample ID: 16-08636-2-EFF-D

Samples R	2	CAS #	Amalyte	Unit	% QLS	Blank	Result	Duplicate	Average	RPD % Spk Rec %	ik Rec %	Det Limit	Cnt Err % Qual Flags
VAPOR-TDU VOA	O VO	A #2											
\$167034205		79-01-6	Trichloroethene	NGS	88	41.6	41.6	n/a	m/a	n/a	n/a	1.6	n/a U
S16T034205		75-69-4	Trichlorofluoromethane	NGS	88	6.15	6,15	n/a	n/a	n/s	n/a	1.9	n/a U
S16T034205		10081-01-5	cis-1,3-Dichlaropropene	NGS	46	A1.8	41.8	a/u	n/a	n/a	n/a	1,8	n/a U
S16T034205		123-88-4	n-Butyl acetate	NGS	83	424	424	n/a	n/a		nla	24	n/a U
S16T034205		142-82-5	n-Heptane	NGS	100	41.6	41.6	n/a	n/a	nis	nla	1.6	Ua/u
S16T034205		10061-02-6	trans-1,3-Dichloropropene	NGS	S	42.1	42.1	n/a	n/a		nla	2.1	n/a U

NA = Not Analyzed, ND = Not Detected B - Blank Contamination

E - Outside Calbration Range

J - Estimated U - Less Than Detection Limit

T - Tentatively Identified Compound N - Named TIC

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Cartridge Evaluation Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-EFF-E
Customer Sample ID: 16-08636-2-EFF-E

Samples	AF CAS#	Amalyto	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	RPD % Spk Rec %	Det Limit	Det Limit Cnt Err % Qual Flags	Qual Flags
VAPOR-TDU VOA #2	U VOA #2												
S16T034206	79-34-5	1,1,2,2-Tetrachioroefnane	NGS	66	<3.0	<3.0	n/a	n'a	ayu	nla	3.0	n/a	3
S16T034206	29-00-62	1.1.2-Trichloroethane	NGS	100	423	423	n/a	n'a	e/u	nía	2.3	n/a	2
S16T034206	75-34-3	1,1-Dichloroethane	NGS	66	L1>	<1.7	n/a	n'a	n/a	nía	1.7	n/a	2
S16T034205	75-35-4	1,1-Dichloroethene	NGS	88	<1.7	<1.7	n/a	n/a	ala	n/a	1.7	n/a	2
\$167034206	107-05-2	1,2-Dichloroefhane	NGS	100	<1.7	<1.7	n/a	n/a	elva	nla	1.7		3
S16T034206	542-75-6	1,3-Dichlenopropene (Total)	NGS	ula	n/s	<1.8	n/a	n/a	n/a	nía	1.8		2
\$167034205	106-46-7	1,4-Dichierobenzene	NGS	100	54.1	54.1	n/a	n/a	a/a	n/a	4.1		3
S16T034205	123-91-1	1,4-Dioxeme	NGS	96	<2.0	<2.0	n/a	n/a	eva	nva	2.0	n/a	0
\$167034206	71-36-3	1-Butanol	NGS	120	<4.3	43	n/a	n/a	e/u	n/a	4.3		2
S16T034206	111.70-6	1-Heptanol	NGS	90	<9.1	49.1	n/a	n/a	e/u	n/a	9.1		2
S16T034206	71-23-8	1-Propanal	NGS	120	<8.9	25	n/a	n/a	eva	n/a	8.9		
S16T034206	108-47-4	2,4-Dimethylpyridine	NGS	66	C4.1	44.1	n/a	m/a	nia	n/a	4.1		-
\$167034206	1708-29-8	2,5-Dihydrofuran	NGS	110	<22	422	n/a	m/a	n/a	n/a	22		2
\$167034206	78-53-3	2-Butanone	NGS	83	<3.1	53.1	n/a	n/a	n/a	nía	3.1		0
S16T034206	110-43-0	2-Heptanome	NGS	94	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	2
\$167034205	591-78-6	2-Hexanone	NGS	96	<2.5	42.5	n/s	n/a	n/a	n/a	2.5		-
\$167034206	534-22-5	2-Methylluran	NGS	48	<13	<1.3	n/a	m/a	nia	nía	1.3	n/a	2
S16T034206	78-94-4	3-Buten-2-one	NGS	91	<1.9	<1.9	n/a	e/a	e/a	n/a	1.9		_
S16T034206	106-35-4	3-Heptanone	NGS	96	<2.7	42.7	n/a	n/a	n/a	n/a	2.7		0
S16T034206	106-68-3	3-Octanone	NGS	85	<3.3	<3.3	n/a	n/a	nya	n/a	3.3	n/a	2
S16T034206	105.42.0	4-Methyl-2-hoxanone	NGS	96	<2.6	<2.6	n/s	n/a	n/a	n/a	2.6	n/a	2
S16T034206	108-10-1	4-Methyl-2-Pentanone	NGS	100	<22	<22	n/a	n/a	n/a	n/a	2.2		2
S18T034206	67-64-1	Acetone	NGS	91	4.4	5.7	n/a	n/a	n/a	nfa	2.8	n/a	2
\$167034206	75-05-8	Acetonitrile	NGS	88	<1.6	310	n/a	n/a	n/a	cju	1.6	n/a	
\$167034206	98-88-2	Acetophenene	NGS	85	<6.2	<62	n/a	n/a	n/a	n/a	6.2	n/a	2
816T034206	107-13-1	Acrylonitrille	NGS	100	<2.1	<2.1	n/a	m/a	n/a	n/a	2.1		0
S16T034206	107-18-6	Allyl Alcohol	NGS	120	<23	<23	m/a	n/a	n/a	n/a	2.3	n/a	2

J - Estimated U - Less Than Detection Limit

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NA = Not Analyzed, ND = Not Detected

T - Tentatively Identified Compound N - Named TIC

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Cartridge Evaluation Data Summary Report

Sample Group: 20162990
SDG Number:
Customer Sample ID: 16-08636-2-EFF-E
Customer Sample ID: 16-08636-2-EFF-E

Sample® R	All CAS#	Analyte	Unit	% GTS	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Det Limit Ont Err % Qual Flags
VAPOR-TDU VOA #2	VOA#2											
\$167034206	107-05-1	Allyl Chloride	NGS	100	425	42.5	n/a	n/a	n/a	n/a	2.5	Uelu
S16T034206	7143-2	Berzene	NGS	98	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	U a/u
S16T034206	100-47-0	Senzonitrile	NGS	98	4.2	64.2	n/a	n/a	n/a	n/a	42	U s/u
S16T034206	123-72-8	Butanal	NGS	100	<3.0	<3.0	6/6	n/a	n/a	n/s	3.0	U s/u
S16T034206	109-74-0	Butanenitrile	NGS	100	42.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a U
S16T034206	56-23-5	Carbon tetrachloride	NGS	100	<1.5	<1.5	n/s	n/a	n/a	n/a	1.5	U e/v
S16T034206	108-90-7	Chlorobenzena	NGS	66	42.5	<2.5	m/a	n/a	n/a	n/s	2.5	U s/u
S16T034206	75.00-3	Chloroethana	SON	110	41.6	41.6	n/n	n/a	n/a	n/a	1.6	n/a U
S16T034206	67-66-3	Chioroform	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a U
\$167034208	110-82-7	Cyclohexane	NGS	100	c1.4	<1.4	e/u	n/a	n/a	n/a	1.4	n/a U
\$167034206	124-18-5	Decane	NGS	88	<3.3	<3.3	n/s	n/a	n/a	n/a	6.6	U e/u
S16T034206	64-17-5	Ethanol	NGS	120	9.9	94	n/a	n/a	n/s	n/a	3.7	n/a B
S16T034206	141-78-6	Ethyl acetate	NGS	82	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a U
S16T034206	100-41-4	Ethylbenzene	NGS	66	424	<2.4	n/s	n/a	n/a	n/a	2.4	U a/u
S16T034206	110-00-8	Furan	NGS	06	e1.8	<1.6	n/a	n/a	n/a	n/a	1.6	n/a U
\$167034206	110-54-3	Heamne	NGS	100	1.5	<1.3	n/a	n/a	n/a	n/a	1.3	U e/u
S16T034206	628-73-9	Hexanentrile	NGS	88	<2.8	<2.6	n/a	n/a	n/a	r/a	2.6	n/a U
S16T034206	126-98-7	Methacylonitrile	NGS	100	<1.8	<1.8	n/s	n/a	n/a	n/a	1.8	n/a U
S16T034206	75-09-2	Methylene Chloride	NGS	110	4.2	44.1	n/a	n/a	n/a	n/a	4.1	n/a U
S16T034206	91-20-3	Naphthalene	SDN	32	<5.3	<5.3	n/a	n/a	n/a	r/a	5,3	Na U
S16T034206	88-95-3	Mtrobenzene	SDN	98	c4.7	<4.7	n/a	n/a	n/a	r/a	4.7	n/a U
S16T034206	110-59-8	Pentanentifie	NGS	88	<2.6	<2.6	n/s	n/a	n/a	r/a	2.6	n/a U
S16T034206	107-12-0	Proparenitrile	SDN	100	c1.8	<1.8	n/s	n/a	n/a	n/a	1.8	n/a U
S16T034206	110-96-1	Pyridine	NGS	110	<2.8	<2.8	n/a	n/a	n/s	n/a	2.8	U a/u
S16T034206	100-42-5	Styrrene	NGS	97	<2.7	<2.7	n/s	n/a	n/a	r/a	2.7	n/a U
S16T034206	127-18-4	Tetrachloroethene	NGS	88	41.8	17	n/a	n/s	n/a	r/a	1,8	n/a
S16T034206	108-88-3	Toluene	NGS	88	<2.2	2.2	n/a	n/a	n/a	r/a	22	n/a J

T - Tertatively Identified Compound N - Named TIC

J - Estimated
U - Less Than Detection Limit

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected B - Blank Contamination

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Cartridge Evaluation Data Summary Report

Sample Group: 20162990

SDG Number: Customer Sample ID: 16-08636-2-EFF-E Customer Sample ID: 16-08636-2-EFF-E

Samples R	A C	45.8	Analyte	Unit	% dTS	Blank	Result	Duplicato	Average	RPD %	RPD 1/4 Spk Rec 1/4	Det Limit	Cnt Err % Qual Flags
VAPOR-TD	NOV UC	17.5						1					
\$167034206	179	9-10-6	Trichloroethene	NGS	98	<1.6	<1.6	n/a	nya	a/a	n/s	1.6	Ulelo
S16T034206	75	1-69-4	Trichlorofluoremethane	NGS	68	613	3.6	n/a	nla		n/a	1.9	
\$167034206	10	9-10-190	cis-1,3-Dichloropeopene	NGS	97	c1.8	41.8	n/a	rya	1	n/a	40	
S16T034206	12	3-86-4	n-Butyl acetate	NGS	88	424	424	n/a	n/a		n/a	2.4	
S16T034206	14.	2-82-5	n-Heptane	NGS	100	61,6	61.8	n/a	rys	n's	n/a	1.6	
S16T03A206	101	061-02-6	trans-1,3-Dichleropeopene	MGS	8	42.1	42.1	n/a	n/a		6,0	2.1	

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T - Tentatively Identified Compound N - Named TIC

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Cartridge Evaluation Data Summary Report

SDG Number: Customer Sample ID: 16-08536-2-EFF-F Customer Sample ID: 16-08636-2-EFF-F

Sample Group: 20162990

Sampled R	R AS CASE	Analyte	Cert	STD %	Blank	Result	Duplicate	Awerage	RPD 1/4	Sck Rec 16	Det Limit	Cat Err 16 Qual Flace
VAPOR-TDU VOA #2	J VOA #2											
\$167034207	79-34-5	1,1,2,2-Tetrachiovoethane	NGS	66	<3.0	<3.0	n'a	nla	n's	n/a	3.0	Uleju
S16T034207	79-00-5	1,1,2-Trichloroethane	NGS	100	423	<2.3	n/a	n/a	m'a	n/a	2.3	Ulaju
S16T034207	75:34-3	1,1-Dichloroethane	NGS	88	<1.7	<1.7	n/a	n/a	n'a	n/a	1.7	U(8)u
S16T034207	75-35-4	1,1-Dichloroethene	NGS	88	<1.7	<1.7	e/u	nla	n/s	2,0	1.7	U B/u
S16T034207	107-05-2	1,2-Dichloroethane	NGS	100	<f.7< td=""><td><1.7</td><td>n/a</td><td>rya</td><td>nia</td><td>2/0</td><td>1.7</td><td>Ulalu</td></f.7<>	<1.7	n/a	rya	nia	2/0	1.7	Ulalu
S16T034207	542.75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	rya	n/a	2/4	1.8	U s/u
S16T034207	106-46-7	1,4-Dichlorobenzene	NGS	100	1.40	4.1	n/a	n/a	n/a	a)e	4.1	n/a U
\$167034207	123-91-1	1,4-Dioxana	SSN	86	<2.0	420	n/a	n/a	n/a	n/a	2.0	Ulshu
S16T034207	71-36-3	1-Butanol	NGS	120	<4.3	<4.3	n/a	n/a	n/a	e/u	4.3	Ulahu
\$167034207	111-70-6	1-Heptanol	NGS	06	<9.1	49.1	n/a	n/a	n/a	s,e	1.0	n/a U
\$167034207	71-23-8	1-Propanol	NGS	120	<8.9	21	n/a	n/a	n/a	n/a	6.8	rils J
S16T034207	108-47-4	2,4-Dimethylpyridine	NGS	66	<4.1	1.40	n/a	n/a	n/a	n/a	4.1	n/a U
\$167034207	1708-29-8	2,5-Dihydrofuran	NGS	110	<22	422	n/a	n/a	n/a	n/a	2.2	n/a U
S16T034207	78-93-3	2-Butanone	NGS	93	<3.1	43.1	n/a	n/a	n/a	n/a	3.1	n/a U
S16T034207	110-43-0	2-Heptanone	NGS	76	<2.6	42.6	n/a	n/a	n/a	n/a	2.6	r/a U
\$167034207	591-78-6	2-Heisznone	NGS	96	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	Uela
S16T034207	634-22-5	2-Methyfluran	NGS	87	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	U/a/u
\$161034207	78-94-4	3-Buten-2-one	NGS	91	e.1>	<1.9	n/a	n/a	n/a	n/a	1.9	U s/u
S16T03A207	106:35-4	3-Heptanone	NGS	96	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a U
S16T034207	106-68-3	3-Octanone	NGS	92	<3.3	<3.3	n/s	n/a	n/a	n/a	3.3	n/a U
S16T034207	10542-0	4-Methyl-2-hoxanone	NGS	96	<2.6	<2.6	eva	n/a	n/a	n/a	2.6	n/a U
S16T034207	108-10-1	4-Methyl-2-Pentanone	NGS	100	<22	<2.2	e/u	n/a	n/a	n/a	2.2	n/a U
S16T034207	67-64-1	Acetone	NGS	91	4.4	9.8	e/u	n/a	n/a	n/a	2.8	rVa BJ
S16T034207	75-05-8	Acetonitrile	NGS	88	<1.6	390	n/a	n/a	e/u	n/a	1.6	n/a
S16T034207	98-86-2	Acetophenone	NGS	92	<62	<6.2	n/a	n/a	e/u	n/a	6.2	n/a U
S16T034207	107-13-1	Acytonitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n/a U
S16T034207	107-18-6	Allyl Alcohol	NGS	120	423	<2.3	n/a	n/a	a/u	nia	0.0	Nall.

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E - Outside Calibration Range

B - Blank Confamination

NA = Not Analyzed, ND = Not Detected

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Cartridge Evaluation Data Summary Report

SDG Number: Customer Sample ID: 16-08636-2-EFF-F Customer Sample ID: 16-03636-2-EFF-F

Sample Group: 20162990

Sampled R	A CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	890 %	RPD 1/4 Spk Ree 1/4	Det Limit	Crt Err % Qual Flags
VAPOR-TDU VOA #2	J VOA #2											
S16T03A207	107-05-1	Ally Chloride	NGS	100	<2.5	<2.5	n/a	rya	n/a	m/a	2.5	Uleyu
\$167034207	71-43-2	Berzene	NGS	98	41.5	<1.5	n/a	r/a	n/a	m'a	1,5	r/a U
S16T034207	100-47-0	Benzonitrile	NGS	88	<4.2	<4.2	n/a	n/a	n/a	n/a	4.2	n/a U
S16T034207	123-72-8	Butanal	NGS	100	<3.0	<3.0	n/a	n/a	n/a	n'a	3.0	n/a U
S16T034207	109-74-0	Butaneninte	NGS	100	<2.1	42.1	n/a	nya	nía	n/a	2.1	U a/u
S16T034207	56-23-5	Carbon tetrachloride	NGS	100	<1.5	<1.5	n/a	rva	n/a	e,su	1.5	n/a U
S16T03M207	108-90-7	Chlorobenzene	NGS	8	<2.5	<2.5	n/a	nya	nía	n/a	2.5	U s/u
S16T034207	75-00-3	Chloroethans	NGS	110	<1.6	9/1>	n/a	nya	nía	n/a	1,6	U a/u
S16T034207	67-66-3	Chloreform	NGS	100	<1.8	<1.8	nla	n/a	n/a	n/a	1.8	Ua/u
S16T034207	110-82-7	Cyclohexane	NGS	100	414	414	nla	n/a	nía	n/a	1.4	n/a U
S16T034207	124-18-5	Decano	NGS	96	<3.3	<3.3	n/a	n/a	nía	n/a	3.3	U s/u
S16T034207	64-17-5	Ethanol	NGS	120	9.9	150	n/a	n/s	nía	n/a	3.7	n/a B
S16T034207	141-78-6	Ethyl acotate	NGS	88	<1.8	<1.8	n/a	n/a	nía	n/a	1.8	n/a U
S16T034207	100-41-4	Ethylbenzene	NGS	86	424	<2.4	n/a	n/a	n/a	n/a	2.4	Us/a
S16T034207	110-00-9	Furan	NGS	06	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a U
S16T034207	110-54-3	Hexane	NGS	100	1.5	<1.3	n/a	n/a	n/a	n/a	1.3	n/a U
S16T034207	628-73-9	Hexaneninie	NGS	96	<2.6	<2.6	nia	n/a	n/a	e/u	2.6	n/a U
S16T034207	126-98-7	Methocrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a U
S16T034207	75-09-2	Methylene Chloride	NGS	110	4.2	<4.1	n/a	n/a	nía	n/a	4.1	n/a U
S16T034207	91-20-3	Naphthalone	NGS	96	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a U
S16T034207	58-95-3	Nitrobenzene	NGS	8	C#7	4.7	nla	n/a	uyu	n/a	4.7	n/a U
816T034207	110-59-8	Pentanenizile	NGS	96	<2.6	<2.6	n/a	n/a	n/a	nía	2.6	n/a U
S16T034207	107-12-0	Propanentrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	Ua/u
S16T034207	110-88-1	Pyridine	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a U
S16T034207	100-42-5	Styrene	NGS	80	<2.7	<2.7	nla	n/a	n/a	n/a	2.7	n/a U
S16T034207	127-18-4	Tetrachloroethene	NGS	86	<1.8	15	n/a	n/a	eju	n/a	1.8	n/a
S16T034207	108-68-3	Toluene	NGS	96	<22	22	e/u	n/a	n/a	n/a	2.2	L a/u

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B - Blank Contamination

NA = Not Analyzed, ND = Not Detected

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Cartridge Evaluation Data Summary Report

Sample Group: 20162990

SDG Number:

Customer Sample ID: 16-08638-2-EFF-F Customer Sample ID: 16-08636-2-EFF-F

Sample# R	AN CAS B	Analyte	Uelt	STD %	Blank	Result	Duplicate	Average	RPD %	RPD % Spk Rec %	Det Limit	Cnt Err % Qual Flass
VAPOR-TD	U VOA #2										1	
\$167034207	79-01-6	Trichlaroethene	NGS	88	cf.6	61.6	nía	nya	2,60	n/a	1.6	ntalu
\$167034207	75-89-4	Trichionofluoromethane	NGS	98	6.19	13	n/a	nya			9	nla
\$167034207	10081-01-5	cis-1,3-Dichloropropene	NGS	87	<1.8	<1.8	n/a	n/a			1.8	nfalti
S16T034207	123-86-4	n-Butyl acetate	NGS	63	424	424		rya			2.4	rds II
S16T034207	142-82-5	n-Heptane	NGS	100	61.6	<1.6		n/a			1.6	nlaU
\$167034207	10061-02-6	trans-1,3-Dichleropropene	NGS	8	421	421		nya			9.4	eds III

NA = Not Analyzed, ND = Not Detected B - Blank Contemination

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J - Estimated U - Less Than Detection Limit

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Cartridge Evaluation Data Summary Report

Sample Group: 20162990

SDG Number: Customer Sample ID: 16-08636-2-EFF-G Customer Sample ID: 16-08636-2-EFF-G

amples R	A CAS	Amalyto	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	RPD % Sak Rec %	Det Limit	Det Limit Cot For MiChael Flace
VAPOR-TDU VDA #2	VOA #2				1							
S16T034208	79-34-6	1,1,2,2-Tetrachioroetrane	NGS	88	43.0	<3.0	nia	n/a	sia	n/a	3.0	n/a/U
S16T034208	29-00-8	1,1,2-Trichtoroethane	NGS	100	423	423	a/u	n/a	e/u	n/a	2.3	
S16T034208	75-34-3	1,1-Dichloroethane	NGS	66	<1.7	<1.7	n/a	n/a	e/s		1.7	n/a U
S16T034208	75-35-4	1,1-Dichloroethene	NGS	88	<1.7	<1.7	2/2	n/a	n/a	n/a	1.7	n/a U
S16T034208	107-06-2	1,2-Dichloroethane	NGS	100	<1.7	<1.7	nla	e,e	n/a	nla	1.7	N8 U
S16T034208	542-75-6	1,3-Dichloropropene (Total)	NGS	E)U	n/a	<1.8	n/a	n/a	n/a	nla	1.8	Ua/u
S16T034208	106-46-7	1,4-Dichlorobenzene	NGS	1001	- 64.1	4.1	n/a	n/a	e/u	n/a	4.1	n/a U
S16T034208	123-91-1	1,4-Dioxane	NGS	93	<2.0	42.0	n/a	n'a	e/u	nya	2.0	n/a U
S16T034208	71-36-3	1-Butanol	NGS	120	<4.3	<4.3	n/a	n'a	n/a	n/a	4.3	Us)u
S16T034208	111-70-6	1-Heptanol	NGS	90	<9.1	<9.1	e/u	n/a	n/a	n/a	9.1	Ush
\$167034208	71-23-8	1-Propanol	NGS	120	<8.8	33	e/u	n/a	n/a	n/a	8.9	n/a
S16T034208	108-47-4	2,4-Dimethylpyridine	NGS	66	44.1	54.1	n/a	nia	nva	n/a	4.1	U s/u
S16T034208	1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	n/a U
S16T034208	78-83-3	2-Butanone	NGS	83	<3.1	<3.1	n/a	n/a	n/a	a/n	3.1	U s/u
S16T034208	110-43-0	2-Heptanone	NGS	8	<2.6	<2.6	n/a	n/a	n/a	e/u	2.6	n's U
S16T034208	591-78-6	2-Hexanone	NGS	96	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	U s/u
S16T034208	534-22-5	2-Methyffuran	NGS	97	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a U
S16T034208	78-94-4	3-Butten-2-one	NGS	16	6.1>	<1.9	n/a	n/a	n/a	n/a	1.9	r/a U
S16T034208	106-35-4	3-Heptanone	NGS	96	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	n/a U
S16T034208	106-68-3	3-Octanone	NGS	35	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a U
S16T034208	105-42-0	4-Methyl-2-hexanona	NGS	96	<2.6	<2.6	nía	n/a	n/B	n/a	2.6	n/a U
S16T034208	108-10-1	4-Methyl-2-Pentanone	NGS	100	422	<2.2	n/a	n/a	n/a	n/a	2.2	n/a U
S16T034208	67-64-1	Apelone	NGS	16	4.4	33	n/a	nla	nta	n/a	2.8	n/a B
S16T034208	75-05-8	Acetoeitrile	NGS	86	41.8	30	nfa	n/a	n/a	n/a	1.6	r/a
S16T034208	98-96-5	Acetophenone	NGS	36	46.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a U
S16T034208	107-13-1	Acryonthie	NGS	100	42.1	42.1	cha	n/a	ng	n/a	2.1	n/a U
S16T034208	107-18-6	Allyl Alcohol	NGS	120	423	42.3	nya	n/a	nta	cyc	2.3	nfo it

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Cartridge Evaluation Data Summary Report

SDG Number: Customer Sample ID: 16-08636-2-EFF-G Customer Sample ID: 16-08636-2-EFF-G

Sample Group: 20162990

Samples R	AS CASB	Analyte	Chit	STD %	Blank	Rosult	Duplicate	Average	RPD 14	Spk Rec %	Det Limit	Det Limit Crit Err % Qual Flags
VAPOR-TDU VOA #2	U VOA #2											
S16T03A208	107-05-1	Ally Chloride	NGS	100	<2.5	<2.5	nla	n/a	n'a	m/a	2.5	Ush
S16T034208	7143-2	Berzane	NGS	88	41.5	<1.5	n/a	. r/a	m'a	n/a	1.5	r/a U
S16T034208	100-47-0	Benzonitrile	NGS	96	<4.2	<4.2	n/a	n/a	n/a	e/u	4.2	r/a/U
S16T03M206	123-72-8	Butanal	NGS	100	<3.0	<3.0	nla	n/a	n/a	e/u	3.0	n/a U
\$167034208	109-74-0	Butanenitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	m'a	2.1	n/a U
S16T034208	56-23-5	Carbon tetrachloride	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a U
S16T034208	108-90-7	Chlorobenzene	NGS	8	<2.5	<2.5	n/a	n/a	n/a	n/s	2.5	n/a U
S16T034208	75-00-3	Chloroethans	NGS	110	<1.6	9/1>	nya	n/a	n/a	n/a	1.6	n/a U
S16T034208	67-66-3	Chloroform	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a U
S16T034208	110-82-7	Cyclehexane	NGS	100	414	414	n/a	n/a	nía	n/a	1.4	n/a U
S18T034208	124-18-5	Decane	NGS	66	<3.3	<3.3	n/a	n/a	n/a	n'a	3.3	n/a U
S16T034208	64-17-5	Ethanol	NGS	120	9.9	230	nya	n/a	nía	n/a	3.7	n/a B
S16T034208	141-78-6	Ethyl acetate	NGS	88	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	U e/u
S16T034208	100-41-4	Ethylbenzene	NGS	66	<2.4	<2.4	n/a	n/a	n/a	n/a	2.4	Us/u
\$187034208	110-00-9	Furan	NGS	90	<1.8	<1.6	n/a	n/a	n/a	n/a	1.6	n/a U
S16T034208	110-54-3	Hexano	NGS	100	1.5	×1.3	ale a	n/a	n/a	n/a	1.3	U s/u
S16T034208	628-73-9	Hexanenitrile	NGS	88	<2.6	<2.6	e/u	n/a	n/a	n/a	2.6	n/a U
S16T034208	126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	m/a	n/a	n/a	nía	1.8	Na U
S16T034208	75-09-2	Mothylene Chloride	NGS	110	42	<4.1	n/a	n/a	nla	nia	4.1	n/a U
S16T034208	91-20-3	Naphthalene	NGS	98	<5.3	<5.3	n/a	n/a	n/a	n/a	6.3	Us/u
S16T034208	58-95-3	Nitrobenzene	NGS	96	4.7	4.7	n/a	n/a	n/a	n/a	4.7	Us/u
S18T034208	110-59-8	Pentanenitrile	NGS	86	<2.6	<2.6	n/a	n/a	n/a	nía	2.6	n/a U
S16T034208	107-12-0	Propanentalle	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a U
S16T034208	110-86-1	Pyridine	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a U
S16T034208	100-42-5	Styrene	NGS	87	427	<2.7	n/a	n/a	n/a	nya	2.7	n/a U
S16T034208	127-18-4	Tetrachloroethene	NGS	66	41.8	13	n/a	n/a	n/a	nla	1.8	n/a
S16T034208	108-88-3	Toluene	NGS	88	<2.2	<22	n/a	n/a	n/a	n/a	22	n/a U

T - Tentatively Identified Compound N - Named TIC

J - Estimated U - Less Than Detoction Limit

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Cartridge Evaluation Data Summary Report

SDG Number:

Sample Group: 20162990

Customer Sample ID: 16-08636-2-EFF-G Customer Sample ID: 16-08636-2-EFF-G

Samples R	AC CAS #		Amalyto	Unit	STD %	Blank	Result	Duplicate	Average		RPD % Spk Rec %	Det Limit	Det Limit Ont Enr 74 Qual Flags
WAPOR-TDU VOA #	VOA #2										1	1	
S16T034208	79-01-8	9	Trichloreethene	NGS	96	41.6	8,15	n/a	n/a	n/a	n/a	1.6	n/a U
S16T034208	75-69-	4	Trichlorefluoremethane	NGS	88	6.19	23	n/a	n/a	n/a	19,0	9.5	-
S16T03A208	10051-01-5	-01-5	cis-1,3-Dichloropeopene	NGS	97	41.8	61,8	n/a	n/a	n/a	n/s	1.8	n/a U
\$167034208	123-88	9-9	n-Butyl acetate	NGS	83	<2.4	424	n/a	n/a		n/a	2.4	r/a U
S16T03A208	142-82-6	5-5	n-Hoptone	NGS	100	6/15	61.6	n/a	n/a	n/a	n's	1.6	
S16T034208	10051-	-02-6	trans-1,3-Dichloropropena	NGS	86	<2.1	42.1	nla	n/a		n/a	2.1	

NA = Not Analyzed, ND = Not Detected B - Blank Contamination

E - Outside Calibration Range

J - Estimated U - Less Than Detection Limit

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Cartridge Evaluation Data Summary Report

SDG Number: Customer Sample ID: 16-08636-2-EFF-H Customer Sample ID: 16-08636-2-EFF-H

Sample Group: 20162990

Samples R	Ad CAS #	Analyte	Unit	25 dTS	Slank	Result	Duplicate	Average		RPD % Spk Rec %	Det Limit	Det Limit Cot Eur % Qual Flags
VAPOR-TDU VOA #2	J VCA #2											
\$167034209	79-34-5	1,1,2,2-Tetrachiceoethane	NGS	88	<3.0	<3.0	n/a	n/a	n/a	nía	3.0	Uleyu
\$167034209	79-00-5	1,1,2-Trichloroethane	NGS	100	<23	<2.3	n/a	n/a	nía	n/a	2.3	n/a U
S16T03A209	75-34-3	1,1-Dichlonoethane	NGS	66	41.7	4.7	eyu	n/a	n/a	n/a	1.7	n/a U
S16T03A209	75-35-4	1,1-Dichlonethene	NGS	86	212	<1.7	nía	n/a	n/a	n/a	1.7	n/a U
S16T03A209	107-06-2	1,2-Dichlonoethane	NGS	100	T.1>	4.7	n/a	n/a	n/a	n/a	1.7	n/a U
S16T034209	542.75-6	1,3-Dichlevopropene (Total)	NGS	e/u	n/s	<1.8	n/a	n/a	n/a	n/a	1.8	n/a U
S16T034209	106-46-7	1,4-Dichlonobenzane	NGS	100	44.1	1,45	n/a	n/a	n/a	n/a	4.1	n/a U
S16T03A209	123-91-1	1.4-Dioxane	NGS	88	<2.0	<2.0	nla	n/a	nla	eju	2.0	n/a U
S16T03A209	71-38-3	1-Butanol	NGS	120	44.3	<4.3	n/a	n/a	n/s	n/a	4.3	r/a U
S16T034209	111-70-6	1-Heptanol	NGS	06	<9.1	<9.1	nía	n/a	n/a	n/a	9.1	n/a U
S16T03A209	71-23-8	1-Propanal	NGS	120	6.8>	29	n/a	n/a	n/a	n/a	8.8	r/a
S16T03A209	10847-4	2,4-Dimethylpyridine	NGS	88	44.1	1,40	n/a	n/a	n/a	n/a	4.1	n/a U
S16T03A209	1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	n/a	2.2	U a/n
S16T034209	78-93-3	2-Butanano	NGS	83	<3.1	43.1	n/a	n/a	n/a	n/a	3.1	n/a U
S16T034209	110-43-0	2-Heptanone	NGS	æ	<2.6	<2.6	n/s	n/a	n/a	e,u	2.6	r/a U
S16T034209	591-78-6	2-Hexanone	NGS	96	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	U shr
S16T034209	634-22-5	2-Methyfluran	NGS	26	4.3	<1.3	nia	n/a	n/a	n/a	1.3	r/a U
S16T034209	78-94-4	3-Buten-2-one	NGS	16	6.19	<1.9	n/a	n/a	n/a	n/a	1.9	r/a U
S16T034209	106-35-4	3-Heptanone	NGS	8	<2.7	<2.7	nía	n/a	n/a	n/a	2.7	r/a U
S16T034209	106-68-3	3-Octanone	NGS	80	<3.3	<3.3	n/a	n/a	n/a	n/a	3,3	n/a U
S16T034209	105-42-0	4-Methyl-2-hexanone	NGS	96	<2.6	<2.6	nía	n/a	n/a	n/a	2.6	r/s U
S16T034209	108-10-1	4-Methyl-2-Pentanone	NGS	100	<22	<2.2	n/a	n/a	n/a	e,eu	2.2	U e/u
S16T034209	67-64-1	Acetone	NGS	16	4.4	65	nla	n/a	n/a	n/a	2.8	r/a B
S16T03A209	75-05-8	Acetonitrie	NGS	86	<1.6	1.7E+03	n/a	n/a	n/a	n/a	1.6	n/a E
S16T034209	98-86-2	Acetophenone	NGS	35	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a U
S16T03A209	107-13-1	Acrylonitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	r/a U
S16T034209	107-18-6	Allyl Alcahol	NGS	120	<2.3	<2.3	n/a	n/s	n/a	n/a	2.3	n/a U

J - Estimated U - Less Than Detection Limit

T - Tentatively Identified Compound N - Named TIC

NA = Not Analyzed, ND = Not Detected

B - Blank Contamination

E - Outside Calbration Range

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Cartridge Evaluation Data Summary Report

Sample Group: 20162990

SDG Number: Customer Sample ID: 16-08636-2-EFF-H Customer Sample ID: 16-08636-2-EFF-H

Sample R	R AF CAS# Ana	Analyte	Unit	STD %	Blank	Result	Duplicate	Average		RPD % Spk Rec %	Det Limit	Det Limit Ont Err % Qual Flags
VAPOR-TDU VOA #2	VOA #2											
S16T034209	107-05-1	Allyl Chloride	NGS	100	<2.5	425	n/a	m/a	nla	n/a	2.5	Ulan
S16T034209	7143-2	Benzere	NGS	88	<1.5	<1.5	e/u	n/a	n/a	n/a	1,5	Us/u
S16T034209	10047-0	Benzontnie	NGS	96	42	42	n/a	n/a	nla	nía	4.2	U a/u
S16T034209	123-72-8	Butanal	NGS	100	<3.0	<3.0	n/a	m/a	n/s	n/a	3.0	n/a U
S16T034209	109-74-0	Butanenitrile	NGS	100	42.1	<2.1	n/a	n/a	nla	nía	2.1	
S16T034209	56-23-5	Carbon tetrachloride	NGS	100	<1.5	<1.5	e/u	n/a	n/a	n/a	1.5	U s/u
S16T034209	108-90-7	Chlorobenzone	NGS	88	<2.5	<2.5	n/a	n/a	n/a	nía	2.5	UlaVa
S16T034209	75-00-3	Chlomethane	NGS	110	41.6	<1.6	n/a	n/a	nla	nía	1.6	Ulahu
S16T034209	67-68-3	Chloreform	NGS	100	<1.8	<1.8	e/u	n/a		eju	1.8	
S16T034209	110-82-7	Cyclobeanne	NGS	100	414	<1.4	2/2	n/a	nla	nía	1.4	
S16T034209	124-18-5	Decane	NGS	88	<3.3	<3.3	n/a	n/a	nia	nía	3.3	
S16T034209	64-17-5	Ethanol	NGS	120	9'9	260	n/a	n/a	e/u	n/a	3.7	n/a B
S15T034209	141-78-6	Ethyl acetate	NGS	82	st.8	<1.8	n/a	n/a	e/u	eju	1.8	Uavu
S16T034209	100414	Ethylbenzene	NGS	88	<2.4	<2.4	n/a	n/a	nía	nía	2.4	U s/u
S16T034209	110-00-9	Furan -	NGS	80	<1.8	<1.6	e,u	n/a	n/a	nía	1.8	
S16T034209	110543	Hexane	NGS	100	1.5	<1.3	n/a	n/a	n/a	n/a	1.3	UaVa
S16T034209	628-73-9	Nexanentrile	NGS	86	<2.6	<2.6	r/a	n/a		n/a	2.8	
S16T034209	126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	Usla
S16T034209	75-09-2	Methylene Chloride	NGS	110	4.2	<4.1	nla	n/a	n/a	nía	4.1	Ulahu
S16T034209	91-20-3	Waphihalene	NGS	96	<5.3	<5.3	n/a	n/a	n/a	nía	5.3	U s/u
S16T034209	58-95-3	Mitrobonzone	NGS	35	44.7	54.7	n/a	n/a	n/a	n/a	4.7	Uahu
S16T034209	110-59-8	Pentanenitrile	NGS	86	<2.6	<2.6	n/a	n/a	n/a	e/u	2.6	U avu
S16T034209	107-12-0	Propanentrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a U
S16T034209	110-86-1	Pyridine	NGS	110	<2.8	<2.8	nia	. n/a	n/a	e,ru	2.8	
S16T034209	100-42-5	Styrene	NGS	26	<2.7	<2.7	n/a	n/a	n/a	nía	2.7	U a/u
S16T034209	127-18-4	Tetrachloroethene	NGS	88	<1.8	11	e/u	n/a		n/a	1.8	
S16T034209	108-88-3	Tokene	NGS	96	<2.2	2.5	a/u	n/a	n/a	n/3	2.2	n/a J

J - Estimated U - Less Than Detection Limit

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NA = Not Analyzed, ND = Not Detected B - Blank Contamination

T - Tentatively Identified Compound N - Named TIC

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Cartridge Evaluation Data Summary Report

Sample Group: 20162990 SDG Number:

Customer Sample ID: 16-08636-2-EFF-H Customer Sample ID: 16-08636-2-EFF-H

Sampled R	A CAS #	Analyte	Unit	% ous	Blank	Result	Duplicate	Average		RPD % Spk Rec %	Det Limit	Det Limit Cnt Err % Qual Flags	Flags
VAPOR-TDU VOA	U VOA #2												
S16T034209	79-01-6	Trichloroethene	NGS	88	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n'a U	l
S16T034209	75-69-4	Trichlorofluoremethans	NGS	88	<1.9	22	n/a	n'a	e/u	n/a	1.9	n/a	
S16T034209	10061-01-5	cls-1,3-Dichloropropene	NGS	16	41.8	41.8	n/a	n/a	n/a	nla	1.8	Ua/u	
S16T034209	123-86-4	n-Butyl acetate	NGS	83	<2.4	424	n/a	n/a	e/u	n/a	2.4	U'a U	
S16T034209	142-82-5	n-Heptane	NGS	100	41.6	<1.6	n/a	n'a	n/a	alu.	1.6	n/a U	
S16T034209	10061-02-6	trans-1,3-Dichloropropene	NGS	94	42.1	421	n/a	n/a	n/a	a/u	2.1	Us/u	

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J - Estimated U - Less Than Detection Limit

E - Outside Calibration Range

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Cartridge Evaluation Data Summary Report

Sample Group: 20162990

SDG Number: Customer Sample ID: 16-08636-2-IN-A Customer Sample ID: 16-08636-2-IN-A

VAPOR-TOUNDA #2		Amalyta	of the second	510 %	Mank.	Result	Duplicate	Average	RPD %	Spk Rec 15	Det Limit	Cut Err %	Det Limit Cnt En % Qual Flags
And the same	VOA #2												
S16T034210	79-34-5	1,1,2,2-Tetrachionoethane	NGS	88	<3.0	<3.0	e,u	n/a	n/a	n/a	3.0	n/a	2
S16T034210	79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<2.3	n/a	n/a	n/s	n/s	23	n/a	2
\$167034210	75:34:3	1,1-Dichloroethane	NGS	88	<1.7	<1.7	e/u	n/a	n/a	n/a	1.7	U 8/u	0
S16T034210	75-35-4	1,1-Dichloroethene	NGS	66	<1.7	<1.7	e/n	n/a	e/u	n/a	1.7	n/a	2
\$167034210	107-06-2	1,2-Dichloroethane	NGS	100	41.7	<1.7	n/a	e/u	n/a	n/a	1.7	n/a	2
S16T034210	542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/s	n/a	n/a	1.8	e/u	2
S16T034210	105-45-7	1,4-Dichloroberzene	NGS	100	64.1	44.1	n/a	e/u	n/a	n/a	4.1	n/a	2
S16T034210	123-91-1	1,4-Dioxane	NGS	98	420	<2.0	e,u	n/a	n/a	n/a	2.0		2
\$167034210	71-38-3	1-Butanol	NGS	120	c43	1,4E+03	n/s	e/u	n/a	n/a	4.3		w
S16T034210	111-70-6	1-Heptanol	NGS	06	69.1	49.1	n/a	n/a	n/a	n/a	1.0	n/a	2
\$167034210	71-23-8	1-Preparol	NGS	120	<8.9	170	n/a	e/u	n/a	n/a	6.8		
\$167034210	108-47-4	2,4-Dimethylpyridina	NGS	88	4.1	<4.1	n/s	n/a	n/a	n/a	4.1	e/u	2
\$167034210	1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<22	n/a	e/u	n/a	n/a	22	n/a k	2
\$167034210	78-93-3	2-Butanone	NGS	83	<3.1	7.2	n/a	e/u	n/a	n/a	5.5	n/a	_
\$167034210	110-43-0	2-Neptanone	NGS	84	<2.6	4.8	n/a	n/a	n/a	n/s	2.6	n/a	-
\$167034210	591-78-6	2-Hexanone	NGS	96	<2.5	2.7	n/a	e/u	n/a	n/a	2.5		_
S16T034210	534-22-5	2-Methythran	NGS	26	<1.3	<1.3	n/a	n/a	n/a	n/s	13	n/a	0
\$167034210	78-94-4	3-Buten-2-one	NGS	91	c1.9	4.7	n/s	e/u	n/a	n/a	1.9	n/a	_
\$167034210	108-35-4	3-Heptanone	NGS	94	<2.7	4.5	n/a	n/a	n/a	n/a	2.7	n/a	_
\$167034210	105-68-3	3-Octanone	NGS	85	<3.3	<3.3	m/s	e/u	n/a	n/a	3.3	n/s	2
\$167034210	105-42-0	4-Methyl-2-hexanone	NGS	96	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a	2
\$167034210	108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	<2.2	n/a	n/a	n/a	n/a	22		2
\$167034210	67-64-1	Apetane	NGS	91	4.4	340	m/a	e/u	n/a	n/a	2.8	e/u	8
S16T034210	75-05-8	Acetonitrile	NGS	88	61.6	240	n/a	n/a		n/a	1.6		
\$167034210	98-88-2	Acetophenone	NGS	85	c8.2	<6.2	n/a	n/a	n/a	n/a	62	e/u	2
\$167034210	107-13-1	Acrylonitrile	NGS	100	<2.1	<2.1	n/s	e/u		n/a	2.1	n/a	2
S16T034210	107-18-6	Allyl Alcohol	NGS	120	<23	<2.3	e/u	n/a	n/a	n/a	23	U s/u	2

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E - Outside Calibration Range

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Cartridge Evaluation Data Summary Report

Sample Group: 20162990 SDG Number: Customer Sample ID: 16-08636-2-IN-A Customer Sample ID: 16-08636-2-IN-A

surpres R	N CAS B	Analyto	Unit	STD %	Blank	Result	Duplicate	Average		RPD % Spk Rec %	Det Limit	Cot Err % Qual Flags	Flags
VAPOR-TDU VOA #2	U VOA #2												1
\$167034210	107-05-1	Allyl Chloride	NGS	100	<2.5	42.5	n/a	n/a	n/a	8,4	2.5	n/a n	ı
\$167034210	7143-2	Berzene	NGS	96	<1.5	1.8	n/a	n/a	n/a	n/a	1.5	r/a J	
S16T034210	100-47-0	Bergoritrie -	NGS	96	-04.2	<4.2	n/a	n/a	n/a	n'a	4.2	U a/u	
\$167034210	123-72-8	Butansl	NGS	100	<3.0	11	n/a	n/a	n/a	m's	3.0	n/a	
\$167034210	109-74-0	Butamenitrile	NGS	100	42.1	42.1	n/a	n/a	n/a	n/a	2.1	U sys	1
\$167034210	56-23-5	Carbon tetrachloride	NGS	100	<1.5	<1.5	n/s	n/a	n/a	m/a	1,5	n/a U	
\$167034210	108-90-7	Chlorobenzene	NGS	88	<2.5	<2.5	n/a	n/a	n/a	n's	2.5	n/a U	
5167034210	75-00-3	Chloroefhane	NGS	110	<1,6	<1.6		n/a	nla	e/u	1.6	Ucha	
\$167034210	67-66-3	Chloroform	NGS	100	6,1>	<1.8	nla	n/a	n/a	n/a	1.8	U s/a	
\$167034210	110-82-7	Cycloheoane	NGS	100	<1.A	41.4	n/a	n/a	n/a	n'a	1.4	n/a U	
S18T034210	124-18-5	Decane	NGS	66	<3.3	<3.3	n/a	n/a	n/a	n'a	3.3	U a/u	
S16T034210	64-17-5	Ethanol	NGS	120	6.6	270	n/a	n/a	n/a	e,w	3.7	n/a B	
S16T034210	141-78-6	Ethyl acetate	NGS	88	<1.8	<1.8	nla	n/a	n/a	n'a	1.8	Uava	
S16T034210	100414	Ethylpenzene	NGS	88	<2.4	<2.4	n/a	n/a	n/a	m'a	2.4	U a/u	
\$167034210	110-00-9	Furan	NGS	90	<1.6	13	nla	n/a	n/a	nia	1.6	n/a	
S16T034210	110-54-3	Hexane	NGS	100	1.5	7.3	n/a	n/a	n/a	n/a	1.3	n/a BJ	
\$167034210	628-73-9	Hexanentrile	NGS	88	<2.6	<2.6	n/a	n/a	e/u	n/a	2.6	U s/u	
S16T034210	125-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	nie	n/a	n/a	n/a	1.8	n/a U	
S16T034210	75-09-2	Mothylene Chloride	NGS	110	6.2	<6.1	n/a	n/a	n/a	nía	4.1	UeAn	
S16T034210	91-20-3	Maphilhalone	NGS	98	<5,3	<5.3	nia	n/a	n/a	n/a	5.3	U s/u	
S16T034210	98-95-3	Mitrobenzene	NGS	86	44.7	<4.7	n/a	n/a	n/a	n/a	4.7	U a/u	
3167034210	110-59-8	Pentanenitrile	NGS	86	<2.6	<2.6	nva	n/a	n/a	n/a	2.6	U B/u	
S16T034210	107-12-0	Propanentrile	NGS	100	<1,8	2.3	rila	n/a	n/a	n/a	1.8	Le/n	
S16T034210	110-88-1	Pyridine	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	U a/u	
S16T034210	100-42-5	Styrrene	NGS	87	<2.7	<2.7	e/u	n/a	n/a	n/a	2.7	U a/u	
S16T034210	127-18-4	Tetrachiorosthene	NGS	66	<1.8	16	ava.	n/a	e/u	n/a	1.8	n/a	
S16T034210	108-88-3	Toluene	NGS	86	<22	4.8	m/a	n/a	eva	nia	00	I who	ı

T - Tentatively Identified Compound N - Named TIC

J - Estimated U - Less Than Detection Limit

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected B - Biank Contamination

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Cartridge Evaluation Data Summary Report

Customer Sample ID: 16-08636-2-IN-A Customer Sample ID: 16-08636-2-IN-A SDG Number:

Sample Group: 20162990

Samples R	Al CAS#	Analyte	Unit	STD %	Blank	Result	Duplicate	Average		RPD % Spk Rec %	Det Limit:	Det Limit Cot Err % Qual Flags
VAPOR-TDU VOA	U VOA #2										1	
\$167034210	79-01-6	Trichloreethene	NGS	88	6,15	61.6	n/a	nfa	n/a	m/a	1.8	ntalU
\$167034210	75-69-4	Trichiorefluoremethane	NGS	88	6:15	9.7	nía	n/a			1.9	n(a)
S16T034210	10061-01-5	dis-1,3-Dichloropeopene	NGS	87	41.8	61.8	n/a	n/s			1.8	n/a U
S16T034210	123-88-4	n-Butyl acetate	NGS	8	<2.4	424	n/a	rva			2.4	n/a U
S16T034210	142-82-5	n-Heptane	NGS	100	41.6	9.6	n/a	n/a	n/a	n/a	1.6	righ
S16T034210	10061-02-6	trans-1,3-Dichloropropene	NGS	8	<2.1	42.1	n/a	rya			2.5	Usla

NA = Not Analyzed, ND = Not Detected B - Blank Contamination

E - Outside Calibration Range

J - Estimated U - Less Than Detection Limit

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Cartridge Evaluation Data Summary Report

SDG Number: Customer Sample ID: 16-08636-2-IN-H Customer Sample ID: 16-08636-2-IN-H

Sample Group: 20162990

Samples R	A# CAS#	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Cnt Err % Qual Flags
VAPOR-TDU VOA #2	VOA #2											
\$167034211	79-34-5	1,1,2,2-Tetrachloreethane	NGS	66	<3.0	<3.0	n/a	nla	n/a	n/a	3.0	Uleyu
S16T034211	79-00-5	1,1,2-Trichloroethane	NGS	100	423	423	n/a	nla	2/2	n/a	23	n/a U
\$167034211	75-34-3	1,1-Dichloroethane	NGS	66	<1.7	<1.7	n/a	nla	n/a	a/a	1.7	Ushn
\$167034211	75-35-4	1,1-Dichloroothene	NGS	88	<1.7	<1.7	n/a	n/a	2,0	n/s	1.7	n/a U
S16T034211	107-06-2	1,2-Dichloroethane	NGS	100	41.7	C1.7	n/a	nya	n/a	n/a	1.7	n/a U
\$167034211	542-75-6	1,3-Dichloropropere (Total)	NGS	n/s	n/a	13	n/a	nla	e/u	n/a	1.0	ryla
\$167034211	106-46-7	1,4-Dichlorobenzene	NGS	100	44.1	04.1	n/a	n/a	2,0	s,e	4.1	n/a U
\$167034211	123-91-1	1,4-Dioxane	NGS	88	<2.0	420	n/a	rys	n's	n/a	2.0	Ushr
\$167034211	71-36-3	1-Butanol	NGS	120	<4.3	1.5E+03	n/a	n/a	n/a	n/a	4.3	r/s E
\$167034211	111.70-6	1-Heptanol	NGS	08	49.1	49.1	n/a	rys	0,0	n/s	8.1	n/a U
\$167034211	71-23-8	1-Prepanol	NGS	120	<8.9	130	n/a	nya	m/a	N's	8.9	rits
\$167034211	108-47-4	2,4-Dimethylpyridine	NGS	88	<4.1	44.1	n/a	nfa	m's	e,u	4.1	r/a U
\$167034211	1708-29-8	2,5-Dihydrofuran	NGS	110	4.2	<2.2	nla	rva	n/a	n's	2.2	Ugha
\$167034211	78-93-3	2-Butanone	NGS	88	43.1	6.9	n/a	n/a	m'a	n/a	3.1	r/a J
\$167034211	110-43-0	2-Heptanone	NGS	8	<2.6	5.1	n/a	rva	n/a	n/a	2.6	r/a J
\$167034211	591-78-6	2-Hexanone	NGS	98	42.5	3.3	n/a	nya	n'a	n/a	2.5	r/s/1
\$167034211	534-22-5	2-Methylfuran	NGS	26	<1,3	<1.3	n/a	nya	n'a	n/a	1.3	n/a U
S16T034211	78-94-4	3-Buten-2-one	NGS	16	6.15	5.0	n/a	rvis	n/a	n'a	9.1	r/a J
S16T034211	106-35-4	3-Heptanone	NGS	8	<2.7	4.2	n/a	r/a	nía	n/a	2.7	r/a 7
S16T034211	105-68-3	3-Octanone	NGS	35	<3.3	<3.3	nla	n/a	n/a	n/a	3.3	U s/u
S16T034211	105-42-0	4-Methyl-2-houseone	NGS	96	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a U
S16T034211	108-10-1	4-Methyl-2-Pentanone	NGS	100	<22	<2.2	nla	n/a	n/a	n/a	2.2	n/a U
S16T034211	67-64-1	Acetone	NGS	16	4.4	230	rys	n/a	n/a	n/a	2.8	n/a B
\$16T034211	75-05-8	Acetonitrile	NGS	96	<1.6	640	n/a	n/a	nía	n/a	1.6	n/a E
S16T034211	98-96-2	Acetophenone	NGS	85	<6.2	<6.2	nla	n/a	nís	n/a	6.2	n/a U
S16T034211	107-13-1	Acrylonitrille	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	Ula/u
S16T034211	107-18-6	Allyl Alcohol	NGS	120	<2.3	<2.3	s/u	n/a	n/a	nía	2.3	n/all!

T - Tentatively Identified Compound N - Named TIC

NA = Not Analyzed, ND = Not Detected

J - Estimated U - Less Than Detection Limit

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Cartridge Evaluation Data Summary Report

Sample Group: 20162990 SDG Number: Customer Sample ID: 16-08636-2-IN-H Customer Sample ID: 16-08635-2-IN-H

ampies R	AF CAS #	Analyte	Unit	STO %	Blank	Result	Duplicate	Average	RPD %	Average RPD % Spk Rec %	Det Limit	Det Limit Cot Err % Qual Flags
VAPOR-TDU VOA #2	VOA #2									1		
16T034211	107-05-1	Allyl Chloride	NGS	100	<2.5	425	n/a	n/a	n/a	n/a	2.5	n/a U
S16T034211	71-43-2	Benzene	SON	88	<1.5	2.4	nva	n'a	n/a	nla	1.5	n/a/J
\$16T034211	100-47-0	Benconiste	NGS	98	<4.2	42	n/a	n'a	n/a	ala	4.2	n/s U
S16T0S4211	123-72-8	Butanal	NGS	100	<3.0	13	n/a	n/a	n/s	n/a	3.0	n/a
S16T034211	109-74-0	Butamenitrile	NGS	100	42.1	42.1	n/a	n'a	n/a	nla	2.1	Us/u
S16T034211	56-23-6	Carbon tetrachloride	NGS	100	<1.5	41.5	n/a	m'a	n/a	n/a	1.5	Us/u
S16T034211	108-90-7	Chlerobenzene	NGS	8	<2.5	425	n/a	nia	n/a	n/a	2.5	n/a U
S16T034211	75-00-3	Chleroefrane	NGS	110	41.6	41.6	n/a	n/a	e/u	nla	1.6	U.S.C.
S16T034211	67-86-3	Chieroform	NGS	100	×1.8	41.8	n/a	nía	n/a	n/a	1.8	n/a U
\$167034211	110-82-7	Cyclothexane	NGS	100	41.4	41.4	n/a	n/a	n/a	n/a	1.4	n/a/U
S16T034211	124-18-5	Decane	NGS	66	<3.3	<0.3	n/a	nla	n/8	n/a	3.3	n'a U
S16T034211	64-17-5	Ethanol	NGS	120	6.6	220	e/u	n/a	e/u	eva	3.7	n'a B
S16T034211	141-78-6	Ethyl acetate	NGS	92	*1.8	<1.8	n/a	n/a	n/a	ayu	1.8	n/a U
S16T034211	100-41-4	Ethylbercene	NGS	66	<2.4	424	e/u	n/a	n/a	n/a	2.4	n's U
3167034211	110-00-9	Furan	NGS	06	8'1×	1.1	nla	n/a	n/a	n/a	1.6	n/a/J
S16T034211	110-54-3	Hexane	NGS	100	1.5	10	n/a	n/a	n/a	e/u	1.3	n/a BJ
\$167034211	628-73-9	Hexanentrile	NGS	86	<2.8	<2.6	n/a	n/a	n/a	n/a	2.6	n/a U
\$167034211	126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	nía	n/a	n/b	n/a	1.8	n/a U
316T034211	75-09-2	Mothylene Chloride	NGS	110	4.2	<4.1	nía	n/a	eyu	n/a	4.1	n/a U
\$167034211	91-20-3	Naphthalene	NGS	96	<5.3	<5.3	n/a	n/a	n/B	n/a	5.3	n/a U
S16T034211	98-95-3	Nitrobenzene	NGS	26	54.7	<4.7	n/a	n/a	alu	n/a	4.7	n/a U
3167034211	110-59-8	Pentanentirile	NGS	96	<2.6	<2.6	nia	n/a	n/a	n/a	2.6	n/a U
1167034211	107-12-0	Propanentrile	NGS	100	<1.8	2.6	nla	n/a	n/a	e/u	1.8	r/a J
S16T034211	110-86-1	Pyriding	NGS	110	<2.8	<2.8	nla	n/a	n/a	n/a	2.8	r/a U
3167034211	100-42-5	Styrene	NGS	97	<2.7	42.7	rya	n/a	n/a	n/a	2.7	n/a U
\$167034211	127-18-4	Tetrachloroethene	NGS	66	s.1.8	5.2	nla	n/a	n/s	n/a	1.8	r/a J
S16T034211	108-88-3	Toluene	NGS	96	422	5.1	nya	n/a	n/a	n/a	2.2	r/a J

T - Tentatively Identified Compound J - Estimated N - Named TIC U - Less Than Detection Limit

E - Outside Celibration Range

B - Blank Contamination

NA = Not Analyzed, ND = Not Detected

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Cartridge Evaluation Data Summary Report

Customer Sample ID: 16-08636-2-IN-H Customer Sample ID: 16-08636-2-IN-H SDG Number:

Sample Group: 20162990

Samples R	AF CAS 8	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD 1/4	RPD 14 Spk Rec 14	Det Limit	Crit Err % Qual Flags
VAPOR-TDI	U VOA #2						1					
\$167034211	79-01-6	Trichloroethene	NGS	88	9/1>	61.6	n/a	n/a	e,u	2/2	1.6	Ulelu
5167034211	75-69-4	Trichlorefluoromethane	NGS	88	615	12	n/a	nla	m'a		1.9	
S16T034211	10061-01-5	cis-1,3-Dichloropropene	NGS	87	6.15	1.6	n/a	nla	n'a		4,00	
\$167034211	123-86-4	n-Butyl acetate	NGS	88	424	42.4	n/a	nla	n'a		2.4	
S16T03M211	142-82-5	n-Heptane .	NGS	100	41.6	11	n/a	nfa	n'a	6,0	1.6	
\$167034211	10051-02-6	trans-1,3-Dichloropropene	NGS	8	42.1	4.7	n/a	nla			2.4	Lala

NA = Not Analyzed, ND = Not Detected B - Blank Contamination

E - Outside Calibration Range

T - Tentatively Identified Compound N - Named TIC

J - Estimated U - Less Than Detection Limit

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Data Summary Report Cartridge Evaluation

Customer Sample ID: 16-08636-2-EFF-A

Sample Group: 20162990

SDG Number:

Qual Flags

Result

8.5 JNT TMP

TN

26 JNT

110 57

NGS NGS NGS Child NGS SSN NGS NGS 23.78 25.74 25.84 25.94 25.94 26.49 27.76 23.24 23.36 62108-27-4 1730214 62108-25-2 100-87-0 95-16-9 61141728 629594 CAS No. 112403 Decare, 2,6,7-trimethyl-Decare, 2,4,6-trimethyl-Indecane, 2,6-dimethyl-Jodecane, 4,6-dimethyl-Customer Sample ID: 16-03636-2-EFF-A Unionown-3 Unionown-4 Tetradecane Jnknown-2 Unionorm-1 Sodecane OC Type VAPOR-TDU VOA #2 S16T054202 S16T054202 16T034202 16T034202 16T034202 167034202 16T034202 167034202 S16T034202 S16T034202 16T034202 Samples

44 JNT 12 JNT

8.3 JNT

28

27.83

18 JNT

14 JNT

NA = Not Analyzed, ND = Not Detected B - Blank Contamination

E - Outside Calibration Range

J - Estimated U - Less Than Detection Limit

T - Tentatively Identified Compound N - Named TIC

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Cartridge Evaluation Data Summary Report

Customer Sample ID: 16-08636-2-EFF-B Customer Sample ID: 16-08636-2-EFF-B

Sample Group: 20162990

SDG Number:

Sample# R	N	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flace
VAPOR-TDU VOA #2	VOA #	25						
S16T034203			Unknown-1	_	7.84	NGS	120 17	1
S16T034203			Decane, 2,4,6-bimethyl-	62108-27-4	23.24	NGS	6.7 JNT	INT
S16T034203			Undecane	1120214	23.36	NGS	TNL 3t	INT
S16T034203			Unknown-2		23.78	NGS	92 JT	-
S16T034203			Undecane, 2,6-dimethyl-	17301-23-4	24.83	NGS	TNL ST	INT
S16T034203			Mothonamine	100-97-0	25.74	NGS	20 JINT	INT
S16T034203			Benzothiazole	95-16-9	25.85	NGS	49 JNT	INT
S16T034203			Dodecane, 4,6-dimethyl-	61141728	25.94	NGS	TNL 11	INT
S15T034203			Tetradecane	965829	26.49	NGS	TNL OF	INT
\$167034203			Unknown-3		27.77	NGS	34	1
S16T034203			Unknown-4		27.84	MGG	25	ŀ

NA = Not Analyzed, ND = Not Detected B - Blank Contamination

E - Outside Calibration Range

T - Tentatively Identified Compound N - Named TIC

J - Estimated U - Less Than Detection Limit

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Cartridge Evaluation Data Summary Report

Sample Group: 20162990 SDG Number:

Customer Sample ID: 16-08636-2-EFF-C Customer Sample ID: 16-08636-2-EFF-C

Sample# R	Ag	QCT)pe	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Oual Flace
VAPOR-TDU VOA #2	VOA#	2						
S16T034204			Unknown-1		7.84	NGS	130 J	11
\$167034204			Cyclotetrasiloxane, octamethyl	556-67-2	19.85	NGS	OS JNT	INT
\$167034204			Decane, 2,4,8-trimethyl-	62108-27-4	23.38	NGS	12 JNT	INT
S16T034204			Unknown-2		23.78	NGS	TL 011	1
S16T034204			Dodecane	112403	24.83	NGS	ZZ JINT	INT
S16T034204			Methenanine	100-97-0	25.73	NGS	TNL 17	INT
S16T034204			Benzothiazole	95-16-9	25.85	NGS	TNL OT	INT
\$167034204			Dodecane, 4,6-dimethyl-	61141728	25.94	NGS	TNL 81	INT
\$167034204			Tetradecane	629594	26.49	NGS	9.7 JNI	INT

NA = Not Analyzed, ND = Not Detected 8 - Blank Contemination

E - Outside Calibration Range

T - Tentatively Identified Compound N - Named TIC

J - Estimated U - Less Than Detection Limit

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Cartridge Evaluation Data Summary Report

Sample Group: 20162990

SDG Number:

Customer Sample ID: 16-08636-2-EFF-D Customer Sample ID: 16-08636-2-EFF-D

77 JNT 30 JNT 8.5 JMT 13 JNT 9.8 JNT 5.3 JMT 502 Result NGS NGS NGS NGS NGS 7.82 23.79 23.79 25.74 25.74 25.86 25.85 26.49 112-40-3 100-97-0 95-16-9 61141728 1120214 CAS No. Dedecane, 4,6-dimethyl-Dedecane Methenamine Benzothiazole Unknown-2 Unionown-1 Undecane Analyte OC Type Sample R As VAPOR-TDU VOA#2 S16T034205 S16T034205 \$16T034205 \$16T034205 \$16T034205 \$16T034205 \$16T034205 \$16T034205

Qual Flags

NA = Not Analyzed, ND = Not Detected B - Blank Contamination

E - Outside Calibration Range

J - Estimated U - Less Than Detection Limit

T - Tentalively Identified Compound N - Named TIC

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Cartridge Evaluation Data Summary Report

Sample Group: 20162990

SDG Number:

Customer Sample ID: 16-08636-2-EFF-E Customer Sample ID: 16-08636-2-EFF-E

Qual Flags 42 JNT 46 JNT 11 JNT 8.3 JNT 11 JNT 23 JT 160 JT 5 88 Result NGS NGS NGS NGS NGS 7.84 23.78 25.80 25.73 25.84 25.84 25.84 25.84 25.84 85-16-9 61141728 629594 100-97-0 CAS No. 112403 Dodecane, 4,6-dimethyl-Unknown-3 Methenamine Benzothiazole Unknown-2 Unknown-1 Amalyte QC Type VAPOR-TDU VOA #2 2 œ \$167034206 \$167034206 \$167034206 \$167034206 \$167034206 167034206 geldure

NA = Not Analyzed, ND = Not Detected 8 - Blank Contamination

T - Tentatively Identified Compound N - Named TIC

J - Estimated U - Less Than Detection Limit

E - Outside Calibration Range

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Cartridge Evaluation Data Summary Report

Sample Group: 20162990

SDG Number:

Customer Sample ID: 16-08636-2-EFF-F Customer Sample ID: 16-08636-2-EFF-F

ample® R	2	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Qual Flags
APOR-TDU VOA #2	YOA #2							L
34207			Unionewn-1		7.84	NGS	140	5
67034207			Decane, 2,4,6-trimethyl-	62108-27-4	23.24	NGS	6.2 JNT	JINT
6T034207			Undecane	1120214	23.36	NGS	11	JNT
14207			Unknown-2	_	23.78	NGS	71.	15
61034207			Dodecane	112403	24.83	NGS	16	INT SI
67034207			Metherarine	100-97-0	25.73	NGS	74	JMT
6T034207			Benzothiazole	95-16-9	25.84	NGS	49	TNL 69
6T034207			Dodecane, 4,6-dinethyl-	61141728	25.94	NGS	11	11 JNT
6T034207			Tetradecane	629505	28.49	MGS	F.S.JMT	INT

NA = Not Analyzed, ND = Not Detected B - Blank Contamination

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J - Estimated U - Less Than Detection Limit

T - Tentatively Identified Compound N - Named TIC

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Cartridge Evaluation Data Summary Report

Customer Sample ID: 16-08636-2-EFF-G Customer Sample ID: 16-08636-2-EFF-G

Sample Group: 20162990

SDG Number:

Sample® R	A	QC Type	Analyte	CAS No.	Retention Time (Minutes)	Unit	Result	Oust Flags	_
VAPOR-TDU VOA #2	POA #	2							,-
S16T034208			Unknown-1	_	7.86	NGS	180 JT	1	_
S16T034206			Cyclotetrasiloxane, octamethyl	556-67-2	19.85	NGS	TNL 63	TM	_
S16T034206			Decane, 3,7-dimethyl-	17312-54-8	22.42	NGS	120 JNT	NT	_
S16T034208			Decano, 2,4-dimethyl-	2801-84-5	22.58	NGS	TNL 45 JNT	MT	_
S16T034208			Undecane	1120-21-4	23.24	NGS	24 JNT	IN	_
S16T034208			Decane, 2,4,6-trimethyf-	62108-27-4	23,36	NGS	TNL 36	NT	_
S16T034208			Undecane, 4-methyl-	2980-69-0	23.47	NGS	TNL 08	INT	_
S16T034208			Undecane, 2-methyl-	7045718	23.60	NGS	TNL 81	NT	_
8167034208			Unknown-2	,	23.78	NGS	TL 88	1	_
S16T034208			Undecane, 3-methyf-	1002-43-3	24.47	NGS	TNL 7.9	TM	_
S16T034208			Dodecane	112-40-3	24.83	NGS	32 JNT	INT	_
S16T034208			Methenamine	100-87-0	25.73	NGS	120 JNT	NT	_
S16T034208			Dodecane, 4,8-dimethyl-	61141728	25.94	NGS	12 JNT	INT	_
S16T034208			Tridecane	629505	28.49	NGS	TMI 00	TM	_

NA = Not Analyzed, ND = Not Detected B - Blank Contemination

E - Outside Calibration Range

J - Estimated U - Less Than Detection Limit

T - Tentatively Identified Compound N - Named TIC

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Cartridge Evaluation Data Summary Report

Customer Sample ID: 16-08636-2-EFF-H Customer Sample ID: 16-08636-2-EFF-H

Sample Group: 20162990

SDG Number:

nplef R	AB	QC Type	Analyte	CAS No.	Rotention Time (Minutes)	Unit	Result	Qual Flaos
VAPOR-TDU VOA #2	VOA #2							
ST034209			Unknown-1		7.84	NGS	150 JT	77
ST034209			Decare, 2,6,7-trimethyl-	62108-25-2	23.21	NGS	33	33 JNT
ST034209			Undecane	1120-21-4	23.36	NGS	22	22 JNT
ST034209			Undecane, 2,6-dimethyl-	17301-23-4	23.80	NGS	17	17 JNT
ST034209			Unispewn-2		23.78	NGS	TC 52	77
ST034209			Decsme, 2,4,6-trimethyl-	62108-27-4	23.93	NGS	24	24 JNT
ST034209			Dodecane	112403	24.84	NGS	12	12 JNT
ST034209			Methenamine	100-97-0	25.74	NGS	180 JNT	JNT
ST034209			Berzothiazole	95-16-9	25.85	NGS	43	ta JNT
ST034209			Dodecane, 4,6-dimethyl-	61141728	25.95	NGS	1NL 8.8	INC
ST034209			Tridecane	629506	28.49	NOS	5.8 JNT	JNT

NA = Not Analyzed, ND = Not Detected B - Blank Contamination

E - Outside Calibration Range

J - Estimated U - Less Than Detection Limit

T - Tentatively Identified Compound N - Named TIC

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Cartridge Evaluation Data Summary Report

Sample Group: 20162990

SDG Number:

Customer Sample ID: 16-08636-2-IN-A Customer Sample ID: 16-08636-2-IN-A

Samples	R As	QC Type	Analyte	CAS No.	Retendon Time (Minutes)	Unit	Result	Qual Fla
VAPOR-TDU VOA #2	DUVOA	#2						
\$167034210			Unknown-1		7.90	NGS	77, 12	5
S16T034210			Allyt(methoxy)dimethylsilane	30535-30-9	8.32	NGS	38	TNC
S167034210			Tetrahydrofuran	109-39-8	11.60	NGS	TA JNT	INT
S16T034210		200	Cyclotetrasiloxene, octamethyl	556-67-2	19.88	NGS	TNL 98	INT
S16T034210			Undecane	1120214	23.36	NGS	12 JNT	INT
S16T034210			Unknown-2	-	23.78	NGS	78 57	5
S16T034210	-	30	Dodecane	112403	24.83	NGS	TML 8.9	INT
S16T034210			Methenamine	100-97-0	25.74	NGS	TML 001	TNC
\$167034210			Dencothiazole	95-16-9	25,85	NGS	36 JM	INI
S16T034210			Dodecane, 2,5,11-trimethyl-	31295564	25.94	NGS	TML 6.9	TMC
S16T034210			Dodecana, 4,6-dimethyl-	81141728	26.49	NGS	5.6 JN1	TML

NA = Not Analyzed, ND = Not Detected

8 - Blank Contamination

E - Outside Calibration Range

T - Tentatively Identified Compound N - Named TIC

J - Estimated U - Less Than Detection Limit

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Cartridge Evaluation Data Summary Report

Sample Group: 20162990 SDG Number:

Customer Sample ID: 16-08636-2-IN-H Customer Sample ID: 16-08636-2-IN-H

Samples R	2	QC Type	Analyte	CAS No.	Retembon Time (Minutes)	Uelt	Result	Qual Flags
VAPOR-TDU VOA #2	VO.	25						
\$167034211			Unknown-1	_	7.84	NGS	76 JT	JT.
\$167034211			Methoxytrimethylsilane	1825-61-2	8.34	NGS	36 JNT	TNL
S16T034211			Tetrahydrofuran	109-89-9	11,60	NGS	TNL 83	INT
\$167034211			N-Nitrosodimethylamine	62-75-9	15.36	NGS	9.2 JNT	INT
S16T034211			Unknown-2	,	23.78	NGS	40 JT	11
S16T034211			Dodecane	112-40-3	24.83	NGS	TNL 7.8	TNL
\$167034211			Unknown-3		25.60	NGS	38 JT	JT.
\$167034211			Methenamine	100-87-0	25.73	NGS	TAL 000	TAL
S16T034211			Dodecane, 2,6,10-trimethyl-	3891883	25.95	NGS	9.7	INT

NA = Not Analyzed, ND = Not Detected B - Blank Contamination

E - Outside Calibration Range

J - Estimated U - Less Than Detection Limit

T - Tentatively Identified Compound N - Named TIC

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Cartridge Evaluation Data Summary of All Results

Sample Group: 20162991 SDG Number: Customer Sample ID: 16-08636-2-BA

Customer Sample ID: 16-08636-2-BASE-EFF Customer Sample ID: 16-08636-2-BASE-EFF

Sampled R	A# CAS#	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	89D %	RPD % Spk Rec %	Det Limit	Det Limit Cut Err % Qual Flags	s 500
VAPOR-TDU VOA #2	J VOA #2												Г
\$167034212	79-34-5	1,1,2,2-Tetrachioroefrane	NGS	66	<3.0	<3.0	a,u	e)u	9,0	n/a	3.0	Ush	T
\$167034212	29-00-5	1,1,2-Trichloroethane	NGS	100	423	<23	n'a	n/a	a'e	n/s	2.3	U/a U	Г
\$167034212	75-34-3	1,1-Dichloreethane	NGS	88	<1.7	<1.7	n'a	e)u	ala	nla	1.7	U B/u	Г
\$167034212	75354	1,1-Dichloroethane	NGS	66	<1.7	<1.7	n'a	n/a	in the	n/a	1.7	U a/u	Г
\$161034212	107-08-2	1,2-Dichloroethane	NGS	100	<1.7	<1.7	n'a	e/u	ala	n/a	1.7	Us C	Г
\$167034212	542-75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	a'c	n/a	8,0	eln	1.8	Ush	Г
S16T034212	108-48-7	1,4-Dichlorobenzene	NGS	100	44.1	4.1	9,0	e)u	ala	n/a	4.1	U/a U	Г
\$167034212	123-91-1	1,4-Dioxane	NGS	88	420	<2.0	2,0	n/a	a/a	n/a	2.0	U ava	Г
S16T034212	71-38-3	1-Butanol	NGS	120	643	443	n/a	n/a	a/a	n/a	4	Ush	Г
\$167034212	111.70-6	1-Heptanol	NGS	06	<9.1	<9.1	n'a	e)u	a/a	nla	9.1	Ush	Г
\$167034212	71.23.8	1-Propanol	NGS	120	<8.9	20	a'c	e)u	a/a	nla	6.8	L e/n	Г
\$167034212	108-47-4	2,4-Dimethylpyridine	NGS	66	44.1	4.1	a,u	e/u	n's	n/a	4.1	Us/u	Г
\$167034212	1708-29-8	2,5-Dihydeofuran	NGS	110	422	<22	n'c	e)u	n/a	n/a	22	U8/u	Г
\$167034212	78-93-3	2-Butanone	NGS	83	3.1	43.1	2/2	n/a	a/n	n/a	3.1	Ulahu	Г
\$167034212	110-43-0	2-Heptanone	NGS	96	970	<2.6	n'a	n/a	n/a	n/a	2.6	Ula U	Г
\$167034212	591-78-6	2-Hexanone	NGS	96	425	<25	9,0	n/a	n's	n/a	25	U8VI	Г
S16T034212	534-22-5	2-Methyfluran	NGS	87	<1.3	<1.3	n/a	n/a	n/s	n/s	1.3	Us/u	Г
\$167034212	78-94-4	3-Buten-2-cne	NGS	94	615	<1.9	a'a	n/a	n/a	n/a	1.9	U B/u	Г
\$167034212	106-35-4	3-Heptanone	NGS	26	427	<2.7	n'a	n/a	nla	n/a	2.7	Us/u	
\$167034212	106-68-3	3-Octanone	NGS	92	<3.3	<3.3	2,0	n/a	e/u	n/a	8.8	Ush	Г
\$167034212	105-42-0	4-Methyl-2-hexamone	NGS	96	426	<2.6	n/a	e)u	n/s	n/a	2.6	U/s U	Г
S16T034212	108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	<22	a'n	t/u	n/a	nka	2.2	Ueva	Г
\$167034212	67-64-1	Acetone	NGS	91	4.4	9.2	n/a	n/a	e/u	n/a	2.8	n/a BJ	Г
\$167034212	75-05-8	Acetonitrile	NGS	86	41.6	240	a's	n/a	n/a	n/a	1.6	e/u	Г
\$167034212	98-85-2	Acetophenone	NGS	85	<6.2	c62	n'a	n/a	e/u	n/e	6.2	U/a C	Г
S16T034212	107-13-1	Acrytonitrile	NGS	100	42.1	42.1	a/a	nía	n/a	n/a	2.1	U/a/U	Г
\$167034212	107-18-6	Allyl Alcohol	NGS	120	<2.3	<23	n'a	n/a	n/a	n/a	2.3	D S/u	Г
\$167034212	107-05-1	Allyl Chloride	NGS	100	<25	<2.5	n/a	e/u	n/s	n/a	2.5		Г

T - Tentatively Identified Compound B - Blank Confamination

0.8

J - Estimated U - Less Than Detection Limit

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected N - Named TIC

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Cartridge Evaluation Data Summary of All Results

Customer Sample ID: 16-08636-2-BASE-EFF Customer Sample ID: 16-08636-2-BASE-EFF Sample Group: 20162991 SDG Number:

VAPOR-TDU VOA #2 S16T094212 71-4 S16T094212 100- S16T094212 102- S16T094212 106- S16T094212 108- S16T094212 108- S16T094212 75-0 S16T094212 75-0 S16T094212 108-	71-43-2 100-47-0 103-72-8 109-74-0 56-23-5 108-80-7 75-00-3 57-66-3 57-66-3	Benzene Benzenlivile	NGS	00					1	ela			
\$167034212 \$167034212 \$167034212 \$167034212 \$167034212 \$167034212 \$167034212 \$167034212	71.43.2 100.47.0 123.72.6 109.74-0 56.23.5 103.90.7 75.00.3	Benzene Benzenbile	NGS	90				-1-1-	a) a	nla			
\$16T034212 \$16T034212 \$16T034212 \$16T034212 \$16T034212 \$16T034212 \$16T034212	100-47-0 123-72-6 109-74-0 56-23-5 108-90-7 75-00-3 67-66-3	Benzonitrile		90	41.5	<1.5	n/a	D/a	9.0	and a	1.5	Ulan U	
\$16T034212 \$16T034212 \$16T034212 \$16T034212 \$16T034212 \$16T034212	123-72-8 109-74-0 56-23-5 108-90-7 75-00-3 67-66-3		NGS	96	44.2	44.2	n/a	n/a	n/a	nla	4.2	U Shu	2200
\$16T034212 \$16T034212 \$16T034212 \$16T034212 \$16T034212	109-74-0 66-23-5 108-90-7 75-00-3 67-66-3	Butanal	NGS	100	3.0	3.0	u/a	n/a	n/a	n/a	3.0	U elu	
\$16T034212 \$16T034212 \$16T034212 \$16T034212 \$16T034212	56-23-5 108-90-7 75-00-3 67-66-3	Butanenitrile	NGS	100	421	42.1	n/a	n/a	e/u	n/a	2.1	U e)u	383
\$16T034212 \$16T034212 \$16T034212 \$16T034212	75-00-3	Carbon tetrachloride	NGS	100	<1.5	<1.5	n/a	n/a	e/u	n/a	1.5	U alu	
\$16T034212 \$16T034212 \$16T034212	67.66-3	Chlorobenzene	NGS	88	425	425	nia	n/a	nla	n/a	2.5	U B/U	
\$167034212	67-66-3	Chloroethane	NGS	110	<1.6	<1.6	n/a	n/a		n/a	1.6	U B/U	
S167034212		Chloroform	NGS	100	<1.8	<1.8	n'e	n/a	n/a	n/a	1.8	Ugh	
	110-82-7	Cyclohestone	NGS	100	<1.4	41.4	n'a	n/a	n/a	n/a	1.4	O B/V	
S16T034212	124-18-5	Decane	NGS	88	43.3	93	20/2	n/a		r/s	3.3	U/a U	
S16T034212	64-17-5	Ethanol	NGS	120	6.6	120	n'a	n/a		rva	3.7	n/a B	
S16T034212	141-78-6	Ethyl acetale	NGS	85	41.8	<1.8	n's	n/a		n/a	1.8	Ua'u	
S16T034212	100-41-4	Ethylbenzene	NGS	66	424	424	n'a	n/a		n/a	2.4	U/a U	
S16T034212	110-00-9	Furan	NGS	06	41.6	<1.8	n/s	n/a	n/a	r/a	1.6	U/a U	
\$167034212	110-54-3	Hexane	NGS	100	1.5	<1.3	n/a	n/a		rila	1,3	Ualu	
\$167034212	628-73-9	Houanenitrio	NGS	86	<2.6	<2.6	n/s	n/a	n/a	r/a	2.6	Ua'u	
\$167034212	125-98-7	Methacrylonitria	NGS	100	<1.8	<1.8	n/a	e/a		ria	1,8	Ula U	
\$167034212	75-09-2	Methylene Chloride	NGS	110	4.2	64.1	n/a	n/a		n'a	4.1	Ua U	
\$167034212	91-20-3	Naphthalene	NGS	38	<5.3	<5.3	n/a	n/a		nla	5.3	n/a U	
\$167034212	58-96-3	Mitrobenzene	NGS	×	C#2	C4.7	n/a	n/a	n/a	n'a	4.7	U s/n	
\$167034212	110-59-8	Pentanenitrile	NGS	96	<2.6	<2.6	n/a	nis		nia	2.6	Us/a	
S16T034212	107-12-0	Propanenthile	NGS	100	<1.8	c1.8	n/a	nla		n'a	1.8	n/a U	
\$167034212	110-86-1	Pyridine	NGS	110	<2.8	<2.8	nva	n/a	n/a	n'a	2.8	O eva	
S15T034212	100-42-5	Styrene	NGS	28	42.7	427	n/a	nta		n'a	2.7	n/a U	
\$167034212	127-18-4	Tetrachloroethene	NGS	8	41.8	35	nya	n/a	n/a	n'a	1.8	n/a	
\$157034212	108-88-3	Toluene	NGS	38	<2.2	3.2	n/a	n/a		n'a	2.2	L eva	
\$167034212	79-01-6	Trichloroethene	NGS	88	<1.6	<1,6	nya	nla	nía	e,u	1.8	U a'ra	
\$167034212	75-69-4	Trichlorofluoromethane	NGS	88	<1.9	<1.9	nya	n/a		n/a	1.9	U a/n	

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected

N - Named TIC

T - Tentalively Identified Compound B - Blank Contamination

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Cartridge Evaluation Data Summary of All Results

Sample Group: 20162991 SDG Number:

Customer Sample ID: 16-08636-2-BASE-EFF Customer Sample ID: 16-08636-2-BASE-EFF

Samples R	N.	CAS#	Amalyto	Unit	% QLS	Blank	Result	Ouplicate	Average	RPD %	RPD % Spk Rec %	Det Limit	Det Limit Ont Ear % Qualiflags	al Flags
VAPOR-1	N OG	DA #2												
\$167034212	H	10061-01-5	dis-1,3-Dichloropropene	NGS	46	<1.8	<1.8	nia	n/a	n/s	u/a	1,8	n/a U	
S16T034212	-	123-86-4	n-Buryl acetate	NGS	83	424	42.4	ave ave		n/a		2.4	Ua/u	
\$167034212		142-82-5	n-Heptane	NGS	100	41.6	41,6	nla		n/s	n/s	1.6		
\$167034212		10061-02-6	trans-1,3-Dichloropropene	NGS	R	42.1	<2.1	n/a	n/a	elu		2.1	n/a U	

NA = Not Analyzed, ND = Not Detected

N - Named TIC

E - Outside Calibration Range

T - Tentatively Identified Compound B - Blank Contamination

J - Estimated U - Less Than Detection Limit

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Cartridge Evaluation Data Summary of All Results

Sample Group: 20162991 SDG Number:

Customer Sample ID: 16-08636-2-BASE-IN Customer Sample ID: 16-08636-2-BASE-IN

Samples R /	Ad CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	_	RPD % Spk Rec %	Det Limit	Det Limit Cot En % Dual Flags
VAPOR-TDU VOA #2	VOA #2								-			
S16T034213	79-34-5	1,1,2,2-Tetrachloroethane	NGS	88	<3.0	<3.0	n/a	n/a	n/a	n/a	3.0	r/a U
S16T034213	79-00-5	1,1,2-Trichloroethene	NGS	100	<2.3	<2.3	n/a			n/a	2.3	n/a U
S16T034213	75-34-3	1,1-Dichlonethane	NGS	88	<1.7	41.7	n/a			n/a	1.7	n/a U
S16T03M213	75-35-4	1,1-Dichlocoethene	NGS	86	<1.7	<1.7	n/a	n/a	eyu	n/a	1.7	r/s U
S16T034213	107-06-2	1,2-Dichlevoethane	NGS	100	<1.7	<1.7	n/a	n/a		nía	1.7	U S/u
\$167034213	542.75-6	1,3-Dichloropropene (Total)	NGS	n/a	n/a	<1.8	n/a	n/a	n/a	n/a	1.8	n/a U
S16T034213	108-48-7	1,4-Dichlorobenzene	NGS	100	4.1	1.40	n/a	n/a	eyu	eju	4.1	r/s U
S16T034213	123-91-1	1,4-Dioxane	NGS	86	<2.0	<2.0	n/a	n/a	nía	n/a	2.0	n/a U
S16T034213	71-36-3	1-Butanol	NGS	120	<4.3	170	nía	n/a	n/a	uju	4.3	r/a
S16T03M213	111.70-6	1-Heptanoi	NGS	96	<9.1	<9.1	n/a	n/a		n/a	9.1	n/s/n
S16T034213	71-23-8	1-Propanal	NGS	120	<8.9	17	n/a	n/a	n/a	e/u	8.9	r/a J
S16T034213	108-47-4	2,4-Dimethylpyridine	NGS	86	<4.1	44.1	n/a	n/a	n/a	n/a	4.1	n/a U
\$167034213	1708-29-8	2,5-Dihydrofuran	NGS	110	<22	<2.2	n/a	n/a	n/a	n/a	2.2	r/a U
S16T034213	78-93-3	2-Butanone	NGS	93	<3.1	3.6	n/a	n/a	n/a	n/a	3.1	r/a J
S16T034213	110-43-0	2-Heptanone	NGS	88	<2.6	4.4	nía	n/a		n/a	2.6	r/a J
S16T034213	591-78-6	2-Hexanone	NGS	96	<2.5	<2.5	n/a	n/a	n/a	n/a	2.5	r/s U
S16T034213	534-22-5	2-Methyffaran	NGS	87	<1.3	<1.3	n/a	n/a		n/a	1.3	n/a U
S16T034213	78-94-4	3-Buten-2-one	NGS	16	615	6.15	n/a	n/a	n/a	n/a	1.9	n/s/n
S16T034213	106-35-4	3-Heptanone	NGS	86	<2.7	4.0	n/a	n/a		n/a	2.7	r/a J
S16T034213	108-68-3	3-Octanone	NGS	85	<3.3	<3.3	n/a	n/a	nía	n/a	3.3	r/a U
\$167034213	105-42-0	4-Methyl-2-haxanone	NGS	96	<2.6	<2.6	n/a	n/a		n/a	2.6	r/a U
S16T034213	108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	<2.2	n/a	n/s	n/a	n/a	2.2	n/a U
S16T034213	67-64-1	Acetone	NGS	16	4.4	23	n/a	n/a	n/a	n/a	2.8	r/a B
S16T034213	75-05-8	Acetonitrile	NGS	88	<1.6	250	n/a	n/a	n/a	n/a	1,6	r/s
S16T034213	58-86-2	Acetophenone	NGS	95	<6.2	<6.2	n/a	n/a	nía	n/a	6.2	n/a U
S16T034213	107-13-1	Acrylonitrillo	NGS	100	<2.1	42.1	n/a	n/a	nla	nía	2.1	n/a n
S16T034213	107-18-6	Ally Alcohol	NGS	120	<23	<2.3	nva	n/a	n/a	n/a	2.3	U e/a
S16T034213	107-05-1	Allyl Chloride	NGS	100	<2.5	<2.5		n/a		n/a	2.5	n/a U

T - Tentalively identified Compound B - Blank Contamination

E - Outside Calibration Range

N - Named TIC

NA = Not Analyzed, ND = Not Detected

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Cartridge Evaluation Data Summary of All Results

Sample Group: 20162991 SDG Number:

Customer Sample ID: 16-08636-2-BASE-IN Customer Sample ID: 16-08636-2-BASE-IN

Samples R	AP CAS#	Analyte	Unit	STD %	Blank	Result	Result Duplicate	Average	RPD %	Spk Rec %	Det Limit	Det Limit Cnt Err % Qual Flags
VAPOR-TDU VOA #2	VOA #2											
S16T034213	71-43-2	Senzene	NGS	88	<1.5	2.1	n/a	ryla	e/u	n/s	1.5	n/a J
S16T034213	100-47-0	Senzonitrile	NGS	96	542	64.2	n/a	nla	n/s	n/8	42	n/a U
\$167034213	123-72-8	Butanal	NGS	100	<3.0	930	n/a	n/a		n/a	3.0	n/a U
\$167034213	109-74-0	Butanentiale	NGS	100	42.1	21	e/u	n/a	a/a	n/a	2.1	n/a U
\$167034213	56-23-5	Carbon tetrachloride	NGS	100	<1.5	<1.5	n/a	nla		n/a	1.5	n/a U
\$167034213	108-90-7	Chlorobenzena	NGS	66	42.5	42.5	n/a	nya	n/a	n/a	2.5	n/a U
\$167034213	75-00-3	Chloroethane	NGS	110	61.6	<1.6	n/a	nla		n/a	1.6	n/a U
\$167034213	87-68-3	Chloroform	NGS	100	61.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a U
\$167034213	110-82-7	Oyclohexene	NGS	100	41.4	<1.4	c/u	chn		n/n	1.4	U shu
\$167034213	124-18-5	Decane	NGS	66	93	43	n/a			n/8	33	n/a U
\$167034213	84-17-5	Ethanol	NGS	120	6.6	83	n/a	nla	n/a	n/a	3.7	n/a 8
\$167034213	141-78-6	Ethyl acetane	NGS	98	<1.8	<1.8	n/a	600		n/a	1.8	n/a U
\$167034213	100-41-4	Ethylbenzene	NGS	66	424	424	e/u	n/a	2/5	n/a	2.4	n/a/U
\$167034213	110-00-9	Furan	NGS	06	61.6	<1.6	n/a	nla		n/a	1.6	n/a U
\$167034213	110-54-3	Hoxane	NGS	100	1.5	2.6	n/a	nla	n/a	n/a	1.3	n/a BJ
\$167034213	628-73-9	Hexanentrile	NGS	88	42.6	426	n/a	nla	n/a	n/a	2.6	n/a U
\$167034213	126-98-7	Methacrylonitrile	NGS	100	<1.8	<1.8	e,ru			n/a	1.8	n/a U
\$167034213	75-09-2	Methylene Chloride	NGS	110	4.2	04.1	n/a	n/a	n/a	n/a	4.1	Ulaju
\$167034213	91-20-3	Naphthalene	NGS	98	<5.3	<5.3	n/a	n/a		n/a	5.3	U ayu
\$167034213	98-95-3	Nitrobenzene	NGS	86	54.7	c4.7	e,ru	eyu	e/u	n/a	4.7	n/a U
\$167034213	110-59-8	Pentanenitrile	NGS	86	42.6	426	n/a	n/a		n/a	2.6	n/a U
S16T034213	107-12-0	Propanentifie	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a U
S16T034213	110-86-1	Pyridine	NGS	110	42.8	428	n/a	nla	n/s	n/a	2.8	n/a U
\$167034213	100-42-5	Stysene	NGS	87	427	427	e,ru	nla		n/s	2.7	n/a U
S16T034213	127-18-4	Tetrachloroethene	NGS	66	<1.8	21	n/a	n/a	n/a	n/a	1.8	n/a
\$167034213	108-88-3	Toluene	NGS	88	422	6.8	n/a	n/a		n/a	22	L elvi
\$167034213	79-01-6	Trichloroethene	NGS	88	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	n/a U
S16T034213	75-69-4	Trichlorofluoromethane	NGS	88	6.15	4.3	n/a			n/a	9.	n/a J

T - Tentatively Identified Compound 8 - Blank Contamination

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected

J - Estimated U - Less Then Detection Limit

N - Named TIC

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Cartridge Evaluation Data Summary of All Results

Sample Group: 20162991 SDG Number:

Customer Sample ID: 16-08636-2-BASE-IN Customer Sample ID: 16-08636-2-BASE-IN

amples R	Al case	Ansiyle	Unit	ern w	Blank	Rosult	Dundicate	Average	Spinds	Spin 45 Sale Barr 45	Dark Livelin	Datt lent Cos Ere H. D.	David Change
	-			2000	-		- Annual	-		a name under	1	WILL PARTY	does a sense
VAPOR-TDU	VOA #2												
167034213	10061-01-5	cis-1,3-Dichloropeopene	NGS	97	<1.8	<1.8		n/a	n/s	nia	1.8	Ulshu	Ļ
167034213	123-86-4	n-Butyl acetate	NGS	83		424	n/a	n/a	n/B		2.4		
167034213	142-82-5	n-Heptane	NGS	100	41.6	4.1		n/a		raja	1.6	Lehn J	_
16T034213	10061-02-6	trans-1,3-Dichloropropene	NGS	8	42.1	421	n/a	n/a	n/a		2.1		

NA = Not Analyzed, ND = Not Detected

N - Named TIC

E - Outside Calibration Range

T - Tentatively Identified Compound B - Stank Contamination

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Cartridge Evaluation Data Summary of All Results

Sample Group: 20162991 SDG Number:

Customer Sample ID: 16-08636-2-BLANK-EFF Customer Sample ID: 16-08636-2-BLANK-EFF

Samples R	A# CAS #	-	Analyte	Unit	STD &	Blank	Result	Ducticate	Average	25 Ogg	Average RPD % Spk Rec %	DetLimit	Det Limit Ont Frr % Dual Flags
VAPOR-TDU VOA #2	1VOA#2												
S16T034214	79-34-5	5.5	1.1.2.2-Tetrachioroethane	NGS	65	<3.0	3.0	n/a	nia	n/a	n/a	3.0	nlaU
S16T034214	79-00-5	5-6	1,1,2-Trichloroethane	NGS	100	<2.3	<23	n/a	nis	nya	nla	2.3	n/a U
8167034214	75-34-3	4.3	1,1-Dichloroethane	NGS	95	41.7	<1.7	n/a	n/a	rya	n/a	1.7	n/a U
\$167034214	75-35-4	75	1,1-Dichloroethene	NGS	88	<1.7	<1.7	n/a	nla	P.	n/a	1.7	n/a U
S16T034214	107-06-2	2-90	1,2-Dichlorosthane	NGS	100	<1.7	<1.7	r/a	nya	nya	nía	1.7	n/s U
S16T034214	542-75-6	75-6	1,3-Dichloropropena (Total)	NGS	nle	r/a	6,12	n/a	nla	nla	n/a	1,8	nle U
\$167034214	106-46-7	16-7	1,4-Dichlorobenzene	NGS	100	1.40	1.40	n/a	nia	n/s	n/a	4.1	n/a U
8167034214	123-91-1	91-1	1,4-Dioxane	NGS	88	<2.0	<20	rVa		n/a	n/a	2.0	Uelu
S16T034214	71-36-3	5.3	1-Butanol	NGS	120	64.3	44.3	n/a	nla	ris	nya	4.3	n/a/U
8167034214	111-70-8	9-02	1-Haptanol	NGS	98	49.1	49.1	n/a		rya	n/a	9.1	n/a U
\$167034214	71-23-8	3-8	1-Propanol	NGS	120	<8.9	<8.9	n/a	nla	n/a	n/a	8.9	n/a U
S16T034214	108-47-4		2.4-Dimethylpyricine	NGS	88	44.1	<4.1	n/a		rila	n/a	4.1	n/a U
\$167034214	1708	1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<22	n/a	nia	n/a	n/a	22	n/a U
8167034214	78-93-3		2-Butanone	NGS	88	43.1	- 3.1	n/a	nla	nia	n/a	3.1	n/s U
\$167034214	110-43-0		2-Heptanone	NGS	26	<2.6	<2.6		nla	nia	n/a	2.6	n/a U
S16T034214	591-78-5	-	2-1-19x8moms	NGS	98	<2.5	42.5	n/a	nla	n/a	n/a	2.5	n/a U
S16T034214	534-22-5	100	2-Methylfuran	NGS	26	<1.3	<1,3	n/a		n/a	n/a	1.3	n/a U
\$167034214	78-94-4		3-Buten-2-ane	MGS	16	41.9	6.15	n/a	nla	pla	n/a	1.9	n/a U
S16T034214	106-35-4	33	3-Heptanone	NGS	at.	427	427	nla		nia	n/a	2.7	n/a U
\$167034214	106-68-3		3-Octanone	NGS	82	<3.3	<3.3	n/a	nla	alc.	n/a	3.3	n/a U
\$167034214	105-42-0	10	4-Methyl-2-hexanone	MGS	98	42.8	42.8	n/a	nla	n/a	n/a	2.6	n/a U
\$167034214	108-10-1		4-Methyl-2-Pentanone	NGS	100	422	92	n/a	nla	e)u	n/a	22	U e/u
S16T034214	87-84-1		Acetone	NGS	91	4.4	3.7	rita		n/a	n/a	2.8	n/a BJ
S16T034214	75-05-8		Acetoeitrile	NGS	88	6.1.8	32	n/a	nla	nla	n/a	1.6	nla
S16T034214	98-86-2		Acetophenone	NGS	35	46.2	<6.2	nya	nla	nla	n/a	6.2	n/a U
S16T034214	107-13-1		Acrylonitrile	MGS	100	42.1	2.1	nta	nla	SC.	n/s	2.1	nau
S16T034214	107-18-6		Ally Alcehol	NGS	120	423	423	nya	nla	nia	n/a	2.3	n/a U
8167034214	107-05-1		Ally Chloride	MGS	100	42.5	925			n/a	n/a	2.5	nlaU

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected

N - Named TIC

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Cartridge Evaluation Data Summary of All Results

Sample Group: 20162891 SDG Number:

Customer Sample ID: 16-08636-2-BLANK-EFF Customer Sample ID: 16-08636-2-BLANK-EFF

Samples R	AR CAS B	Analyte	Cult	STO %	Blank	Result	Duplicato	Average	RPD % Spk Rec %	ph Rec %	Det Limit o	Det Limit Cet Err % Qual Flags
VAPOR-TDU VOA #2	U VOA #2											
S16T034214	71-43-2	Benzono	NGS	88	41.5	41.5	e/u	n/a	n/s	nka	1.5	n/a U
S16T034214	100-47-0	Benzoninie	NGS	96	<4.2	<4.2	n/a	nía	n/a	nla	4.2	n/a U
S16T034214	123-72-8	Butanal	NGS	100	<3.0	<3.0	n/a	n/a	n/a	evu	3.0	Ualu
S16T034214	109-74-0	Butamenitrile	NGS	100	<2.1	<2.1	n/a	nía	n/a	nla	2.1	Ualu
S16T034214	56-23-5	Carbon tetrachloride	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	U(a)U
8167034214	108-90-7	Chlorobenzene	NGS	66	<2.5	<2.5	n/a	n/a	n/a	eļu	2.5	n/a U
S16T034214	75-00-3	Chlorosthane	MGS	110	41.6	41.6	nla	nía	n/a	nla	1.6	n/a U
S16T034214	67-66-3	Ohloroform	MGS	100	41.8	<1.8	nía	n/a	n/a	r/a	1.8	U/a/U
S16T034214	110-82-7	Cyclohexane	NGS	100	41.4	41.4	n/a	nia	n/a	rva	1.4	U/a/U
S16T034214	124-18-5	Decare	MGS	88	<3.3	<3.3	nya	nía	n/a	n/a	3.3	Ualu
S16T034214	84-17-5	Ethanol	NGS	120	6.6	35	n/a	nía	n/a	e/u	3.7	n/a B
S16T034214	141-78-6	Ethyl acotato	NGS	85	41.8	<1.8	n/a	nia	n/a	n/a	1.8	U s/u
S16T034214	100-41-4	EBylbenzene	NGS	66	42.4	<2.4	nla	nía	n/a	n/a	2.4	n/a U
S16T034214	110-00-9	Furan	NGS	06	41.8	41.6	n/a	n/a	n/a	n/a	1.6	n/a U
\$167034214	110-54-3	Hexane	NGS	100	1.5	<1.3	n/s	n/a	e/u	ena	1.3	n/a U
8167034214	628-73-9	Hexanenitrile	NGS	88	<2.6	<2.6	n/a	nía	n/a	n/a	2.6	n/a U
S16T034214	126-98-7	Methacryfonitrite	NGS	100	<1.8	<1.8	n/a	n/a	n/a	e/u	1.8	Uleju
S16T034214	75-09-2	Methylene Chloride	NGS	110	4.2	<4.1	n/a	nía	n/a	ela	4.1	Ush .
S16T034214	91-20-3	Naphthalene	NGS	98	<5.3	<5.3	n/a	nía	n/a	th/s	5.3	n/a U
S16T034214	96-95-3	Nitrobenzene	NGS	94	44.7	44.7	n/a	n/a	n/a	e/u	4.7	n/a U
S16T034214	110-59-8	Pentanentrile	NGS	96	<2.6	<2.6	ru(a	nla	n/a	n/a	2.6	U a/u
S16T034214	107-12-0	Propanentrile	NGS	100	41.8	×1,8	n/a	n/a	n/a	eyu	1.8	n/a/U
S16T034214	110-96-1	Pyridine	NGS	110	<2.8	<2.8	n/a	nía	n/a	n/a	2.8	n/a/U
S16T034214	100-42-5	Styrene	NGS	97	42.7	<2.7	E/U	nla	n/a	n/a	2.7	n/a U
S16T034214	127-18-4	Tetrachioneithene	NGS	66	<1.8	<1.8	nla	n/a	n/a	n/a	1.8	n/a/U
S16T034214	108-88-3	Toluene	NGS	88	<2.2	<2.2	nla	nla	n/a	n/a	2.2	n/a U
S16T034214	79-01-6	Trichloroethene	NGS	- 98	<1.6	<1.6	n/a	nla	n/a	n/s	1.6	n/a U
S16T034214	75-69-4	Trichlorofluoromethane	MGS	88	6.1.9	41.9	eju	nía	n/a	n/a	1.9	n/a/U

J - Estimated U - Less Than Detection Limit

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected N - Named TIC

T - Tentatively Identified Compound 8 - Blank Contamination

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Cartridge Evaluation Data Summary of All Results

Sample Group: 20162991 SDG Number:

Customer Sample ID: 16-08636-2-BLANK-EFF Customer Sample ID: 16-08636-2-BLANK-EFF

Samples R	AF CAS	18.8	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Average RPD % Spk Rec %	Det Limit	Det Limit Cnt Err % Qual Flags
VAPOR-TD	U VOA #	22										1	
S16T034214	10	061-01-5	ds-1,3-Dichloropropene	NGS	97	41.8	A.	n/a	2,0		nla	1.8	
S16T034214	12	3-86-4	n-Butyl acetatle	NGS	83	<2.4	424	n/a	2,0	Table 1	n/a	2.4	
S16T034214	14.	2-82-5	n-Heptane	NGS	100	41.8	41.6	n/a			nla	1.6	n/a U
5167034214	100	9-20-1900	trans-1,3-Dichloropropene	NGS	¥	42.1	42.1	n/s			n/a	2.1	

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected

T - Tentatively Identified Compound B - Blank Contamination

J - Estimated U - Less Than Detection Limit

N - Named TIC

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Cartridge Evaluation Data Summary of All Results

Sample Group: 20162991
SDG Number:
Customer Sample ID: 16-08636-2-BLANK-IN
Customer Sample ID: 16-08636-2-BLANK-IN

Sample# R	A# CAS#		Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	RPD % Spk Rec %	DetLimb	Det Limb Cot Err % Dual Flass
VAPOR-TDU VOA #2	VOA#												
S16T034215	79-3	79-34-5	1,1,2,2-Tetrachioroethane	NGS	88	<3.0	<3.0	n/a	n/a	nla	n/a	3.0	n/a U
S16T034215	79-0	79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	423	n/a	n/a	nla	n/a	2.3	NaU
S16T034215	75-3	75-34-3	1,1-Dichloroethane	NGS	8	4.7	<1.7	n/a	n/a	nya	nta	1.7	NaU
\$167034215	75.0	75-35-4	1,1-Dichloroethene	NGS	8	4.7	<1.7	n/a	n/a	nla	n/s	1.7	Ush
\$167034215	107	107-06-2	1,2-Dichloroethane	NGS	100	41.7	<1.7	n/s	n/a	rya	n/a	1.7	n/a U
\$167034215	542	642-75-6	1,3-Dichloropropene (Total)	NGS	n/e	n/a	<1.8	n/a	n/s	nla	n/a	1,8	n/a U
S16T034215	106	106-46-7	1,4-Dichlarobenzene	NGS	100	1.45	1.40	n/a	n/a	n/a	E/C	.4.1	n/a U
\$167034215	123	123-91-1	1,4-Dioxane	NGS	98	<2.0	<2.0	n/a	n/a	nha	S/C	2.0	Ush
\$167034215	71-3	71-36-3	1-Butanol	NGS	120	64.3	64.3	n/s	n/a	e/u	nyo	4.3	U e/a
S16T034215	111	111-70-6	1-Heptanol	NGS	8	1.6>	49.1	n/a	n/a	n/a	n/a	9.1	n/a U
S16T034215	71-2	71-23-8	1-Propanol	NGS	120	<8.9	33	n/a	n/a	r/a	nya	8.9	n/a
\$167034215	108	108-47-4	2,4-Dimethytpyridine	NGS	65	<4.1	<4.1	n/a	n/a	n/a	n/a	4.1	n/a U
S16T034215	170	1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	rya	ng.	2.2	Ualu
3167034215	78-8	78-93-3	2-Butanone	NGS	83	<3.1	<3.1	n/s	n/a	r/a	ng.	1.0	Us U
S16T034215	110	110-43-0	2-Heptanone	NGS	a	<2.6	<2.6	n/a	n/a	1/3	n/a	2.6	n/a U
S15T034215	591.		2-Hexanone	NGS	86	<2.5	<2.5	n/s	n/a	r/a	rva	2.5	U/s/U
\$167034215	534	534-22-5	2-Methythuran	NGS	26	<1.3	<1.3	n/a	n/a	n/a	r/a	1.3	n/a (U
\$167034215	78-6	78-94-4	3-Buten-2-one	NGS	84	41.9	<1.9	n/a	n/a	n/a	r/a	1.9	n/a U
S16T034215	106	106-35-4	3-Heptanone	NGS	26	<2.7	<2.7	m/a	n/a	n/a	r/a	2.7	n/a U
S16T034215	106		3-Octanone	NGS	85	<3.3	<3.3	n/a	n/a	n/a	r/a	3.3	n/a U
\$167034215	105	105-42-0	4-Methyl-2-hexanone	NGS	96	<2.6	<2.6	e,u	n/s	n/a	1/3	2.6	Ula/u
\$167034215	108	108-10-1	4-Methyl-2-Pentanone	NGS	100	42.2	<2.2	n'a	n/a	n/a	n/a	22	Ulahu
\$167034215	67-64-1		Acetone	NGS	91	4.4	5.9	e,u	n/a	n/a	n/a	2.8	n/a BJ
\$167034215	75-0		Acetoritrile	NGS	88	<1.6	66	n'a	n/a	n/a	n/a	1,6	nía
\$167034215	98-8	98-88-2	Acetophenone	NGS	92	<6.2	<6.2	n/a	n/a	n/a	n/a	62	U/a/U
S16T034215	107	107-13-1	Acytonicile	NGS	100	42.1	<2.1	m/a	n/a	n/a	n/a	2.1	U(a)U
\$167034215	107.		Ally Alcohol	NGS	120	<23	42.3	n'a	n/B	n/s	n/a	23	U(s)u
S16T034215	107	107-05-1	Allyl Chloride	NGS	100	425	<2.5	n/a	n/a	n/a	n/a	2.5	n/s U

T - Tentatively Identified Compound B - Blank Contamination

NA = Not Analyzed, ND = Not Detected

E - Outside Calibration Range

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Cartridge Evaluation Data Summary of All Results

Sample Group: 20162991 SDG Number: Customer Sample ID: 16-08636-2-BLANK-IN Customer Sample ID: 16-08636-2-BLANK-IN

Samples R	AF CAS#	Analyte	Unit	% drs	Blank	Result	Duplicate	Average	RPD % S	RPD % Spk Rec %	Det Limit	Det Limit Cet Err % Qual Flags
VAPOR-TDU VOA #2	J VOA #2								1			
S16T034215	71-43-2	Benzene	NGS	86	<1.5	<1.5	e/u	n/a	n/a	n/a	1.5	Walu
S16T034215	100-47-0	Benzonitrile	NGS	96	42	4.2	n/a	n/a	L	nía	4.2	n/a U
S16T034215	123-72-8	Butanal	NGS	100	0.8>	3.0	ela	n/a		n/a	3.0	n/a U
\$161034215	109-74-0	Butanenitrile	NGS	100	1.2	42.1	n/a	n'a	n/s	n/a	2.1	Ua/u
316T034215	56-23-5	Carbon tetrachloride	NGS	100	<1.5	<1.5	n/a	n/a		n/a	1.5	n/a U
316T034215	108-90-7	Chlorobenzene	NGS	88	42.5	42.5	n/a	n's		n/a	2.5	n/a U
S16T034215	75-00-3	Chloroethane	NGS	110	6,15	8.12	n/a	m/a		n/a	1.6	n/a/U
S16T034215	87-66-3	Chloroform	NGS	100	<1.8	418	n/s	2,0	e/u	n/8	1.8	n/a U
S16T034215	110-82-7	Cyclohexane	NGS	100	414	41.4	n/a	n's		n/a	1.4	n/a U
S16T034215	124-18-5	Decano	SDN	88	93	0.00	n/a	n'a		n/a	3.3	n/a U
S16T034215	84-17-5	Ethinnol	NGS	120	9'9	8	n/a	n/a		n/a	3.7	n/a 8
S16T034215	141-78-6	Effryl acetato	NGS	85	41.8	418	n/a	n/a		n/a	1.0	n/a U
S16T034215	100-41-4	Ethylberzene	NGS	66	424	424	n/a	n/a		nla	2.4	n/a U
S16T034215	110-00-9	Furan	NGS	80	41.8	<1.6	n/a	n/a		nla	1.6	n/a U
S16T034215	110-54-3	Hexane	NGS	100	1.5	41.3	n/a	n/a	E/u	n/s	1.3	n/a U
S16T034215	628-73-9	Hexanentrile	NGS	98	<2.6	42.6	n/a	nía	n/a	n/a	2.6	n/a U
S16T034215	126-98-7	Methacryfonitrille	NGS	100	41,8	41.8	n/a	n/a	e/u	nle	1.8	n/a U
S16T034215	75-09-2	Methylone Chlorida	NGS	110	4.2	44.1	n/a	n/a	e/u	nla	4.1	n/a U
S16T034215	91-20-3	Naphthalene	NGS	92	<5.3	<5.3	n/a	n/a	e/u	nla	6.3	n/a/U
S16T034215	88-85-3	Mirobenzene	NGS	26	54.7	54.7	n/a	n/a	n/a	n/a	4.7	n/a U
S16T034215	110-59-8	Pentanentrile	NGS	98	<2.6	<2.6	n/a	n/a	n/a	n/a	2.6	n/a U
S16T034215	107-12-0	Propanentrite	NGS	100	41.8	41.8	n/a	n/a	n/a	n/a	1.8	n/a/U
S16T034215	110-96-1	Pyridine	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	Ualu
S16T034215	100-42-5	Styrene	NGS	87	<2.7	<2.7	n/a	nía	e/u	e/u	2.7	n/a U
S16T034215	127-18-4	Tetrachione@hene	NGS	66	<1.8	41.8	n/a	n/a	n/a	nya	1.8	n/a/U
S16T034215	106-88-3	Toluene	NGS	88	<2.2	<2.2	nla	n/a	n/a	n/a	2.2	NaU
S16T034215	79-01-6	Trichloroethane	NGS	96	41.6	41.6	n/a	nia	n/a	n/a	1.6	Na U
S16T034215	75-69-4	Trichlorofluoromethane	NGS	88	6.1.9	6,15	nla	nla	n/a	n/a	1.9	Na U

T - Tentatively Identified Compound B - Blank Contamination

NA = Not Analyzed, ND = Not Detected

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Cartridge Evaluation Data Summary of All Results

Sample Group: 20162991

SDG Number:

Customer Sample ID: 16-08636-2-BLANK-IN Customer Sample ID: 16-08636-2-BLANK-IN

Sample# R	All CAS#	Analyte	nuit.	STD %	Blank	Result	Duplicate	Average	RPD %	RPD % Spk Rec %	Det Limit	Det Limit Cet Err % Qual Flags
VAPOR-TD(J VOA #2											
16T034215	10061-01-5	dis-1,3-Dichloropropene	NGS	26	¢1,8	<1.8		n/a	2,0	n/a	1.8	Ukh
16T034215	123-88-4	n-Butyl acetate	NGS	88	424	424				n/a	2.4	1
116T034215	142-82-5	n-Heptane	NGS	100	41.6	41.6	n'a				1.8	
316T034215	10061-02-6	trans-1,3-Dichloropropene	NGS	36	421	421		nia	5,0		24	of a Li

NA = Not Analyzed, ND = Not Detected E - Outside Calibration Range

N - Named TIC

T - Tentatively Identified Compound B - Blank Contamination

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Cartridge Evaluation Data Summary of All Results

Sample Group; 20162991 SDG Number; Customer Sample ID: 16-08636-2-IN-B Customer Sample ID: 16-08636-2-IN-B

Samples R	A# CAS#	Analyte	Unit	STD %	Blank	Result	Duplicate	Average		RPD % Sak Rec %	Det Umit	Det Limit Cot Err % Dual Flags
VAPOR-TDU VOA #2	VOA #2											
S16T034216	79-34-5	1,1,2,2-Tetrachioroethane	NGS	85	3.0	<3.0	n/a	n/a	r/a	n/a	3.0	n/a U
\$167034216	79-00-5	1,1,2-Trichlosoethane	NGS	100	<2.3	<2.3	n/a	n/a	rVa	n/a	2.3	n/a U
\$167034216	75-34-3		NGS	68	<1.7	<1.7	n/s		r/a	nya	1.7	Uka U
S16T034216	75-35-4		NGS	88	4.7	<1.7	n/a	n/a	n/a	rya.	1.7	n/a U
\$167034216	107-06-2	1,2-Dichloroethane	NGS	100	41.7	<1.7	n/a	n/a	n/a	rya	1.7	n/a U
S16T034216	542-75-6		NGS	e,u	n/a	<1.8	n/a	n/a	n/a	nya	1,8	Ula IU
\$167034216	106-46-7	7 1.4-Dichlarobenzene	NGS	100	1.40	54.1	n/a	n/a	n/a	rya	4.1	n/a U
S15T034216	123-91-1	0	NGS	88	<2.0	<2.0	e/u	n/a	n/a	n/a	2.0	n/a U
S16T034216	71-36-3		NGS	120	c4.3	1.6E+03	6,0	ajru	n/a	rva	4.3	3 c/v
\$167034216	111-70-6	3 1-Heptanol	NGS	06	<9.1	<9.1	n/a	n/a	n/a	υţα	1.6	UsiO
\$167034216	71-23-8		NGS	120	<8.9	150	n/a	n/a	n/a	r/a	8.9	n/a
S167034216	108-47-4		NGS	88	c4.1	44.1	n'a	n/a	n/a	r/a	4.1	Ua U
\$167034216	1708-29-8	- 1	NGS	110	<2.2	<2.2	n/a	n/a	n/a	r/a	22	n/s U
S16T034216	78-93-3		NGS	83	<3.1	8.4	n/a	n/a	n/a	nya	1.50	n/a J
S16T034216	110-43-0		NGS	98	<2.6	7.8	n/a	n/a	n/a	n/a	2.6	L n/n
S167034216	691-78-6	3 2-Nexanone	NGS	98	<2.5	4.0	n/a	n/a	n/a	n/a	2.5	n/a J
S16T034216	534-22-5		NGS	26	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a U
\$167034218	78-94-4		NGS	91	61.9	6.7	n/a	nfa	n/a	n/a	1.9	L uju
S167034216	106-35-4		NGS	8	427	6.1	n/a	n/a	n/s	n/a	2.7	n/a J
S16T034216	106-68-3		NGS	85	<3.3	433	n/a	nha	n/a	n/a	3.3	n/a U
S167034216	105-42-0		NGS	96	42.8	426	n/a	n/s	n/s	n/a	2.6	n/a U
\$167034216	108-10-1		NGS	100	422	22	nía	nha	n/a	n/s	22	n/a J
S16T034216	67-84-1		NGS	91	4.4	380	nía	n/s	n's	n/a	2.8	n/s B
S16T034216	75-05-8		NGS	88	41.6	190	n/a	rya	n's	a/n	1.6	n/a
S16T034216	98-96-2		NGS	35	<6.2	46.2	e/u	n/a	n/a	2/2	6.2	n/a U
S16T034216	107-13-1		NGS	100	42.1	421	n/a	n/s	n/a	a/a	2.1	n/s U
S16T034216	107-18-6		NGS	120	<2.3	<2.3	n/a	n/a	n/a	n/s	2.3	n/a U
S16T034216	107-05-1		NGS	100	42.5	<2.5	n/a	n/a	n'a	n/a	2.5	r/a U

T - Tentatively Identified Compound B - Blank Contamination

E - Outside Calbration Range

NA = Not Analyzed, ND = Not Detected N - Named TIC

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Cartridge Evaluation Data Summary of All Results

Sample Group: 20162991 SDG Number: Customer Sample ID: 16-08636-2-IN-B Customer Sample ID: 16-08636-2-IN-B

Samples R	AF CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Sok Rec %	Det Umit	Cat Err V. Qual Flans
VAPOR-TDU VOA #2	VOA #2											
\$167034216	7143-2	Bertzene	NGS	88	<1.5	1.9	m'a	nla	2,0	n/a	1.5	N8 J
S16T034216	100-47-0	Benzonlinie	NGS	96	54.2	54.2	m/a	nla	0/0	n/a	4.2	n/a U
\$167034216	123-72-8	Butanal	NGS	100	<3.0	15	m'a	n/a	n'a	n/a	3.0	n/a
S16T034216	109-74-0	Butanenikrite	NGS	100	421	42.1	n'a	nla	2/4	n/a	2.1	n/a U
\$167034216	56-23-5	Carbon tetrachloride	NGS	100	<1.5	<1.5	n/a	nfa	n/a	n/a	1.5	U/a/U
\$167034216	108-90-7	Chlorobenzene	NGS	88	425	<2.5	n/a	nla	2,0	n/a	2.5	U(a)U
\$167034216	75-00-3	Chloroethane	NGS	110	<1.8	<1.6	n/a	nla	n'a	n/a	1.6	n/a/U
\$167034216	67-66-3	Chloroform	NGS	100	6.13	<1.8	nía	nfa	e,u	n/a	1.8	UBN
\$167034216	110-82-7	Cyclohaoane	NGS	100	41.4	41.4	n/a	nla	n/a	n/s	1.4	n/a U
\$167034216	124-18-5	Decame	NGS	88	-3.3	<3.3	n/a	nla	n/a	n/a	3.3	n/a U
S167034216	84-17-5	Ethanol	NGS	120	6.6	220	n/a	nla	n/a	a/a	3.7	n/a B
\$167034216	141-78-6	Ethyl acetate	NGS	98	<1.8	<1.8	n/a	nya	n'a	n/a	1,8	n/a U
S167034216	100-41-4	Ethylbenzene	NGS	8	424	424	nía	rva	n/a	n's	2.4	n/a/U
S167034216	110-00-9	Furan	NGS	8	<1.6	17	n/a	nys	nía	n/a	1.6	rvla
S16T034216	110-54-3	Hexane	NGS	100	1.5	9.4	n/a	nya	n/a	n/a	1.3	n/a BJ
\$167034216	628-73-9	Haxanenitrile	NGS	88	<2.6	42.6	n/a	n/a	n/a	n/a	2.6	n/a/U
S16T034216	126-98-7	Methacrylonitrile	NGS	100	8/1×	<1.8	n/a	nya	n/a	e,e	1.8	n/a/U
S167034216	75-09-2	Methylene Chloride	NGS	110	4.2	4.1	n/a	rya	nía	n/a	4.1	n/a U
S16T034216	91-20-3	Naphthalene	NGS	88	<5.3	<5.3	nía	nya	n/a	e.	5.3	n/a U
S167034216	98-95-3	Mitrobonzene	NGS	8	54.7	4.7	n/a	nha	n/a	n/a	4.7	n/a U
S16T034218	110-59-8	Pentanenitrile	NGS	96	<2.6	926	n/a	n/a	n/a	5,6	2.6	rya U
\$167034216	107-12-0	Propaneritrie	NGS	100	6,15	3.1	n/a	n/a	n/a	n/a	1.8	n/a J
S167034216	110-86-1	Pyridine	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/s/u
\$167034216	100-42-5	Styrene	NGS	82	<2.7	427	n/a	n/a	n/a	n/a	2.7	r/s U
\$167034216	127-18-4	Tetrachloroethene	NGS	66	41,8	15	n/a	n/a	n/a	n'a	1.8	rva
S16T034216	108-88-3	Toluene	NGS	96	<2.2	5.0	n/a	n/a	n/a	n/a	2.2	r/a J
S16T034216	79-01-6	Trichloroethene	NGS	86	<1,6	41.6	n/a	n/a	n/a	n/a	1.6	rvaU
S16T034216	75-69-4	Trichlorofluoromethane	NGS	88	<1.9	12	n/a	n/a	n/a	n/a	1.9	r/a

T - Tentatively Identified Compound B - Blank Contamination

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected N - Named TIC

> J - Estimated U - Less Than Detection Limit

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Cartridge Evaluation Data Summary of All Results

Sample Group: 20162991 SDG Number:

Customer Sample ID: 16-08636-2-IN-B Customer Sample ID: 16-08636-2-IN-B

Samples R	A# CA	*8	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Average RPD % Spk Rec %	Det Limit C	Cnt En % Qual Flags
VAPOR-TDU	U VOA #	52											
\$167034216	100	361-01-5	dis-1,3-Dichloropeopene	NGS	16	c1.8	<1.8	n/a	n/s	n/a	n/a	1.8	U(s)u
\$167034216	123	3-88-4	n-Butyl acetate	NGS	83	424	424	n/a	n/a	n/a	n/a	2.4	n/a U
S16T034216	145	42-82-5	n-Heptane	NGS	100	<1.6	12		n/a	n/a	n/a	1.6	L e/u
\$167034216	100	361-02-6	trans-1,3-Dichloropropene	NGS	86	42.1	42.1	n/a	n/a	n/a	n/a	2.1	n/a U

NA = Not Analyzed, ND = Not Detected

N-Named TIC

T - Tentatively Identified Compound B - Blank Contamination

E - Outside Calbration Range

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Cartridge Evaluation Data Summary of All Results

Sample Group: 20162991 SDG Number:

Customer Sample ID: 16-08636-2-IN-C Customer Sample ID: 16-08636-2-IN-C

S16T094217 79-3 S16T094217 79-0 S16T094217 75-3 S16T094217 75-3 S16T094217 75-3 S16T094217 107-	OA #2	The same of the sa										
\$16T034217 \$16T034217 \$16T034217 \$16T034217	24 100											
\$16T034217 \$16T034217 \$16T034217	79-34-5	1,1,2,2-Tetrachloroethane	NGS	66	<3.0	<3.0	n'a	n/s	n/a	e/u	3.0	n'a U
\$16T034217 \$16T034217	2-00-64	1,1,2-Trichlonoethane	NGS	100	<2.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a U
\$16T084217 \$16T084217	75-34-3	1.1-Dichloroethane	NGS	88	<1.7	C1.7	n/a	n/a	n/a	r/s	1.7	n/a U
S16T034217	75-35-4	1,1-Dichloroethene	SON	66	<1.7	51.7	n/a	n/a	n/a	r/a	1.7	n/a U
	107-06-2	1,2-Dichloroethane	NGS	100	C1.7	<1.7	n/a	n/a	n/a	r/s	1.7	n/a U
S16T034217	542-75-6	1,3-Dichloropropene (Total)	NGS	nia	e/u	<1.8	n/a	n/a	n/a	r/a	1.8	n/a U
S16T034217	108-46-7	1,4-Dichlorobenzene	NGS	100	c4.1	1.10	n/a	n/a	n/a	nla	4.1	n/a U
S16T034217	123-91-1	1,4-Dioxane	NGS	88	<2.0	<2.0	n/a	n/a	n/a	nya	2.0	n/a U
S16T034217	71-36-3	1-Butanol	NGS	120	64.3	1.6E+03	n/a	n/a	n/a	ela	4.3	n/a E
S16T034217	111-70-6	1-Heptanol	NGS	06	1.6>	<9.1	n/a	n/a	n/a	e/u	1.6	n/a U
\$167034217	71-23-8	1-Propanol	NGS	120	€8.9	97	n/a	n/a	n/a	r/s	8.9	n/a
S16T034217	108-47-4	2,4-Dimethylpyridine	NGS	66	C4.1	c4.1	n/a	n/a	n/a	n/a	4.1	n/a U
\$167034217	1708-29-8	2.5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a	n/a	riva	2.2	n/a U
316T034217	78-93-3	2-Butanone	NGS	83	43.1	8.2	n/a	n/s		n/a	3.1	n/a J
\$16T034217	110-43-0	2-Heptanone	NGS	86	<2.6	8.8	n/a	n/a	n/a	r/a	2.6	n/a J
316T034217	591-78-6	2-Hexanone	NGS	96	<2.5	4.2	n/a	n/a	n/a	e/u	2.5	n/a J
316T034217	534-22-5	2-Methylfuran	NGS	97	<1.3	<1,3	n/a	n/a	n/a	rita	1.3	n/a U
S16T034217	78-94-4	3-Buten-2-one	NGS	91	61.9	6.8	n/a	n/a		e/u	1.9	n/a J
3167034217	106-35-4	3-Heptanone	NGS	35	427	6.9	n/a	e/u	n/a	n/a	2.7	m'a J
316T034217	106-68-3	3-Octanone	NG\$	82	<3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a U
S16T034217	105-42-0	4-Methyl-2-hexanone	NGS	96	<2.6	<2.6	n/a	n/a	n/a	rva	2.6	n/a U
S16T034217	108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	2.4	n/a	n/a	n/a	nya	2.2	ra'a J
S16T034217	67-64-1	Acetone	NGS	95	4.4	340	n/a	n/a	n/a	nia	2.8	n/a B
S16T034217	75-05-8	Acetonitrile	NGS	88	<1.6	St.	n/a	n/a	n/a	eln	1.6	n/a
S16T034217	98-86-2	Acetophenone	NGS	85	<6.2	<6.2	n/a	n/a	n/a	rita	6.2	n/a U
S16T034217	107-13-1	Acrylonitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	n/a	2.1	n's U
S16T034217	107-18-6	Allyl Alcohol	NGS	120	<2.3	<2.3	n/a	n/a	n/a	nla	2.3	n/s U
S16T034217	107-05-1	Allyl Chloride	NGS	100	<2.5	<2.5	n/a	n/a	n/a	e/u	2.5	n/a U

J - Estimated U - Less Than Detection Limit

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected

T - Tentatively Identified Compound B - Stank Contemination

N - Named TIC

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Cartridge Evaluation Data Summary of All Results

Sample Group: 20162391 SDG Number:

Customer Sample ID: 16-08636-2-IN-C Customer Sample ID: 16-08636-2-IN-C

Samples R	AF CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Det Limit Cat Err % Qual Flags
VAPOR-TDU VOA #2	VOA #2									1		
S16T034217	71-43-2	Benzere	MGS	86	<1.5	1.9	n/a	nia	n/a	n/a	1.5	n/a J
S16T034217	100-47-0	Benzonitrile	NGS	96	4.2	<4.2	e/u	n/a	n/a	n/a	4.2	n(a)u
S16T034217	123-72-8	Butanal	MGS	100	<3.0	19	n/a	n/a	n/a	n/a	3.0	nía
S16T034217	109-74-0	Butanenitrile	NGS	100	42.1	<2.1	n/a	n/a	n/a	n/a	2.1	n'a U
S16T034217	56-23-5	Carbon tetrachioride	NGS	100	<1.5	<1.5	n/a	n/a	n/a	e/u	1.5	n/a U
S16T034217	108-90-7	Chlorobenzene	NGS	66	<2.5	42.5	n/a	n/a	n/a	n/a	2.5	n/a U
S16T034217	75-00-3	Chloroethans	NGS	110	<1.6	<1.6	n/a	n/a	n/a	n/a	1.6	U a/u
S16T034217	67-66-3	Chieroform	NGS	100	41.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a U
S16T034217	110-82-7	Cyclohexane	NGS	100	41.4	<1.4	n/n	n/a	n/a	m/a	1.4	n/a U
S16T034217	124-18-5	Decane	NGS	66	<3.3	6.3	n/a	n/a	n/a	m/a	3.3	n/a J
S16T034217	84-17-5	Ethanol	NGS	120	6.6	180	n/a	nia	n/a	n/a	3.7	n/a 8
S16T034217	141.78-6	Ethyl acetate	NGS	88	<1.8	<1.8	e/u	n/a	n/a	e/u	1.8	n/a U
\$167034217	100-41-4	Ethylbenzene	NGS	88	42.4	<2.4	e,ru	n/a	n/a	n/a	2.4	n/a U
S16T034217	110-00-9	Furam	NGS	80	<1.6	15	n/a	2,0		n/a	1.6	n/a
S16T034217	110-54-3	Hexane	NGS	100	1.5	11	n/a	n/a	e/u	n/a	1.3	r/a BJ
S16T034217	628-73-9	Hexamenitrile	NGS	88	42.6	<2.6	a/a	n/a		n/a	2.6	n/a U
S16T034217	126-98-7	Methacrytonizile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	r/a U
S16T034217	75-09-2	Methylene Chloride	NGS	110	4.2	44.1	nla	n/a	n/a	n/a	4.1	n/a U
S16T034217	91-20-3	Naphthalene	NGS	95	<5.3	<5.3	nya	n/a	n/a	n/a	5.3	n/a U
8167034217	88-88-3	Nitrobenzene	NGS	84	C4.7	<4.7	nia	n/a	n/s	n/a	4.7	n/a U
S16T034217	110-59-8	Pentanenitrile	SON	88	<2.6	<2.6	n/a	n/a		n/a	2.6	n/a U
S15T034217	107-12-0	Preparentifile	NGS	100	<1.8	3.0	rvis	n/a	n/a	n/a	1.8	1/0/1
S15T034217	110-88-1	Pyridine	NGS	110	<2.8	<2.8	nla	n/a		n/a	2.8	r/a U
S16T034217	100-42-5	Styrene	NGS	26	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	r/a U
S16T034217	127-18-4	Tetrachloroethere	NGS	86	<1.8	15	nla	n/a	n/a	n/a	1.8	r/a
S16T034217	108-88-3	Toluene	NGS	86	<22	5.2	nla	n/a	n/a	n/a	2.2	1/8/3
S16T034217	79-01-6	Trichloroothene	NGS	86	<1.6	<1.6	nla	n/a	n/a	n/a	1.6	r/a U
S16T03A217	75-69-4	Trichlorofluoromethane	NGS	88	<1.9	12	n/a	n/a	n/a	n/a	1.9	rie J

J - Estimated U - Less Than Detection Limit

E - Outside Calbration Range

NA = Not Analyzed, ND = Not Detected N - Named TIC

T - Tentatively Identified Compound B - Blank Contamination

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Cartridge Evaluation Data Summary of All Results

Sample Group: 20162991 SDG Number:

Customer Sample ID: 16-08636-2-IN-C Customer Sample ID: 16-08636-2-IN-C

Samples R	Aff CAS #	Analyte	Unit	\$ CLS	Blank	Result	Duplicate	Average		RPD % Spk Rec %	Det Limit	Det Limit Cet Err % Qua	sal Flags
VAPOR-TD	U VOA #2												
S16T034217	10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	<1.8				r/s	1.8		
S16T034217	123-86-4	n-Butyl acetaba	NGS	83	42.4	<2.4				e/a	2.4		
S16T034217	142-82-5	n-Heptane	NGS	100	<1.6	13	n/a	n/a	n/a	r/a	1.6	n/a	
S16T034217	10061-02-6	trans-1,3-Dichloropropera	NGS	946	42.1	<2.1				r/a	2.1		

NA = Not Analyzed, ND = Not Detected

N - Named TIC

E - Outside Calibration Range

T - Tentatively Identified Compound B - Blank Contamination

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Cartridge Evaluation Data Summary of All Results

Sample Group: 20162991 SDG Number:

Customer Sample ID: 16-08536-2-IN-D Customer Sample ID: 16-08636-2-IN-D

Samples R A	R AF CASE Ans	Analyte	Unit	24 dTS	Blank	Result	Duplicate	Average		RPO 16 Spk Rec 16	Det Limit	Det Limit Crit Err % Qual Flags
VAPOR-TDU VOA #2	VOA #2											
S16T034218	79-34-5	1,1,2,2-Tetrachionoethane	NGS	96	<3.0	<3.0	n/a	n/a	e,u	n/a	3.0	n/a U
S16T034218	79-00-5	1.1,2-Trichlonethane	NGS	100	423	<2.3	n/a	n/a	n's	n/a	2.3	n/s U
S16T034218	75-34-3	1,1-Dichlorpethane	NGS	66	<1.7	<1.7	e,u	nla	n/e	n/a	1.7	n/a U
S16T034218	75.354	1,1-Dichloroethene	NGS	66	<1.7	<1.7	n'a	n/a	n/a	n/a	1.7	n/a U
S15T034218	107-05-2	1,2-Dichloroethane	NGS	100	<1.7	<1.7	m'a	n/a	n/a	n/a	1.7	n/a U
S15T034218	542-75-8	1,3-Dichloropropene (Total)	NGS	n/s	n/a	<1.8	n'a	n/a	n/a	n/a	1.8	n/a U
S16T034218	106-46-7	1,4-Dichlorobenzene	NGS	100	64.1	c4.1	m/a	n/a	n/a	n/a	4.1	n/a U
S16T034218	123-91-1	1,4-Dioxane	NGS	86	<2.0	<2.0	n/a	n/a	n/a	n/a	2.0	n/a U
S16T034218	71-38-3	1-Butanol	NGS	120	64.3	1.5E+03	n/a	n/a	n/a	n/a	6.3	n'a E
S16T034218	111-70-6	1-Heptanol	NGS	96	<9.1	<9.1	n/a	n/a	n/a	e/u	9.1	n/a U
S16T034218	71-23-8	1-Propanol	NGS	120	<8.9	98	n/a	n/a	n/a	n/a	6.9	n/a
S15T034218	108-47-4	2,4-Dimethy/pyridine	NGS	66	c4.1	c4.1	n/a	n/a	n/a	r/a	4.1	n/a U
S16T034218	1708-29-8	2.5-Dihydrofuran	NGS	110	42.2	422	n/a	n/a	n/a	n/a	2.2	n/a U
S16T034218	78-93-3	2-Butanone	NGS	83	4.1	7.6	n/a	n/a	n/a	rva	3.1	n/a J
S16T034218	110-43-0	2-Heptanone	NGS	×	42.6	4.8	n/a	n/a	n/a	n/a	2.6	n's J
8167034218	891-78-6	2-Hexanone	NGS	38	425	3.4	n/a	n/a		n/a	2.5	n/a J
S16T034218	534-22-5	2-Methylfuran	NGS	28	<1.3	<1.3	n/a	n/a	n/a	n/a	1.3	n/a U
S16T034218	78-94-4	3-Buten-2-one	NGS	91	6,12	5.8	r/a	nia		n/a	1.9	n/a J
S16T034218	106-35-4	3-Heptanone	NGS	72	47	6.0	r/a	nla	n/a	n/a	2.7	n/a J
S16T034218	106-68-3	3-Octanons	NGS	95	<3.3	<3.3	r/a	n/a	nla	n/a	3.3	n/a U
S16T034218	105-42-0	4-Methyl-2-hexanone	NGS	96	<2.6	<2.6	rva	nla		e/u	2.6	n/a U
S16T034218	108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	4.7	n/s	nla	nta	n/a	22	Na J
S16T034218	67-64-1	Acetone	NGS	16	4.4	270	rife	nla		n/a	2.8	n/a B
S16T034218	75-05-8	Acetonitrile	NGS	96	<1.6	120	nla	n/a	nla	n/a	1.6	n/a
S16T034218	98-86-2	Acetophenone	NGS	92	<6.2	<6.2	nla	n/a	nla	n/a	6.2	n/a U
S16T034218	107-13-1	Acrylonitrie	MGS	100	42.1	<2.1	nya	n/a	n/a	n/a	2.1	n/a U
S16T034218	107-18-6	Allyl Alcohol	NGS	120	<2.3	<2.3	nla	n/a	nla	n/a	2.3	n/a U
S16T034218	107-05-1	Allyl Chloride	MGS	100	<2.5	<2.5	nla	n/a	n/s	n/a	2.5	n/a U

NA = Not Analyzed, ND = Not Detected

E - Outside Calbration Range

N - Named TIC

T - Tentatively Identified Compound B - Blank Contamination

J - Estimated U - Less Than Detection Limit

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Cartridge Evaluation Data Summary of All Results

Sample Group: 20162991 SDG Number: Customer Sample ID: 16-08636-2-IN-D Customer Sample ID: 16-08636-2-IN-D

Samples R	A# CAS #	Analyte	Unit	STD%	Diank	Result	Duplicate	Average	Average RPD % Spk Rec %	pk Rec %	DetLimit	Det Limit Cot Err % Qual Flags
VAPOR-TDU VOA #2	J VOA #2									1		
S16T034218	71-43-2	Benzene	NGS	86	<1.5	1.8	n/a	n/a	n/a	n/a	1.5	L e/u
S16T034218	100-47-0	Benzonitrie	NGS	96	4.2	44.2	n/a	n/s	n/a	n/a	42	U/a U
\$167034218	123-72-8	Butanal	NGS	100	<3.0	14	n/a	n/a	n/a	n/a	3.0	n/a
S16T034218	109-74-0	Butanenihile	MGS	100	1.2	42.1	n/a	n/a	n/a	n/a	2.1	n/s U
S16T034218	56-23-5	Carbon tetrachloride	NGS	100	<1.5	<1.5	n/a	n/a	n/a	n/a	1.5	n/a U
S16T034218	108-90-7	Chlorobenzena	NGS	88	42.5	<2.5	n/a	n/a	n/a	n/a	2.5	n/a U
S16T034218	75-00-3	Chloroethane	NGS	110	6,15	<1.6	n/a	n/a	n/a	n/a	1.6	n/a U
S16T034218	67-66-3	Chloroform	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.6	Us/u
S16T034218	110-82-7	Cyclohexane	NGS	100	41.4	51.4	n/a	n/a	n/a	n/a	1.4	n/a U
S16T034218	124-18-5	Decane	NGS	66	3.3	<3.3	n/a	n/a	n/a	n/a	3.3	n/a U
S16T034218	84-17-5	Ethanol	NGS	120	6.6	170	n/a	e/u	n/a	n/a	3.7	n/a 8
S16T034218	141-78-6	Ethyl acetate	NGS	85	<1.8	c1.8	n/a	n/a	n/a	n/a	1.8	n/a U
S16T034218	100-41-4	Ethylbenzene	NGS	66	424	424	n/a	n/a	n/a	n/a	2.4	n/a U
S16T034218	110-00-9	Furan	NGS	06	<1.6	15	n/a	n/a	n/a	n/a	1.6	rv/a
S16T034218	110-54-3	Hexane	NGS	100	1.5	9.8	n/a	n/a	n/a	n/a	13	n/a BJ
S16T034218	628-73-9	Hexanenitrile	NGS	88	<2.8	<2.6	n/a	n/a	n/a	n/a	2.6	n/a U
S16T034218	126-98-7	Methacryfonitrile	NGS	100	<1.8	<1.8	n/a	n/a	n/a	n/a	1.8	n/a U
S16T034218	75-09-2	Methylene Chloride	NGS	110	4.2	c4.1	n/a	n/a	n/a	n/a	4.1	n/a U
S16T034218	91-20-3	Naphthalone	NGS	35	<5.3	<5.3	n/a	n/a	n/a	n/a	5.3	n/a U
S16T034218	98-85-3	Nitrobenzene	NGS	86	54.7	C4.7	n/a	n/a	n/a	n/a	4.7	n/a U
S16T034218	110-59-8	Pentaneniblio	NGS	88	<2.6	<2.6	n/s	n/a	n/a	n/a	2.6	n/a U
S16T034218	107-12-0	Propanentrile	NGS	100	<1.8	2.6	n/a	n/a	n/a	n/a	1.8	n/a 5
S16T034218	110-96-1	Pyridine	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/a U
S16T034218	100-42-5	Styrene	NGS	87	<2.7	<2.7	n/a	n/a	n/a	n/a	2.7	U/3 U
S16T034218	127-18-4	Tetrachlorcethene	NGS	88	<1.8	- 11	n/a	n/a	n/a	n/a	1.8	n/a J
S16T034218	108-88-3	Toluene	NGS	38	<2.2	4.5	n/a	n/a	n/a	n/a	22	n/a J
S16T034218	79-01-6	Trichloroethene	NGS	88	41.6	<1.6	n/a	n/a	n/a	n/a	1,6	n/a U
S16T034218	75-69-4	Trichlorofluoromethane	NGS	68	c1.9	11	n/a	e/u	n/a	n/a	1.9	n/a J

E - Outside Calibration Range

NA. = Not Analyzed, ND = Not Detected

Dange

T - Tentatively Identified Compound B - Blank Contemination

J - Estimated U - Less Than Detection Limit

N - Named TIC

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Cartridge Evaluation Data Summary of All Results

Sample Group: 20162991 SDG Number:

Customer Sample ID: 16-08636-2-IN-D Customer Sample ID: 16-08636-2-IN-D

Sampled R	A CAS #		Analyte	Unit	STD %	Blank	Result	Ouplicate	Average		RPO % Spk Rec %	Det Limit	Cnt Enr % Qual Flags
WAPOR-TD	TDU VOA #2												
\$167034218	10051-01	01-5	cis-1,3-Dichloropropena	NGS	26	<1.8	e1.8	n/a	n/a		e,w	1.8	r/a U
\$167034218	123-86-	4	n-Butyl acetate	NGS	88	42.4	<2.4	n/a	n/a	n/a		2.4	n/a U
S16T03A218	142-82-	9	n-Hoptane	NGS	100	61,6	41.6	n/a				1.6	n/a U
\$167034218	10061-02-	02-6	trans-1,3-Dichloropropene	NGS	8	121	42.1	n/a	n/a		n'a	2.1	n/a U

NA = Not Analyzed, ND = Not Detected

N - Named TIC

T - Tentatively Identified Compound B - Blank Contamination

E - Outside Calibration Range J - Essimated U - Less Than Detection Limit

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Cartridge Evaluation Data Summary of All Results

Sample Group: 20162991 SDG Number: Customer Sample ID: 16-08636-2-IN-E

Customer Sample ID: 16-08636-2-IN-E

Samples &	SAS B	and stand	CHIL	2010	Blank	Result	Daplicate	Average	_	RPD % Spk Rec %	Det Limit	Det Limit Ont Ear % Qual Flags
VAPOR-TDU VOA #2	U VOA #2											
S16T034219	79-34-5	1,1,2,2-Tetrachloroethane	NGS	66	<3.0	<3.0	nla	n/a	n/a	n'a	3.0	n/a U
S16T034219	79-00-5	1,1,2-Trichloroethane	NGS	100	<2.3	<23	n/a	n/a	e/u	e,w	2.3	n/s U
S16T034219	75-34-3	1,1-Dichloroethane	NGS	66	<1.7	<1.7	n/a	n/a	n/a	n'a	1.7	Ueln
S16T034219	75-35-4	1,1-Dichloroethene	NGS	96	<1.7	<1.7	u/u	n/a	n/a	a'm	1.7	USh
S16T034219	107-06-2	1,2-Dichloroethane	NGS	100	C1>	<1.7	n/s	n/a	e/u	n/a	1.7	n/a U
S16T034219	542-75-6		NGS	r/3	n/a	<1.8	n/a	n/a	e,ru	a,u	1.8	n/a U
S16T034219	106-46-7	1,4-Dichlorobenzene	NGS	100	1,45	44.1	e/u	n/a	n/a	a,c	4.1	U shu
S16T034219	123-91-1	1,4-Dioxane	NGS	96	<2.0	<20	e/u	nya	n/a	a'e	20	n/a U
S16T034219	71-36-3	1-Butanol	NGS	120	44.3	1.5E+03	n/u	n/a	n/a	n/a	4.3	n/a E
S16T034219	111-70-6		NGS	06	<9.1	49.1	n/a	nya	eju	ala	1.6	U s/u
S16T034219	71-23-8	1-Propanol	NGS	120	<8.9	110		nia	e,ru	n'a	6.8	nía
S16T034219	108-47-4	2,4-Dimethylpyridine	NGS	06	44.1	54.1	e/u	n/a	nia	ala	4.1	U ayu
S16T034219	1708-29-8	2,5-Dihydrofuran	NGS	110	<22	422		nha	n/a	ala	22	U siv
S16T034219	78-93-3	2-Butanone	NGS	88	43.1	6.3	n/a	nia	a'e	n's	3.1	n/a J
S16T034219	110-43-0	2-Heptanone	NGS	96	42.6	5.7	n/a	e)u	m'a	n/a	2.6	nía J
S16T034219	591-78-6	2-Hexanone	NGS	98	<2.5	3.3	n/a	n/a	9,0	n'e	2.5	n/a J
S16T034219	534-22-5	2-Methylfuran	NGS	37	<1.3	<1.3	e,ru	nla	9,0	n/e	13	Ush
S16T034219	78.94.4	3-Buten-2-cna	NGS	91	<1.9	5.7	n'a	n/a	a'a	n/a	1.9	L e/u
S16T034219	106-35-4	3-Heptanone	NGS	26	427	5.8	n'a	n/a	a'e	nia	2.7	n/a J
\$167034219	106-68-3	3-Octamone	NGS	85	433	<3.3	e,w	e)u	e,u	eln	33	UBN
S16T034219	105-42-0	4-Methyl-2-hexanone	NGS	96	42.6	<2.6	ns'a	eyu	n/a	nla	2.6	U s/u
S16T034219	108-10-1	4-Methyl-2-Pentanone	NGS	100	422	422	n/a	e)u	a/a	nia	22	n/a U
S16T034219	67-64-1	A.cetone	NGS	91	4.4	240	e,u	e)u	0,0	n/a	2.8	n/a 8
S15T034219	75-05-8	A.cetonitrile	NGS	88	<1.6	33	n'a	n/a	nla	nis	1.6	n/a
S16T034219	98-86-2	A.cetophenone	NGS	35	<8.2	<62	e,su	e)u	n/a	n/e	6.2	U s/u
S16T034219	107-13-1	Acrylonitrille	NGS	100	42.1	<2.1	e,cu	eyu	n/a	n/a	2.1	U s/u
\$167034219	107-18-6	Allyl Alcohol	NGS	120	423	<2.3	n'a	n/a	nla	nis	2.3	n/a/U
S16T034219	107-05-1	Allyl Chloride	NGS	100	<2.5	<2.5	200	BJU	a'n	nva	2.5	Ua/u

J - Estimated U - Less Than Detection Limit

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected N - Named TIC

T - Tentatively Identified Compound B - Blank Contamination

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Cartridge Evaluation Data Summary of All Results

Sample Group: 20162991 SDG Number: Customer Sample ID: 16-08636-2-IN-E Customer Sample ID: 16-08636-2-IN-E

Samples R	Aff CAS #	Analyte	Unit	8 OTS	Blank	Result	Duplicate	Average	RPD %	Average RPD % Spk Rec %	Det Limit	Cnt Err % Qual Flags
VAPOR-TDU VOA #2	U VOA IIZ											
S16T034219	71-43-2	Benzene	NGS	88	<1.5	1.8	nís	8/6	n/a	n/a	1.5	n/a J
S16T034219	100-47-0	Benzoninie	NGS	96	<4.2	<4.2	n/a	n'a	n/a	n/a	4.2	n/a U
S16T034219	123-72-8	Butanal	NGS	100	<3.0	14	n/a	e,u	e/u	n/a	3.0	m'a
S16T034219	109-74-0	Butanenitrile	NGS	100	42.1	42.1	n/a	m'a	n/a	e/u	2.1	n/a U
S16T034219	56-23-5	Carbon tetrachicide	NGS	100	41.5	41,5	n/s	n/a	n/a	nla	1.5	n/a U
S16T034219	108-90-7	Chlorobenzene	NGS	88	<2.5	<2.5	n/a	m'a	ra/s	n/a	2.5	D s/u
S16T034219	75-00-3	Chionosthane	NGS	110	41.6	41.8	e/u	m'a	e/u	ela	1.6	n/s U
S16T034219	67-66-3	Chloroform	NGS	100	41.8	41.8	n/a	e,w	n/a	n/a	1.8	n/a U
S16T034219	110-82-7	Cyclohexane	NGS	100	41.4	41.4	n/n	m'a	e/u	eva	1.4	U e/u
S16T034219	124-18-5	Decane	NGS	88	<3.3	3.5	n/a	m'a	n/a	ela	3.3	n/a J
8167034219	84-17-5	Ethanol	NGS	120	9.9	180	n/a	m'a	a/u	nia	3.7	m'a B
S16T034219	141-78-6	Ethyl acetate	NGS	88	<1.8	<1.8	n/a	m/a	e/u	n/a	1.8	Na U
S16T034219	100-41-4	Ethylbendene	NGS	88	42.4	42.4	n/a	e/a	e/u	ela	2.4	D S/U
3167034219	110-00-9	Furan	NGS	06	<1.6	15	n/a	m'a	n/a	eyu	1.6	n/a
S16T034219	110-54-3	Hexane	NGS	100	1.5	10	n/a	m'a	e/u	eva	1.3	n/a BJ
3167034219	628-73-9	Hexanenitrile	NGS	88	<2.6	<2.6	n/a	m'a	e/u	elu	2.6	U s/u
S16T034219	126-98-7	Methacryfonitrile	NGS	100	<1.8	<1.8	n/a	a'a	n/a	n/a	1.8	n/a U
S16T034219	75-09-2	Methylene Chloride	NGS	110	4.2	44.1	n/a	m'a	e/u	n/a	4.1	n/a U
\$167034219	91-20-3	Naphthalene	NGS	35	<5.3	<5.3	n/a	m'a	e/u	e/u	5.3	n/s U
S16T034219	88-95-3	Nitrobenzene	NGS	8	<4.7	<4.7	n/a	m'a	n/a	n/a	4.7	U s/u
S16T034219	110-59-8	Pentanonitrile	SDN	88	<2.8	<2.8	n/a	m'a	e/u	elu	2.6	n/a U
S16T034219	107-12-0	Proparventrille	NGS	100	<1.8	2.8	n/a	n/a	n/a	n/a	1.8	n'a J
S16T034219	110-86-1	Pyridine	NGS	110	<2.8	<2.8	n/a	m'a	e/u	elu	2.8	n's U
S16T034219	100-42-5	Styrene	NGS	97	<2.7	<2.7	n/a	n'a	n/a	n/a	2.7	n/a U
S16T034219	127-18-4	Tetrachioroethene	NGS	88	41.8	8.0	n/a	m/a	e/u	ela.	1.8	n/a J
S16T034219	108-88-3	Toluene	NGS	88	<2.2	4.4	n/a	m/a	e/u	ela	2.2	n/a J
S16T034219	79-01-6	Trichloroethene	NGS	88	<1.6	<1.6	n/a	n'a	n/s	e/u	1.6	U s/u
\$167034219	75-69-4	Trichlorofluoremethane	NGS	83	<1.9	11	n/a	n'a	n/a	e/u	1.9	n/a J

T - Tentatively Identified Compound B - Blank Contamination

N - Named TIC

NA = Not Analyzed, ND = Not Detected

J - Estimated U - Less Than Detection Limit

E - Outside Calibration Range

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Cartridge Evaluation Data Summary of All Results

Sample Group: 20162991 SDG Number:

Customer Sample ID: 16-08636-2-IN-E Customer Sample ID: 16-08636-2-IN-E

Sampled R	\$	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Average RPD % Spk Rec %	Det Limit	Det Limit Cot Em % Qu	ual Flags
VAPOR-TD	20.70	1A #2												
S16T034219	L	10061-01-5	cis-1,3-Dichloropropene	NGS	97									
S16T034219		123-86-4	n-Butyl acetate	NGS	83									
S16T034219		142-82-5		NGS	100	41.6	12	n/a	n/a	n/a	eva	1.6	Le'n	
S16T034219		10061-02-6	trans-1,3-Dichloropropene	NGS	96									

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N - Named TIC

T - Tentatively Identified Compound B - Blank Contamination

J - Estimated U - Less Than Detection Limit

E - Outside Calibration Range

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Cartridge Evaluation Data Summary of All Results

Sample Group: 20162991 SDG Number:

Customer Sample ID: 16-08636-2-IN-F

Customer Sample ID: 16-08636-2-IN-F

VAPOR-TOU VOA #2 S16T034220 79-0 S16T034220 79-0 S16T034220 75-3	U VOA #2							-				
\$16T034220 \$16T034220 \$16T034220												
S16T034220 S16T034220	79-34-5	1,1,2,2-Tetrachionoethane	NGS	66	<3.0	30	n/a	n'a	n/a	n/a	3.0	n/a U
S16T034220	ш	1,1,2-Trichioneshane	NGS	100	<2.3	423	e/u	n'a	n/a	n/a	2.3	n/a U
Sanda and	75-34-3	1,1-Dichloroethane	NGS	88	<1.7	43	e/u	n/a	e/u	n/a	1.7	n/a U
8761034220		1,1-Dichloroethene	NGS	66	41.7	417	n/a	n/a	n/a	n/a	1.7	n/s U
S16T034220		1,2-Dichloroethane	NGS	100	<1.7	4.7	n/a	n/a	n/a	n/a	1.7	Na U
S16T034220	542-75-6	1,3-Dichloropropene (Total)	NGS	r/a	n/a	2.0	e/u	n/a	e/u	n/a	1.8	n/a J
S16T034220	106-46-7	1,4-Dichlorobenzene	SDN	100	<4.1	1.40	n/a	n/a	n/a	n/s	4.1	n/a U
S16T034220	123-91-1	1,4-Dioxane	NGS	98	<2.0	<2.0	n/a	n/a	e/u	n/8	2.0	n/a U
S16T034220	71-36-3	1-Butanel	NGS	120	44.3	1.5E+03	n/a	n/a	n/a	n/a	4.3	n/a E
S16T034220	111-70-6	1-Heptanol	NGS	90	49.1	1.6>	n/a	n/s		n/a	1.6	ova U
S16T034220	71-23-8	1-Propanol	NGS	120	<8.9	86	n/a	n/a	n/a	n/s	8.9	n/a
S16T034220	108-47-4	2,4-Dimethylpyridine	NGS	66	1.47	1.42	n/a	n/a		n/a	4.1	n/a U
S16T034220	1708-29-8	2,5-Dihydrofuran	NGS	110	<2.2	<2.2	n/a	n/a		n/a	2.2	n/a U
S16T034220	78-83-3	2-Butanone	NGS	83	43.1	8.9	n/a	n/a		n/a	3.1	n/a J
S16T034220	110-43-0	2-Heptanone	NGS	84	<2.6	4.6	n/a	n/a	n/a	n/a	2.8	L'e/n
S16T034220	891-78-8	2-Hexanone	NGS	96	<2.5	2.9	n/a	n/a		n/a	2.5	n/a J
S16T034220	534-22-5	2-Methythuran	NGS	97	<1.3	<1.3	n/a	n/a		n/a	1.3	Us/u
S16T034220	78-94-4	3-Buten-2-one	MGS	16	41.9	5.6	n/a	n/a	n/a	n/a	1.9	n/a J
S16T034220	106-35-4	3-Heptanona	NGS	8	<2.7	4.0	n/a	n/a	n/a	n/a	2.7	n/a J
S16T034220	106-68-3	3-Octanone	NGS	82	<3.3	<3.3	n/a	n/a	n/a	e/u	3.3	n/a U
S16T034220	106-42-0	4-Methyl-2-hoxanone	NGS	96	<2.6	<2.6	n/a	rva	n/a	n/a	2.6	U a/u
S16T034220	106-10-1	4-Methyl-2-Pentanone	NGS	100	422	<2.2	n/a	n/a	n/a	n/a	2.2	n/a U
S16T034220	67-64-1	Apelone	NGS	16	4.4	360	· n/a	n/a	n/a	e/u	2.8	n/a B
S16T034220	75-05-8	Apelonitrite	MGS	86	<1.6	36	n/a	nía	n/a	n/a	1.6	n/a
S16T034220	96-85-2	Apetophenone	NGS	35	<8.2	<8.2	n/a	n/a	n/a	n/a	6.2	U a/u
S16T034220	107-13-1	Acrylonitrile	NGS	100	421	<2.1	nía	nía	e/u	n/a	2.1	n/a U
S16T034220	107-16-6	Allyl Alcohol	NGS	120	42.3	<2.3	n/a	n/a	n/a	n/a	2.3	n/a U
\$167034220	107-05-1	Allyl Chloride	NGS	100	42.5	<2.5	n/a	n/a		n/a	2.5	n/a U

T - Tentatively Identified Compound B - Blank Contamination

E - Outside Calibration Range

N - Named TIC

NA = Not Analyzed, ND = Not Detected

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Cartridge Evaluation Data Summary of All Results

Sample Group: 20162991 SDG Number: Customer Sample ID: 16-08636-2-IN-F

Customer Sample ID: 16-08636-2-IN-F

Samples R	Aff CAS#	Analyte	Unit	% QLS	Blank	Result	Duplicate	Average	RPD % S	RPD % Sak Rec %	Det Limit	Det Limit Cnt Err % Qual Flace
VAPOR-TDU VOA #2	VOA #2											
S16T034220	71-43-2	Benzone	NGS	86	41.5	2.0	n/a	n's	n/a	n/a	1.5	n/a J
S16T034220	100-47-0	Benzonitrie	NGS	96	<4.2	<4.2		6,0	s/u	n/a	4.2	Us'm
S16T034220	123-72-8	Butanal	NGS	100	<3.0	10	n/a	8,0	n/a	n/a	3.0	m'a
S16T034220	109-74-0	Butamenitrile	NGS	100	42.1	2.2		n'a	e/u	n/a	2.1	n'a J
S16T034220	58-23-5	Carbon tetrachloride	SDN	100	41.5	<1.5	n/a	n'a	e/u	n/e	1.5	n's U
S16T034220	108-80-7	Chlorobenzene	NGS	88	<2.5	<2.5		9,0	eva	nla	2.5	n/s U
S16T034220	75-00-3	Chloroethane	NGS	110	41.8	<1.6		8,60	eyu	nia	1.6	n/a U
S16T034220	67-66-3	Chloroform	MGS	100	41.8	41.8		n'a	e/a	evu	1.8	n/a U
S16T034220	110-82-7	Cyclohexane	NGS	100	41.4	41.4	n/n	e/a	evo	eyu	1.6	n/s U
S16T034220	124-18-5	Decare	NGS	88	<3.3	<3.3	n/a	n,u	eva	e/u	3.3	n/s U
S16T034220	84-17-5	Ethanol	NGS	120	8.8	190	n/a	n'a	n/a	n/a	3.7	n'a B
8167034220	141-78-6	Ethyl acetate	NGS	88	41.8	<1.8		n'a	e/u	nia	1.8	n's U
S16T034220	100-41-4	Ethylbenzene	MGS	88	<2.4	<2.4		n's	e/u	eju	2.4	n/a U
S16T034220	110-00-9	Furan	NGS	80	41.6	19		n'a	n/a	n/a	1.8	n'a
S16T034220	110-54-3	Hexane	NGS	100	1.5	11	n/a	n's	B/B	n/a	1.3	n/a BJ
S16T034220	628-73-9	Hexanenizrie	NGS	88	<2.8	<2.6	n/a	m'a	8/4	n/a	2.6	n/a U
S16T034220	126-98-7	Methacryfonitrile	NGS	100	41.8	<1,8		n/a	e/u	elva	1.8	n/a/U
S16T034220	75-09-2	Wethylone Chloride	NGS	110	4.2	44.1	n/a	n'a	n/s	n/a	4.1	n/a U
S16T034220	91-20-3	Naphthalene	NGS	35	<5.3	<5.3	n/a	u,a	E/u	n/a	5.3	U(a)U
S16T034220	98-95-3	Nirobenzene	NGS	25	44.7	<4.7	n/a	n'a	n/a	n/a	4.7	n's U
S16T034220	110-59-8	Pentanonitrio	NGS	9:3	<2.8	<2.6		n/a	10/10	n/a	2.6	n/a U
S16T034220	107-12-0	Propanentrile	NGS	100	41.8	2.9	n/a	n/a	e/u	n/a	1.8	n/a J
S16T034220	110-86-1	Pyridine	NGS	110	<2.8	<2.8		n/a	n/a	n/a	2.8	n/a U
S16T034220	100-42-5	Styrene	NGS	87	<2.7	<2.7	n/a	n/a	n/a	E/s	2.7	n/a U
S16T034220	127-18-4	Tetrachloroethene	NGS	88	41.8	7.2	n/a	n/a	e/u	E/s	1.8	n/a J
S16T034220	108-88-3	Toluene	MGS	98	<2.2	4.2		n/a	n/a	n/a	2.2	Us/u
S16T034220	79-01-6	Trichtoroethana	NGS	88	<1.6	<1.6	n/a	n/a	n/a	n/8	1.8	n/a U
S16T034220	75-69-4	Trichlorofluoromethane	MGS	88	<1.9	11	n/a		n/a	n/a	1.9	n/a J

J - Estimated U - Less Than Detection Limit

NA, = Not Analyzed, ND = Not Detected N - Named TIC

T - Tentatively Identified Compound 8 - Blank Contamination

E - Outside Calibration Range

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Cartridge Evaluation Data Summary of All Results

Sample Group: 20162991 SDG Number:

Customer Sample ID: 16-08636-2-IN-F Customer Sample ID: 16-08636-2-IN-F

Samples R	All CAS #	Analyte	Unit	STO %	Blank	Result	Duplicate	Average	RPD %	Average RPD % Spk Rec %	Det Limit	Det Limit Cnt Err % Qual Flags
VAPOR-TD	JU VOA #2											
S16T034220	10061-01-5	cls-1,3-Dichloropropene	NGS	97	41.8	2.0	n/a	nía	n/a	eļu	1.8	n/a J
S16T034220	123-86-4	n-Butyl acetate	NGS	83	42.4	42.4			n/a	n/a	2.4	n/a U
S16T034220	142-82-5	n-Heptane	MGS	100	41.6	9	n/a	n/a	n/n		1.6	n/a J
S16T034220	10061-02-6	trans-1,3-Dichloropropone	NGS	8	42.1	42.1			n/a	n/a	2.1	n/a U

NA = Not Analyzed, ND = Not Detected

N - Named TIC

E - Outside Calibration Range

T - Tertatively Identified Compound B - Blank Contamination

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Cartridge Evaluation Data Summary of All Results

Sample Group: 20162991 SDG Number: Customer Sample ID: 16-08636-2-IN-G Customer Sample ID: 16-08636-2-IN-G

Samples N	A CAS a	Analyse	Unit	\$10 %	Blank	Ketnit	Duplicate	Average	RPD % 13	RPD % Sok Rec %	Det Limits	Dot Limit Con Per % Count State
VAPOR-TDU VOA #2	U VOA #2											
\$167034221	79-34-5	1,1,2,2-Tetrachioroethane	NGS	88	3.0	<3.0	n/a	n/a	n/a	n/a	3.0	n/a U
S16T034221	79-00-5	1,1,2-Trichloroethane	MGS	100	42.3	<2.3	e/u	n/a	n/a	n/a	2.3	n/a U
S16T034221	75-34-3	1,1-Dichloroethane	NGS	88	<1.7	<1.7	n/a	n/a	n/a	nva	1.7	n/a U
S16T034221	75-35-4	1,1-Dichloroethene	NGS	86	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a U
S16T034221	107-06-2	1,2-Dichloroethane	NGS	100	<1.7	<1.7	n/a	n/a	n/a	n/a	1.7	n/a)U
S16T034221	542-75-8	1,3-Dichloropropene (Total)	NGS	n/a	n/a	8.3	n/a	nía	n/a	n/a	1.8	n/a/J
\$167034221	106-46-7	1,4-Dichlorobenzene	NGS	100	44.1	44.1	nla	n/a	n/a	n/a	4.1	n/a/U
S16T034221	123-91-1	1,4-Dioxane	NGS	96	420	42.0	n/a	n/a	n/s	n/a	2.0	n/a U
\$167034221	71-36-3	1-Butanol	NGS	120	44.3	1.5E+03	nla	nía	eyu.	n/a	4.3	n/a E
8167034221	111-70-6	1-Hoptanol	NGS	98	69.1	9.1	n/a	nla	nla	n/a	9.1	n/a/U
\$167034221	71-23-8	1-Propanol	NGS	120	48.9	110	n/a	nla	nla	n/a	6.8	n/a
8167034221	108-47-4		NGS	88	4.1	44.1	nka	nía	cya	n/a	4.1	n/a U
S16T034221	1708-29-8		NGS	110	92	422	e/u	n/a	n/a	n/a	22	nau
8167034221	78-93-3	2-Butanone	NGS	8	0.1	6.2	n/a	n/a	n/a	n/a	3.1	n/a J
8167034221	110-43-0	2-Heptanone	NGS	K	<2.6	4.5	r/s	nla	n/a	n/a	2.6	n/a J
\$167034221	591-78-6	2-Hexanone	NGS	98	42.5	2.7	r/a	nla	nla	n/a	2.5	n/a J
S16T034221	534-22-5	2-Methyffuran	NGS	26	4.3	<1.3	r/a	nya	n/a	n/s	1.3	nau
\$167034221	78-94-4	3-Buten-2-one	NGS	16	6.15	5.1	nla	n/a	rya	nya	1.9	n/a J
\$167034221	106-35-4	3-Heptanone	NGS	×	<2.7	3.7	r/a	nis	rya	n/a	2.7	n/a J
S16T034221	106-68-3	3-Octanone	NGS	25	<3.3	43.3	n/a	nya	rya	n/a	3.3	nau
\$167034221	105-42-0	4-Methyl-2-hexanone	NGS	96	<2.6	42.6	r/a	n/a	rva	nya	2.6	n/a U
\$167034221	108-10-1	4-Methyl-2-Pentanone	NGS	100	<2.2	422	r/a	n/s	n/a	n/a	2.2	n/s U
\$167034221	67-64-1	Acetone	NGS	16	4.4	180	r/a	n/a	n/a	n/a	2.8	n/a B
\$167034221	75-05-8	Acetonitrile	NGS	88	<1.6	30	n/a	n/a	n/a	nya	1.6	n/a
\$167034221	58-86-2	Acetophenone	NGS	85	<6.2	<6.2	n/a	n/a	n/a	n/a	6.2	n/a U
\$167034221	107-13-1	Acrylonitrile	NGS	100	<2.1	<2.1	n/a	n/a	n/a	nta	2.1	n/a U
\$167034221	107-18-6	Allyl Alcohol	NGS	120	<2.3	<2.3	n/s	n/a	n/a	nya	2.3	U s/u
S16T034221	107-05-1	Allyl Chierde	NGS	100	<2.5	<2.5	n/a	n/a	n/a	rya	2.5	n/a U

J - Estimated U - Less Than Detection Limit

E - Outside Calibration Range

N - Named TIC

NA = Not Analyzed, ND = Not Detected

T - Tentatively Identified Compound B - Blank Contemination

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Cartridge Evaluation Data Summary of All Results

Customer Sample ID: 16-08636-2-IN-G Customer Sample ID: 16-08636-2-IN-G Sample Group: 20162991 SDG Number:

variables v	CAS I											
VAPOR-TDU VOA #2	U VOA #2										1	
\$167034221	71-43-2	Senzene	NGS	86	c1.5	2.8	n/a	nla	n/a	r/a	1.5	u/a/J
\$167034221	100-47-0	Benzonitrile	NGS	96	4.2	44.2	n/a			n/a	42	U8/U
\$167034221	123-72-8	Sutanal	NGS	100	<3.0	14	n/a	nla	n/s	n/a	3.0	n/a
\$167034221	109-74-0	Sutanenibile	NGS	100	42.1	42.1	n/a	nla	n/a	n/a	2.1	n/a U
\$167034221	56-23-5	Carbon tetrachloride	NGS	1001	61.5	<1.5	n/a	s/u	n/a	n/a	1.5	n/8 U
\$167034221	108-90-7	Chlorobenzene	NGS	88	425	425	n/a	shr .	2/2	n/a	2.5	n/8 U
\$167034221	75-00-3	Chloroethane	NGS	110	41.6	<1.6	n/a	nla	n/s	n/a	1.6	Nalu
S16T034221	67-66-3	Chloroform	NGS	100	<1.8	<1.8	n/a	nya	n/a	n/a	1.8	n/a U
\$167034221	110-82-7	Cyclohexane	NGS	100	413	41.4	n/a	nla	2,0	n/a	1.4	Unio
S16T034221	124-18-5	Decane	NGS	88	433	93	n/a	nys	2/2	n/a	3.3	Ulajn
\$167034221	64-17-5	Ethanol	NGS	120	6.6	200	n/a	nya	19/2	n/a	3.7	n/a 8
\$167034221	141-78-8	Ethyl acetate	NGS	85	<1.8	<1.8	n/a	nya	n/a	n/a	1.8	U(a)u
S16T034221	100-41-4	Ethylbenzene	NGS	88	424	424	n/a		2,0	n/a	2.4	n/s U
S16T034221	110-00-9	Furan	NGS	96	<1.6	8.9	n/a	rva	n/a	n/s	1.6	n/a J
\$167034221	110-54-3	Hexane	NGS	100	1.5	9.8	n/a		2,6	n/a	1.3	n/a BJ
\$161034221	628-73-9	Hexanentrie	NGS	88	42.6	979	n/a	rva	n/s	n/a	2.6	n/a U
S16T034221	126-96-7	Methacrylonitrile	NGS	100	c1.8	<1.8	n/a		n/a	n/a	1.8	n/a U
S16T034221	75-09-2	Methylene Chloride	NGS	110	4.2	13	n/a	n/s	n/a	n/a	4.1	n/a B
5167034221	91-20-3	Naphthalene	MGS	98	<5.3	<5.3	nía	r/a	n/a	n/a	5.3	n/a U
S16T03M221	96-95-3	Mitrobenzene	NGS	8	44.7	4.7	n/a	n/a	n/a	n/a	4.7	n/s U
S16T034221	110-59-8	Pentamentrile	NGS	88	<2.6	<2.6	n/a	rva	n/a	n/s	2.6	rvlaU
S16T034221	107-12-0	Propanentrile	MGS	100	c1.8	2.4	n/a	n/a	n/a	n/a	1,00	riel
S16T03M221	110-86-1	Pyridine	NGS	110	<2.8	<2.8	n/a	n/a	n/a	n/a	2.8	n/s U
\$161034221	10042-5	Styrcine	NGS	26	427	427	n/a	n/a	E/M	n/s	2.7	n/a U
S16T034221	127-18-4	Tetrachloroethene	NGS	66	e,1>	5.1	n/a	n/a	n/a	6/4	1.8	risj
S16T034221	108-88-3	Toluene	NGS	98	<2.2	5.2	n/a	n/a	n/a	m/a	2.2	r/s/1
S16T034221	79-01-6	Trichloroethene	NGS	98	41.6	41.6	nia	n/a	n/a	n/s	1.6	r/a U
S16T034221	75-69-4	Trichtondunandhana	0000	00								

J - Estimated U - Less Than Detection Limit

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected N - Named TIC

T - Tentatively Identified Compound B - Blank Contamination

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Cartridge Evaluation Data Summary of All Results

Sample Group: 20162991 SDG Number:

Customer Sample ID: 16-08636-2-IN-G Customer Sample ID: 16-08636-2-IN-G

Sampled R	All CAS #	Analyte	Unit	\$ OTS	Blank	Result	Duplicate		RPD %	Average RPD % Spk Rec %	Det Limit	Det Umit Ont for % Qual Flags
VAPOR-TD	U VOA #2											
S16T034221	10061-01-5	cis-1,3-Dichloropropene	NGS	97	<1.8	5.4	n/a			m/a	100	Ua J
\$167034221	123-86-4	n-Butyl acetate	NGS	83	<2.4	424	n/a			n/a	2.6	ľ
S16T034221	142-82-5	n-Heptane	NGS	100	41.8	=	n/a	n/a	n/a	TA STATE	1.6	D'a J
S16T034221	10061-02-6	trans-1,3-Dichloropropere	NGS	76	42.1	2.9	n/a			n/a	10	l

E - Outside Calibration Range

NA = Not Analyzed, ND = Not Detected N-Named TIC

T - Tertatively Identified Compound B - Blank Contemination

E - Outside Calibration Range

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Cartridge Evaluation Data Summary of All Results

Sample Group: 20162986 SDG Number:

Customer Sample ID: 16-08635-3-BASE-EFF Customer Sample ID: 16-08635-3-BASE-EFF

amples R As	AS CASE	•	Analyto	Green Green	STO %	Blank	Result	Duplicate	Average	890%	RPD % Spk Rec %	DetLimit	Det Limit Cat for % Qual Flags	tal Flags
Furans in Vapor S.	seidmes voor	by SIM												
16T034142	1191-99	2	2,3-Dihydrofuran	NGS	98	<0.23	<0.23	e/u	e,u	e/u	e,w	0.23	Uehn	
167034142	1708-29	89	5-Dihydrofuran	NGS	72	<0.33	<0.33	n/a	nia	n/a	e,w	0.33	Uelu	
16T034142	625-86-5	8	,5-Dimethyffuran	NGS	160	<0.75	<0.75	e/u	n/a	e/u	e,u	0.75		
167034142	3777-71-7	7	Heptyfuran	NGS	35	<0.86	<0.86	n/a	nía	n/a	e,ru	0.86	Ukhu	
167034142	534-22-5	8	-Methyfluran	NGS	2	<0.46	<0.46	e/u	n/a	e/u	e,w	0.46	Uehn	
167034142	3777-69-3	2	-Pentyfuran	NGS	88	<0.90	05'0>	n/a	nía	e/u	e,iu	06'0	U shn	
167034142	4229-91-8	9	-Propyfluran	NGS	98	<0.62	<0.62	n/a	n/a	n/a	e,u	0.62	U e/u	
167034142	110-00-9	6	uran	NGS	69	<0.37	<0.37	e/u	n/a	n/a	e,w	0.37	Uehr	
167034142	109-89-6	6	ebrahvdrofuran	NGS	08	<0.23	<0.23	n/a	n/a	n/a	m/a	0.23	Uehr	

E - Outside Calibration Range

U - Less Than Detection Limit

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Sample Group: 20162986 SDG Number:

Customer Sample ID: 16-08635-3-BASE-IN Customer Sample ID: 16-08635-3-BASE-IN

Cartridge Evaluation Data Summary of All Results

Sample R	As	* 0 * 0	Anabote	Holi	* 54.0	Risok	Receip	Durelleade	Austra		BBD W. Seb Ber W.	Dat Live	Dat Linds Cos Ere at Dead Chara
-		* 000			200	-		-	affection.	_	of new wife	-	CHE LAN THE GOOD IN
Furans in Va	appa.	Samples by SIM	IM										
\$167034143		1191-99-7	2,3-Dihydrofuran	NGS	99	<0.23	<0.23	n/a	nía	n/a	n/a	0.23	U S/n
8167034143		1708-29-8	2,5-Dihydrofuran	NGS	72	<0.33	<0.33	n/a	nia	n/a	n/a	0.33	U eva
\$167034143		625-86-5	2.5-Dimethylluran	NGS	20	<0.75	<0.75	n/a	nía	n/a	n/a	0.75	U S/u
8167034143		3777-71-7	2-Heptyffuran	NGS	82	<0.86	<0.86	e,u	n/a	n/a	n/a	0.86	
S16T034143		534-22-5	2-Methylluran	NGS	75	c0.46	<0.46	n/a	n/a	n/a	n/a	0.48	
8167034143		3777-69-3	2-Pentyffuran	NGS	888	<0.90	<0.90	n/a	nla	n/a	n/a	0.90	U elva
8167034143		4229-91-8	2-Propyffuram	NGS	86	<0.62	<0.62	n/a	nla	n/a	n'a	0.62	
S16T034143		110-00-9	Furan	NGS	69	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37	
S16T034143		109-99-9	Tetrahydrofuran	NGS	88	00.23	c0.23	e/u	nla	e/a	n'a	0.23	U e/n

Cartridge Evaluation Data Summary of All Results

Sample Group: 20162986 SDG Number:

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Customer Sample ID: 16-08635-3-BLANK1 Customer Sample ID: 16-08635-3-BLANK1

Sampled R	2	CAS#	Analyte	Unit	% qus	Blank	Result	Ouplicate	Average	RPD %	RPD % Spk Ree %	Det Limit	Det Limit Cot Err % Qual Flags	Qual Flags
Furans in Va	about	Samples by SI	M											
S167034144		1191-99-7	2,3-Dihydrofuran	NGS	99	<0.23	<0.23	e/u	n'a	e/u	nia	0.23	n/a U	2
S16T034144		1708-29-8	2,5-Dihydrofuran	NGS	72	<0.33	<0.33	e/u	n/a	eva	n/a	0.33	n/a L	2
\$167034144		625-86-5	2,5-Dimethylfuran	NGS	18	<0.75	<0.75	2/4	n'a	e/u	n/a	0.75	n/a	2
S16T034144		3777-71-7	2-Hoptyfaran	NGS	82	96.0⊳	<0.86	e/u	e,u	n/e	nla	0.86	n/s	2
S16T034144		634-22-5	2-Methyffuran	NGS	75	99'0>	<0.46	2/2	n/a	n/a	n/a	0.46	n/a	2
S167034144		3777-69-3	2-Pentytfuran	NGS	88	<0.90	<0.90	n/a	e/u	n/a	nla	00'0	2,0	2
S16T034144		4229-91-8	2-Propyffuran	NGS	88	<0.62	<0.62	n/a	m/a	n/a	nla	0.62	e,u	2
\$167034144		110-00-9	Furan	NGS	69	<0.37	<0.37	e/u	5,0	nia	nla	0.37	J E/U	2
S16T034144		109-99-9	Tetrahydrofuran	NGS	68	<0.23	<0.23	e/u	m/a	n/a	ala	0.23	n's U	2

Cartridge Evaluation Data Summary of All Results

Sample Group: 20162986 SDG Number:

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Customer Sample ID: 16-08635-3-BLANK2 Customer Sample ID: 16-08635-3-BLANK2

Samples R	2	CAS#	Analyte	Unit	STD %	Blank	Result	Result Duplicate Average RPD % Spk Rec %	Average	KPD %	Spik Rec %	12	Cnt Err %	Det Limit Cnt Err % Qual Flags
Furans in Vag	Doe S	Semples by SI												
\$167034145		1191-99-7	2,3-Dihydrofuran	NGS	99	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/a	0
\$167034145		1708-29-8	2,5-Dihydrofuran	NGS	72	<0.33	<0.33	n/a	n/a	nla	n/a	0.33	n/a l	2
\$167034145		825-85-8	2,5-Dimethyffuran	NGS	81	<0.75	<0.75	n/a	n/a	n/a	nía	0.75	n/a (0
\$167034145		3777-71-7	2-Heptyffuran	NGS	85	-0.86	+0°.86	n/a	n/a	n/a	nla		Ua'v	2
S16T034145		534-22-5	2-Methylfuran	NGS	75	99'00	95′0>	n/a	n/a	6/4	nía	0.46	n/8 (0
\$167034145		3777-69-3	2-Pentyffuran	NGS	88	·00:90	40.90	nla	n/a	n/a	nla	06'0	n/a	2
\$167034145		4229-91-8	2-Propyffuran	NGS	98	<0.62	<0.62	n/a	n/a	n/a	n/a		n/a	2
\$167034145		110-00-9	Furan	NGS	69	-00.37	<0.37	n/a	n/a	n/a	n/a		n/a	2
\$167034145		6-66-601	Tetrahydiofuran	NGS	88	<0.23	<0.23	n/a	n/a	n/a	nla	0.23	n/a U	0

Cartridge Evaluation Data Summary of All Results

Sample Group: 20162986 SDG Number:

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Customer Sample ID: 16-08635-3-EFF-A Customer Sample ID: 16-08635-3-EFF-A

Sampled R	\$	CAS#	Analyte	Unit	% QLS	Blank	Result	Duplicate		RPD %	Average RPD % Spk Rec %	Det Umit	Det Limit Cet Err S Qual Flag	Seal Flags
Furans in Vi	apor.	apor Samples by SIM	MIS											
S16T034146	L	1191-99-7	2.3-Dihydrofuran	NGS	99	03.23	<0.23	n/a	n/a	e,u	e,u	0.23	e/u	
S16T034146		1708-29-8	2.5-Dihydrofuran	NGS	72	<0.33	<0.33	n/a	n/a	n/a	e,u	0.33		
S16T034146		825-86-5	2.5-Dimothythran	NGS	91	<0.75	<0.75	nla	n/a	n/a		0.75	U e/u	
S16T034146		3777-71-7	2-Heptyffuran	NGS	92	<0.85	<0.86	n/a	n/a			0.85		
S16T034146	L	534-22-5	2-Methylluran	NGS	75	<0.46	<0.46	n/a	n/a			0.46		
S16T034146		3777-69-3	2-Pentyturan	NGS	98	<0.00	<0.90	n/a	n/a	n/a	e,u	0.90	n/a C	
S16T034146		4229-91-8	2-Propytfuran	NGS	98	<0.62	<0.62	n/a	n/a			0.62		
S16T034146		110-00-9	Furan	NGS	69	<0.37	<0.37	e/u	n/a			0.37	O e/u	
S16T034146		109-99-9	Tetrahydrofuran	NGS	88	<0.23	<0.23	n/a	n/a			0.23		0

J - Estimated

Cartridge Evaluation Data Summary of All Results

Sample Group: 20162986 SDG Number:

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Customer Sample ID: 16-08635-3-EFF-B Customer Sample ID: 16-08635-3-EFF-B

amples R	¥	R All CASE	Analyte	Unit	810 %	Blank	Result	Duplicate	Average	RPD %	RPD % Spk Red %		Det Limit Cet Err % Qual Flag	tual Flags
Furans in Va	apor 8	Samples by St	M											
167034147		1191-99-7	2,3-Dihydrofuran	NGS	99	<0.23	<0.23	e/u	n/a	m/a	n/a	0.23	U/s U	
16T034147		1708-29-8	2,5-Dihydrofuran	NGS	72	<0.33	<0.33	e/u	n/a	n/a	n/a	0.33	U B/U	1
167034147		625-86-5	sthytfuran	NGS	18	<0.75	<0.75	n/s	n/a	n/a	n/a	0.75		
16T034147		3777-71-7	2-Heptyffuran	NGS	92	>0.86	<0.86	nla	n/a	n/a	n/a		n/a U	
16T034147		534-22-5	2-Methyffuran	NGS	75	<0.46	<0.46	n/a	n/a	n/a	n/a			
16T034147		3777-69-3	2-Pentyffuran	NGS	88	06'0>	-00.90	n/a	n'a	ale a	n/a			
16T034147		4229-91-8	2-Propyfluran	SDN	88	<0.62	<0.62	n'a	n/a	n/a				
16T034147		110-00-9	Furan	NGS	69	<0.37	-0.37	n/s	n/a	e/u	n/a		U s/u	
167034147		109-90-9	Tetrahydiofurie	NGS	89	<0.23	<0.23	a/a	n/a	m/a				

U - Less Than Detection Limit

J - Estimated

Cartridge Evaluation Data Summary of All Results

Sample Group: 20162986 SDG Number:

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Customer Sample ID: 16-08635-3-EFF-C Customer Sample ID: 16-08635-3-EFF-C

2000														
Samples R	2	CASE	Analyto	Unit	ST0 %	Blank	Result	Duplicate	Acrerage	RPD %	RPD % Spk Rec %	Det Limit	Cnt Err %	Cnt Err % Qual Flags
Furans in Vapor Sampl	'appor	Samples by S	M											
\$167034148	H	1191-99-7	2,3-Dihydrofuran	NGS	99	<0.23	<0.23	eju	n/a	e/u	n/n	0.23	n/a	2
S16T034148	_	1708-29-8	2.5-Dihydrafuran	NGS	7.2	<0.33	<0.33	e/u	n/a	n/a	n/a	0.33	n/a	0
\$167034148		625-86-5	2.5-Dimethyffuran	NGS	92	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	n/a	5
S16T034148	_	3777-71-7	2-Heptylfuran	NGS	35	<0.85	<0.88	nía	n/a	u/a	n/a	0.85	n/a	0
S16T034148	L	534-22-5	2-Methyffuran	NGS	22	<0.45	<0.46	e/u	n/a	n/a	n/B	0.46	n/a	5
S16T034148		3777-69-3	2-Pentyffuran	NGS	98	<0.90	<0.90	nla	n/a	u/a	n/a	0.90	n/a	0
S16T034148	L	4229-91-8	2-Propylluran	NGS	98	<0.62	<0.62	nia	n/a	n/a	n/8	0.62	n/a	5
\$167034148		110-00-9	Furan	NGS	69	<0.37	<0.37	n/a	n/a	eyu	n/a	0.37	U e/n	0
S16T034148		109-88-9	Tetrahydrofuran	NGS	88	<0.23	<0.23	nla	n/a	uía	e/u	0.23	U s'v	0

Cartridge Evaluation Data Summary of All Results

Sample Group: 20162986 SDG Number:

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Customer Sample ID: 16-08635-3-EFF-D Customer Sample ID: 16-08635-3-EFF-D

Sample# R	F	CASE	Analyte	Unit	S OTS	Blank	Result	Duplicate	Average	RPD%	RPD % Spk Rec %	Det Limit	Det Limit Cnt Err % Qual Flag-	Qual Flags
Furans in Vi	apper	Samples by Si	M											
S16T034149	L	1191-99-7	2,3-Dihydrofuran	NGS	99	<0.23	<0.23	n/a	n/a	n'a	n/a	0.23	J E/U	
\$167034149		1708-29-8	2,5-Dihydoofuran	NGS	72	<0.33	<0.33	6/0	n/a	ala	n/a	0.33	nía	
S16T034149	L	625-86-5	2.5-Dimethyffuran	NGS	20	<0.75	<0.75	n/a	n's	n'a	nla	0.75	D. B.	-
S16T034149		3777-71-7	2-Heptylfuran	NGS	85	<0.86	<0.86	n/a	n/a	n/a	nla	0.86	ntak	-
S16T034149		534-22-5	2-Methylfuran	NGS	75	99'0>	9p'0>	6/0	n'a	n'a	n/a	0.46	riva	-
S16T034149		3777-69-3	2-Pentylfuran	NGS	88	<0.90	<0.90	n/a	n/a		nla	06'0	Ush	-
S16T034149	L	4229-91-8	2-Propyfluran	NGS	98	<0.62	<0.62	n/a	n's	n/a	n/a	0.62	nta	-
S16T034149		110-00-9	Furan	NGS	69	<0.37	<0.37	n/a	n/a		n/s	0.37	nia	-
S16T034149		109-99-9	Tetrahydrofuram	NGS	89	<0.23	<0.23	e/u	n'a	e/a	nla	0.23	Uela	-

U - Less Than Detection Limit

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Cartridge Evaluation Data Summary of All Results

Sample Group: 20162986 SDG Number:

Customer Sample ID: 16-08635-3-EFF-E Customer Sample ID: 16-08635-3-EFF-E

Sample® R	\$	CAS#	Analyte	Unit	8.018	Blank	Result	Duplicate	Anerage	RPD %	RPD 1/4 Sp& Rec 1/4		Det Limit Ont Err % Qual Flags	Qual Flags
Furans in Vi	apor	Samples by S	M											
S16T034150	L	1191-99-7	2,3-Dihydrofuran	NGS	99	<0.23	<0.23	n/a	n/a	n/a	n/a	0.23	n/s	2
S16T034150		1708-29-8	2,5-Dihydrofuran	NGS	72	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33	U a/u	0
\$167034150		625-86-5	2,5-Dimethylluran	NGS	18	<0.75	<0.75	n/a	n/a	n/a	n/a	0.75	U s/u	0
S16T034150		3777-71-7	2-Heptyffuran	NGS	92	<0.88	<0.86	n/a	n/a	n/a	n/a	0.86	U e/u	
S16T034150		534-22-5	2-Methylfuran	NGS	75	<0.46	<0.46	n/a	n/a	n/a	n/a	0.46	U BJU	0
S16T034150		3777-69-3	2-Pentytturan	NGS	88	<0.90	<0.90	n/a	n/a	n/a	n/a	06'0	U e/u	0
S16T034150		4229-91-8	2-Propytfuran	NGS	98	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	u a u	0
S16T034150		6-00-044	Furan	NGS	69	<0.37	<0.37	n/a	n/a	n'a	n'a	0.37	U B/U	5
8167034150		6-66-601	Tetrahydrofuran	NGS	68	<0.23	<0.23	n/a	nía	n/a	n/a	0.23	n/a L	5

Cartridge Evaluation Data Summary of All Results

28 - Oct - 2016 8:10:44 DSRHandcop/WOLImils 3:0:11b DSR.Jer v. 3:0:12

Sample Group: 20162986 SDG Number: Customer Sample ID: 16-08635-3-EFF-F Customer Sample ID: 16-08635-3-EFF-F

Samples R	2	CASE	Analyte	Unit	STO %	Blank	Rosalt	Duplicate	Average		RPD % Spk Rec %	Det Umit	Cat Enr % Qual Flags	Qual Flags
Furans in V	apor Sar	Samples by SIN	IM											
		91-99-7	2,3-Ditydrofuran	NGS	99	<0.23	40.23	n/a	n/a	nla	n/a	0.23	rval	
S16T034151	L	1708-29-8	2,5-Dihydrofuran	NGS	72	<0.33	40,33	n/a	n'a	n/a	n/a	0.33	n/a	-
\$167034151	L	625-86-5	2,5-Dimethytluran	NGS	84	<0.75	<0.75	n/a	n/a	nla	n/a	0.75	n/a	
S16T034151	L	3777-77-7	2-Heptyffuran	NGS	85	>0.86	99'0>	n/a	n/a	n/a	n/a	0.86	n/a	_
S16T034151	L	534-22-5	2-Methylfuran	NGS	75	<0.46	40.46	n/a	n/a	n/a	n'a	0.46	r/a L	2
8167034151	L	3777-69-3	2-Pentyffuran	NGS	88	05'0>	-0.90	e/u	n/a	n/a	n/a	0.90	n/a l	0
S16T034151	_	4229-91-8	2-Propyffuran	NGS	98	<0.62	<0.62	n/a	n/a	n/s	n/a	0.62	n/a	0
8167034151		110-00-9	Furan	NGS	69	<0.37	<0.37	e/u	n'a	n/a	n/a	0.37	L/3	-
\$167034151		6-66-601	Tetrahydoofuran	NGS	88	<0.23	40,23	n/a	n/a	nya	n's	0.23	n/a n	-

U - Less Than Detection Limit

Cartridge Evaluation Data Summary of All Results

28 - Oct - 2016 8:10:44 DSRHandopyWOLImits 3.0:11b DSR-Jan v. 3.0:12

Sample Group: 20162986
SDG Number:
Customer Sample ID: 16-08635-3-EFF-G
Customer Sample ID: 16-08635-3-EFF-G

Samples R	P	CASF	Analyte	Unit	STD %	Blank	Result	Daplicate	Average		RPO % Spk Rec %	Det Limit Co	Det Limit Crt Err S Qual Flags
Furans in Va	apor	Samples by S	IM										
S15T034152		1191-99-7	2,3-Dihydrofuran	NGS	96	<0.23	<0.23	e/u	n/a	n/a	e,u	0.23	U e/u
S16T034152		1708-29-8	2.5-Dihydrafuran	NGS	72	00.33	<0.33	n/a	n/a	n/a	n/a	0.33	n/a U
S16T034152		625-86-5	2.5-Dimethyfluran	NGS	100	<0.75	<0.75	n/a	e/u	n/a	e,u	0.75	n/a U
S16T034152	Į,	3777-71-7	2-Heptyffuran	NGS	82	00.86	<0.88	n/a	n/a	nía	n'a	0.86	n/a U
S16T034152		534-22-5	2-Methylluran	NGS	75	03.46	<0.46	n/a	n/a	n/a	n'a	0.46	n/a U
S16T034152		3777-69-3	2-Pentylluran	NGS	98	<0.90	<0.90	n/a	n/a	n/a	u/a	0.90	n/a U
S16T034152		4229-91-8	2-Propyffuran	NGS	98	<0.62	<0.62	n/a	n/8	nía	n'a	0.62	n/a U
\$167034152		110-00-9	Furan	NGS	69	-03.37	<0.37	n/a	n/a	n/a	n/a	0.37	n/a U
\$167034152		109-99-9	Tetrahydrofuran	NGS	688	00.23	0.74	n/a	n/a	n/a	n/a	0.23	n/a J

U - Less Than Detection Limit

28 - Oct - 2016 8:10:44 DSRHardopyWOLmits 3.0.11b DSR.Jar v. 3.0.12

Cartridge Evaluation Data Summary of All Results

Sample Group: 20162986 SDG Number:

Customer Sample ID: 16-08635-3-EFF-H Customer Sample ID: 16-08635-3-EFF-H

Sample# R	2	CAS#	Analyte	Unit	8T0 %	Blank	Result	Duplicate	Average	RPD %	RPD 16 Spk Rec 16	100	Det Limit Ont Err % Qual Flags
Furans in V	add,	Samples by SI	M										
S16T034153		1191-99-7	2.3-Dihydrofuran	NGS	99	<0.23	<0.23	n/a	n/a	n'a	n/a		n/a U
S16T034153		1708-29-8	2,5-Dihydrofuran	NGS	72	<0.33	<0.33	n/a	nia	n/a	n/a	0.33	n/a U
S16T034153		625-86-5	2,5-Dimethylfuran	NGS	81	<0.75	<0.75	n/a	nía	n/a	n/a	0.75	n/a U
S16T034153		3377-71-7	2-Heptyffuran	NGS	82	<0.88	<0.86	n/a	n/a	n/a	n/a		n/a U
S16T034153	L	534-22-5	2-Methylluran	NOS	75	<0.46	<0.46	n/a	nía	n/a	n/a	0.46	n/a U
S16T034153		3777-69-3	2-Pentytluran	NGS	888	<0.90	<0.90	n/a	n/a	n/a	n/a		n/a U
S16T034153		4229-91-8	2-Propytfuran	NGS	86	<0.62	<0.62	n/a	uís	n/a	n/a		n/s U
8167034153		110-00-9	Furan	NGS	69	<0.37	<0.37	m/a	n/a	m/a	n/a		n/a U
S16T034153		6-66-601	Tetrahydrofuran	NGS	83	<0.23	1.6	m'a	n/a	n'a	n/a		n/a J

J - Estimated

U - Less Than Detection Limit

E - Outside Calibration Range

Cartridge Evaluation Data Summary of All Results

> Sample Group: 20162986 SDG Number:

28 - Oct - 2016 8:10:44 DSRHardcopyWOLmits 3.0.11b DSRJar v. 3.0.12 Customer Sample ID: 16-08635-3-IN-A Customer Sample ID: 16-08635-3-IN-A

Samples R	74	CAS#	Amalyte	Unit	STO %	Blank	Result	Duplicate	Average	RPD %	RPD 1/4 Spk Rec %	Det Limit	Det Limit Ont Err % Qual Flags	teal Flags
Furans in V	about,	Samples by S	W											
\$167034154	L	1191-99-7	2,3-Dihydrofuran	MGS	99	<0.23	0.29	n/a	n/a	n/a	e/u	0.23	n/a J	Γ
S16T034154	_	1708-29-8	2,5-Dihydrofuran	NGS	72	<0.33	<0.33	n/a	n/a			0.33	Ualu	
\$167034154	L	825-86-5	2,5-Dimethylfuran	NGS	28	<0.75	<0.75	n/a	n/a			0.75	n/a U	
8167034154		3777-71-7	2-Heptyffuran	MGS	92	<0.86	<0.86	n/a	n/a	n/a	e/u	0.86	Ualu	
S16T034154	-	534-22-5	2-Methyfuran	MGS	75	<0.46	<0.46	n'a	n/a	n/a		0.46	Ualu	
S16T034154		3777-69-3	2-Pentyfluran	NGS	88	<0.90	<0.90	n/a	n/a	n/a		0.90	U elva	
S16T034154		4229-91-8	2-Propylluran	MGS	88	<0.62	<0.62	n/a	n/a	n/a		0.62	U alu	
S16T034154	L	110-00-9	Furan	MGS	69	<0.37	<0.37	e/u	e/u			0.37	n/a U	
STATOSATSA	L	100-00-0	Tetrahudrofuran	MGS	80	e0 23	130	e/o	ele.			0.53	H also	

U - Less Than Detection Limit

28 - Oct - 2016 8:10;44 DSRHardopyWOLimits 3,0,11b DSR,Jer v. 3,0,12

Cartridge Evaluation Data Summary of All Results

Sample Group: 20162986 SDG Number:

Customer Sample ID: 16-08635-3-IN-B Customer Sample ID: 16-08635-3-IN-B

Samples R	2	CASE	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	RPD % Spk Rec %	DetLimit	Cat Err %	Det Limit Cat Enr % Qual Flags
Furans in Va	appor	Samples by SI	W											
S16T034155		1191-99-7	2,3-Dihydrofuran	NGS	99	<0.23	<0.23	n/a	n/a	eyu	n/a	0.23	n/a	n
\$167034155		1708-29-8	2,5-Dihydrofuran	NGS	72	<0.33	<0.33	e/u	nla	n/a	n/a	0.33	n/a	0
S16T034155		825-86-5	2,5-Dimethylfuran	NGS	81	<0.75	<0.75	n/a	nla	n/a	n/a	0.75	U/a U	0
\$16T034155		3777-71-7	2-Heptyffuran	NGS	92	<0.86	<0.86	nia	nla	n/a	n/a	0.85	n/a	0
\$167034155		534-22-5	2-Methylfuran	NGS	75	<0.45	<0.46	e/u	nla	n/a	n/a	0.46	n/a	2
S16T034155		3777-69-3	2-Penhituran	NGS	88	<0.90	<0.90	nla	n/a	n/a	n/a	0.90	n/a	0
\$167034155		4229-91-8	2-Propyfluran	NGS	86	<0.62	<0.62	nla	nla	eju	n/8	0.62	U/8/U	0
S16T034156		110-00-9	Furan	NGS	69	<0.37	<0.37	nla	nla	n/a	n/a	0.37	n/a (0
\$167034155		109-99-9	Tetrahydrofuran	NGS	88	<0.23	97	nla	n/a	nia	n/8	0.23	n/s €	8

NA = Not Analyzed, ND = Not Detected

U - Less Than Detection Limit

E - Outside Calibration Range

J · Essmated

Cartridge Evaluation Data Summary of All Results

Sample Group: 20162986 SDG Number:

28 - Oct - 2016 8:10:44 DSRHaedcopyWOLimits 3:0:11b DSR Jar v. 3:0:12

Customer Sample ID: 16-08635-3-IN-C Customer Sample ID: 16-08635-3-IN-C

Samples R	2	CASE	Analyto	Unit	ST0 %	Blank	Result	Duplicate	Average	RPD %	RPD % Spk Rec %	Det Limit	Det Limit Ont Enr % Qual Flags	sal Flags
Furans in Vapor Sa	/appor	mples by	SIM											
8167034156	H	1191-99-7	2,3-Dihydrofuran	NGS	99	<0.23	<0.23	6/4	n/a	nla	nia	0.23	Uslu	
S16T034156	-	1708-29-8	2,5-Dihydrofuran	NGS	72	<0.33	<0.33	e/u	n/a	nla	nla	0.33	U Blu	
8167034156		625-86-5	2,5-Dimethyffuran	NGS	81	<0.75	40.75	6/6	n/a	nla	nia	0.75	Usla	
8167034156	L	3777-71-7	2-Heptyffuran	NGS	92	<0.06	<0.86	n/a	n/a	nla	nla	0.86	URAU	
8167034156		534-22-5	2-Methythran	NGS	75	99'0>	40.46	e/u	n/a	nla	nla	0.46	Uklu	
8167034156	-	3777-69-3	2-Pentyfluran	NGS	88	06:0>	06:0>	n/a	n/a	nia	n/a	06.0	Ugu	
8167034156	-	4229-91-8	2-Propyffuran	NGS	98	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	Uklu	
8167034156		110-00-9	Futan	NGS	69	<0.37	<0.37	u/a	n/a	nla	nla	0.37	U syu	
8167034156	-	109-99-9	Tetrahydoduran	NGS	88	<0.23	86	n/a	n/a	n/a	n/a	0.23	n/a E	

Cartridge Evaluation Data Summary of All Results

Sample Group: 20162986 SDG Number:

28 - Oct - 2016 8:10:44 DSR4andoopyWOLImits 3:0:11b DSRJar v. 3:0:12

Customer Sample ID: 16-08635-3-IN-D Customer Sample ID: 16-08635-3-IN-D

Samples R	ş	CASF	Analyte	Unit	\$10 %	Olank	Result	Duplicate	Average	RPD %	RPD % Spk Rec %		Crit Enr %	Det Limit Ont Enr % Qual Flags
Furans in V	apor	Samples by Si	M											
S16T034157	L	1191-89-7	2.3-Dhydrofuran	NGS	99	<0.23	<0.23	E/U	e/u	e,u		8	n e,u	n
S16T034157		1708-29-8		NGS	72	<0.33	<0.33	n/a	n/a					0
S16T034157		625-86-5		NGS	82	<0.75	<0.75	n/a	n/a	n/a	n/a		U e/u	n
S16T034157		3777-71-7		NGS	82	<0.85	<0.85	n/a	n/a	n/s		0.86		0
S16T034157		534-22-5	2-Methyduran	NGS	75	<0.45	<0.46	e,u	n/a	n/a	n/a	0.46		n
8167034157		3777-69-3	2-Pentylluran	NGS	88	<0.90	<0.90	n/a	n/a	n/a		080	n/a U	0
S16T034157	L	4229-91-8	2-Propylluran	NGS	88	<0.62	<0.62	n/a	e/u	n/a	n/a	0.62		n
S16T034157		110-00-9	Furan	NGS	69	<0.37	<0.37	n/a	n/a	n/a			n/a U	n
S16T034157		6-66-601	Tetrahydrofuran	NGS	68	<0.23	110	rija	n/a	n/a	n/a			E .

U - Less Than Detection Limit

Cartridge Evaluation Data Summary of All Results

Sample Group: 20162986 SDG Number:

28 - Oct - 2016 8:10:44 DSRNantoop/WOLimits 3.0.11b DSR.Jar.v. 3.0.12

Customer Sample ID: 16-08635-3-IN-E Customer Sample ID: 16-08635-3-IN-E

Samples R	All CASE	Analyte	Unit	STD %	Blank	Result	Result Duplicate	Average		RPD % Spk Rec %		Cnt Err %	Det Limit Cot Err % Qual Flags
Furans in Vag	oor Samples by Si	M											
S16T034158	1191-99-7	2,3-Dihydrofuran	NGS	99	<0.23	<0.23	n/a	n/a	nla	n/a	0.23	n/a t	2
S16T034158	1708-29-8	2,5-Dihydrofuran	NGS	72	<0.33	-0.33	n/a	n/a	n/a	n/a	0.33		2
S16T034158	625-86-5	2.5-Dimethyffuran	NGS	81	<0.75	<0.75	n/a	n/a	nla	n/a	0.75		0
\$167034158	3777-71-7	2-Heptyffuran	NGS	85	>0.86	98′0⊳	e/u	n'a	n/a	n/a	0.86	U e/u	2
S16T034158	534-22-5	2-Methylfuran	NGS	75	<0.46	97'0>	n/a	n/a	n/a	n/a	0.46	100	2
\$167034153	3777-69-3	2-Pentytfuran	NGS	88	06'0>	06:0⊳	e/u	n/a	nla	n/a		nia	2
S16T034158	4229-91-8	2-Propytfuran	NGS	98	<0.62	<0.62		n/a	n/a	n/a		n/a L	2
\$167034158	110-00-9	Furan	NGS	69	<0.37	<0.37	e/u	n/a	n/a	n/a			0
S16T034158	109-99-9	Tetrahydrofuran	NGS	88	<0.23	110	n/a	n/a	n/a	n/a	0.23	n/a E	8

Cartridge Evaluation Data Summary of All Results

Sample Group: 20162986 SDG Number:

28 - Oct - 2016 8:10:44 DSRHardopyWOLimits 3:0:11b DSR.Jarv. 3:0:12

Customer Sample ID: 16-08635-3-IN-F Customer Sample ID: 16-08635-3-IN-F

	-													
Sample® R	8	CAS#	Analyto	Unit	8 DI %	Blank	Result	Duplicate	Average	RPD %	RPD % Sph Red %	Det Limit	Det Limit Ont Err % Qual Flags	Flags
Furans in Vapor Si	ode,	Samples by S	PMI .											
S16T034159	-	1191-89-7	2,3-Dihydrofuran	NGS	99	<0.23	<0.23	n/a	e/u	e/u	n/a	0.23	Ueln	
S16T034159	_	1708-29-8	2,5-Dihydroluran	NGS	72	<0.33	<0.33	m/a	n/a	n/a	n/a	0.33	n/a U	
S16T034159	L	625-86-5	2,5-Dimethylluran	NGS	81	<0.75	<0.75	m/m	n/a	n/a	n/a	0.75		
S16T034159	_	3777-71-7	2-Heptythran	NGS	82	40.88	<0.86	n'a	n/a	n/a	n/a	0.86	n/a U	
\$167034159	L	534-22-5	2-Methylfuran	NGS	75	<0.46	97'0>	n/a	n/a	n/a	n/a	0.46		
S16T034159	L	3777-69-3	2-Pentyffuran	NGS	88	<0.90	<0.90	n/a	n/a	n/a	n/a	06'0		
8167034159		4229-91-8	2-Propylfuram	NGS	98	<0.62	<0.62	m/a	nía	n/a	n/a	0.62		
S16T034159	L	110-00-9	Furan	NGS	69	<0.37	<0.37	e,u	n/a	n/a	n/a	0.37		
S16T034159	_	6-96-601	Tetrahydrofuran	NGS	68	<0.23	120	e/u	n/a	n/a	n/a	0.23	n/s E	
	١													

U - Less Than Detection Limit

E - Outside Calibration Range

Cartridge Evaluation Data Summary of All Results

28 - Oct - 2016 8:10:44 DSRHandoopWOLimits 3.0.11b DSR.Jar v. 3.0.12

Customer Sample ID: 16-08635-3-IN-G Customer Sample ID: 16-08635-3-IN-G Sample Group: 20162986 SDG Number:

Samples R	2	CAS#	Analyte	Uek	STD 1%	Blank	Result	Duplicate	Average	RPD %	RPD 16 Spk Ree 16	Dot Limk	Dot Limit Ont Err 1, Qual Flags
Furans in Va	pod	Samples by St	W										
S16T034160		1191-99-7	2,3-Dihydrofuran	NGS	88	<0.23	<0.23	n/a	e/a	nía	e,u	0.23	n/a U
S16T034160		1708-29-8	2,5-Dihydrofuran	NGS	72	<0.33	<0.33	n/a	r/3	n/a	e,u	0.33	n/a U
\$167034160		625-86-5	2,5-Dimethylfuran	NGS	20	<0.75	<0.75	n/a	1/3	nía	e,u	0.75	n/a U
S16T034160		3777-71-7	2-Hoptyffuran	NGS	8	<0.36	<0.86	n/a	1/3	nla		0.86	n/a U
S16T034160		534-22-5	2-Methythman	NGS	75	-0,48	<0.48	nía	r/3	n/a	e,u	0.46	n/a U
S16T034160		3777-69-3	2-Pentyffuran	NGS	88	<0.90	<0.90	n/a	6/4	n/a		0.90	rvia U
\$167034160		4229-91-8	2-Propyffuran	NGS	96	<0.62	<0.62	n/a	r/a	n/a		0.62	n/a U
S16T034160		110-00-9	Furan	NGS	69	<0.37	<0.37	n/a	n/8	n/a	n/a	0.37	n/a U
S16T034160		109-89-9	Tetrahydroluran	NGS	88	<0.23	140	nla	n/a	nla	e,u	0.23	n/a E

U - Less Than Detection Limit

28 - Oct - 2016 8:10:44 DSRHandoopyWDLImits 3.0.11b DSR.Jar v. 3.0.12

Cartridge Evaluation Data Summary of All Results

Sample Group: 20162986 SDG Number:

Customer Sample ID: 16-08635-3-IN-H Customer Sample ID: 16-08635-3-IN-H

Samples R	*	CAS#	Analyze	Unit	\$10 %	Blank	Result	Duplicate	Average	RPD %	RPD 1/4 Spk Rec 1/4	Dot Limit	Det Limit. Ont Err % Qual Flag	Qual Flags
Furans in	Vapo	r Samples by SIM	W											
S16T034161	-	1191-99-7	2,3-Dihydrofuran	NGS	99	<0.23	<0.23	e/u	eju	n/a	n/a	0.23	U e/n	2
S16T034161	-	1708-29-8	2,5-Dihydrofuran	NGS	72	<0.33	<0.33	n/a	n/a	n/a	n/a	0.33		
S15T034161	H	625-86-5	2,5-Dimphylluan	NGS	81	<0.75	<0.75	a/a	n/a	n/a	n/a	0.75		
S16T034161	-	3777-71-7	2-Heptyffuran	NGS	92	<0.88	<0.86	n/a	n/a	m/a	n/a	0.86		-
S16T034161	-	534-22-5	2-Methythean	NGS	75	<0.46	<0.46	m/a	nía			0.46		,
S16T034161	-	3777-69-3	2-Pentylluran	NGS	98	<0.90	<0.90	n/a	n/a	n/a	n/a	08:0		,
S16T034161	-	4229-91-8	2-Propyffuran	NGS	96	<0.62	<0.62	n/a	n/a	n/a	n/a	0.62	Uela	,
S16T034161	H	110-00-9	Furan	NGS	69	<0.37	<0.37	n/a	n/a	n/a	n/a	0.37		,
STRTDS4161	-	100.00.0	Tatrahudrolusan	NGS	80	00.23	130	4,00	nin.	200	n'a			

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Cartridge Evaluation Data Summary Report

Sample Group: 20162987

SDG Number: Customer Sample ID: 16-08636-3-BASE-EFF Customer Sample ID: 16-08638-3-BASE-EFF

amples R	Af CAS #	Aeshito	Unit	% drs	Blank	Result	Duplicate	Average	RPD % Spk Rec %	pk Rec %	Det Limit C	Det Limit Ont Err % Qual Flags
Furans in Va	apor Samples by SIM	VSIM.										
16T034162	1191-99-7	2,3-Othydrofuran	NGS	130	<0.32	<0.32	n/s	n/a	n/a	n/a	0.32	∪ a/u
167034162	1708-29-8	2,5-Ohydrofuran	NGS	110	<0.45	<0.45	m/s	n/a	n/a	n/a	0.45	N/8 U
167004162	625-86-5	2,5-Dimethyfluran	NGS	100	<0.26	40.26	n/a	n/a	n/a	n/a	0.26	∪'a\U
16T034162	3777-71-7	2-Heptyffuran	NGS	100	<0.38	40.38	n/a	a/a	eyu	n/a	0.38	∪'a U
16T034162	534-22-5	2-Methyfuran	NGS	100	<0.15	<0.15	n/s	n'a	n/a	e/u	0.15	n/a U
16T004162	3777-69-3	2-Pentylluran	NGS	100	<0.29	40.29	n/a	2,0	n/s	n/a	0.29	∪a/∪
S16T034162	4229-91-8	2-Propyfluran	NGS	130	40.21	40.21	n/a	a'a	nia	n/8	0.21	∩'a U
S16T034162	110-00-9	Funn	NGS	110	40.58	-0.58	n/a	e/a	eya	n/a	0.53	n/a U
116T034162	109-89-9	Tetrahydrofuran	NGS	100	<0.31	0.39	n/a	n/2	ela	nju	0.31	1 6/0

U - Less Than Detection Limit

J - Estimated

Cartridge Evaluation Data Summary Report

Sample Group: 20162987 SDG Number: Customer Sample ID: 16-08636-3-BASE-IN Customer Sample ID: 16-08638-3-BASE-IN

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Samples R	\$	CASB	Analyte	Unit	\$ OTS	Blank	Result	Dupilicate	Average	RPD %	RPD % Spk Rec %	Det Limit	Det Limit Cnt Err % Qual Flags	ual Flags
Furans in Va	poor	Samples by SI	W										1	I
S16T034163		1191-99-7	2,3-Dihydrofuran	NGS	130	<0.32	<0.32	n/a	n/a	n/a	n/a	0.32	Ula/u	
S16T034163	00	1706-29-8	2,5-Dihydrofuran	NGS	110	<0.45	<0.45	n/s	n/a	n/a	n/a	0.45	Dia Di	
S16T034163		625-86-5	2,5-Dimethythuran	NGS	100	<0.28	<0.26	n/a	n/a	n/a	n/a	0.26	Ualu	
S16T034163	1	3777-71-7	2-Heptyffuran	NGS	100	<0.38	<0.38	n/a	n/a	n/a	n/a	0.38	D S,u	
S16T034163		534-22-5	2-Methythran	NGS	100	<0.15	<0.15	n/a	n/a	n/a	n/a	0.15	Ua'm	
S16T034163		3777-69-3	2-Penlyffuran	NGS	100	<0.29	<0.29	e/u	n/a	n/a	n/a	0.29	D's/u	
S16T034163		4229-91-8	2-Propythuan	NGS	130	<0.21	<0.21	n/a	e/u	n/a	n/a	0.21	U/a/U	
S16T034163		110-00-9	Furan	NGS	110	<0.58	<0.58	eju	n/a	rva	n/a	990	Ua'v	
S16T034163		109-99-9	Tetrahydrofuran	NGS	100	<0.31	5.1	nia	n/a	n/a	n/a	0.31	nia	

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Cartridge Evaluation Data Summary Report

Sample Group: 20162987
SDG Number:
Customer Sample ID: 16-08636-3-BLANK-EFF
Customer Sample ID: 16-08636-3-BLANK-EFF

to another man	ŧ	CASE	Anabyte	Chile	\$018	Blank	Result	Duplicate	Average		RPD % Spk Rac %	Det Umit	Det Umit Cat Err % Qual Flags
Furans in Va	apor S.	lamples by SI	M			1							
S16T034164		1191-99-7	2,3-Dihydrofuran	NGS	130	<0.32	<0.32	n/a	n/a	n/a	n/a	0.32	naki
S16T034164		1708-29-8	2,5-Dihydrofuran	NGS	110	<0.45	<0.45	nia	n/a	n/a		0.45	
S16T034164		625-86-5	2,5-Dimetryfluran	NGS	100	<0.28	<0.28	n/a	n/a	n/a		0.26	
S16T034164		3777-71-7	2-Heptyffuran	NGS	100	<0.38	<0.38	nia	n/a	n/a		0.38	
S16T034164		534-22-5	2-Methythuran	NGS	100	<0.15	<0.15	nya	n/a	n/a		0.15	
S16T034164		3777-69-3	2-Pentylkran	NGS	100	62.00	<0.29	r/s	n/a			0.29	
S16T034164		4229-91-8	2-Propylluran	NGS	130	40.21	<0.21	shr.	n/a			0.21	
S16T034164		110-00-9	Furan	NGS	110	40.58	<0.58	n/a	n/a	rva	n/a	0.58	NaU
S16T034164		6-66-601	Tetrahydrofuran	NGS	100	40.31	<0.31	r/a	nla	nla	n/o	0.31	nia ti

U - Less Than Detection Limit

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Cartridge Evaluation Data Summary Report

Sample Group: 20162987 SDG Number: Customer Sample ID: 16-08636-3-BLANK-IN Customer Sample ID: 16-08636-3-BLANK-IN

amples R	A# CAS#	3	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	RPD % Spk Rec %	Det Limit	Det Limit Ont Err % Qual Flags
Furans in Vapor Samples by SIM	par Sample	as by Sil											
16T034165	1191-99-	_	2,3-Oilydrofuran	NGS	130	<0.32	<0.32	n/a	a/a	nla	n/a	0.32	n/a/U
167034165	1708-29-8		2,5-Dihydrofuran	NGS	110	<0.45	<0.45	n/a	5,0	ala a	n/a	0.45	
16T034165	625-88-5		2,5-Dimethythuran	NGS	100	<0.26	<0.26	n/a	a's	n/a	n/n	0.26	
16T034165	3777-71-7		2-Heptyffuran	NGS	100	40.38	40.38	n/a	n/a	10/2	n/s	0.38	
16T034165	534-22-5		2-Mothyffuran	NGS	100	<0.15	<0.15	n/a	a/a	n/a	n/s	0.15	
16T034165	3777-69-3		2-Pentylluran	NGS	100	40.29	40.29	e/u	n/a	n/a		0.23	
16T034165	4229-91-8		2-Propythuran	NGS	130	40.21	<0.21	n/a	n/a	n/a		0.21	
16T034165	110-00-9		Funin	NGS	110	<0.58	<0.58	n/a	rva nva	n/a		0.58	
167034165	109-99-9		Tetrahydrofuran	NGS	100	<0.31	<0.31	n/s	o/o		ala	0.35	

J - Estimated

Cartridge Evaluation Data Summary Report

Sample Group: 20162987
SDG Number:
Customer Sample ID: 16-08636-3-EFF-A
Customer Sample ID: 16-08636-3-EFF-A

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							ĺ							
Samples	8	CAS #	Anabyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	RPD % Spk Rec %	Det Limit	Det Limit Cnt Err 1/4 Qual Fit	Qual Flag
Furans in	Vapo	r Samples by Si	SIM											
S16T034174	H	1191-99-7	2,3-Dihydrofuran	NGS	130	<0.32	<0.32	n/a	n'a	n/a	ayu	0.32	Us/u	5
S16T034174	100	1708-29-8	2,5-Dihydrofuran	NGS	110	<0.45	<0.45	n/a	n's	n/a		0.45	n/a t	,
S16T034174		625-86-5	2,5-Dimethylituran	NGS	100	<0.26	<0.26	n/u	n/a	n/a		0.26	U/a/U	2
S16T034174		3777-71-7	2-Hoptyffuran	NGS	100	<0.38	<0.38	n/a	n/a	n/a	n/a	0.38	m'a l	5
S16T034174	-	534-22-5	2-Methythuran	NGS	100	<0.15	<0.15	n/a	n/a	n/a	n/a	0.15	U s/m	,
S16T034174	-	3777-69-3	2-Pontyfluan	NGS	100	<0.29	<0.29	n/a	n/a	n/a	n/a	0.29	n/a	,
S16T034174	-	4229-91-8	2-Propythum	MGS	130	<0.21	<0.21	rva	n/a	n/a	u/u	0.21	n'a	, ,
S16T034174	-	110-00-9	Furan	NGS	110	<0.58	<0.58	E/u	rva	n/a	n/u	0.58	the's	, ,
S16T034174	H	109-99-9	Tetrahydrofuran	NGS	100	<0.31	<0.31	nía	n/a	nla	n/a	0.31	July	,
									1					

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Cartridge Evaluation Data Summary Report

Sample Group: 20162987 SDG Number:

ō	Cust	ner mo	Sample I or Sample	Customer Sample ID: 16-08636-3-EFF-B Customer Sample ID: 16-08636-3-EFF-B				
Samples	æ	2	A# CAS#	Analyte	Unit	% OTS	Blank	æ
Furans	in Vap	NOT S	amples by S	MI				ı
S16T03417			1191-99-7	2.3-Dihydrofuran	NGS	130	40.32	ľ

Unit	STD %	Blank	Result	Duplicate	Average	RPO %	RPO % Spk Rec %	DetLimit	Ont Err % Qual Flags
NGS	130	40.32	<0.32	n/a	10/8	nya	n/s	0.32	n/a U
NGS	110	<0.45	<0.45	n/a	n/a	n/a	nla	0.45	
NGS	100	<0.28	<0.26	n/a	n/a	nya	n/a	0.26	
NGS	100	<0.38	<0.38	n/s	n/a	n/a	rla e/u	0.38	
NGS	100	<0.15	<0.15	n/a	n/s	r/a	nla	0.15	
NGS	100	<0.29	<0.29	a/n	e/u	n/a		0.29	
NGS	130	<0.21	<0.21	n/a	n/a	n/a		0.21	
SDN	110	<0.58	<0.58	n/2	nya	n/a		0.58	
NGS	100	<0.31	<0.31	n'a	n/a	n/a		0.31	
NGO	201	10,02	×0.31		D/S		N/B	n/a n/a	Na Na na

U - Less Than Detection Limit

Cartridge Evaluation Data Summary Report

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Sample Group: 20162987
SDG Number:
Customer Sample ID: 16-08636-3-EFF-C
Customer Sample ID: 16-08636-3-EFF-C

	Į		And the second name of the secon										
Sampled R	\$	CAS#	Amalyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	RPO % Spk Rec %	Det Umit	Det Umit Ont En % Qual Flags
Furans in Va	lode.	Samples by St	N										
S16T034176		1191-59-7	2,3-Dihydrofuran	NGS	130	<0.32	<0.32	r/a	alva	nla	n/a	0.32	Us/U
S16T034176		1708-29-8	2,5-Dihydrofuran	NGS	110	<0.45	<0.45	rya	nla	nya	n/a	0.45	n/s/U
S16T034176		625-86-5	2,5-Dimethythman	NGS	100	40.26	<0.26	rya	nla	nya		0.26	Ua/u
S16T034176		3777-71-7	2-Hoph/fluran	NGS	100	<0.38	<0.38	n/a	n/a	rva		0.38	n/a U
S16T034176		534-22-5	2-Wethylfuran	NGS	100	0.15	<0.15	nfa	nla	n/a		0.15	NaU
S16T034175		3777-69-3	2-Pentyfluran	NGS	100	<0.29	<0.29	rita	nla	n/a	n/a	0.29	U e/u
S16T034176		4229-51-8	2-Propylluran	NGS	130	40.21	<0.21	nya	nla	nla		0.21	Ualu
S16T034176		110-00-9	Furan	NOS	110	65.00	<0.58	cyu	nla	nta		0.58	Ualu
S16T034176		109-99-9	Tetrahydrofusan	NGS	100	0.31	<0.31	nya	n/a	n/a		0.31	nati

Cartridge Evaluation Data Summary Report

Sample Group: 20162987
SDG Number:
Customer Sample ID: 16-08636-3-EFF-D
Customer Sample ID: 16-08636-3-EFF-D

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	l													
Samples R.	2	CAS#	Analyte	Unit	STD %	Blank	Result	Dupilcate	Average	RPD %	RPD % Spk Rec %	Det Limit	Det Limit Cnt Err % Qual Flags	F
Furans in	Vapor	Samples by S	WI											T
S16T034177	-	1191-99-7	2,3-Dihydrofuran	NGS	130	<0.32	<0.32	n/a	n/a	n/a	e/u	0.32	Ulahu	Т
S16T034177		1708-29-8	2,5-Dihydrofuran	NGS	110	<0.45	<0.45	n/s		n/a	e/u	0,45	U(a)U	T
S16T034177		625-86-5	2.5-Dimethylluran	NGS	100	<0.26	<0.28	n/a	n/a	n/a	nya	0.26	n/a U	Т
S16T034177		3777-71-7	2-Heptyffuran	NGS	100	<0.38	<0.38	n/a		n/a		0.38	n/a U	Т
S16T034177		534-22-5	2-Methytluran	NGS	100	<0.15	<0.15	n/a		n/a		0.15	n/a U	Т
S16T034177	H	3777-69-3		NGS	100	<0.29	<0.29	n/s	n'a	n/a		0.29	U(a)U	Т
S16T034177	-	4229-91-8	2-Propylluran	NGS	130	<0.21	e0.21	n/a		n/a		0.21	U(a)U	7
S16T034177	H	110-00-9	Furan	NGS	110	e0.58	<0.58	n/s		n/n		0.58	Ucau	Т
S16T034177	H	109-99-9	Tetrahydrofuran	NGS	100	<0.31	<0.31	nía		n/a		0.31	Digita	Т

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Cartridge Evaluation Data Summary Report

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Sample Group: 20162987
SDG Number:
Customer Sample ID: 16-08636-3-EFF-E
Customer Sample ID: 16-08636-3-EFF-E

Samples R	Ş	CAS#	Analyte	Unit	% dTS	Blank	Result	Duplicate	Average	RPD %	RPD % Spk Rec %	Det Limit	Det Umit Ont Err % Qual Flags	bush Fings
Furans in W	/spor	Samples by SI	W											
S15T034178	L	1191-99-7	2,3-Othydrofuran	NGS	130	40.32	40.32	n/a	n/a	n/a	n/a	0.32	n/a U	
S16T034178		1708-29-8	2,5-Othydrofuran	NGS	110	40.45	<0.45	n/a	n/a	n/a	n/a	0.45	J. B/u	
S16T034178		625-86-5	2,5-Dimethylfuran	NGS	100	40.26	40.26	n/8	n/a	n/s	n/a	0.25	n/a L	
S16T034178		3777-71-7	2-Hepoffuran	NGS	100	<0.38	40.38	n/a	n/a	n/a	n/8	0.38	n/a L	
S16T034178		534-22-5	2-Mathyturan	NGS	100	d0.15	<0.15	n/a	n/a	n/a	n/n	0.15	n/a C	
S16T034178		3777-69-3	2-Pentylfuran	NGS	100	<0.29	40.29	n/a	n/8	n/a	n/s	0.29		
S16T034178		4229-91-8	2-Propyffuran	NGS	130	40.21	<0.21	n/s	2/2	n/a	n/a	0.21	D'a	
8167034178		110-00-9	Furan	NGS	110	*6.58	40.58	e/u	m/a	e/u	e/u	0.58	D'a	
S16T034178		109-99-9	Tetrahydrofuran	NGS	100	<0.31	<0.31	n/a	6/0	n/a	nla	0.31	n/a C	

Cartridge Evaluation Data Summary Report

Sample Group: 20162987 SDG Number: Customer Sample ID: 16-08636-3-EFF-F Customer Sample ID: 16-08636-3-EFF-F

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Samples R	ş	A CAS #	Analyto	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	Spk Rec %	Det Limit	Det Limit Ont Err % Qual Flags	Flags
Furans in Va	apor S	Furans in Vapor Samples by SIM	M											
S16T034179		1191-89-7	2,3-Dihydrofuran	NGS	130	<0.32	<0.32	eva	n/a	n/a	n/a	0.32	U a/u	
S16T034179		1708-29-8	2,5-Dihydrofuran	NGS	110	<0.45	<0.45	e/a	n/a	n/s	n/a	0.45	n/a U	
S16T034179		959-929	2,5-Dimethylfuran	NGS	100	<0.26	<0.26	e/u	n/a	n/s	n/a	0.26	U a/u	
S16T034179		3777-715	2-Heptyffuran	NGS	100	<0.38	<0.38	n/a	n/a	nla	elva	0.38	n/a U	
8167034179		634-22-6	2-Methyffuran	NGS	100	<0.15	<0.15	n/a	n/a	n/a	n/a	0.15	U/a/U	
8167034179		3777-69-3	2-Pentyffuran	NGS	100	<0.29	<0.29	eva	n/s	n/a	n/a	0.29	U s/u	
S16T034179		4229-91-6	2-Propylluran	NGS	130	<0.21	<0.21	n/a	n/a	n/a	n/a	0.21	n/a U	
S16T034179		110-00-9	Furan	NGS	110	<0.58	<0.58	e/u	n/a	n/a	n/a	0.58	Ua U	
S16T034179		8-66-601	Tetrahydrofuran	NGS	100	<0.31	0.67	e/u	n/a	nya	n/a	0.31	L a/n	

Cartridge Evaluation Data Summary Report

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Sample Group: 20162987
SDG Number:
Customer Sample ID: 16-08636-3-EFF-G
Customer Sample ID: 16-08636-3-EFF-G

Samplest R All CAS # CAS												
n Vapor Si	Analyte	Unit	STD %	Blank	Retail	Duplicate	Average	RPD %	RPD % Spk Rec %	Det Umit	Det Limit Cut En % Qual Flags	Flags
	y SIM											
- 9 8 9	7 2,3-Dihydrofuran	NGS	130	<0.32	<0.32	n/a	n/a	n/a	n/a	0.32	n/a U	
9 8 9	8 2,5-Dihydrofuran	NGS	110	<0.45	<0.45	nha	n/a	n/a	n/a	0.45		Γ
m 10	2,5-Dimethyffuran	NGS	100	<0.26	<0.25	nha	n/a	n/a	n/a	0.26		Γ
39	7 2-Heptytfuran	NGS	100	<0.38	<0.38	r/a	nla	n/a	n/a	0.38		Γ
	2-Wethylluran	NGS	100	0.15	<0.15	n/a	n/a	n/a	n/a	0.15		Γ
\$167034180 3777-69-3	3 2-Pentythuran	NGS	100	40.29	62.0>	r/a	nla	n/a	n/u	0.29		Г
\$167034180 4229-91-8	8 2-Propyfluran	NGS	130	40.21	<0.21	nya	n/a	n/a	n/a	0.21		Г
\$167034180 110-00-9	Furan	SON	110	95.00	<0.58	r/a	n/a	nía	n/a	0.58		Γ
\$167034180 109-99-9	Tetrahydrofuran	NGS	100	<0.31	2.1	r/a	n/a	n/a	n/a	0.31		

U - Less Than Detection Limit.

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Cartridge Evaluation Data Summary Report

Sample Group: 20162987
SDG Number:
Customer Sample ID: 16-08636-3-EFF-H
Customer Sample ID: 16-08636-3-EFF-H

Samples R	2	CAS #	Analyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	RPD % Spk Rec %	Det Limit	Det Limit Crit Err 14 Qual Flags
Furans in Va	apor:	Furans in Vapor Samples by SI	SIM										
S16T034181		1191-89-7	2,3-Dihydrofuran	NGS	130	<0.32	<0.32	n/a	nla	n/a	n/a	0.32	n/a U
S16T034181		1708-29-8	2,5-Dihydrofuran	NGS	110	<0.45	<0.45	n/a	nla	n/a	n/a	0.45	n/a U
S16T034181		625-86-5	2,5-Dimethyffuran	NGS	100	<0.26	<0.26	s/c	n/a	n/a	n/a	0.26	U(a)U
S16T034181		3777-71-7	2-Hoptyffuran	NGS	100	<0.38	<0.38	n/a	nla	n/a	n/s	0.38	U(a)U
S16T034181		534-22-5	2-Methythuran	NGS	100	<0.15	<0.15	n/a	nla	n/a	n/a	0.15	n/a U
\$167034181		3777-69-3	2-Pentyfluran	NGS	100	<0.29	<0.29	n/a	n/a	nía		0.29	
S16T034181		4229-91-8	2-Propylluran	NGS	130	<0.21	<0.21	n/a	n/a	nla	n/a	0.21	n/a/U
S16T034181		110-00-9	Furan	MGS	110	<0.58	<0.58	nia	nla	n/a		0.58	n/a U
S16T034181		109-99-9	Tetrahydrofuran	MGS	100	<0.31	6.2	n/a	nla	n/a	n/a	0.31	
													J

Cartridge Evaluation Data Summary Report

01 - Dec - 2016 14:49:59 DSRHardopyWCLimits 3.0.13 DSRJar v. 3.0.12

Sample Group: 20162987 SDG Number: Customer Sample ID: 16-08636-3-IN-A Customer Sample ID: 16-08636-3-IN-A

Sampled R	3	CAS#	Analyte	Unit	% OTS	Blank	Result	Duplicate	Average	RPD %	RPD % Spk Rec %	Det Limit	Det Limit Cm Err % Qual Flags	of Flags
Furans in V	/apo	r Samples by S	WI											I
S16T034166	-	1191-99-7	2,3-Dihydrofuran	NGS	130	<0.32	<0.32	n/a	n/a	n/a	n/a	0.32	n/a U	Γ
S16T034166	H	1708-29-8	2.5-Dihydrofuran	NGS	110	<0.45	<0.45	n/a	n/a	n/a	n/a	0.45	∪ s/n	
S16T034166	-	825-86-5	2,5-Dimethythuan	NGS	100	<0.26	<0.28	n/a	n/a	n/a	n/a	0.26	U s/u	
S16T034166	Н	3777-71-7	2-Heptyffuran	NGS	100	<0.38	<0.38	n/a	n/a	n/s	E/N	0.38	⊃ e/o	
S16T034166	-	534-22-5	2-Methythran	NGS	100	<0.15	<0.15	n/a	n/a	n/a	e/u	0.15	O S/U	
S16T034166	H	3777-69-3	2-Pentyfluran	NGS	100	<0.29	<0.29	n/s	n/a	n/a		0.29	Ua U	
S16T034166	L	4229-91-8	2-Propyffuran	NGS	130	<0.21	<0.21	n/a	n/a	n/a		0.21	U/s/u	
S16T034166	H	110-00-9	Furan	NGS	110	<0.58	<0.58	rva	n/a	n/a		0.58	U e/u	
S16T034166	Н	109-89-9	Tetrahydrofuran	NGS	100	<0.31	87	n/a	n/a	n/a		0.31	n/a E	

Cartridge Evaluation Data Summary Report

> Sample Group: 20162987 SDG Number: Customer Sample ID: 16-08636-3-IN-B Customer Sample ID: 16-08636-3-IN-B

01 - Dec - 2016 14:49:59 DSRHardcop/WCLimits 3.0.13 DSR.Jer v. 3.0.12

Samples R	Na C	AS #	Analyte	Unit	% QLS	Blank	Result	Duplicate	Average	RPD %	RPD % Spk Rec %	Det Limit	Crit Err %	Det Limit Ont Err % Qual Flags
Furans in Va	por Sa	imples by Si	M											
S16T034167	-	191-99-7	2,3-Oihydrofuran	NGS	130	<0.32	<0.32	e/u	9,0	n/a	n/s	0.32	D/a/U	2
S16T034167	-	708-29-8	2,5-Othydrofuran	NGS	110	<0.45	40.45	n/a	n'a	n/s	n/8	0.45		2
S16T034167	10	25-88-55	2.5-Dimethyfluran	NGS	100	40.26	<0.26	n/a	9,0	n/a	n/a	0.26		0
8157034167	33	7-17-777	2-Heptyffuran	NGS	100	40.38	<0.38	e/u	n'a	n/a	n/a	0.38		2
S16T034167	100	34-22-5	2-Methyfuran	NGS	100	40.15	<0.15	n/a	n's	s/a	nla	0.15		2
S16T034167	65	777-69-3	2-Pentylluran	NGS	100	40.29	40.29	e/u	n's	2/4	n/a	0.29		7
S16T034167	2	229-91-8	2-Propylfuran	NGS	130	40.21	40.21	n/a	m'a	a/u	n/s	0.21		0
816T034167	÷	6-00-01	Furon	NCS	110	<0.58	<0.58	n/a	n'a	eva	nka	0.58		2
S16T034167	7	39-99-9	Tetrahydrofuran	NGS	100	<0.31	88	n/s	n/a		nia	0.31	Pa's	u

Cartridge Evaluation Data Summary Report

Sample Group: 20162987

01 - Dec - 2016 14:49:59 DSRHardcop/WOLimin 3.0.13 DSRJar v. 3.0.12

SDG Number: Customer Sc Customer	SDG Number: Customer Sample ID: Customer Sample ID:	pre Group: 20 102567 DG Number: Customer Sample ID: 16-08636-3-IN-C Customer Sample ID: 16-08635-3-IN-C										
lampled R	AF CAS #	Analyte	Unit	STO %	Blank	Result	Dupilicate	Amerage	RPD %	Average RPD % Spk Rec %	Det Umit	Det Umit Cnt Err % Qual Flags
Futans in Vapor Sample	蛟	by SIM									1	
3167034168	1191-99-7	2,3-Dihydrofuran	MGS	130	<0.32	<0.32	s/u	n/a	n/a	nya	0.32	Ua'n
316T034168	1706-29-8	2,5-Dihydrofuran	NGS	110	<0.45	<0.45	n/a	n/a	n/a	n/a	0.45	n/a U
316T034168	825-86-5	2,5-Dimethyffuran	NGS	100	<0.26	<0.26	n/a	n/a	n/s	n/a	0.26	U/a/U
16T034168	3777-71-7	2-Heptyffuran	NGS	100	<0.38	<0.38	n/a	n/a	n/a	6/4	0.38	n/s U
316T034168	534-22-5	2-Methythuran	NGS	100	<0.15	<0.15	n/a	n/a	n/a	n/a	0.15	n/s/C
1167034168	3777-69-3	2-Pentylluran	NGS	100	<0.29	<0.29	n/a	n/a	n/a	n/a	0.29	n/a U
167034168	4229-91-8	2-Propytfuran	NGS	130	<0.21	<0.21	n/a	n/a	n/a	n/a	0.21	n/a U
1167034168	110.00-9	Furan	NOS	110	e9:0>	×0.50	eju	nju	n/a	n/a	0.58	m/a U
1167034168	109-99-9	Tetrahydrofuran	NGS	100	<0.31	86	n/a	n/a	n/a	n/s	0.31	n/a E

E - Outside Calibration Range

Cartridge Evaluation Data Summary Report

01 - Doc - 2016 14:49:59 DSRHardcopyMOLimbs 3.0:13 DSR.Jar v. 3.0:12

Sample Group: 20162987 SDG Number: Customer Sample ID: 16-08636-3-IN-D Customer Sample ID: 16-08636-3-IN-D

Samples R	\$	CAS #	Analyte	Unit	\$ OTS	Blank	Result	Duplicate	Average	RPD %	RPD % Spk Rec %	Det Limit	Det Limit Cot Err % Qual Flags
Furans in Vapor Samples	apor	Samples by SIM	W										
S16T03A169	L	1191-89-7	2,3-Dihydrofuran	NGS	130	<0.32	<0.32	nís	n/a	n/a	n/a	0.32	U s/u
S16T034169	Ц	1708-29-8	2,5-Dihydiofuran	NGS	110	<0.45	<0.45	n/a	nía	n/a	n/a	0.45	U(a)U
S16T034169		825-86-5	2,5-Dimethythran	NGS	100	<0.26	<0.26	n/a	nía	n/a	n/a	0.26	Ush
S16T034169		3777-71-7	2-Heptyffuran	MGS	100	<0.38	<0.38	e/u	n/a	n/s	n/a	0.38	Ualu
S16T034169		534-22-5	2-Methythinan	NGS	100	<0.15	<0.15	nía	n/a		n/a	0,15	Ush
S16T034169		3777-69-3	2-Pontyfuran	NGS	100	<0.29	<0.29	n/a	n/a	n/a	n/a	0.29	Uav
S16T034169		4229-91-8	2-Propylluran	NGS	130	<0.21		n/a	n/a	n/a	n/a	0.21	Ualu
S16T034169		110-00-9	Furan	NGS	110	<0.58	<0.58	nva	nya	n/a	n/a	99'0	Uev
S16T034169		109-99-9	Tetrahydrofutan	NGS	100	<0.31	100	n/a	n/a	n/s	n/a	0.31	n/a E

U - Less Than Detection Limit

Cartridge Evaluation Data Summary Report

01 - Dec - 2016 14:49:59 DSR-landcopyW0Limits 3.0.13 DSR-Jar v. 3.0.12

Sample Group: 20162987 SDG Number: Customer Sample ID: 16-08636-3-IN-E Customer Sample ID: 16-08636-3-IN-E

Samples R	\$	CASS	Analyte	Unit	2 ors	Blank	Result	Duplicate	Average	RPD %	RPD % Spk Rec %	Det Umit	Ont Err % Qual Flags	Qual Flags
Furans in Vo	65	por Samples by S	/ SIM											
S16T034170		1191-99-7	2,3-Dihydrofuran	NGS	130	<0.32	<0.32	n/a	n/a	n/a	nla	0.32	U e/u	-
S16T034170		1708-29-8	2,5-Dihydrofuran	NGS	110	<0.45	<0.45	n/s	n/a	n/a		0.45	U e/u	-
S167034170		525-86-5	2,5-Dimethyfluran	NGS	100	<0.26	<0.26	n/a	n/a	n/a		0.26		
8167034170		5777-71-7	2-Heptylfuran	NGS	100	<0.38	<0.38	n/a	e/u	n/a		0.38	U s/u	-
S16T034170		534-22-5	2-Methyffuran	NGS	100	<0.15	<0.15	n/a	n/a	n/a	nla	0.15		-
S167034170		5777-69-3	2-Pentyffuran	NGS	100	<0.29	<0.29	n/a	n/a	n/a	nla	0.29		-
\$167034170		8-16-6221	2-Propytluran	NGS	130	<0.21	<0.21	n/a	n/a	n/a	nla	0.21		-
S16T034170		110-00-9	Furan	NGS	110	<0.58	<0.58	n/n	n/a	n/a		0.58		-
S15T034170		6-66-60	Tetrahydrofuran	NGS	100	<0.31	110	n/a	n/a	n/a		0.31	L	-

Cartridge Evaluation Data Summary Report

01 - Dec - 2016 14:49:59 DSRHardopyWOLimits 3.0.13 DSR.Jar v. 3.0.12

Sample Group: 20162987 SDG Number: Customer Sample ID: 16-08636-3-IN-F Customer Sample ID: 16-08636-3-IN-F

Samples R As CAS Furans in Vapor Samp 316T034171 1191 516T034171 1706	AS #	Analyte	Bloke	arm a	Colombia		-					
N Vapor S	modern by C		11110	600	Blank	Result	Cuplicate	Average		RPD % Spk Rec %	Det Unit	Det Umit Cnt Err % Qual Flags
	o for condition	W								1		
-	91-99-7	2,3-Dihydrofuran	NGS	130	<0.32	<0.32	n/a	n/a	n/a	n/a	0.32	n/a U
	708-29-8	2,5-Dihydrofuran	NGS	110	<0.45	<0.45	n/a	n/a	n/a	n/a	0.45	n/a U
167034171 525	525-86-5	2,5-Dimethyfluran	NGS	100	<0.28	<0.26	n/a	n/a	n/a	n/a	0.26	O E/u
16T034171 377	77-71-7	2-Heptyffuran	NGS	100	<0.38	<0.38	e/u	n/a	n/a	n/a	0.38	n/a U
167034171 534	34-22-5	2-Wethyffuran	NGS	100	<0.15	<0.15	eju	n/a	n/a	e/u	0.15	n/a/U
16T034171 377	777-69-3	2-Pentylturan	NGS	100	<0.29	<0.29	n/s	n/a	n/a	n/a	0.29	n/a U
167034171 422	8-18-622	2-Propyfluran	NGS	130	<0.21	c0.21	n/a	n/a		n/a	0.21	n/a U
167034171 116	10-00-9	Furan	NGS	110	<0.58	<0.58	nía	n/a	n/a	n/u	99.0	D B/W
167034171 106	6-66-60	Tetrahydrofuran	MGS	1000	<0.31	88	D/S	n/a	n/a	n/a	0.31	n/a E

E - Outside Calibration Range

U - Less Than Detection Limit

Cartridge Evaluation Data Summary Report

01 - Dec - 2016 14:49:59 DSRHardcop/WCLimbs 3.0.13 DSR.Jar v. 3.0.12

Sample Group: 20162987
SDG Number:
Customer Sample ID: 16-08636-3-IN-G
Customer Sample ID: 16-08636-3-IN-G

Sample# R	₹	CAS #	Arralyte	Unit	STD %	Blank	Result	Duplicate	Average	RPD %	RPD % Spk Rec %	Det Ulmit	Det Umit Ont Err % Qual Flags
Furants in Va	S vod	amples by Si	IM			1		1					
S167034172	Ė	191-89-7	2,3-Dihydrofuran	NGS	130	<0.32	<0.32	nla	nía	n/a	n/a	0.32	n/a U
S16T034172	-	708-29-8	2,5-Dihydrofuran	NGS	110	<0.45	<0.45	n/a	n/a	n/a	n/a	0.45	n/a U
S16T034172	100	25-86-5	2,5-Dimethyffuran	NGS	1000	o0.26	<0.26	r/s	nla	n/a	n/a	0.26	NaU
S16T034172	6	7-17-276	2-Hoptyfluran	NGS	1004	<0.38	<0.38	r/a	nía	n/a	n/a	0.38	n/a/U
S16T034172	90	34-22-5	2-Methylluran	NGS	100	<0.15	<0.15	r/a	n/a	n/a	n/a	0.15	n/a/U
S16T034172	0	0777-69-3	2-Pentyffuran	NGS	100	e0.29	<0.29	r/a	nia	n/a		0.29	NaU
S16T034172	4	1229-91-8	2-Propyfluran	NGS	130	40.21	40.21	r/a	nla	n/a		0.21	n/a U
\$161034172	-	10-00-9	Futan	NGS	110	65.00	e0.58	uyu	n/a	n/a		99'0	NaV
S16T034172	-	6-66-60	Tetrahydrofuran	NGS	100	<0.31	110	cha	n/a	nia	s/u	0.31	Halu F



Report Date: October 05, 2016

Phone: (509) 373-1262

E-mail: robert_w_sosa@rl.gov

20162970

Workorder: 34-1627302

Client Project ID: Washington River Protection

Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

Robert (Buddy) Sosa

Richland, WA 99352

Washington River Protection So PO Box 850, MSIN T6-02

Collected: 09/23/2016 Sample ID: \$16T033565 Received: 09/28/2016 Lab ID: 1627302001 Method: Amines-VOA Aliphatic VAA-1 Media: SKC 226-96, XAD-7 Tube Analyzed: 10/04/2016 50/100mg [(NBD) Chloride] Sampling Parameter: Air Volume Not Provided Result Analyte (ug/sample) Result (mg/m²) Result (ppm) RL (ug/sample) Dimethylamine <0.10 NA NA. 0.10 Ethylamine NA 0.10 <0.10 NA Methylamine <0.10 NA NA 0.10

Sample ID: \$16703356 Lab ID: 162730200				Collected: 09/23/2016 Received: 09/28/2016
Method: Amines-VOA Al			226-96, XAD-7 Tu 00mg [(NBD) Chlor Volume Not Provid	ide]
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA.	0.10
Methylamine	<0.10	NA.	NA.	0.10

Sample ID: \$16T03356 7 Lab ID: 1627302003				Collected: 09/ Received: 09/	
Method: Amines-VOA Alip		1,000,000,000,000,000	226-96, XAD-7 Tul 00mg [(NBD) Chlor Volume Not Provid	ide]	04/2016
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)	
Dimethylamine	<0.10	NA	NA	0.10	
Ethylamine	<0.10	NA NA	NA.	0.10	

Results Continued on Next Page

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1627302 - Page 1 of 18 Wed, 10/05/16 4:11 PM IHREP-V12.3



Workorder: 34-1627302

Client Project ID: Washington River Protection

So

Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

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Sample ID: 816T033567 Collected: 09/23/2016 Received: 09/28/2016 Lab ID: 1627302003 Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Method: Amines-VOA Aliphatic VAA-1 Analyzed: 10/04/2016 Sampling Parameter: Air Volume Not Provided Result Analyte (ug/sample) Result (mg/m²) Result (ppm) RL (ug/sample) Methylamine < 0.10 NA NA

Sample ID: \$16T033568 Collected: 09/23/2016 Received: 09/28/2016 Lab ID: 1627302004 Media: SKC 226-96, XAD-7 Tube 50/100mg [(NBD) Chloride] Method: Amines-VOA Aliphatic VAA-1 Analyzed: 10/04/2016 Sampling Parameter: Air Volume Not Provided Result Analyte RL (ug/sample) (ug/sample) Result (mg/m²) Result (ppm) Dimethylamine < 0.10 NA NA 0.10 Ethylamine < 0.10 NA. NA 0.10 Methylamine < 0.10 NA NA 0.10

Sample ID: \$16T033569 Collected: 09/23/2016 Received: 09/28/2016 Lab ID: 1627302005 Method: Amines-VOA Aliphatic VAA-1 Media: SKC 226-96, XAD-7 Tube Analyzed: 10/04/2016 50/100mg [(NBD) Chloride] Sampling Parameter: Air Volume Not Provided Result Analyte Result (ppm) RL (ug/sample) (ug/sample) Result (mg/m²) < 0.10 0.10 Dimethylamine NA. NA < 0.10 NA NA 0.10 Ethylamine Methylamine < 0.10 NA. NA 0.10

Sample ID: \$16T033570 Collected: 09/23/2016 Lab ID: 1627302006 Received: 09/28/2016 Method: Amines-VOA Aliphatic VAA-1 Media: SKC 226-96, XAD-7 Tube Analyzed: 10/04/2016 50/100mg [(NBD) Chloride] Sampling Parameter: Air Volume Not Provided Result (ug/sample) Result (ppm) Analyte Result (mg/m²) RL (ug/sample) Dimethylamine < 0.10 NA 0.10 NA Ethylamine < 0.10 0.10 NA. NA < 0.10 NA NA 0.10 Methylamine

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IHREP-V12.8



Workorder: 34-1627302

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

rates jureau rivadura				
Sample ID: \$16T0335	71			Collected: 09/23/2016
Lab ID: 162730200	07			Received: 09/28/2010
Method: Amines-VOA A		200,000,000,000,000	226-96, XAD-7 Tu 00mg ((NBD) Chlor Volume Not Provid	ide)
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA.	0.10

Sample ID: \$16T03357 Lab ID: 162730200				Collected: 09/23/2016 Received: 09/28/2016
Method: Amines-VOA Ali		THE R. P. LEWIS CO., LANSING, S. LEWIS CO., L	226-96, XAD-7 Tu 00mg ((NBD) Chlor Volume Not Provid	ide)
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: S16T03357					09/23/2016
Lab ID: 162730200	9			Received:	09/28/2016
Method: Amines-VOA All	•		226-96, XAD-7 Tul 00mg [(NBD) Chlor Volume Not Provid	ide)	10/04/2016
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)	
Dimethylamine	<0.10	NA	NA	0.10	
Ethylamine	<0.10	NA	NA	0.10	
Methylamine	<0.10	NA	NA	0.10	

Sample ID: \$16T0335 7					09/23/2016
Lab ID: 162730201	0			Received:	09/28/2016
Method: Amines-VOA Al	•		226-96, XAD-7 Tul 00mg ((NBD) Chlor Volume Not Provid	ide)	10/04/2016
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)	
Dimethylamine	<0.10	NA	NA.	0.10	
Ethylamine	<0.10	NA	NA	0.10	
Methylamine	<0.10	NA.	NA.	0.10	

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Workorder: 34-1627302

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

Sample ID: \$16T03357 Lab ID: 162730201				Collected: 09/23/2010 Received: 09/28/2010
Method: Amines-VOA Ali			226-96, XAD-7 Tul 00mg [(NBD) Chlor Volume Not Provid	ide]
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: \$16T03357 Lab ID: 1627302012				Collected: 09/23/2016 Received: 09/28/2016
Method: Amines-VOA Ali		A 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	226-96, XAD-7 Tu 00mg ((NBD) Chlor Volume Not Provid	ide)
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: S16T03357	7			Collected: 09/23/2016
Lab ID: 1627302013	3			Received: 09/28/2016
Method: Amines-VOA Ali			226-96, XAD-7 Tu 00mg ((NBD) Chlor Volume Not Provid	ide]
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: \$16T033576 Lab ID: 1627302014				Collected: 09/23/2016 Received: 09/28/2016
Method: Amines-VOA Ali			226-96, XAD-7 Tul 00mg [(NBD) Chlor Volume Not Provid	ide)
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA.	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	0.27	NA	NA	0.10

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Workorder: 34-1627302

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

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Sample ID: \$16T03357	'9			Collected: 09/23/2016
Lab ID: 162730201	5			Received: 09/28/2016
Method: Amines-VOA Ali		200000000000000000000000000000000000000	226-96, XAD-7 Tu 00mg ((NBD) Chlor Volume Not Provid	ide)
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	0.40	NA	NA	0.10

Sample ID: \$16T03358 Lab ID: 1627302016				Collected: 09/23/2016 Received: 09/28/2016
Method: Amines-VOA Alij		100 M 300 M 1 T 1 T 1 T	226-96, XAD-7 Tul 00mg ((NBD) Chlor Volume Not Provid	ide)
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	0.64	NA	NA	0.10

Sample ID: S16T03358 Lab ID: 1627302017				Collected: 09/23/2016 Received: 09/28/2016
Method: Amines-VOA Ali	•		226-96, XAD-7 Tu 00mg [(NBD) Chlor Volume Not Provid	ide)
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	0.57	NA	NA	0.10
				1000000

Sample ID: S16T03358 Lab ID: 162730201				Collected: 09/23/2016 Received: 09/28/2016
Method: Amines-VOA Aliphatic VAA-1		Media: SK0 50/1 apling Parameter: Air V	ide)	
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA.	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	0.57	NA	NA	0.10
	9.91	147	164	-,10

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Workorder: 34-1627302

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

Sample ID: \$16T033583 Lab ID: 1627302019				Collected: 09/23/2016 Received: 09/28/2016
Method: Amines-VOA Alip			226-96, XAD-7 Tu 00mg [(NBD) Chlor Volume Not Provid	ide)
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	0.49	NA	NA	0.10

Sample ID: \$16T03350 Lab ID: 162730202				Collected: 09/23/2016 Received: 09/28/2016
Method: Amines-VOA Al			226-96, XAD-7 Tu 00mg ((NBD) Chlor Volume Not Provid	ide)
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	0.49	NA	NA	0.10

Sample ID: S16T03358				Collected: 09/24/2016
Lab ID: 162730202	Received: 09/28/2016			
Method: Amines-VOA Ali			226-96, XAD-7 Tu 00mg ((NBD) Chlor Volume Not Provid	ide)
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10
				1200000

Sample ID: \$16T03350 Lab ID: 162730202				Collected: 09/24/2016 Received: 09/28/2016
Method: Amines-VOA Al	. *************************************	Media: SK0 50/1 opling Parameter: Air V	ide)	
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA.	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA.	NA.	0.10

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Workorder: 34-1627302

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

Sample ID: \$16T033587 Lab ID: 1627302023				Collected: 09/24/2016 Received: 09/28/2016
Method: Amines-VOA Alip			226-96, XAD-7 Tu 00mg [(NBD) Chlor Volume Not Provid	ide)
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: \$16T03358 Lab ID: 162730202				Collected: 09/24/2016 Received: 09/28/2016
Method: Amines-VOA Al		200 M	226-96, XAD-7 Tu 00mg ((NBD) Chlor Volume Not Provid	ide)
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: \$16T03358					09/24/2016
Lab ID: 1627302025					09/28/2016
Method: Amines-VOA Al			226-96, XAD-7 Tul 00mg [(NBD) Chlor Volume Not Provid	ide)	10/04/2016
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)	
Dimethylamine	<0.10	NA	NA	0.10	
Ethylamine	<0.10	NA	NA	0.10	
Methylamine	<0.10	NA	NA	0.10	

Sample ID: \$16T03359 Lab ID: 162730202				Collected: 09/2 Received: 09/2	
Method: Amines-VOA Aliphatic VAA-1 Media			Media: SKC 226-96, XAD-7 Tube Analyze 50/100mg [(NBD) Chloride] Parameter: Air Volume Not Provided		
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)	
Dimethylamine	<0.10	NA	NA.	0.10	
Ethylamine	<0.10	NA	NA	0.10	
Methylamine	<0.10	NA	NA.	0.10	

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Workorder: 34-1627302

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

Sample ID: \$16T03359 Lab ID: 162730202				Collected: 09/24/2016 Received: 09/28/2016
Method: Amines-VOA Ali			226-96, XAD-7 Tul 00mg [(NBD) Chlor Volume Not Provid	ide]
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: \$16T03359 Lab ID: 162730202				Collected: 09/24/2016 Received: 09/28/2016
Method: Amines-VOA Ali		THE RESERVE TO SERVE THE PARTY OF THE PARTY	226-96, XAD-7 Tu 00mg ((NBD) Chlor Volume Not Provid	ide)
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: S16T03359 Lab ID: 162730202				Collected: 09/24/2016 Received: 09/28/2016
Method: Amines-VOA Al			226-96, XAD-7 Tu 00mg [(NBD) Chlor Volume Not Provid	ride)
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10
and the same of th		100000000	17.075	

Sample ID: S16T03359	4			Collected: 09/24/2016
Lab ID: 162730203	Received: 09/28/2016			
Method: Amines-VOA Ali			226-96, XAD-7 Tu 00mg ((NBD) Chlor Volume Not Provid	ide)
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

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Workorder: 34-1627302

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

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Sample ID: \$16T03359 Lab ID: 162730203				Collected: 09/24/2016 Received: 09/28/2016
Method: Amines-VOA Al			226-96, XAD-7 Tul 00mg ((NBD) Chlor Volume Not Provid	ide)
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: \$16T033590 Lab ID: 1627302032				Collected: 09/24/2016 Received: 09/28/2016
Method: Amines-VOA Alig		1000 months (10.00)	226-96, XAD-7 Tu 00mg ((NBD) Chlor Volume Not Provid	ide)
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: S16T03359				Collected: 09/24/2016
Lab ID: 162730203	3			Received: 09/28/2016
Method: Amines-VOA Ali			226-96, XAD-7 Tu 00mg ((NBD) Chlor Volume Not Provid	ride)
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	<0.10	NA	NA	0.10

Sample ID: \$16T033598 Lab ID: 1627302034				Collected: 09/24/2016 Received: 09/28/2016
Method: Amines-VOA Alipha			226-96, XAD-7 Tul 00mg ((NBD) Chlor Volume Not Provid	ide]
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA.	0.10
Ethylamine	< 0.10	NA	NA	0.10
Methylamine	1.0	NA	NA	0.10

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Workorder: 34-1627302

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

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Sample ID: \$16T03359	9			Collected: 09/24/2016
Lab ID: 162730203	Received: 09/28/2016			
Method: Amines-VOA Ali		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	226-96, XAD-7 Tu 00mg ((NBD) Chlor Volume Not Provid	ide)
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	1.4	NA	NA	0.10

Sample ID: \$16T03360 Lab ID: 162730203				Collected: 09/24/2016 Received: 09/28/2016
Method: Amines-VOA Al		2000 account 1 2 2 2 2	226-96, XAD-7 Tu 00mg ((NBD) Chlor Volume Not Provid	ide]
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	1.0	NA	NA	0.10

Sample ID: S16T033601 Lab ID: 1627302037				Collected: 09/24/2016 Received: 09/28/2016
Method: Amines-VOA Alig			226-96, XAD-7 Tul 00mg [(NBD) Chlor Volume Not Provid	ide]
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	0.92	NA	NA	0.10

Sample ID: \$16T03360; Lab ID: 1627302038				Collected: 09/24/2016 Received: 09/28/2016
Method: Amines-VOA Ali	· Order Color of Artistance		226-96, XAD-7 Tul 00mg [(NBD) Chlor Volume Not Provid	ide)
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA.	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	0.74	NA	NA	0.10

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Workorder: 34-1627302

Client Project ID: Washington River Protection

So

Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

Sample ID: \$16T03360	13			Collected: 09/24/2016
Lab ID: 162730203	9			Received: 09/28/2016
Method: Amines-VOA Al			226-96, XAD-7 Tu 00mg ((NBD) Chlor Volume Not Provid	ide)
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA	0.10
Methylamine	0.49	NA	NA	0.10

Sample ID: \$16T03360 Lab ID: 162730204				Collected: 09/24/2016 Received: 09/28/2016
Method: Amines-VOA Ali		Territoria (1977)	226-96, XAD-7 Tu 00mg ((NBD) Chlor Volume Not Provid	ide)
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Dimethylamine	<0.10	NA	NA	0.10
Ethylamine	<0.10	NA	NA.	0.10
Methylamine	0.42	NA	NA	0.10

Comments

Quality Control: Amines-VOA Aliphatic VAA-1 - (HBN: 177811)

LMB/LCS/LCSD 521154/521155/521156 batched with samples 001-020.

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review	
Aminos WOA Allebedie WAA A	/S/ Christopher Winter	/S/ Thomas Bosch	
Amines-VOA Aliphatic VAA-1	10/05/2016 14:44	10/05/2016 16:03	

Laboratory Contact Information

ALS Environmental 960 W Levoy Drive Salt Lake City, Utah 84123 Phone: (801) 266-7700 Email: alslt.lab@ALSGlobal.com Web: www.alsslc.com

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Workorder: 34-1627302

Client Project ID: Washington River Protection

So

Purchase Order: 55502 Rel9 Project Manager: Rand Potter

General Lab Comments

The results provided in this report relate only to the items tested. Samples were received in acceptable condition unless otherwise noted.

Samples have not been blank corrected unless otherwise noted.

This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ANAB (DoD ELAP)	ADE-1420	http://www.anab.org/accredited-organizations/
	Utah (NELAC)	DATA1	http://health.utah.gov/lab/lab/mp/
	Nevada	UT00009	http://ndep.nv.gov/bsdw/labservice.htm
	Oldahoma	UT00009	http://www.deq.state.ok.us/CSDnew/
	Iowa	IA# 376	http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx
	Texas (TNI)	T104704456-11-1	http://www.tceq.texas.gov/field/qa/lab_accred_certif.html
	Washington	C596-16	http://www.ecy.wa.gov/programs/eap/labs/index.html
	Kenses	E-10416	http://www.kdheks.gov/lipo/index.html
Industrial Hygiene	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org
	Washington	C596-16	http://www.ecy.wa.gov/programs/eap/labs/index.html
Lead Testing:			
CPSC	ANAB (ISO 17025, CPSC)	ADE-1420	http://www.anab.org/accredited-organizations/
Soil, Dust, Paint ,Air	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org
Dietary Supplements	ACLASS (ISO 17025)	ADE-1420	http://www.adasscorp.com

Definitions

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LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.

LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.

ND = Not Detected, Testing result not detected above the LOD or LOQ.

NA = Not Applicable.

" No result could be reported, see sample comments for details.

< This testing result is less than the numerical value.

() This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

ALS Environmental certifies this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this report has been electronically authorized by the following laboratory representative:

Rand Potter, Project Manager, ALS Environmental

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Quality Control Sample Batch Report

Analysis Information

Workorder: 1627302

Limits: Historical/Performance Preparation: NA Analysis: IH Aliphatic Amines Batch: ILC/12777 (HBN: 177811) Basis: ALS Laboratory Group Batch: NA Prepared By: NA Analyzed By: Christopher Winter

LMB: 521154 Analyzed: 10/04/2016 15:01

Units: ug/sample

Analyte	Result	MDL	RL
Dimethylamine	ND	NA	0.100
Ethylamine	ND	NA	0.100
Methylamine	ND	NA	0.100

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 521155 Analyzed: 10/04/2016 15:47

Dilution: 1

Units: ug/sample

LCSD: 521156

Analyzed: 10/04/2016 15:32

Dilution: 1

Units: ug/sample Result % Rec QC Limits RPD QC Limits 134.6 3.89 97.1 1.06 0.0 20.0 160.0 4.34 109 3.97 0.0 20.0 160.0 4.10 102 0.0488 0.0 20.0

Methylamine Comments

Dimethylamine

Ethylamine

Analyte

LMB/LCS/LCSD 521154/521155/521156 batched with samples 001-020.

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Target

4.00

4,00

4.00

% Rec

96.0

113

102

60.4

40.0

40.0

Analyst	Peer Review	
/S/ Christopher Winter	/S/ Thomas Bosch	
10/05/2016 13:37	10/05/2016 15:59	

Result

3.84

4.52

4.10

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits

▲ - Sample result is greater than 4 times the spike added

Sample and Matrix Duplicate less than 5 times the reporting limit

. Result is above the calibration range

RPD - Relative % Difference (Spike / Spike Duplicate)

ND - Not Detected (U - Qualifier also flags analyte as not detected)

NA - Not Applicable

QC results are not adjusted for moisture correction, where applicable



Quality Control Sample Batch Report

Analysis Information

Workorder: 1627302

Limits: Historical/Performance Preparation: NA Analysis: IH Aliphotic Amines

Basis: ALS Leboratory Group Batch: NA Batch: ILC/12778 (HBN: 177812)

Prepared By: NA Analyzed By: Christopher Winter

Blank

LMB: 521157 Analyzed: 10/04/2016 21:41

Units: ug/sample

Analyte	Result	MDL	RL
Dimethylamine	ND	NA	0.100
Ethylamine	ND	NA	0.100
Methylamine	ND	NA	0.100

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 521158 LCSD: 521159
Analyzed: 10/05/2016 11:07 Analyzed: 10/04/2016 22:11

Dilution: 1 Dilution: 1

Units: ug/sample Units: ug/sample Result % Rec Analyte. Result Target % Rec QC Limits RPD QC Limits Dimethylamine 3.87 4.00 96.6 60.4 134.6 4.02 100 3.81 0.0 20.0 Ethylamine 3.95 4,00 98.8 40.0 160.0 4.77 119 18.8 0.0 20.0 Methylamine 3.99 4.00 99.8 40.0 160.0 4.23 106 5.91 0.0 20.0

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review	
/S/ Christopher Winter	/S/ Thomas Bosch	
10/05/2016 14:44	10/05/2016 16:03	

Symbols and Definitions

Analyte above reporting limit or outside of control limits

A - Sample result is greater than 4 times the spike added

Sample and Matrix Duplicate less than 5 times the reporting limit

Result is above the calibration range

RPD - Relative % Difference (Spike / Spike Duplicate)

ND - Not Detected (U - Qualifier also flags analyte as not detected)

NA - Not Applicable

QC results are not adjusted for moisture correction, where applicable

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SAF No.

					7	MINOR	CHAIN OF CHSTODY/SAMPI F ANALYSIS REQUEST	I VSIS REGUEST	20162970	2970
3/4					5	LO NIN	COSTON INSCRIPTION	2000	Page 2	6 4
Collector					Contact/Requestor	stor		Telephone No.313-6861	MSIN FAX	372-1878
SAF Na.		1			Sample Origin	NUMBER		Purchase OrdenCharge Code 209003/Cade	do	
Project Title					Lagbook Work Package No.	Package No		510-18-18	Tems Too	8
Shipped To (Lak)	(200 TROP)				Method of Shipment	ment			8009 123	1227 B103
Pretacel					Data Turnaround	P		Parts and Return No. 4	41367	
Sample No.	CabilD	Ŀ	Date	There	Ne./Type Container		Sam	Sample Analysis		Preservative
	8162033575	\$	9/23/16		XXD-7-885	MINES	16-08633-4-222-0 , ,			8/4
	\$1,67033576	VA			XAD-7-885	AMINES	16-08635-4-82F-R A .			8/Y
	5162033577	WA	9/23/16		XA.0-7-880	MINES	16-08635-4-IN-A			8/3
	\$167033578	VA	9/23/16		XAD-7-880	MINES	16-08633-4-18-3.	100	*	8/8
	8167033579	Y.	VA 9/23/16		300-7-880	AKINES	16-08635-4-IN-C			8/3
	\$167033580	4.4	9/23/16		300-1-88D	AMINES	16-08635-4-15-2 , :			H/A
	5167033581	4	9/23/16		30,00-7-88.0	POLISIES	16-08635-4-IN-E			8/4
	\$167033582	Z,	VA 9/23/16		XXD-7-58.D	AMINES	16-08635-4-IS-F			8/4
	5167033563	Z,	3/23/26		XAD-7-28D	AMINES	16-08635-4-19-6 ,			8/4
	8167033584	N.	VA. 9/23/16		XXD-7-280	AMINES	16-08635-4-IN-N			5/3
POSSIBLE SA	MPLE HAZARDSI	REMA	PKS (List all X	nown wast	POSSIBLE SAMPLE HAZARDS/REMAPH/S (List all known weales) MBDS O Yes • No	© 8	SPECIAL INSTRUCTIONS Send Paralts to Carl Scwald IV & Greg Schaller Boustelfit, gow see SOW for email Gregory Lacanianer, gow see SOW for email CONTRACT \$4502	wald IV & Greg d m see sow for email	Hold Time	
Reinquished By			Sign	16	A DateTime R	AL	Received by Gradian or 11 1 100 100	9121/K Desertine	Matrice S = Sol DL	- Drum Liquids
Reinquille GR	disher	6	19	1/2-1/	Date/Time R	Received By	FEDEX		SE = Sediment T SO = Seld Will St. = Studge L	* Tissue * Wips * Uquid
Relinquished By	2			-	Date/Time R	Received By	th Westall Showith	9/10/2012 19/2		= Vegetation = Vapor = Other
Advisor de la constante de la									- CRUS	
FINAL SAMPLE DISPOSITION		6.9	Return to cust	omer, per	Disposal Method (e.g., Return to customer, per lab procedure, usegon govers)	(Docess)	Cars Survey	10/4/10	DateTime	
All consider an			the sale has all	of our backs		the named	as a contract to a contract to the state of the state of the contract to the state of collections and collections.			A count not necessary

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Comparison	Assembler					477	N OF	COTSU	VISAMPLE ANA	YSIS REQUEST			970
Color Colo	N/A					5	LO N	20100				Page 3	of 4
Supplementaries	Collector					Contact/Requests	2			Telephone No ₃₇₃ -6861	MSIN 56-05	15 FAX 37	FAX 372-1878
The control of the	SAF No.		1			Sample Origin	ATTON			Purchase Order/Charge C			
Service 1.0 Date Three No.2-7-100 Active Service S	Project Title					Logbook Work P	ackago No.				Tem	ON I	Tice
State 1960 Date Three No. Type Construct State S	Shipped To (La	6)				Method of Shipm	OUT			ó		CERO	8403
Signolists Vin 3/24/16 XAZ-7-NED	hotocol					Data Tumaround 10 Durs				Parts and Return No.	4136	7	,
SECURISES VA 9/24/16 XAD-7-880	Sample No.	CII 997		Date	Time	No./Type Container			Samp	le Analysis			Preservative
SECO13566		8167033585	N/	9/24/26		XALE-7-NBO	MINES	16-08636-					2/A
167033557		8162033586	5			XAD-7-880	AMINES	-98980-91	4-BASE-IN 1				8/4
167031359 VA 9/24/16 XAD-7-880 AMINES 16-08636-4-EFF-A		\$167033587	5	9/24/16		XA.0-1-880	AMINES	16-18636-	-c-stanceff, .				8/A
167031559 VA 9/24/16 XAD-7-880 ANIBES 16-08636-6-EFF-6 . 16703159 VA 9/24/16 XAD-7-880 ANIBES 16-08636-6-EFF-6 . 1670316 XAD-7-880 ANIBES 16-08636-6-EFF-6 . 1670317 XAD-7-880 ANIB		8167033548	5			089-1-dex	MCBES	-96980-91	-4-SINNE-IN				N/K
167031590 VA 5/24/16 XAD-7-889 ANIBES 16-08636-4-EFF-2 . 167031592 VA 5/24/16 XAD-7-889 ANIBES 16-08636-4-EF		\$167033589	5	9/24/16		XXD-7-880	MINES	16-08636-	A-TTS-4				8/A
167031592		8167033590	5			XX0-7-880	MINES	16-08636-	8-443-4-				N/N
167031592 VA 9/24/16 XAD-7-92D ANIDES 16-08636-4-EFF-E 1 167031592 VA 9/24/16 XAD-7-92D ANIDES 16-08636-4-EFF-E 1 167031595 VA 9/24/16 VA 9/24/16 VAS ONE TO ANIDES 16-08636-4-EFF-E 1 167031595 VA 9/24/16 VAS ONE TO ANIDES 16-08636-4-EFF-E 1 167031595 VA 9/24/16 VAS ONE TO ANIDES 16-08636-4-EFF-E 1 167031595 VA 9/24/16 VAS ONE TO ANIDES 16-08636-4-EFF-E 1 167031595 VA 9/24/16 VAS ONE TO ANIDES 16-08636-4-EFF-E 1 167031595 VAS ONIDES 16-08636-4-EFF-E 1 167031595 VAS ONIDES 16-08636-4-EFF-E 1 1		8161033593	\$			XXD-7-88.b	MUNES	16-08636-	0-111-9-				H/A
THE HAZARDS/RELLARIAS (List at known wastes) MSDS O Yes © No SPECIAL INSTRUCTIONS LE HAZARDS/RELLARIAS (List at known wastes) MSDS O Yes © No SPECIAL INSTRUCTIONS LE HAZARDS/RELLARIAS (List at known wastes) MSDS O Yes © No SPECIAL INSTRUCTIONS SECURIAL SON SECURITY SECU		\$162033592	3	9/24/16		XXD-7-88.0	MINES	16-08636-	-4-EFF-D -				M/A
THE HAZARDSINE LATER AND ANTONE 16-08636-4-877-F ' THAY AND STATE AND		3167033593	127	9/24/16		XAD-7-08-D	AMINES.	16-08636-	4 - 3-232-5-				N/A
Print Sign Class Moore wastes) MSOS O Yes		5167033596	S			XAD-7-3050	AMINES		-4-825-E				N/N
disper Chears Activisor 1/21/16 0936 WRPS (MIL Order 4/67/16 0930 S WRPS) (MIL Order 4/67/16 0930 S WRPS) (MIL Order 4/67/16 0930 S S WRPS) (MIL Order 4/67/16 1940 S S S S S S S S S S S S S S S S S S S	OSSIBLE SA		3	aks (Ust all A	SEW FWOOD		4.00		JAL INSTRUCTIONS Besults to Carl No. Alone Westler, gov and Brg_L_Scanlager, gov and Recr 55502	ald IV 4 Greg see 30M for email	Hold Time	2	
diaber Milici Clarellor 9/27/16 1900 PRODUNG BY PEDEX Charles W. Datellina W. Datellina W. Datellina P. Datellina W. Datellina P. Datellina D. Datel	Manne 1		3	Sign	49.5	33	WR!	Sradiship.	Barn			Matthr DL	Drum Llquids Tissue
Date-Time Received By Non-lease School Spinish No Date Time Date Time Received By Consense Date Time Date Date Date Date Date Date Date Dat	AC	diabet	30	rachar	a	16 /4co	ceived By	0	FEDEX			¥ .,	. Uquid
Date-Time Received By Discount	Selinquished	6					Colored By	the !	Verteur Sharth	Share on	>0∢	> ž ×	= Vegelation = Vapor = Other
Total Second	Selinquished E	NA.					ceived By			Series Series		Solids	
Disposal Method (s.g., Hellun to customer, per uso procedure, used. procedure, and (0.154 Per uso procedure)	INAL SAMPLE DISPOSITION		0	Rearm to cust	omer, per	peen 'europooad ges	1		Dispessed By	(e) C	2/4	10. P	- 0

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K/A						TO MIX	TSELLOR OF CLICATORYS AMBI E ANALYSIS BEDLIEST	I VSIS REGILEST	20162970	2970
					5	AIN OF	COSTODINSMITTERING	Elolo NEGOLO	Page 4	6 · 40
Collector					Contact/Nequasion	sitor		Telephone No ₃₁₃₋₆₈₆₁	MSIN -15 FAX 372-1878	12-1878
SAF No.					Sample Origin	CONTION		Purchase Order/Charge Code 203003/C626		
Project Title					Logbook/Work Package No.	Package No.		los Chest Na. 3	Temp.	Inc
Shipped To (Lab)	(p)				Method of Shipment	ment		Bit of Lading/Air Bitt No. 6009	SEC	8403
Protocol					Data Tumaround	. 8		Parts and Return No.	41367	
Sample No.	Older		Date	Ture	No./Type Container		Sang	Sample Analysis		Preservative
	8167033595	\$	9/24/16		X3.0-7-880	AMERES	16-08636-4-877-5.			S/A
	8167033596	5	9/24/16		XAD-7-880	AKINES	16-08636-4-EFF-H			8/3
	5167033597	V.	9/24/26		XAD-T-SBO	AMINES	16-08636-4-18-A			8/8
	8167033598	KN.	9/24/16		X3.0-7-880	AMINES	16-08636-4-18-3 /			8/4
	8167033599	V.V	9/24/16		XA.D-7-580	AMINES	16-08636-4-15-0. :			8/8
	8167033630	VA	9/16/16		XAD-7-883	ANTINES	16-08636-4-15-5			8/3
	8167033691	T)	9/24/16		XAD-7-880	AMINGS	16-08636-4-IN-E , .			. Y/S
	\$167033692	B	VA 9/24/26		XXD-7-880	AMINES	16-08636-4-IN-P			8/4
	S16T033693	r.	9/24/16		XXD-7-885	AMINES	16-08636-4-13-8			S/A
	\$167033604	N	VA 3/24/16		XAD-7-98.0	AMERICA	16-08636-4-IN-H ·		*	8/8
POSSIBLE SA	MIPLE HAZARDSIG	CEMAN	RKS plat all	sew moon	POSSIBLE SAMPLE HAZARDSIREMARKS (List all known wasted) MSDS 🔘 Yes . 💿 No	ĕ ⊙ s	SPECIAL INSTRUCTIONS SEATHS TO CAIL Sewald IV 6 Greg Seaths boulder, pov and Gregory_L_Semanasti.gov see 50% for email CONTRACT 55502 WITHOUS STATE	wald IV & Greg d r see SOW for email	Hold Time	
Reinquished By	1	3	San San	1 3	9/20/10 of 30	WRPS ///	Gradienter", Sagleston	9/27/W 0830 S		= Drum Liquids
Polimquis M. Ghadishor	13	a	" Pui Gookste	02		Received By	FEDEX		Sold · W	= Wipe
Relinquished By	b					Received By	at Mariage Googh	Catalogo (USCP)	· Water v	= Vegetation = Vapor = Other
Reinquished By					DataTing	Secenary By		_	= Drum 5	
FINAL SAMPLE DISPOSITION	Disposal Method	9.	Refurm to cus	forner, per	Daposal Method (e.g., Refum to customer, per lab procedure, Lefficin gelossa;	(Security	Constraint By	12/4/40	Date/Time (0)	
			1	Saland Lan St.	and as here as he was	ment to name	and the second and the second and the second and the second and and and and an extend from the of self-of-		***	Charles san annual

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Report Date: October 05, 2016

Phone: (509) 373-1262

E-mail: robert_w_sosa@rl.gov

20162972

Workorder: 34-1627294

Client Project ID: Washington River Protection

So

Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

Robert (Buddy) Sosa Washington River Protection So PO Box 850, MSIN T6-02

Richland, WA 99352

Collected: 09/23/2016 Sample ID: \$16T033645 Lab ID: 1627294001 Received: 09/28/2016 Method: NIOSH 1606 Media: SKC 226-09, Charcoal Tube Analyzed: 09/30/2016 400/200mg
Sampling Parameter: Air Volume Not Provided Result Analyte (mg/sample) Result (mg/m²) Result (ppm) RL (mg/sample) Acetonitrile < 0.010 NA NA 0.010

Sample ID: \$16T033646 Collected: 09/23/2016 Received: 09/28/2016 Lab ID: 1627294002 Media: SKC 226-09, Charcoal Tube Method: NIOSH 1606 Analyzed: 09/30/2016 400/200mg Sampling Parameter: Air Volume Not Provided Result Analyte Result (mg/m²) (mg/sample) Result (ppm) RL (mg/sample) < 0.010 NA 0.010 Acetonitrile NA

Sample ID: \$16T033647 Collected: 09/23/2016 Lab ID: 1627294003 Received: 09/28/2016 Method: NIOSH 1606 Media: SKC 226-09, Charcoal Tube Analyzed: 09/30/2016 400/200mg Sampling Parameter: Air Volume Not Provided Result Analyte (mg/sample) Result (mg/m³) Result (ppm) RL (mg/sample) Acetonitrile < 0.010 NA NA 0.010

> ADDRESS 960 West Levoy Drive, Salt Lake City, Utah, 84123 USA | PHONE +1 801 266 7700 | FAX +1 801 268 9992 ALS GROUP USA, CORP. An ALS Limited Company

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IHREP-V12.3



Workorder: 34-1627294

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Sample ID: \$16T033648				Colle	cted: 09/23/2016
Lab ID: 1627294004				Rece	ived: 09/28/2016
Method: NIOSH 1606	San		226-09, Charcoal 200mg Volume Not Provid		/zed: 09/30/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
Acetonitrile	<0.010	NA	NA	0.010	

Sample ID: \$16T033649 Lab ID: 1627294005				Collected: 09/2 Received: 09/2	
Method: NIOSH 1606	San		226-09, Charcoal 200mg Volume Not Provid		0/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
Acetonitrile	< 0.010	NA.	NA.	0.010	

Sample ID: S16T033650				Collected: 09/23/2
Lab ID: 1627294006				Received: 09/28/2
Method: NIOSH 1606	San	Tube Analyzed: 09/30/20		
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)
Acetonitrile	<0.010	NA NA	NA	0.010

Sample ID: \$16T033651 Lab ID: 1627294007				77.50	09/23/2016 09/28/2016
Method: NIOSH 1606	Media: SKC 226-09, Charcoal Tube 400/200mg Sampling Parameter: Air Volume Not Provided				09/30/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
Acetonitrile	<0.010	NA NA	NA	0.010	



Workorder: 34-1627294

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Sample ID: \$16T033652				Colle	cted: 09/23/2016
Lab ID: 1627294008				Rece	ived: 09/28/2016
Method: NIOSH 1606	Media: SKC 226-09, Charcoal Tube 400/200mg Sampling Parameter: Air Volume Not Provided				yzed: 09/30/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	12
Acetonitrile	<0.010	NA.	NA	0.010	

Sample ID: \$16T033653 Lab ID: 1627294009					09/23/2016 09/28/2016
Method: NIOSH 1606	San	Media: SKC 226-09, Charcoal Tube An 400/200mg Sampling Parameter: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
Acetonitrile	< 0.010	NA.	NA	0.010	

Sample ID: \$16T033654 Lab ID: 1627294010					ted: 09/23/2016 ved: 09/28/2016
Method: NIOSH 1606	San		zed: 09/30/2016		
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
Acetonitrile	<0.010	NA	NA	0.010	

Sample ID: \$16T033655				Collecte	1: 09/23/2016
Lab ID: 1627294011				Receive	1: 09/28/2016
Method: NIOSH 1606	Media: SKC 226-09, Charcoal Tube 400/200mg Sampling Parameter: Air Volume Not Provided				1: 09/30/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
Acetonitrile	<0.010	NA	NA	0.010	



Workorder: 34-1627294

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Sample ID: \$16T033656				Collecte	d: 09/23/2016
Lab ID: 1627294012				Receive	d: 09/28/2016
Method: NIOSH 1606	San		d: 09/30/2016		
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
Acetonitrile	<0.010	NA.	NA	0.010	

Sample ID: \$16T033657 Lab ID: 1627294013				7,500,000	d: 09/23/2016 d: 09/28/2016
Method: NIOSH 1606	San	Media: SKC 226-09, Charcoal Tube 400/200mg Sampling Parameter: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
Acetonitrile	< 0.010	NA.	NA	0.010	

Sample ID: \$16T033658 Lab ID: 1627294014					cted: 09/23/2016 ived: 09/28/2016
Method: NIOSH 1606	San		yzed: 09/30/2016		
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
Acetonitrile	< 0.010	NA	NA	0.010	

Sample ID: \$16T033659 Lab ID: 1627294015					ed: 09/23/2016 ed: 09/28/2016
Method: NIOSH 1606	Media: SKC 226-09, Charcoal Tube 400/200mg Sampling Parameter: Air Volume Not Provided				ed: 09/30/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
Acetonitrile	<0.010	NA NA	NA	0.010	



Workorder: 34-1627294

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Sample ID: \$16T033660				Collec	ded: 09/23/2016
Lab ID: 1627294016				Recei	ved: 09/28/2016
Method: NIOSH 1606	Media: SKC 226-09, Charcoal Tube 400/200mg Sampling Parameter: Air Volume Not Provided				zed: 09/30/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
Acetonitrile	<0.010	NA.	NA	0.010	

Sample ID: \$16T033661 Lab ID: 1627294017				Collected: 09/23/2010 Received: 09/28/2010
Method: NIOSH 1606	San	Tube Analyzed: 09/30/2016		
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)
Acetonitrile	< 0.010	NA.	NA.	0.010

Sample ID: \$16T033662 Lab ID: 1627294018					oted: 09/23/2016 ived: 09/28/2016
Method: NIOSH 1606	San		226-09, Charcoal 200mg Volume Not Provid		zed: 09/30/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
Acetonitrile	< 0.010	NA	NA	0.010	

Sample ID: \$16T033663				Collecte	d: 09/23/2016
Lab ID: 1627294019				Receive	d: 09/28/2016
Method: NIOSH 1606	San	1119099999	226-09, Charcoal /200mg Volume Not Provid		d: 09/30/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
Acetonitrile	<0.010	NA	NA	0.010	



Workorder: 34-1627294

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Sample ID: \$16T033664				Colle	cted: 09/23/2016
Lab ID: 1627294020				Rece	ived: 09/28/2016
Method: NIOSH 1606	Media: SKC 226-09, Charcoal Tube 400/200mg Sampling Parameter: Air Volume Not Provided				yzed: 09/30/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	0
Acetonitrile	<0.010	NA.	NA NA	0.010	

Sample ID: \$16T033665 Lab ID: 1627294021					09/24/2016
Method: NIOSH 1606	San	Media: SKC 226-09, Charcoal Tube 400/200mg Sampling Parameter: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
Acetonitrile	< 0.010	NA.	NA	0.010	

Sample ID: \$16T033666 Lab ID: 1627294022					oted: 09/24/2016 ived: 09/28/2016
Method: NIOSH 1606	San		226-09, Charcoal 200mg Volume Not Provid		yzed: 09/30/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
Acetonitrile	<0.010	NA	NA	0.010	

Sample ID: \$16T033667				Collecte	d: 09/24/2016
Lab ID: 1627294023				Receive	d: 09/28/2016
Method: NIOSH 1606	San	111 A SHIFT OF THE PARTY OF THE	226-09, Charcoal /200mg Volume Not Provid		d: 09/30/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
Acetonitrile	<0.010	NA	NA	0.010	



Workorder: 34-1627294

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Sample ID: \$16T033668				Colle	cted: 09/24/2016
Lab ID: 1627294024				Rece	ived: 09/28/2016
Method: NIOSH 1606	Media: SKC 226-09, Charcoal Tube 400/200mg Sampling Parameter: Air Volume Not Provided				yzed: 09/30/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	0
Acetonitrile	<0.010	NA.	NA	0.010	

Sample ID: \$16T033669 Lab ID: 1627294025				Collected: 09/24/2016 Received: 09/28/2016	
Method: NIOSH 1606	San	Media: SKC 226-09, Charcoal Tube 400/200mg Sampling Parameter: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
Acetonitrile	< 0.010	NA.	NA	0.010	

Sample ID: \$16T033670 Lab ID: 1627294026					ted: 09/24/2016 ved: 09/28/2016
Method: NIOSH 1606	San		226-09, Charcoal 200mg Volume Not Provid		zed: 09/30/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
Acetonitrile	<0.010	NA	NA	0.010	

Sample ID: \$16T033671 Lab ID: 1627294027					1: 09/24/2016 1: 09/28/2016
Method: NIOSH 1606	San	1119 30100	226-09, Charcoal 200mg Volume Not Provid		1: 09/30/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
Acetonitrile	<0.010	NA NA	NA	0.010	



Workorder: 34-1627294

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Sample ID: \$16T033672				Colle	cted: 09/24/2016
Lab ID: 1627294028				Rece	ived: 09/28/2016
Method: NIOSH 1606	Media: SKC 226-09, Charcoal Tube 400/200mg Sampling Parameter: Air Volume Not Provided				yzed: 09/30/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
Acetonitrile	<0.010	NA.	NA	0.010	

Sample ID: \$16T033673 Lab ID: 1627294029				Collected: 09/24/20 Received: 09/28/20
Method: NIOSH 1606	San		226-09, Charcoal 200mg Volume Not Provid	
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)
Acetonitrile	< 0.010	NA.	NA.	0.010

Sample ID: \$16T033674 Lab ID: 1627294030					d: 09/24/2016 d: 09/28/2016
Method: NIOSH 1606	San		226-09, Charcoal 200mg Volume Not Provid		d: 10/01/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
Acetonitrile	0.047	NA	NA	0.010	

Sample ID: \$16T033675 Lab ID: 1627294031					: 09/24/2016 : 09/28/2016
Method: NIOSH 1606	San	111 A SHIFT TO ST	226-09, Charcoal /200mg Volume Not Provid		1: 10/01/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
Acetonitrile	<0.010	NA NA	NA	0.010	



Workorder: 34-1627294

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Sample ID: \$16T033676				Collecte	d: 09/24/2016
Lab ID: 1627294032				Receive	d: 09/28/2016
Method: NIOSH 1606	San		226-09, Charcoal 200mg Volume Not Provid		d: 10/01/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
Acetonitrile	<0.010	NA.	NA	0.010	

Sample ID: \$16T033677 Lab ID: 1627294033				Collected: 09/24 Received: 09/28	
Method: NIOSH 1606	San		226-09, Charcoal 200mg Volume Not Provid	Tube Analyzed: 10/01/	
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
Acetonitrile	< 0.010	NA.	NA.	0.010	

Sample ID: \$16T033678 Lab ID: 1627294034					ted: 09/24/2016 red: 09/28/2016
Method: NIOSH 1606	San		226-09, Charcoal 200mg Volume Not Provid		zed: 10/01/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
Acetonitrile	<0.010	NA	NA	0.010	

Acetonitrile	<0.010	NA	NA	0.010	
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
Method: NIOSH 1606	San	1119/30/10/10	C 226-09, Charcoal /200mg Volume Not Provid		1: 10/01/2016
Sample ID: \$16T033679 Lab ID: 1627294035					: 09/24/2016 : 09/28/2016



Workorder: 34-1627294

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Sample ID: \$16T033680				Collec	ted: 09/24/2016
Lab ID: 1627294036				Receiv	red: 09/28/2016
Method: NIOSH 1606	San		226-09, Charcoal 200mg Volume Not Provid		red: 10/01/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
Acetonitrile	<0.010	NA.	NA	0.010	

Sample ID: \$16T033681 Lab ID: 1627294037				Collected: 09/ Received: 09/	
Method: NIOSH 1606	San		226-09, Charcoal 200mg Volume Not Provid	Tube Analyzed: 10/	
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
Acetonitrile	0.092	NA.	NA.	0.010	

Sample ID: \$16T033682 Lab ID: 1627294038				2000	ed: 09/24/2016 ed: 09/28/2016
Method: NIOSH 1606	San		226-09, Charcoal 200mg Volume Not Provid		ed: 10/01/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)	
Acetonitrile	< 0.010	NA	NA	0.010	

Sample ID: \$16T033683 Lab ID: 1627294039					: 09/24/2016 : 09/28/2016
Method: NIOSH 1606	San		226-09, Charcoal /200mg Volume Not Provid		1: 10/01/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
Acetonitrile	<0.010	NA	NA	0.010	



Workorder: 34-1627294

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

Sample ID: \$16T033684 Lab ID: 1627294040					d: 09/24/2016 d: 09/28/2016
Method: NIOSH 1606	San		226-09, Charcoal 200mg Volume Not Provid		d: 10/01/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
Acetonitrile	<0.010	NA.	NA.	0.010	

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
NIOSH 1606	/S/ Young Hee Yoon 10/04/2016 14:15	/S/ Thomas J. Masoian 10/05/2016 08:37

Laboratory Contact Information

ALS Environmental 960 W Levoy Drive Salt Lake City, Utah 84123 Phone: (801) 266-7700 Email: alsit.lab@ALSGlobal.com Web: www.alsslc.com



Workorder: 34-1627294

Client Project ID: Washington River Protection

Purchase Order: 55502 Rel9 Project Manager: Rand Potter

General Lab Comments

The results provided in this report relate only to the items tested. Samples were received in acceptable condition unless otherwise noted. Samples have not been blank corrected unless otherwise noted.

This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ANA8 (DoD ELAP) Utah (NELAC) Nevada Oklahoma Iowa Texas (TNI) Washington Kansas	ADE-1420 DATA1 UT00009 UT00009 IA# 376 T 104704456-11-1 C596-16 E-10416	http://www.anab.org/accredited-organizations/ http://health.utah.gov/lab/lab/mp/ http://health.utah.gov/lab/lab/mp/ http://hwww.deq.state.ok.us/CSDnew/ http://www.lowador.gov/lns/docNR/Regulatory/Water.aspx http://www.lowador.gov/lns/docNR/Regulatory/Water.aspx http://www.lowador.gov/lpo/inide/dafab_accred_certif.html http://www.lovy.wa.gov/lpo/inidex.html http://www.kcheks.gov/lpo/inidex.html
Industrial Hygiene	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	http://www.ahaaccreditedlabs.org
	Washington	C596-16	http://www.ecy.wa.gov/programs/eapflabs/index.html
Lead Testing: CPSC Soil, Dust, Paint Air	ANAB (ISO 17025, CPSC) AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	ADE-1420 101574	http://www.anab.org/accredited-organizations/ http://www.aihaaccreditedlabs.org
Dietary Supplements	ACLASS (ISO 17025)	ADE-1420	http://www.aclasscorp.com

- LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.
- LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.
- ND = Not Detected, Testing result not detected above the LOD or LOQ.

NA = Not Applicable.

- "No result could be reported, see sample comments for details.

 This testing result is less than the numerical value.
- () This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

ALS Envrionmental certifies this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this report has been electronically authorized by the following laboratory representative:

Rand Potter, Project Manager, ALS Environmental

Page 12 of 12 Wed, 10/05/16 8:40 AM IHREP-V123

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Quality Control Sample Batch Report

Analysis Information

Workorder: 1627294

Limits: Historical/Performance Preparation: NA Basis: ALS Laboratory Group Batch: NA Prepared By: NA

Analysis: IH GC-FID QC Batch: IFID/7795 (HBN: 177533) Analyzed By: Young Hee Yoon

Blank

Analyzed: 09/30/2016 00:00

Units: mg/sample

Analyte MOL RL Result 0.0100 Acetonitrile ND NA

MB: 520572

Analyzed: 09/30/2016 00:00

Units: mg/sample

Analyte Result MDL RL Acetonitrile ND 0.0100

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 520570 Analyzed: 09/30/2016 00:00 Dilution: 1 Units: mg/sample						LCSD: 52 Analyzed: 09 Dilution: 1 Units: m	/30/2016 0	0:00		
Analyte	Result	Target	% Rec	QCL	imits	Result	% Rec	RPD	QC LI	mits
Acetonitrile	0.332	0.312	106	86.6	115.3	0.323	104	2.75	0.0	20.0

LCS: 520573

Analyzed: 09/30/2016 00:00 Dilution: 1

Units- moisemple

LCSD: 520574 Analyzed: 09/30/2016 00:00 Dilution: 1 Linite: maisample

with a congruency					O1010.11	gradinario.			
Analyte	Result	Target	%Rec	QC Limits					
Acetonitrile	0.272	0.281	96.9	86.6 115.3	0.260	92.6	4.51	0.0	20.0

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review	
/S/ Young Hee Yoon	/S/ Thomas J. Masoian	
10/04/2016 14:15	10/05/2016 08:36	

Symbols and Definitions

- Analyte above reporting limit or outside of control limits

▲ - Sample result is greater than 4 times the spike added

Sample and Matrix Duplicate less than 5 times the reporting limit

Result is above the calibration range

RPD - Relative % Difference (Spike / Spike Duplicate)

ND - Not Detected (U - Qualifier also flags analyte as not detected)

NA - Not Applicable

QC results are not adjusted for moisture correction, where applicable

1 1 2	1627294	1	ì		_	CHA	N OF CUS	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	EANA	LYSIS REQUE	ST	203	20162972
												Page	1 01 4
Collector					Contact CART NO	Contact/Requestor				Telephone Na ₃₇₂ -5861		MSIN FAX	372-1878
SAF NO.					Sample	Sample Orgin CARTHIDG EVALUATION	TION			Purchase Order/Charge Code 293003/caze	age Code		
Project Tide CANTRIDGE COLUMPTON	AUMITON				Logbook 8/A	V Work Pa	Leghook/ Work Package No K/A.			LISCHEINS WHIS-013	510-5	Temp.	SATER
Shipped To (Lab)	(qr				Mathod	Mathod of Shipment	M.			Bill of LadingsAir Bill N	No. 8009	6	22 8403
Pretacol N/A					Data Tur	Data Tumaround				Parts and Return No.			
Sample No.	CIRRO	•	Date	Thme	No/Type Container	oriziner	Par		Sam	Sample Analysis			Preservative
	8160033645	15	9/23/16		CRANCOAL TUBE		Acetositrile	Acetomitzile 16-08635-5-8ASE-EFF 4	* 112				35/A
	\$167033646	ţ.	VA. 9/23/16	110	CHARGOL TURE		Acetositzile	Acetomitzile 16-08635-5-8ASE-IN-	-80				N/N
	8160033647	*	9/23/16		CHROCOL TUBE		Acetositrile	Acetomitrile 16-08635-5-BELSER!					N/A
	\$162033648	17	VA 9/23/16		CHARCOLL TOBE		Acetonitriia	Acetonitzile 16-08635-5-8133K2 *	2	,			8/A
	8162033649	ķ	VA 9/23/16		CHARCOL TUBE		Acetonitrile	Acetonitzile 16-38635-5-877-A *					N/A
	8162033650	17	9/23/16		CHARGOL TUBE	. 3	Acetonitrile	Acetonitzile 16-08635-5-8F7-8 *					11/A
	8162033481	77.8	9/23/16		CHARCOL TUBE		Acetonitrile	Acetonitzile 16-08633-5-827-0 .	*				18/W
	\$160033652	17.8	9/23/16		CHARGOAL TUBE		Acetonitrile	Acetonitzile 16-08635-5-EFF-D.	2	•			N/A
	\$162033653	7.7	7A 9/23/16		CHARGOL TUBE		Acetonitrila	Acetonitzile 16-08635-5-277-E -					8/8
	\$167033654	4	7A 9/23/16		CHARCOL TUBE		Acetonitrile	Acetonitzile 15-08633-5-2FF-F					N/A
POSSBLES	POSSIBLE SAMPLE HAZARDSREMARKS (List at known wastest)	ZB/A	PICS (List all	known was	ated) MSDS O Yes	0	£ ⊙	SPECIAL INSTRUCTIONS Send Assults to Carl Bownid IV & Grey Send Assults to Carl Bownids IV Carl W Howaldfell gov and GroyFrg L Scantasfri.gov for esail Nafersco Contract # 35502	Carl Bo	unid IV & Greg d for enail 502	2	Hold Time	
Reinquished By Coange Ju Reinquished By Reinquished By WRPS	Kroek H	. See	Sodies	Elb.	1/27/4 8 30 Catallians	17	Received By Received By Received By	Pint Son Guller Childs	Sadi	Sign Danish 427/10 000	0	Soil DL. Sediment T Soild Will Charles	C = Drum Uquids = Tissue f = Wipe
Reinquished	in G			-	"Date/Time		Received By	Merigage Showill	Lowell	Paris Dates	39	Water	Vegetation A = Vapor
Relinquished By					Date/Time	Rec	Golfrid By				28	Deum Selids	
FINAL SAMPLE DISPOSITION	Disposal Metr	(6.9.	Return to cus	tomer, per	od (e.g., Refum to quatomer, per lab procedure/Aged in precess)	d upo	1	Christian Obsessed By		oct 1, 2016	1	Casa Par.	me

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N/A					CHA	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	YSIS REQUEST	20162972	162972
					5		100000000000000000000000000000000000000	Page	2 04
Collector					Contact/Requesto	5	Telephone No _{37.3} -4861	MSIN FOOT FAX	372-1878
SAF No.					Sample Origin Cleritipst byscartor	MATIDAL	Purchase Order/Charge Code 203003/0820		
Project Tibe	MATTON				Logbook Work Package No.	ackage No.	to Chest No. W.+S-O13	Temp.	00 TEE
Shipped To (Lab)	(9)				Wethod of Shipment	ert.	Bill of Lading/Air Bill No. 9	0	7 8462
Protocol 8/A		3			Data Turnacound		Parts and Return No.	41367	
Sample No.	Cab ID		Date	Time	No./Type Container	Sample	Sample Analysis		Proservative
	8161633655	\$	9/23/16		CHARDOAL 1983	Acetonitrile 16-08635-5-EFF-G .			N/A
	8167033656	5	9/23/16		CHURDOAL TORS	Acetonitrile 14-08635-5-EFF-H .		,	20/36
	S16T033657	5	9/23/76		CHANGOAL TOBE	Acetomitrile 16-88635-5-TM-A			2/3
	8167633658	\$	9/23/16		CHARGOAL 1938	Acetocitrile 16-98635-5-IX-8	*	, .	8/3
	8167033659	5	9/23/16		CHARGOAL TUBE	Acetomitrile 16-98635-5-IR-C			8/3
	8167033660	×	9/23/16		CHARGOAL TUBE	Asstonitrile 16-08635-5-IN-D		,	N/A
	8167033663	V.	9/23/16		CEARCOAL TUBE	Acotomitrile 16-08635-5-IN-N '		,	M/A
	8362033662	N/	9/23/16		CEURCOST TURE	Acetonitrile 16-08635-5-IN-F		7	11/3
	8167013663	8	9/23/16		CEARCOAL TUBE	Acetomitrile 16-08635-5-TH-G		,	M/A
	S167033664	K	WA 9/23/16		CEASCOAL TUBE	Acetenitrile 16-08635-5-IX-H . "			M/A
POSSIBLESA	POSSIBLE SAMPLE NAZARDS/REVARKS (Lat all known wastes)	REWA	PHOS (List all	Stoven vess	tes) MSDS O Yes	SPECIAL INSTRUCTIONS Seed Besults to Carl Bowald IV & Greg Senican Series Schalleri, gov for enail BESEALS SEAMLANTEL, gov for enail RESEALS SREENES SREENES 1 55502	ald IV & Greg for enail	Hold Time	
Positropassing by F	We der	. 3 8	2 4 mg	200	Date/Time	Milli Cadion Of his Gadion 427/16	og/20 de/Time	1111	
Reinquehed By	2 4				2 300	Ab Warrison Shooth		W = Water O = Oil A = Air DS = Drum Solice	/ = Vegetation /A = Vapor C = Other
PHAL SAMPLE DISPOSITION	Disposal M	9	Postum to cur	stemer, per	ethod (e.g., Petum to customer, per lab procedure, ulted in process)	Young the year	oct 1, 2016 1:	i sop per	Time
				100000000000000000000000000000000000000		9	100 CO 10	The second second	

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Cededor Jones SAF No. BLA Project Tibe CANTALEGE EVALUATION					CHA	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	LYSIS REQUEST	20162972	
Solution SAF No. SAF No. Project Tibe								Page 3 of	4
SAF No. JA Project Title Authorice ENACOMITION					Contact/Requestor	8		MSIN 56-02 FAX 372-1818	
Project Tibe					Sample Origin Cuerticos siguantical	WITCOM	Purchase Order/Charge Code 213011/CB28		
					Logbook/ Work Package No.	Package No.	to Cheet No. Lut. 5-012	2 Temp. Ou TCE	
Shipped To (Lab)					Method of Shipment	erit.	Bill of Lading/Ar Bill No. 80	0 6	6
Protopol 8/A					Data Turnsround		Parts and Return No. 4136		
Sample No.	LabiD		Date	Time	No/Type Container		Sample Analysis		Preservative
3167	\$167033665	S.	9/24/16	1000	CHARCOL TUBE	Acetocitrile 16-09636-5-SASE-STZ.		X/X	
8762	8167033666	VA.	9/24/16		CHARGOLA TORK	Acetonitrile 16-08636-5-BaSE-IN		14/B	
8160	\$16T613567	VA 9	9/24/16		CHARGOAL TUBE	Acetomitrile 16-08636-5-SCANDC-EFF'		H/R	
8165	8167033668	W.	9/24/16		CHARCOAL TUDE	Acetonitrile 16-08636-5-31ANK-IR"		25/35	
8165	8167033669	VA 9	9/24/16		CHARGOST TUBE	Acetonitrile 16-08536-5-EFF-A .		M/R	
3162	\$162633678	VA 9	9/24/16		CHARGOAL TUBE	Acetonitrile 16-08616-5-ETF-B .		M/N	
ders.	SISTORBETL	VA.	VA 9/24/16		CENACOST TUBE	Acetopitrile 16-08616-5-EFF-C .	•	M/N	
5162	\$167033672	E E	9/24/16		CHARCOAL TUBE	Acetomitrile 16-08616-5-EFF-D .		34/A	
2167	2167033673	E	9/24/16		CHASCOAL TURE	Acetenitrile 16-08636-5-EFF-E	,	N/N	
2916	5162033674	E.	WA 9/24/26		CRASCOAL TUBE	Acetonitrile 16-08636-5-EPP-F .		N/N	
POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes) MSDS 🔘 Yes . 💿 No	MZAROSIRE	MACS	CS (List all X	nown wast	IND NISOS O Ye	s () No SPECIAL INSTRUCTIONS Seed Sensite to Carl Howald IV & Step Sometim Sensite to Carl Howald Graft W Step Leanismir.gov and Graft Sensite Leanismir.gov for enail MCKANS 9 Reference Contract # 35502	ald IV & Step For email	Hold Time	
3 5	Surf.	1-9	Acronios Alsonios	36.1	9(2) Desertine 100	Forceword by Frank By It's Cooliets Frank By Frank By Frank	al 27/1/16 1930 DataTime	Martic Sell DL - Dr.m Liquids Sellment T - Thouse Selld W - Wige Sald L - Liquid	B
Refrequished By C					DawTime Re	Meaning St. Wardama Salandh.	Thefame Augr o	= VVater V = 01 VA = Air X = Ceum Solids	8
DISPOSITION DISPOSAL MA		9. 10	etum to ousto	omer, per	ab procedure, based in	(third (e.g., Festum to outstance, per tab procedure, fueld in process)	out 1, 2016 1200 Pu	P Date/Time	1

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e d					5	AIN OF COST OF ISSUED IN		Page 4	9 40
Collector					Contact/Requests cont. scott.0 1V	ution		MSIN 56-02 FAX 3	312-1818
SAF NO.					Sample Orgin Cuentition fromatrics	MARKEDON	Purchase Order/Charge Code 269063/C626		
Project Title	- Constitution				Logbacki Wark Package No.	c Package No.	Los Chest No. (0+5-0)?	Temp.	13 H
Shipped To (Lab)	(que				Method of Shipment	andre.	Bill of Lading/Arr Bill No. 8009	9	38403
Protocol					Data Tumaround		Parts and Return No. 4/	0	
Sample No.	Cabio		Date	Time	No./Type Container		Semple Analysis		Preservative
	\$1,67033,675	1	9/24/16		CHARCOAL TORS	Acetomitrile 16-08636-5-EFF-G , ,	,		2/3
	8167033676	NA.	9/24/16		CHANCOAL TUBE	Acetonitrile 16-08636-3-522-8 ,			21/3
	8167033677	5	9/26/26		CHANGGAL TORE	Acetonitrile 16-38636-3-18-A	,		N/A
	8167033678	5	9/24/16		CHARGOAL TOBE	Acetonitrile 16-58636-5-18-8			N/A
	8162013679	5	9/24/16		CHARGOAL TORK	Acetonitrile 16-91636-9-19-0	1		n/a
	5167033680	ś	9/24/16		CHARGOAL TORS	Acetomitrile 16-08636-5-19-D	,		3/A
	8162033681	1	VA 9/24/16		CEARCOAL TUBE	Acatemitrile 16-08636-5-19-8 & .	*		M/A
	8167033682	\$	9/24/16		CHARGOAL TUBE	Acatomitrile 16-08636-5-28-F 1			M/N
	8162033683	V.	9/24/16		CRANCOAL TURE	Acatomitrile 16-08636-3-130-6 · ·	,		M/A
	8167033684	VA	VX 9/24/16		CEASCOAL TUBE	Acatonitrile 16-08636-5-136-8	,		K/X
POSSIBLE S.	AMPLE HAZAROSA	REMA	RKS (List all	ichovin vas	POSSIBLE SAMPLE HAZAROSIREWARKS (Likt all known wastes) MSDS 🔘 Yes 💿 No	Ves No SPECALINSTRUCTIONS Sect Assubts to Carl Howald IV 6 Greg Sont AmbouldEt.gov and Gregory L. Scanlander.gov for email REGISTS Reference Contract # 35302	owald IV & Greg or for email	Hold Time	*
Reinquished By	define of	1	Sign	6	8	Will Fradion Ouls (radion 9/27)	9/27/1/2 OSSO S	Matrix = Sol Dt. = Sediment T = Sold Wi	- Drum Uquids - Tissue - Wipe
WRPS Reinquished By Reinquished By	3	N Clod	Hole	124	Date/Time P	Heading By Hamana School Heading	. DateTrine 7/36/ace /3500° DateTime	= Sludge L = Vither V = Oil VA = Ar X = Orum Solds	= Uquid = Vepetation = Vapor = Other
FRALL SAMPLE DISPOSITION		(0.9.	Return to our	Storner, per	Disposal Method (n.g., Petum to customer, per lab procedure, (66d in process)	the late that	641, 2016 1200	1200 Pry Date/Time	9
	and adjust an improved to me	- Constant	Cale after her	design up &	categories and solver or	as secured as a proposition and other than the advantage and returned to assent contained or also of origin.			

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FINAL REPORT ON MERCURY VAPOR TUBES FOR CARTRIDGE EVALUATION COLLECTED SEPTEMBER 23 - 24, 2016

Document No.: 20162958 Rev. 0

Michael A. Purcell WAI Hanford Laboratory

Date Published October 26, 2016



Prepared for:



Joyce A. Caldwell Washington River Protection Solutions, Inc. P.O. Box 850 Richland, WA 99352 509-376-0737 Prepared by:



WAI Hanford Laboratory 1955 Jadwin Ave, Suite 330 Richland, WA 99354 509-373-3240

October 26, 2016
Michael A. Purcell, WHL Project Coordinator

NARRATIVE

FINAL REPORT ON MERCURY VAPOR TUBES FOR CARTRIDGE EVALUATION COLLECTED SEPTEMBER 23 -- 24, 2016

This final report presents the results of forty mercury vapor tubes received at the 222-8 Laboratory on September 26, 2016, in good condition and with adequate paperwork. The mercury vapor tubes were logged into sample delivery group 20162958.

DISCLAIMERS

- The information contained in this report is intended only for the use of the addressee and should be considered confidential.
- This report shall not be reproduced, except in full, without written approval of the laboratory.
- The results shown in this report pertain only to the actual samples tested.
- These results conform to the requirements specified in the referenced methods/procedures and specifications provided verbally or electronically by the customer. Any deviations or modifications are discussed in the following narrative.
- This report only addresses laboratory activities related to the listed surveys.
 Requirements or anomalies concerning field sampling are not addressed in this report.

PROCEDURES

Method	Preparation Procedure	Analysis Procedure
Mercury by OSHA ID-140	LA-325-109, Rev. 2-4	LA-325-109, Rev. 2-4

ANALYTICAL SUMMARY

The vapor tubes were tested for mercury, as specified on the chain of custody. Standard laboratory procedures for digestions and cold vapor atomic absorption for mercury were followed as well as the requirements in WHL-MP-1029, WHL Industrial Hygiene Quality Assurance Project Plan for 222-S Laboratory (QAPP). Program specific work authorization instructions have been provided for WRPS IH sample analysis through verbal and electronic communication with the customer point of contact, and are kept as a record by the laboratory. When applicable, any client communication specific to the samples in this report will be included herein. All quality control criteria in the QAPP were met.

The measurement uncertainty was estimated based on the historical behavior of laboratory control standards (LCS). For mercury, the results of 178 LCS determinations indicate a mean recovery of 98% with a standard deviation of 6%. Statistical process control limits for the LCS are 81 - 115%, with no significant bias. The overall estimate of uncertainty is 12%, with coverage factor (k) = 2.

Background levels of mercury or interfering compounds can be present in the sorbent tube media used for collecting vapor samples. OSHA ID-140 recommends that the laboratory determine the average background for each lot of media and subtract it from the sample results prior to reporting. However, per agreement with the client, this background is being determined by the client using blank media submitted as blind samples to the laboratory. Any blank subtraction from the sample results will be performed by the client. The laboratory is using the same media

for QC samples. These QC samples may not match the lot numbers of the samples being submitted and the background for this QC sample media has not been determined. Over the past several years the results from preparation blanks, field blanks, and the vast majority of samples have been below the laboratory's method detection limit, which is an order of magnitude below the reporting limit. In general, the laboratory believes there is no need for background subtraction using the current sample media (Hydrar, SKC 226-17-1A).

For the mercury analysis, the blank results for tube lot number 9473 were below the detection limit; therefore, no blank correction was required. All mercury results for this sample group were below the reporting limit of $0.05~\mu g/s$ ample, except for sample 16-08635-6-IN-G. For this sample, both the resin and glass wool portions were below the reporting limit, but the total of the two was above the reporting limit (see Attachment 1).

Attachment 1

DATA SUMMARY REPORT

DATA SUMMARY REPORT FOR SAMPLE GROUP 20162598

Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit
16-08635-6-BASE-EFF	Total	S16T033316	Mercury	µg/sample	n/a	< 0.0500	<0.0500	0.0500
16-08635-6-BASE-EFF	Resin	S16T033317	Mercury	µg/sample	90.9	< 0.0500	< 0.0500	0.0500
16-08635-6-BASE-EFF	Glass Wool	S16T033318	Mercury	µg/sample	90.9	< 0.0500	< 0.0500	0.0500
16-08635-6-BASE-IN	Total	S16T033320	Mercury	µg/sample	n/a	< 0.0500	< 0.0500	0.0500
16-08635-6-BASE-IN	Resin	S16T033322	Mercury	µg/sample	90.9	< 0.0500	<0.0500	0.0500
16-08635-6-BASE-IN	Glass Wool	S16T033325	Mercury	μg/sample	90.9	< 0.0500	< 0.0500	0.0500
16-08635-6-BLANK1	Total	S16T033328	Mercury	µg/sample	n/a	< 0.0500	< 0.0500	0.0500
16-08635-6-BLANK1	Resin	S16T033329	Mercury	µg/sample	90.9	< 0.0500	< 0.0500	0.0500
16-08635-6-BLANK1	Glass Wool	S16T033330	Mercury	µg/sample	90.9	< 0.0500	< 0.0500	0.0500
16-08635-6-BLANK2	Total	S16T033331	Mercury	µg/sample	n/a	< 0.0500	<0.0500	0.0500
16-08635-6-BLANK2	Resin	S16T033332	Mercury	µg/sample	90.9	< 0.0500	< 0.0500	0.0500
16-08635-6-BLANK2	Glass Wool	S16T033333	Mercury	µg/sample	90.9	< 0.0500	< 0.0500	0.0500
16-08635-6-EFF-A	Total	S16T033334	Mercury	µg/sample	n/a	< 0.0500	< 0.0500	0.0500
16-08635-6-EFF-A	Resin	S16T033335	Mercury	μg/sample	90.9	< 0.0500	< 0.0500	0.0500
16-08635-6-EFF-A	Glass Wool	S16T033336	Mercury	µg/sample	90.9	< 0.0500	< 0.0500	0.0500
16-08635-6-EFF-B	Total	S16T033337	Mercury	µg/sample	n/a	< 0.0500	< 0.0500	0.0500
16-08635-6-EFF-B	Resin	S16T033338	Mercury	µg/sample	90.9	< 0.0500	< 0.0500	0.0500
16-08635-6-EFF-B	Glass Wool	S16T033339	Mercury	µg/sample	90.9	< 0.0500	< 0.0500	0.0500
16-08635-6-EFF-C	Total	S16T033344	Mercury	µg/sample	n/a	< 0.0500	< 0.0500	0.0500
16-08635-6-EFF-C	Resin	S16T033345	Mercury	µg/sample	90.9	< 0.0500	< 0.0500	0.0500
16-08635-6-EFF-C	Glass Wool	S16T033346	Mercury	µg/sample	90.9	< 0.0500	< 0.0500	0.0500
16-08635-6-EFF-D	Total	S16T033347	Mercury	µg/sample	n/a	< 0.0500	< 0.0500	0.0500
16-08635-6-EFF-D	Resin	S16T033348	Mercury	µg/sample	90.9	< 0.0500	< 0.0500	0.0500
16-08635-6-EFF-D	Glass Wool	S16T033349	Mercury	pg/sample	90.9	< 0.0500	< 0.0500	0.0500
16-08635-6-EFF-E	Total	S16T033350	Mercury	ug/sample	n/a	< 0.0500	< 0.0500	0.0500
16-08635-6-EFF-E	Resin	S16T033351	Mercury	µg/sample	90.9	< 0.0500	< 0.0500	0.0500
16-08635-6-EFF-E	Glass Wool	S16T033352	Mercury	µg/sample	90.9	< 0.0500	< 0.0500	0.0500
16-08635-6-EFF-F	Total	S16T033353	Mercury	ug/sample	n/a	< 0.0500	< 0.0500	0.0500
16-08635-6-EFF-F	Resin	S16T033354	Mercury	µg/sample	90.9	< 0.0500	< 0.0500	0.0500
16-08635-6-EFF-F	Glass Wool	S16T033355	Mercury	µg/sample	90.9	< 0.0500	< 0.0500	0.0500
16-08635-6-EFF-G	Total	S16T033356	Mercury	ug/sample	n/a	< 0.0500	< 0.0500	0.0500
16-08635-6-EFF-G	Resin	S16T033357	Mercury	μg/sample	95.9	< 0.0500	< 0.0500	0.0500
16-08635-6-EFF-G	Glass Wool	S16T033358	Mercury	µg/sample	95.9	< 0.0500	<0.0500	0.0500
16-08635-6-EFF-H	Total	S16T033359	Mercury	µg/sample	n/a	< 0.0500	< 0.0500	0.0500
16-08635-6-EFF-H	Resin	S16T033360	Mercury	µg/sample	95.9	< 0.0500	< 0.0500	0.0500
16-08635-6-EFF-H	Glass Wool	S16T033361	Mercury	µg/sample	95.9	< 0.0500	< 0.0500	0.0500
16-08635-6-IN-A	Total	S16T033362	Mercury	µg/sample	n/a	< 0.0500	<0.0500	0.0500
16-08635-6-IN-A	Resin	S16T033363	Mercury	µg/sample	95.9	< 0.0500	< 0.0500	0.0500
16-08635-6-IN-A	Glass Wool	S16T033364	Mercury	µg/sample	95.9	< 0.0500	<0.0500	0.0500
16-08635-6-IN-B	Total	S16T033365	Mercury	µg/sample	n/a	<0.0500	<0.0500	0.0500
16-08635-6-IN-B	Resin	S16T033366	Mercury	µg/sample	95.9	< 0.0500	< 0.0500	0.0500
16-08635-6-IN-B	Glass Wool	S16T033367	Mercury	µg/sample	95.9	<0.0500	<0.0500	0.0500
16-08635-6-IN-C	Total	S16T033368	Mercury	µg/sample	n/a	< 0.0500	< 0.0500	0.0500
16-08635-6-IN-C	Resin	S16T033369	Mercury	µg/sample	95.9	< 0.0500	<0.0500	0.0500
16-08635-6-IN-C	Glass Wool	S16T033370	Mercury	ug/sample	95.9	< 0.0500	< 0.0500	0.0500
16-08635-6-IN-D	Total	S16T033371	Mercury	ug/sample	n/a	<0.0500	<0.0500	0.0500
16-08635-6-IN-D	Resin	S16T033371	Mercury	pg/sample	95.9	< 0.0500	<0.0500	0.0500
16-08635-6-IN-D	Glass Wool	S16T033373	Mercury	ug/sample	95.9	< 0.0500	<0.0500	0.0500

DATA SUMMARY REPORT FOR SAMPLE GROUP 20162598

Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit
16-08635-6-IN-E	Total	S16T033374	Mercury	µg/sample	n/a	< 0.0500	< 0.0500	0.0500
16-08635-6-IN-E	Resin	S16T033375	Mercury	µg/sample	95.9	<0.0500	<0.0500	0.0500
16-08635-6-IN-E	Glass Wool	S16T033376	Mercury	µg/sample	95.9	< 0.0500	< 0.0500	0.0500
16-08635-6-IN-F	Total	S16T033377	Mercury	μg/sample	n/a	< 0.0500	< 0.0500	0.0500
16-08635-6-IN-F	Resin	S16T033378	Mercury	µg/sample	95.9	< 0.0500	< 0.0500	0.0500
16-08635-6-IN-F	Glass Wool	S16T033379	Mercury	µg/sample	95.9	< 0.0500	< 0.0500	0.0500
16-08635-6-IN-G	Total	S16T033380	Mercury	µg/sample	n/a	< 0.0500	0.0543	0.0500
16-08635-6-IN-G	Resin	S16T033381	Mercury	μg/sample	95.9	< 0.0500	< 0.0500	0.0500
16-08635-6-IN-G	Glass Wool	S16T033382	Mercury	µg/sample	95.9	< 0.0500	< 0.0500	0.0500
16-08635-6-IN-H	Total	S16T033383	Mercury	µg/sample	n/a	< 0.0500	< 0.0500	0.0500
16-08635-6-IN-H	Resin	S16T033384	Mercury	µg/sample	95.9	< 0.0500	< 0.0500	0.0500
16-08635-6-IN-H	Glass Wool	S16T033385	Mercury	µg/sample	95.9	< 0.0500	< 0.0500	0.0500
16-08636-6-BASE-EFF	Total	S16T033386	Mercury	µg/sample	n/a	< 0.0500	<0.0500	0.0500
16-08636-6-BASE-EFF	Resin	S16T033387	Mercury	µg/sample	92.3	< 0.0500	< 0.0500	0.0500
16-08636-6-BASE-EFF	Glass Wool	S16T033388	Mercury	µg/sample	92.3	< 0.0500	< 0.0500	0.0500
16-08636-6-BASE-IN	Total	S16T033389	Mercury	µg/sample	n/a	< 0.0500	<0.0500	0.0500
16-08636-6-BASE-IN	Resin	S16T033390	Mercury	μg/sample	92.3	< 0.0500	< 0.0500	0.0500
16-08636-6-BASE-IN	Glass Wool	S16T033391	Mercury	µg/sample	92.3	< 0.0500	< 0.0500	0.0500
16-08636-6-BLANK-EFF	Total	S16T033392	Mercury	μg/sample	n/a	< 0.0500	<0.0500	0.0500
16-08636-6-BLANK-EFF	Resin	S16T033393	Mercury	µg/sample	92.3	< 0.0500	< 0.0500	0.0500
16-08636-6-BLANK-EFF	Glass Wool	S16T033394	Mercury	µg/sample	92.3	< 0.0500	< 0.0500	0.0500
16-08636-6-BLANK-IN	Total	S16T033395	Mercury	µg/sample	n/a	< 0.0500	< 0.0500	0.0500
16-08636-6-BLANK-IN	Resin	S16T033397	Mercury	µg/sample	92.3	< 0.0500	< 0.0500	0.0500
16-08636-6-BLANK-IN	Glass Wool	S16T033398	Mercury	µg/sample	92.3	< 0.0500	< 0.0500	0.0500
16-08636-6-EFF-A	Total	S16T033401	Mercury	µg/sample	n/a	< 0.0500	< 0.0500	0.0500
16-08636-6-EFF-A	Resin	S16T033403	Mercury	μg/sample	92.3	< 0.0500	< 0.0500	0.0500
16-08636-6-EFF-A	Glass Wool	S16T033404	Mercury	µg/sample	92.3	< 0.0500	< 0.0500	0.0500
16-08636-6-EFF-B	Total	S16T033407	Mercury	µg/sample	n/a	< 0.0500	< 0.0500	0.0500
16-08636-6-EFF-B	Resin	S16T033409	Mercury	µg/sample	92.3	< 0.0500	< 0.0500	0.0500
16-08636-6-EFF-B	Glass Wool	S16T033410	Mercury	µg/sample	92.3	< 0.0500	<0.0500	0.0500
16-08636-6-EFF-C	Total	S16T033411	Mercury	µg/sample	n/a	< 0.0500	< 0.0500	0.0500
16-08636-6-EFF-C	Resin	S16T033412	Mercury	μg/sample	92.3	< 0.0500	< 0.0500	0.0500
16-08636-6-EFF-C	Glass Wool	S16T033413	Mercury	µg/sample	92.3	< 0.0500	< 0.0500	0.0500
16-08636-6-EFF-D	Total	S16T033414	Mercury	μg/sample	n/a	< 0.0500	< 0.0500	0.0500
16-08636-6-EFF-D	Resin	S16T033415	Mercury	µg/sample	92.3	< 0.0500	< 0.0500	0.0500
16-08636-6-EFF-D	Glass Wool	S16T033416	Mercury	µg/sample	92.3	< 0.0500	< 0.0500	0.0500
16-08636-6-EFF-E	Total	S16T033417	Mercury	µg/sample	n/a	< 0.0500	< 0.0500	0.0500
16-08636-6-EFF-E	Resin	S16T033420	Mercury	µg/sample	92.3	< 0.0500	<0.0500	0.0500
16-08636-6-EFF-E	Glass Wool	S16T033421	Mercury	µg/sample	92.3	< 0.0500	<0.0500	0.0500
16-08636-6-EFF-F	Total	S16T033423	Mercury	µg/sample	n/a	< 0.0500	< 0.0500	0.0500
6-08636-6-EFF-F	Resin	S16T033427	Mercury	µg/sample	92.3	< 0.0500	< 0.0500	0.0500
6-08636-6-EFF-F	Glass Wool	S16T033428	Mercury	µg/sample	92.3	< 0.0500	< 0.0500	0.0500
16-08636-6-EFF-G	Total	S16T033434	Mercury	µg/sample	n/a	< 0.0500	<0.0500	0.0500
16-08636-6-EFF-G	Resin	S16T033436	Mercury	µg/sample	90.9	< 0.0500	< 0.0500	0.0500
6-08636-6-EFF-G	Glass Wool	S16T033437	Mercury	µg/sample	90.9	< 0.0500	<0.0500	0.0500
6-08636-6-EFF-H	Total	S16T033440	Mercury	µg/sample	n/a	< 0.0500	<0.0500	0.0500
6-08636-6-EFF-H	Resin	S16T033442	Mercury	µg/sample	90.9	< 0.0500	< 0.0500	0.0500
6-08636-6-EFF-H	Glass Wool	S16T033443	Mercury	µg/sample	90.9	< 0.0500	< 0.0500	0.0500

DATA SUMMARY REPORT FOR SAMPLE GROUP 20162598

Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reporting Limit
16-08636-6-IN-A	Total	S16T033446	Mercury	µg/sample	n/a	< 0.0500	< 0.0500	0.0500
16-08636-6-IN-A	Resin	S16T033448	Mercury	µg/sample	90.9	< 0.0500	<0.0500	0.0500
16-08636-6-IN-A	Glass Wool	S16T033449	Mercury	µg/sample	90.9	< 0.0500	< 0.0500	0.0500
16-08636-6-IN-B	Total	S16T033452	Mercury	µg/sample	n/a	< 0.0500	< 0.0500	0.0500
16-08636-6-IN-B	Resin	S16T033456	Mercury	µg/sample	90.9	< 0.0500	< 0.0500	0.0500
16-08636-6-IN-B	Glass Wool	S16T033457	Mercury	µg/sample	90.9	< 0.0500	< 0.0500	0.0500
16-08636-6-IN-C	Total	S16T033459	Mercury	µg/sample	n/a	< 0.0500	< 0.0500	0.0500
16-08636-6-IN-C	Resin	S16T033460	Mercury	µg/sample	90.9	< 0.0500	< 0.0500	0.0500
16-08636-6-IN-C	Glass Wool	S16T033461	Mercury	µg/sample	90.9	< 0.0500	< 0.0500	0.0500
16-08636-6-IN-D	Total	S16T033464	Mercury	µg/sample	n/a	< 0.0500	< 0.0500	0.0500
16-08636-6-IN-D	Resin	S16T033466	Mercury	µg/sample	90.9	< 0.0500	< 0.0500	0.0500
16-08636-6-IN-D	Glass Wool	S16T033467	Mercury	µg/sample	90.9	< 0.0500	< 0.0500	0.0500
16-08636-6-IN-E	Total	S16T033470	Mercury	µg/sample	n/a	< 0.0500	< 0.0500	0.0500
16-08636-6-IN-E	Resin	S16T033472	Mercury	µg/sample	90.9	< 0.0500	< 0.0500	0.0500
16-08636-6-IN-E	Glass Wool	S16T033473	Mercury	ug/sample	90.9	< 0.0500	<0.0500	0.0500
16-08636-6-IN-F	Total	S16T033476	Mercury	µg/sample	n/a	< 0.0500	< 0.0500	0.0500
16-08636-6-IN-F	Resin	S16T033477	Mercury	µg/sample	90.9	< 0.0500	< 0.0500	0.0500
16-08636-6-IN-F	Glass Wool	S16T033478	Mercury	µg/sample	90.9	< 0.0500	< 0.0500	0.0500
16-08636-6-IN-G	Total	S16T033479	Mercury	µg/sample	n/a	< 0.0500	< 0.0500	0.0500
16-08636-6-IN-G	Resin	S16T033480	Mercury	µg/sample	90.9	< 0.0500	< 0.0500	0.0500
16-08636-6-IN-G	Glass Wool	S16T033488	Mercury	ug/sample	90.9	< 0.0500	< 0.0500	0.0500
16-08636-6-IN-H	Total	S16T033522	Mercury	µg/sample	n/a	< 0.0500	< 0.0500	0.0500
16-08636-6-IN-H	Resin	S16T033523	Mercury	µg/sample	90.9	< 0.0500	< 0.0500	0.0500
6-08636-6-IN-H	Glass Wool	S16T033524	Mercury	µg/sample	90.9	< 0.0500	< 0.0500	0.0500

Attachment 2

ANALYSIS DATE REPORT

ANALYSIS DATE REPORT FOR SAMPLE GROUP 20162958

Laboratory Sample ID	Customer Sample ID	Method	Preparation Date	Analysis Date
S16T033317	16-08635-6-BASE-EFF	Mercury	09/30/2016 08:00	09/30/2016 17:26
S16T033318	16-08635-6-BASE-EFF	Mercury	09/30/2016 08:00	09/30/2016 17:28
S16T033322	16-08635-6-BASE-IN	Mercury	09/30/2016 08:00	09/30/2016 17:30
S16T033325	16-08635-6-BASE-IN	Mercury	09/30/2016 08:00	09/30/2016 17:32
S16T033329	16-08635-6-BLANK1	Mercury	09/30/2016 08:00	09/30/2016 17:33
S16T033330	16-08635-6-BLANK1	Mercury	09/30/2016 08:00	09/30/2016 17:35
S16T033332	16-08635-6-BLANK2	Mercury	09/30/2016 08:00	09/30/2016 17:40
S16T033333	16-08635-6-BLANK2	Mercury	09/30/2016 08:00	09/30/2016 17:41
S16T033335	16-08635-6-EFF-A	Mercury	09/30/2016 08:00	09/30/2016 17:43
816T033336	16-08635-6-EFF-A	Mercury	09/30/2016 08:00	09/30/2016 17:45
S16T033338	16-08635-6-EFF-B	Mercury	09/30/2016 08:00	09/30/2016 17:46
S16T033339	16-08635-6-EFF-B	Mercury	09/30/2016 08:00	09/30/2016 17:48
S16T033345	16-08635-6-EFF-C	Mercury	09/30/2016 08:00	09/30/2016 17:50
S16T033346	16-08635-6-EFF-C	Mercury	09/30/2016 08:00	09/30/2016 17:51
S16T033348	16-08635-6-EFF-D	Mercury	09/30/2016 08:00	09/30/2016 17:53
S16T033349	16-08635-6-EFF-D	Mercury	09/30/2016 08:00	09/30/2016 17:55
S16T033351	16-08635-6-EFF-E	Mercury	09/30/2016 08:00	09/30/2016 17:59
S16T033352	16-08635-6-EFF-E	Mercury	09/30/2016 08:00	09/30/2016 18:01
S16T033354	16-08635-6-EFF-F	Mercury	09/30/2016 08:00	09/30/2016 18:03
S16T033355	16-08635-6-EFF-F	Mercury	09/30/2016 08:00	09/30/2016 18:04
S16T033357	16-08635-6-EFF-G	Mercury	09/30/2016 08:00	09/30/2016 18:12
S16T033358	16-08635-6-EFF-G	Mercury	09/30/2016 08:00	09/30/2016 18:13
S16T033360	16-08635-6-EFF-H	Mercury	09/30/2016 08:00	09/30/2016 18:19
S16T033361	16-08635-6-EFF-H	Mercury	09/30/2016 08:00	09/30/2016 18:21
S16T033363	16-08635-6-IN-A	Mercury	09/30/2016 08:00	09/30/2016 18:22
S16T033364	16-08635-6-IN-A	Mercury	09/30/2016 08:00	09/30/2016 18:24
S16T033366	16-08635-6-IN-B	Mercury	09/30/2016 08:00	09/30/2016 18:26
S16T033367	16-08635-6-IN-B	Mercury	09/30/2016 08:00	09/30/2016 18:27
S16T033369	16-08635-6-IN-C	Mercury	09/30/2016 08:00	09/30/2016 18:29
S16T033370	16-08635-6-IN-C	Mercury	09/30/2016 08:00	09/30/2016 18:31
S16T033372	16-08635-6-IN-D	Mercury	09/30/2016 08:00	09/30/2016 18:32
S16T033373	16-08635-6-IN-D	Mercury	09/30/2016 08:00	09/30/2016 18:34
S16T033375	16-08635-6-IN-E	Mereury	09/30/2016 08:00	09/30/2016 18:40
S16T033376	16-08635-6-IN-E	Mercury	09/30/2016 08:00	09/30/2016 18:42
S16T033378	16-08635-6-IN-F	Mercury	09/30/2016 08:00	09/30/2016 18:43
S16T033379	16-08635-6-IN-F	Mercury	09/30/2016 08:00	09/30/2016 18:45
S16T033381	16-08635-6-IN-G	Mercury	09/30/2016 08:00	09/30/2016 18:46
816T033382	16-08635-6-IN-G	Mercury	09/30/2016 08:00	09/30/2016 18:48
S16T033384	16-08635-6-IN-H	Mercury	09/30/2016 08:00	09/30/2016 18:50
316T033385	16-08635-6-IN-H	Mercury	09/30/2016 08:00	09/30/2016 18:52
816T033387	16-08636-6-BASE-EFF	Mercury	09/30/2016 19:00	10/03/2016 13:23
S16T033388	16-08636-6-BASE-EFF	Mercury	09/30/2016 19:00	10/03/2016 13:24
S16T033390	16-08636-6-BASE-IN	Mercury	09/30/2016 19:00	10/03/2016 13:26
S16T033391	16-08636-6-BASE-IN	Mercury	09/30/2016 19:00	10/03/2016 13:28
S16T033393	16-08636-6-BLANK-EFF	Mercury	09/30/2016 19:00	10/03/2016 13:29
S16T033394	16-08636-6-BLANK-EFF	Mercury	09/30/2016 19:00	10/03/2016 13:31

ANALYSIS DATE REPORT FOR SAMPLE GROUP 20162958

Laboratory Sample ID	Customer Sample ID	Method	Preparation Date	Analysis Date
S16T033397	16-08636-6-BLANK-IN	Mercury	09/30/2016 19:00	10/03/2016 13:36
S16T033398	16-08636-6-BLANK-IN	Mercury	09/30/2016 19:00	10/03/2016 13:37
S16T033403	16-08636-6-EFF-A	Mercury	09/30/2016 19:00	10/03/2016 13:39
S16T033404	16-08636-6-EFF-A	Mercury	09/30/2016 19:00	10/03/2016 13:41
S16T033409	16-08636-6-EFF-B	Mercury	09/30/2016 19:00	10/03/2016 13:42
S16T033410	16-08636-6-EFF-B	Mercury	09/30/2016 19:00	10/03/2016 13:44
S16T033412	16-08636-6-EFF-C	Mercury	09/30/2016 19:00	10/03/2016 13:45
S16T033413	16-08636-6-EFF-C	Mercury	09/30/2016 19:00	10/03/2016 13:47
S16T033415	16-08636-6-EFF-D	Mercury	09/30/2016 19:00	10/03/2016 13:49
S16T033416	16-08636-6-EFF-D	Mercury	09/30/2016 19:00	10/03/2016 13:50
S16T033420	16-08636-6-EFF-E	Mercury	09/30/2016 19:00	10/03/2016 13:55
S16T033421	16-08636-6-EFF-E	Mercury	09/30/2016 19:00	10/03/2016 13:57
S16T033427	16-08636-6-EFF-F	Mercury	09/30/2016 19:00	10/03/2016 13:58
S16T033428	16-08636-6-EFF-F	Mercury	09/30/2016 19:00	10/03/2016 14:00
S16T033436	16-08636-6-EFF-G	Mercury	09/30/2016 19:00	10/03/2016 14:06
S16T033437	16-08636-6-EFF-G	Mercury	09/30/2016 19:00	10/03/2016 14:08
S16T033442	16-08636-6-EFF-H	Mercury	09/30/2016 19:00	10/03/2016 14:13
S16T033443	16-08636-6-EFF-H	Mercury	09/30/2016 19:00	10/03/2016 14:15
S16T033448	16-08636-6-IN-A	Mercury	09/30/2016 19:00	10/03/2016 14:16
S16T033449	16-08636-6-IN-A	Mercury	09/30/2016 19:00	10/03/2016 14:18
S16T033456	16-08636-6-IN-B	Mercury	09/30/2016 19:00	10/03/2016 14:20
S16T033457	16-08636-6-IN-B	Mercury	09/30/2016 19:00	10/03/2016 14:22
S16T033460	16-08636-6-IN-C	Mercury	09/30/2016 19:00	10/03/2016 14:23
S16T033461	16-08636-6-IN-C	Mereury	09/30/2016 19:00	10/03/2016 14:25
S16T033466	16-08636-6-IN-D	Mercury	09/30/2016 19:00	10/03/2016 14:27
S16T033467	16-08636-6-IN-D	Mercury	09/30/2016 19:00	10/03/2016 14:29
S16T033472	16-08636-6-IN-E	Mercury	09/30/2016 19:00	10/03/2016 14:34
S16T033473	16-08636-6-IN-E	Mercury	09/30/2016 19:00	10/03/2016 14:36
S16T033477	16-08636-6-IN-F	Mercury	09/30/2016 19:00	10/03/2016 14:37
S16T033478	16-08636-6-IN-F	Mercury	09/30/2016 19:00	10/03/2016 14:39
S16T033480	16-08636-6-IN-G	Mercury	09/30/2016 19:00	10/03/2016 14:41
S16T033488	16-08636-6-IN-G	Mercury	09/30/2016 19:00	10/03/2016 14:43
S16T033523	16-08636-6-IN-H	Mercury	09/30/2016 19:00	10/03/2016 14:44
S16T033524	16-08636-6-IN-H	Mercury	09/30/2016 19:00	10/03/2016 14:46

Attachment 3

RECEIPT PAPERWORK

222-S					HAIN OF CUSTODY HECKLIST	ATS-LO-090-101 Rev DG-1
Date Samples Rece Sample Custodian:	7:	ras		lumbe	or of Samples: 480 Gr	oup# 20162958-1
	Landine Too			Custo	odian to Complete:	
A	ction	Yes	No	N/A		Comments
RSR provided?						
		-		-	D	
/erify GKI is complete	!			7	☐ In Project File	~
teceived from an alph	na facility?		~		Contact PC for approval	to release
heck that outer custo resent	dy seal is intact, if			-		
Record cooler tempera appropriate	ature in centigrade, as	1ºc			Check if no cooler and/or	r no ice
Samples are intact and	d in good condition	-			If No, provide comments belo	w
RSA/COC provided ar he following information	nd complete containing on?					Service .
Client name an	d client sample number	-				
Date and time	of sampling	_				
 Sampling locat 	ion or origin	-				
 Container type, 	size, and number	-				
 Preservatives (COC/RSA and 	if used) noted on the sample bottles			-		
Analysis requer	st is clear	-				
 Signature of pereceiving samp 	rsons relinquishing and les	-				
 Date and/or time exchange 	e of sample custody	-				
erify that sample num natch the COC and/or	bers on containers RSA	-			v. 545 (94-194)	
amples stored proper	fy (e.g., refrigeration)	-				
	liately if any problems aw is completed by the					PC resolution. For WRPS samples,
	for release? <u>yes</u> ommunication and res W A	olution PS	1200	4, P	als <u>dut</u> Date_ 280 120 (80) 40NH ₃	9/26/16 40 Hg
lumber of IH Samp	./	1.			Acetonoke 46	
Wdehyde Screen:	40 Amines:	40	-	mmoni		
Beryllium: Formaldehyde:	Be-Bulk:	40	-	Be-Filte Mercur		
r omnaloenyou.	ruidits.	10		THE WAY	I moulding.	The vocalities 70

A-6005-302 (REV 4)

SWIHD - Chain of Custody

INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: W	ashington River	Protection Solutions				Date S	ampled: 0	9/23/2016	
CACN: 202367		COA: CB2	0	Survey No	o.: 16-08635	- Cartridge	Testing		
Contact Name:	Jones, Parker	r L	Phone: (509)373-4966		Turnarou	nd: N/A		
Return Report 1	Γο: Caldwell,	Jayoe A			MSIN: F	11-08	Phone: (8	509)376-073	7
Laboratory Log No.	Sample ID/	Type/Description				Requ	ired Analysi	is	
5167033316,	16-08635-6	BASE-EFF / Hyd	drar (SKC 226-17	547033.		Hg-El	emental Sc	urce	
SI67032320	16-08635-6	BASE-IN / Hydra	ar (SKC 226-17-1		322	Hg-El	emental So	urce	
S1167033328.	16-08635-6	-BLANK1 / Hydra	enterman 5		9	Hg-El	emental So	urce	
S167 053331 1	16-08635-6	-BLANK2 / Hydra	r (SKC 226-17-1		32	Hg-El	emental So	urce	
Slio 10333>4	16-08635-6	-EFF-A / Hydrar (SKC 226-17-1A)		5	Hg-Ei	emental So	urce	33
HI61033337 1	16-08635-6	-EFF-B / Hydrar (SKC 226-17-1A) 5/6			Hg-EI	emental So	urce	
y67033344 ·		-EFF-C / Hydrar (516	.7033345 7033346		Hg-El	emental So	uroe	
5167033547,	16-08635-6	-EFF-D / Hydrar ((SKC 226-17-1A) S/6		8.	Hg-El	emental So	urce	100
Special Instruction	ons:				'				
		Signature	Printed	Name	Locat	ion	Date	Tim	e
Delivered to Stor	age: E	rea Whieler	Enia W	rule-	2764HV	41164	09-24-16	0800	
Retrieved from S		Marin	777	noun		e Nate	9/20/1	6074	5
		Signature		Printed Name	,	D	ate	Time	
Relinquished By:	(m)	00W	- Cha	She M	2002	9-	20016	1200	
	Nine	Juster	Dianne	Turne	er	9-3	6-16	12500	
Received By:	ACCOUNTY OF THE PARTY OF THE PA							the said of the	
Relinquished By									
Relinquished By:				STATE OF THE PARTY					
Received By: Relinquished By: Received By: Relinquished By: Received By:									

INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Wa	shington River Pr	otection Solutions				Date Sa	impled:	09/23/20	16
CACN: 202367		COA: CB20		Survey N	lo.: 16-0863	5 - Cartridge 1	esting		
Contact Name:	Jones, Parker L		Phone:	509)373-4966		Turnarous	nd: N/A		
Return Report T	o: Caldwell, Jo	yoe A			MSIN:	R1-06	Phone:	(509)376	-0737
Laboratory Log No.	Sample ID/T	ype/Description	4			Require	d Analysi	s	
S167033350	16-06635-6-	EFF-E / Hydrar (5	270333.		Hg-Eler	mental So	urce	<
SIL 70373536	16-08635-6-	EFF-F / Hydrar (51	6703333 6703335	54	Hg-Eler	mental So	urce	te
516703336	16-08635-6-	EFF-G / Hydrar (SKC 226-17-1/		57	Hg-Eler	nental So	urce	,
5167033359	16-08635-6-	EFF-H / Hydrar (SKC 226-17-1/	-	,0	Hg-Eler	nental So	uroe	11
5167033362	16-08635-6-	N-A / Hydrar (Sk	(C 226-17-1A) 5 / c		3	Hg-Eler	nental So	urce	I,
516T033365 6	16-08635-6-	N-B / Hydrar (SH	516	T03334		Hg-Eler	nental So	urce	1.
516T033368 1	16-08635-6-	N-C / Hydrar (Sh	(C 226-17-1A)		9	Hg-Eler	mental So	urce	15
5167033371	16-08635-6-	N-D / Hydrar (Sk	(C 226-17-1A) 5/6		2	Hg-Elen	nental So	urce	14
Special Instruction									
		Signature	Printed	Name	Loc	ation	Date		Time
Delivered to Stora	ige: Enc	in Mheeler	Enca V	Sheeter	2764 HV	+1164	69-24-	16 05	00
Retrieved from St	orage: CM	1004	Chash	MOON	***		9/26/	16 O	745
	Sig	nature		Printed Nam	e	D	ate	Ti	me
Relinquished By:	CMO	00	1 ha	in m	0000	96	26/16	120	70
Received By:	Diarre	Jurser	Diann	Turn	er	9/30	1/16	15:0	(Si
Relinquished By:									
Received By:									1
Relinquished By:			3						
Received By:									

SWIHD - Chain of Custody

20162958 Rev. 0

INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

	lashington River Pr	rotection Solutions		10 To	D	ate San	npled: 09	/23/2015
CACN: 202367		COA: CB20	S	urvey No.: 16	-08635 - Car	tridge Tes	sting	
Contact Name:	Jones, Parker L		Phone: (509)3	73-4966	Turr	naround	I: N/A	
Return Report	To: Caldwell, Jo	yce A		MS	IN: R1-06	. P	hone: (5	09)376-0737
Laboratory Log No.	Sample ID/T	ype/Description			R	equired	Analysis	
5/10/23/74	16-08635-6-1	N-E / Hydrar (Si	KC 226-17-1A) , 5/6-7 0 5/6-703		Н	lg-Eleme	ental Sour	ce I
41/1033377		N-F / Hydrar (Sh	(C 226-17-1A) , 5/6 70:	3378	н	g-Eleme	ental Source	e i
CLT033380	16-09635-6-1	N-G / Hydrar (Si	KC 226-17-1A) . 5/6703 11111111 5/6703		н	g-Eleme	ental Source	e f
5167037383	16-08635-6-1	N-H / Hydrar (Sh	CC 226-17-1A) . S16763	384	H	g-Eleme	ental Source	e 1
	16-08635-7-E	BASE-EFF / CIS			N	H3 Sour	Се	
	and the same of	BASE-IN/CISA			N	H3 Sour	се	
	16-08635-7-E	BLANK1 / CISA (SKC 226-29)		NI	H3 Sour	ce	
	16-08635-7-8	LANK2 / CISA (SKC 226-29)		N	H3 Sour	CE	
		LENGTH OF BRIDE OF	IN ENTERIOR OF		Χ.			
Special Instructio	ns:							
		Signature	Printed Nam	0	Location		Date	Time
		What	Erica Wheel	2764	HV HIOS	1	9-24-16	0500
Delivered to Stora	age: Ency	The season	0.110.1					
Delivered to Store Retrieved from St	175.5	10012	Christo	On	-	. 9	7/26/1	60743
	torage: CV	10010	1 Christo M	ON d Name		Date	7/36/1	6 0743 Time
	torage: CW	1012	1 Christo M	on		Date 9-2	6761	Time (200
Retrieved from St	torage: CW	1012	Christie Chaste	MOSW	9	9-2	6161	
Retrieved from St	sign CMO	nature	1 Christo M	MOSW	9	Date 9-26-	6161	200
Retrieved from SI Relinquished By: Received By:	sign CMO	nature	Christie Chaste	MOSW	9	9-2	6161	200
Retrieved from St Retinquished By: Received By: Retinquished By:	Sign (M)	nature	Christie Chaste	MOSW	9	9-2	6161	200
Retrieved from St Relinquished By: Received By: Relinquished By: Received By:	Sign (M)	nature	Christie Chaste	MOSW	9	9-2	6161	200

INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: w	ashington River	Protection Solutions		annua vani			Dat	e Sampled	: 09	/24/2016
CACN: 202367		COA: CB	20	8	urvey No	.: 16-086	36 - Cartrio	dge Testing A	W Sta	ck - A Train
Contact Name:	Jones, Parker	L		Phone: (509)3	73-4966		Turna	round: N/	1	
Return Report	To: Caldwell,	Joyce A				MSIN:	R1-06	Phone	e: (50	09)376-0737
Laboratory Log No.	Sample ID/T	ype/Description					R	equired An	alysis	5
5167033786		BASE-EFF/Hy		KC 226-17-1A) \$ / 	17033		Н	g-Elementa	al Soc	urce
SIL1033389	16-08636-6-	BASE-IN / Hydra	ar (SKC	516	TOJ3:	90	н	g-Elementa	ai Sou	urce
5/6/033 392		BLANK-EFF/H		8	16703		Н	g-Elementa	I Sou	irce
4167033395		BLANK-IN / Hyd		5/	67033	398	Н	g-Elementa	al Sou	ifce
SINTONOHOL	16-08636-6-6	EFF-A / Hydrar (SKC 2	5167	0334		H	g-Elementa	d Sou	irce
S167033407	16-08636-6-E	EFF-B / Hydrar (SKC 2	26-17-1A) . 516 70.			H	g-Elementa	l Sou	iroe
51LT033411		EFF-C / Hydrar (516 70	37413		Н	g-Elementa	l Sou	rce
SIL7033414		EFF-D / Hydrar (26-17-1A) - SIL TO	37415	5	H	g-Elementa	l Sou	rce
Special Instruction	ns: N/A							-		0
		Signature		Printed Name	,	Loca	ation	Da	ite	Time
Delivered to Store	age:	-	7	Soh Wilhelm	- 2	704HV)	1404	9/01/	4	0500
Retrieved from St	torage: Bell	Sponeing	, D	11 Spauldi		*		9-26	16	0705
	Sk	gnature .	Т	Printe	d Name			Date	T	Time
Relinquished By:	A111	And de	· [11 Som	idi.		9	26-16		1200
Received By	Quane	Jurney	Z		RNER		9.	26.16	1	12:00
Relinquished By:										
Received By:							2			41
Relinquished By:										
Received By:	-						3		1	
			_				_		_	

SWIHD - Chain of Custody

INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

CACN: 202367		COA: CB20		Survey	Mo : 16.08	636 - Cartridge	ampled:		
Contact Name:	Innas Darker			509)373-4966		Turnarou		ratac	x - A Iran
Return Report T			Phone.	309/37 3-4990		R1-06	1	1500	9)376-0737
Laboratory Log No.		Type/Description			mont		ed Analys		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
361033417	16-08636-6	3-EFF-E / Hydrar (54	7033 4 7033 4		Hg-Ele	mental S	ource	. 2
CIL 2007 423		-EFF-F / Hydrar (SKC 228-17-1A		27	Hg-Ele	mental S	ource	, ,
S167032434	16-08636-6	-EFF-G / Hydrar (SKC 228-17-1		34	Hg-Ele	mental S	ource	ر ،
W1033 440	16-08636-6	-EFF-H / Hydrar (1):	34	3167	mental \$6 633 4 633 44	45	3
5167033446	16-08636-6	-IN-A / Hydrar (SF	516	70334 70334		Hg-Ele	mental So	ource	3
516T033452		-IN-B / Hydrar (Sh	516	70374:		Hg-Ele	mental So	ource	, ,
516T033459	16-08636-6	-IN-C / Hydrar (Sk	516	103346		Hg-Elei	mental Sc	urce	3
316T03>464	16-08636-6	-IN-D / Hydrar (Sk	(C 226-17-1A) 5(6			Hg-Elei	mental Sc	urce	3
Special Instruction	s: N/A								
		Signature	Printed	Name	Lo	cation	Dat	0	Time
Delivered to Stora	ge: 1	~	Joh W.	Ihelm	27041	V/H104	4k5/	t.	0500
Retrieved from Sto	orage: Du	el Spacking	Dell Spa	ulling		-	9-26	-16	0705
	Si	gnature		Printed Nam			ate		Time
Relinquished By:	19010 8	4	Dell 5	mille	-1		6-16		1200
Received By:	Nin.	Justa	Dianne	Tour	7		6-16		2:00
Relinquished By:	ALLETE	Justin	JIANNE	, ace n		1		,	
Received By:									
Relinquished By:									
Received By:									
dditional Comme	7.00				4				

INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Wa	ashington River P	Protection Solution	6			Date 5	Sampled:	09/24/2	2016
CACN: 202367		COA: CE	120	Survey No	.: 16-0863	6 - Cartridge	Testing AV	/ Stack -	A Train
Contact Name:	Jones, Parker L		Phone:	(509)373-4966		Turnaro	und: N/A		
Return Report 1	To: Caldwell, J	oyce A			MSIN:	R1-06	Phone:	(509)3	76-0737
Laboratory Log No.	Sample ID/T	'ype/Description	n			Requ	ired Analy	/sis	
SH1003410		IN-E / Hydrar (7033472 7033473		Hg-E	lemental S	Source	
061033476	and the second		SKC 226-17-1A) S16		2	Hg-E	lemental \$	Source	3
461037479	16-08636-6-	IN-G / Hydrar (SKC 226-17-1A) 5167			Hg-E	emental S	Source	3
5167033522	16-08636-6-	IN-H / Hydrar (S	SKC 226-17-1A) 516		3	Hg-El	emental S	Source	4
	16-08636-7-8		SA (SKC 226-29)			NH3	Source	_	_
			A (SKC 226-29)	W 1/20	سعا	NH3	Source	*	
			IISA (SKG-226-29		_	NH3 S	Source		
			SA (SKC 226-29)	1		NH3	Sonice	_	_
Special Instruction	ns: N/h								
		Signature	Printed	Name	Loca	tion	Date	0	Time
Delivered to Stora Retrieved from St	6	e Josephia	Josh Lu	Tilhelm 2	704 140/	4104	9-26	7	705
	Una	A.M.	Thenop	2			-	10	
	Sig	nature		Printed Name		D	ate	7	ime
Relinquished By:	Alle	Jacins	Dells	aulding	9	9-2	6-16	12	00
Received By:	Diese	Just	Dianne	7	-	9/3	4/16	13.	
Relinquished By:						1	1		
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Relinquished By:	1	-							
Received By:		300							
Additional Comme	ents:								

FINAL REPORT ON AMMONIA VAPOR TUBES FOR CARTRIDGE EVALUATION COLLECTED SEPTEMBER 23 - 24, 2016

Document No.: 20162957 Rev. 0

Michael A. Purcell WAI Hanford Laboratory

Date Published October 26, 2016



Prepared for:



Joyce A. Caldwell Washington River Protection Solutions, Inc. P.O. Box 850 Richland, WA 99352 509-376-0737 Prepared by:



WAI Hanford Laboratory 1955 Jadwin Ave, Suite 330 Richland, WA 99354 509-373-3240

Michael A. Purcell, WHL Project Coordinator

NARRATIVE

FINAL REPORT ON AMMONIA VAPOR TUBES FOR CARTRIDGE EVALUATION COLLECTED SEPTEMBER 23 – 24, 2016

This final report presents the results of forty ammonia vapor tubes received at the 222-8 Laboratory on September 26, 2016, in good condition and with adequate paperwork. The samples were logged into sample delivery group 20162957.

DISCLAIMERS

- The information contained in this report is intended only for the use of the addressee and should be considered confidential.
- This report shall not be reproduced, except in full, without written approval of the laboratory.
- The results shown in this report pertain only to the actual samples tested.
- These results conform to the requirements specified in the referenced methods/procedures and specifications provided verbally or electronically by the customer. Any deviations or modifications are discussed in the following narrative.
- This report only addresses laboratory activities related to the listed surveys.
 Requirements or anomalies concerning field sampling are not addressed in this report.

PROCEDURES

Method	Preparation Procedure	Analysis Procedure
Ammonia by OSHA ID-188	LA-533-117, Rev. 3-1	LA-533-117, Rev. 3-1 LA-503-157, Rev. 2-6

ANALYTICAL SUMMARY

The vapor tubes were tested for ammonia, as specified on the chain of custody. Standard laboratory procedures for ion chromatography were followed as well as the requirements in WHL-MP-1029, WHL Industrial Hygiene Quality Assurance Project Plan for 222-S Laboratory (QAPP). Program specific work authorization instructions have been provided for WRPS IH sample analysis through verbal and electronic communication with the customer point of contact, and are kept as a record by the laboratory. When applicable, any client communication specific to the samples in this report will be included herein. All quality control criteria in the QAPP were met.

The measurement uncertainty was estimated based on the historical behavior of laboratory control samples (LCS). The results of 373 LCS determinations indicate a mean recovery of 98% with a standard deviation of 3.3%. Statistical process control limits for the LCS are 89 - 111% for LA-533-117, instrument IC-9; 80 - 120% for LA-503-157, instrument IC-10; and 88 - 107% for LA-503-157, instrument IC-13, with no significant bias. The overall estimate of uncertainty is 6.7%, with coverage factor (k) = 2.

Due to background levels of ammonium (or interfering compounds) that are typically present in the media used in the sorbent tubes for collecting the vapor samples, positive results are obtained for the preparation blank. Laboratories typically correct the LCS and all field samples for these background levels, when detected. However, per agreement with the customer, no blank

subtraction was performed. The client-requested reporting limit is $10~\mu g$ per sample, which makes the analysis of additional blanks and subsequent blank subtraction unnecessary. It is the laboratory's opinion that including the media contribution, which is well below the client's requested reporting limit, provides results that are more conservative than when blank subtractions are performed. Twenty-three of the forty ammonia results for sample group 20162957 were above the reporting limit of $10~\mu g$ per sample. For these samples, the total result includes the contribution from the back resin portion even though the back resin portion result is lower than the reporting limit (see Attachment 1).

Attachment 1

DATA SUMMARY REPORT

DATA SUMMARY REPORT FOR SAMPLE GROUP 20162957

Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reportin g Limit
16-08635-7-BASE-EFF	Total	S16T033396	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
16-08635-7-BASE-EFF	Front Resin	S16T033399	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08635-7-BASE-EFF	Back Resin	S16T033400	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08635-7-BASE-IN	Total	S16T033402	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
16-08635-7-BASE-IN	Front Resin	S16T033405	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08635-7-BASE-IN	Back Resin	S16T033406	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08635-7-BASE-IN	Total	S16T033408	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
16-08635-7-BLANK1	Front Resin	S16T033418	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08635-7-BLANK1	Back Resin	S16T033419	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08635-7-BLANK2	Total	S16T033422	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
16-08635-7-BLANK2	Front Resin	S16T033424	Ammonia	ug/sample	102	<10.0	<10.0	10.0
16-08635-7-BLANK2	Back Resin	S16T033425	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08635-7-EFF-A	Total	S16T033426	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
16-08635-7-EFF-A	Front Resin	S16T033429	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08635-7-EFF-A	Back Resin	S16T033430	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08635-7-EFF-B	Total	S16T033431	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
16-08635-7-EFF-B	Front Resin	S16T033432	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08635-7-EFF-B	Back Resin	S16T033433	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08635-7-EFF-C	Total	S16T033435	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
16-08635-7-EFF-C	Front Resin	S16T033438	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08635-7-EFF-C	Back Resin	S16T033439	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08635-7-EFF-D	Total	S16T033441	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
16-08635-7-EFF-D	Front Resin	S16T033444	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08635-7-EFF-D	Back Resin	S16T033445	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08635-7-EFF-E	Total	S16T033447	Ammonia	ug/sample	n/a	<10.0	<10.0	10.0
16-08635-7-EFF-E	Front Resin	S16T033450	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08635-7-EFF-E	Back Resin	S16T033451	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08635-7-EFF-F	Total	S16T033453	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
16-08635-7-EFF-F	Front Resin	S16T033454	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08635-7-EFF-F	Back Resin	S16T033455	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08635-7-EFF-G	Total	S16T033458	Ammonia	ug/sample	n/a	<10.0	18.2	10.0
16-08635-7-EFF-G	Front Resin	S16T033462	Ammonia	µg/sample	101	<10.0	17.8	10.0
16-08635-7-EFF-G	Back Resin	S16T033463	Ammonia	µg/sample	101	<10.0	<10.0	10.0
16-08635-7-EFF-H	Total	S16T033465	Ammonia	ug/sample	n/a	<10.0	31.5	10.0
16-08635-7-EFF-H	Front Resin	S16T033468	Ammonia	µg/sample	101	<10.0	30.8	10.0
16-08635-7-EFF-H	Back Resin	S16T033469	Ammonia	µg/sample	101	<10.0	<10.0	10.0
16-08635-7-IN-A	Total	S16T033471	Ammonia	µg/sample	n/a	<10.0	412	100
16-08635-7-IN-A	Front Resin	S16T033474	Ammonia	µg/sample	101	<10.0	412	100
16-08635-7-IN-A	Back Resin	S16T033475	Ammonia	µg/sample	101	<10.0	<10.0	10.0
16-08635-7-IN-B	Total	S16T033765	Ammonia	µg/sample	n/a	<10.0	437	100
16-08635-7-IN-B	Front Resin	S16T033766	Ammonia	µg/sample	101	<10.0	436	100
16-08635-7-IN-B	Back Resin	S16T033767	Ammonia	µg/sample	101	<10.0	<10.0	10.0
16-08635-7-IN-C	Total	S16T033768	Ammonia	µg/sample	n/a	<10.0	419	100
16-08635-7-IN-C	Front Resin	S16T033769	Ammonia	µg/sample	101	<10.0	418	100
16-08635-7-IN-C	Back Resin	S16T033770	Ammonia	ug/sample	101	<10.0	<10.0	10.0
16-08635-7-IN-D	Total	S16T033770	Ammonia	ug/sample	n/a	<10.0	413	100
16-08635-7-IN-D	Front Resin	S16T033772	Ammonia	µg/sample µg/sample	101	<10.0	411	100
16-08635-7-IN-D	Back Resin	S16T033772	Ammonia	µg/sample µg/sample	101	<10.0	<10.0	10.0

DATA SUMMARY REPORT FOR SAMPLE GROUP 20162957

Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reportin g Limit
16-08635-7-IN-E	Total	S16T033774	Ammonia	µg/sample	n/a	<10.0	388	100
16-08635-7-IN-E	Front Resin	S16T033775	Ammonia	µg/sample	101	<10.0	387	100
16-08635-7-IN-E	Back Resin	S16T033776	Ammonia	µg/sample	101	<10.0	<10.0	10.0
16-08635-7-IN-F	Total	S16T033777	Ammonia	μg/sample	n/a	<10.0	176	50.0
16-08635-7-IN-F	Front Resin	S16T033778	Ammonia	µg/sample	101	<10.0	176	50.0
16-08635-7-IN-F	Back Resin	S16T033779	Ammonia	µg/sample	101	<10.0	<10.0	10.0
16-08635-7-IN-G	Total	S16T033780	Ammonia	µg/sample	n/a	<10.0	446	100
16-08635-7-IN-G	Front Resin	S16T033781	Ammonia	µg/sample	101	<10.0	446	100
16-08635-7-IN-G	Back Resin	S16T033782	Ammonia	µg/sample	101	<10.0	<10.0	10.0
16-08635-7-IN-H	Total	S16T033783	Ammonia	μg/sample	n/a	<10.0	430	100
16-08635-7-IN-H	Front Resin	S16T033784	Ammonia	µg/sample	102	<10.0	429	100
16-08635-7-IN-H	Back Resin	S16T033785	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08636-7-BASE-EFF	Total	S16T033786	Ammonia	jig/sample	n/a	<10.0	<10.0	10.0
16-08636-7-BASE-EFF	Front Resin	S16T033787	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08636-7-BASE-EFF	Back Resin	S16T033788	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08636-7-BASE-IN	Total	S16T033789	Ammonia	µg/sample	n/a	<10.0	15.7	10.0
16-08636-7-BASE-IN	Front Resin	S16T033790	Ammonia	µg/sample	102	<10.0	15.2	10.0
16-08636-7-BASE-IN	Back Resin	S16T033791	Ammonia	ug/sample	102	<10.0	<10.0	10.0
16-08636-7-BLANK-EFF	Total	S16T033792	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
16-08636-7-BLANK-EFF	Front Resin	S16T033793	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08636-7-BLANK-EFF	Back Resin	S16T033794	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08636-7-BLANK-IN	Total	S16T033795	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
16-08636-7-BLANK-IN	Front Resin	S16T033796	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08636-7-BLANK-IN	Back Resin	S16T033797	Ammonia	ug/sample	102	<10.0	<10.0	10.0
16-08636-7-EFF-A	Total	S16T033798	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
16-08636-7-EFF-A	Front Resin	S16T033809	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08636-7-EFF-A	Back Resin	S16T033810	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08636-7-EFF-B	Total	S16T033811	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
16-08636-7-EFF-B	Front Resin	S16T033812	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08636-7-EFF-B	Back Resin	S16T033813	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08636-7-EFF-C	Total	S16T033814	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
16-08636-7-EFF-C	Front Resin	S16T033815	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08636-7-EFF-C	Back Resin	S16T033816	Ammonia	ug/sample	102	<10.0	<10.0	10.0
16-08636-7-EFF-D	Total	S16T033817	Ammonia	µg/sample	n/a	<10.0	<10.0	10.0
16-08636-7-EFF-D	Front Resin	S16T033818	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08636-7-EFF-D	Back Resin	S16T033819	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08636-7-EFF-E	Total	S16T033820	Ammonia	µg/sample	n/a	<10.0	14.1	10.0
16-08636-7-EFF-E	Front Resin	S16T033821	Ammonia	µg/sample	102	<10.0	13.5	10.0
16-08636-7-EFF-E	Back Resin	S16T033822	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08636-7-EFF-F	Total	S16T033823	Ammonia	µg/sample	n/a	<10.0	25.0	10.0
16-08636-7-EFF-F	Front Resin	S16T033824	Ammonia	µg/sample	104	<10.0	24.1	10.0
16-08636-7-EFF-F	Back Resin	S16T033825	Ammonia	µg/sample	104	<10.0	<10.0	10.0
16-08636-7-EFF-G	Total	S16T033826	Ammonia	µg/sample	n/a	<10.0	39.9	10.0
16-08636-7-EFF-G	Front Resin	S16T033827	Ammonia	µg/sample	104	<10.0	39.4	10.0
16-08636-7-EFF-G	Back Resin	S16T033828	Ammonia	ug/sample	104	<10.0	<10.0	10.0
16-08636-7-EFF-H	Total	S16T033829	Ammonia	µg/sample	n/a	<10.0	66.9	10.0
16-08636-7-EFF-H	Front Resin	S16T033830	Ammonia	µg/sample	104	<10.0	66.4	10.0
16-08636-7-EFF-H	Back Resin	S16T033831	Ammonia	µg/sample	104	<10.0	<10.0	10.0

DATA SUMMARY REPORT FOR SAMPLE GROUP 20162957

Customer Sample ID	Vapor Tube Portion	Laboratory Sample ID	Analyte	Result Unit	Standard % Recovery	Blank	Result	Reportin g Limit
16-08636-7-IN-A	Total	S16T033832	Ammonia	µg/sample	n/a	<10.0	409	100
16-08636-7-IN-A	Front Resin	S16T033833	Ammonia	µg/sample	104	<10.0	408	100
16-08636-7-IN-A	Back Resin	S16T033834	Ammonia	µg/sample	104	<10.0	<10.0	10.0
16-08636-7-IN-B	Total	S16T033835	Ammonia	µg/sample	n/a	<10.0	438	100
16-08636-7-IN-B	Front Resin	S16T033836	Ammonia	µg/sample	104	<10.0	437	100
16-08636-7-IN-B	Back Resin	S16T033837	Ammonia	µg/sample	104	<10.0	<10.0	10.0
16-08636-7-IN-C	Total	S16T033838	Ammonia	µg/sample	n/a	<10.0	475	100
16-08636-7-IN-C	Front Resin	S16T033839	Ammonia	µg/sample	104	<10.0	474	100
16-08636-7-IN-C	Back Resin	S16T033840	Ammonia	µg/sample	104	<10.0	<10.0	10.0
16-08636-7-IN-D	Total	S16T033841	Ammonia	µg/sample	n/a	<10.0	393	100
16-08636-7-IN-D	Front Resin	S16T033842	Ammonia	µg/sample	104	<10.0	392	100
16-08636-7-IN-D	Back Resin	S16T033843	Ammonia	µg/sample	104	<10.0	<10.0	10.0
16-08636-7-IN-E	Total	S16T033844	Ammonia	µg/sample	n/a	<10.0	411	100
16-08636-7-IN-E	Front Resin	S16T033845	Ammonia	µg/sample	104	<10.0	410	100
16-08636-7-IN-E	Back Resin	S16T033846	Ammonia	µg/sample	104	<10.0	<10.0	10.0
16-08636-7-IN-F	Total	S16T033847	Ammonia	µg/sample	n/a	<10.0	229	100
16-08636-7-IN-F	Front Resin	S16T033848	Ammonia	µg/sample	104	<10.0	229	100
16-08636-7-IN-F	Back Resin	S16T033849	Ammonia	µg/sample	104	<10.0	<10.0	10.0
16-08636-7-IN-G	Total	S16T033850	Ammonia	µg/sample	n/a	<10.0	367	100
16-08636-7-IN-G	Front Resin	S16T033851	Ammonia	µg/sample	102	<10.0	366	100
16-08636-7-IN-G	Back Resin	S16T033852	Ammonia	µg/sample	102	<10.0	<10.0	10.0
16-08636-7-IN-H	Total	S16T033853	Ammonia	µg/sample	n/a	<10.0	401	100
16-08636-7-IN-H	Front Resin	S16T033854	Ammonia	µg/sample	102	<10.0	401	100
16-08636-7-IN-H	Back Resin	S16T033855	Ammonia	ug/sample	102	<10.0	<10.0	10.0

Attachment 2

ANALYSIS DATE REPORT

ANALYSIS DATE REPORT FOR SAMPLE GROUP 20162957

Laboratory Sample ID	Customer Sample ID	Method	Preparation Date	Analysis Date
S16T033399	16-08635-7-BASE-EFF	Ammonia	10/03/2016 13:40	10/03/2016 16:38
S16T033400	16-08635-7-BASE-EFF	Ammonia	10/03/2016 13:40	10/03/2016 16:56
316T033405	16-08635-7-BASE-IN	Ammonia	10/03/2016 13:40	10/03/2016 17:14
S16T033406	16-08635-7-BASE-IN	Ammonia	10/03/2016 13:40	10/03/2016 17:32
S16T033418	16-08635-7-BLANK1	Ammonia	10/03/2016 13:40	10/03/2016 17:50
S16T033419	16-08635-7-BLANK1	Ammonia	10/03/2016 13:40	10/03/2016 18:08
S16T033424	16-08635-7-BLANK2	Ammonia	10/03/2016 13:40	10/03/2016 19:21
S16T033425	16-08635-7-BLANK2	Ammonia	10/03/2016 13:40	10/03/2016 19:39
S16T033429	16-08635-7-EFF-A	Ammonia	10/03/2016 13:40	10/03/2016 19:57
S16T033430	16-08635-7-EFF-A	Ammonia	10/03/2016 13:40	10/03/2016 20:15
S16T033432	16-08635-7-EFF-B	Ammonia	10/03/2016 13:40	10/03/2016 20:33
S16T033433	16-08635-7-EFF-B	Ammonia	10/03/2016 13:40	10/03/2016 20:51
S16T033438	16-08635-7-EFF-C	Ammonia	10/03/2016 13:40	10/03/2016 21:09
S16T033439	16-08635-7-EFF-C	Ammonia	10/03/2016 13:40	10/03/2016 21:27
316T033444	16-08635-7-EFF-D	Ammonia	10/03/2016 13:40	10/03/2016 21:45
S16T033445	16-08635-7-EFF-D	Ammonia	10/03/2016 13:40	10/03/2016 22:03
S16T033450	16-08635-7-EFF-E	Ammonia	10/03/2016 13:40	10/03/2016 23:16
S16T033451	16-08635-7-EFF-E	Ammonia	10/03/2016 13:40	10/03/2016 23:34
816T033454	16-08635-7-EFF-F	Ammonia	10/03/2016 13:40	10/03/2016 23:52
S16T033455	16-08635-7-EFF-F	Ammonia	10/03/2016 13:40	10/04/2016 00:10
S16T033462	16-08635-7-EFF-G	Ammonia	10/03/2016 13:40	10/04/2016 02:35
S16T033463	16-08635-7-EFF-G	Ammonia	10/03/2016 13:40	10/04/2016 02:53
S16T033468	16-08635-7-EFF-H	Ammonia	10/03/2016 13:40	10/04/2016 03:11
S16T033469	16-08635-7-EFF-H	Ammonia	10/03/2016 13:40	10/04/2016 03:29
S16T033474	16-08635-7-IN-A	Ammonia	10/03/2016 13:40	10/04/2016 09:49
S16T033475	16-08635-7-IN-A	Ammonia	10/03/2016 13:40	10/04/2016 04:05
S16T033766	16-08635-7-IN-B	Ammonia	10/03/2016 13:40	10/04/2016 10:07
S16T033767	16-08635-7-IN-B	Ammonia	10/03/2016 13:40	10/04/2016 05:36
S16T033769	16-08635-7-IN-C	Ammonia	10/03/2016 13:40	10/04/2016 10:25
S16T033770	16-08635-7-IN-C	Ammonia	10/03/2016 13:40	10/04/2016 06:12
S16T033772	16-08635-7-IN-D	Ammonia	10/03/2016 13:40	10/04/2016 10:43
316T033773	16-08635-7-IN-D	Ammonia	10/03/2016 13:40	10/04/2016 06:48
S16T033775	16-08635-7-IN-E	Ammonia	10/03/2016 13:40	10/04/2016 11:01
S16T033776	16-08635-7-IN-E	Ammonia	10/03/2016 13:40	10/04/2016 07:24
S16T033778	16-08635-7-IN-F	Ammonia	10/03/2016 13:40	10/04/2016 11:19
S16T033779	16-08635-7-IN-F	Ammonia	10/03/2016 13:40	10/04/2016 08:00
S16T033781	16-08635-7-IN-O	Ammonia	10/03/2016 13:40	10/04/2016 11:37
816T033782	16-08635-7-IN-G	Ammonia	10/03/2016 13:40	10/04/2016 09:31
S16T033784	16-08635-7-IN-H	Ammonia	10/11/2016 16:55	10/17/2016 12:14
316T033785	16-08635-7-IN-H	Ammonia	10/11/2016 16:55	10/14/2016 17:00
316T033787	16-08636-7-BASE-EFF	Ammonia	10/11/2016 16:55	10/14/2016 17:17
S16T033788	16-08636-7-BASE-EFF	Ammonia	10/11/2016 16:55	10/14/2016 17:34
S16T033790	16-08636-7-BASE-IN	Ammonia	10/11/2016 16:55	10/14/2016 17:51
S16T033791	16-08636-7-BASE-IN	Ammonia	10/11/2016 16:55	10/14/2016 18:08
S16T033793	16-08636-7-BLANK-EFF	Ammonia	10/11/2016 16:55	10/14/2016 19:15
S16T033794	16-08636-7-BLANK-EFF	Ammonia	10/11/2016 16:55	10/14/2016 19:32

ANALYSIS DATE REPORT FOR SAMPLE GROUP 20162957

Laboratory Sample ID	Customer Sample ID	Method	Preparation Date	Analysis Date
S16T033796	16-08636-7-BLANK-IN	Ammonia	10/11/2016 16:55	10/14/2016 19:49
S16T033797	16-08636-7-BLANK-IN	Ammonia	10/11/2016 16:55	10/14/2016 20:06
S16T033809	16-08636-7-EFF-A	Ammonia	10/11/2016 16:55	10/14/2016 20:23
S16T033810	16-08636-7-EFF-A	Ammonia	10/11/2016 16:55	10/14/2016 20:40
S16T033812	16-08636-7-EFF-B	Ammonia	10/11/2016 16:55	10/14/2016 20:57
S16T033813	16-08636-7-EFF-B	Ammonia	10/11/2016 16:55	10/14/2016 21:14
S16T033815	16-08636-7-EFF-C	Ammonia	10/11/2016 16:55	10/14/2016 21:30
S16T033816	16-08636-7-EFF-C	Ammonia	10/11/2016 16:55	10/14/2016 21:47
S16T033818	16-08636-7-EFF-D	Ammonia	10/11/2016 16:55	10/14/2016 22:55
S16T033819	16-08636-7-EFF-D	Ammonia	10/11/2016 16:55	10/14/2016 23:12
S16T033821	16-08636-7-EFF-E	Ammonia	10/11/2016 16:55	10/14/2016 23:29
S16T033822	16-08636-7-EFF-E	Ammonia	10/11/2016 16:55	10/14/2016 23:46
S16T033824	16-08636-7-EFF-F	Ammonia	10/11/2016 16:55	10/15/2016 02:01
S16T033825	16-08636-7-EFF-F	Ammonia	10/11/2016 16:55	10/15/2016 02:17
S16T033827	16-08636-7-EFF-G	Ammonia	10/11/2016 16:55	10/15/2016 02:34
S16T033828	16-08636-7-EFF-G	Ammonia	10/11/2016 16:55	10/15/2016 02:51
S16T033830	16-08636-7-EFF-H	Ammonia	10/11/2016 16:55	10/15/2016 03:08
S16T033831	16-08636-7-EFF-H	Ammonia	10/11/2016 16:55	10/15/2016 03:25
S16T033833	16-08636-7-IN-A	Ammonia	10/11/2016 16:55	10/17/2016 12:31
S16T033834	16-08636-7-IN-A	Ammonia	10/11/2016 16:55	10/15/2016 04:49
S16T033836	16-08636-7-IN-B	Ammonia	10/11/2016 16:55	10/17/2016 12:48
S16T033837	16-08636-7-IN-B	Ammonia	10/11/2016 16:55	10/15/2016 05:23
S16T033839	16-08636-7-IN-C	Ammonia	10/11/2016 16:55	10/17/2016 13:05
S16T033840	16-08636-7-IN-C	Ammonia	10/11/2016 16:55	10/15/2016 05:57
S16T033842	16-08636-7-IN-D	Ammonia	10/11/2016 16:55	10/17/2016 13:22
S16T033843	16-08636-7-IN-D	Ammonia	10/11/2016 16:55	10/15/2016 06:31
S16T033845	16-08636-7-IN-E	Ammonia	10/11/2016 16:55	10/17/2016 13:38
S16T033846	16-08636-7-IN-E	Ammonia	10/11/2016 16:55	10/15/2016 07:04
S16T033848	16-08636-7-IN-F	Ammonia	10/11/2016 16:55	10/17/2016 13:55
S16T033849	16-08636-7-IN-F	Ammonia	10/11/2016 16:55	10/15/2016 08:29
S16T033851	16-08636-7-IN-G	Ammonia	10/06/2016 17:00	10/10/2016 11:33
816T033852	16-08636-7-IN-G	Ammonia	10/06/2016 17:00	10/06/2016 23:28
S16T033854	16-08636-7-IN-H	Ammonia	10/06/2016 17:00	10/10/2016 11:57
S16T033855	16-08636-7-IN-H	Ammonia	10/06/201617:00	10/07/2016 00:14

Attachment 3

RECEIPT PAPERWORK

222-S					HAIN OF CUSTODY HECKLIST	ATS-LO-090-101 Rev DG-1
Date Samples Rece Sample Custodian:	7	ras		lumbe	or of Samples: 480 Gr	oup# 20/62957 - NH
	APPRICE TEL			Custo	odian to Complete:	Alexander /
A	ction	Yes	No	N/A		Comments
RSR provided?						
			-	1	The Project Str.	
Verify GKI is complete				- Simon	☐ In Project File	
Received from an alph	na facility?		~		Contact PC for approval	to release
Check that outer custo present	ody seal is intact, if			-		
Record cooler tempera appropriate	ature in centigrade, as	16c			Check if no cooler and/or	r no ice
Samples are intact and	d in good condition	-			If No, provide comments below	w
RSA/COC provided an he following information	nd complete containing on?					and Section 1
Client name an	d client sample number	-	200			
Date and time	of sampling	-				
Sampling locati	ion or origin	-				
Container type,	size, and number	-				
 Preservatives (COC/RSA and 	if used) noted on the sample bottles			-		
 Analysis reques 	st is clear	-				
 Signature of pe receiving samp 	rsons relinquishing and les	-				
 Date and/or time exchange 	e of sample custody	-				
erify that sample num natch the COC and/or	bers on containers RSA	-				
amples stored proper	fy (e.g., refrigeration)	-				
	tiately if any problems w is completed by the					PC resolution. For WRPS samples,
	for release? <u>yes</u> communication and res	-	120	4, 8	als <u>dut</u> Date_ 280 120 (80) 400H ₃	9/26/16 40 Hg
lumber of IH Samp	11.	./.	33	- 3	Acetonithe 46	3
Vdehyde Screen:	40 Amines:	40	-	mmoni		
Beryllium: Formaldehyde:	Be-Bulk:	40		Be-Filte Merour		1,3-Butadiene: 80 Nitrosamines: 40
. Similarodifyuu.	T Uteris.	-			, moundings.	70

A-6005-302 (REV 4)

SWIHD - Chain of Custody

INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Was	shington River Prote	action Solutions				Date S	ampled:	09/23/2016
CACN: 202367		COA: C820		Survey	No.: 16-0863	5 - Cartridge	Testing	
Contact Name:	Jones, Parker L		Phone:	(509)373-496	6	Turnarou	nd: N/A	
Return Report To	D: Caldwell, Joyc	PΑ			MSIN:	R1-06	Phone:	(509)376-073
Laboratory Log No.	Sample ID/Typ	e/Description				Requir	ed Analysi	s
	A STATE OF	E / Hydrar (SK)		Hg-Ele	mental So	urce
		F7Hydrar (SK				Hg-Ele	mental So	urce
		G / Hydrar (SK			-	Hg-Ele	mental So	urce
		H / Hydrar (SK)	-	Hg-Ele	mental So	urce
516/053396		SE-EFF / CISA	(SKC 226-2		33399	NH3 S	ource	
61610337	16-08635-7-BA	SE-IN/CISA(SKC 226-29)		33405 33406	NH3 S	ource.	
(16/033408	16-08635-7-BL	ANK1 / CISA (S			33419	NH3 S	ource	
5167033422	16-08635-7-BL	ANK2 / CISA (S		SIGTO	3 424	NH3 S	ource	
Special Instruction								
	. 5	ignature	Printe	d Name	Loc	ation	Date	Tim
Delivered to Stora	ge:	-	Sinh 6	1.14/1	2704HV	14104	9/24/1	6 04/5
Retrieved from Str	orage: CM	OUX	Chris	omoon		1200	1/26/	16 074
	Signa	nture	01	Printed Na	me	1 0	ate	Time
Relinquished By:	(ma)	(2)	Cha	nom	000	9-21	-16	1200
Received By:	Teres 7	aneste	TERES	FORR	esten	9-2	6-14	1200
Relinquished By:								
Received By:								
Relinquished By:								
Received By:		-		-2				
Additional Comme								

INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Wash	ington River Prob	ection Solutions				Date S	ampled:	09/23/2016
CACN: 202387		COA: CB2	10	Survey	No.: 16-0863	35 - Cartridge	Testing	
Contact Name: J	ones, Parker I.		Phor	00: (509)373-496	8	Turnarou	ind: N/A	
Return Report To:	Caldwell, Joyo	eA .			MSIN:	R1-06	Phone:	(509)376-073
Laboratory Log No.	Sample ID/T	ype/Descripti	ion			Requ	ired Analys	sis
5165033426	16-08635-7-	EFF-A / CISA	(SKC 226-	29) S167	33429 33430		Source	
5161033431		EFF-B / CISA	(SKC 226-		33435		Source	
5161033435	16-08635-7-	EFF-C / CISA	(SKC 226-		33 438 33 439		Source	
5161033441	16-08635-7-	EFF-D / CISA			33444 33445	NH3	Source	
5167033447	16-08635-7-	EFF-E / CISA		_	33450		Source	
5161083453	16-08635-7-	EFF-F / CISA		n	33454 33455	NH3	Source	
4161033458	16-08635-7-	EFF-G / CISA			33 462	NH3	Source	
516TO 334650	16-08635-7-8	EFF-H / CISA	(SKC 226-2	19) 516T	33469		Source	
Special Instructions							1.70	
	S	ignature	Pri	nted Name	Loc	ation	Date	Tim
Delivered to Storage	i the	5	Josh	Vilhelm	2704 M	1/4104	9/24/201	6 0495
Retrieved from Stora	age: CM	1001	Chn:	tomon)			9/00/	6 074
	Signa	iture		Printed Nar	me	0	ate	Time
Relinquished By:	amo	ch)	(1)	aspo in	200A)	9.2	6-16	1200
Received By:	Teres.	Tometo	TERES	A FORRES	TER	9-2	0.000	1200
elinquished By:	1							
Received By:								
Relinquished By:								
Received By:								As E

INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washi	ington River Prot	tection Solutions				Date S	ampled:	09/23/201	16
CACN: 202367		COA: CB20	- 10	Survey	No.: 16-0863	5 - Cartridge	Testing		
Contact Name: Jo	ones, Parker L		Phone	(609)373-4966	3	Turnarou	nd: N/A	-1.276	
Return Report To:	Caldwell, Joyc	oe A			MSIN:	R1-06	Phone:	(509)376-	0737
Laboratory Log No.	Sample ID/	Type/Description	n			Requir	ed Analys	s	
5167033471	MANAMA	'-IN-A / CISA (S	KC 226-29)		33 474 33475	NH3 S	ource	Į,	
5161033765	16-08635-7	-IN-B / CISA (S			33766 33767	NH3 S	ource		+
5165033768	16-08635-7	-IN-C / CISA (S		516To	33769 33770	NH3 S	ource		
5161033771	16-08635-7	-IN-D / CISA (S		\$16To 3	3772 33773	NH3 S	ource		
516 033774	16-08635-7	-IN-E / CISA (S		51610	33775 33776	NH3 S	ource		9
5161033177	16-08635-7	-IN-F / CISA (S		51670	33778 33779	NH3 S	ource		
5161033780	er no arm	-IN-G / CISA (S		81610	33781 33782	NH3 S	ource		
5165033783	16-08635-7	-in-H / CISA (S		SIGT	33784		ource		
Special Instructions:	11.0								
		Signature	Printe	d Name	Loc	ation	Date	1	Time
Delivered to Storage	Ale	3	Joshh	Jilholm	2704 HV	HIOY	9/24/20	W6 04	55
Retrieved from Stora	ige: OVY	ww.	Chris	Lemon	3		9/24	16 0	745
	Sign	ature		Printed Nan	ne	D	ate	Tin	ne
Relinquished By:	CM	DW.	Oh	nation	2000	9-20	-16	120	0
Received By:	Teres 7	Emeste	TERESA	FORRES	TER	9-2		1201	
Relinquished By:	-								
Received By:	4								
Relinquished By:									
Received By:									

SWIHD - Chain of Custody

20162957 Rev. 0

INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Wa	sshington River Pro	tection Solutions	E	*		Date S	ampled:	09/	24/2016
CACN: 202367		COA: CB2	0	Survey N	40. : 16-0863	6 - Cartridge	Testing AV	/ Stac	k - A Train
Contact Name:	Jones, Parker L		Phone:	(509)373-4966		Turnarou	ind: N/A		
Return Report 1	o: Caldwell, Joy	ce A			MSIN:	R1-06	Phone:	(50)	9)376-0737
Laboratory Log No.	Sample ID/Typ	pe/Description				Requ	ired Analy	ysis	
		I-E / Hydrar (SI			44	Hg-El	emental :	Soun	oe
		F7Hydrar (SI	_	SW 9/2	5/16	Hg-El	emental 5	Source	DB .
	16-08636-6-IN	-G / Hydrar (SI				Hg-El	emental S	Sourc	oe .
	THE RESIDENCE	-H / Hydrar (Si				Hg-El	emental S	Sourc	ze
5161033186	16-08636-7-B/	ASE-EFF/CIS			03378 - 33788		Source		
5161033781	16-08636-7-B/	ASE-IN / CISA		1	33790 33791	NH3 S	Source		
5161033792	16-08636-7-8L	ANK-EFF / CI			3379 33794		Source		
5165033795	16-08636-7-BL				33796 33797	NH3 S	Source		
Special Instructio	ns: N/A								
		Signature	Printed	Name	Loca	ation	Dat	e	Time
Delivered to Store	ige:	-	Josh W.	Ihdm !	2704 110	14104	9/25/1	6	0500
Retrieved from St	orage: Dec	Spauli	Dell Si	aulding			9-26-	16	0715
	Sign	ature		Printed Name	e	D	ate		Time
Relinquished By:	Acre 1	Day D.	Dells	Sauldi	79	9-2	6-16	1	200
Received By:	Diseu	Dus 1	2-5/10	DIAZ	'7	960	16	1	200
Relinquished By:		/		-					
Received By:									
Seller sieberd De	the state of the s								
Relinquished By:									
Received By:									

SWIHD - Chain of Custody

20162957 Rev. 0

INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Wash	Date Sampled: 09/24/2016										
CACN: 202387		COA: CB2			No.: 16-0863	-			/ Stack	k - A Train	
Contact Name: J			Phone	: (509)373-4960			naround				
Return Report To: Caldwell, Joyce A					MSIN: Rt			06 Phone: (509)378-07			
Laboratory Log No.	Sample iD/Type/Description						Require	ed Anal	ysis		
5165033798		7-EFF-A / CISA		33810			NH3 Source				
5165033811	The second second	7-EFF-B / CISA		516T033812 33813			NH3 Source				
5165033814	16-08636-7-EFF-C / CISA (SKC 226-29)				31865 07318 21855			NH3 Source			
5167033817		-EFF-D / CISA		516TO 33818 33819			NH3 Source				
5161033820	16-08636-7-EFF-E / CISA (SKC 226-29) 3/6				33821 33822			NH3 Source			
5161033823	16-08636-7	-EFF-F / CISA		\$16T033824 33825 \$16T033827 33828			NH3 Source				
5161033826	16-08636-7	-EFF-G / CISA									
5161033829		-EFF-H / CISA	\$16T0 33830 33831			NH3 Source					
Special Instructions	NIA										
	Signature		Print	Printed Name		Location		Date		Time	
Delivered to Storage	a left	3	Josh	Josh Wilhelm 2		2704 HV/H104		9/25/16		0500	
Retrieved from Stora	age: Dul	Spaking	Dello	aulding				9-26	-16	0715	
	Sign	nature		Printed Nan	ne	T	Date	9	Time		
Relinquished By:	Decl Spanding		Dells	DellSpaulding			9-26-16		1200		
Received By:	Bestielie		145%	LYSTIP DIAZ		9	9/26/110		1200		
telinquished By:	Taking.	~	100	CAMILLE		1		-	10		
teceived By:											
Relinquished By:											
Received By:						-					
Additional Comment			-			-			_		

INDUSTRIAL HYGIENE CHAIN OF CUSTODY AND LABORATORY REQUEST

Contractor: Washi	ngton River Protec						ampled				
CACN: 202367		COA: CB20	-	Survey		8 - Cartridge		_	k - A Train		
Contact Name: Jo	Phone:	(509)373-4966	-	Turnaround: N/A							
Return Report To: Caldwell, Joyce A				MSIN:		R1-06	-06 Phone: (509)376		9)376-0737		
Laboratory Log No.	Sample ID/Ty	rpe/Description				Requi	red Anal	d Analysis			
5165033932		N-A / CISA (SK	SIGTO	NH3 S	NH3 Source						
516(033835	16-08635-7-1	31670	NH3 S	NH3 Source							
5161033838		16-08636-7-IN-C / CISA (SKC 226-29) 516T0 338'39					NH3 Source				
1157033841		16-08636-7-IN-D / CISA (SKC 226-29) 516T033842-				NH3 S	NH3 Source				
516 10338 JULY 19	16-08636-7-IN-F / CISA (SKC 226-29) \$16 To 3384 16-08636-7-IN-G / CISA (SKC 226-29) \$16 To 338				33845 33846						
5167033847					33848 33849	NH3 Source					
5161033850					3385/ NH 33852		H3 Source				
5165033853	16-08636-7-IN	I-H / CIŜA (SK		516TO	NH3 S	NH3 Source					
Special Instructions:	NIA										
	Signature		re Printed		d Name Loca		Da	te	Time		
Delivered to Storage	Ta	Olas.		Joh Wilholm		1104	9/25/	16 050			
Retrieved from Stora	go: Dell d	rowling	De1152	wlding			9-26	-16	0715		
	Signati	ire		Printed Nam	ne	D	ate	T	Time		
telinquished By:	Del Snoudels		Dell Spaulding		ina	926-16		1200			
eceived By:	Marile V		Poste	estie DIAZ			10000		# 12a		
elinquished By.	queur)	7	-Carre	VIIIC		1164	act.	Strate	1000		
eceived By:								11444	4		
Relinquished By:											
Received By:											
dditional Comments	-					-					



Report Date: October 06, 2016

Phone: (509) 373-1262

E-mail: robert_w_sosa@rl.gov

20162971 Workorder: 34-1627297

Client Project ID: Washington River Protection

So

Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

Robert (Buddy) Sosa

Richland, WA 99352

Washington River Protection So PO Box 850, MSIN T6-02

Analytical Results					
Sample ID: \$16T033605				Collected: 09/23/2016	
Lab ID: 1627297001				Received: 09/28/2016	
Method: EPA TO-11A	Media: SKC 226-119, Silica Gel (2.4- Analyzed: 10/03/2016 Dinitrophenylhydrazine) Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)	
Formaldehyde	<0.050	NA	NA	0.050	
Acetaldehyde	<0.050	NA	NA	0.050	
Acetone	0.48	NA	NA	0.050	
Acrolein	< 0.050	NA	NA.	0.060	
Propionaldehyde	<0.050	NA	NA.	0.050	
Crotonaldehyde	< 0.050	NA	NA.	0.050	
Butyraldehyde	< 0.050	NA .	NA	0.050	
Benzaldehyde	<0.050	NA	NA	0.050	
Isovaleraldehyde	<0.050	NA	NA	0.050	
Valeraldehyde	< 0.050	NA	NA.	0.050	
m-Tolualdehyde	<0.050	NA	NA	0.050	
p-Tolualdehyde	< 0.050	NA	NA.	0.060	
o-Tolualdehyde	< 0.050	NA	NA	0.050	
Hexanal	<0.050	NA	NA	0.050	
2,5-Dimethylbenzaldehyde	< 0.050	NA	NA.	0.050	

Sample ID: \$16T033606 Lab ID: 1627297002					: 09/23/2016 : 09/28/2016
Method: EPA TO-11A	Media: SKC 226-119, Silica Gel (2,4- Analyzed: 10/03/ Dinitrophenylhydrazine) Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)	
Formaldehyde	0.071	NA	NA	0.060	
Acetaldehyde	0.085	NA	NA	0.050	

Results Continued on Next Page

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RIGHT SOLUTIONS HIGHT PARTITION

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Workorder: 34-1627297

Client Project ID: Washington River Protection

So

Purchase Order: 55502 Rel9 Project Manager: Rand Potter

NA

NA

NA

NA

NA

NA

0.050

0.050

0.050

0.050

0.050

0.050

Analytical Results

o-Tolualdehyde

o-Tolualdehyde

2,5-Dimethylbenzaldehyde

Hexanal

Page 2 of 26

2,5-Dimethylbenzaldehyde

Hexanal

Sample ID: S16T033606				Collected: 09/23/2016	
Lab ID: 1627297002				Received: 09/28/2016	
Method: EPA TO-11A	Media: SKC 226-119, Silica Gel (2,4- Analyzed: 10/03/2016 Dinitrophenythydrazine) Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)	
Acetone	0.83	NA	NA	0.050	
Acrolein	< 0.060	NA	NA	0.060	
Propionaldehyde	< 0.050	NA	NA	0.050	
Crotonaldehyde	< 0.060	NA	NA.	0.060	
Butyraldehyde	<0.050	NA	NA	0.050	
Benzaldehyde	<0.060	NA	NA	0.060	
Isovaleraldehyde	<0.050	NA	NA	0.050	
Valeraldehyde	<0.050	NA	NA	0.050	
m-Tolualdehyde	<0.050	NA	NA	0.050	
p-Tolualdehyde	<0.060	NA	NA	0.060	
The same of the sa	THE RESERVE AND ADDRESS OF THE PARTY OF THE				

NA.

NA

NA

< 0.050

< 0.050

<0.050 <0.050

<0.050

0.12

Sample ID: \$16T033607				Collected: 09/23/2016
Lab ID: 1627297003				Received: 09/28/2016
Method: EPA TO-11A	San		226-119, Silica Gel trophenylhydrazine) Volume Not Provide	
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	< 0.060	NA	NA	0.060
Acetone	0.14	NA	NA	0.050
Acrolein	< 0.060	NA	NA	0.060
Propionaldehyde	< 0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.060
Butyraldehyde	<0.050	NA	NA	0.060
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.060
p-Tolualdehyde	<0.060	NA	NA	0.060

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NA

NA

NA.



Workorder: 34-1627297

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

Analytical Results				
Sample ID: S16T033608				Collected: 09/23/2016
Lab ID: 1627297004				Received: 09/28/2016
Method: EPA TO-11A	San		226-119, Silica Gel (2 trophenythydrazine) Volume Not Provided	
Analyte	Result (ug/sample)	Result (mg/m²)		RL (ug/sample)
Formaldehyde	< 0.050	NA	NA	0.050
Acetaldehyde	< 0.060	NA	NA	0.060
Acetone	0.15	NA	NA	0.050
Acrolein	< 0.060	NA	NA.	0.060
Propionaldehyde	<0.050	NA	NA	0.060
Crotonaldehyde	< 0.060	NA	NA	0.060
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.060	NA	NA	0.060
m-Tolualdehyde	< 0.060	NA	NA	0.050
p-Tolualdehyde	< 0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2.5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: S16T033609				Collected: 09/23/2016
Lab ID: 1627297005				Received: 09/28/2016
Method: EPA TO-11A	San		226-119, Silica Gel trophenylhydrazine) Volume Not Provide	
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Formaldehyde	< 0.050	NA	NA	0.050
Acetaldehyde	0.28	NA	NA	0.050
Acetone	0.068	NA	NA	0.050
Acrolein	<0.050	NA	NA.	0.060
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA.	NA.	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.060	NA	NA	0.060
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA.	0.050

Results Continued on Next Page

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Workorder: 34-1627297

Client Project ID: Washington River Protection

0.050

IHREP-V12.8

NA

So

Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

Sample ID: \$16T033609 Collected: 09/23/2016 Received: 09/28/2016 Lab ID: 1627297005 Method: EPA TO-11A Media: SKC 226-119. Silica Gel (2.4-Analyzed: 10/03/2016 Dinitrophenylhydrazine) Sampling Parameter: Air Volume Not Provided Result Analyte (ug/sample) Result (mg/m²) Result (ppm) RL (ug/sample) Hexanal < 0.050 NA NA 0.050 0.050 2,5-Dimethylbenzaldehyde < 0.050 NA NA.

Sample ID: \$16T033610 Collected: 09/23/2016 Lab ID: 1627297006 Received: 09/28/2016 Method: EPA TO-11A Media: SKC 226-119, Silica Gel (2,4-Analyzed: 10/03/2016 Dinitrophenylhydrazine) Sampling Parameter: Air Volume Not Provided Result Analyte (ug/sample) Result (mg/m²) Result (ppm) RL (ug/sample) Formaldehyde < 0.050 NA. NA 0.050 Acetaldehyde 0.42 0.060 NA NA Acetone 0.061 NA NA 0.050 Acrolein < 0.050 NA. NA 0.050 Propionaldehyde < 0.050 NA NA 0.050 Crotonaldehyde < 0.050 NA NA 0.050 Butyraldehyde < 0.050 NA. NA 0.050 Benzaldehyde < 0.050 NA NA 0.050 NA 0.050 Isovaleraldehyde < 0.050 NA Valeraldehyde < 0.050 NA 0.050 NA m-Tolualdehyde <0.050 0.050 NA NA NA 0.050 p-Tolualdehyde < 0.050 NA < 0.050 NA 0.050 o-Tolualdehyde NA < 0.050 NA NA 0.050 Hexanal

Sample ID: \$16T033611 Collected: 09/23/2016 Received: 09/28/2016 Lab ID: 1627297007 Method: EPA TO-11A Media: SKC 226-119, Silica Gel (2,4-Analyzed: 10/03/2016 Dinitrophenylhydrazine) Sampling Parameter: Air Volume Not Provided Result Analyte (ug/sample) Result (mg/m²) Result (ppm) RL (ug/sample) Formaldehyde < 0.050 NA. NA 0.050 0.050 Acetaldehyde 0.40 NA NA 0.31 NA NA 0.050 Acetone

NA

Results Continued on Next Page

2,5-Dimethylbenzaldehyde

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< 0.060



Workorder: 34-1627297

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

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Analytical Results				
Sample ID: S16T033611				Collected: 09/23/2016
Lab ID: 1627297007				Received: 09/28/2016
Method: EPA TO-11A		Dini	226-119, Silica Gel (trophenylhydrazine)	
		npling Parameter: Air	Volume Not Provided	1
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Acrolein	<0.050	NA.	NA	0.050
Propionaldehyde	< 0.060	NA	NA	0.060
Crotonaldehyde	< 0.050	NA	NA	0.050
Butyraldehyde	<0.060	NA	NA	0.060
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.060	NA	NA	0.060
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.060	NA	NA	0.060
Hexanal	< 0.050	NA	NA.	0.050
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: S16T033612				Collected: 09/23/2016
Lab ID: 1627297008				Received: 09/28/2016
Method: EPA TO-11A	San		226-119, Silica Gel (trophenylhydrazine) Volume Not Provider	
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	0.41	NA	NA	0.050
Acetone	0.26	NA	NA.	0.060
Acrolein	< 0.050	NA	NA	0.050
Propionaldehyde	< 0.060	NA	NA	0.060
Crotonaldehyde	< 0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA	NA.	0.050
m-Tolualdehyde	< 0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	< 0.060	NA	NA	0.060
Hexanal	<0.050	NA	NA.	0.060
2,5-Dimethylbenzaldehyde	< 0.050	NA	NA	0.050



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0.050

0.050

0.050

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Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

o-Tolualdehyde

2,5-Dimethylbenzaldehyde

Hexanal

Sample ID: \$16T033613 Collected: 09/23/2016 Received: 09/28/2016 Lab ID: 1627297009 Method: EPA TO-11A Media: SKC 226-119. Silica Gel (2.4-Analyzed: 10/03/2016 Dinitrophenylhydrazine) Sampling Parameter: Air Volume Not Provided Result Analyte (ug/sample) Result (mg/m²) Result (ppm) RL (ug/sample) Formaldehyde < 0.050 NA NA 0.050 Acetaldehyde NA NA 0.060 0.42 Acetone 0.12 NA. NA 0.050 Acrolein < 0.050 NA NA 0.050 Propionaldehyde < 0.050 NA. NA 0.050 Crotonaldehyde < 0.050 NA NA 0.060 Butyraldehyde < 0.050 NA 0.050 NA Benzaldehyde < 0.050 NA. NA 0.050 0.050 Isovaleraldehyde < 0.050 NA NA Valeraldehyde < 0.060 NA NA 0.060 m-Tolualdehyde < 0.050 NA. NA 0.050 p-Tolualdehyde < 0.050 0.050 NA NA

Sample ID: \$16T033614 Collected: 09/23/2016
Lab ID: 1627297010 Received: 09/28/2016

NA

NA

NA

< 0.050

< 0.050

< 0.050

Method: EPA TO-11A Media: SKC 226-119, Silica Gel (2,4- Analyzed: 10/03/2016

Dinitrophenylhydrazine)

NA

NA

NA

Sampling Parameter: Air Volume Not Provided Result Analyte Result (ppm) RL (ug/sample) (ug/sample) Result (mg/m²) Formaldehyde < 0.050 NA. 0.050 NA Acetaldehyde 0.42 NA NA 0.050 Acetone 0.35 NA. NA 0.050 Acrolein < 0.050 NA NA 0.050 Propionaldehyde < 0.050 NA NA 0.050 Crotonaldehyde < 0.050 NA NA 0.050 NA. NA 0.050 Butyraldehyde < 0.050 < 0.050 NA 0.050 Benzaldehyde NA Isovaleraldehyde < 0.050 NA NA 0.050 Valeraldehyde < 0.050 NA. NA 0.060 NA 0.050 m-Tolualdehyde < 0.050 NA. < 0.050 NA 0.050 p-Tolualdehyde NA o-Tolualdehyde < 0.050 NA. NA 0.050

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Workorder: 34-1627297

Client Project ID: Washington River Protection

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Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

Sample ID: 816T033614 Collected: 09/23/2016 Received: 09/28/2016 Lab ID: 1627297010 Media: SKC 226-119, Silica Gel (2,4-Method: EPA TO-11A Analyzed: 10/03/2016 Dinitrophenylhydrazine)
Sampling Parameter: Air Volume Not Provided Result Analyte (ug/sample) Result (mg/m²) Result (ppm) RL (ug/sample) < 0.050 0.050 Hexanal NA NA 0.050 2,5-Dimethylbenzaldehyde < 0.050 NA NA.

Sample ID: \$16T033615 Collected: 09/23/2016 Lab ID: 1627297011 Received: 09/28/2016 Method: EPA TO-11A Media: SKC 226-119, Silica Gel (2,4-Analyzed: 10/03/2016 Dinitrophenylhydrazine) Sampling Parameter: Air Volume Not Provided Result Analyte (ug/sample) Result (mg/m²) Result (ppm) RL (ug/sample) Formaldehyde < 0.050 NA NA 0.050 Acetaldehyde 0.45 NA 0.060 NA 0.050 Acetone 0.48 NA NA < 0.050 0.050 Acrolein NA NA Propionaldehyde < 0.050 NA NA 0.050 Crotonaldehyde < 0.050 NA NA 0.050 Butyraldehyde 0.050 < 0.050 NA. NA Benzaldehyde <0.050 0.050 NA NA < 0.050 NA 0.050 Isovaleraldehyde NA Valeraldehyde < 0.050 NA 0.050 NA m-Tolualdehyde <0.050 NA 0.050 NA p-Tolualdehyde NA NA 0.050 < 0.050 o-Tolualdehyde < 0.050 NA NA 0.050 < 0.050 NA 0.050 Hexanal NA 2,5-Dimethylbenzaldehyde 0.050 < 0.060 NA NA

Sample ID: \$16T033616 Lab ID: 1627297012				Collected: 09/23/2016 Received: 09/28/2016
Method: EPA TO-11A	San		226-119, Silica Ge trophenylhydrazine) Volume Not Provid	
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	0.41	NA	NA	0.060
Acetone	0.70	NA	NA.	0.050

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Workorder: 34-1627297

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Analytical Results				
Sample ID: S16T033616				Collected: 09/23/2016
Lab ID: 1627297012				Received: 09/28/2016
Method: EPA TO-11A		Dini	226-119, Silica Gel (trophenylhydrazine)	
		npling Parameter: Air	Volume Not Provided	
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Acrolein	< 0.050	NA	NA	0.050
Propionaldehyde	< 0.060	NA	NA	0.060
Crotonaldehyde	< 0.050	NA	NA	0.050
Butyraldehyde	<0.060	NA	NA	0.060
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	< 0.060	NA	NA	0.060
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	< 0.060	NA	NA	0.060
Hexanal	< 0.050	NA	NA.	0.050
2,5-Dimethylbenzaldehyde	< 0.050	NA	NA	0.050

Sample ID: S16T033617				Collected: 09/23/2016
Lab ID: 1627297013				Received: 09/28/2016
Method: EPA TO-11A	San		226-119, Silica Gel trophenylhydrazine) Volume Not Provide	
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.20	NA	NA	0.060
Acetaldehyde	0.73	NA	NA	0.050
Acetone	3.2	NA	NA	0.060
Acrolein	< 0.050	NA	NA	0.050
Propionaldehyde	0.20	NA	NA	0.060
Crotonaldehyde	< 0.050	NA	NA	0.050
Butyraldehyde	0.26	NA	NA	0.060
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	0.052	NA	NA.	0.050
m-Tolualdehyde	< 0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	< 0.060	NA	NA	0.060
Hexanal	0.17	NA	NA	0.050
2,5-Dimethylbenzaldehyde	< 0.050	NA	NA	0.050



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Analytical Results				
Sample ID: \$16T033618				Collected: 09/23/2016
Lab ID: 1627297014				Received: 09/28/2016
Method: EPA TO-11A	San		226-119, Silica Gel (trophenylhydrazine) Volume Not Provided	
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.054	NA	NA	0.050
Acetaldehyde	0.73	NA	NA	0.060
Acetone	4.7	NA	NA	0.050
Acrolein	<0.060	NA	NA.	0.060
Propionaldehyde	0.21	NA	NA	0.050
Crotonaldehyde	< 0.060	NA	NA	0.060
Butyraldehyde	0.26	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	0.080	NA	NA.	0.060
m-Tolualdehyde	< 0.050	NA	NA	0.060
p-Tolualdehyde	< 0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	0.11	NA	NA	0.060
2,5-Dimethylbenzaldehyde	< 0.050	NA	NA	0.050

Sample ID: S16T033619				Collected:	09/23/2016
Lab ID: 1627297015				Received:	09/28/2016
Method: EPA TO-11A	San		226-119, Silica Gel (2 trophenylhydrazine) Volume Not Provided		10/03/2016
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)	
Formaldehyde	< 0.050	NA	NA	0.050	
Acetaldehyde	0.67	NA	NA	0.050	
Acetone	4.7	NA	NA	0.050	
Acrolein	< 0.050	NA	NA	0.060	
Propionaldehyde	0.19	NA	NA	0.050	
Crotonaldehyde	< 0.050	NA	NA	0.050	
Butyraldehyde	0.27	NA	NA	0.050	
Benzaldehyde	<0.050	NA	NA	0.050	
Isovaleraldehyde	<0.050	NA	NA	0.050	
Valeraldehyde	< 0.060	NA	NA	0.060	
m-Tolualdehyde	< 0.050	NA	NA	0.050	
p-Tolualdehyde	< 0.050	NA	NA	0.050	
o-Tolualdehyde	< 0.050	NA	NA	0.050	

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Analytical Results

Sample ID: \$16T033619 Collected: 09/23/2016 Received: 09/28/2016 Lab ID: 1627297015 Method: EPA TO-11A Media: SKC 226-119. Silica Gel (2.4-Analyzed: 10/03/2016 Dinitrophenylhydrazine) Sampling Parameter: Air Volume Not Provided Result Analyte (ug/sample) Result (mg/m²) Result (ppm) RL (ug/sample) 0.14 0.050 Hexanal NA NA 0.060 2,5-Dimethylbenzaldehyde < 0.050 NA NA.

Sample ID: \$16T033620 Collected: 09/23/2016 Lab ID: 1627297016 Received: 09/28/2016 Method: EPA TO-11A Media: SKC 226-119, Silica Gel (2,4-Analyzed: 10/03/2016 Dinitrophenylhydrazine) Sampling Parameter: Air Volume Not Provided Result Analyte (ug/sample) Result (mg/m²) Result (ppm) RL (ug/sample) Formaldehyde 0.059 NA NA 0.050 Acetaldehyde NA 0.060 0.66 NA 0.050 Acetone 3.9 NA NA 0.050 Acrolein < 0.050 NA NA Propionaldehyde NA NA 0.050 0.16 Crotonaldehyde < 0.050 NA NA 0.050 Butyraldehyde 0.050 0.22 NA. NA Benzaldehyde 0.050 < 0.050 NA NA < 0.050 NA 0.060 Isovaleraldehyde NA Valeraldehyde NA. 0.050 0.060 NA m-Tolualdehyde 0.050 <0.050 NA NA p-Tolualdehyde NA NA 0.050 < 0.050 < 0.050 NA 0.050 o-Tolualdehyde NA 0.050 0.10 NA NA Hexanal 0.060 2,5-Dimethylbenzaldehyde < 0.060 NA NA

Sample ID: \$16T033621 Collected: 09/23/2016 Received: 09/28/2016 Lab ID: 1627297017 Method: EPA TO-11A Media: SKC 226-119, Silica Gel (2,4-Analyzed: 10/03/2016 Dinitrophenylhydrazine) Sampling Parameter: Air Volume Not Provided Result Analyte (ug/sample) Result (mg/m²) Result (ppm) RL (ug/sample) Formaldehyde 0.090 NA. NA 0.050 0.050 Acetaldehyde 0.66 NA NA Acetone NA NA 0.050 3.4

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Analytical Results

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Arialytical Results				
Sample ID: S16T033621				Collected: 09/23/2016
Lab ID: 1627297017				Received: 09/28/2016
Method: EPA TO-11A	San		226-119, Silica Gel (trophenylhydrazine) Volume Not Provided	
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	0.20	NA	NA	0.060
Crotonaldehyde	< 0.050	NA	NA.	0.050
Butyraldehyde	0.23	NA	NA	0.060
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	< 0.060	NA	NA	0.060
Valeraldehyde	0.070	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	< 0.060	NA	NA	0.060
Hexanal	0.12	NA	NA	0.050
2,5-Dimethylbenzaldehyde	< 0.050	NA	NA	0.050

Sample ID: S16T033622				Collected: 09/23/2016
Lab ID: 1627297018				Received: 09/28/2016
Method: EPA TO-11A	San		226-119, Silica Gel (trophenylhydrazine) Volume Not Provide	
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.086	NA	NA	0.050
Acetaldehyde	0.65	NA	NA	0.050
Acetone	3.5	NA	NA.	0.060
Acrolein	< 0.050	NA	NA.	0.050
Propionaldehyde	0.17	NA	NA	0.060
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	0.24	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	0.052	NA	NA.	0.050
m-Tolualdehyde	< 0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	< 0.060	NA	NA	0.060
Hexanal	0.10	NA	NA.	0.050
2,5-Dimethylbenzaldehyde	< 0.050	NA	NA	0.050

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Workorder: 34-1627297

Client Project ID: Washington River Protection

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So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

Analytical Results				
Sample ID: S16T033623				Collected: 09/23/2016
Lab ID: 1627297019				Received: 09/28/2016
Method: EPA TO-11A	San		226-119, Silica Gel (trophenythydrazine) Volume Not Provided	
Analyte	Result (ug/sample)	Result (mg/m²)		RL (ug/sample)
Formaldehyde	0.064	NA	NA	0.050
Acetaldehyde	0.66	NA	NA	0.060
Acetone	3.6	NA	NA	0.050
Acrolein	<0.060	NA	NA.	0.060
Propionaldehyde	0.17	NA	NA	0.050
Crotonaldehyde	< 0.060	NA	NA.	0.050
Butyraldehyde	0.21	NA	NA.	0.050
Benzaldehyde	<0.050	NA	NA.	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	< 0.060	NA	NA	0.060
m-Tolualdehyde	< 0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	0.091	NA	NA	0.060
2.5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: S16T033624				Collected: 09/23/2016
Lab ID: 1627297020				Received: 09/28/2016
Method: EPA TO-11A	San		226-119, Silica Gel trophenylhydrazine) /olume Not Provide	
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Formaldehyde	< 0.050	NA	NA	0.050
Acetaldehyde	0.67	NA	NA	0.060
Acetone	3.5	NA	NA	0.050
Acrolein	<0.050	NA	NA NA	0.060
Propionaldehyde	0.20	NA	NA	0.050
Crotonaldehyde	< 0.050	NA	NA	0.050
Butyraldehyde	0.25	NA.	NA.	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.060
Valeraldehyde	<0.060	NA	NA	0.060
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	< 0.050	NA	NA	0.050

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Workorder: 34-1627297

Client Project ID: Washington River Protection

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Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

Sample ID: \$16T033624 Collected: 09/23/2016 Received: 09/28/2016 Lab ID: 1627297020 Media: SKC 226-119, Silica Gel (2,4-Method: EPA TO-11A Analyzed: 10/03/2016 Dinitrophenylhydrazine)
Sampling Parameter: Air Volume Not Provided Result Analyte (ug/sample) Result (mg/m²) Result (ppm) RL (ug/sample) 0.050 Hexanal 0.078 NA NA 0.060 2,5-Dimethylbenzaldehyde < 0.050 NA NA.

Sample ID: \$16T033625 Collected: 09/24/2016 Lab ID: 1627297021 Received: 09/28/2016 Method: EPA TO-11A Analyzed: 10/03/2016 Media: SKC 226-119, Silica Gel (2,4-Dinitrophenylhydrazine) Sampling Parameter: Air Volume Not Provided Result Analyte (ug/sample) Result (mg/m²) Result (ppm) RL (ug/sample) Formaldehyde 0.059 NA NA 0.050 Acetaldehyde 0.050 0.053 NA NA 0.050 Acetone 0.43 NA NA 0.050 Acrolein < 0.050 NA NA Propionaldehyde < 0.050 NA NA 0.050 Crotonaldehyde < 0.050 NA NA 0.050 Butyraldehyde 0.050 < 0.050 NA. NA Benzaldehyde <0.050 0.050 NA NA < 0.060 NA 0.060 Isovaleraldehyde NA Valeraldehyde < 0.050 NA. 0.050 NA m-Tolualdehyde <0.050 NA NA 0.050 p-Tolualdehyde < 0.050 NA NA 0.050 o-Tolualdehyde < 0.050 NA NA 0.050 < 0.050 NA 0.050 Hexanal NA 2,5-Dimethylbenzaldehyde 0.060 < 0.060 NA NA

Sample ID: \$16T033626 Lab ID: 1627297022				Collected: 09/24/2016 Received: 09/28/2016
Method: EPA TO-11A	San		226-119, Silica Ge trophenylhydrazine) Volume Not Provid	
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.080	NA	NA	0.050
Acetaldehyde	0.10	NA	NA	0.060
Acetone	0.49	NA	NA	0.050

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Workorder: 34-1627297

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

			Collected: 09/24/2016
			Received: 09/28/2016
	Dinit	rophenylhydrazine)	
	npling Parameter: Air	/olume Not Provided	l
(ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
< 0.050	NA	NA	0.050
< 0.050	NA	NA	0.060
< 0.050	NA	NA	0.050
<0.060	NA	NA	0.050
< 0.050	NA	NA NA	0.050
< 0.060	NA	NA	0.060
< 0.050	NA	NA.	0.050
<0.050	NA	NA	0.060
<0.050	NA	NA	0.050
< 0.060	NA	NA.	0.060
< 0.050	NA	NA.	0.050
< 0.050	NA	NA	0.050
	Result (ug/sample) <0.050 <0.050 <0.050 <0.050 <0.050 <0.050 <0.050 <0.050 <0.050 <0.050	Sampling Parameter: Air \	(ug/sample) Result (mg/m²) Result (ppm) <0.050

Sample ID: S16T033627				Collected: 09/24/2016
Lab ID: 1627297023				Received: 09/28/2016
Method: EPA TO-11A	San		226-119, Silica Gel rophenylhydrazine) /olume Not Provide	
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	<0.050	NA	NA	0.050
Acetone	0.49	NA	NA	0.060
Acrolein	< 0.050	NA	NA	0.050
Propionaldehyde	< 0.060	NA	NA	0.050
Crotonaldehyde	< 0.050	NA	NA.	0.050
Butyraldehyde	<0.050	NA	NA	0.060
Benzaldehyde	<0.050	NA	NA.	0.050
Isovaleraldehyde	< 0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA.	NA.	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA.	0.050
o-Tolualdehyde	< 0.060	NA	NA	0.060
Hexanal	< 0.050	NA	NA.	0.050
2,5-Dimethylbenzaldehyde	< 0.050	NA	NA	0.050

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Workorder: 34-1627297

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So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

Analytical Results				
Sample ID: \$16T033628				Collected: 09/24/2016
Lab ID: 1627297024				Received: 09/28/2016
Method: EPA TO-11A	San		226-119, Silica Gel (trophenythydrazine) Volume Not Provided	
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Formaldehyde	< 0.050	NA	NA	0.050
Acetaldehyde	< 0.060	NA	NA	0.060
Acetone	< 0.050	NA	NA	0.050
Acrolein	<0.060	NA	NA.	0.060
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	< 0.060	NA	NA	0.060
Butyraldehyde	<0.050	NA	NA.	0.050
Benzaldehyde	<0.050	NA	NA.	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.060	NA	NA	0.060
m-Tolualdehyde	< 0.050	NA	NA	0.060
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.060
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.060

Sample ID: S16T033629				Collected: 09/24/2016
Lab ID: 1627297025				Received: 09/28/2016
Method: EPA TO-11A	San		226-119, Silica Gel trophenylhydrazine) Volume Not Provide	
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.057	NA	NA	0.050
Acetaldehyde	0.34	NA	NA	0.050
Acetone	0.18	NA	NA	0.050
Acrolein	<0.050	NA	NA.	0.060
Propionaldehyde	<0.050	NA	NA	0.050
Crotonaldehyde	< 0.050	NA	NA	0.050
Butyraldehyde	<0.050	NA.	NA.	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.060	NA	NA	0.060
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA.	NA.	0.050
o-Tolualdehyde	<0.050	NA	NA.	0.050

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Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

Sample ID: \$16T033629 Collected: 09/24/2016 Received: 09/28/2016 Lab ID: 1627297025 Media: SKC 226-119, Silica Gel (2.4-Method: EPA TO-11A Analyzed: 10/03/2016 Dinitrophenylhydrazine)
Sampling Parameter: Air Volume Not Provided Result Analyte (ug/sample) Result (mg/m²) Result (ppm) RL (ug/sample) < 0.050 0.050 Hexanal NA NA 0.050 2,5-Dimethylbenzaldehyde < 0.050 NA NA.

Sample ID: \$16T033630 Collected: 09/24/2016 Lab ID: 1627297026 Received: 09/28/2016 Method: EPA TO-11A Media: SKC 226-119, Silica Gel (2,4-Analyzed: 10/03/2016 Dinitrophenylhydrazine) Sampling Parameter: Air Volume Not Provided Result Analyte (ug/sample) Result (mg/m²) Result (ppm) RL (ug/sample) Formaldehyde < 0.050 NA NA 0.050 Acetaldehyde 0.36 NA 0.060 NA 0.050 Acetone < 0.050 NA NA 0.050 Acrolein < 0.050 NA NA Propionaldehyde < 0.050 NA NA 0.050 Crotonaldehyde < 0.050 NA NA 0.050 Butyraldehyde < 0.050 NA. NA 0.050 Benzaldehyde 0.050 <0.050 NA NA < 0.050 NA 0.050 Isovaleraldehyde NA Valeraldehyde < 0.050 NA. 0.050 NA m-Tolualdehyde <0.050 NA 0.050 NA p-Tolualdehyde NA NA 0.050 < 0.050 o-Tolualdehyde < 0.050 NA NA 0.050 < 0.050 0.050 Hexanal NA NA

Sample ID: \$16T033631 Lab ID: 1627297027				Collected: 09/24/2016 Received: 09/28/2016
Method: EPA TO-11A	San		226-119, Silica Ge trophenylhydrazine) Volume Not Provid	
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.050
Acetaldehyde	0.47	NA	NA	0.060
Acetone	0.23	NA	NA	0.050

NA

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2,5-Dimethylbenzaldehyde

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< 0.060

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0.050

NA



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Analytical Results				
Sample ID: S16T033631				Collected: 09/24/2016
Lab ID: 1627297027				Received: 09/28/2016
Method: EPA TO-11A		Dini	226-119, Silica Gel (trophenythydrazine)	
		npling Parameter: Air	Volume Not Provided	1
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Acrolein	<0.050	NA.	NA	0.050
Propionaldehyde	< 0.060	NA	NA	0.060
Crotonaldehyde	< 0.050	NA	NA	0.050
Butyraldehyde	<0.060	NA	NA	0.060
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	< 0.060	NA	NA	0.060
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	< 0.060	NA	NA	0.060
Hexanal	< 0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	< 0.050	NA	NA	0.050

Sample ID: S16T033632				Collected: 09/24/2016
Lab ID: 1627297028				Received: 09/28/2016
Method: EPA TO-11A	San		226-119, Silica Gel trophenylhydrazine) Volume Not Provide	
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Formaldehyde	<0.050	NA	NA	0.060
Acetaldehyde	0.42	NA	NA	0.050
Acetone	< 0.060	NA	NA.	0.060
Acrolein	< 0.050	NA	NA	0.050
Propionaldehyde	< 0.060	NA	NA	0.060
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	<0.060	NA	NA	0.060
Benzaldehyde	<0.050	NA	NA.	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA.	NA.	0.050
m-Tolualdehyde	< 0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	< 0.060	NA	NA	0.060
Hexanal	<0.050	NA	NA.	0.050
2,5-Dimethylbenzaldehyde	< 0.050	NA	NA	0.050

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NA

NA

NA

NA

NA

0.050

0.050

0.050

0.050

0.050

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Analytical Results

m-Tolualdehyde

p-Tolualdehyde

o-Tolualdehyde

2,5-Dimethylbenzaldehyde

Hexanal

Sample ID: \$16T033633 Collected: 09/24/2016 Received: 09/28/2016 Lab ID: 1627297029 Method: EPA TO-11A Media: SKC 226-119. Silica Gel (2.4-Analyzed: 10/03/2016 Dinitrophenylhydrazine) Sampling Parameter: Air Volume Not Provided Result Analyte (ug/sample) Result (mg/m²) Result (ppm) RL (ug/sample) Formaldehyde 0.081 NA NA 0.050 Acetaldehyde NA NA 0.060 0.49 Acetone 0.71 NA. NA 0.050 Acrolein < 0.050 NA NA 0.050 Propionaldehyde < 0.050 NA. NA 0.050 0.060 Crotonaldehyde < 0.050 NA NA Butyraldehyde < 0.050 NA 0.050 NA Benzaldehyde < 0.050 NA NA 0.050 0.050 Isovaleraldehyde < 0.050 NA. NA Valeraldehyde < 0.050 NA NA 0.060

Sample ID: \$16T033634 Collected: 09/24/2016 Lab ID: 1627297030 Received: 09/28/2016

NA.

NA

NA

NA

NA

< 0.050

< 0.050

< 0.050

< 0.050

< 0.050

Method: EPA TO-11A Media: SKC 226-119, Silica Gel (2.4- Analyzed: 10/03/2016

Dinitrophenylhydrazine)

Sampling Parameter: Air Volume Not Provided Result Analyte Result (ppm) RL (ug/sample) (ug/sample) Result (mg/m²) Formaldehyde < 0.050 NA. 0.050 NA 0.050 Acetaldehyde 0.47 NA NA Acetone 0.65 NA. NA 0.050 Acrolein < 0.050 NA NA 0.050 0.050 Propionaldehyde < 0.050 NA NA Crotonaldehyde < 0.050 NA NA 0.050 NA. NA 0.050 Butyraldehyde < 0.050 < 0.050 NA 0.050 Benzaldehyde NA Isovaleraldehyde < 0.050 NA NA 0.050 Valeraldehyde < 0.060 NA. NA 0.060 NA NA 0.050 m-Tolualdehyde < 0.050 < 0.050 NA NA 0.050 p-Tolualdehyde o-Tolualdehyde < 0.050 NA. NA 0.050

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Analytical Results

Sample ID: \$16T033634 Collected: 09/24/2016 Received: 09/28/2016 Lab ID: 1627297030 Method: EPA TO-11A Media: SKC 226-119. Silica Gel (2.4-Analyzed: 10/03/2016 Dinitrophenylhydrazine) Sampling Parameter: Air Volume Not Provided Result Analyte (ug/sample) Result (mg/m²) Result (ppm) RL (ug/sample) Hexanal < 0.050 NA NA 0.050 0.060 2,5-Dimethylbenzaldehyde < 0.050 NA NA.

Sample ID: \$16T033635 Collected: 09/24/2016 Lab ID: 1627297031 Received: 09/28/2016 Method: EPA TO-11A Media: SKC 226-119, Silica Gel (2,4-Analyzed: 10/03/2016 Dinitrophenylhydrazine) Sampling Parameter: Air Volume Not Provided Result Analyte (ug/sample) Result (mg/m²) Result (ppm) RL (ug/sample) Formaldehyde < 0.050 NA NA 0.050 Acetaldehyde NA 0.060 0.45 NA Acetone 0.94 NA NA 0.050 Acrolein < 0.050 NA. NA 0.050 Propionaldehyde < 0.050 NA NA 0.050 Crotonaldehyde < 0.050 NA NA 0.050 Butyraldehyde < 0.050 NA. NA 0.050 0.050 Benzaldehyde < 0.050 NA NA < 0.060 0.050 Isovaleraldehyde NA. NA Valeraldehyde < 0.050 NA. 0.050 NA m-Tolualdehyde <0.050 0.050 NA NA NA 0.050 p-Tolualdehyde < 0.050 NA < 0.050 NA 0.050 o-Tolualdehyde NA < 0.050 NA NA 0.050 Hexanal

Sample ID: \$16T033636 Collected: 09/24/2016 Received: 09/28/2016 Lab ID: 1627297032 Method: EPA TO-11A Media: SKC 226-119, Silica Gel (2,4-Analyzed: 10/03/2016 Dinitrophenylhydrazine) Sampling Parameter: Air Volume Not Provided Result Analyte (ug/sample) Result (mg/m²) Result (ppm) RL (ug/sample) Formaldehyde < 0.050 NA. NA 0.050 0.050 Acetaldehyde 0.43 NA NA NA NA 0.050 Acetone 1.3

NA

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2,5-Dimethylbenzaldehyde

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< 0.060

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0.050

NA



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Analytical Results				
Sample ID: S16T033636				Collected: 09/24/2016
Lab ID: 1627297032				Received: 09/28/2016
Method: EPA TO-11A		Dini	226-119, Silica Gel (trophenylhydrazine)	
		npling Parameter: Air	Volume Not Provided	1
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Acrolein	<0.050	NA	NA	0.050
Propionaldehyde	< 0.060	NA	NA	0.060
Crotonaldehyde	< 0.050	NA	NA	0.050
Butyraldehyde	<0.060	NA	NA	0.060
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	< 0.060	NA	NA	0.060
Valeraldehyde	<0.050	NA	NA.	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.060	NA	NA	0.060
Hexanal	< 0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	< 0.050	NA	NA	0.050

Sample ID: S16T033637			Collected: 09/24/2016
Lab ID: 1627297033			Received: 09/28/2016
Method: EPA TO-11A		C 226-119, Silica Ge hitrophenylhydrazine) Volume Not Provid	
Resu Analyte (ug/sample		Result (ppm)	RL (ug/sample)
Formaldehyde 0.2	NA NA	NA.	0.060
Acetaldehyde 0.7	1 NA	NA	0.050
Acetone 1.	.6 NA	NA.	0.060
Acrolein <0.05	0 NA	NA	0.050
Propionaldehyde 0.1	l6 NA	NA	0.060
Crotonaldehyde <0.05	0 NA	NA	0.050
Butyraldehyde 0.2	M NA	NA	0.060
Benzaldehyde <0.05	0 NA	NA.	0.050
Isovaleraldehyde <0.05	NA NA	NA	0.050
Valeraldehyde 0.05	NA NA	NA.	0.050
m-Tolualdehyde <0.05	NA NA	NA	0.050
p-Tolualdehyde <0.05	50 NA	NA	0.050
o-Tolualdehyde <0.05	NA NA	NA	0.060
Hexanal 0.1	7 NA	NA.	0.050
2,5-Dimethylbenzaldehyde <0.05	NA NA	NA	0.050

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Analytical Results

Analytical Results				
Sample ID: \$16T033638				Collected: 09/24/2016
Lab ID: 1627297034				Received: 09/28/2016
Method: EPA TO-11A	San		226-119, Silica Gel (2 trophenylhydrazine) Volume Not Provided	
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.073	NA	NA	0.050
Acetaldehyde	0.67	NA	NA	0.060
Acetone	3.9	NA	NA	0.050
Acrolein	<0.060	NA	NA.	0.060
Propionaldehyde	0.18	NA	NA	0.050
Crotonaldehyde	< 0.060	NA	NA	0.060
Butyraldehyde	0.29	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA.	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.060	NA	NA	0.060
m-Tolualdehyde	< 0.060	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	0.17	NA	NA	0.060
2,5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: S16T033639				Collected: 09/24/2016
Lab ID: 1627297035				Received: 09/28/2016
Method: EPA TO-11A	San		226-119, Silica Gel trophenylhydrazine) Volume Not Provide	
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Formaldehyde	< 0.050	NA	NA	0.050
Acetaldehyde	0.74	NA	NA	0.060
Acetone	5.1	NA	NA	0.050
Acrolein	< 0.050	NA	NA	0.060
Propionaldehyde	0.21	NA	NA	0.050
Crotonaldehyde	< 0.050	NA	NA	0.050
Butyraldehyde	0.27	NA	NA.	0.050
Benzaldehyde	< 0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.060	NA	NA	0.060
m-Tolualdehyde	< 0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	< 0.050	NA	NA	0.050

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Analytical Results

Sample ID: \$16T033639 Collected: 09/24/2016 Received: 09/28/2016 Lab ID: 1627297035 Method: EPA TO-11A Media: SKC 226-119. Silica Gel (2.4-Analyzed: 10/03/2016 Dinitrophenylhydrazine) Sampling Parameter: Air Volume Not Provided Result Analyte (ug/sample) Result (mg/m²) Result (ppm) RL (ug/sample) Hexanal NA NA 0.050 0.14 0.060 2,5-Dimethylbenzaldehyde < 0.050 NA NA.

Sample ID: \$16T033640 Collected: 09/24/2016 Lab ID: 1627297036 Received: 09/28/2016 Method: EPA TO-11A Media: SKC 226-119, Silica Gel (2,4-Analyzed: 10/03/2016 Dinitrophenylhydrazine) Sampling Parameter: Air Volume Not Provided Result Analyte (ug/sample) Result (mg/m²) Result (ppm) RL (ug/sample) Formaldehyde 0.061 NA NA 0.050 Acetaldehyde NA 0.060 0.63 NA Acetone 4.1 NA NA 0.050 Acrolein < 0.050 NA. NA 0.050 Propionaldehyde NA NA 0.050 0.17 Crotonaldehyde < 0.050 NA NA 0.050 Butyraldehyde 0.23 NA. NA 0.050 Benzaldehyde < 0.050 NA NA 0.050 < 0.050 NA 0.050 Isovaleraldehyde NA Valeraldehyde < 0.050 NA. 0.050 NA m-Tolualdehyde <0.050 0.050 NA NA NA NA 0.050 p-Tolualdehyde < 0.050 < 0.050 NA 0.050 o-Tolualdehyde NA 0.11 NA NA 0.050 Hexanal 0.050 2,5-Dimethylbenzaldehyde < 0.060 NA NA

Sample ID: \$16T033641 Collected: 09/24/2016 Received: 09/28/2016 Lab ID: 1627297037 Method: EPA TO-11A Media: SKC 226-119, Silica Gel (2,4-Analyzed: 10/03/2016 Dinitrophenylhydrazine) Sampling Parameter: Air Volume Not Provided Result Analyte (ug/sample) Result (mg/m²) Result (ppm) RL (ug/sample) Formaldehyde 0.088 NA. NA 0.050 0.050 Acetaldehyde 0.63 NA NA NA NA 0.050 Acetone 3.2

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Analytical Results				
Sample ID: S16T033641				Collected: 09/24/2016
Lab ID: 1627297037				Received: 09/28/2016
Method: EPA TO-11A	120	Dinit	226-119, Silica Gel (trophenylhydrazine)	
		npling Parameter: Air	Volume Not Provided	1
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Acrolein	<0.050	NA	NA.	0.050
Propionaldehyde	0.17	NA	NA	0.060
Crotonaldehyde	< 0.050	NA.	NA	0.050
Butyraldehyde	0.24	NA	NA	0.060
Benzaldehyde	<0.050	NA	NA	0.060
Isovaleraldehyde	<0.060	NA	NA	0.060
Valeraldehyde	<0.050	NA	NA	0.050
m-Tolualdehyde	<0.050	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.060	NA	NA	0.060
Hexanal	< 0.050	NA	NA	0.050
2,5-Dimethylbenzaldehyde	< 0.050	NA	NA	0.050

Sample ID: S16T033642				Collected: 09/24/2016
Lab ID: 1627297038				Received: 09/28/2016
Method: EPA TO-11A	San		226-119, Silica Gel trophenylhydrazine) Volume Not Provide	
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.084	NA	NA	0.060
Acetaldehyde	0.60	NA	NA	0.050
Acetone	3.0	NA	NA	0.060
Acrolein	< 0.050	NA	NA	0.050
Propionaldehyde	0.17	NA	NA	0.060
Crotonaldehyde	< 0.050	NA	NA	0.050
Butyraldehyde	0.22	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA.	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.050	NA.	NA.	0.050
m-Tolualdehyde	<0.060	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	< 0.060	NA	NA	0.050
Hexanal	< 0.050	NA	NA.	0.050
2,5-Dimethylbenzaldehyde	< 0.050	NA	NA.	0.050

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Analytical Results

Analytical Results				
Sample ID: S16T033643				Collected: 09/24/2016
Lab ID: 1627297039				Received: 09/28/2016
Method: EPA TO-11A	San		226-119, Silica Gel (trophenylhydrazine) Volume Not Provided	
Analyte	Result (ug/sample)	Result (mg/m²)	140000000000000000000000000000000000000	RL (ug/sample)
Formaldehyde	0.074	NA	NA	0.050
Acetaldehyde	0.52	NA	NA	0.060
Acetone	3.1	NA	NA	0.050
Acrolein	<0.060	NA	NA.	0.060
Propionaldehyde	0.17	NA	NA	0.050
Crotonaldehyde	< 0.060	NA	NA	0.060
Butyraldehyde	0.24	NA	NA	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.060	NA	NA.	0.060
m-Tolualdehyde	< 0.060	NA	NA	0.050
p-Tolualdehyde	<0.050	NA	NA	0.050
o-Tolualdehyde	<0.050	NA	NA	0.050
Hexanal	<0.050	NA	NA	0.050
2.5-Dimethylbenzaldehyde	<0.050	NA	NA	0.050

Sample ID: S16T033644				Collected: 09/24/2016
Lab ID: 1627297040				Received: 09/28/2016
Method: EPA TO-11A	San		226-119, Silica Gel rophenylhydrazine) /olume Not Provide	
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Formaldehyde	0.078	NA	NA	0.050
Acetaldehyde	0.63	NA	NA	0.050
Acetone	2.8	NA	NA	0.050
Acrolein	<0.050	NA	NA.	0.060
Propionaldehyde	0.16	NA	NA	0.050
Crotonaldehyde	<0.050	NA	NA	0.050
Butyraldehyde	0.20	NA.	NA.	0.050
Benzaldehyde	<0.050	NA	NA	0.050
Isovaleraldehyde	<0.050	NA	NA	0.050
Valeraldehyde	<0.060	NA	NA	0.060
m-Tolualdehyde	< 0.050	NA	NA	0.050
p-Tolualdehyde	< 0.050	NA	NA	0.050
o-Tolualdehyde	< 0.050	NA	NA	0.050

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Analytical Results

Sample ID: \$16T033644 Lab ID: 1627297040					d: 09/24/2016 d: 09/28/2016
Method: EPA TO-11A	San		226-119, Silica Ge trophenylhydrazine) Volume Not Provid		d: 10/03/2016
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)	
Hexanal	< 0.050	NA	NA	0.050	
2,5-Dimethylbenzaldehyde	< 0.050	NA	NA	0.060	

Comments

Quality Control: EPA TO-11A - (HBN: 177647)

LMB 520823 was used to media correct LCS 520824, LCSD 520825 and field samples for Acetone only.

520824 LCS/520825 LCSD; All of the analytes recovered within +/- 10% of the target concentration. A few analytes are outside of established limits but within general laboratory limits. No further action was taken. Historical limits have been submitted for

Quality Control: EPA TO-11A - (HBN: 177648)

LMB 520826 was used to media correct LCS 520827, LCSD 520828 and field samples 021-040 for Acetone only.

LCS 520827/LCSD 520828: All of the analytes recovered within +/- 10% of the target concentration. A few analytes are outside of established limits but within general laboratory limits. No further action was taken. Historical limits have been submitted for review.

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
EPA TO-11A	/S/ Emilie Pratt 10/06/2016 15:57	/S/ Christopher Winter 10/06/2016 16:53

Laboratory Contact Information

ALS Environmental Phone: (801) 266-7700 960 W Levoy Drive Email: alslt.lab@ALSGlobal.com Salt Lake City, Utah 84123 Web: www.alsslc.com



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General Lab Comments

The results provided in this report relate only to the items tested.

Samples were received in acceptable condition unless otherwise noted.

Samples have not been blank corrected unless otherwise noted.

This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ANAB (DoD ELAP)	ADE-1420	http://www.anab.org/accredited-organizations/
	Utah (NELAC)	DATA1	http://health.utah.gov/lab/lab/mp/
	Nevada	UT00009	http://ndep.nv.gov/bsdw/labservice.htm
	Oldahoma	UT00009	http://www.deg.state.ok.us/CSDnew/
	Iowa	IA# 376	http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx
	Texas (TNI)	T104704456-11-1	http://www.tceq.texas.gov/field/qa/lab_accred_certif.html
	Washington	C596-16	http://www.ecy.wa.gov/programs/eap/labs/index.html
	Kenses	E-10416	http://www.kdheks.gov/lipo/index.html
Industrial Hygiene	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org
	Washington	C596-16	http://www.ecy.wa.gov/programs/eap/labs/index.html
Lead Testing:			
CPSC	ANAB (ISO 17025, CPSC)	ADE-1420	http://www.anab.org/accredited-organizations/
Soil, Dust, Paint ,Air	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org
Dietary Supplements	ACLASS (ISO 17025)	ADE-1420	http://www.adasscorp.com

Definitions

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LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.

LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.

ND = Not Detected, Testing result not detected above the LOD or LOQ.

NA = Not Applicable.

" No result could be reported, see sample comments for details.

< This testing result is less than the numerical value.

() This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

ALS Environmental certifies this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this report has been electronically authorized by the following laboratory representative:

Rand Potter, Project Manager, ALS Environmental

1627297 - Page 26 of 34 Tru, 10/06/16 4:55 PM IHREP-V12.3



Analysis Information

Workorder: 1627297

Preparation: NA Limits: Historical/Performance Analysis: EPA TO-11A

Batch: ILC/12748 (HBN: 177647) Analyzed By: Emilie Pratt Basis: ALS Laboratory Group Batch: NA

Prepared By: NA

LMB: 520828 Analyzed: 10/03/2016 00:00

Analyte	Result	MDL	RL
Formaldehyde	ND	NA.	0.0500
Acetaldehyde	ND	NA	0.0500
Acetone	0.0740	NA	0.0500
Acrolein	ND	NA	0.0500
Propionaldehyde	ND	NA	0.0500
Crotonaldehyde	ND	NA	0.0500
Butyraldehyde	ND	NA	0.0500
Benzaldehyde	ND	NA	0.0500
Isovaleraldehyde	ND	NA	0.0500
Valeraldehyde	ND	NA	0.0500
m-Tolualdehyde	ND	NA	0.0500
p-Tolualdehyde	ND	NA	0.0500
o-Tolualdehyde	ND	NA	0.0500
Hexanal	ND	NA	0.0500
2,5-Dimethylbenzaldehyde	ND	NA.	0.0500

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 520824 Analyzed: 10/03/2016 00:00 Dilution: 1 LCSD: 520825 Analyzed: 10/03/2016 00:00 Dilution: 1

Units: ug/sample						Units: u	g/sample			
Analyte	Result	Target	% Rec	QCL	imits	Result	% Rec	RPD	QCLI	mits
Formaldehyde	2.90	3.00	96.5	87.8	116.8	2.97	99.0	2,52	0.0	20.0
Acetaldehyde	2.90	3.00	96.7	94.7	110.5	2.98	99.2	2,59	0.0	20.0
Acetone	3.02	3.00	101	69.2	119.9	3.18	106	5.23	0.0	20.0
Acrolein	2.86	3.00	95.3	83.5	120.2	2.96	98.6	3.41	0.0	20.0
Propionaldehyde	2.82	3.00	93.9	92.2	117.2	2.90	96.6	2.90	0.0	20.0
Crotonaldehyde	2.88	3.00	96.0	93.1	114,8	2.86	95.4	0.557	0.0	20.0
Butyraldehyde	2.74	3.00	91.2	86.6	120.8	2.87	95.6	4.75	0.0	20.0
Benzaldehyde	2.86	3.00	* 95.5	96.0	112.3	2.92	97.4	1.97	0.0	20.0
Isovaleraldehyde	2.96	3.00	98.6	95.4	121.8	3.10	103	4.82	0.0	20.0
Valeraldehyde	3.06	3.00	102	85.3	120.4	3.20	107	4.60	0.0	20.0
m-Tolualdehyde	2.80	3.00	93.4	80.9	118.6	2.88	95.9	2.64	0.0	20.0
p-Tolualdehyde	2.78	3.00	92.8	83.5	122.2	2.80	93.2	0.466	0.0	20.0
o-Tolualdehyde	2.82	3.00	93.9	91.6	111.4	2.93	97.6	3.83	0.0	20.0
Hexanal	3.09	3.00	103	85.4	127.6	3.14	105	1.84	0.0	20.0
2,5-Dimethylbenzaldehyde	2.87	3.00	* 95.5	99.6	118.7	2.82	8 94.1	1.48	0.0	20.0

QCS V4.1 Page 1 of 4 Thursday, October 06, 2016 1627297 - Page 27 of 34



Analysis Information

Workorder: 1627297

Limits: Historical/Performance Preparation: NA Analysis: EPATO-11A

Basis: ALS Laboratory Group Batch: NA Batch: ILC/12748 (HBN: 177647)

Prepared By: NA Analyzed By: Emilie Pratt

Comments

LMB 520823 was used to media correct LCS 520824, LCSD 520825 and field samples for Acetone only.

520824 LCS/520825 LCSD: All of the analytes recovered within */- 10% of the target concentration. A few analytes are outside of established limits but within general laboratory limits. No turther action was taken. Historical limits have been submitted for review.

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review	
/S/ Emilie Pratt	/S/ Christopher Winter	
10/05/2016 15:42	10/06/2016 10:34	

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits

▲ - Sample result is greater than 4 times the spike added

Sample and Matrix Duplicate less than 5 times the reporting limit.

· Result is above the calibration range

RPD - Relative % Difference (Spike / Spike Duplicate)

ND - Not Detected (U - Qualifier also flags analyte as not detected)

NA - Not Applicable

QC results are not adjusted for moisture correction, where applicable



Analysis Information

Workorder: 1627297

Preparation: NA Limits: Historical/Performance Analysis: EPA TO-11A

Batch: ILC/12749 (HBN: 177648) Analyzed By: Emilie Pratt Basis: ALS Laboratory Group Batch: NA

Prepared By: NA

LMB: 520826 Analyzed: 10/03/2016 00:00

Analyte	Result	MDL	RL
Formaldehyde	ND	NA.	0.0500
Acetaldehyde	ND	NA	0.0500
Acetone	0.124	NA	0.0500
Acrolein	ND	NA	0.0500
Propionaldehyde	ND	NA	0.0500
Crotonaldehyde	ND	NA	0.0500
Butyraldehyde	ND	NA	0.0500
Benzaldehyde	ND	NA	0.0500
Isovaleraldehyde	ND	NA	0.0500
Valeraldehyde	ND	NA	0.0500
m-Tolualdehyde	ND	NA	0.0500
p-Tolualdehyde	ND	NA	0.0500
o-Tolualdehyde	ND	NA	0.0500
Hexanal	ND	NA.	0.0500
2,5-Dimethylbenzaldehyde	ND	NA	0.0500

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 520827 Analyzed: 10/03/2016 00:00 Dilution: 1

LUSU:	27/070
Analyzed:	10/03/2016 00:00
Dilution:	1

Units: ug/sample						Units: u	g/sample			
Analyte	Result	Target	% Rec	QCL	imits	Result	% Rec	RPD	QCL	mits
Formaldehyde	2.82	3.00	94.1	87.8	116.8	2.95	98.2	4.26	0.0	20.0
Acetaldehyde	2.90	3.00	96.8	94.7	110.5	2.98	99.4	2.68	0.0	20.0
Acetone	3.03	3.00	101	69.2	119.9	3.20	107	5.42	0.0	20.0
Acrolein	2.82	3.00	94.0	83.5	120.2	2.92	97.3	3.45	0.0	20.0
Propionaldehyde	2.84	3.00	94.5	92.2	117.2	2.92	97.2	2.75	0.0	20.0
Crotonaldehyde	2.88	3.00	95.3	93.1	114,8	2.91	97.1	1.84	0.0	20.0
Butyraldehyde	2.74	3.00	91.4	86.6	120.8	2.89	96.5	5.39	0.0	20.0
Benzaldehyde	2.82	3.00	# 94.1	96.0	112.3	2.91	96.9	3.00	0.0	20.0
Isovaleraldehyde	3.00	3.00	99.9	95.4	121.6	3.02	101	0.731	0.0	20.0
Valeraldehyde	3.14	3.00	105	85.3	120.4	3.19	106	1.42	0.0	20.0
m-Tolualdehyde	2.77	3.00	92.3	80.9	118.6	2.80	93,4	1.26	0.0	20.0
p-Tolualdehyde	2.80	3.00	93.3	83.5	122.2	2.89	96.3	3.16	0.0	20.0
o-Tolualdehyde	2.91	3.00	97.0	91.6	111.4	3.01	100	3.48	0.0	20.0
Hexanal	3.08	3.00	103	85.4	127.6	3.14	105	1.93	0.0	20.0
2,5-Dimethylbenzaldehyde	2.74	3.00	* 91.4	99.6	118.7	2.76	92.1	0.763	0.0	20.0

QCS V4.1 Page 3 of 4 Thursday, October 08, 2016 1627297 - Page 29 of 34



Analysis Information

Workorder: 1627297

Limits: Historical/Performance Analysis: EPATO-11A Preparation: NA

Basis: ALS Laboratory Group Batch: NA Batch: ILC/12749 (HBN: 177648) Analyzed By: Emilie Pratt Prepared By: NA

Comments

LMB 520826 was used to media correct LCS 520827; LCSD 520828 and field samples 021-040 for Acetone only.

LCS 520827A_CSD 520828. All of the analytes recovered within +/- 10% of the target concentration. A few analytes are outside of established limits but within general laboratory limits. No turther action was taken. Historical limits have been submitted for review.

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review	
/S/ Emilie Pratt	/S/ Christopher Winter	
10/06/2016 15:57	10/08/2016 16:53	

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits

▲ - Sample result is greater than 4 times the spike added

Sample and Matrix Duplicate less than 5 times the reporting limit.

· Result is above the calibration range

RPD - Relative % Difference (Spike / Spike Duplicate)

ND - Not Detected (U - Qualifier also flags analyte as not detected)

QC results are not adjusted for moisture correction, where applicable

7 7	1627297				3	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	YSIS REQUEST	Page	1 06 6
Collector					Contact Requestor	AL Joseph	Telephone No.373-6861	MSIN FAX	372-1078
SAF No.					Sample Ordin CATHLDGE BOLCALTOR	NOWING STATES	Purchase Order/Charge Code 203003/C820		
Project Tide	THE STORE				Lapbooki Wark Package No.		Signinol3	100	TOP
Shipped To (Lat.)	(#)				Method of Shipment			8009 033	8403
Protection at A.					Data Tunspound	pa.	Parts and Return No. 4436	367	
Sample No.	Cidel	Ŀ	Date	Time	No.Type Container		Sample Analysis		Preservative
-	8167933605	\$	03/23/16		STLICA SEE PER	Aldehyde 16-68635-8-8835-877 - 1			25C or low
2	\$162933606	\$	91/11/60		SILICA SHE	Aldehyde 16-08635-9-3835-38 .			25C or low
30	816703607	N/A	09/23/36		SILICA GEL	Aldebyes 16-08 635-8-81ANA			25C or 18w
7	8161033608	ğ	09/23/16		SILICA GEL	Aldehyde 16-08635-8-Blaxez .	/		25C or low
2	8187033609	ğ	09/23/16		SIEICA GEE	Aldehyde 16-08535-8-827-A .			250 or low
و	8161033610	ğ	09/23/36		SILICA GEC	Aldehyde 16-08635-8-877-8 , .			250 or low
1	8167033611	\$	09/23/16		SIRICY ORF	Aldehyde 16-08635-8-Err-C		**	25C or low
6	8367033612	ß	09/23/36		SILICA SEL	Aldebyde 16-08635-8-827-0			25C or low
0	5167033613	¢	08/23/26		SILICA GEL	Aldehyde 16-08633-8-KFF-8			250 or low
٩	8167033614	g	VA 09/23/26		SILICA GEL	Aldehyde 16-01633-1-277-F			250 or low
POSSIBLE SA EPA TO-LIA	POSSIBLE SAMPLE HAZARDS/REDANNOS (List all lorsion vasitos) EPA. TO-LIA.	Will .	HYS (List all K	Delva was) sosw	FREGAL MASTRACOTONS Send Assults to Carl Ereald IV and Greeg Sonsian Carl W Mounidation and Gregorysenialadel.gov and Gregorysenialadel.gov see 30% for email Release 9 Reference 9 Reference 9 Reference 9 Reference 9	and IV and Greg see 50% for email	Hod Time	
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6					5			Page 2 of	4 10
Collector					Confect/Requestion		Talephone No.373-6861	MSSN F6-05 FAX	372-1878
SAF No.		1			Sample Origin		Purchase Orden'Charge Code 250003/0829		
Project Title	-				Logbook Work Package No.	a No.	Co Chesting	Temp	Tac
Shipped To (Lab)	de contract	-			Method of Shipmont		ģ	POOS 0327	8463
Pretocol					Dota Tumaround 20 pars		Parts and Return No.	41367	
Sample No.	Cabio	Ŀ	Date	Ē	No/Type Container	Sample Analysis	nalysis		Preservetivo
=	819203318	8	VA 09/23/16		SILICA GRL	Aldehyde 16-08635-2-537-5 ;			25C or low
- 21	\$160033616	\$	09/23/16		SILICA GILL	Aldehyde 16-08635-8-277-E .			25c or low
13	\$167033617	2	09/23/26		SILLICA GEL	Aldebyde 16-08635-8-23-A .			250 or low
141	8160033618	Z,	09/23/16		SILICA 685	Aldebyde 16-08638-0-28-2			250 or low
T	9167633619	\$	08/33/36	-	STILTCA SELL	Aldebyde 16-08635-8-DS-C .			150 or low
12	8167033620	5	09/23/16		SILICA OEL	Aldehyde 16-DB635-B-IN-D ,			150 or 10w
2 5	\$167033621	5			SILICA GEL	Aldehyde 16-08635-8-18-2			250 or -tow
×	\$162013622	5	VA 59/23/16		SILICA OEL	Aldehyde 16-08635-8-IN-T			250 or low
0.0	S162033623	5	99/23/16		SILLICA GEL	Aldehyde 16-08635-8-15-0 ,			250 or low
20	**********	5	21/25/16		STEETER GEE	Aldehyde 16-08635-8-120-H .			250 or low
POSSIBLE SAMPLEHAZ	MPLEHAZARDSI	A SERVICE A SERV	Rics (Ust all V	GROWN WELL	NEDS/REMARCS (Lat all known washes) MSDS 🔾 Yes	Yes No SPECALINSTRUCTIONS Sand Results to Carl Envald IV and Goog Scenlan Scenlan Scenlan Scenlan Sergery L. Scanlandel. gov and Stropery L. Scanlandel. gov see 30% for enail Madescane Contract # 35502	d IV and Groy ee sow for enail	Hold Time	
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Collector					CHA	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	ISIS REQUEST	Page 3 of	3 00 4
DOUGH.					Contact/Requesto		Telephone Nowen co.c.	USIN FAX	FAX. 373-1070
2000000					CARL BOOKS IV		Pusthase Order/Charge Coda	20-02	
SAF Na.					CARTAINGE DIPALIMETOR		623623/CH26		
Project Title					Legbool/ Work Package No.		to Chest Na. W-S-013	113 iemp. O	OU TOE
Shipped To (Lab)					Method of Shipmont		BEI OF LEAST STRING. SEOS 0227	80090227	8403
Protocol S/A					Data Tumaround		Parts and Return No. 5	41367.	
e No.	Clabio		Date	Tere	No./Type Container	Sample Analysis	265		Preservative
1	3162033625	5	09/24/16		SILICA GEL	Aldehyda 15-08616-8-3ASE-52F /			150 or 10w
	\$142033626 V	s.	09/24/16		SILICA OEL	Aldehyde 15-08635-8-SASS-ER .			25C or lev
		W	09/24/18		SILICA GEL	Aldehyds 16-08536-8-RIMSECTF :			15C or lew
	8162033628	5	VA 09/24/16		SILICA GEL	Aldehyde 16-08636-8-MIANN-IN ,			15C or low
	\$162033629 V	5	09/24/26		SILICA OSL	Aldehyds 16-08636-8-827-A :			15c or low
	\$16703363e	V.	91/34/46		SIESCA GEE	Aldehyde 16-08636-6-EFF-8 .			250 or low
	816793833	NA.	VA 09/24/16		SIRICH GHE	Aldehyde 16-08636-8-mrr-c .			25c or low
	8167033632	ď	91/32/60		SILICA GEL	Aldehyde 16-01636-b-Err-o			25C or low
	8167033633	B	09/24/16		SIRICA SEL	Aldehyde 16-08636-5-Erf-8 .			25C or 10%
	5167033634	1	VA. 05/24/26		STRICK ORL	Aldebyde 16-04636-8-KTF-F			25C ex 10w
POSSIBLE SAMPLE)	WZASDSRE	WW.	S (List all k	Mark myon	POSSIBLE SAMPLE HAZARDSREMARKS (List all known wested) MSDS O Yes	SPECIAL INSTRUCTIONS formal Benealts to Carl Steedid 19 and Greg formal and Carl Steedids: gov and formal Steedids: gov and formal Steeding Steedids: gov and formal Steeding	id IV and Greg see 50W for enail	. Hold Time	
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Reinquigned Piddeshow WRPS	2) Lilie	1/2	radial.	1/2/8	1000	Received By C FEDEX	DateTime	= Sold = Studge	M - Wpe
Reinquined By	0			-		Wednesday Warrenge Schwille	Shehow 12497	W = Water	V. = Vegelation VA. = Vapor X. = Other
Reinquished By					Date/Time Ne	sectivity by .	N. St. St. St.		
PINAL SAMPLE DISPOSAL DISPOSITION	sal Nethod (e.	4	flum to cust	oaser, per	I Nettod (e.g., Natum to customer, per lab proceptite, used in process)	process) Diapesed By	i	154/16 15:2	DataTime (5:20

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Collector Sake No. Project Title Collector Contractor Supplied Title Collector Supplied Title								
Selection Selection SER No. Project Title Submission selection			-				Page 4 of	5 10
SAF No. (7) CAN PROPERTIES CANTINGS DALMATOR School To disk)	1			Contact Requestor	00	Telephone No.373-6863	MSBI 26-03	FAX 372-1878
Project Title CANTELDES DALMITOS Stelenad To disk)	1			Sample Origin CARTAIDES ENCONTROS	MERCH	Purchase Ordes/Charge Code 203003/CR20		
Shipped To digital				Logbook Work Package Na.	accage No.	Ica Chest No.	Temp.	STO
The same of the sa				Method of Shipment	ant	Bill of Lading Mr Bill Sh. So.	0	7 8403
Prefacel N/A		3		Data Tumanound		Parts and Return No. —	41,36%	
Sample No. Lab ID		Dote	Time	No./Type Container	Serrigi	Sample Analysis		Preservative
3 (sietosasas v	V.A.	97/52/60		SILICA OSE	Aldebyda 16-08636-8-827-9 *			25C or low
v 963666674 ZE	WA D	32/24/16		SILICA GEL	Aldehyde 16-08536-8-3FF-E '			15c or low
55 steressest 4	N.	91/52/60		SILICA OSE	Aldehyde 16-78 636-6-15-A .			25G or low
8167033638	W.	97/24/18		SILICA GRE	Aldehyde 16-08536-8-19-8 .			25C or low
75 SIGNOTORIS V	VA C	91/17/60		SILICA GIL	Aldehyde 16-08516-3-13-C .			25¢ or 10w
8167033640	UA G	91/12/60		SIRICA GRE	Aldehyde 16-08636-8-IN-D			250 or low
SISTOMBES	4	98/24/26		SILICA GHL	Aldehyde 16-08636-8-32-3			25C or low
8162033642	5	09/34/36		SILICA GEL	Aldehgyde 16-08 636-8-28-T ,			25C or 10W
8167033643	8	09/27/16		SILICA GEL	Aldehyde 16-08636-8-136-G .			25C or low
UN 8167033644 V	0 4	09/24/36		SILICA GEL	Aldebyde 16-08635-8-EM-E			250 er lav
POSSIBLE SAMPLE HAZANDSHIBIANGS (List all brown vasital)	1884	(प्रमान्त्र) इ.स.च्या	Services was	O sosw	SPECIAL MASTRALCTIONS Seal Results to Carl Reveild IV and Grey Sealan Schulder. Toward Carl W BoundSpir. Tow and Garl W Schulder. Tow and Garl W Schulder. Toward Sealane S Reserves S Results S Results S Reserves S Reserves S Reserves S Results S Reserves S Results S	aid IV and Greg see 50% for email	Hold Time	
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Report Date: October 05, 2016

Phone: (509) 373-1262

E-mail: robert_w_sosa@rl.gov

20162973

Workorder: 34-1627295

Client Project ID: Washington River Protection

So

Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

Robert (Buddy) Sosa Washington River Protection So PO Box 850, MSIN T6-02

Richland, WA 99352

Collected: 09/23/2016 Sample ID: \$16T033685 Lab ID: 1627295001 Received: 09/28/2016 Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided Method: NIOSH 1024 Analyzed: 10/04/2016 Result Analyte Result (mg/m²) Result (ppm) RL (mg/sample) (mg/sample) 1,3-Butadiene < 0.0010 NA

Sample ID: \$16T033686 Collected: 09/23/2016 Received: 09/28/2016 Lab ID: 1627295002 Method: NIOSH 1024 Media: SKC 226-37 Sorbent Tube Analyzed: 10/04/2016 Sampling Parameter: Air Volume Not Provided Result Analyte (mg/sample) Result (mg/m²) Result (ppm) RL (mg/sample) < 0.0010 1,3-Butadiene NA NA

Sample ID: \$16T033687 Collected: 09/23/2016 Lab ID: 1627295003 Received: 09/28/2016 Method: NIOSH 1024 Media: SKC 226-37 Sorbent Tube Analyzed: 10/04/2016 Sampling Parameter: Air Volume Not Provided Result Analyte Result (ppm) RL (mg/sample) (mg/sample) Result (mg/m²) 1,3-Butadiene < 0.0010 NA NA 0.0010

> ADDRESS 960 West LeVoy Drive, Salt Lake City, Utah, 84123 USA | PHONE +1801266 7700 | FAX +1801268 9992 ALS GROUP USA, CORP. An ALS Limited Company

Environmental J

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IHREP-V123



Workorder: 34-1627295

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analy	at the second	D	44.

Sample ID: \$16T033688				Collecte	d: 09/23/2016
Lab ID: 1627295004				Receive	d: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided				d: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
1,3-Butadiene	< 0.0010	NA	NA	0.0010	

lethod: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			Analyzed: 10/04/2016
lethod: NIOSH 1024				Analyzed: 10/04/2016

Sample ID: \$16T033690 Lab ID: 1627295006				Collected: 09/23/2010 Received: 09/28/2010
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Analyzed: 10/0 Sampling Parameter: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA.	0.0010

Sample ID: \$16T033691 Lab ID: 1627295007					ed: 09/23/2016 ed: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Analyzed: 10/04/ Sampling Parameter: Air Volume Not Provided				
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
1,3-Butadiene	<0.0010	NA.	NA	0.0010	

Sample ID: \$16T033692				Collected	: 09/23/2016
Lab ID: 1627295008				Received	: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided				1: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
1,3-Butadiene	<0.0010	NA NA	NA	0.0010	

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Workorder: 34-1627295

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

Sample ID: \$16T033693				Collecte	d: 09/23/2016
Lab ID: 1627295009				Receive	d: 09/28/2016
Method: NIOSH 1024	San		d: 10/04/2016		
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
1,3-Butadiene	< 0.0010	NA	NA	0.0010	

Sample ID: \$16T033694 Lab ID: 1627295010				Collected: 09/23/2016 Received: 09/28/2016
Method: NIOSH 1024	San	ube Analyzed: 10/04/2016 led		
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: \$16T033695 Lab ID: 1627295011				Collected: 09/23/2016 Received: 09/28/2016
Method: NIOSH 1024	San	ube Analyzed: 10/04/2016 led		
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA.	NA	0.0010

Sample ID: \$16T033696				Collec	ted: 09/23/2016
Lab ID: 1627295012				Receiv	ved: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided				zed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
1,3-Butadiene	<0.0010	NA NA	NA	0.0010	

Sample ID: 046T022607				Cellantad	: 09/23/2016
Sample ID: \$16T033697					
Lab ID: 1627295013				Received	: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided				: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
1.3-Butadiene	< 0.0010	NA NA	NA.	0.0010	

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Workorder: 34-1627295

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

Sample ID: \$16T033698				Collecte	1: 09/23/2016
Lab ID: 1627295014				Receive	1: 09/28/2016
Method: NIOSH 1024	San		d: 10/04/2016		
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
1,3-Butadiene	< 0.0010	NA	NA	0.0010	

Sample ID: \$16T033699 Lab ID: 1627295015				Collected: 09/23/201 Received: 09/28/201
Method: NIOSH 1024	San	ube Analyzed: 10/04/2016		
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: \$16T033700 Lab ID: 1627295016				Collected: 09/23/2010 Received: 09/28/2010
Method: NIOSH 1024	San	Media: SKO	226-37 Sorbent To	ube Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	< 0.0010	NA.	NA.	0.0010

Sample ID: \$16T033701				4,000,000	ted: 09/23/2016
Lab ID: 1627295017				Recei	ved: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided				zed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
1,3-Butadiene	<0.0010	NA NA	NA	0.0010	

Sample ID: \$16T033702				Collected	1: 09/23/2016
Lab ID: 1627295018				Received	1: 09/28/2016
Method: NIOSH 1024	San		1: 10/04/2016		
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
1,3-Butadiene	<0.0010	NA NA	NA	0.0010	

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Workorder: 34-1627295

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

Sample ID: \$16T033703				Collected	: 09/23/2016
Lab ID: 1627295019				Received	1: 09/28/2016
Method: NIOSH 1024	San		1: 10/04/2016		
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
1,3-Butadiene	< 0.0010	NA.	NA	0.0010	

Sample ID: \$16T033704 Lab ID: 1627295020				Collected: 09/23/2016 Received: 09/28/2016
Method: NIOSH 1024	San	ube Analyzed: 10/04/2016		
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T033705				Collected	1: 09/23/2016
Lab ID: 1627295021				Received	1: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided				1: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
1,3-Butadiene	<0.0010	NA NA	NA.	0.0010	

Sample ID: \$16T033706				Collect	ed: 09/23/2016
Lab ID: 1627295022				Receiv	ed: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Paramoter: Air Volume Not Provided				ed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	C#3
1,3-Butadiene	<0.0010	NA	NA	0.0010	

Sample ID: S16T033707				Collected	1: 09/23/2016
Lab ID: 1627295023				Receive	1: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			,	d: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
1,3-Butadiene	<0.0010	NA NA	NA.	0.0010	

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Workorder: 34-1627295

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

Sample ID: \$16T033708				Collecte	1: 09/23/2016
Lab ID: 1627295024				Receive	1: 09/28/2016
Method: NIOSH 1024	San	Media: SKO	226-37 Sorbent To Volume Not Provid		d: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
1,3-Butadiene	< 0.0010	NA	NA	0.0010	

Sample ID: \$16T033709 Lab ID: 1627295025				Collected: 09/23/201/ Received: 09/28/201/
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			ube Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: \$16T033710 Lab ID: 1627295026				Collected: 09/23/2016 Received: 09/28/2016
Method: NIOSH 1024	San	Media: SKO	226-37 Sorbent Tu	
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA.	NA	0.0010

Sample ID: \$16T033711				Collected: 0	09/23/2016
Lab ID: 1627295027				Received: 0	09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			the same of the same of	10/04/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
1,3-Butadiene	<0.0010	NA NA	NA	0.0010	

1,3-Butadiene	<0.0010	NA NA	NA	0.0010	
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
Method: NIOSH 1024	San	Media: SKC opling Parameter: Air \	226-37 Sorbent To Volume Not Provid		d: 10/04/2016
Sample ID: \$16T033712 Lab ID: 1627295028					d: 09/23/2016 d: 09/28/2016

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Workorder: 34-1627295

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

Sample ID: \$16T033713				Collecte	d: 09/23/2016
Lab ID: 1627295029				Receive	d: 09/28/2016
Method: NIOSH 1024	San	Media: SKC	226-37 Sorbent To Volume Not Provid		d: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
1,3-Butadiene	< 0.0010	NA.	NA	0.0010	

Sample ID: \$16T033714 Lab ID: 1627295030				Collected: 09/23/2016 Received: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: \$16T033715 Lab ID: 1627295031				Collected: 09/23/2010 Received: 09/28/2010
Method: NIOSH 1024	San	Media: SKO	226-37 Sorbent Tu	ube Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T033716				Collec	ted: 09/23/2016
Lab ID: 1627295032				Receiv	ved: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided				zed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
1,3-Butadiene	<0.0010	NA	NA	0.0010	

1,3-Butadiene	< 0.0010	NA NA	NA	0.0010	
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
Method: NIOSH 1024	San	Media: SKC opling Parameter: Air \	226-37 Sorbent To Volume Not Provid		d: 10/04/2016
Sample ID: S16T033717 Lab ID: 1627295033					d: 09/23/2016 d: 09/28/2016

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Workorder: 34-1627295

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

Sample ID: \$16T033718				Collected	09/23/2016
Lab ID: 1627295034				Received	: 09/28/2016
Method: NIOSH 1024	San	Media: SKO	226-37 Sorbent Tu Volume Not Provid		: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
1,3-Butadiene	< 0.0010	NA	NA	0.0010	

	San Result	pling Parameter: Air	olume Not Provid	led
Method: NIOSH 1024			226-37 Sorbent Tu	
Lab ID: 1627295035				Received: 09/28/2016
Sample ID: \$16T033719				Collected: 09/23/2016

Sample ID: \$16T033720				Collected	1: 09/23/2016
Lab ID: 1627295036				Receive	1: 09/28/2016
Method: NIOSH 1024	San	Media: SKC	226-37 Sorbent Tu Volume Not Provid		d: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
1,3-Butadiene	< 0.0010	NA	NA.	0.0010	

			4,000	ed: 09/23/2016
			Keceiv	ed: 09/28/2016
¢				ed: 10/04/2016
	ipling Parameter: Air	volume Not Provid	led	
(mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
<0.0010	NA NA	NA	0.0010	
	Result (mg/sample)	Sampling Parameter: Air \ Result (mg/sample) Result (mg/m')	Sampling Parameter: Air Volume Not Provid Result (mg/sample) Result (mg/m²) Result (ppm)	Receive Media: SKC 226-37 Sorbent Tube Analyz Sampling Parameter: Air Volume Not Provided Result (mg/m²) Result (ppm) RL (mg/sample)

1,3-Butadiene	< 0.0010	NA NA	NA	0.0010	
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
Method: NIOSH 1024	San	Media: SKC opling Parameter: Air \	226-37 Sorbent To folume Not Provid		d: 10/04/2016
Sample ID: S16T033722 Lab ID: 1627295038					d: 09/23/2016 d: 09/28/2016

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Workorder: 34-1627295

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

Sample ID: \$16T033723				Collected	: 09/23/2016
Lab ID: 1627295039				Received	: 09/28/2016
Method: NIOSH 1024	San	Media: SKC	226-37 Sorbent To Volume Not Provid		1: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)	
1,3-Butadiene	<0.0010	NA.	NA.	0.0010	

Sample ID: \$16T033724				Collecte	d: 09/23/2016
Lab ID: 1627295040				Receive	d: 09/28/2016
Method: NIOSH 1024	San	Media: SKO	226-37 Sorbent To Volume Not Provid		d: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
1,3-Butadiene	<0.0010	NA.	NA.	0.0010	

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
	/S/ Fred Rejali	/S/ Thomas J. Masoian
NIOSH 1024	10/04/2016 20:14	10/05/2016 08:22

Laboratory Contact Information

ALS Environmental 960 W Levoy Drive Salt Lake City, Utah 84123

Phone: (801) 266-7700 Email: alstt.lab@ALSGlobal.com Web: www.alsslc.com



Workorder: 34-1627295

Client Project ID: Washington River Protection

Purchase Order: 55502 Rel9 Project Manager: Rand Potter

General Lab Comments

The results provided in this report relate only to the items tested. Samples were received in acceptable condition unless otherwise noted.

Samples have not been blank corrected unless otherwise noted.

This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ANA8 (DoD ELAP) Utah (NELAC) Nevada Oklahoma Iowa Texas (TNI) Washington Kansas	ADE-1420 DATA1 UT00009 UT00009 IA# 376 T104704456-11-1 C596-16 E-10416	http://www.anab.org/accredited-organizations/ http://health.utah.gov/lab/lab/mp/ http://health.utah.gov/lab/lab/mp/ http://hwww.deq.state.ok.us/CSDnew/ http://www.lowador.gov/lns/dep/lab/lab/lab/lab/lab/lab/lab/lab/lab/lab
Industrial Hygiene	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org
	Washington	C595-16	http://www.ecy.wa.gov/programs/eap/labs/index.html
Lead Testing: CPSC Soil, Dust, Paint Air	ANAB (ISO 17025, CPSC) AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	ADE-1420 101574	http://www.anab.org/accredited-organizations/ http://www.ainaaccreditedlabs.org
Dietary Supplements	ACLASS (ISO 17025)	ADE-1420	http://www.aclasscorp.com

- LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.
- LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.
- ND = Not Detected, Testing result not detected above the LOD or LOQ.

NA = Not Applicable.

- "No result could be reported, see sample comments for details.

 This testing result is less than the numerical value.
- () This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

ALS Envrionmental certifies this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this report has been electronically authorized by the following laboratory representative:

Rand Potter, Project Manager, ALS Environmental

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Quality Control Sample Batch Report

Analysis Information

Workorder: 1627295

Limits: Historical/Performance Basis: ALS Laboratory Group Preparation: NA Batch: NA Prepared By: NA Analysis: NIOSH 1024

Batch: IFID/7808 (HBN: 177676)

Analyzed By: Fred Rejali

Blank

MB: 520884 Analyzed: 10/04/2016 00:00

Units: mg/sample

 Analyte
 Result
 MDL
 RL

 1,3-Butadiene
 ND
 NA
 0.00100

MB: 520887

Analyzed: 10/04/2016 00:00

Units: mg/sample

 Analyte
 Result
 MDL
 RL

 1,3-Butadione
 ND
 NA
 0.00100

MB: 520890

Analyzed: 10/04/2016 00:00

Units: mg/sample

 Analyte
 Result
 MDL
 RL

 1.3-Butadiene
 ND
 NA
 0.00100

MB: 520893

Analyzed: 10/04/2016 00:00

Units: mg/sample

 Analyte
 Result
 MDL
 RL

 1.3-Butadiene
 ND
 NA
 0.00100

MB: 520896

Analyzed: 10/04/2016 00:00

Units: mg/sample

 Analyte
 Result
 MDL
 RL

 1.3-Butadiene
 ND
 NA
 0.00100

MB: 521241

Analyzed: 10/04/2016 00:00

Units: mg/sample

 Analyte
 Result
 MDL
 RL

 1,3-Butadiene
 ND
 NA
 0.00100

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 520885 LCSD: 520886 Analyzed: 10/04/2016 00:00 Analyzed: 10/04/20

Dilution: 1

Units: mg/sample

Analyzed: 10/04/2016 00:00
Dilution: 1
Units: mg/sample
Result % Rec RPD QC Limits

 Analyte
 Result
 Target
 % Rec
 QC Limits
 Result
 % Rec
 RPD
 QC Limits

 1,3-Butadiene
 0.0315
 0.0342
 92.1
 78.0
 117.6
 0.0315
 92.1
 0.00
 0.0
 20.0

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Wednesday, October 05, 2016

QCS V4.1



Quality Control Sample Batch Report

Analysis Information

Workorder: 1627295

Limits: Historical/Performance Preparation: NA Analysis: NIOSH 1024

Basis: ALS Laboratory Group Batch: NA Batch: IFID/7808 (HBN: 177676)

Prepared By: NA Analyzed By: Fred Rejali

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 520888 LCSD: 520889 Analyzed: 10/04/2016 00:00 Analyzed: 10/04/2016 00:00

Dilution: 1 Dilution: 1

Units: mg/sample Units: mg/sample

Analyte Result Target % Rec QC Limits Result % Rec RPD QC

Analyte Result Target % Rec QC Limits Result % Rec RPO QC Limits 1,3-Butadiene 0.0285 0.0274 104 78.0 117.6 0.0285 105 0.350 0.0 20.0

LCS: 520891 LCSD: 520892 Analyzed: 10/04/2016 00:00 Analyzed: 10/04/2016 00:00

Dilution: 1 Dilution: 1

Units: mg/sample Result % Rec % Rec Analyte Result Target % Rec QC Limits RPD QC Limits 1,3-Butadiene 0.0291 0.0274 106 78.0 117.6 0.0285 104 0.0 20.0

LCS: 520894 LCSD: 520895

Analyzed: 10/04/2016 00:00 Analyzed: 10/04/2016 00:00

Dilution: 1 Dilution: 1 Units: mg/sample Units: mg/sample

Analyte Result % Rec QC Limits Result %Rec RPD QC Limits Target 1,3-Butadiene 0.0276 0.0274 101 78.0 117.6 0.0262 95.8 5.20 0.0 20.0

LCS: 520897 LCSD: 520898

Analyzed: 10/04/2016 00:00 Analyzed: 10/04/2016 00:00

Dilution: 1
Limits: malkamole
Limits: malkamole

Units: mg/sample Units: mg/sample Result Analyte % Rec QC Limits % Rec QC Limits Result Target 1.3-Butadiene 0.0267 78.0 117.6 0.0273 20.0 0.0274 97.6 2.22 0.0 99.5

LCS: 521242 LCSD: 521243

Analyzed: 10/04/2016 00:00 Analyzed: 10/04/2016 00:00 Dilution: 1 Dilution: 1

Units: mg/sample Units: mg/sample Result Analyte Result % Rec QC Limits % Rec RPD QC Limits Target 1,3-Butadiene 0.0267 0.0274 97.6 78.0 117.6 0.0263 1.51 0.0 20.0

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review	
/S/ Fred Rejali	/S/ Thomas J. Masoian	
10/04/2016 20:14	10/05/2016 08:20	

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits RPD - Relative % Difference (Spike / Spike Duplicate)

▲ - Sample result is greater than 4 times the spike added ND - Not Detected (U - Qualifier also flags analyte as not detected)

Sample and Matrix Duplicate less than 5 times the reporting limit
 NA - Not Applicable

Result is above the calibration range
 QC results are not adjusted for moisture correction, where applicable

CHAIN OF CUSTOMS Confection	-	2007001	U				L Control of the cont	Tenione alex tax	20162973	
Commence	N/A H	1951501	,	i		CH	AIN OF CUSTODY/SAMPLE A	NALYSIS REQUEST	Page 1 of	4
Supplementation Supplement	Collector					Contact Reques	store	Tolephone No.373-6861	MS#e FAX 372-1878	28
Supplementation	SAF No.					Sample Origin	8011487	Purchase Ordes/Charge Code 203003/Cato		
10 10 10 10 10 10 10 10	Project Tibe	2007.000				Lagbook Work	Package No.	In Chest No. LO. S- O.		19
Date Time No. Libit Starting Arabytic Starting Arabitic Starting Arabytic	Shipped To (La	(p)	1			Method of Ships	count	Bill of Lading-Wei Bill No. So	9 0337	8403
Sample Analysis Sample Ana	Protocol					Data Turnaroun	P	-		
15 VA 09/23/16 CEMAGOAL TURE 1.3-butadiene 16-08633-9-83-0-787-A 1 17 VA 09/23/16 CEMAGOAL TURE 1.3-butadiene 16-08633-9-87-0-87-A 1 18 VA 09/23/16 CEMAGOAL TURE 1.3-butadiene 16-08633-10-87-0-87-A 1 18 VA 0	Sample No.	Olds.	-	- Date	Time	No/Type Container				Preservative
10		8360003988	5	_		CHARCOAL TUBE	1,3-putadiene 16-05635-9-82-G-P80	7-A t .		CRIEF -40
17 17		\$167033686	5	_		CHARCOAL TUBE		. * 8-28		CRIEL -40
13 14 15 15 15 15 15 15 15		8167033687	5			CRAHODAL TUBE	1,3-Butadiese 16-08615-9-EF-FF	. 14-1	4 CHILL	77 40
13 14 19 12 13 13 14 14 15 15 15 15 15 15		8362033688	5	_		CEARCOAL TOSE	1,3-Butadiene 16-08615-10-XF-H-M		CHILL	77
1,3-But adden		5167033689	5	_		CHARCOAL TUBE	1,3-Butadiene 16-08615-9-EFF-BASS	1 .		CRILL -40
1, 2 1, 2 2, 3 2, 4 2, 3 2, 3 2, 4 2, 3 2, 3 2, 4 2, 3 2, 4 2, 3 2, 4 2, 3 2, 3 2, 4 2, 3 2, 3 2, 3 2, 3 2, 3 2, 3 2, 3 2, 3 2, 3 2, 3 3 3 3 3 3 3 3 3 3		\$167033650	5	_	L	CHANCOAL TUBE	1,3-Butadiene 16-08635-10-Eff-BA		CRIFE	28- T
1,3-Butadiene 16-08635-10-23-N-7973-8 1,3-Butadiene 16-08635-10-23-N-7973-8 1,3-Butadiene 16-08635-10-27-N-7973-8 1,3-		8161033691	5	-		CHARCOAL TURE	1,3-But, silene 16-08615-9-IN-A-PRO		CHILL	77 -40
1.3-But addense 16-0603-10-EF-C-PRT-A. 1.3-But addense 16-0603-10-EF-C-PRT-A. 1.3-But addense 16-0603-10-EF-C-PRT-A. Solve 14 (9)/21/16 (EMMCOAL TUBE 1.3-But addense 16-0603-10-EF-C-PRT-A. Solve 14 (9)/21/16 (1900) Solve 15 (1900) Solve 1		5167033692	5	-		CHANCOL TUBE	1, 3-Butadiene 16-08635-10-28-A-R	. 19-99	CHILL	29- 77
1.3-Butadiane 16-0803-10-EF-C-0730		\$167033693	\$	-	L	CEMBOOAL TUSE	1,3-Butadiene 16-08615-9-27-C-PM		CHILL	34- T
DOSPENARYS (Litrati known wastes) MSDS O Yes		\$167033694	5	09/23/16		CHAMCOAL TUBE	1,3-Sutadiene 16-08635-10-EF-C-F1		CHILL	Tr -40
LUMBLY 91216 0730 WRPS CHILLY CHORAS Some Some Some Some Some Some Some Som	POSSIBLE SA	AIPLE HAZAROSA	REW	RKS 6.lst all k	Chown was	W O sosw (sea)	1	W Rewald IV, and Crep Scanlan .gov see SOW for email .95502	Hold Time	
ALL VICTOR OF LOCATIONS PROGNANCE BY PEDEX DURINTING OF SOME STORY OF SOME STORY OF SOME SOME SOME SOME SOME SOME SOME SOME	Law	12 1	13	Slon Sland	3276	20	utu)	ОЗЗО	Matthe.	Drum Uquids
Date Time Proceived By Cappaign Cappaig	Melinguishad	1	3	Subole	63	8	6		* Solid W *	8 8 3
Disposal Method (e.g., Return to customer, per tale procedure/Land in process) Disposed By	Reinquished R		1				M	Spartine 13/2/2/	. Water VA Alt X A	Vegetation Veget Other
Fred ReIn 6: 10104,16	FINAL SAMPLE DISPOSITION	Disposal Meth	0.8	Return to cust	oener, per	posm/sunpecoud gel	Cisposed By		Date/Time 2.00	

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Sample No. Lab ID Date	Control Requestor Control Results 1V Sample Cont. Could Intole Fragment of Could Intole Intole Intole Intole Intole Into		2	Page 2 of 4
	Contact Request ONL MINALD IV Sample Origin CALTILIDE EVALI Logbook Werk F			-
	Sample Organ CAUTITIDES EVILED Logbooks Werk P			5 FAX 372-1878
F CANALALIZOR TO (LIB) SNO. Lab ID • Date S167033695 VA 09/23/16 S167033696 VA 09/23/16	Logboots Work P		Purchase OrderCharge Code	,
To (Lab): 10 No. Lab ID • Date 11 CTO (Lab): 12 CTO 33695 VA 09/23/16 12 CTO 33696 VA 09/23/16	-	No.	Ice Creativo, LUTS-012 Temp.	SUTTE
6 No. LabiD • Date signaling as 09/23/16 signaling va 09/23/16	Method of Shipment		BE OF LEASING NEW XOO & COULD	237 8403
1.00 To Date 1.00 Signature 1.00 Sig	Data Temanound		Pats and Return No. 41367	
\$167033695 VA	Time No/Type Container		Sample Analysis	Preservative
5	10	1,3-Sutadione 16-08633-9-EF-D-PRI-A		CRIST -+C
	CHANCOAL TURE	1,3-Sutadiene 16-08635-10-EF-0-FRE-31		CHILL -40
\$16T033697 VA 09/23/16	CRANCOAL TUBE	1,3-Butadiene 16-08615-9-EF-E-PHI-A ,		ORIEL -40
\$160033698 VA 09/23/16	CHARCOAL TUBE	1,3-Butadiene 16-08635-10-x7-E-281-8 ;		CRITE -40
\$167031699 VA 09/23/16	CHARGOAL TERE	1,3-Sutadiene 16-09635-9-8F-7-782-3. 4	,	CRIST -4C
816F033700 VA 09/23/16	CHANCOAL TUBE	1,3-Butadiene 16-08635-10-x7-7-2527-8		CHILL -40
Т	CHARCOAL TURE	1,3-Butadiene 16-08635-9-IN-8-PRI-A.	,	OSIM -40
T	CHARCOAL TURE	1,3-Butadiene 16-08635-10-28-8-282-8		CRISE -40
S167033703 VA 69/23/16	CHARGOAL TUBE	1,3-But.edlene 16-08635-9-IB-SASS-A 1	, ,	CKTSE -4C
2167033704 VA 65/23/16	CHARCOAL TURE	1,3-Butadiene 16-08635-10-19-8ASE-3*		CKILL -10
18	nn wastes) ASDS O Yea	SPECBAL INSTRUCTIONS Seat Remains to Cart W Rewaid IV, Seat Membrate to Cart W Rewaid IV, Seat M NewaldEll, etc., and drep Scalar, Greeporg L, Sonalmart, gor are SOK for enail Reference Contract # 33562 NIGHT SEA	Hed Tmo Hed Tmo Hed Tmo Hed Tmo Scralan, see 50K for enail.	
Share Lifelby		Received By Gradisher Spr. Granter	9 27 1 3 sol	. Matrix DL = Drum Liquids or T = Tissue
Fisher 10, Godien	9(27) No 1400	Ceived By C FEDEX	88	¥.
		Whint the Wortense Shundh		V = Vegetation VA = Vapor X = Other
Reinquished By	Date/Time Re	Redeived By	Date Time DS = Drum Selids	olids
FINAL SAMPLE Disposal Method (e.g., Senam to custom cusposmich	ethod (e.g., Settam to customer, per lab procedure Assed in process	Fred Rejah	91/00/01	Date/Time Q 1 0 0

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					-	TEAM OF CHETONISAMPI F ANALYSIS REQUEST	ASIS REQUEST	2010101	2312
8/A					5	AIN OF COSTOO PARTIES AND TO		Page 3	e 15
Collector					Conflict/Requestor		Telephone No.313-6861	10-92 16-03	FAX 312-1876
SAF No.					Sample Origin		Purchase OrdenCharge Code 201001/0920		
S/A Proloct Title					Logboot/ Work Package No.	e No.	to Chest No. 1 . L C . O . T	Tomb. Ou The	705
CARTHERE EVALUATION	CONTROL				N/K		Bill of LodingsAir Bill No. 6	200	0.00
Shipped To (Lab)	(gs				Mercon or only		Dark and Baham Mo.	0331	3 46.5
Protocol					10 pars			41367	
Sample No.	Cabio		Date	Time	No/Type Container	Sample Analysis	Analysis		Preservative
	8167033705	S	09/23/16		CHANCOAL TURE	1,3-Butadione 16-08615-9-DN-C-PHI-A 3			CHIEF -4C
	8167033706	N/A	09/23/16		CHARCOAL TONE	1,3-dutadiene 16-08635-10-18-C-ERT-8 :			CRITES -40
	\$167033707	KN	09/23/16		CHARCOAL TORK	1,3-Sutadione 16-08635-9-IN-D-PRI-A.			CHILL -40
	8167033708	5	09/23/26		CHARCOAL THE	1,3-8utadisce 16-08635-10-28-0-787-3 ,			CHILL -4C
	\$362033709	5	09/23/16		CHARCOAL TUBE	1,3-Sutadiene 16-08635-9-18-8-PRI-8,1			ORIET -4C
	8161033710	\$	09/23/26		CHARCOL TURE	1,3-Fortadione 16-D8635-10-IN-E-FRI-1			CHILL -40
	\$162033711	\$	09/23/16		CHARGOLAL TUBE	1,3-Butadiane 16-08635-9-18-7-781-0.4			CHITT -40
	8167033712	15		L	CHARGOAL TORK	1,3-Butadiene 16-08635-10-18-9-992-8			CHILL -40
	\$167033713	5			CHARCOAL TUBE	1,3-Butadiene 16-08615-9-15-G-PAT-A ;			CHILL -40
	*154013314	5	29/23/36		CHARGOAL TORS	1,3-Butadiene 16-08635-10-13-0-987-8 \			CHILL -40
POSSIBLE SA	POSSIBLE SAMPLE HAZARDS/REMARKS (List all known wastes)	SEMM	RKS (List all)	Sown wat	steel MSGS O'ver © No	2	caid TV.	Hold Time	,
Relinquished By	8		Sign	1		deny (1997	almeter decip	Matrix Matrix	- Doen Louids
Reing Skill Sher	1 3	10	Mis Gold of all all	200	Ton Contract		and Time	SE = Sediment T SO = Sediment T SL = Sludge L	- Tesue - Wipe - Uquid
Refinquished By	P			-	adv/Time	Ab Warrens Strat Sh	Theybure 1234/F		
ReInquished By	No.				Cate/Time	Received By		- Drum S	
FINAL SAMPLE DISPOSITION	Disposal	6.0	Refum to cust	gemer, per	Method (e.g., Return to customer, per tab procedure) used	Gred Richery Gred Rink	91/40/01	S 2100	. 0
				-					170000000000000000000000000000000000000

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Controlled Con							*****	VIAMA BIOMAGIVACATOR SO TO TO	Vele DEOLIEST	201	20182973
Supplication Control	N. W.					_	SHA	IN OF COSTOOT/SAMPLE ANALY		Page	9 10
Equation Surface Contact	Collector	-				Contact	White IV			MBIN FE-03 FAX	372-1678
Exception Code The Hopkood Wind Pendage No. Be of Closed Me. Lab Code	SAF No.					Sample	Orgin Scr Enus				
10 10 10 10 10 10 10 10	Project Title	- Comments				Logboo	WWW.P	e No.	toe Chest No. (LJ+5 - O)	S. Temp. O.k.	TRE
Surger Annal Surger Annal Surger Annal Surger Annal Parts and Return No. 413.677	Shipped To A.	(qe				Method	of Shipm		Bit of Lading/Air Bit No. 800	9 0327	8403
Sicros3713 VA 09/23/16 CRANCOAL TURE 1,1-Sucadiano 16-9653-9-174-6-725-A 1 CRANCOAL TURE 1,1-Sucadiano 16-9653-9-174-6-725-A 1 CRANCOAL TURE 1,1-Sucadiano 16-9653-19-18481 .	Protocol					Data Te	punceeura		Parts and Return No. 41.31	20	
CE033716 Vin 09/23/16 CRANCOOM TURE 1,3-Buradieno 16-08639-19-TR-0-PRT-N	Sample No.	H		Cate	Three	No/Type C	Container	Sample	Analysis		Preservative
CE033716 Vin DA/23/16 CHANCOAL TURE 1,3-Buradieno 14-08639-19-18-0-18-0-18-0-19		T	100	09/23/16	19	CHARDOM	TUBE	1,3-Butadiene 16-88635-9-IN-N-72I-A 4			CHILL -40
Control Cont		\$16093716	5			CHARCOAL	2022	1,3-Butadiene 16-85635-10-IS-8-29II-8 /			CHILL -40
CE03312 V. 0.0/23/16 CHANCOLL TITE 1.3-Buradian 16-B8635-9-BLANE1 CE030321 V. 0.0/23/16 CHANCOLL TITE 1.3-Buradian 16-B8635-9-BLANE2 CE030322 V. 0.0/23/16 CHANCOLL TITE 1.3-Buradian 16-D8635-9-BLANE2 CE030322 V. 0.0/23/16 CEASCOLL TITE 1.3-Buradian 16-D8635-9-BLANE2 CEO30322 V. 0.0/23/16 CEASCOLL TITE 1.3-Buradian 16-D8635-9-BLANE2 CEO30322 V. 0.0/23/16 CEASCOLL TITE 1.3-Buradian 16-D8635-9-BLANE2 CEO3032 CEO30322 V. 0.0/23/16 CEASCOLL TITE 1.3-Buradian 16-D8635-9-BLANE2 CEASCOLL TITE CEASCO		8162033717	5	09/23/16	-	CHARCOAL	1138	1,3-Furadiese 16-08635-19-8LASS1 , '			CHILL -4C
CE003122 VA 09/23/16 CHARCOLL TURE 1,3-Buradians 14-08035-9-ER-A-FRT-A 1 CEAACOLL TURE 1,3-Buradians 14-08035-9-ER-A-FRT-A 1 CEAACOLL TURE 1,3-Buradians 14-08035-9-ER-A-FRT-B 1 CEA		\$162033718	K	03/23/16	-	CHARGOAL	2655	1.3-Butadiana 16-88635-9-8EANNEL :			CHILL -4C
CE0001220 VA 09/23/16 CHANCOAL TTRE 1,3-Buradiano 14-08635-19-82-A-F27-A 1 CEANCOAL TTRE 1,3-Buradiano 14-08635-9-82-A-F27-A CEANCOAL TTRE 1,3-Buradiano 14-08635-9-82-A-F27-A CEANCOAL TTRE 1,3-Buradiano 14-08635-9-82-A-F27-A CEANCOAL TTRE 1,3-Buradiano 14-08635-9-82-A-F27-A CEANCOAL TTRE 1,3-Buradiano 14-08635-9-82-B-F27-B CEANCOAL TTRE 1,3-Buradiano 14-08635-9-82-B-F27-B CEANCOAL TTRE 1,3-Buradiano 14-08635-9-82-B-F27-B CEANCOAL TTRE 1,3-Buradiano 14-08635-9-82-B-F87-B CEANCOAL TTRE CEANCOAL TTRE 1,3-Buradiano 14-08635-9-82-B-F87-B CEANCOAL TTRE 1,3-Buradiano 14-0863-9-82-B-F87-B CEANCOAL TTRE CEANCOAL TTRE 1,3-Buradiano 14-0863-9-82-B-F87-B CEANCOAL TTRE 1,3-Buradi		8161033719	5			CHARCOAL	7036	1,3-Butadieno 14-88635-9-8EANSE2 ? .			CHILL -40
Consisted Cons		8162933720	8	09/23/16	-	CHARCOAL	TERE	1,3-Buradiene 16-08635-10-BEASS21 .			CRITE -4C
CE033722 Vr. 09/32/16 CEAACOAL TUBE 1,3-Butadian 14-08035-19-87-8-787-8 		8160933721	5	-	-	CHARCOAL	2000	1,3-Butadiene 16-09635-9-32-A-FAT-A :			CHILL -40
CEDS3723 V.N. 09/32/16 CENACONL TURE 1,3-Butadiana 14-08635-15-67-6-187-6.7 CENACONL TURE 1,3-Butadiana 14-08635-15-67-6-187-		8161033722	5			CHANCOAL	1038	1,3-Butadiene 16-08635-19-62-A-FHI-8 .			CHILL -4C
FINZARDSREIMARKS (List all known washes) MSDS O Yes © No SPECIAL INSTRUCTIONS SECURISE LANGUAGE SPECIAL SPECIA		\$162033723	5	09/23/10	-	CHARCOAL	TUBE	1,3-Butadiene 16-08635-9-ZE-B-FUT-A +			CHILL -40
Held Time Sign Date/Time Received By Cradio and Cree Sol for small Find Sign Date/Time Received By Cradio and Cree Sol for small Find Sign Date/Time Received By Cradio and Cree Sol for small Find Sign Date/Time Received By Cradio and Cree Sol for small Find Sign Date/Time Received By Cradio and Cree Sol for small Find Sign Date/Time Received By Cradio and Cree Sol for small Find Sign Date/Time Received By Cradio and Cree Sol for small Find Sign Date/Time Received By Cradio and Cree Sol for small Find Sign Date/Time Received By Cree Sol for Sol		8162033724	5	09/23/16	-	CENEDRAL	TUBE	1,3-Butadiese 16-08635-19-89-8-997-8 ;			CHILL -40
Print Sign Date/Time Received by Cardiology Charles Sign 9/27/16 0/30 s s s s s DL = WARPS Charles Cha	POSSIBLE S.	WIPLE HAZARDSPR	3	INS (List at	l known was	SOSM (see	O	o _N ⊙	Greg Scanian Greg Scanian See Sow for small	Held Time	
See 3 South Control of 27 16 March 19 Control of 19 Cont	Reinquished	E .	3		4.27-11	Office Office		Sulle Gallet			
Supersitive (e.g., Neturn to customer, per lab procedure/cated in processes) Control of the con	Reinquisted	1	3	i	obzil	S PACK		O FEDER		Solid W	- Mpe - Uquid
Disposal Matter No customer, per lab procedure (case in processes) Disposed By (10/04/16 2.10<	Reinquished	P				Date/Tim		de		Water VA	Vapor Vapor Other
Desposal Method (e.g., Return to outstoner, per tab procedure/carde in grocess) Disposed By (e.g., Return to outstoner, per tab procedure/carde in grocess) C read (e.g., Return to outstoner, per tab procedure/carde in grocess)	Reinquished	ja ga				Date/Tim			80	- Onus Solids	
	FINAL SAMPLE DISPOSITION	Disposal M	6	Defum to ou	stomer, per	ampleoud ga	KO.	Cred Ra,		Dute/Tin	0 8 0

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Report Date: October 05, 2016

Robert (Buddy) Sosa Washington River Protection So PO Box 850, MSIN T6-02 Richland, WA 99352

Phone: (509) 373-1262

E-mail: robert_w_sosa@rl.gov

20162974

Workorder: 34-1627348

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

Sample ID: \$16T033725				Collected:	09/24/2016
Lab ID: 1627348001				Received:	09/28/2016
Method: NIOSH 1024	San	Media: SKO	226-37 Sorbent To Volume Not Provid		10/04/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
1,3-Butadiene	< 0.0010	NA.	NA.	0.0010	

Sample ID: \$16T033726 Lab ID: 1627346002				Collected: 09/24/2016 Received: 09/28/2016
Method: NIOSH 1024	San	Media: SKC	226-37 Sorbent To Volume Not Provide	
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	< 0.0010	NA.	NA	0.0010

Sample ID: \$16T033727				Collected	d: 09/24/2016
Lab ID: 1627348003				Receive	d: 09/28/2016
Method: NIOSH 1024	San	Media: SKC	226-37 Sorbent To Volume Not Provid	rana ja s	d: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
1,3-Butadiene	< 0.0010	NA.	NA.	0.0010	

ADDRESS 960 West LeVoy Orive, Salt Lake City, Utah, 84123 USA | PHONE +1 801 266 7700 | FAX +1 801 268 9992 ALS GROUP USA, CORP. An ALS Limited Company

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IHREP-V123



Workorder: 34-1627348

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

Sample ID: \$16T033728				Collecte	1: 09/24/2016
Lab ID: 1627348004				Receive	1: 09/28/2016
Method: NIOSH 1024	San	Media: SKO	226-37 Sorbent Tu Volume Not Provid		d: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
1,3-Butadiene	< 0.0010	NA	NA	0.0010	

Sample ID: \$16T033729 Lab ID: 1627348005				Collected: 09/24/201 Received: 09/28/201
Method: NIOSH 1024	San	Media: SKO	226-37 Sorbent To Volume Not Provide	
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: \$16T033730 Lab ID: 1627348006				Collected: 09/24/2016 Received: 09/28/2016
Method: NIOSH 1024	San	Media: SKC	226-37 Sorbent To	
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA.	0.0010

Sample ID: \$16T033731					cted: 09/24/2016
Lab ID: 1627348007				Recei	ved: 09/28/2016
Method: NIOSH 1024	San	Media: SKC	226-37 Sorbent To Volume Not Provid		zed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
1,3-Butadiene	<0.0010	NA NA	NA	0.0010	

Sample ID: \$16T033732 Lab ID: 1627348008				Collected: 09/24/2016 Received: 09/28/2016
Method: NIOSH 1024	San	Media: SKC	226-37 Sorbent To Volume Not Provid	ube Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)
1.3-Butadiene	<0.0010	NA.	NA.	0.0010

Wed, 10/05/16 8:29 AM 1627348 - Page 2 of 16 IHREP-V12.3 Page 2 of 10



Workorder: 34-1627348

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

Sample ID: \$16T033733				Collecte	d: 09/24/2016
Lab ID: 1627348009				Receive	d: 09/28/2016
Method: NIOSH 1024	San	Media: SKO	226-37 Sorbent Tu Volume Not Provid		d: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
1,3-Butadiene	< 0.0010	NA	NA	0.0010	

Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Analyzed: 10/04/20 Sampling Parameter: Air Volume Not Provided			
		pling Parameter: Air	Volume Not Provid	led
	Result			

Sample ID: \$16T033735				Collected: 09/24/2016
Lab ID: 1627348011				Received: 09/28/2016
Method: NIOSH 1024	San	Media: SKO	226-37 Sorbent Tu folume Not Provid	
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	< 0.0010	NA NA	NA	0.0010

Sample ID: \$16T033736					ed: 09/24/2016	
Lab ID: 1627348012				Receiv	ed: 09/28/2016	
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided				Analyzed: 10/04/2016	
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)		
1,3-Butadiene	<0.0010	NA	NA	0.0010		

Sample ID: \$16T033737				Collecte	d: 09/24/2016
Lab ID: 1627348013				Receive	d: 09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			The state of the s	d: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
1,3-Butadiene	<0.0010	NA NA	NA	0.0010	

Wed, 10/05/16 8:29 AM 1627348 - Page 3 of 16 Page 3 of 10 IHREP-V12.3



Workorder: 34-1627348

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

Completion reserve				Calleded DODA DOS
Sample ID: \$16T033738				Collected: 09/24/201
Lab ID: 1627348014				Received: 09/28/201
Method: NIOSH 1024	San	Media: SKC	226-37 Sorbent To	
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	< 0.0010	NA	NA	0.0010

Sample ID: \$16T033739				Collected: 09/24/2016
Lab ID: 1627348015				Received: 09/28/2016
Method: NIOSH 1024	San	Media: SKC	226-37 Sorbent To Volume Not Provid	
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: \$16T033740				Collected: 09/24/2016
Lab ID: 1627348016				Received: 09/28/2016
Method: NIOSH 1024	San	Media: SKC	226-37 Sorbent Tu folume Not Provid	
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	< 0.0010	NA	NA	0.0010

Sample ID: S16T033741				4.2000 (0.000)	ed: 09/24/2016	
Lab ID: 1627348017				Receiv	ed: 09/28/2016	
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided				Analyzed: 10/04/2016	
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)		
1,3-Butadiene	<0.0010	NA	NA	0.0010		

Sample ID: \$16T033742				Collected	1: 09/24/2016
Lab ID: 1627348018				Received	1: 09/28/2016
Method: NIOSH 1024	San	Media: SKC	226-37 Sorbent To Volume Not Provide		1: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
1,3-Butadiene	<0.0010	NA NA	NA	0.0010	

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Workorder: 34-1627348

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

Sample ID: \$16T033743				Collecte	d: 09/24/2016
Lab ID: 1627348019				Receive	d: 09/28/2016
Method: NIOSH 1024	San	Media: SKO	226-37 Sorbent To Volume Not Provid		d: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
1,3-Butadiene	< 0.0010	NA	NA	0.0010	

Sample ID: \$16T033744 Lab ID: 1627348020				Collected: 09/24/2010 Received: 09/28/2010
Method: NIOSH 1024	San	Media: SKO	226-37 Sorbent To Volume Not Provid	
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA NA	0.0010

Sample ID: \$16T033745				Collected	09/24/2016
Lab ID: 1627348021				Received	09/28/2016
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided				: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
1,3-Butadiene	<0.0010	NA NA	NA.	0.0010	

Sample ID: S16T033746				Collect	ed: 09/24/2016	
Lab ID: 1627348022				Receive	ed: 09/28/2016	
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided				Analyzed: 10/04/2016	
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)		
1,3-Butadiene	<0.0010	NA	NA	0.0010		

Sample ID: S16T033747				Collecte	d: 09/24/2016
Lab ID: 1627348023				Receive	d: 09/28/2016
Method: NIOSH 1024	San	Media: SKC	226-37 Sorbent To Volume Not Provid	1, 27, 20, 20, 20, 20, 20, 20, 20, 20, 20, 20	d: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
1,3-Butadiene	<0.0010	NA NA	NA	0.0010	

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Workorder: 34-1627348

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

Sample ID: \$16T033749				Collected	09/24/2016
Lab ID: 1627348024				Received	09/28/2016
Method: NIOSH 1024	San	Media: SKO	226-37 Sorbent Tu Volume Not Provid		: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
1,3-Butadiene	< 0.0010	NA	NA	0.0010	

1.3-Butadiene	<0.0010	NA NA	NA NA	0.0010	
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
Method: NIOSH 1024	San	Media: SKO	226-37 Sorbent To Volume Not Provid		yzed: 10/04/2016
Lab ID: 1627348025				Rece	ived: 09/28/2016
Sample ID: \$16T033750				Colle	cted: 09/24/2016

Sample ID: \$16T033751 Lab ID: 1627348026				Collected: 09/24/2016 Received: 09/28/2016
		Mades OV	226 27 C-4-4 T	
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided			
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA.	NA	0.0010

Sample ID: \$16T033752					ed: 09/24/2016	
Lab ID: 1627348027				Receiv	ed: 09/28/2016	
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided				Analyzed: 10/04/2016	
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)		
1,3-Butadiene	<0.0010	NA	NA	0.0010		

Sample ID: \$16T033753				Collected:	09/24/2016
Lab ID: 1627348028				Received:	09/28/2016
Method: NIOSH 1024	San	Media: SKC	226-37 Sorbent To Volume Not Provid		10/04/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
1,3-Butadiene	<0.0010	NA NA	NA	0.0010	

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Workorder: 34-1627348

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

Sample ID: \$16T033754				Collecte	d: 09/24/2016
Lab ID: 1627348029				Receive	d: 09/28/2016
Method: NIOSH 1024	San	Media: SKO	226-37 Sorbent Tu Volume Not Provid		d: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
1,3-Butadiene	< 0.0010	NA	NA	0.0010	

Sample ID: \$16T033755 Lab ID: 1627348030				Collected: 09/24/2016 Received: 09/28/2016
Method: NIOSH 1024	San	Media: SKO	226-37 Sorbent Tu Volume Not Provid	
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA NA	0.0010

Sample ID: \$16T033756 Lab ID: 1627348031				Collected: 09/24/2016 Received: 09/28/2016
Method: NIOSH 1024	San	Media: SKC	226-37 Sorbent To Volume Not Provid	ube Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: S16T033757				Collec	cted: 09/24/2016	
Lab ID: 1627348032				Recei	ived: 09/28/2016	
Method: NIOSH 1024	Media: SKC 226-37 Sorbent Tube Sampling Parameter: Air Volume Not Provided				Analyzed: 10/04/2016	
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)		
1,3-Butadiene	<0.0010	NA	NA	0.0010		

Sample ID: \$16T033758				Collecte	d: 09/24/2016
Lab ID: 1627348033				Receive	d: 09/28/2016
Method: NIOSH 1024	San	Media: SKC	226-37 Sorbent Tu Volume Not Provid		d: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
1,3-Butadiene	<0.0010	NA NA	NA.	0.0010	

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Workorder: 34-1627348

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

Sample ID: \$16T033759				Collected	09/24/2016
Lab ID: 1627348034				Received	: 09/28/2016
Method: NIOSH 1024	San	Media: SKC	226-37 Sorbent To Volume Not Provid		: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
1,3-Butadiene	< 0.0010	NA	NA	0.0010	

Sample ID: \$16T033760 Lab ID: 1627348035				Collected: 09/24/2010 Received: 09/28/2010
Method: NIOSH 1024	San	Media: SKC	226-37 Sorbent To Volume Not Provid	
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	<0.0010	NA	NA	0.0010

Sample ID: \$16T033761 Lab ID: 1627348036				Collected: 09/24/2016 Received: 09/28/2016
Method: NIOSH 1024	San	Media: SKC	226-37 Sorbent To	ube Analyzed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)
1,3-Butadiene	< 0.0010	NA.	NA.	0.0010

Sample ID: \$16T033762 Lab ID: 1627348037					ed: 09/24/2016 ed: 09/28/2016
Method: NIOSH 1024	San	Media: SKC	226-37 Sorbent To Volume Not Provid	ube Analyz	ed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
1,3-Butadiene	<0.0010	NA NA	NA	0.0010	

Sample ID: \$16T033763				Collected:	09/24/2016
Lab ID: 1627348038				Received:	09/28/2016
Method: NIOSH 1024	San	Media: SKC	226-37 Sorbent To Volume Not Provid	The state of the state of	10/04/2016
Analyte	Result (mg/sample)	Result (mg/m²)	Result (ppm)	RL (mg/sample)	
1,3-Butadiene	<0.0010	NA NA	NA	0.0010	

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Workorder: 34-1627348

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

Sample ID: \$16T033764 Lab ID: 1627348039					ted: 09/24/2016 red: 09/28/2016
Method: NIOSH 1024	San	Media: SKO	226-37 Sorbent To		zed: 10/04/2016
Analyte	Result (mg/sample)	Result (mg/m³)	Result (ppm)	RL (mg/sample)	
1,3-Butadiene	<0.0010	NA.	NA	0.0010	

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review	
NIOCU 4004	/S/ Fred Rejali	/S/ Thomas J. Masoian	
NIOSH 1024	10/04/2016 20:14	10/05/2016 08:22	

Laboratory Contact Information ALS Environmental 960 W Levoy Drive Salt Lake City, Utah 84123

Phone: (801) 265-7700 Email: alsh.lab@ALSGlobal.com Web: www.alsslc.com



Workorder: 34-1627348

Client Project ID: Washington River Protection

Purchase Order: 55502 Rel9 Project Manager: Rand Potter

General Lab Comments

The results provided in this report relate only to the items tested. Samples were received in acceptable condition unless otherwise noted. Samples have not been blank corrected unless otherwise noted.

This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ANAS (DOD ELAP) Utah (NELAC) Nevada Okahoma Iowa Texas (TNI) Washington Kanses	ADE-1420 DATA1 UT00009 UT00009 IA# 376 T 104704456-11-1 C596-16 E-10416	http://www.anab.org/accredited.organizations/ http://health.utah.gov/lab/lab/mp/ http://hodep.nv.gov/bsdw/labservice.htm http://www.dougstate.ok.us/CSDnew/ http://www.iowadnr.gov/lnsideDNR/RegulatoryWater.aspx http://www.iowadnr.gov/lnsideDNR/RegulatoryWater.aspx http://www.iowadnr.gov/lnsideDNR/RegulatoryWater.aspx http://www.iowadnr.gov/lnsideDNR/RegulatoryWater.aspx http://www.ecy.wa.gov/lprograms/eapflabs/index.html http://www.kdheks.gov/lipo/index.html
Industrial Hygiene	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP) Washington	101574 C596-16	http://www.ahaaccreditedlabs.org http://www.ecy.wa.gov/programs/eap/labs/index.html
Lead Testing: CPSC Soil, Dust, Paint ,Air	ANAB (ISO 17025, CPSC) AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	ADE-1420 101574	http://www.anab.org/accredited-organizations/ http://www.ahaaccreditedlabs.org
Dietary Supplements	ACLASS (ISO 17025)	ADE-1420	http://www.aclasscorp.com

- LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.
- LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.
- ND = Not Detected, Testing result not detected above the LOD or LOQ.

NA = Not Applicable.

- "No result could be reported, see sample comments for details.

 This testing result is less than the numerical value.
- () This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

ALS Envrionmental certifies this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this report has been electronically authorized by the following laboratory representative:

Rand Potter, Project Manager, ALS Environmental

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Quality Control Sample Batch Report

Analysis Information

Workorder: 1627348

Limits: Historical/Performance Basis: ALS Laboratory Group

Preparation: NA Batch: NA Prepared By: NA Analysis: NIOSH 1024

Batch: IFID/7808 (HBN: 177676)

Analyzed By: Fred Rejali

Blank

MB: 520884 Analyzed: 10/04/2016 00:00

Units: mg/sample

Analyte Result MDL RL 1,3-Butadiene ND 0.00100

Analyzed: 10/04/2016 00:00

Units: mg/sample

Analyte MDL Result RL 1,3-Butadiene ND NA 0.00100

MB: 520890

Analyzed: 10/04/2016 00:00

Units: mg/sample

MDL Analyte Result RL ND 1,3-Butadiene NA 0.00100

MB: 520893

Analyzed: 10/04/2016 00:00

Units: mg/sample

Analyte Result MOL RL ND 1,3-Butadiene NA 0.00100

MB: 520898

Analyzed: 10/04/2016 00:00

Units: mg/sample

Analyte Result MDL RL 1,3-Butadiene 0.00100 ND

MB: 521241

Analyzed: 10/04/2016 00:00

Units: mg/sample

Analyte Result MDL RL 1,3-Butadiene 0.00100

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 520885 LCSD: 520886 Analyzed: 10/04/2016 00:00 Analyzed: 10/04/2016 00:00

Dilution: 1

Dilution: 1 Units: mg/sample Units: mg/sample

Target %Rec QC Limits Result % Rec RPD QC Limits Analyte Result 1,3-Butadiene 0.0315 0.0342 92.1 78.0 117.6 0.0315 92.1 0.00 0.0 20.0

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Wednesday, October 05, 2016 1627348 - Page 11 of 16 QCS V4.1



Quality Control Sample Batch Report

Analysis Information

Workorder: 1627348

Limits: Historical/Performance Preparation: NA Analysis: NIOSH 1024

Basis: ALS Laboratory Group Batch: NA Batch: IFID/7808 (HBN: 177676)

Prepared By: NA Analyzed By: Fred Rejali

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 520888 LCSD: 520889 Analyzed: 10/04/2016 00:00 Analyzed: 10/04/2016 00:00

Dilution: 1 Dilution: 1

Units: mg/sample Units: mg/sample % Rec QC Limits QC Limits Regult Result % Rec RPD Analyte Target 1,3-Butadiene 0.0285 0.0274 104 78.0 117.6 0.0286 0.350 0.0 20.0

LCS: 520891 LCSD: 520892

Analyzed: 10/04/2016 00:00 Analyzed: 10/04/2016 00:00 Dilution: 1 Dilution: 1

Units: mg/sample Units: mg/sample

Analyte Result Target % Rec QC Limits Result % Rec RPD

Analyte Result Target % Rec QC Limits Result % Rec RPD QC Limits 1,3-Butadiene 0.0291 0.0274 106 78.0 117.6 0.0295 104 2.00 0.0 20.0

LCS: 520894 LCSD: 520895

Analyzed: 10/04/2016 00:00 Analyzed: 10/04/2016 00:00

Dilution: 1 Dilution: 1 Units: mg/sample Units: mg/sample

Analyte Result % Rec QC Limits Result %Rec RPD QC Limits Target 1,3-Butadiene 0.0276 0.0274 101 78.0 117.6 0.0262 95.8 5.20 0.0 20.0

LCS: 520897 LCSD: 520898 Analyzed: 10/04/2016 00:00 Analyzed: 10/04/2016 00:00

Dilution: 1 Dilution: 1

Units: mg/sample Units: mg/sample

Analyte Result Target % Rec QC Limits Result % Rec RPD QC Limits

1.3-Butadiene 0.0267 0.0274 97.6 78.0 117.6 0.0273 99.8 2.22 0.0 20.0 LCs: 521242 LCsD: 521243

Analyzed: 10/04/2016 00:00 Analyzed: 10/04/2016 00:00 Dilution: 1 Dilution: 1 Units: mg/sample Units: mg/sample

QC Limits Result Analyte Result % Rec % Rec RPD QC Limits Target 1,3-Butadiene 0.0267 0.0274 97.6 78.0 117.6 0.0263 1.51 0.0 20.0

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review	
/S/ Fred Rejali	/S/ Thomas J. Masoian	
10/04/2016 20:14	10/05/2016 08:20	

Symbols and Definitions

* - Analyte above reporting limit or outside of control limits RPD - Relative % Difference (Spike / Spike Duplicate)

▲ - Sample result is greater than 4 times the spike added ND - Not Detected (U - Qualifier also flags analyte as not detected)

Sample and Matrix Duplicate less than 5 times the reporting limit
 NA - Not Applicable

Result is above the calibration range
 QC results are not adjusted for moisture correction, where applicable

K/A								GO.C. No.
					CHA	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	YSIS REQUEST	Page 1 of 4
Collector					Contact/Requesto		Telephone No.373-6861	MSIN FAX 372-1878
SAF No.					Sample Organ CARTAIDGE CHALIBITION		Purchase Order/Charge Code 253053/c626	
Project Tibe	30149100				Logbook/Work Package No.	No.	les Chest No. 10+5-0	Tomb ON The
Shipped To (Lab)	(c)e				Method of Shipment		Bill of LadingFar Bill No. 800	048 CZCO PC
Pretocol K/A					Data Tamanound 10 DATS		Parts and Return No. 15 41.3/07	41367
Sample No.	Clabio		Date	Time	No./Type Container	Sample	Sample Analysis	Preservative
	8167633725	\$	09/24/16		CHARCOAL TOSS	1,3-Suradiene 16-08636-9-BLANS-RF-A 3		CHILL -40
	S167033726	5	09/24/16		CRANCOAL TUBE	1,3-Sutadiene 16-08636-10-SIANE-EF-8;		CHILL -40
	\$167033727	\$	09/24/16		CHANCOAL TUBE	1,3-Sutadiene 16-08636-9-BLAKK-IS-A		OBILT -40
	8167033728	\$	09/24/16	L	CRAMCOAL TUBE	1,3-suradions 16-08636-10-stanc-18-8 }		CRIM -40
	8167033729	\$	09/24/16		CHANCOAL TUBE	1,3-Butadione 16-08636-9-EF-A-292-A 3	,	CRISE -40
	8167633730	5	09/24/16		CHARCOAL TURK	1,3-Sutadions 16-08636-10-EF-A-PRE-B		. CHILL -40
	SLETCONNIN	×	09/24/16		CRANCOAL TUBE	1,3-Sutadione 16-08636-9-EF-8-2915-3 6		CHIEF -40
	8167033732	\$	09/24/16		CHANCOAL TORE	1,3-Sutadione 16-08636-10-EF-3-PFT-B;		CHEEF -4C
	8161033733	5	09/24/16		CRANCOAL TONE	1,3-SutadLene 16-08636-9-EF-C-2FE-3 /		CHILL -40
	8162033734	Š	09/24/16		CHANCOAL TUBE	1,3-Butadiene 16-08636-10-EF-C-PMT-8		CHINE -40
POSSIBLES	POSSIBLE SAMPLE HAZAROŠIPILMAROS (List at brown vassins)	SDW	acs (Ust all)	TOWN WISE	MSDS O Yes No	SPECIAL INSTRUCTIONS Sond Paralle to Carl W Sevald IV. Sond Paralle to Carl W Sevald IV. Carl W SevaldSL.com.instructure Sond for enail Errecoepycom.instructure Sond for enail Errecoep Contract # 55502 Errecoep	weld IV, series, see Sories, see Sor	Holds Time
Reinquahed By	ay Paint		Sign	0	-	Roceived By Print Sign	-	Martic
Presental Poly	Salar Care	16	Trans	19	12/ may war 9/27/16/40	Receives Waps FEDEX	٨	= Sold M = Wpe = Sold M = Wpe = Sludge L = Uquid
Reinquished By	P				_	St. Marionale Sharlle	Shafaye Give o	>>×
Reinquished By	A				Dato/Time Rec	becoved By		* Drum Solids
FINAL SAMPLE DISPOSITION	Disposal Meth	0.9.	ceturn to cust	omer, per	od (e.g., Return to customer, per lab procedure (used in p	(in process) Chaptered By	4110001	Date/Time

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Contact Name						CHAI	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	YSIS REQUEST	Parts 2 of	2 20
Post and Percentage Control Co	Collector					Conflect/Requesto		Telephone No.273-6861	¥	372-1878
Sample Analysis Control Contro	JONES No.					Sample Origin		Purchase OrdenCharge Code		
Function Width Winds W	N/A					CASTRIDGE EVALUA-		Ce Chest No	Temp.	
10 10 10 10 10 10 10 10	CARTRIDGE EVA	CONTION				Y/S		10-S+M		100
1	Shipped To (Li	(Co				Method of Shipme		Bill of Lading Myr Bill No. Sco.	12 60 27	8403
Surgic Analysis 10 10 10 10 10 10 10 1	Protocol					Data Turnaround		Parts and Return Na. 41	1367	
235 Va. 09/24/16 CRANCOLA TODE 1,3-Batadiens 16-08596-9-EF-0-ENT-8 239 Va. 09/24/16 CRANCOLA TODE 1,3-Batadiens 16-08596-9-EF-0-ENT-8 239 Va. 09/24/16 CRANCOLA TODE 1,3-Batadiens 16-08596-9-EF-0-ENT-8 239 Va. 09/24/16 CRANCOLA TODE 1,3-Batadiens 16-08596-9-EF-0-ENT-8 230 Va. 09/24/16 CRANCOLA TODE 1,3-Batadiens 16-08596-9-EF-0-ENT-8 231 Va. 09/24/16 CRANCOLA TODE 1,3-Batadiens 16-08596-9-EF-0-ENT-8 232 Va. 09/24/16 CRANCOLA TODE 1,3-Batadiens 16-08596-9-EF-0-ENT-8 233 Va. 09/24/16 CRANCOLA TODE 1,3-Batadiens 16-08596-9-EF-0-ENT-8 234 Va. 09/24/16 CRANCOLA TODE 1,3-Batadiens 16-08696-9-EF-0-ENT-8 235 CRANCOLA TODE 1,3-Batadiens 16-08696-9-EF-0-EF-0-EF-0-ENT-8 235 CRANCOLA TODE 1,3-Batadiens 16-08696-9-EF-0-EF-0-EF-0-EF-0-EF-0-EF-0-EF-0-EF	Sample No.	Clabio		Date	Time	No./Type Container	/ aydunds	Analysis		Preservative
256 Va. 99/24/16 CLANCOLL TORE 1.3-Suradians 14-08636-10-EP-0-ENT-8 259 Va. 99/24/16 CLANCOLL TORE 1.3-Suradians 14-08636-10-EF-0-ENT-8 250 Va. 99/24/16 CLANCOLL TORE 1.3-Suradians 14-08636-10-EF-0-ENT-8 251 Va. 99/24/16 CLANCOLL TORE 1.3-Suradians 14-08636-10-EF-0-ENT-8 252 Va. 99/24/16 CLANCOLL TORE 1.3-Suradians 14-08639-10-ENT-8 252 Va. 99/24/16 CLANCOLL TORE 1.3-Suradians 14-08639-10-EF-0-ENT-8 252 Va. 99/24/16 CLANCOLL TORE 1.3-Suradians 14-08639-10-EF-0-ENT-8 252 Va. 99/24/16 CLANCOLL TORE 1.3-Suradians 14-08639-10-EF-0-ENT-8 252 Va. 90/24/16 CLANCOLL TORE 1.3-Suradians 14-08639-10-EF-0-ENT-8 252 Va. 90/24/16 CLANCOLL TORE 1.3-Suradians 14-08639-10-EF-0-ENT-8 253 Va. 90/24/16 CLANCOLL TORE 1.3-Suradians 14-08639-10-EF-0-ENT-8 254 Va. 90/24/16 CLANCOLL TORE 1.3-Suradians 14-08639-10-EF-0-ENT-8 255 Va. 90/24/16		\$160033735	8	+			1,3-Butadiens 36-08636-9-EF-D-FRI-A V			CHILL -40
139 Va. 99/24/16 CRANCOLL TORE 1,3-Butations 16-0805-0-EP-8-PRT-8 139 Va. 99/24/16 CRANCOLL TORE 1,3-Butations 16-0805-0-EP-8-PRT-8 140 Va. 99/24/16 CRANCOLL TORE 1,3-Butations 16-0805-0-EP-8-PRT-8 141 Va. 99/24/16 CRANCOLL TORE 1,3-Butations 16-0805-0-EP-8-PRT-8 142 Va. 99/24/16 CRANCOLL TORE 1,3-Butations 16-0805-0-EP-8-PRT-8 143 Va. 99/24/16 CRANCOLL TORE 1,3-Butations 16-0805-0-EP-8-PRT-8 144 Va. 99/24/16 CRANCOLL TORE 1,3-Butations 16-0805-0-EP-8-PRT-8 145 Va. 99/24/16 CRANCOLL TORE 1,3-Putations 16-0805-0-EP-8-PR		\$160033736	5	09/24/16			1,3-Sutadiens 16-08636-10-EF-0-FRT-B ;			CHING -60
139 Va. 1947416 CALACOLL TUBE 1,1-Butadians 16-08656-10-EP-E-FRT-8; 140 14		\$1,62033737	1 X				1,3-Sutadiene 16-08636-9-EP-E-PRT-A 1			CHI32 -40
12 12 12 13 14 15 15 15 15 15 15 15		\$167033738	2	-			1,3-Butadions 16-08636-10-EF-E-PRT-8 4			CHILL -40
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14.2 Vin 59/24/16 CEARCOAL TORE 1.3-Butadiene 16-08636-9-287-8 Vin Vin 59/24/16 CEARCOAL TORE 1.3-Butadiene 16-08636-9-287-8 Vin Vin 59/24/16 CEARCOAL TORE 1.3-Butadiene 16-08636-9-287-8 Vin		\$1,62033740	NA.	-			1, 3-Sutadians 16-08636-10-SF-7-PST-8 4			CHILL -4C
14.2 Vin 59/24/16 CEARCOAL TONE 1.3-Buteaftens 16-08636-1-2FF-8-TRT-A 7 14.4 Vin 59/24/16 CEAR		\$167033741	5	-			1,3-Butadions 16-08636-9-88-G-PRI-A :			CHISE -40
144 VR 59/24/16 CRANCOLL TORE 1.3-Butadiana 16-08636-9-287-8-797-8 The CRANCOLL TORE 1.3-Butadiana 16-08636-10-277-8 The CRANCOLL TORE 1.3-Butadiana 16-08636-10-277-8 The CRANCOLL TORE 1.3-Butadiana 16-08636-10-277-8 The CRANCOLL WISSON TOWN SHOWN WESTERN TORE 1.3-Butadiana 16-08636-10-277-8 The CRANCOLL WISSON TOWN SHOWN WESTERN TORES 1.3-Butadiana 16-08636-10-277-8 The CRANCOLL CALL CALL CALL CALL CALL CALL CALL		8162033742	NA.	_			1,3-Butadiens 16-08636-10-EF-C-PST-8 .			CRIME -4C
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Disposal Method (e.g., Return to customer, per lab proceduref used in process) Disposed By	Reinquished L	<i>M</i>				+	for your		= Drum Solids	
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KVA						5	IN OF CUSIC	UTISAMPLE ANAL	TOIS AEGUES!	Page	3 of	*
Cellector					Contac CALL III	ContactRequestor			Telephone No.373-6461	MSIN T6-05	FAX 372-1878	
SAF No.					Sample	Sample Origin CARTILLOS SINUMITOR	ATTOR		Purchase Order/Charge Code 203003/cs20			
Project Title	30127106	1			Logboo	al Viork P.	Logbook/ Work Padage No.		TO Cheet No.	- Ol 3 Temp.	30 F 00	10
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	8162033746	\$	09/24/16		CHANCOAL TUBE	10000	1,3-Butadiene 3	1,3-Sutadiene 16-08634-10-ZUT-SASE-B V			CHIEF -4C	9
	8167033747	5	09/24/16		CENTICOAL TUBE	2002	1,3-Butadione 3	1, 1-Sutadione 16-08636-9-IN-A-PRI-A			CHILL	9
	8167633749	\$	09/24/16		CHURCOAL 1988	1988	1,3-Sutadione 1	1, 1-Sutadione 16-08636-9-IN-B-FHI-A	, ,		CRISS	9
	8162833750	5	09/24/16		CHURCOAL TUBE	1038	1,3-Sutadione 1	1,3-Sutadions 16-08636-10-IN-3-PMT-8 -			CHILL	9
	5167033751	5	09/24/16		CHANCOAL TUBE	1088	1,3-Sutadiene 1	1,3-Sutadiene 16-08636-9-IN-EASE-A ;			CRISE	740
	\$165033752	5	09/24/16		CHARGOAL 1028	1000	1,3-Sutadione 3	1,3-Sutadions 16-08636-10-IN-3ASE-8 ;			CRITE	7
	8162033753	\$	09/24/16		CHARCOAL 1988	1008	1,3-Sutadions 1	1,3-Sutadione 16-08616-9-IN-C-PRI-A /			CHILL -4C	9
	3167033754	\$	09/24/16		CSUMCOAL 1058	1006	1,3-Sutadione 1	1,3-Sutadione 16-08636-10-IN-C-PMT-B			CHILL -4C	9
	8167633755	5	VA 09/24/16		CHARCOAL TODS	1088	1,1-Sutadione 1	. A-184-G-61-6-36380-31 onelbeaus-1,1			CHILL	-40
POSSIBLE SA	POSSIBLE SAMPLE HAZARDS/REMARKS (List all from 1 washa) MSDS () Yes	EMAR	KS (Uet all le	SOW I WOSE	(to	0	g ⊙	SPECIAL INSTRUCTIONS Card Seales to Carl W Reveld IV, Carl W Boweldell.gov, and Gred Scalins Gregoly_L,Scaniandri.gov are 50% for enail Gregoly_L,Scaniandri.gov are 50% for enail Strians Contract # 55592 Fillans For Carl W Record - 4 C	weld IV.	Hold Time		
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Relinquished By	*				Date/Time		Received By ·		OsteTime	80		
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure)	8.6°	othern to custo	nac, per	arpoood go	ssecoud uposnije	ssecux	Gyested By	1000	10/04/16	DelivTime 2.10.0	0
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1627348 - Page 15 of 16

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Decoants Decoants						*
abili		Confectifinguests CAUL ROBALD IV		Telephone No. 573-6861 MSIN 76-05	PACK 372-1878	
23755 WA 23755		Sample Origin Custrations Invacantics	ALTOR	8		
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8 8 8 8 8 8 8	Time	No/Type Container	Sample	Sample Analysis	Pres	Preservative
	16	CRANCOAL TUBE	1,3-Sutadiene 16-98636-10-78-0-782-9 1		CRITIC	CRISE -40
5 5 5 5 5	91	CHARGONE TUBE	1,3-Sutediene 16-88636-9-28-2-18-8		CRITE	CHIEF 40 .
. R R R	. 91	CRASCOAL TURE	1,3-Sutadiane 16-09635-10-18-2-PHZ-8		CELL	CRILL -40
8 8 8	91	CHARGONE, TUBE	1,3-Betadiese 16-63635-9-IN-7-PRI-A+		CRITI	CHILL -40
5 5	. 91	CHARGOAL TORE	1,3-Sotadiese 16-01635-16-18-F-FRI-B		CHIEF	CHILL -40
KN.	. 91	CHARCOAL TORS	1,3-835-6-35-9-23-6-282-A 1		CRIN	CRIME -40
ľ	97	CRONCOAL TORE	1,3-Butadiese 16-09636-10-19-0-PE-8		CRIT	CHILL -40
\$160033763 VA 05/24/16	91	CEARCOAL TERE	1,3-Butadiene 16-01636-9-28-8-PET-A		CHIES	CHIEF -40
316E933764 VA 69/24/16	97	CRANCOAL TUBE	1.3-Butadiene 16-08536-10-IS-2-29I-8 ;		CRIT	CRITE -40
POSSIBLE SAMPLE HAZARDSREMARKS (List all known wasted)	all known weel	O sasw	No SPECIAL INSTRUCTIONS See Shoults to clast * Reveald IV. Carl M Eveniderings* and Greg Scentian Cregory	Hold Times		
Spaces Like a Coc. Print of the Mall		9-57-14, 09-36 9-57-14, 09-36 9-37-14, 1400	Received By Gradiffe. Cade to 9/27	Difference St Sod	Watter DL - Tourn	Drum Liquids Tissue Wipe
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NAL SAMPLE DEPOSE Method (e.g., Return to customer, per tab precedural seed in process post-depose.)	customer, per	u pean surpeced on	Managed Disposed By	1.6. 10/04/16	Data/Time	

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Report Date: October 05, 2016

Phone: (509) 373-1262

E-mail: robert_w_sosa@rl.gov

20162969 Workorder: **34-1627303**

Client Project ID: Washington River Protection

So

Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

Robert (Buddy) Sosa

Richland, WA 99352

Washington River Protection So PO Box 850, MSIN T6-02

Collected: 09/23/2016 Sample ID: \$16T033525 Received: 09/28/2016 Lab ID: 1627303001 Method: NIOSH 1613 Mod. Media: SKC 226-01, Charcoal Tube Analyzed: 09/30/2016 100/50mg Sampling Parameter: Air Volume Not Provided Result Analyte (ug/sample) Result (mg/m²) Result (ppm) RL (ug/sample) <0.50 Pyridine NA NA. 0.50 2,4-Dimethylpyridine NA 0.50 < 0.50 NA

Sample ID: S16T033526				Colle	ected: 09/23/2016
Lab ID: 1627303002				Rec	eived: 09/28/2016
Method: NIOSH 1613 Mod.	San		226-01, Charcoal 1/50mg Volume Not Provid		lyzed; 09/30/2016
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA.	0.50	0
2,4-Dimethylpyridine	<0.50	NA	NA.	0.50	0

Sample ID: S16T033527				Collected: 09/23/2016
Lab ID: 1627303003				Received: 09/28/2016
Method: NIOSH 1613 Mod.	San		226-01, Charcoal 50mg Volume Not Provid	
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA.	0.50
2,4-Dimethylpyridine	< 0.50	NA	NA.	0.50

ADDRESS 960 West Levby Drive, Salt Lake City, Utah, 84123 USA | PHONE +1 801 266 7700 | FAX +1 801 268 9992 ALS CROUP USA, CORP. An ALS Limited Company

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Workorder: 34-1627303

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Ana	A ret l		5	diam
AAI 12	WVEH	CAL I	rt eesst	mrs.

Sample ID: \$16T033528 Lab ID: 1627303004					09/23/2016
Method: NIOSH 1613 Mod.	San		226-01, Charcoal 1/50mg Volume Not Provid	Tube Analyzed:	09/30/2016
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)	
Pyridine	< 0.50	NA	NA	0.50	
2,4-Dimethylpyridine	< 0.50	NA	NA.	0.50	

Sample ID: \$16T033529 Lab ID: 1627303005				Collected: 09/23/2016 Received: 09/28/2016
Method: NIOSH 1613 Mod.	San		226-01, Charcoal 50mg Volume Not Provid	
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	< 0.50	NA	NA	0.50

Sample ID: \$16T033530				Collected: 09/23/2016
Lab ID: 1627303006				Received: 09/28/2016
Method: NIOSH 1613 Mod.	San		226-01, Charcoal 50mg Volume Not Provid	1975 B
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Pyridine	< 0.50	NA	NA	0.50
2,4-Dimethylpyridine	< 0.50	NA.	NA.	0.50

Sample ID: \$16T033531 Lab ID: 1627303007				Collected: 09/23/2010 Received: 09/28/2010
Method: NIOSH 1613 Mod.	San		226-01, Charcoal 50mg Volume Not Provid	
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50



Workorder: 34-1627303

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Α.		All minds	Resu	44-
- 444	TO BE V	HCA	PE 645-L	mrs.

Sample ID: \$16T033532 Lab ID: 1627303008				1.0000000000000000000000000000000000000	09/23/2016
Method: NIOSH 1613 Mod.	San		226-01, Charcoal 1 /50mg Volume Not Provid		09/30/2016
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)	
Pyridine	< 0.50	NA	NA	0.50	
2,4-Dimethylpyridine	< 0.50	NA	NA	0.50	

Sample ID: \$16T033533 Lab ID: 1627303009				Collected: 09/23/2016 Received: 09/28/2016
Method: NIOSH 1613 Mod.	San		226-01, Charcoal 50mg Volume Not Provid	
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	< 0.50	NA	NA	0.50
1000				

Sample ID: \$16T033534				Collected: 09/23/2016
Lab ID: 1627303010				Received: 09/28/2016
Method: NIOSH 1613 Mod.	San		226-01, Charcoal 1/50mg Volume Not Provid	
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Pyridine	< 0.50	NA	NA	0.50
2,4-Dimethylpyridine	< 0.50	NA	NA.	0.50

Sample ID: \$16T033535 Lab ID: 1627303011				Collected: 09/23/2016 Received: 09/28/2016
Method: NIOSH 1613 Mod.	San		226-01, Charcoal 50mg Volume Not Provid	
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50



Workorder: 34-1627303

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Ann	bettern!	Resul	t.

Sample ID: \$16T033536				120000	09/23/2016
Lab ID: 1627303012				Received:	09/28/2010
Method: NIOSH 1613 Mod.	San		226-01, Charcoal 50mg Volume Not Provid		09/30/2016
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)	
Pyridine	< 0.50	NA	NA	0.50	
2,4-Dimethylpyridine	< 0.50	NA	NA	0.50	

Sample ID: \$16T033537 Lab ID: 1627303013				Collected: 09/23/2016 Received: 09/28/2016
Method: NIOSH 1613 Mod.	San		226-01, Charcoal 50mg Volume Not Provid	
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	< 0.50	NA	NA	0.50

Sample ID: \$16T033538				Collected: 09/23/20
Lab ID: 1627303014				Received: 09/28/20
Method: NIOSH 1613 Mod.	San		226-01, Charcoal 1/50mg Volume Not Provid	
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Pyridine	< 0.50	NA	NA	0.50
2,4-Dimethylpyridine	< 0.50	NA	NA	0.50

Sample ID: \$16T033539 Lab ID: 1627303015				Collected: 09/23/2016 Received: 09/28/2016
Method: NIOSH 1613 Mod.	San		226-01, Charcoal 50mg Volume Not Provid	
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

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Workorder: 34-1627303

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analy	rtical	Resu	lts

, a.m.)					
Sample ID: \$16T033540				Collected	: 09/23/2016
Lab ID: 1627303016				Received	1: 09/28/2016
Method: NIOSH 1613 Mod.	San		226-01, Charcoal 3 /50mg Volume Not Provid		1: 09/30/2016
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)	
Pyridine	< 0.50	NA	NA	0.50	
2.4-Dimethylpyridine	< 0.50	NA	NA.	0.50	

Sample ID: \$16T033541 Lab ID: 1627303017				Collected: 09/23/2016 Received: 09/28/2016
Method: NIOSH 1613 Mod.	San		226-01, Charcoal 50mg Volume Not Provid	
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA.	0.50
2,4-Dimethylpyridine	< 0.50	NA	NA	0.50

Sample ID: \$16T033542				Collected:	09/23/2016
Lab ID: 1627303018				Received:	09/28/2016
Method: NIOSH 1613 Mod.	San		226-01, Charcoal 1/50mg Volume Not Provid		: 09/30/2016
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)	
Pyridine	< 0.50	NA	NA	0.50	
2,4-Dimethylpyridine	< 0.50	NA	NA	0.50	

Sample ID: \$16T033543 Lab ID: 1627303019				Collected: 09/23/2016 Received: 09/28/2016
Method: NIOSH 1613 Mod.	San		226-01, Charcoal /50mg Volume Not Provid	
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	<0.50	NA	NA	0.50

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Workorder: 34-1627303

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

Sample ID: \$16T033544 Lab ID: 1627303020					09/23/2016
Method: NIOSH 1613 Mod.			226-01, Charcoal 1/50mg	Tube Analyzed	: 09/30/2016
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)	
Pyridine	< 0.50	NA	NA	0.50	
2,4-Dimethylpyridine	< 0.50	NA	NA.	0.50	

Sample ID: \$16T033545 Lab ID: 1627303021				Collected: 09/24/2016 Received: 09/28/2016
Method: NIOSH 1613 Mod.	San	Tube Analyzed: 10/04/2016		
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA.	0.50
2,4-Dimethylpyridine	< 0.50	NA	NA.	0.50

Sample ID: \$16T033546				Collected:	09/24/2016
Lab ID: 1627303022				Received:	09/28/2016
Method: NIOSH 1613 Mod.	Media: SKC 226-01, Charcoal Tube Analyzed: 10/0 100/50mg Sampling Parameter: Air Volume Not Provided				
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)	
Pyridine	< 0.50	NA	NA	0.50	
2,4-Dimethylpyridine	< 0.50	NA	NA	0.50	

Sample ID: \$16T033547 Lab ID: 1627303023					09/24/2016 09/28/2016	
Method: NIOSH 1613 Mod.	Media: SKC 226-01, Charcoal Tube Analyzed: 10/0 100/50mg Sampling Parameter: Air Volume Not Provided					
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)		
Pyridine	<0.50	NA	NA	0.50		
2,4-Dimethylpyridine	<0.50	NA	NA	0.50		

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Workorder: 34-1627303

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

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Ana	betical	Resul	te

Sample ID: S16T033548 Lab ID: 1627303024					09/24/2016 09/28/2016
Method: NIOSH 1613 Mod.	San		226-01, Charcoal 1 /50mg Volume Not Provid		10/04/2016
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)	
Pyridine	< 0.50	NA	NA	0.50	
2,4-Dimethylpyridine	< 0.50	NA	NA	0.50	

Sample ID: \$16T033549 Lab ID: 1627303025				Collected: 09/24/2016 Received: 09/28/2016
Method: NIOSH 1613 Mod.	San		226-01, Charcoal 1/50mg Volume Not Provid	
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA.	0.50
2,4-Dimethylpyridine	< 0.50	NA	NA	0.50

Sample ID: \$16T033550				Collected:	09/24/2016
Lab ID: 1627303026				Received:	09/28/2016
Method: NIOSH 1613 Mod.	San		226-01, Charcoal 50mg Volume Not Provid		10/04/2016
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)	
Pyridine	< 0.50	NA	NA	0.50	
2,4-Dimethylpyridine	< 0.50	NA.	NA	0.50	

Sample ID: \$16T033551 Lab ID: 1627303027					09/24/2016 09/28/2016
Method: NIOSH 1613 Mod.	San		226-01, Charcoal 50mg Volume Not Provid		10/04/2016
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)	
Pyridine	<0.50	NA	NA	0.50	
2,4-Dimethylpyridine	<0.50	NA	NA.	0.50	



Workorder: 34-1627303

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

Sample ID: S16T033552					09/24/2016
Lab ID: 1627303028				Received:	09/28/2016
Method: NIOSH 1613 Mod.	San		226-01, Charcoal 1 50mg Volume Not Provid		10/04/2016
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)	
Pyridine	<0.50	NA	NA	0.50	
2,4-Dimethylpyridine	< 0.50	NA.	NA	0.50	

Sample ID: \$16T033553 Lab ID: 1627303029				Collected: 09/24/2010 Received: 09/28/2010
Method: NIOSH 1613 Mod.	San		226-01, Charcoal 50mg Volume Not Provid	Tube Analyzed: 10/04/2016
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA.	0.50
2,4-Dimethylpyridine	< 0.50	NA	NA	0.50

Sample ID: \$16T033554				Collected:	09/24/2016
Lab ID: 1627303030				Received:	09/28/2016
Method: NIOSH 1613 Mod.	San		226-01, Charcoal 150mg Volume Not Provid		10/04/2016
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)	
Pyridine	< 0.50	NA	NA	0.50	
2,4-Dimethylpyridine	< 0.50	NA.	NA	0.50	

Sample ID: \$16T033555 Lab ID: 1627303031					09/24/2016 09/28/2016
Method: NIOSH 1613 Mod.	San		226-01, Charcoal 50mg Volume Not Provid		10/04/2016
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)	
Pyridine	<0.50	NA	NA	0.50	
2,4-Dimethylpyridine	<0.50	NA	NA	0.50	

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Workorder: 34-1627303

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

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Sample ID: \$16T033556				Collected	: 09/24/2016
Lab ID: 1627303032				Received	: 09/28/2016
Method: NIOSH 1613 Mod.	San		226-01, Charcoal T /50mg Volume Not Provide		: 10/04/2016
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)	
Pyridine	< 0.50	NA	NA	0.50	
2.4-Dimethylpyridine	< 0.50	NA	NA	0.50	

Sample ID: \$16T033557 Lab ID: 1627303033				Collected: 09/24/2016 Received: 09/28/2016
Method: NIOSH 1613 Mod.	San		226-01, Charcoal 50mg Volume Not Provid	
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	< 0.50	NA	NA	0.50

Sample ID: \$16T033558				Collected:	09/24/2016
Lab ID: 1627303034				Received:	09/28/2016
Method: NIOSH 1613 Mod.	San		226-01, Charcoal 750mg Volume Not Provid		10/04/2016
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)	
Pyridine	< 0.50	NA	NA	0.50	
2,4-Dimethylpyridine	< 0.50	NA	NA	0.50	

Sample ID: \$16T033559 Lab ID: 1627303035					09/24/2016 09/28/2016
Method: NIOSH 1613 Mod.	San		226-01, Charcoal 50mg Volume Not Provid		10/04/2016
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)	
Pyridine	<0.50	NA	NA	0.50	
2,4-Dimethylpyridine	<0.50	NA	NA.	0.50	



Workorder: 34-1627303

Client Project ID: Washington River Protection

So Purchase Order: 55502 Rel9 Project Manager: Rand Potter

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Sample ID: \$16T033560 Lab ID: 1627303036					09/24/2016
Method: NIOSH 1613 Mod.	San		C 226-01, Charcoal 7 /50mg Volume Not Provid	Tube Analyzed:	10/04/2016
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)	
Pyridine	< 0.50	NA	NA	0.50	
2,4-Dimethylpyridine	< 0.50	NA	NA	0.50	

Sample ID: \$16T033561 Lab ID: 1627303037				Collected: 09/24/201 Received: 09/28/201
Method: NIOSH 1613 Mod.	San		226-01, Charcoal 750mg Volume Not Provid	
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Pyridine	<0.50	NA	NA	0.50
2,4-Dimethylpyridine	< 0.50	NA	NA.	0.50

Sample ID: \$16T033562				Collected: 09/24/2
Lab ID: 1627303038				Received: 09/28/2
Method: NIOSH 1613 Mod.	San		226-01, Charcoal 150mg Volume Not Provid	
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)
Pyridine	< 0.50	NA	NA	0.50
2,4-Dimethylpyridine	< 0.50	NA	NA	0.50

Sample ID: \$16T033563 Lab ID: 1627303039					09/24/2016 09/28/2016
Method: NIOSH 1613 Mod.	San		226-01, Charcoal 50mg Volume Not Provid		10/04/2016
Analyte	Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)	
Pyridine	<0.50	NA	NA	0.50	
2,4-Dimethylpyridine	<0.50	NA	NA	0.50	



Workorder: 34-1627303

Client Project ID: Washington River Protection

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Purchase Order: 55502 Rel9 Project Manager: Rand Potter

Analytical Results

			12/1/10/10/10	09/24/2016
San	100	/50mg		10/04/2016
Result (ug/sample)	Result (mg/m²)	Result (ppm)	RL (ug/sample)	
< 0.50	NA	NA	0.50	
< 0.50	NA	NA	0.50	
	Result (ug/sample) <0.50	Sampling Parameter: Air ' Result (ug/sample) Result (mg/m²) <0.50 NA	Sampling Parameter: Air Volume Not Provid Result (ug/sample) Result (mg/m²) Result (ppm) <0.50 NA NA	Received: Media: SKC 226-01, Charcoal Tube Analyzed: 100/50mg Sampling Parameter: Air Volume Not Provided Result (ug/sample) Result (mg/m²) Result (ppm) RL (ug/sample) <0.50 NA NA 0.50

Comments

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Quality Control: NIOSH 1613 Mod. - (HBN: 177599)

The referenced method has not been validated for 2,4-dimethylpyridine. Additionally, studies regarding media collection efficiency, sample storage stability, analyte retention capability, and/or analyte description efficiency have not been performed. The ending CCV failed high for pyridine and 2,4-dimethylpyridine. Since all the samples were below the reporting limit for pyridine and 2,4-dimethylpyridine, the data is valid per IH-QA-009, Section 6.3.3.

Quality Control: NIOSH 1613 Mod. - (HBN: 177738)

The referenced method has not been validated for 2,4-dimethylpyridine. Additionally, studies regarding media collection efficiency, sample storage stability, analyte retention capability, and/or analyte desorption efficiency have not been performed. The back sorbent section of sample 1627303036 was lost during extraction and the front section was analyzed like normal with no positive hits being detected.

Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
NIOSH 1613 Mod.	/S/ David Teynor 10/05/2016 11:12	/S/ Thomas J. Masolan 10/05/2016 14:39

Laboratory Contact Information

ALS Environmental 960 W Levoy Drive Salt Lake City, Utah 84123 Phone: (801) 266-7700 Email: alsit.lab@ALSGlobal.com Web: www.alsslc.com



Workorder: 34-1627303

Client Project ID: Washington River Protection

So

Purchase Order: 55502 Rel9 Project Manager: Rand Potter

General Lab Comments

The results provided in this report relate only to the items tested.

Samples were received in acceptable condition unless otherwise noted.

Samples have not been blank corrected unless otherwise noted.

This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ANAB (DoD ELAP)	ADE-1420	http://www.anab.org/accredited-organizations/
	Utah (NELAC)	DATA1	http://health.utah.gov/lab/lab/mp/
	Nevada	UT00009	http://ndep.nv.gov/bsdvi/labservice.htm
	Oklahoma	UT00009	http://www.deq.state.ok.us/CSDnew/
	Iowa	IA# 376	http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx
	Texas (TNI)	T104704456-11-1	http://www.tceq.texas.gov/field/qa/lab_accred_certif.html
	Washington	C596-16	http://www.ecy.wa.gov/programs/eap/labs/index.html
	Kenses	E-10416	http://www.kdheks.gov/lipo/index.html
Industrial Hygiene	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org
	Washington	C596-16	http://www.ecy.wa.gov/programs/eap/labs/index.html
Lead Testing:			
CPSC	ANAB (ISO 17025, CPSC)	ADE-1420	http://www.anab.org/accredited-organizations/
Soil, Dust, Paint ,Air	AIHA LAP LLC (ISO 17025 & IHLAP/ELLAP)	101574	http://www.aihaaccreditedlabs.org
Dietary Supplements	ACLASS (ISO 17025)	ADE-1420	http://www.adasscorp.com

Definitions

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LOD = Limit of Detection = MDL = Method Detection Limit, A statistical estimate of method/media/instrument sensitivity.

LOQ = Limit of Quantitation = RL = Reporting Limit, A verified value of method/media/instrument sensitivity.

ND = Not Detected, Testing result not detected above the LOD or LOQ.

NA = Not Applicable.

" No result could be reported, see sample comments for details.

< This testing result is less than the numerical value.

() This testing result is between the LOD and LOQ and has higher analytical uncertainty than values at or above the LOQ.

ALS Environmental certifies this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this report has been electronically authorized by the following laboratory representative:

Rand Potter, Project Manager, ALS Environmental

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Quality Control Sample Batch Report

Analysis Information

Workorder: 1627303

Limits: Historical Performance Preparation: NA
Basis: ALS Laboratory Group Batch: NA
Prepared By: NA

Analysis: NIOSH 1613 Mod. Batch: ISVO/3162 (HBN: 177599)

Analyzed By: David Teynor

Blank

LMB: 620720 Analyzed: 09/30/2016 10:13 Units: ug/sample

 Analyte
 Result
 MDL
 RL

 Pyridine
 ND
 NA
 0.500

 2,4-Dimethylpyridine
 ND
 NA
 0.500

Laboratory Control Sample - Laboratory Control Sample Duplicate

LCS: 520721 LCSD: 520722 Analyzed: 09/30/2016 10:32 Analyzed: 09/30/2016 10:52

Dilution: 1

Dilution: 1

Units unitsmale

Units: ug/sample Units: ug/s Result % Rec Analyte % Rec QC Limits RPD QC Limits Result Target Pyridine 0.633 0.699 22.1 1.00 63.3 61.8 141 69.9 9.85 0.0 2,4-Dimethylpyridine 0.632 1.00 63.2 51.7 130.6 0.686 68.6 8.15 0.0 22.2

Comments

The referenced method has not been validated for 2,4-dimethylpyridine. Additionally, studies regarding media collection efficiency, sample storage stability, analyte retention capability, analyte description efficiency have not been performed. The ending CCV tailed high for pyridine and 2,4-dimethylpyridine. Since all the samples were below the reporting limit for pyridine and 2,4-dimethylpyridine, the data is valid per IH-QA-009, Section 6.3.3.

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review	
/S/ David Teynor	/S/ Thomas J. Mascian	
10/05/2016 11:12	10/05/2016 14:16	

Symbols and Definitions

- Analyte above reporting limit or outside of control limits

Sample result is greater than 4 times the spike added

Sample and Matrix Duplicate less than 5 times the reporting limit

. Result is above the calibration range

RPD - Relative % Difference (Spike / Spike Duplicate)

ND - Not Detected (U - Qualifier also flags analyte as not detected)

NA - Not Applicable

QC results are not adjusted for moisture correction, where applicable



Quality Control Sample Batch Report

Analysis Information

Workorder: 1627303

Limits: Historical/Performance Preparation: NA Basis: ALS Laboratory Group Batch: NA Prepared By: NA

Analysis: NIOSH 1613 Mod. Batch: ISVO/3165 (HBN: 177738) Analyzed By: David Teynor

LMB: 521043 Analyzed: 10/04/2016 09:24

Analyte	Result	MDL	RL
Pyridine	ND	NA	0.500
2,4-Dimethylpyridine	ND	NA	0.500

Laboratory Control Sample - Laboratory Control Sample Duplicate

Analyzed: 10/04/2016 09:44 Analyzed: 10/04/2016 10:04

Dilution: 1 Dilution: 1

Units: ug/sample						Units: ug	sample .			
Analyte	Result	Target	%Rec	QCL	lmits	Result	% Rec	RPD	QCLI	mits
Pyridine	0.998	1.00	99.8	61.8	141.1	1.03	103	3.02	0.0	22.1
2,4-Dimethylpyridine	0.893	1,00	89.3	51.7	130.6	1.03	103	14.5	0.0	22.2

Comments

The referenced method has not been validated for 2,4-dimethylpyridine. Additionally, studies regarding media collection efficiency, sample storage stability, analyte retention capability, and/or analyte description efficiency have not been performed. The back sorbent section of sample 1627303038 was lost during extraction and the front section was analyzed like normal with no positive hits being detected.

QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Analyst	Peer Review	
/S/ David Teynor	/S/ Thomas J. Masoian	
10/05/2016 11:07	10/05/2016 14:38	

Symbols and Definitions

 Analyte above reporting limit or outside of control limits. RPD - Relative % Difference (Spike / Spike Duplicate)

A - Sample result is greater than 4 times the spike added ND - Not Detected (U - Qualifer also flags analyte as not detected)

 Sample and Matrix Duplicate less than 5 times the reporting limit. NA - Not Applicable

. Result is above the calibration range. QC results are not adjusted for moisture correction, where applicable

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	5162033526	5	Vh. 9/23/16		CHARGONE STREE	Tyridiess 16-D8636-11-BASE-IS .			N/A
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	\$167033529	F	VA 9/23/16	L	CHANCOAL TURE	Pyridines 16-08635-11-52F-A ,			2/2
	5167033530	\$	VA 9/23/26	L	CHARGONE TUBE	Sycidians 16-05639-11-557-9			18/3
	\$16T033531	\$	VA 9/23/16	L	CERROCONE, TUBE	Pyridises 16-08639-11-88F-C	+		27.2
	\$160033532	É	VA. 3/23/16		CHANCOAL TUBE	Pyridime: 16-08635-11-827-0		•	18/A
	\$16T033533	É	73. 9/23/26	L	CIDACONI TERE	Pychologe 16-00635-11-237-E		,	8/8
	\$1,62033534	£	78. 9/23/26		CENTRONAL TWEE	Pyridizes 16-09635-11-229-F		,	+ K/3.
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Contest	SVA.					5	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	SIS REQUEST	20162969 Page 2 of	2 of 4
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3 3 3 3 7	5918	Г		1/23/16		CHARGOAL TURE	Syzidines 16-08635-11-DH-D .		*	M/N
31 31 31 47	50.62	Т		1/23/16		CEASCOAL TUBE	Pyridines 16-08635-11-26-E	,		1 S/A
3 3 7	8369	Т		1/23/16		CHARGONS, TUBE	Pyridiaes 14-08635-11-28-8		7	K/X
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A-6009-962 (93/09) 3,2 18 of Laborator 18 10 2 000 200 210 210 3 16-05 FAX 372-1878 C.O.C. No. 20162969 N/N 8/3 S 25% S 2 1/4 S. 5 m m 10/4/16 à Page ∞888×0<8 Nerchage OrdenCharge Code Date/Time 9 27 14 0930 releptione No 313-61 61 Date/Tene CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST Send Searchts to Carl Howald IV and Greg Carl W Dealdst. gov and Gregory L. Scanlandel. pov. see 50M for enail Parts and Return No. Sample Analysis PATEZASE 9 Pafernace Contract \$ 55502 Pire Sgn Ledier Oldi Balon Pyridians 16-04636-11-State-ETF . Pyridines 16-08636-11-SLORG-IN Paridines 16-05636-11-SET-A . Syxidines 16-08636-11-EFF-5 - 0-112-11-9696-91 seeppixid Warteren Che Pyridines 16-08636-11-BASE-DF Pyridines 16-08636-11-8ASB-1FF Paridines 16-08636-11-272-8 Pyridines 16-36056-11-EFF-F Syridizes 16-01626-11-EFF-C Violativities of the passes of the propuestor and returned to parent container or site of ortigor materials shall be placed up by requestor and returned to parent container or site of ortigor Sample Origin coentrates trouserros Legibodi/Work Padage No. S/A MSDS O Yes Method of Shipment Data Tumanound No./Type Container CENTICONE TYRE DESCONE TOTAL CRANCOAL TUBE CHANGOL TUBE CHARGONE TORE CHARGONA TUBE CEASCORE TUBE CHARGOLA TORE CEARCOAL TUBE CRANCOAL TUBE Alzalie. Time POSSIBLE SAMPLE WZZARDSREMARKS (List all 3/24/16 VA 9/24/16 VA 5/24/16 43 9/24/16 AV VA 3/26/26 72 3/24/16 3/24/16 9/24/18 VA 9/24/26 VA 5/24/16 Date ś \$1,65033354 \$162033549 \$162033550 \$1,67033551 \$1,62033332 \$16203333 8162033247 \$162933548 5161033345 5167033546 OI 987 clect Title chitton sroum ripped To (Lab) telinguished By FINAL SAUPLE DESPOSITION Screpto No.

1627303- Page 17 of 18

					3	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	SIS REQUEST	Page 4 of	of 4
Collector					Contact Requestor		Telephone No 373-6861	MSIN 16-05 PAX	372-1878
SAF No.					Sample Orgin		Purchase OrdesCharge Code 293003/C886		
Project Title					Logbook/Work.Padrage No.		SOCIAL SOLA	No.	300
CASTRIDGE EVALUATION Shipped To fl. 805	CALTION				Method of Shipment		II of Lading/Art Bill No.	9009 BBB	0331 8403
Protocol					Data Tumaround		Parts and Return No.	41367	
UA	645		Date	Time	No/Twee Container	Sample Analysis	natysis		Preservative
campa no.	C140011666	5	15		CENTRONI TUBB	Pyridines 16-01636-11-6FF-0 .	•		2/3
	0100031536	1 5	_		CHANCOLL TURE	Pyridines 16-08636-11-889-E .			E/3
	2167033557		9/24/16		CHARGOAL TORK	Pyridines 16-08636-11-28-A .		,	N/A
	4167033558	ş	9/24/16		CHANCOLL TUBE	Pyridines 16-09636-11-138-B '		,	N/A
	8167033559	\$	VA 5/24/16		CHANCOLL TUBE	Tyridises 16-08636-11-230-C .		,	8/3
	*167033560	\$	VA. 5/24/16		CHANGOAL TUBE	Pyridises 16-08636-11-28-0		,	8/3
	6760033563	ß	9/24/16		CHANGOAL TUBE	Pyridines 16-08636-11-78-8 .			3/5
	63 640 95 63	5	9/24/16		CELECOAL TERM	Pyridites 16-08636-11-Di-F ;		,	8/8
	63 60003563	2	9/26/16		CHACCAL TORS	Pyridines 16-08636-11-18-6			\$/¥
	100000000000000000000000000000000000000	1	3/36/36		CHANGOOK TORS	Pyridines 16-08636-11-18-8			8/3
POSSIBLE SA	MPLE HAZARDSIR	- MG	aks (Lat all	CHOWN WEST	POSSIBLE SAMPLE HAZARDSREJANISKS (Latral travan weeks) MSDS () Yes () No	ries No SEPECAL MESTRUCTIONS Send Persits to Carl Newald IV and Greg Carl M Newalderingor and Gregory L. Sendament.gor see 50% for small RESEARCH CONTRACT BY NEW STREAMS RESEARCH CONTRACT BY 85552	4 FF and Groy ee 50W for email	Hold Time	
Reinquarted By	Mene Ase	3	\$ 5 m	3	Sylic office	Nacional By Print Sign July : Gradian Opellis Gudera	Plantus oggo	Mager's = Soil Dt. SE = Sedment T	= Drum Liquids = Texus
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FRAL SAMPLE DESPOSITION		100	od (e.g., Kritum to custo)	gouser, per	Corposal Method (e.g., Rutum to customer, per tilo procedure, uned in process)	(in process) Disposed By		04/1/6	13:50

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RJ LeeGroup, Inc. | Columbia Basin Analytical Laboratories 2710 North 20th Avenue, Pasco WA 99301 Tel: (509) 545-4969 | Fasc (509) 544-6010

Contract No.:

Carl Howald IV 11/21/16

Washington River Protection Solutions, LLC P.O. Box 850 MSIN H6-16 Richland, WA 99352

Project: Cartridge Evaluation

Subject: Nitrosamines Analysis Report, Group Number 20162968

Enclosed is the final report for group 20162968 number analyzed for Nitrosamines using NIOSH 2522-Modified. This group number 20162968 has been assigned a Columbia Basin Analytical Laboratories login order number of W609129. This report consists of a summary report of the samples, a laboratory report of each nitrosamine, a single quality control report for the analysis batch, and a copy of the chain of custody.

General Set Comments

Columbia Basin Analytical Laboratories received 40 samples on 09/27/16 to be tested for Nitrosamines. The samples were analyzed in accordance with NIOSH 2522-Modified for N-Nitrosodimethylamine, N-Nitrosomethylethylamine, N-Nitrosodiethylamine, N-Nitrosodien-propylamine, N-Nitrosodien-butylamine, N-Nitrosopiperidine, N-Nitrosopyrrolidine, and N-Nitrosomorpholine. All results have been corrected for desorption efficiency and measurable levels in the blanks.

X- Analyte detected at or above MRL on initial analysis. Analyte not detected at or above MRL on confirmation analysis. Analyte not confirmed.

Results

There were detectable nitrosamines concentrations at or above the reporting limit in the samples.

SampleName	Lab ID	Analyzed	Analyte	Results	RL	Units	Flags
16-08635-12-EFF-E	S16T033481	10/18/16	N-Nitrosodiethylamine	< 0.022	0.022	µg/tube	
16-08635-12-EFF-E	S16T033481	10/18/16	N-Nitrosodimethylamine	<0.017	0.017	µg/tube	
16-08635-12-EFF-E	S16T033481	10/18/16	N-Nitrosodi-n-butylamine	< 0.023	0.023	µg/tube	
16-08635-12-EFF-E	S16T033481	10/18/16	N-Nitrosodi-n-propylamine	< 0.022	0.022	µg/tube	
16-08635-12-EFF-E	S16T033481	10/18/16	N-Nitrosomethylethylamine	< 0.022	0.022	µg/tube	
16-08635-12-EFF-E	S16T033481	10/18/16	N-Nitrosomorpholine	< 0.022	0.022	µg/tube	
16-08635-12-EFF-E	S16T033481	10/18/16	N-Nitrosopiperidine	< 0.023	0.023	µg/tube	
16-08635-12-EFF-E	S16T033481	10/18/16	N-Nitrosopyrrolidine	< 0.022	0.022	µg/tube	
16-08635-12-EFF-F	S16T033482	10/18/16	N-Nitrosodiethylamine	< 0.022	0.022	µg/tube	
16-08635-12-EFF-F	S16T033482	10/18/16	N-Nitrosodimethylamine	< 0.017	0.017	µg/tube	
16-08635-12-EFF-F	S16T033482	10/18/16	N-Nitrosodi-n-butylamine	< 0.023	0.023	µg/tube	
16-08635-12-EFF-F	S16T033482	10/18/16	N-Nitrosodi-n-propylamine	< 0.022	0.022	µg/tube	
16-08635-12-EFF-F	S16T033482	10/18/16	N-Nitrosomethylethylamine	< 0.022	0.022	µg/tube	

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^{*} Analyte not detected at or above MRL on initial analysis. Analyte detected at or above MRL on confirmation analysis. Analyte not confirmed.

•								
	16-08635-12-EFF-F	S16T033482	10/18/16	N-Nitrosomorpholine	< 0.022	0.022	µg/tube	
	16-08635-12-EFF-F	S16T033482	10/18/16	N-Nitrosopiperidine	< 0.023	0.023	µg/tube	
	16-08635-12-EFF-F	S16T033482	10/18/16	N-Nitrosopyrrolidine	< 0.022	0.022	µg/tube	
	16-08635-12-EFF-G	S16T033483	10/18/16	N-Nitrosodiethylamine	< 0.022	0.022	µg/tube	
	16-08635-12-EFF-G	S16T033483	10/18/16	N-Nitrosodimethylamine	< 0.017	0.017	µg/tube	
	16-08635-12-EFF-G	S16T033483	10/18/16	N-Nitrosodi-n-butylamine	< 0.023	0.023	µg/tube	
	16-08635-12-EFF-G	S16T033483	10/18/16	N-Nitrosodi-n-propylamine	< 0.022	0.022	µg/tube	
	16-08635-12-EFF-G	S16T033483	10/18/16	N-Nitrosomethylethylamine	< 0.022	0.022	µg/tube	
	16-08635-12-EFF-G	S16T033483	10/18/16	N-Nitrosomorpholine	< 0.022	0.022	µg/tube	
	16-08635-12-EFF-G	S16T033483	10/18/16	N-Nitrosopiperidine	< 0.023	0.023	µg/tube	
	16-08635-12-EFF-G	S16T033483	10/18/16	N-Nitrosopyrrolidine	< 0.022	0.022	µg/tube	
	16-08635-12-EFF-H	S16T033484	10/18/16	N-Nitrosodiethylamine	< 0.022	0.022	µg/tube	
	16-08635-12-EFF-H	S16T033484	10/18/16	N-Nitrosodimethylamine	< 0.017	0.017	µg/tube	
	16-08635-12-EFF-H	S16T033484	10/18/16	N-Nitrosodi-n-butylamine	< 0.023	0.023	µg/tube	
	16-08635-12-EFF-H	S16T033484	10/18/16	N-Nitrosodi-n-propylamine	< 0.022	0.022	µg/tube	
	16-08635-12-EFF-H	S16T033484	10/18/16	N-Nitrosomethylethylamine	< 0.022	0.022	µg/tube	
	16-08635-12-EFF-H	S16T033484	10/18/16	N-Nitrosomorpholine	< 0.022	0.022	µg/tube	
	16-08635-12-EFF-H	S16T033484	10/18/16	N-Nitrosopiperidine	< 0.023	0.023	µg/tube	
	16-08635-12-EFF-H	S16T033484	10/18/16	N-Nitrosopyrrolidine	< 0.022	0.022	µg/tube	
	16-08635-12-IN-A	S16T033485	10/18/16	N-Nitrosodiethylamine	< 0.022	0.022	µg/tube	
	16-08635-12-IN-A	S16T033485	10/21/16	N-Nitrosodimethylamine	3.171	0.281	µg/tube	D
	16-08635-12-IN-A	S16T033485	10/18/16	N-Nitrosodi-n-butylamine	< 0.023	0.023	µg/tube	
	16-08635-12-IN-A	S16T033485	10/18/16	N-Nitrosodi-n-propylamine	< 0.022	0.022	µg/tube	
	16-08635-12-IN-A	S16T033485	10/18/16	N-Nitrosomethylethylamine	0.025	0.022	µg/tube	
	16-08635-12-IN-A	S16T033485	10/18/16	N-Nitrosomorpholine	0.041	0.022	µg/tube	
	16-08635-12-IN-A	S16T033485	10/18/16	N-Nitrosopiperidine	< 0.023	0.023	µg/tube	
	16-08635-12-IN-A	S16T033485	10/18/16	N-Nitrosopyrrolidine	< 0.022	0.022	µg/tube	
	16-08635-12-IN-B	S16T033486	10/18/16	N-Nitrosodiethylamine	< 0.022	0.022	µg/tube	
	16-08635-12-IN-B	S16T033486	10/21/16	N-Nitrosodimethylamine	3.267	0.281	µg/tube	D
	16-08635-12-IN-B	S16T033486	10/18/16	N-Nitrosodi-n-butylamine	< 0.023	0.023	µg/tube	
	16-08635-12-IN-B	S16T033486	10/18/16	N-Nitrosodi-n-propylamine	< 0.022	0.022	µg/tube	
	16-08635-12-IN-B	S16T033486	10/18/16	N-Nitrosomethylethylamine	0.030	0.022	µg/tube	
	16-08635-12-IN-B	S16T033486	10/18/16	N-Nitrosomorpholine	0.041	0.022	µg/tube	
	16-08635-12-IN-B	S16T033486	10/18/16	N-Nitrosopiperidine	< 0.023	0.023	µg/tube	
	16-08635-12-IN-B	S16T033486	10/18/16	N-Nitrosopyrrolidine	< 0.022	0.022	µg/tube	
	16-08635-12-IN-C	S16T033487	10/18/16	N-Nitrosodiethylamine	<0.022	0.022	µg/tube	
	16-08635-12-IN-C	S16T033487	10/21/16	N-Nitrosodimethylamine	3.239	0.281	µg/tube	D
	16-08635-12-IN-C	S16T033487	10/18/16	N-Nitrosodi-n-butylamine	< 0.023	0.023	µg/tube	
	16-08635-12-IN-C	S16T033487	10/18/16	N-Nitrosodi-n-propylamine	< 0.022	0.022	µg/tube	
	16-08635-12-IN-C	S16T033487	10/18/16	N-Nitrosomethylethylamine	0.032	0.022	µg/tube	
	16-08635-12-IN-C	S16T033487	10/18/16	N-Nitrosomorpholine	0.036	0.022	µg/tube	
	16-08635-12-IN-C	S16T033487	10/18/16	N-Nitrosopiperidine	<0.023	0.023	µg/tube	
	16-08635-12-IN-C	S16T033487	10/18/16	N-Nitrosopyrrolidine	<0.022	0.022	µg/tube	
	16-08635-12-IN-D	S16T033489	10/18/16	N-Nitrosodiethylamine	< 0.022	0.022	µg/tube	
	16-08635-12-IN-D	S16T033489	10/21/16	N-Nitrosodimethylamine	3.446	0.281	µg/tube	D
	16-08635-12-IN-D	S16T033489	10/18/16	N-Nitrosodi-n-butylamine	<0.023	0.023	µg/tube	
	16-08635-12-IN-D	S16T033489	10/18/16	N-Nitrosodi-n-propylamine	< 0.022	0.022	µg/tube	
	16-08635-12-IN-D	S16T033489	10/18/16	N-Nitrosomethylethylamine	0.031	0.022	µg/tube	
	16-08635-12-IN-D	S16T033489	10/18/16	N-Nitrosomorpholine	0.033	0.022	µg/tube	
	16-08635-12-IN-D	S16T033489	10/18/16	N-Nitrosopiperidine	<0.023	0.023	µg/tube	
	16-08635-12-IN-D	S16T033489	10/18/16	N-Nitrosopyrrolidine	< 0.022	0.022	µg/tube	
	16-08635-12-BASE-EFF	S16T033490	10/18/16	N-Nitrosodiethylamine	< 0.022	0.022	µg/tube	
	16-08635-12-BASE-EFF	S16T033490	10/18/16	N-Nitrosodimethylamine	<0.017	0.017	µg/tube	
	16-08635-12-BASE-EFF	S16T033490	10/18/16	N-Nitrosodi-n-butylamine	< 0.023	0.023	µg/tube	

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16-08635-12-BASE-EFF	S16T033490	10/18/16	N-Nitrosodi-n-propylamine	< 0.022	0.022	µg/tube
16-08635-12-BASE-EFF	S16T033490	10/18/16	N-Nitrosomethylethylamine	<0.022	0.022	µg/tube
16-08635-12-BASE-EFF	S16T033490	10/18/16	N-Nitrosomorpholine	< 0.022	0.022	µg/tube
16-08635-12-BASE-EFF	S16T033490	10/18/16	N-Nitrosopiperidine	< 0.023	0.023	µg/tube
16-08635-12-BASE-EFF	S16T033490	10/18/16	N-Nitrosopyrrolidine	<0.022	0.022	µg/tube
16-08635-12-BASE-IN	S16T033491	10/18/16	N-Nitrosodiethylamine	< 0.022	0.022	µg/tube
16-08635-12-BASE-IN	S16T033491	10/18/16	N-Nitrosodimethylamine	< 0.017	0.017	µg/tube
16-08635-12-BASE-IN	S16T033491	10/18/16	N-Nitrosodi-n-butylamine	< 0.023	0.023	µg/tube
16-08635-12-BASE-IN	S16T033491	10/18/16	N-Nitrosodi-n-propylamine	< 0.022	0.022	µg/tube
16-08635-12-BASE-IN	S16T033491	10/18/16	N-Nitrosomethylethylamine	< 0.022	0.022	µg/tube
16-08635-12-BASE-IN	S16T033491	10/18/16	N-Nitrosomorpholine	< 0.022	0.022	µg/tube
16-08635-12-BASE-IN	S16T033491	10/18/16	N-Nitrosopiperidine	<0.023	0.023	µg/tube
16-08635-12-BASE-IN	S16T033491	10/18/16	N-Nitrosopyrrolidine	< 0.022	0.022	µg/tube
16-08635-12-BLANK1	S16T033492	10/18/16	N-Nitrosodiethylamine	< 0.022	0.022	µg/tube
16-08635-12-BLANK1	S16T033492	10/18/16	N-Nitrosodimethylamine	< 0.017	0.017	µg/tube
16-08635-12-BLANK1	S16T033492	10/18/16	N-Nitrosodi-n-butylamine	< 0.023	0.023	µg/tube
16-08635-12-BLANK1	S16T033492	10/18/16	N-Nitrosodi-n-propylamine	< 0.022	0.022	µg/tube
16-08635-12-BLANK1	S16T033492	10/18/16	N-Nitrosomethylethylamine	< 0.022	0.022	µg/tube
16-08635-12-BLANK1	S16T033492	10/18/16	N-Nitrosomorpholine	<0.022	0.022	µg/tube
16-08635-12-BLANK1	S16T033492	10/18/16	N-Nitrosopiperidine	< 0.023	0.023	µg/tube
16-08635-12-BLANK1	S16T033492	10/18/16	N-Nitrosopyrrolidine	< 0.022	0.022	µg/tube
16-08635-12-BLANK2	S16T033493	10/18/16	N-Nitrosodiethylamine	<0.022	0.022	µg/tube
16-08635-12-BLANK2	S16T033493	10/18/16	N-Nitrosodimethylamine	< 0.017	0.017	µg/tube
16-08635-12-BLANK2	S16T033493	10/18/16	N-Nitrosodi-n-butylamine	< 0.023	0.023	µg/tube
16-08635-12-BLANK2	S16T033493	10/18/16	N-Nitrosodi-n-propylamine	< 0.022	0.022	µg/tube
16-08635-12-BLANK2	S16T033493	10/18/16	N-Nitrosomethylethylamine	< 0.022	0.022	µg/tube
16-08635-12-BLANK2	S16T033493	10/18/16	N-Nitrosomorpholine	< 0.022	0.022	µg/tube
16-08635-12-BLANK2	S16T033493	10/18/16	N-Nitrosopiperidine	< 0.023	0.023	µg/tube
16-08635-12-BLANK2	S16T033493	10/18/16	N-Nitrosopyrrolidine	<0.022	0.022	µg/tube
16-08635-12-EFF-A	S16T033494	10/18/16	N-Nitrosodiethylamine	< 0.022	0.022	µg/tube
16-08635-12-EFF-A	S16T033494	10/18/16	N-Nitrosodimethylamine	< 0.017	0.017	µg/tube
16-08635-12-EFF-A	S16T033494	10/18/16	N-Nitrosodi-n-butylamine	< 0.023	0.023	µg/tube
16-08635-12-EFF-A	S16T033494	10/18/16	N-Nitrosodi-n-propylamine	< 0.022	0.022	µg/tube
16-08635-12-EFF-A	S16T033494	10/18/16	N-Nitrosomethylethylamine	< 0.022	0.022	µg/tube
16-08635-12-EFF-A	S16T033494	10/18/16	N-Nitrosomorpholine	< 0.022	0.022	µg/tube
16-08635-12-EFF-A	S16T033494	10/18/16	N-Nitrosopiperidine	<0.023	0.023	µg/tube
16-08635-12-EFF-A	S16T033494	10/18/16	N-Nitrosopyrrolidine	< 0.022	0.022	µg/tube
16-08635-12-EFF-B	S16T033495	10/18/16	N-Nitrosodiethylamine	< 0.022	0.022	µg/tube
16-08635-12-EFF-B	S16T033495	10/18/16	N-Nitrosodimethylamine	< 0.017	0.017	µg/tube
16-08635-12-EFF-B	S16T033495	10/18/16	N-Nitrosodi-n-butylamine	< 0.023	0.023	µg/tube
16-08635-12-EFF-B	S16T033495	10/18/16	N-Nitrosodi-n-propylamine	< 0.022	0.022	µg/tube
16-08635-12-EFF-B	S16T033495	10/18/16	N-Nitrosomethylethylamine	<0.022	0.022	µg/tube
16-08635-12-EFF-B	S16T033495	10/18/16	N-Nitrosomorpholine	< 0.022	0.022	µg/tube
16-08635-12-EFF-B	S16T033495	10/18/16	N-Nitrosopiperidine	< 0.023	0.023	µg/tube
16-08635-12-EFF-B	S16T033495	10/18/16	N-Nitrosopyrrolidine	< 0.022	0.022	µg/tube
16-08635-12-EFF-C	S16T033496	10/18/16	N-Nitrosodiethylamine	<0.022	0.022	µg/tube
16-08635-12-EFF-C	S16T033496	10/18/16	N-Nitrosodimethylamine	< 0.017	0.017	µg/tube
16-08635-12-EFF-C	S16T033496	10/18/16	N-Nitrosodi-n-butylamine	< 0.023	0.023	µg/tube
16-08635-12-EFF-C	S16T033496	10/18/16	N-Nitrosodi-n-propylamine	<0.022	0.022	µg/tube
16-08635-12-EFF-C	S16T033496	10/18/16	N-Nitrosomethylethylamine	<0.022	0.022	µg/tube
16-08635-12-EFF-C	S16T033496	10/18/16	N-Nitrosomorpholine	< 0.022	0.022	µg/tube
16-08635-12-EFF-C	\$16T033496	10/18/16	N-Nitrosopiperidine	< 0.023	0.023	µg/tube
16-08635-12-EFF-C	S16T033496	10/18/16	N-Nitrosopyrrolidine	<0.022	0.022	µg/tube
16-08635-12-EFF-D	S16T033497	10/18/16	N-Nitrosodiethylamine	< 0.022	0.022	µg/tube

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16-08635-12-EFF-D	S16T033497	10/18/16	N-Nitrosodimethylamine	< 0.017	0.017	µg/tube	
16-08635-12-EFF-D	S16T033497	10/18/16	N-Nitrosodi-n-butylamine	< 0.023	0.023	µg/tube	
16-08635-12-EFF-D	S16T033497	10/18/16	N-Nitrosodi-n-propylamine	< 0.022	0.022	µg/tube	
16-08635-12-EFF-D	S16T033497	10/18/16	N-Nitrosomethylethylamine	< 0.022	0.022	µg/tube	
16-08635-12-EFF-D	S16T033497	10/18/16	N-Nitrosomorpholine	<0.022	0.022	µg/tube	
16-08635-12-EFF-D	S16T033497	10/18/16	N-Nitrosopiperidine	< 0.023	0.023	µg/tube	
16-08635-12-EFF-D	S16T033497	10/18/16	N-Nitrosopyrrolidine	< 0.022	0.022	µg/tube	
16-08635-12-IN-E	S16T033498	10/18/16	N-Nitrosodiethylamine	< 0.022	0.022	µg/tube	
16-08635-12-IN-E	S16T033498	10/21/16	N-Nitrosodimethylamine	2.993	0.281	µg/tube	D
16-08635-12-IN-E	S16T033498	10/18/16	N-Nitrosodi-n-butylamine	< 0.023	0.023	µg/tube	
16-08635-12-IN-E	S16T033498	10/18/16	N-Nitrosodi-n-propylamine	< 0.022	0.022	µg/tube	
16-08635-12-IN-E	S16T033498	10/18/16	N-Nitrosomethylethylamine	0.031	0.022	µg/tube	
16-08635-12-IN-E	S16T033498	10/18/16	N-Nitrosomorpholine	0.032	0.022	µg/tube	
16-08635-12-IN-E	S16T033498	10/18/16	N-Nitrosopiperidine	< 0.023	0.023	µg/tube	
16-08635-12-IN-E	S16T033498	10/18/16	N-Nitrosopyrrolidine	< 0.022	0.022	µg/tube	
16-08635-12-IN-F	S16T033499	10/18/16	N-Nitrosodiethylamine	< 0.022	0.022	µg/tube	
16-08635-12-IN-F	S16T033499	10/22/16	N-Nitrosodimethylamine	3.090	0.281	µg/tube	D
16-08635-12-IN-F	S16T033499	10/18/16	N-Nitrosodi-n-butylamine	< 0.023	0.023	µg/tube	
16-08635-12-IN-F	S16T033499	10/18/16	N-Nitrosodi-n-propylamine	< 0.022	0.022	µg/tube	
16-08635-12-IN-F	S16T033499	10/18/16	N-Nitrosomethylethylamine	0.029	0.022	µg/tube	
16-08635-12-IN-F	S16T033499	10/18/16	N-Nitrosomorpholine	< 0.022	0.022	µg/tube	
16-08635-12-IN-F	S16T033499	10/18/16	N-Nitrosopiperidine	< 0.023	0.023	µg/tube	
16-08635-12-IN-F	S16T033499	10/18/16	N-Nitrosopyrrolidine	< 0.022	0.022	µg/tube	
16-08635-12-IN-G	S16T033500	10/18/16	N-Nitrosodiethylamine	< 0.022	0.022	µg/tube	
16-08635-12-IN-G	S16T033500	10/22/16	N-Nitrosodimethylamine	2.894	0.281	µg/tube	D
16-08635-12-IN-G	S16T033500	10/18/16	N-Nitrosodi-n-butylamine	< 0.023	0.023	µg/tube	-
16-08635-12-IN-G	S16T033500	10/18/16	N-Nitrosodi-n-propylamine	< 0.022	0.022	µg/tube	
16-08635-12-IN-G	S16T033500	10/18/16	N-Nitrosomethylethylamine	0.032	0.022	µg/tube	
16-08635-12-IN-G	S16T033500	10/18/16	N-Nitrosomorpholine	<0.022	0.022	µg/tube	
16-08635-12-IN-G	S16T033500	10/18/16	N-Nitrosopiperidine	< 0.023	0.023	µg/tube	
16-08635-12-IN-G	S16T033500	10/18/16	N-Nitrosopyrrolidine	< 0.022	0.022	µg/tube	
16-08635-12-IN-H	S16T033501	10/18/16	N-Nitrosodiethylamine	<0.022	0.022	µg/tube	
16-08635-12-IN-H	S16T033501	10/21/16	N-Nitrosodimethylamine	2.794	0.281	µg/tube	D
16-08635-12-IN-H	S16T033501	10/18/16	N-Nitrosodi-n-butylamine	< 0.023	0.023	µg/tube	-
16-08635-12-IN-H	S16T033501	10/18/16	N-Nitrosodi-n-propylamine	< 0.022	0.022	µg/tube	
16-08635-12-IN-H	S16T033501	10/18/16	N-Nitrosomethylethylamine	0.025	0.022	µg/tube	
16-08635-12-IN-H	S16T033501	10/18/16	N-Nitrosomorpholine	< 0.022	0.022	µg/tube	
16-08635-12-IN-H	S16T033501	10/18/16	N-Nitrosopiperidine	<0.023	0.023	µg/tube	
16-08635-12-IN-H	S16T033501	10/18/16	N-Nitrosopyrrolidine	< 0.022	0.022	µg/tube	
16-08636-12-BASE-EFF	S16T033502	10/19/16	N-Nitrosodiethylamine	<0.022	0.022	µg/tube	
16-08636-12-BASE-EFF	S16T033502	10/19/16	N-Nitrosodimethylamine	<0.022	0.022	µg/tube	
16-08636-12-BASE-EFF	S16T033502	10/19/16	N-Nitrosodi-n-butylamine	< 0.021	0.021	µg/tube	
16-08636-12-BASE-EFF	S16T033502	10/19/16	N-Nitrosodi-n-propylamine	< 0.021	0.021	µg/tube	
16-08638-12-BASE-EFF	S16T033502	10/19/16	N-Nitrosomethylethylamine	< 0.021	0.021	µg/tube	
16-08636-12-BASE-EFF	S16T033502	10/19/16	N-Nitrosomorpholine	< 0.021	0.021	pg/tube	
16-08636-12-BASE-FFF	S16T033502	10/19/16	N-Nitrosopiperidine	<0.021	0.021	µg/tube	
16-08636-12-BASE-EFF	S16T033502	10/19/16	N-Nitrosopyrrolidine	< 0.022	0.022	µg/tube	
16-08636-12-BASE-IN	S16T033503	10/19/16	N-Nitrosodiethylamine	< 0.022	0.022	µg/tube	
16-08638-12-BASE-IN	S16T033503	10/19/16	N-Nitrosodimethylamine	<0.022	0.022	µg/tube	
16-08636-12-BASE-IN	S16T033503	10/19/16	N-Nitrosodi-n-butylamine	<0.022	0.022	µg/tube	
16-08636-12-BASE-IN	S16T033503	10/19/16	N-Nitrosodi-n-propylamine	< 0.021	0.021	haltinge haltinge	
16-08636-12-BASE-IN	S16T033503	10/19/16	N-Nitrosomethylethylamine	< 0.021	0.021	pg/tube	
16-08636-12-BASE-IN	S16T033503	10/19/16	N-Nitrosomorpholine	<0.021	0.021	pg/tube	
16-08636-12-BASE-IN	\$16T033503	10/19/16	N-Nitrosopiperidine	< 0.021	0.021	pg/tube	
10-00000-12-DAGE-IN	0101033003	10/10/10	re-mirosoppendine	50.021	0.021	pgrade	

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	16-08636-12-BASE-IN	S16T033503	10/19/16	N-Nitrosopyrrolidine	< 0.022	0.022	µg/tube
	16-08636-12-BLANK-EFF	S16T033504	10/19/16	N-Nitrosodiethylamine	< 0.022	0.022	µg/tube
	16-08636-12-BLANK-EFF	S16T033504	10/19/16	N-Nitrosodimethylamine	< 0.022	0.022	µg/tube
	16-08636-12-BLANK-EFF	S16T033504	10/19/16	N-Nitrosodi-n-butylamine	< 0.021	0.021	µg/tube
	16-08636-12-BLANK-EFF	S16T033504	10/19/16	N-Nitrosodi-n-propylamine	< 0.021	0.021	µg/tube
	16-08636-12-BLANK-EFF	S16T033504	10/19/16	N-Nitrosomethylethylamine	< 0.021	0.021	µg/tube
	16-08636-12-BLANK-EFF	S16T033504	10/19/16	N-Nitrosomorpholine	< 0.021	0.021	µg/tube
	16-08636-12-BLANK-EFF	\$16T033504	10/19/16	N-Nitrosopiperidine	< 0.021	0.021	µg/tube
	16-08636-12-BLANK-EFF	S16T033504	10/19/16	N-Nitrosopyrrolidine	< 0.022	0.022	µg/tube
	16-08636-12-BLANK-IN	S16T033505	10/19/16	N-Nitrosodiethylamine	< 0.022	0.022	µg/tube
	16-09636-12-BLANK-IN	S16T033505	10/19/16	N-Nitrosodimethylamine	< 0.022	0.022	µg/tube
	16-08636-12-BLANK-IN	S16T033505	10/19/16	N-Nitrosodi-n-butylamine	< 0.021	0.021	µg/tube
	16-08636-12-BLANK-IN	S16T033505	10/19/16	N-Nitrosodi-n-propylamine	< 0.021	0.021	µg/tube
	16-08636-12-BLANK-IN	S16T033505	10/19/16	N-Nitrosomethylethylamine	< 0.021	0.021	µg/tube
	16-08636-12-BLANK-IN	S16T033505	10/19/16	N-Nitrosomorpholine	< 0.021	0.021	µg/tube
	16-08636-12-BLANK-IN	S16T033505	10/19/16	N-Nitrosopiperidine	< 0.021	0.021	µg/tube
	16-08638-12-BLANK-IN	S16T033505	10/19/16	N-Nitrosopyrrolidine	< 0.022	0.022	µg/tube
	16-08636-12-EFF-A	\$16T033506	10/19/16	N-Nitrosodiethylamine	< 0.022	0.022	µg/tube
	16-08636-12-EFF-A	S16T033506	10/19/16	N-Nitrosodimethylamine	< 0.022	0.022	µg/tube
	16-08636-12-EFF-A	S16T033506	10/19/16	N-Nitrosodi-n-butylamine	< 0.021	0.021	µg/tube
	16-08636-12-EFF-A	S16T033506	10/19/16	N-Nitrosodi-n-propylamine	< 0.021	0.021	µg/tube
	16-08636-12-EFF-A	S16T033506	10/19/16	N-Nitrosomethylethylamine	< 0.021	0.021	µg/tube
	16-08636-12-EFF-A	S16T033506	10/19/16	N-Nitrosomorpholine	< 0.021	0.021	µg/tube
	16-08636-12-EFF-A	S16T033506	10/19/16	N-Nitrosopiperidine	< 0.021	0.021	µg/tube
	16-08636-12-EFF-A	S16T033506	10/19/16	N-Nitrosopyrrolidine	< 0.022	0.022	µg/tube
	16-08636-12-EFF-B	S16T033507	10/19/16	N-Nitrosodiethylamine	< 0.022	0.022	µg/tube
	16-08636-12-EFF-B	S16T033507	10/19/16	N-Nitrosodimethylamine	< 0.022	0.022	µg/tube
	16-08636-12-EFF-B	S16T033507	10/19/16	N-Nitrosodi-n-butylamine	< 0.021	0.021	µg/tube
	16-08635-12-EFF-B	S16T033507	10/19/16	N-Nitrosodi-n-propylamine	< 0.021	0.021	µg/tube
	16-08636-12-EFF-B	S16T033507	10/19/16	N-Nitrosomethylethylamine	< 0.021	0.021	µg/tube
	16-08636-12-EFF-B	S16T033507	10/19/16	N-Nitrosomorpholine	< 0.021	0.021	µg/tube
	16-08636-12-EFF-B	S16T033507	10/19/16	N-Nitrosopiperidine	< 0.021	0.021	µg/tube
	16-08636-12-EFF-B	S16T033507	10/19/16	N-Nitrosopyrrolidine	< 0.022	0.022	µg/tube
	16-08636-12-EFF-C	S16T033508	10/19/16	N-Nitrosodiethylamine	< 0.022	0.022	µg/tube
	16-08636-12-EFF-C	S16T033508	10/19/16	N-Nitrosodimethylamine	< 0.022	0.022	µg/tube
	16-08636-12-EFF-C	S16T033508	10/19/16	N-Nitrosodi-n-butylamine	< 0.021	0.021	µg/tube
	16-08636-12-EFF-C	S16T033508	10/19/16	N-Nitrosodi-n-propylamine	< 0.021	0.021	µg/tube
	16-08636-12-EFF-C	S16T033508	10/19/16	N-Nitrosomethylethylamine	< 0.021	0.021	µg/tube
	16-08636-12-EFF-C	S16T033508	10/19/16	N-Nitrosomorpholine	< 0.021	0.021	µg/tube
	16-08636-12-EFF-C	S16T033508	10/19/16	N-Nitrosopiperidine	< 0.021	0.021	µg/tube
	16-08636-12-EFF-C	S16T033508	10/19/16	N-Nitrosopyrrolidine	< 0.022	0.022	µg/tube
	16-08636-12-EFF-D	S16T033509	10/19/16	N-Nitrosodiethylamine	<0.022	0.022	µg/tube
	16-08636-12-EFF-D	S16T033509	10/19/16	N-Nitrosodimethylamine	< 0.022	0.022	µg/tube
	16-08636-12-EFF-D	S16T033509	10/19/16	N-Nitrosodi-n-butylamine	< 0.021	0.021	µg/tube
	16-08636-12-EFF-D	S16T033509	10/19/16	N-Nitrosodi-n-propylamine	< 0.021	0.021	µg/tube
	16-08636-12-EFF-D	S16T033509	10/19/16	N-Nitrosomethylethylamine	<0.021	0.021	µg/tube
	16-08636-12-EFF-D	S16T033509	10/19/16	N-Nitrosomorpholine	< 0.021	0.021	µg/tube
	16-08636-12-EFF-D	S16T033509	10/19/16	N-Nitrosopiperidine	< 0.021	0.021	µg/tube
	16-08638-12-EFF-D	S16T033509	10/19/16	N-Nitrosopyrrolidine	<0.022	0.022	µg/tube
	16-08636-12-EFF-E	S16T033510	10/19/16	N-Nitrosodiethylamine	< 0.022	0.022	µg/tube
	16-08636-12-EFF-E	S16T033510	10/19/16	N-Nitrosodimethylamine	< 0.022	0.022	µg/tube
	16-08636-12-EFF-E	S16T033510	10/19/16	N-Nitrosodi-n-butylamine	< 0.021	0.021	µg/tube
	16-08636-12-EFF-E	S16T033510	10/19/16	N-Nitrosodi-n-propylamine	<0.021	0.021	µg/tube
	16-08636-12-EFF-E	S16T033510	10/19/16	N-Nitrosomethylethylamine	< 0.021	0.021	µg/tube

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16-08636-12-EFF-E	S16T033510	10/19/16	N-Nitrosomorpholine	< 0.021	0.021	µg/tube	
16-08636-12-EFF-E	S16T033510	10/19/16	N-Nitrosopiperidine	< 0.021	0.021	µg/tube	
16-08636-12-EFF-E	S16T033510	10/19/16	N-Nitrosopyrrolidine	< 0.022	0.022	µg/tube	
16-08636-12-EFF-F	S16T033511	10/19/16	N-Nitrosodiethylamine	< 0.022	0.022	µg/tube	
16-08636-12-EFF-F	S16T033511	10/19/16	N-Nitrosodimethylamine	<0.022	0.022	µg/tube	
16-08636-12-EFF-F	S16T033511	10/19/16	N-Nitrosodi-n-butylamine	< 0.021	0.021	µg/tube	
16-08636-12-EFF-F	S16T033511	10/19/16	N-Nitrosodi-n-propylamine	< 0.021	0.021	µg/tube	
16-08636-12-EFF-F	S16T033511	10/19/16	N-Nitrosomethylethylamine	< 0.021	0.021	µg/tube	
16-08636-12-EFF-F	S16T033511	10/19/16	N-Nitrosomorpholine	< 0.021	0.021	µg/tube	
16-08638-12-EFF-F	S16T033511	10/19/16	N-Nitrosopiperidine	< 0.021	0.021	µg/tube	
16-08636-12-EFF-F	S16T033511	10/19/16	N-Nitrosopyrrolidine	< 0.022	0.022	µg/tube	
16-08636-12-EFF-G	S16T033512	10/19/16	N-Nitrosodiethylamine	< 0.022	0.022	µg/tube	
16-08636-12-EFF-G	S16T033512	10/19/16	N-Nitrosodimethylamine	< 0.022	0.022	µg/tube	
16-08636-12-EFF-G	S16T033512	10/19/16	N-Nitrosodi-n-butylamine	< 0.021	0.021	µg/tube	
16-08636-12-EFF-G	S16T033512	10/19/16	N-Nitrosodi-n-propylamine	< 0.021	0.021	µg/tube	
16-08636-12-EFF-G	S16T033512	10/19/16	N-Nitrosomethylethylamine	< 0.021	0.021	µg/tube	
16-08636-12-EFF-G	S16T033512	10/19/16	N-Nitrosomorpholine	< 0.021	0.021	µg/tube	
16-08636-12-EFF-G	S16T033512	10/19/16	N-Nitrosopiperidine	< 0.021	0.021	µg/tube	
16-08636-12-EFF-G	S16T033512	10/19/16	N-Nitrosopyrrolidine	<0.022	0.022	µg/tube	
16-08636-12-EFF-H	S16T033513	10/19/16	N-Nitrosodiethylamine	< 0.022	0.022	µg/tube	
16-08636-12-EFF-H	S16T033513	10/19/16	N-Nitrosodimethylamine	< 0.022	0.022	µg/tube	
16-08636-12-EFF-H	S16T033513	10/19/16	N-Nitrosodi-n-butylamine	< 0.021	0.021	µg/tube	
16-08636-12-EFF-H	S16T033513	10/19/16	N-Nitrosodi-n-propylamine	< 0.021	0.021	µg/tube	
16-08636-12-EFF-H	S16T033513	10/19/16	N-Nitrosomethylethylamine	< 0.021	0.021	µg/tube	
16-08636-12-EFF-H	S16T033513	10/19/16	N-Nitrosomorpholine	< 0.021	0.021	µg/tube	
16-08636-12-EFF-H	S16T033513	10/19/16	N-Nitrosopiperidine	< 0.021	0.021	µg/tube	
16-08636-12-EFF-H	S16T033513	10/19/16	N-Nitrosopyrrolidine	< 0.022	0.022	µg/tube	
16-08636-12-IN-A	S16T033514	10/19/16	N-Nitrosodiethylamine	< 0.022	0.022	µg/tube	
16-08635-12-IN-A	S16T033514	10/21/16	N-Nitrosodimethylamine	3.038	0.280	µg/tube	D
16-08636-12-IN-A	S16T033514	10/19/16	N-Nitrosodi-n-butylamine	< 0.021	0.021	µg/tube	
16-08636-12-IN-A	S16T033514	10/19/16	N-Nitrosodi-n-propylamine	< 0.021	0.021	µg/tube	
16-08636-12-IN-A	S16T033514	10/19/16	N-Nitrosomethylethylamine	0.028	0.021	µg/tube	
16-08636-12-IN-A	S16T033514	10/19/16	N-Nitrosomorpholine	0.037	0.021	µg/tube	
16-08636-12-IN-A	S16T033514	10/19/16	N-Nitrosopiperidine	< 0.021	0.021	µg/tube	
16-08636-12-IN-A	S16T033514	10/19/16	N-Nitrosopyrrolidine	< 0.022	0.022	µg/tube	
16-08636-12-IN-B	S16T033515	10/19/16	N-Nitrosodiethylamine	<0.022	0.022	µg/tube	
16-08636-12-IN-B	S16T033515	10/22/16	N-Nitrosodimethylamine	1.205	0.224	µg/tube	D
16-08636-12-IN-B	S16T033515	10/19/16	N-Nitrosodi-n-butylamine	< 0.021	0.021	µg/tube	
16-08636-12-IN-B	S16T033515	10/19/16	N-Nitrosodi-n-propylamine	< 0.021	0.021	µg/tube	
16-08636-12-IN-B	S16T033515	10/19/16	N-Nitrosomethylethylamine	< 0.021	0.021	µg/tube	
16-08636-12-IN-B	S16T033515	10/19/16	N-Nitrosomorpholine	< 0.021	0.021	hg/tnpe	
16-08636-12-IN-B	S16T033515	10/19/16	N-Nitrosopiperidine	<0.021	0.021	µg/tube	
16-08636-12-IN-B	S16T033515	10/19/16	N-Nitrosopyrrolidine	<0.022	0.022	µg/tube	
16-08638-12-IN-C	S16T033516	10/19/16	N-Nitrosodiethylamine	< 0.022	0.022	µg/tube	
16-08636-12-IN-C	S16T033516	10/21/16	N-Nitrosodimethylamine	3.394	0.280	h@\tupe	
16-08636-12-IN-C	S16T033516	10/19/16	N-Nitrosodi-n-butylamine	<0.021	0.021	µg/tube	
16-08636-12-IN-C	S16T033516	10/19/16	N-Nitrosodi-n-propylamine	< 0.021	0.021	µg/tube	
16-08636-12-IN-C	S16T033516	10/19/16	N-Nitrosomethylethylamine	0.035	0.021	µg/tube	
16-08636-12-IN-C	S16T033516	10/19/16	N-Nitrosomorpholine	0.032	0.021	µg/tube	
16-08636-12-IN-C	S16T033516	10/19/16	N-Nitrosopiperidine	<0.021	0.021	µg/tube	**
16-08636-12-IN-C	S16T033516	10/19/16	N-Nitrosopyrrolidine	0.027	0.022	µg/tube	X
16-08636-12-IN-D	S16T033517	10/19/16	N-Nitrosodiethylamine	< 0.022	0.022	µg/tube	_
16-08636-12-IN-D	S16T033517	10/21/16	N-Nitrosodimethylamine	2.978	0.280	µg/tube	D
16-08636-12-IN-D	S16T033517	10/19/16	N-Nitrosodi-n-butylamine	< 0.021	0.021	µg/tube	

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16-08636-12-IN-D	S16T033517	10/19/16	N-Nitrosodi-n-propylamine	< 0.021	0.021	µg/tube	
16-08636-12-IN-D	S16T033517	10/19/16	N-Nitrosomethylethylamine	0.031	0.021	µg/tube	
16-08636-12-IN-D	S16T033517	10/19/16	N-Nitrosomorpholine	0.031	0.021	µg/tube	
16-08636-12-IN-D	S16T033517	10/19/16	N-Nitrosopiperidine	< 0.021	0.021	µg/tube	
16-08636-12-IN-D	S16T033517	10/19/16	N-Nitrosopyrrolidine	<0.022	0.022	µg/tube	
16-08636-12-IN-E	S16T033518	10/19/16	N-Nitrosodiethylamine	< 0.022	0.022	µg/tube	
16-08636-12-IN-E	S16T033518	10/22/16	N-Nitrosodimethylamine	3.275	0.280	µg/tube	D
16-08636-12-IN-E	S16T033518	10/19/16	N-Nitrosodi-n-butylamine	< 0.021	0.021	µg/tube	-
16-08636-12-IN-E	S16T033518	10/19/16	N-Nitrosodi-n-propylamine	< 0.021	0.021	µg/tube	
16-08636-12-IN-E	S16T033518	10/19/16	N-Nitrosomethylethylamine	0.035	0.021	µg/tube	
16-08636-12-IN-E	S16T033518	10/19/16	N-Nitrosomorpholine	0.032	0.021	µg/tube	
16-08636-12-IN-E	S16T033518	10/19/16	N-Nitrosopiperidine	< 0.021	0.021	µg/tube	
16-08636-12-IN-E	S16T033518	10/19/16	N-Nitrosopyrrolidine	< 0.022	0.022	µg/tube	
16-08636-12-IN-F	S16T033519	10/19/16	N-Nitrosodiethylamine	< 0.022	0.022	µg/tube	
16-08636-12-IN-F	S16T033519	10/22/16	N-Nitrosodimethylamine	2.692	0.280	µg/tube	D
16-08636-12-IN-F	S16T033519	10/19/16	N-Nitrosodi-n-butylamine	< 0.021	0.021	µg/tube	
16-08636-12-IN-F	S16T033519	10/19/16	N-Nitrosodi-n-propylamine	< 0.021	0.021	µg/tube	
16-08636-12-IN-F	S16T033519	10/19/16	N-Nitrosomethylethylamine	0.030	0.021	µg/tube	
16-08636-12-IN-F	S16T033519	10/19/16	N-Nitrosomorpholine	0.026	0.021	µg/tube	
16-08636-12-IN-F	S16T033519	10/19/16	N-Nitrosopiperidine	< 0.021	0.021	µg/tube	
16-08636-12-IN-F	S16T033519	10/19/16	N-Nitrosopyrrolidine	< 0.022	0.022	µg/tube	
16-08636-12-IN-G	S16T033520	10/19/16	N-Nitrosodiethylamine	< 0.022	0.022	µg/tube	
16-08636-12-IN-G	S16T033520	10/21/16	N-Nitrosodimethylamine	2.758	0.280	µg/tube	D
16-08636-12-IN-G	S16T033520	10/19/16	N-Nitrosodi-n-butylamine	< 0.021	0.021	µg/tube	
16-08636-12-IN-G	S16T033520	10/19/16	N-Nitrosodi-n-propylamine	< 0.021	0.021	µg/tube	
16-08636-12-IN-G	S16T033520	10/19/16	N-Nitrosomethylethylamine	0.030	0.021	µg/tube	
16-08636-12-IN-G	S16T033520	10/19/16	N-Nitrosomorpholine	0.024	0.021	µg/tube	
16-08636-12-IN-G	S16T033520	10/19/16	N-Nitrosopiperidine	< 0.021	0.021	µg/tube	
16-08635-12-IN-G	S16T033520	10/19/16	N-Nitrosopyrrolidine	<0.022	0.022	µg/tube	
16-08636-12-IN-H	S16T033521	10/19/16	N-Nitrosodiethylamine	< 0.022	0.022	µg/tube	
16-08636-12-IN-H	S16T033521	10/22/16	N-Nitrosodimethylamine	2.656	0.280	µg/tube	D
16-08636-12-IN-H	S16T033521	10/19/16	N-Nitrosodi-n-butylamine	< 0.021	0.021	µg/tube	
16-08636-12-IN-H	S16T033521	10/19/16	N-Nitrosodi-n-propylamine	< 0.021	0.021	µg/tube	
16-08636-12-IN-H	S16T033521	10/19/16	N-Nitrosomethylethylamine	0.027	0.021	µg/tube	
16-08636-12-IN-H	S16T033521	10/19/16	N-Nitrosomorpholine	< 0.021	0.021	µg/tube	
16-08636-12-IN-H	S16T033521	10/19/16	N-Nitrosopiperidine	< 0.021	0.021	µg/tube	
16-08636-12-IN-H	S16T033521	10/19/16	N-Nitrosopyrrolidine	< 0.022	0.022	µg/tube	
Recovery Failures in the IC	V, CCVs, LCSs, RL	and MRL					

There were no recovery failures in the CCVs, ICV, LCSs, MRL.

RSD Failures in the LCSs

There were no RSD failures between the laboratory control samples.

Measurable Blank Values

There were no measurable analytes in the blank samples.

Calibration Curves

The calibration curves for the Nitrosamines had an R-value that was 0.997 or better, over a range of 5.0 ng/mL to 200 ng/mL.

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General Lab Comments

The results provided in this report relate only to the items tested. Samples were received in acceptable conditions unless otherwise noted in the comments above. Samples have not been field blank corrected unless otherwise noted in the general set comments above. This test report shall not be reproduced, except in full, without written approval of Columbia Basin Analytical Laboratories.

I certify that this analytical report is in compliance with the Hanford SOW, both technically and for completeness. Release of the data contained in this hard copy report has been authorized by the Laboratory Director or a designee as verified by the following signature.

11/04/16

Scientist II DeNomy Dage

If you have any questions, please feel free to contact DeNomy Dage at ddage@rjlg.com or at 509-545-4989.

This report has been reviewed and approved by the following individual:

11/21/16

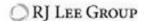
Office Manager JJ Furlong

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Report Template: WRPS_Nitrosamines 2.1.rpt



Carl Howald IV

Washington River Protection Solutions, LLC

P.O. Box 850 MSIN H6-16 Richland, WA 99352 Client Project: Cartridge Evaluation

Laboratory Report

NIOSH 2522 Air/Emissions on CC/TEA Analyzer Summary Table RJ Lee Group No.: W609129 Samples Received: 09/27/16 Report Date: 11/21/16 COC No.: 20162968 Extraction Date: 09/30/16

Sample Identification Client Sample ID	RJLG ID	Sampling Date	Analysis Date	Analyte	Concentration µg/tube	RL	Qualifier
16-08635-12-EFF-E S16T033481	W609129-01	09/23/16	10/18/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosodimethylamine	<0.017	0.017	
		09/23/16	10/18/16	N-Nitrosodi-n-butylamine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosodi-n-propylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Ntrosomethylethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomorpholine	<0.022	0.022	
		09/23/16	10/18/16	N-Nerosopiperidine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosopyrrolidine	<0.022	0.022	
16-08635-12-EFF-F S16T033482	W609129-02	09/23/16	10/18/16	N-Nitrosociethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosodimethylamine	<0.017	0.017	
		09/23/16	10/18/15	N-Nitrosodi-n-butylamine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosodi-n-propylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomethylethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomorpholine	<0.022	0.022	
		09/23/16	10/18/16	N-Ntrosopiperidine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosopymolidine	<0.022	0.022	

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Sample Identification Client Sample ID	RJLG ID	Sampling Date	Analysis Date	Analyte	Concentration µg/tube	RL	Qualifiers
16-08635-12-EFF-G S16T033483	W609129-03	09/23/16	10/18/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosodimethylamine	<0.017	0.017	
		09/23/16	10/18/16	N-Nitrosodi-n-butylamine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosodi-n-propylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomethylethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomorpholine	<0.022	0.022	
		09/23/16	10/18/16	N-Ntrosopiperidine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosopyrrolidine	<0.022	0.022	
16-08635-12-EFF-H S16T033484	W609129-04	09/23/16	10/18/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosodimethylamine	<0.017	0.017	
		09/23/16	10/18/16	N-Nitrosodi-n-butylamine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosodi-n-propylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomethylethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomorpholine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosopiperidine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosopymolidine	<0.022	0.022	

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Sample Identification Client Sample ID	RJLG ID	Sampling Date	Analysis Date	Analyte	Concentration µg/tube	RL	Qualifiers
16-08635-12-IN-A S16T033485	W609129-05	09/23/16	10/18/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/21/16	N-Nitrosodimethylamine	0.173	0.021	
		09/23/16	10/21/16	N-Nitrosodimethylamine	2.998	0.281	D
		09/23/16	10/18/16	N-Nitrosodi-n-butylamine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosodi-n-propylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomethylethylamine	0.025	0.022	
		09/23/16	10/18/16	N-Nitrosomorpholine	0.041	0.022	
		09/23/16	10/18/16	N-Nitrosopiperidine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosopyrrolidine	<0.022	0.022	
16-08635-12-IN-B S16T033486	W609129-06	09/23/16	10/18/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/21/16	N-Nitrosodimethylamine	3.008	0.261	D
		09/23/16	10/21/16	N-Nitrosodimethylamine	0.259	0.021	
		09/23/16	10/18/16	N-Ntrosodi-n-butylamine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosodi-n-propytamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomethylethylamine	0.030	0.022	
		09/23/16	10/18/16	N-Nitrosomorpholine	0.041	0.022	
		09/23/16	10/18/16	N-Nitrosopiperidine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosopyrrolidine	<0.022	0.022	

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Sample Identification Client Sample ID	RJLG ID	Sampling Date	Analysis Date	Analyte	Concentration µg/tube	RL	Qualifiers
16-08635-12-IN-C \$16T033487	W609129-07	09/23/16	10/18/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/21/16	N-Nitrosodimethylamine	0.202	0.021	
		09/23/16	10/21/16	N-Nitrosodimethylamine	3.037	0.261	D
		09/23/16	10/18/16	N-Nitrosodi-n-butylamine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosodi-n-propylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomethylethylamine	0.032	0.022	
		09/23/16	10/18/16	N-Nitrosomorpholine	0.036	0.022	
		09/23/16	10/18/16	N-Nitrosopiperidine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosopyrrolidine	<0.022	0.022	
16-08635-12-IN-D \$16T033469	W609129-08	09/23/16	10/18/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/21/16	N-Nitrosodimethylamine	3.287	0.281	D
		09/23/16	10/21/16	N-Nitrosodimethylamine	0.159	0.021	
		09/23/16	10/18/16	N-Nitrosodi-n-butylamine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosodi-n-propytamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomethylethylamine	0.031	0.022	
		09/23/16	10/18/16	N-Nitrosomorpholine	0.033	0.022	
		09/23/16	10/18/16	N-Nitrosopiperidine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosopyrrolidine	<0.022	0.022	

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Sample Identification Client Sample ID	RJLG ID	Sampling Date	Analysis Date	Analyte	Concentration µg/tube	RL	Qualifiers
6-08635-12-BASE-EFF S16T033490	W609129-09	09/23/16	10/18/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosodimethylamine	<0.017	0.017	
		09/23/16	10/18/16	N-Nitrosodi-n-butylamine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosodi-n-propylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomethylethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomorpholine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosopiperidine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosopyrrolidine	<0.022	0.022	
6-08635-12-BASE-IN S16T033491	W609129-10	09/23/16	10/18/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Ntrosodimethylamine	<0.017	0.017	
		09/23/16	10/18/16	N-Nitrosodi-n-butylamine	<0.023	0.023	
		09/23/16	10/18/16	N-Ntrosodi-n-propylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomethylethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomorpholine	< 0.022	0.022	
		09/23/16	10/18/16	N-Nitrosopiperidine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosopyrrolidine	<0.022	0.022	
5-08635-12-BLANK1 S16T033492	W509129-11	09/23/16	10/18/15	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosodimethylamine	<0.017	0.017	
		09/23/16	10/18/16	N-Nitrosodi-n-butylamine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosodi-n-propylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomethylethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomorpholine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosopiperidine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosopyrrolidine	<0.022	0.022	

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6-08635-12-BLANK2 \$16T033493	W609129-12	09/23/16	10/18/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosodimethylamine	<0.017	0.017	
		09/23/16	10/18/16	N-Nitrosodi-n-butylamine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosodi-n-propylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomethylethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomorpholine	<0.022	0.022	
		09/23/16	10/18/16	N-Ntrosopiperidine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosopyrrolidine	<0.022	0.022	
16-08635-12-EFF-A S16T033494	W609129-13	09/23/16	10/18/16	N-Ntrosodiethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosodimethylamine	<0.017	0.017	
		09/23/16	10/15/16	N-Nitrosodi-n-butylamine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosodi-n-propylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomethylethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomorpholine	< 0.022	0.022	
		09/23/16	10/18/16	N-Nitrosopiperidine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosopyrrolidine	<0.022	0.022	
16-08635-12-EFF-B \$16T033495	W609129-14	09/23/16	10/18/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosodimethylamine	<0.017	0.017	
		09/23/16	10/18/16	N-Nitrosodi-n-butylamine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosodi-n-propylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomethylethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomorpholine	<0.022	0.022	
		09/23/16	10/18/16	N-Ntrosopiperidine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosopyrrolidine	<0.022	0.022	

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Sample Identification Client Sample ID	RJLG ID	Sampling Date	Analysis Date	Analyte	Concentration µg/tube	RL	Qualifiers
16-08635-12-EFF-C S16T033496	W609129-15	09/23/16	10/18/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosodimethylamine	<0.017	0.017	
		09/23/16	10/18/16	N-Nitrosodi-n-butylamine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosodi-n-propylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomethylethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomorpholine	<0.022	0.022	
		09/23/16	10/18/16	N-Ntrosopiperidine	<0.023	0.023	
		09/23/16	10/18/15	N-Nitroscpyrrolidine	<0.022	0.022	
16-08635-12-EFF-D \$16T033497	W609129-16	09/23/16	10/18/16	N-Ntrosodiethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosodimethylamine	<0.017	0.017	
		09/23/16	10/18/16	N-Nitrosodi-n-butylamine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosodi-n-propylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomethylethylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomorpholine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosopiperidine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosopyrrolidine	<0.022	0.022	

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Report Template: WRPS_Nitrosamines 2.1.rpt

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Sample Identification Client Sample ID	RJLG ID	Sampling Date	Analysis Date	Analyte	Concentration µg/tube	RL	Qualifiers
16-08635-12-IN-E S16T033498	W609129-17	09/23/16	10/18/16	N-Nitrosodiethylamine	<0.022	0.022	•
		09/23/16	10/21/16	N-Nitrosodimethylamine	2.814	0.281	D
		09/23/16	10/21/16	N-Nitrosodimethylamine	0.180	0.021	
		09/23/16	10/18/16	N-Nitrosodi-n-butylamine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosodi-n-propylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomethylethylamine	0.031	0.022	
		09/23/16	10/18/16	N-Nitrosomorpholine	0.032	0.022	
		09/23/16	10/18/16	N-Nitrosopiperidine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosopyrrolidine	<0.022	0.022	
16-08635-12-IN-F S16T033499	W609129-18	09/23/16	10/18/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/21/16	N-Nitrosodimethylamine	0.132	0.021	
		09/23/16	10/22/16	N-Nitrosodimethylamine	2.958	0.281	0
		09/23/16	10/18/16	N-Nitrosodi-n-butylamine	<0.023	0.023	
		09/23/16	10/18/16	N-Narosodi-n-propytamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomethylethylamine	0.029	0.022	
		09/23/16	10/18/16	N-Nitrosomorpholine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosopiperidine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosopyrrolidine	<0.022	0.022	

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16-08635-12-IN-G S16T033500	W609129-19	09/23/16	10/18/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/21/16	N-Nitrosodimethylamine	0.112	0.021	
		09/23/16	10/22/16	N-Nitrosodimethylamine	2.783	0.281	D
		09/23/16	10/18/16	N-Nitrosodi-n-butylamine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosodi-n-propylamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomethylethylamine	0.032	0.022	
		09/23/16	10/18/16	N-Nitrosomorpholine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosopiperidine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosopyrrolidine	<0.022	0.022	
16-08635-12-IN-H 516T033501	W609129-20	09/23/16	10/15/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/22/16	N-Nitrosodimethylamine	2.666	0.281	0
		09/23/16	10/21/16	N-Ntrosodimethylamine	0.128	0.021	
		09/23/16	10/18/16	N-Nitrosodi-n-butylamine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosodi-n-propytamine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosomethylethylamine	0.025	0.022	
		09/23/16	10/18/16	N-Nitrosomorpholine	<0.022	0.022	
		09/23/16	10/18/16	N-Nitrosopiperidine	<0.023	0.023	
		09/23/16	10/18/16	N-Nitrosopymolidine	<0.022	0.022	

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Sample Identification Client Sample ID	RJLG ID	Sampling Date	Analysis Date	Analyte	Concentration µg/tube	RL	Qualifier
6-08636-12-BASE-EFF S16T033502	W609129-21	09/23/16	10/19/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/19/16	N-Nitrosodimethylamine	<0.022	0.022	
		09/23/16	10/19/16	N-Nitrosodi-n-butylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosodi-n-propylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosomorpholine	<0.021	0.021	
		09/23/16	10/19/16	N-Narosopiperidine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosopyrrolidine	<0.022	0.022	
6-06636-12-BASE-IN S16T033503	W609129-22	09/23/16	10/19/16	N-Nitrosodiethylamine	≈0.022	0.022	
		09/23/16	10/19/16	N-Ntrosodimethylamine	<0.022	0.022	
		09/23/16	10/19/16	N-Nitrosodi-n-butylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosodi-n-propylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosomorphotine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosopiperidine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosopyrrolidine	<0.022	0.022	
6-08636-12-BLANK-EFF \$16T033504	W509129-23	09/23/16	10/19/15	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/19/16	N-Nitrosodimethylamine	<0.022	0.022	
		09/23/16	10/19/15	N-Nitrosodi-n-butylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosodi-n-propylamine	< 0.021	0.021	
		09/23/16	10/19/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosomorpholine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosopiperidine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosopyrrolidine	<0.022	0.022	

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16-08636-12-BLANK-IN \$16T033505	W609129-24	09/23/16	10/19/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/19/16	N-Nitrosodimethylamine	<0.022	0.022	
		09/23/16	10/19/16	N-Nitrosodi-n-butylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosodi-n-propylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosomorpholine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosopiperidine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosopyrrolidine	<0.022	0.022	
16-08636-12-EFF-A S16T033506	W609129-25	09/23/16	10/19/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/19/16	N-Nitrosodimethylamine	<0.022	0.022	
		09/23/16	10/19/16	N-Nitrosodi-n-butylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosodi-n-propylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosomorpholine	< 0.021	0.021	
		09/23/16	10/19/16	N-Nitrosopiperidine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosopyrrolidine	<0.022	0.022	
16-08636-12-EFF-B \$16T033507	W609129-26	09/23/16	10/19/15	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/19/16	N-Nitrosodimethylamine	<0.022	0.022	
		09/23/16	10/19/16	N-Nitrosodi-n-butylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosodi-n-propylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosomorpholine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosopiperidine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosopyrrolidine	< 0.022	0.022	

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16-08636-12-EFF-C \$16T033508	W609129-27	09/23/16	10/19/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/19/16	N-Nitrosodimethylamine	<0.022	0.022	
		09/23/16	10/19/16	N-Nitrosodi-n-butylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosodi-n-propylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosomorpholine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosopiperidine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosopyrrolidine	<0.022	0.022	
16-06636-12-EFF-D S16T033509	W609129-28	09/23/16	10/19/16	N-Ntrosodiethylamine	<0.022	0.022	
		09/23/16	10/19/16	N-Ntrosodimethylamine	<0.022	0.022	
		09/23/16	10/19/16	N-Nitrosodi-n-butylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Ntrosodi-n-propylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosomorpholine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosopiperidine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosopyrrolidine	<0.022	0.022	
16-08536-12-EFF-E \$16T033510	W509129-29	09/23/16	10/19/15	N-Nitrosodiethylamine	<0.022	0.022	
		09/23/16	10/19/16	N-Nitrosodimethylamine	<0.022	0.022	
		09/23/16	10/19/16	N-Ntrosodi-n-butylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosodi-n-propylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosomorpholine	<0.021	0.021	
		09/23/16	10/19/16	N-Ntrosopiperidine	<0.021	0.021	
		09/23/16	10/19/16	N-Nitrosopyrrolidine	<0.022	0.022	

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16-08636-12-EFF-F \$16T033511	W609129-30	09/24/16	10/19/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/24/16	10/19/16	N-Nitrosodimethylamine	<0.022	0.022	
		09/24/16	10/19/16	N-Nitrosodi-n-butylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosodi-n-propylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosomorpholine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosopiperidine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosopyrrolidine	<0.022	0.022	
16-08636-12-EFF-G S16T033512	W609129-31	09/24/16	10/19/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/24/16	10/19/16	N-Nitrosodimethylamine	<0.022	0.022	
		09/24/16	10/19/16	N-Nitrosodi-n-butylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosodi-n-propylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosomorpholine	< 0.021	0.021	
		09/24/16	10/19/16	N-Nitrosopiperidine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosopyrrolidine	<0.022	0.022	
16-08636-12-EFF-H 516T033513	W509129-32	09/24/16	10/19/15	N-Nitrosodiethylamine	<0.022	0.022	
		09/24/16	10/19/16	N-Nitrosodimethylamine	<0.022	0.022	
		09/24/16	10/19/16	N-Nitrosodi-n-butylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosodi-n-propylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosomorpholine	<0.021	0.021	
		09/24/16	10/19/16	N-Ntrosopiperidine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosopyrrolidine	<0.022	0.022	

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16-08636-12-IN-A S16T033514	W609129-33	09/24/16	10/19/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/24/16	10/22/16	N-Nitrosodimethylamine	2.904	0.280	D
		09/24/16	10/21/16	N-Nitrosodimethylamine	0.134	0.021	
		09/24/16	10/19/16	N-Nitrosodi-n-butylamine	<0.021	0.021	•
		09/24/16	10/19/16	N-Nitrosodi-n-propylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosomethylethylamine	0.028	0.021	
		09/24/16	10/19/16	N-Nitrosomorpholine	0.037	0.021	
		09/24/16	10/19/16	N-Nitrosopiperidine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosopyrrolidine	<0.022	0.022	
16-00636-12-IN-B S16T033515	W609129-34	09/24/16	10/19/16	N-Nitrosoclethylamine	<0.022	0.022	
		09/24/16	10/21/16	N-Nitrosodimethylamine	0.065	0.021	
		09/24/16	10/22/16	N-Nitrosodimethylamine	1.140	0.224	0
		09/24/16	10/19/16	N-Ntrosodi-n-butylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosodi-n-propytamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosomethylethylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosomorpholine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosopiperidine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosopyrrolidine	<0.022	0.022	

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Sample Identification Client Sample ID	RJLG ID	Sampling Date	Analysis Date	Analyte	Concentration µg/tube	RL	Qualifiers
16-08636-12-IN-C S16T033516	W609129-35	09/24/16	10/19/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/24/16	10/22/16	N-Nitrosodimethylamine	3.249	0.280	0
		09/24/16	10/21/16	N-Nitrosodimethylamine	0.145	0.021	
		09/24/16	10/19/16	N-Nitrosodi-n-butylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosodi-n-propylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosomethylethylamine	0.035	0.021	
		09/24/16	10/19/16	N-Nitrosomorpholine	0.032	0.021	
		09/24/16	10/19/16	N-Nitrosopiperidine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosopyrrolidine	0.027	0.022	×
16-08636-12-IN-D \$16T033517	W609129-36	09/24/16	10/19/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/24/16	10/22/16	N-Nitrosodimethylamine	2.837	0.260	0
		09/24/16	10/21/16	N-Nitrosodimethylamine	0.142	0.021	
		09/24/16	10/19/16	N-Nitrosodi-n-butylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosodi-n-propytamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosomethylethylamine	0.031	0.021	
		09/24/16	10/19/16	N-Nitrosomorpholine	0.031	0.021	
		09/24/16	10/19/16	N-Nitrosopiperidine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosopyrrolidine	<0.022	0.022	

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16-08636-12-IN-E \$16T033518	W609129-37	09/24/16	10/19/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/24/16	10/21/16	N-Nitrosodimethylamine	0.156	0.021	
		09/24/16	10/22/16	N-Nitrosodimethylamine	3.119	0.280	D
		09/24/16	10/19/16	N-Nitrosodi-n-butylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosodi-n-propylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosomethylethylamine	0.035	0.021	
		09/24/16	10/19/16	N-Nitrosomorpholine	0.032	0.021	
		09/24/16	10/19/16	N-Nitrosopiperidine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosopyrrolidine	<0.022	0.022	
16-08636-12-IN-F S16T033519	W609129-38	09/24/16	10/19/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/24/16	10/21/16	N-Nitrosodimethylamine	0.143	0.021	
		09/24/16	10/22/16	N-Nitrosodimethylamine	2.548	0.280	0
		09/24/16	10/19/16	N-Nitrosodi-n-butylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosodi-n-propytamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosomethylethylamine	0.030	0.021	
		09/24/16	10/19/16	N-Nitrosomorpholine	0.026	0.021	
		09/24/16	10/19/16	N-Nitrosopiperidine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosopymolidine	<0.022	0.022	

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16-08636-12-IN-G \$16T033520	W609129-39	09/24/16	10/19/16	N-Nitrosodiethylamine	<0.022	0.022	
		09/24/16	10/22/16	N-Nitrosodimethylamine	2.621	0.280	0
		09/24/16	10/21/16	N-Nitrosodimethylamine	0.137	0.021	
		09/24/16	10/19/16	N-Nitrosodi-n-butylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosodi-n-propylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Narosomethylethylamine	0.030	0.021	
		09/24/16	10/19/16	N-Nitrosomorpholine	0.024	0.021	
		09/24/15	10/19/16	N-Nitrosopiperidine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosopyrrolidine	<0.022	0.022	
16-08636-12-IN-H 516T033521	W609129-40	09/24/16	10/19/16	N-Ntrosodiethylamine	<0.022	0.022	
		09/24/16	10/21/16	N-Nitrosodimethylamine	0.143	0.021	
		09/24/16	10/22/16	N-Nitrosodimethylamine	2.513	0.280	0
		09/24/16	10/19/16	N-Nitrosodi-n-butylamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosodi-n-propytamine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosomethylethylamine	0.027	0.021	
		09/24/16	10/19/16	N-Nitrosomorpholine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosopiperidine	<0.021	0.021	
		09/24/16	10/19/16	N-Nitrosopymolidine	<0.022	0.022	

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 $A = Target\ Analyte\ modia\ breakthrough\ suspect,\ see analytical\ sepect$

D = Analytic analysist in a dilution

E = Report concentration was above the instrument calibration range

E = Report concentration was above the intersected articulum lange:

| = Analyte defected before quantitation limits, concentration is estimated.

| P = Library sportners matrix, and oblive in RF matrix.
| R = RPD (relative powerd difference) entrials accepted convery limits.
| II = Analyte analyzed for but not defected.

NiA - Not Applicable

B = Analyte detected in the executional black

d = Date that exceeds the ASD critimie set by the SOP

H = Holding times for properation or enalysis exceeded

L = Sample condition at secript and of compliance with method defined conditions

Q = Routh out of motion specific acceptance QC criteria S = Sythe Receivery outside assepted convery limits Z = Not ELAP acception analyte

NO + Not Detected

Scientist II DeNomy Dage

Three coults are submitted pursuant to RJ Lee Group's current terms and conditions of sale, including the company's standard currently and limitation of Eablifty provisions. No These constitutes constituted personnel for Exercising a constitution of sale, instituting the company's intensitual assessment and intensities of authority previously. An exponentiality in thicking in amount of path in previously convent by this propert. At Exercising exponentiality, the channel for the second of intensity of an april of mining 20th days before discounting. A shipping and handling for will be associated for the return of any samples. Unless other conclusions under CRELAP LAD Code RAD ABAR-LAP, LLC LaD DI 1286/6 EPA DI MARTINES and MA DOE Lab DI COSE. This report may not be used to claim product endorsement by any inhoratory according agency. The reason amounted in this report relationship in the control of the first point and the control of the control of the sample's an received by the laboratory, Any reproduction of this document must be in full for the report to be valid. Quality control data in amounted the given request.

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Laboratory Report Carl Howald IV

NIOSH 2522

RJ Lee Group No.: W609129 Samples Received: 09/27/16 Report Date: 11/21/16 COC No.: 20162968

Extraction Date: 09/30/16

Washington River Protection Solutions, LLC

P.O. Box 850 MSIN H6-16 Richland, WA 99352

Analyte: N-Nitrosodiethylamine Client Project:

Cartridge Evaluation CAS No.: 55-18-5

Sample Identification Client Sample ID RJLG	Sampling Date	Analyzed Date	Result µg/tube	RL µg/tube	Qualifier
16-08635-12-EFF-E S16T03348 W609129	-01 09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-F \$16T03348 W609129-	-02 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-EFF-G S16T03348 W609129-	-03 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-EFF-H S16T03348 W609129	-04 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-IN-A \$16T033485 W609129-	-05 09/23/16	10/18/16	<0.022	0.022	
16-08635-12-IN-B S16T033486 W609129-	-06 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-IN-C S16T033487 W609129-	-07 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-IN-D \$16T033489 W609129	-08 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-BASE-EFF S16T0: W609129-	-09 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-BASE-IN \$16T033 W609129-	-10 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-BLANK1 \$16T033- W609129	-11 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-BLANK2 S16T033- W609129-	-12 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-EFF-A \$16T03349 W609129-	-13 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-EFF-B S16T03349 W609129-	-14 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-EFF-C S16T03349 W609129	-15 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-EFF-D \$16T03349 W609129-	-16 09/23/16	10/18/16	<0.022	0.022	
16-08635-12-IN-E S16T033498 W609129-	-17 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-IN-F S16T033499 W609129-	-18 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-IN-G \$16T033500 W609129-	-19 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-IN-H \$16T033501 W609129-	-20 09/23/16	10/18/16	< 0.022	0.022	
16-08636-12-BASE-EFF \$16T0: W609129-	-21 09/23/16	10/19/16	< 0.022	0.022	
16-08636-12-BASE-IN S16T033 W609129-	-22 09/23/16	10/19/16	< 0.022	0.022	
16-08636-12-BLANK-EFF \$16Tt W609129-	-23 09/23/16	10/19/16	< 0.022	0.022	
16-08636-12-BLANK-IN \$16T03 W609129-	-24 09/23/16	10/19/16	< 0.022	0.022	
16-08636-12-EFF-A \$16T03350 W609129	-25 09/23/16	10/19/16	< 0.022	0.022	
16-08636-12-EFF-B \$16T03350 W609129-	-26 09/23/16	10/19/16	< 0.022	0.022	
16-08636-12-EFF-C S16T03350 W609129	-27 09/23/16	10/19/16	<0.022	0.022	
16-08636-12-EFF-D \$16T03350 W609129	-28 09/23/16	10/19/16	<0.022	0.022	
16-08636-12-EFF-E S16T03351 W609129	-29 09/23/16	10/19/16	< 0.022	0.022	
16-08636-12-EFF-F \$16T03351 W609129-	-30 09/24/16	10/19/16	< 0.022	0.022	

Report Qualifiers

 $A = Target\ Analyte\ modis\ breakthrough\ couport,\ see analytical\ report$ $D = Analyte\ analyte\ of\ in\ s\ dilution$

E = Report concentration uses above the instrument calibration range

] = Analyte detected below quantitation limits, concentration is estimated P = Library sportrum match, and >00% or RT match

R = RPD infative powert difference authide accepted soccery limits

U = Analyte analysed for but not delected

N/A = Not Applicable

B = Analyte detected in the associated black

 $d \sim D$ at that exceeds the RSD criteria set by the SOP

H = Holding times for preparation or analysis exceeded

L = Sample condition at societ out of compliance with method defined conditions Q = Result out of method specific acceptance QC criteria

S = Spike Recovery autistic accepted recovery limits

Z = Not ELAP accordited analytic

ND = Not Detected

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W609129, Page 28 of 54

RJ Lee Group No.: W609129

RJ LEE GROUP

Washington River Protection

Carl Howald IV

Richland, WA 99352

Laboratory Report

Samples Received: 09/27/16 NIOSH 2522

Report Date: 11/21/16 COC No.: 20162968

Solutions, LLC Extraction Date: 09/30/16 P.O. Box 850 MSIN H6-16

Analyte: N-Nitrosodiethylamine Client Project:

CAS No.: 55-18-5 Cartridge Evaluation

Sample Identification	n	Sampling	Analyzed	Result	RL	Qualifiers
Client Sample ID	RJLG	Date	Date	µg/tube	µg/tube	
16-08636-12-EFF-G S16T03351	W609129-31	09/24/16	10/19/16	<0.022	0.022	
16-08636-12-EFF-H S16T03351	W609129-32	09/24/16	10/19/16	< 0.022	0.022	
16-08636-12-IN-A S16T033514	W609129-33	09/24/16	10/19/16	< 0.022	0.022	
16-08636-12-IN-B S16T033515	W609129-34	09/24/16	10/19/16	< 0.022	0.022	
16-08636-12-IN-C \$16T033516	W609129-35	09/24/16	10/19/16	<0.022	0.022	
16-08636-12-IN-D \$16T033517	W609129-36	09/24/16	10/19/16	< 0.022	0.022	
16-08636-12-IN-E S16T033518	W609129-37	09/24/16	10/19/16	< 0.022	0.022	
16-08636-12-IN-F \$16T033519	W609129-38	09/24/16	10/19/16	<0.022	0.022	
16-08636-12-IN-G S16T033520	W609129-39	09/24/16	10/19/16	<0.022	0.022	
16-08636-12-IN-H \$16T033521	W609129-40	09/24/16	10/19/16	< 0.022	0.022	

D = Analyte analyzed in a dilution

 $\boldsymbol{E} = \boldsymbol{E}_{\boldsymbol{r}} \boldsymbol{p} \boldsymbol{r} \boldsymbol{r} \boldsymbol{r}$ concentration was above the instrument calibration range J = Analyte detected below quantitation limits, concentration is estimated P = Ethney opertrum match, and >80% is RT match

R=RPD isolative powerd difference) extride accepted sourcery limits U=Analyte analyted for but not detected NIA = Not Applicable

Report Template: WRPS_Nitrosamines 2.1.rpt

B = Analyte detected in the associated blank

d = Date that exends the RSD criteria set by the SOP H = Holding times for proporation or analysis exceeded

L = Sample condition at receipt out of compliance with method defined conditions Q = Result out of method specific acceptance QC exists is

5 = Spike Revocery outside accepted recovery limits 2 = Not ELAP accepted analyte

ND = Not Detected

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These results are submitted pursuant to RJ Lee Croup's current tomes and conditions of sale, including the company's standard sucreasity and limitation of liability provisions. No responsibility or liability is assumed for the manner in which the results are used or interpreted. Unless neighed in writing to return the samples according this report. RJ Lee Croup will store the samples for a provid of ninety (Nii days before discussing. A shipping and hundling for will be accorded for the return of any samples. Unless otherwise noted, samples were sected in an acoptain condition. This behaviory operator in accordance with SO 17025 guidelines, and holds limited scopes of accordination under CRELAP Lab Code 4061
ABUL-LAP, LLC Lab IO 170856 EPA IO WARTESS and WA DOE Lab IO CESS. This separt may not be used to claim product endowernest by any aboratory according agrees. The
results contained in this report relate only to the items Arted or to the sample's; as servined by the laboratory. Any repudaction of this document must be in full for the report to be

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Laboratory Report

NIOSH 2522

RJ Lee Group No.: W609129 Samples Received: 09/27/16 Report Date: 11/21/16 COC No.: 20162968

Extraction Date: 09/30/16

Washington River Protection

Carl Howald IV

Solutions, LLC P.O. Box 850 MSIN H6-16 Richland, WA 99352

Analyte: N-Nitrosodimethylamine Client Project:

Cartridge Evaluation CAS No.: 62-75-9

Sample Identification Client Sample ID RJL0	Sampling Date	Analyzed Date	Result µg/tube	RL µg/tube	Qualifier
16-08635-12-EFF-E S16T03348 W609129	-01 09/23/16	10/18/16	<0.017	0.017	
16-08635-12-EFF-F \$16T03348 W609129-	-02 09/23/16	10/18/16	< 0.017	0.017	
16-08635-12-EFF-G S16T03348 W609129-	-03 09/23/16	10/18/16	< 0.017	0.017	
16-08635-12-EFF-H S16T03348 W609129	-04 09/23/16	10/18/16	< 0.017	0.017	
16-08635-12-IN-A \$16T033485 W609129-	-05 09/23/16	10/21/16	0.173	0.021	
16-08635-12-IN-A \$16T033485 W609129	-05 09/23/16	10/21/16	3.00	0.281	D
16-08635-12-IN-B S16T033486 W609129-	-06 09/23/16	10/21/16	0.259	0.021	
16-08635-12-IN-B S16T033486 W609129	-06 09/23/16	10/21/16	3.01	0.281	D
16-08635-12-IN-C S16T033487 W609129-	-07 09/23/16	10/21/16	3.04	0.281	D
16-08635-12-IN-C \$16T033487 W609129-	-07 09/23/16	10/21/16	0.202	0.021	
16-08635-12-IN-D \$16T033489 W609129	08 09/23/16	10/21/16	0.159	0.021	
16-08635-12-IN-D S16T033489 W609129-	-08 09/23/16	10/21/16	3.29	0.281	D
16-08635-12-BASE-EFF S16T0: W609129-	-09 09/23/16	10/18/16	< 0.017	0.017	
16-08635-12-BASE-IN \$16T033 W609129-	-10 09/23/16	10/18/16	< 0.017	0.017	
16-08635-12-BLANK1 S16T033- W609129	-11 09/23/16	10/18/16	< 0.017	0.017	
16-08635-12-BLANK2 S16T033- W609129-	-12 09/23/16	10/18/16	<0.017	0.017	
16-08635-12-EFF-A \$16T03349 W609129-	-13 09/23/16	10/18/16	< 0.017	0.017	
16-08635-12-EFF-B S16T03349 W609129-	-14 09/23/16	10/18/16	< 0.017	0.017	
16-08635-12-EFF-C S16T03349 W609129-	-15 09/23/16	10/18/16	< 0.017	0.017	
16-08635-12-EFF-D S16T03349 W609129-	-16 09/23/16	10/18/16	< 0.017	0.017	
16-08635-12-IN-E S16T033498 W609129-	-17 09/23/16	10/21/16	2.81	0.281	D
16-08635-12-IN-E S16T033498 W609129-	-17 09/23/16	10/21/16	0.180	0.021	
16-08635-12-IN-F \$16T033499 W609129-	-18 09/23/16	10/22/16	2.96	0.281	D
16-08635-12-IN-F \$16T033499 W609129-	-18 09/23/16	10/21/16	0.132	0.021	
16-08635-12-IN-G \$16T033500 W609129	-19 09/23/16	10/22/16	2.78	0.281	D
16-08635-12-IN-G \$16T033500 W609129-	-19 09/23/16	10/21/16	0.112	0.021	
16-08635-12-IN-H S16T033501 W609129	-20 09/23/16	10/22/16	2.67	0.281	D
16-08635-12-IN-H S16T033501 W609129	-20 09/23/16	10/21/16	0.128	0.021	
16-08636-12-BASE-EFF S16T0: W609129-	-21 09/23/16	10/19/16	< 0.022	0.022	
16-08636-12-BASE-IN S16T033 W609129-	22 09/23/16	10/19/16	< 0.022	0.022	

A = Target Analyte media breakthrough couport, see analytical report $D \approx \Delta malyte analyzed in a dilution$

E = Report concentration uses above the instrument calibration range

] = Analyte detected below quantitation limits, concentration is estimated P = Library sportrum match, and >00% or RT match

R = RPO infative percent difference; subside accepted soccery limits.

If = Analyte analysed for but not delected.

N/A = Not Applicable

B = Analyte detected in the associated black

d = Date that exceeds the RSD criteria set by the SOP

II - Halding times for preparation or analysis exceeded

L = Sample condition at societ out of compliance with method defined conditions Q = Result out of method specific acceptance QC criteria

S = Spike Recurry outside accepted recovery limits

Z = Not ELAP according analyte

ND = Not Detected

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Laboratory Report

NIOSH 2522

RJ Lee Group No.: W609129 Samples Received: 09/27/16 Report Date: 11/21/16 COC No.: 20162968

Extraction Date: 09/30/16

Washington River Protection

Carl Howald IV

Solutions, LLC P.O. Box 850 MSIN H6-16 Richland, WA 99352

Analyte: N-Nitrosodimethylamine Client Project:

Cartridge Evaluation CAS No.: 62-75-9

Sample Identification Client Sample ID RJLG	Sampling Date	Analyzed Date	Result µg/tube	RL µg/tube	Qualifiers
16-08636-12-BLANK-EFF \$16Tt W609129-23	09/23/16	10/19/16	<0.022	0.022	
16-08636-12-BLANK-IN S16T03 W609129-24	09/23/16	10/19/16	< 0.022	0.022	
16-08636-12-EFF-A S16T03350 W609129-25	09/23/16	10/19/16	< 0.022	0.022	
6-08636-12-EFF-B \$16T03350 W609129-26	09/23/16	10/19/16	< 0.022	0.022	
16-08636-12-EFF-C \$16T03350 W609129-27	09/23/16	10/19/16	<0.022	0.022	
6-08636-12-EFF-D \$16T03350 W609129-28	09/23/16	10/19/16	< 0.022	0.022	
16-08638-12-EFF-E \$16T03351 W609129-29	09/23/16	10/19/16	< 0.022	0.022	
16-08636-12-EFF-F S16T03351 W609129-30	09/24/16	10/19/16	< 0.022	0.022	
16-08636-12-EFF-G S16T03351 W609129-31	09/24/16	10/19/16	< 0.022	0.022	
16-08636-12-EFF-H S16T03351 W609129-32	09/24/16	10/19/16	< 0.022	0.022	
16-08636-12-IN-A \$16T033514 W609129-33	09/24/16	10/21/16	0.134	0.021	
16-08636-12-IN-A S16T033514 W609129-33	09/24/16	10/22/16	2.90	0.280	D
16-08636-12-IN-B S16T033515 W609129-34	09/24/16	10/21/16	0.065	0.021	
16-08636-12-IN-B S16T033515 W609129-34	09/24/16	10/22/16	1.14	0.224	D
16-08636-12-IN-C S16T033516 W609129-35	09/24/16	10/22/16	3.25	0.280	D
6-08636-12-IN-C \$16T033516 W609129-35	09/24/16	10/21/16	0.145	0.021	
16-08636-12-IN-D \$16T033517 W609129-36	09/24/16	10/22/16	2.84	0.280	D
16-08636-12-IN-D \$16T033517 W609129-36	09/24/16	10/21/16	0.142	0.021	
16-08636-12-IN-E S16T033518 W609129-37	09/24/16	10/22/16	3.12	0.280	D
16-08636-12-IN-E S16T033518 W609129-37	09/24/16	10/21/16	0.156	0.021	
6-08636-12-IN-F \$16T033519 W609129-38	09/24/16	10/21/16	0.143	0.021	
16-08636-12-IN-F S16T033519 W609129-38	09/24/16	10/22/16	2.55	0.280	D
16-08636-12-IN-G S16T033520 W609129-39	09/24/16	10/21/16	0.137	0.021	
16-08636-12-IN-G \$16T033520 W609129-39	09/24/16	10/22/16	2.62	0.280	D
16-08636-12-IN-H \$16T033521 W609129-40	09/24/16	10/21/16	0.143	0.021	
16-08636-12-IN-H S16T033521 W609129-40	09/24/16	10/22/16	2.51	0.280	D

Report Qualiforni

A = Target Analyte media bresidbrough suspect, sor analytical report

D = Analyte analyzed in a dilution

E = Report concentration was above the instrument calibration range: J = Analysis distribed below quantitation limits, concentrations is estimated: P = Library spectrum match, red $SOPP_1$ = RP match: R = RPD (relative powerd difference) exhibit accepted sourcery limits Ω = Analysis analysed for but not detected:

N/A = Not Applicable

d = Date that exceeds the RSD criteria set by the SOP

H = Hidding times for preparation or analysis executed L = Sample condition at societ and c compliance with method defined conditions Q = Result out of method specific acceptance QC criteria

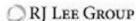
S = Spike Becovery outside accepted recovery limits Z = Not ELAP accepted analyte

ND = Not Detected

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Approved: 11/4/16 19:26 Report Time Stamp: 11/21/16 17:34



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These results are submitted guessment to BJ Lee Group's current terms and conditions of sele, including the company's standard customary and limitation of liability precisions. No responsibility or liability is assumed for the manner in which the results are used or interpreted, Unless notified in uniting to return the samples corrend by this report, RJ Lee Group will shore the samples for a period of ninety-90s days before disconding. A shipping and headling for will be accosed for the return of any samples. Unless reference noted, samples correccived in an acceptable condition. This behaviory operates in assumfance with ISO 17023 guidelines, and helds limited scapes of as redistrian under CRILAF Leb Cade 4001 ABSA-LAF, LLC Lab ID 170506 EPA ID WARTES-and WA DOE Lab ID CSSS. This supert may not be used to daint punished endomenous by any identitive secretal in a results contained in this report relate only to the items tested on the sample's) as received by the liberatury, Any equalaction of this document must be in full for the report to be

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Laboratory Report

NIOSH 2522

RJ Lee Group No.: W609129 Samples Received: 09/27/16 Report Date: 11/21/16 COC No.: 20162968

Extraction Date: 09/30/16

Washington River Protection

Carl Howald IV

Solutions, LLC P.O. Box 850 MSIN H6-16 Richland, WA 99352

Analyte: N-Nitrosodi-n-butylamine Client Project:

Cartridge Evaluation CAS No.: 924-16-3

Sample Identification Client Sample ID RJL	Sampling Date	Analyzed Date	Result µg/tube	RL µg/tube	Qualifier
16-08635-12-EFF-E S16T03348 W609129	-01 09/23/16	10/18/16	<0.023	0.023	
16-08635-12-EFF-F \$16T03348 W609129	-02 09/23/16	10/18/16	< 0.023	0.023	
16-08635-12-EFF-G S16T03348 W609129	-03 09/23/16	10/18/16	< 0.023	0.023	
16-08635-12-EFF-H \$16T03348 W609129	-04 09/23/16	10/18/16	< 0.023	0.023	
16-08635-12-IN-A \$16T033485 W609129	-05 09/23/16	10/18/16	<0.023	0.023	
16-08635-12-IN-B \$16T033486 W609129	-06 09/23/16	10/18/16	< 0.023	0.023	
16-08635-12-IN-C \$16T033487 W609129	-07 09/23/16	10/18/16	< 0.023	0.023	
16-08635-12-IN-D \$16T033489 W609129	-08 09/23/16	10/18/16	< 0.023	0.023	
16-08635-12-BASE-EFF S16T0: W609129	-09 09/23/16	10/18/16	<0.023	0.023	
16-08635-12-BASE-IN S16T033 W609129	-10 09/23/16	10/18/16	< 0.023	0.023	
16-08635-12-BLANK1 \$16T033- W609129	9-11 09/23/16	10/18/16	< 0.023	0.023	
16-08635-12-BLANK2 S16T033- W609129	-12 09/23/16	10/18/16	< 0.023	0.023	
16-08635-12-EFF-A \$16T03349 W609129	-13 09/23/16	10/18/16	< 0.023	0.023	
16-08635-12-EFF-B S16T03349 W609129	-14 09/23/16	10/18/16	< 0.023	0.023	
16-08635-12-EFF-C S16T03349 W609129	-15 09/23/16	10/18/16	< 0.023	0.023	
16-08635-12-EFF-D \$16T03349 W609129	-16 09/23/16	10/18/16	<0.023	0.023	
16-08635-12-IN-E \$16T033498 W609129	-17 09/23/16	10/18/16	< 0.023	0.023	
16-08635-12-IN-F \$16T033499 W609129	-18 09/23/16	10/18/16	< 0.023	0.023	
16-08635-12-IN-G \$16T033500 W609129	-19 09/23/16	10/18/16	< 0.023	0.023	
16-08635-12-IN-H \$16T033501 W609129	-20 09/23/16	10/18/16	< 0.023	0.023	
16-08636-12-BASE-EFF S16T0: W609129	-21 09/23/16	10/19/16	< 0.021	0.021	
16-08636-12-BASE-IN S16T033 W609129	-22 09/23/16	10/19/16	< 0.021	0.021	
16-08636-12-BLANK-EFF \$16Tt W609129	-23 09/23/16	10/19/16	< 0.021	0.021	
16-08636-12-BLANK-IN \$16T03 W609129	-24 09/23/16	10/19/16	< 0.021	0.021	
16-08636-12-EFF-A \$16T03350 W609129	-25 09/23/16	10/19/16	< 0.021	0.021	
16-08636-12-EFF-B \$16T03350 W609129	-26 09/23/16	10/19/16	< 0.021	0.021	
16-08636-12-EFF-C \$16T03350 W609129	-27 09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-D S16T03350 W609129	-28 09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-E S16T03351 W609129	-29 09/23/16	10/19/16	< 0.021	0.021	
16-08636-12-EFF-F S16T03351 W609129	-30 09/24/16	10/19/16	< 0.021	0.021	

Report Qualifiers:

A = Target Analyte media breakthrough couport, see analytical report $D \approx \Delta malyte analyzed in a dilution$

E = Report concentration cost above the instrument calibration range

J = Analyte detected below quantitation limits, concentration is estimated <math>P = Library spectrum match, and <math>>0.07, or RT match

R = RPD indutive powerst difference; such ide accepted soccerny limits.

If a Analyte analysed for but not detected.

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Approved: 11/4/16 19:26 Report Time Stamp: 11/21/16 17:34

Laboratory Report

NIOSH 2522

RJ Lee Group No.: W609129 Samples Received: 09/27/16 Report Date: 11/21/16

COC No.: 20162968 Extraction Date: 09/30/16

Washington River Protection

Solutions, LLC P.O. Box 850 MSIN H6-16

Carl Howald IV

Client Project:

Richland, WA 99352

Analyte: N-Nitrosodi-n-butylamine

CAS No.: 924-16-3 Cartridge Evaluation

Sample Identification	n	Sampling	Analyzed	Result	RL	Qualifiers
Client Sample ID	RJLG	Date	Date	µg/tube	µg/tube	
16-08636-12-EFF-G S16T03351	W609129-31	09/24/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-H S16T03351	W609129-32	09/24/16	10/19/16	< 0.021	0.021	
16-08636-12-IN-A S16T033514	W609129-33	09/24/16	10/19/16	< 0.021	0.021	•
16-08636-12-IN-B S16T033515	W609129-34	09/24/16	10/19/16	< 0.021	0.021	
16-08636-12-IN-C \$16T033516	W609129-35	09/24/16	10/19/16	<0.021	0.021	
16-08636-12-IN-D \$16T033517	W609129-36	09/24/16	10/19/16	< 0.021	0.021	
16-08638-12-IN-E S16T033518	W609129-37	09/24/16	10/19/16	< 0.021	0.021	
16-08636-12-IN-F \$16T033519	W609129-38	09/24/16	10/19/16	<0.021	0.021	
16-08636-12-IN-G S16T033520	W609129-39	09/24/16	10/19/16	<0.021	0.021	
16-08636-12-IN-H \$16T033521	W609129-40	09/24/16	10/19/16	< 0.021	0.021	

D = Analyte analyzed in a dilution

 $\boldsymbol{E} = \boldsymbol{E}_{\boldsymbol{r}} \boldsymbol{p} \boldsymbol{r} \boldsymbol{r} \boldsymbol{r}$ concentration was above the instrument calibration range

J = Analyte detected below quantitation limits, concentration is estimated P = Edwary operature match, and >80% is RT match

 $R=RPO\ (relative\ powerd\ difference)\ outside\ accepted\ accepted\ accepted\ limits$ $U=Analyte\ analyte\ of\ for\ but\ not\ dotted$

NIA = Not Applicable

B = Analyte detected in the associated Marsh

d = Date that exeeds the RSD criteria set by the SOP

H=Holding times for proposition or enalpsis exceeded

L = Sample condition at receipt out of compliance with method defined conditions <math>Q = Result and of method specific acceptance QC criteria

S = Spike Revocery outside accepted recovery limits 2 = Not ELAP according analyte

ND = Not Detected

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These results are submitted pursuant to RJ Lee Croup's current toms and conditions of sale, including the company's standard warranty and limitation of liability provisions. No responsibility or liability is assumed for the manner in which the results are used or interpreted. Unless notified in writing to return the samples covered by this report. RJ Lee Croup will store the samples for a provid of ninety (Nit days before discussing. A shipping and hundling for will be account for the return of any samples. Unless attoriuse noted, samples were sected in an acceptable condition. This belowatery operates in accordance with SO 17025 guidelines, and holds limited accept of accordance under CRELAP Lab Code 4061
ABUL-LAP, LLC Lab IO 170866 EPA IO WARTES and WA DOC Lab IO CESS. This separt may not be used to claim product endowerment by any alteratory according agracy. The
results contained in this report relate only to the items Arted or to the sample's; as serviced by the laboratory. Any reproduction of this document must be in full for the report to be

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Carl Howald IV

Laboratory Report NIOSH 2522

RJ Lee Group No.: W609129 Samples Received: 09/27/16 Report Date: 11/21/16

Washington River Protection Solutions, LLC P.O. Box 850 MSIN H6-16

COC No.: 20162968 Extraction Date: 09/30/16

Richland, WA 99352

Analyte: N-Nitrosodi-n-propylamine

Client Project: Cartridge Evaluation CAS No.: 621-64-7

Sample Identification Client Sample ID RJL0	Sampling Date	Analyzed Date	Result µg/tube	RL µg/tube	Qualifier
16-08635-12-EFF-E S16T03348 W609129	-01 09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-F \$16T03348 W609129-	-02 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-EFF-G S16T03348 W609129-	-03 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-EFF-H S16T03348 W609129	-04 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-IN-A \$16T033485 W609129-	-05 09/23/16	10/18/16	<0.022	0.022	
16-08635-12-IN-B \$16T033486 W609129-	-06 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-IN-C \$16T033487 W609129-	-07 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-IN-D \$16T033489 W609129	-08 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-BASE-EFF S16T0: W609129-	-09 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-BASE-IN S16T033 W609129-	-10 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-BLANK1 \$16T033- W609129	-11 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-BLANK2 S16T033- W609129-	-12 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-EFF-A \$16T03349 W609129-	-13 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-EFF-B S16T03349 W609129-	-14 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-EFF-C S16T03349 W609129	-15 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-EFF-D \$16T03349 W609129-	-16 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-IN-E S16T033498 W609129-	-17 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-IN-F S16T033499 W609129	-18 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-IN-G \$16T033500 W609129-	-19 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-IN-H \$16T033501 W609129-	-20 09/23/16	10/18/16	< 0.022	0.022	
16-08636-12-BASE-EFF \$16T0: W609129-	-21 09/23/16	10/19/16	< 0.021	0.021	
16-08636-12-BASE-IN S16T033 W609129-	-22 09/23/16	10/19/16	< 0.021	0.021	
16-08636-12-BLANK-EFF \$16Tt W609129-	-23 09/23/16	10/19/16	< 0.021	0.021	
16-08636-12-BLANK-IN \$16T03 W609129-	-24 09/23/16	10/19/16	< 0.021	0.021	
16-08636-12-EFF-A \$16T03350 W609129	-25 09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-B S16T03350 W609129-	-26 09/23/16	10/19/16	< 0.021	0.021	
16-08636-12-EFF-C S16T03350 W609129	-27 09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-D \$16T03350 W609129	-28 09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-E S16T03351 W609129-	-29 09/23/16	10/19/16	< 0.021	0.021	
16-08636-12-EFF-F \$16T03351 W609129-	-30 09/24/16	10/19/16	< 0.021	0.021	

Report Qualifiers:

A = Target Analyte media breakfrough suspect, see analytical report $D \approx \Delta malyte analyzed in a filterion$

E = Report concentration uses above the instrument calibration range

] = Analyte detected below quantitation limits, concentration is estimated P = Library sportrum match, rud >00% to RT match

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Laboratory Report

Samples Received: 09/27/16 NIOSH 2522

Report Date: 11/21/16 COC No.: 20162968

Extraction Date: 09/30/16

RJ Lee Group No.: W609129

Washington River Protection

Solutions, LLC P.O. Box 850 MSIN H6-16

Carl Howald IV

Richland, WA 99352

Analyte: N-Nitrosodi-n-propylamine Client Project:

CAS No.: 621-64-7 Cartridge Evaluation

16-08636-12-EFF-H \$16T03351 W609129-32	Qualifiers
16-08636-12-IR-A S16T03351 W609129-32	
16-08636-12-IN-A \$16T033514 W609129-33	
16-08636-12-IN-B \$16T033515 W609129-34	
16-08636-12-IN-C \$16T033516 W609129-35	
16-08636-12-IN-D \$16T033517 W609129-36 09/24/16 10/19/16 <0.021 0.021 16-08636-12-IN-E \$16T033518 W609129-37 09/24/16 10/19/16 <0.021 0.021	
16-08636-12-IN-E \$16T033518 W609129-37 09/24/16 10/19/16 <0.021 0.021	
46 00636 43 IN C 1 C46T033540 1 M600430 30 D0DAH6 40H0H6 40 034 0 034	
10-00030-15-10-1 0 101033019 M003153-00 03/54-10 10113110 -0.051 0.051	
16-08636-12-IN-G S16T033520 W609129-39 09/24/16 10/19/16 <0.021 0.021	
16-08636-12-IN-H S16T033521 W609129-40 09/24/16 10/19/16 <0.021 0.021	

D = Analyte analyzed in a dilution

 $\boldsymbol{E} = \boldsymbol{E}_{\boldsymbol{r}} \boldsymbol{p} \boldsymbol{r} \boldsymbol{r} \boldsymbol{r}$ concentration was above the instrument calibration range J = Analyte detected below quantitation limits, concentration is estimated P = Ethney spectrum match, and >80% is RT match

R=RPO isolative powerd difference) extride accepted recovery limits U=Annlyte analysed for but not detected

NIA = Not Applicable

Report Template: WRPS_Nitrosamines 2.1.rpt

B = Analyte detected in the associated blank

d = Date that crossls the RSD criteria set by the SOP H = Holding times for proporation or analysis exceeded

L = Sample condition at receipt out of compliance with method defined conditions <math>Q = Result ant of method specific acceptance QC criteria

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ABUL-LAP, LLC Lab IO 1708/ib EPA IO WARTES and WA DOE Lab IO CESS. This regard may not be used to claim product endowerment by any alteratory according agracy. The
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Washington River Protection Solutions, LLC P.O. Box 850 MSIN H6-16 Richland, WA 99352

Client Project:

Laboratory Report

NIOSH 2522

RJ Lee Group No.: W609129 Samples Received: 09/27/16 Report Date: 11/21/16 COC No.: 20162968 Extraction Date: 09/30/16

Analyte: N-Nitrosomethylethylamine

Cartridge Evaluation CAS No.: 10595-95-6

Sample Identification Client Sample ID RJL	Sampling Date	Analyzed Date	Result µg/tube	RL µg/tube	Qualifiers
16-08635-12-EFF-E S16T03348 W609129	-01 09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-F \$16T03348 W609129	-02 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-EFF-G S16T03348 W609129	-03 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-EFF-H \$16T03348 W609129	-04 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-IN-A \$16T033485 W609129	-05 09/23/16	10/18/16	0.025	0.022	
16-08635-12-IN-B \$16T033486 W609129	-06 09/23/16	10/18/16	0.030	0.022	
16-08635-12-IN-C \$16T033487 W609129	-07 09/23/16	10/18/16	0.032	0.022	
16-08635-12-IN-D \$16T033489 W609129	-08 09/23/16	10/18/16	0.031	0.022	
16-08635-12-BASE-EFF S16T0: W609129	-09 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-BASE-IN S16T033 W609129	-10 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-BLANK1 \$16T033- W609129	9-11 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-BLANK2 S16T033- W609129	-12 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-EFF-A \$16T03349 W609129	-13 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-EFF-B S16T03349 W609129	-14 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-EFF-C S16T03349 W609129	-15 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-EFF-D S16T03349 W609129	-16 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-IN-E S16T033498 W609129	-17 09/23/16	10/18/16	0.031	0.022	
16-08635-12-IN-F \$16T033499 W609129	-18 09/23/16	10/18/16	0.029	0.022	
16-08635-12-IN-G \$16T033500 W609129	-19 09/23/16	10/18/16	0.032	0.022	
16-08635-12-IN-H \$16T033501 W609129	-20 09/23/16	10/18/16	0.025	0.022	
16-08636-12-BASE-EFF S16T0: W609129	-21 09/23/16	10/19/16	< 0.021	0.021	
16-08636-12-BASE-IN S16T033 W609129	-22 09/23/16	10/19/16	< 0.021	0.021	
16-08636-12-BLANK-EFF \$16Tt W609129	-23 09/23/16	10/19/16	< 0.021	0.021	
16-08636-12-BLANK-IN \$16T03 W609129	-24 09/23/16	10/19/16	< 0.021	0.021	
16-08636-12-EFF-A \$16T03350 W609129	-25 09/23/16	10/19/16	< 0.021	0.021	
16-08636-12-EFF-B \$16T03350 W609129	-26 09/23/16	10/19/16	< 0.021	0.021	
16-08636-12-EFF-C \$16T03350 W609129	-27 09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-D S16T03350 W609129	-28 09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-E S16T03351 W609129	-29 09/23/16	10/19/16	< 0.021	0.021	
16-08636-12-EFF-F S16T03351 W609129	-30 09/24/16	10/19/16	< 0.021	0.021	

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E = Report concentration cost above the instrument calibration range J = Analyte detected below quantitation limits, concentration is estimated <math>P = Library spectrum match, and <math>>0.07, or RT match

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If a Analyte detected in the associated black

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II - Holding times for preparation or analysis exceeded

L = Sample condition at secript out of compliance with method defined conditions Q = Result out of method specific acceptance QC criteria

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NO = Not Detected

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Laboratory Report

NIOSH 2522

RJ Lee Group No.: W609129 Samples Received: 09/27/16 Report Date: 11/21/16 COC No.: 20162968 Extraction Date: 09/30/16

Washington River Protection Solutions, LLC

P.O. Box 850 MSIN H6-16 Richland, WA 99352

Carl Howald IV

Analyte: N-Nitrosomethylethylamine Client Project:

CAS No.: 10595-95-6 Cartridge Evaluation

Sample Identification	n	Sampling	Analyzed	Result	RL	Qualifiers
Client Sample ID	RJLG	Date	Date	µg/tube	µg/tube	
16-08636-12-EFF-G S16T03351	W609129-31	09/24/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-H S16T03351	W609129-32	09/24/16	10/19/16	< 0.021	0.021	
16-08636-12-IN-A S16T033514	W609129-33	09/24/16	10/19/16	0.028	0.021	
16-08636-12-IN-B S16T033515	W609129-34	09/24/16	10/19/16	< 0.021	0.021	
16-08636-12-IN-C \$16T033516	W609129-35	09/24/16	10/19/16	0.035	0.021	
16-08636-12-IN-D \$16T033517	W609129-36	09/24/16	10/19/16	0.031	0.021	
16-08636-12-IN-E \$16T033518	W609129-37	09/24/16	10/19/16	0.035	0.021	
16-08636-12-IN-F \$16T033519	W609129-38	09/24/16	10/19/16	0.030	0.021	
16-08636-12-IN-G S16T033520	W609129-39	09/24/16	10/19/16	0.030	0.021	
16-08636-12-IN-H S16T033521	W609129-40	09/24/16	10/19/16	0.027	0.021	

Report Qualifiers:

A = Target Analyte media invakthrough suspect, see analytical report

D = Analyte analyzed in a dilution

 $\boldsymbol{E} = \boldsymbol{E}_{\boldsymbol{r}} \boldsymbol{p} \boldsymbol{r} \boldsymbol{r} \boldsymbol{r}$ concentration was above the instrument calibration range

J = Analyte detected below quantitation limits, concentration is estimated P = Ethney operium match, and >80% is RT match

Report Template: WRPS_Nitrosamines 2.1.rpt

 $R=RPO\ (solution\ powerd\ deflevence)\ extride\ accepted\ sourcery\ limits$ $U=Analyte\ analyte\ of\ for\ but\ not\ defected$

NIA = Not Applicable

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L = Sample condition at receipt out of compliance with method defined conditions Q = Result and of method specific acceptance QC exists is

5 = Spike Revocery outside accepted recovery limits 2 = Not ELAP according analyte

ND = Not Detected

Scientist II DeNomy Dage

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ABUL-LAP, LLC Lab IO 170866 EPA IO WARTES and WA DOC Lab IO CESS. This regard may not be used to claim product endowerment by any alternatory according agrees. The
results contained in this report relate only to the items around no to the sample's; as secrived by the laboratory. Any repudaction of this document must be in full for the report to be

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Approved: 11/4/16 19:26 Report Time Stamp: 11/21/16 17:34

Laboratory Report

NIOSH 2522

RJ Lee Group No.: W609129 Samples Received: 09/27/16 Report Date: 11/21/16 COC No.: 20162968 Extraction Date: 09/30/16

Washington River Protection Solutions, LLC P.O. Box 850 MSIN H6-16 Richland, WA 99352

Carl Howald IV

Client Project:

Analyte: N-Nitrosomorpholine

Cartridge Evaluation CAS No.: 59-89-2

Sample Identification Client Sample ID RJL0	Sampling Date	Analyzed Date	Result µg/tube	RL µg/tube	Qualifiers
16-08635-12-EFF-E S16T03348 W609129	-01 09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-F S16T03348 W609129-	-02 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-EFF-G S16T03348 W609129-	-03 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-EFF-H S16T03348 W609129	-04 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-IN-A \$16T033485 W609129-	-05 09/23/16	10/18/16	0.041	0.022	
16-08635-12-IN-B S16T033486 W609129-	-06 09/23/16	10/18/16	0.041	0.022	
16-08635-12-IN-C S16T033487 W609129-	-07 09/23/16	10/18/16	0.036	0.022	
16-08635-12-IN-D S16T033489 W609129	-08 09/23/16	10/18/16	0.033	0.022	
16-08635-12-BASE-EFF S16T0: W609129-	-09 09/23/16	10/18/16	<0.022	0.022	
16-08635-12-BASE-IN S16T033 W609129-	-10 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-BLANK1 S16T033- W609129	-11 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-BLANK2 S16T033- W609129-	-12 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-EFF-A S16T03349 W609129-	-13 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-EFF-B S16T03349 W609129-	-14 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-EFF-C S16T03349 W609129	-15 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-EFF-D S16T03349 W609129-	-16 09/23/16	10/18/16	<0.022	0.022	
16-08635-12-IN-E S16T033498 W609129-	-17 09/23/16	10/18/16	0.032	0.022	
16-08635-12-IN-F S16T033499 W609129-	-18 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-IN-G \$16T033500 W609129-	-19 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-IN-H S16T033501 W609129-	-20 09/23/16	10/18/16	< 0.022	0.022	
16-08636-12-BASE-EFF \$16T0: W609129-	-21 09/23/16	10/19/16	< 0.021	0.021	
16-08636-12-BASE-IN S16T033 W609129-	-22 09/23/16	10/19/16	< 0.021	0.021	
16-08636-12-BLANK-EFF \$16Tt W609129-	-23 09/23/16	10/19/16	< 0.021	0.021	
16-08636-12-BLANK-IN \$16T03 W609129-	-24 09/23/16	10/19/16	< 0.021	0.021	
16-08636-12-EFF-A \$16T03350 W609129	-25 09/23/16	10/19/16	< 0.021	0.021	
16-08636-12-EFF-B \$16T03350 W609129-	-26 09/23/16	10/19/16	< 0.021	0.021	
16-08636-12-EFF-C S16T03350 W609129	-27 09/23/16	10/19/16	< 0.021	0.021	
16-08636-12-EFF-D S16T03350 W609129	-28 09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-E S16T03351 W609129	-29 09/23/16	10/19/16	< 0.021	0.021	
16-08638-12-EFF-F \$16T03351 W609129	-30 09/24/16	10/19/16	< 0.021	0.021	

Report Qualifiers:

A = Target Analyte media level/through couport, see analytical report $D \approx \Delta malyte analyted in a dilution$

E = Report concentration cost above the instrument calibration range

] = Analyte detected below quantitation limits, concentration is estimated P = Library sportram match, and >00% or RT match

R = RPD infative powerst difference; subside accepted soccerny limits.

If a Analyte analysed for but not detected.

N/A = Not Applicable

B = Analyte detected in the associated blank

 $d \sim D$ at that exceeds the RSD criteria set by the SOP

H = Holding times for preparation or analysis exceeded

L= Sample condition at societ out of compliance with method defined conditions Q= Result out of method specific acceptance QC cedenia

S = Spike Recurry outside accepted recurry limits

Z = Not ELAP according analyte

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Report Template: WRPS_Nitrosamines 2.1.rpt

Report Time Stamp: 11/21/16 17:34

Laboratory Report

NIOSH 2522

RJ Lee Group No.: W609129 Samples Received: 09/27/16 Report Date: 11/21/16 COC No.: 20162968 Extraction Date: 09/30/16

Washington River Protection Solutions, LLC P.O. Box 850 MSIN H6-16

Richland, WA 99352

Carl Howald IV

Client Project:

Analyte: N-Nitrosomorpholine

CAS No.: 59-89-2 Cartridge Evaluation

Sample Identification	n	Sampling	Analyzed	Result	RL	Qualifiers
Client Sample ID	RJLG	Date	Date	µg/tube	µg/tube	
16-08636-12-EFF-G S16T03351	W609129-31	09/24/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-H S16T03351	W609129-32	09/24/16	10/19/16	< 0.021	0.021	
16-08636-12-IN-A S16T033514	W609129-33	09/24/16	10/19/16	0.037	0.021	
16-08636-12-IN-B S16T033515	W609129-34	09/24/16	10/19/16	< 0.021	0.021	
16-08636-12-IN-C \$16T033516	W609129-35	09/24/16	10/19/16	0.032	0.021	
16-08636-12-IN-D \$16T033517	W609129-36	09/24/16	10/19/16	0.031	0.021	
16-08636-12-IN-E \$16T033518	W609129-37	09/24/16	10/19/16	0.032	0.021	
16-08636-12-IN-F \$16T033519	W609129-38	09/24/16	10/19/16	0.026	0.021	
16-08636-12-IN-G S16T033520	W609129-39	09/24/16	10/19/16	0.024	0.021	
16-08636-12-IN-H \$16T033521	W609129-40	09/24/16	10/19/16	< 0.021	0.021	

Report Qualifiers:

A = Target Analyte media invaktivnegh suspect, see analytical report

D = Analyte analyzed in a dilution

 $\boldsymbol{E} = \boldsymbol{E}_{\boldsymbol{r}} \boldsymbol{p} \boldsymbol{r} \boldsymbol{r} \boldsymbol{r}$ concentration was above the instrument calibration range

J = Analyte detected below quantitation limits, concentration is estimated P = Ethney opertram match, and >80% is RT match

R=RPO isolative powerd difference) exciside accepted sourcery limits U=Analyte analyted for but not detected

NIA = Not Applicable

B = Analyte detected in the associated blank

d = Date that exceeds the RSD criteria set by the SOP

H=Holding times for proporation or analysis exceeded

L = Sample condition at receipt out of compliance with method defined conditions <math>Q = Result and of method specific acceptance QC criteria

S = Spike Revocery outside accepted recovery limits 2 = Nat ELAP according analyte

ND = Not Detected

Scientist II DeNomy Dage

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ABUL-LAP, LLC Lab IO 170856 EPA IO WARTESS and WA DOC Lab IO CESS. This segart may not be used to claim product endowerment by any alteratory according agracy. The
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Laboratory Report Carl Howald IV

NIOSH 2522

RJ Lee Group No.: W609129 Samples Received: 09/27/16 Report Date: 11/21/16 COC No.: 20162968 Extraction Date: 09/30/16

Washington River Protection Solutions, LLC P.O. Box 850 MSIN H6-16 Richland, WA 99352

Client Project:

Analyte: N-Nitrosopiperidine

Cartridge Evaluation CAS No.: 100-75-4

Sample Identification Client Sample ID RJL0	Sampling Date	Analyzed Date	Result µg/tube	RL µg/tube	Qualifiers
16-08635-12-EFF-E S16T03348 W609129	-01 09/23/16	10/18/16	<0.023	0.023	
16-08635-12-EFF-F \$16T03348 W609129	09/23/16	10/18/16	< 0.023	0.023	
16-08635-12-EFF-G S16T03348 W609129	-03 09/23/16	10/18/16	< 0.023	0.023	
16-08635-12-EFF-H \$16T03348 W609129	09/23/16	10/18/16	< 0.023	0.023	
16-08635-12-IN-A \$16T033485 W609129	-05 09/23/16	10/18/16	<0.023	0.023	
16-08635-12-IN-B \$16T033486 W609129	-06 09/23/16	10/18/16	< 0.023	0.023	
16-08635-12-IN-C \$16T033487 W609129	-07 09/23/16	10/18/16	< 0.023	0.023	
16-08635-12-IN-D \$16T033489 W609129	-08 09/23/16	10/18/16	< 0.023	0.023	
16-08635-12-BASE-EFF S16T0: W609129	-09 09/23/16	10/18/16	< 0.023	0.023	
16-08635-12-BASE-IN S16T033 W609129	-10 09/23/16	10/18/16	< 0.023	0.023	
16-08635-12-BLANK1 \$16T033- W609129	9-11 09/23/16	10/18/16	< 0.023	0.023	
16-08635-12-BLANK2 S16T033- W609129	-12 09/23/16	10/18/16	< 0.023	0.023	
16-08635-12-EFF-A \$16T03349 W609129	-13 09/23/16	10/18/16	< 0.023	0.023	
16-08635-12-EFF-B S16T03349 W609129	-14 09/23/16	10/18/16	< 0.023	0.023	
16-08635-12-EFF-C S16T03349 W609129	-15 09/23/16	10/18/16	< 0.023	0.023	
16-08635-12-EFF-D \$16T03349 W609129	-16 09/23/16	10/18/16	<0.023	0.023	
16-08635-12-IN-E \$16T033498 W609129	-17 09/23/16	10/18/16	< 0.023	0.023	
16-08635-12-IN-F \$16T033499 W609129	-18 09/23/16	10/18/16	< 0.023	0.023	
16-08635-12-IN-G \$16T033500 W609129	-19 09/23/16	10/18/16	< 0.023	0.023	
16-08635-12-IN-H \$16T033501 W609129	-20 09/23/16	10/18/16	< 0.023	0.023	
16-08636-12-BASE-EFF S16T0: W609129	-21 09/23/16	10/19/16	< 0.021	0.021	
16-08636-12-BASE-IN S16T033 W609129	-22 09/23/16	10/19/16	< 0.021	0.021	
16-08636-12-BLANK-EFF \$16Tt W609129	-23 09/23/16	10/19/16	< 0.021	0.021	
16-08636-12-BLANK-IN \$16T03 W609129	-24 09/23/16	10/19/16	< 0.021	0.021	
16-08636-12-EFF-A \$16T03350 W609129	-25 09/23/16	10/19/16	< 0.021	0.021	
16-08636-12-EFF-B \$16T03350 W609129	-26 09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-C \$16T03350 W609129	-27 09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-D S16T03350 W609129	-28 09/23/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-E S16T03351 W609129	-29 09/23/16	10/19/16	< 0.021	0.021	
16-08636-12-EFF-F S16T03351 W609129	-30 09/24/16	10/19/16	< 0.021	0.021	

Report Qualifiers:

A = Target Analyte media breakfrough couport, see analytical report $D \approx \Delta malyte analysed in a dilution$

E = Report concentration uses above the instrument calibration range

J = Analyte detected below quantitation limits, concentration is estimated <math>P = Library spectrum match, and <math>>0.0%, or RT match

R = RPD (relative powerst difference) authide accepted sourcery limits $\Omega = Analyte analysed for that not delected.$

N/A = Not Applicable

B = Analyte detected in the associated black

 $d \sim D$ at that exceeds the RSD criticals set by the SOP

If a Holding times for preparation or analysis exceeded

L=Semple condition at societ out of compliance with method defined conditions <math>Q=Result out of method specific acceptance QC criteria

S = Spike Recurry outside accepted recurry limits

Z = Not ELAP according analyte

ND = Not Detacted

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Laboratory Report

NIOSH 2522

RJ Lee Group No.: W609129 Samples Received: 09/27/16 Report Date: 11/21/16 COC No.: 20162968

Extraction Date: 09/30/16

Washington River Protection

Solutions, LLC

Carl Howald IV

P.O. Box 850 MSIN H6-16 Richland, WA 99352

Analyte: N-Nitrosopiperidine Client Project:

CAS No.: 100-75-4 Cartridge Evaluation

Sample Identificati	on	Sampling	Analyzed	Result	RL	Qualifiers
Client Sample ID	RJLG	Date	Date	µg/tube	µg/tube	
16-08636-12-EFF-G \$16T0335	W609129-31	09/24/16	10/19/16	<0.021	0.021	
16-08636-12-EFF-H \$16T03351	W609129-32	09/24/16	10/19/16	< 0.021	0.021	
16-08636-12-IN-A S16T033514	W609129-33	09/24/16	10/19/16	< 0.021	0.021	
16-08636-12-IN-B \$16T033515	W609129-34	09/24/16	10/19/16	< 0.021	0.021	
16-08636-12-IN-C \$16T033516	W609129-35	09/24/16	10/19/16	<0.021	0.021	
16-08636-12-IN-D \$16T033517	W609129-36	09/24/16	10/19/16	< 0.021	0.021	
16-08636-12-IN-E \$16T033518	W609129-37	09/24/16	10/19/16	< 0.021	0.021	
16-08636-12-IN-F \$16T033519	W609129-38	09/24/16	10/19/16	<0.021	0.021	
16-08636-12-IN-G S16T033520	W609129-39	09/24/16	10/19/16	< 0.021	0.021	
16-08636-12-IN-H \$16T033521	W609129-40	09/24/16	10/19/16	< 0.021	0.021	

 $A=Target\ Analyte\ media\ breakthrough\ suspect,\ see\ analytical\ report$

D = Analyte analyzed in a dilution

 $\boldsymbol{E} = \boldsymbol{E}_{\boldsymbol{r}} \boldsymbol{p} \boldsymbol{\sigma} \boldsymbol{r}$ concentration was above the instrument calibration range J = Analyte detected below quantitation limits, concentration is estimated P = Edwary operature match, and >80% is RT match

Report Template: WRPS_Nitrosamines 2.1.rpt

 $R=RPO\ (relative\ powerd\ difference)\ outside\ accepted\ sourcery\ limits$ $U=Analyte\ analyte\ of\ for\ but\ not\ difference$

NIA = Not Applicable

B = Analyte detected in the associated blankd = Date that exemds the RSD criteria set by the SOP

H=Holding times for proposition or enalpsis exceeded L = Sample condition at receipt out of compliance with method defined conditions Q = Result and of method specific acceptance QC criteria

5 = Spike Revocery outside accepted recovery limits 2 = Not ELAP accepted analyte

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Scientist II DeNomy Dage

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ABUL-LAP, LLC Lab IO 170856 EPA IO WARTESS and WA DOC Lab IO CESS. This separt may not be used to claim product endowerment by any identitory according agracy. The
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Approved: 11/4/16 19:26 Report Time Stamp:

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Laboratory Report

NIOSH 2522

RJ Lee Group No.: W609129 Samples Received: 09/27/16 Report Date: 11/21/16 COC No.: 20162968 Extraction Date: 09/30/16

Washington River Protection Solutions, LLC

P.O. Box 850 MSIN H6-16 Richland, WA 99352

Carl Howald IV

Analyte: N-Nitrosopyrrolidine Client Project:

Cartridge Evaluation CAS No.: 930-55-2

Sample Identification Client Sample ID RJL0	Sampling Date	Analyzed Date	Result µg/tube	RL µg/tube	Qualifiers
16-08635-12-EFF-E S16T03348 W609129	-01 09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-F \$16T03348 W609129	-02 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-EFF-G S16T03348 W609129	-03 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-EFF-H S16T03348 W609129	-04 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-IN-A \$16T033485 W609129	-05 09/23/16	10/18/16	<0.022	0.022	
16-08635-12-IN-B \$16T033486 W609129	-06 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-IN-C \$16T033487 W609129	-07 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-IN-D \$16T033489 W609129	-08 09/23/16	10/18/16	<0.022	0.022	
16-08635-12-BASE-EFF S16T0: W609129	-09 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-BASE-IN S16T033 W609129	-10 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-BLANK1 \$16T033- W609129	9-11 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-BLANK2 S16T033- W609129	-12 09/23/16	10/18/16	<0.022	0.022	
16-08635-12-EFF-A \$16T03349 W609129	-13 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-EFF-B S16T03349 W609129	-14 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-EFF-C S16T03349 W609129	-15 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-EFF-D \$16T03349 W609129	-16 09/23/16	10/18/16	<0.022	0.022	
16-08635-12-IN-E S16T033498 W609129	-17 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-IN-F \$16T033499 W609129	-18 09/23/16	10/18/16	< 0.022	0.022	
16-08635-12-IN-G \$16T033500 W609129	-19 09/23/16	10/18/16	<0.022	0.022	
16-08635-12-IN-H \$16T033501 W609129	-20 09/23/16	10/18/16	< 0.022	0.022	
16-08636-12-BASE-EFF S16T0: W609129	-21 09/23/16	10/19/16	< 0.022	0.022	
16-08636-12-BASE-IN S16T033 W609129	-22 09/23/16	10/19/16	< 0.022	0.022	
16-08636-12-BLANK-EFF \$16Tt W609129	-23 09/23/16	10/19/16	< 0.022	0.022	
16-08636-12-BLANK-IN \$16T03 W609129	-24 09/23/16	10/19/16	<0.022	0.022	
16-08636-12-EFF-A \$16T03350 W609129	-25 09/23/16	10/19/16	< 0.022	0.022	
16-08636-12-EFF-B \$16T03350 W609129	-26 09/23/16	10/19/16	<0.022	0.022	
16-08636-12-EFF-C \$16T03350 W609129	-27 09/23/16	10/19/16	< 0.022	0.022	
16-08636-12-EFF-D \$16T03350 W609129	-28 09/23/16	10/19/16	<0.022	0.022	
16-08636-12-EFF-E S16T03351 W609129	-29 09/23/16	10/19/16	< 0.022	0.022	
16-08636-12-EFF-F S16T03351 W609129	-30 09/24/16	10/19/16	< 0.022	0.022	

Report Qualifiers:

A = Target Analyte media breakfrough couport, we analytical report $D\sim Analyte analysed in a dilution$

E = Report concentration uses above the instrument calibration range

] = Analyte detected below quantitation limits, concentration is estimated P = Library sportrum match, and >00% or RT match

R = RPD infative powers difference; subside accepted soccery limits.

If a Analyte analysed for but not detected.

N/A = Not Applicable

B = Analyte detected in the associated black

d = Date that exceeds the RSD criteria set by the SOP

II - Holding times for preparation or analysis exceeded

L = Sample condition at societ out of compliance with method defined conditions Q = Result out of method specific acceptance QC criteria

S = Spike Recurry outside accepted recurry limits

Z = Nat ELAP according analytic

ND = Not Detected

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Approved: 11/4/16 19:26 Report Time Stamp: 11/21/16 17:34

Laboratory Report

NIOSH 2522

RJ Lee Group No.: W609129 Samples Received: 09/27/16 Report Date: 11/21/16 COC No.: 20162968

Extraction Date: 09/30/16

Washington River Protection Solutions, LLC

Carl Howald IV

Client Project:

P.O. Box 850 MSIN H6-16 Richland, WA 99352

Analyte: N-Nitrosopyrrolidine

CAS No.: 930-55-2 Cartridge Evaluation

Sample Identification	n	Sampling	Analyzed	Result	RL	Qualifiers
Client Sample ID	RJLG	Date	Date	µg/tube	µg/tube	
16-08636-12-EFF-G \$16T03351	W609129-31	09/24/16	10/19/16	<0.022	0.022	
16-08636-12-EFF-H S16T03351	W609129-32	09/24/16	10/19/16	<0.022	0.022	
16-08636-12-IN-A S16T033514	W609129-33	09/24/16	10/19/16	< 0.022	0.022	
16-08636-12-IN-B S16T033515	W609129-34	09/24/16	10/19/16	< 0.022	0.022	
16-08636-12-IN-C \$16T033516	W609129-35	09/24/16	10/19/16	0.027	0.022	Х
16-08636-12-IN-D \$16T033517	W609129-36	09/24/16	10/19/16	< 0.022	0.022	
16-08636-12-IN-E \$16T033518	W609129-37	09/24/16	10/19/16	< 0.022	0.022	
16-08636-12-IN-F \$16T033519	W609129-38	09/24/16	10/19/16	<0.022	0.022	
16-08636-12-IN-G S16T033520	W609129-39	09/24/16	10/19/16	<0.022	0.022	
16-08636-12-IN-H S16T033521	W609129-40	09/24/16	10/19/16	< 0.022	0.022	

Report Qualifiers:

A = Target Analyte media Invakthrough suspect, see analytical report

D = Analyte analyzed in a dilution

 $\boldsymbol{E} = \boldsymbol{E}_{\boldsymbol{r}} \boldsymbol{p} \boldsymbol{r} \boldsymbol{r} \boldsymbol{r}$ concentration was above the instrument calibration range J = Analyte detected below quantitation limits, concentration is estimated P = Ethney operature match, and >80% is RT match

 $R=RPO\ (relative\ powerd\ difference)\ outside\ accepted\ accepted\ accepted\ accepted\ accepted\ between the accepted\ acce$

NIA = Not Applicable

Report Template: WRPS_Nitrosamines 2.1.rpt

B = Analyte defected in the associated Hankd = Date that exceeds the RSD criteria set by the SOP

H=Holding times for proposition or analysis exceeded

L = Sample condition at receipt out of compliance with method defined conditions <math>Q = Result ant of method specific acceptance QC criteria

S = Spike Revocery outside accepted recovery limits 2 = Not ELAP according analyte

ND = Not Detected

Scientist II DeNomy Dage

These results are submitted pursuant to EJ Lee Croup's current toms and conditions of sale, including the company's standard sucreasity and limitation of liability provisions. No responsibility or liability is assumed for the manner in which the results are used or interpreted. Unless neitfied in writing to return the samples covered by this report. EL Lee Croup will store the samples for a period of ninety (Nii days before discussing. A shipping and hundling for will be assessed for the return of any samples. Unless attention on neitfield. received in an acceptable condition. This behaviory operator in accordance with SO 17055 guidelines, and holds limited scopes of accordination under CRELAP Lab Code 4061.

ABIA-LAP, LLE Lab IO 170866 EPA ID WARTES and WA DOE Lab ID CESS. This regard may not be used to claim product endowerment by any alternativey according agrees. The results contained in this report relate only to the items tested or to the sample's; as servined by the laboratory. Any reproduction of this document must be in full for the report to be

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Approved: 11/4/16 19:26 Report Time Stamp: 11/21/16 17:34

Carl Howald IV

Quality Control

NIOSH 2522

RJ Lee Group No.: W609129 Samples Received: 09/27/16 Report Date: 11/21/16 COC No.: 20162968 Extraction Date: 09/30/16

Washington River Protection Solutions, LLC P.O. Box 850 MSIN H6-16 Richland, WA 99352

Report Template: WRPS_Nitrosamines 2.1.rpt

Client Project: Cartridge Evaluation

Analyte	CAS No.	Sample ID	Analyzed Date	Expecte d	Result µg/tube	DE	DE Corrected	REC %	RSD %	Qualifier
N-Nitrosodiethylamine	55-18-5	LCS-1	10/18/16	0.200	0.186	0.90	0.207	103	4.32	
N-Nitrosodiethylamine	55-18-5	LCS-1	10/18/16	0.200	0.190	0.92	0.208	103	3.52	
N-Nitrosodiethylamine	55-18-5	LCS-1	10/21/16	0.200	0.192	0.95	0.201	100	1.23	
N-Nitrosodiethylamine	55-18-5	LCS-1	10/21/16	0.200	0.201	1.02	0.196	97.8	2.42	
N-Nitrosodiethylamine	55-18-5	LCS-1	10/21/16	0.200	0.190	0.93	0.205	102	3.37	
N-Nitrosodiethylamine	55-18-5	LCS-1	10/22/16	0.200	0.197	0.97	0.203	101	1.22	
N-Nitrosodimethylamine	62-75-9	LCS-1	10/18/16	0.200	0.177	0.84	0.212	106	5.71	
N-Nitrosodimethylamine	62-75-9	LCS-1	10/18/16	0.200	0.189	0.92	0.206	103	2.50	7
N-Nitrosodimethylamine	62-75-9	LCS-1	10/21/16	0.200	0.191	0.96	0.200	99.5	1.84	
N-Nitrosodimethylamine	62-75-9	LCS-1	10/21/16	0.200	0.191	0.99	0.193	96.6	3.30	
N-Nitrosodimethylamine	62-75-9	LCS-1	10/21/16	0.200	0.184	0.89	0.207	103	3.95	
N-Nitrosodimethylamine	62-75-9	LCS-1	10/22/16	0.200	0.182	0.89	0.204	102	2.99	0
N-Nitrosodi-n-butylamine	924-16-3	LCS-1	10/18/16	0.200	0.180	0.89	0.203	101	1.79	
N-Nitrosodi-n-butylamine	924-16-3	LCS-1	10/18/16	0.200	0.190	0.95	0.201	100	0.265	
N-Nitrosodi-n-butylamine	924-16-3	LCS-1	10/21/16	0.200	0.190	0.95	0.201	100	0.279	
N-Nitrosodi-n-butylamine	924-16-3	LCS-1	10/21/16	0.200	0.201	1.03	0.194	97.3	2.48	
N-Nitrosodi-n-butylamine	924-16-3	LCS-1	10/21/16	0.200	0.183	0.92	0.199	99.7	1.10	
N-Nitrosodi-n-butylamine	924-16-3	LCS-1	10/22/16	0.200	0.197	0.97	0.203	102	2.43	
N-Nitrosodi-n-propylamine	621-64-7	LCS-1	10/18/16	0.200	0.188	0.91	0.207	103	3.50	
N-Nitrosodi-n-propylamine	621-64-7	LCS-1	10/18/16	0.200	0.195	0.96	0.203	101	1.44	
N-Nitrosodi-n-propylamine	621-64-7	LCS-1	10/21/16	0.200	0.195	0.97	0.202	101	0.969	
N-Nitrosodi-n-propylamine	621-64-7	LCS-1	10/21/16	0.200	0.202	1.04	0.194	97.0	2.98	
N-Nitrosodi-n-propylamine	621-64-7	LCS-1	10/21/16	0.200	0.191	0.94	0.202	101	3.56	
N-Nitrosodi-n-propylamine	621-64-7	LCS-1	10/22/16	0.200	0.199	0.97	0.204	102	2.01	
N-Nitrosomethylethylamine	10595-95-6	LCS-1	10/18/16	0.200	0.187	0.89	0.210	105	4.91	
N-Nitrosomethylethylamine	10595-95-6	LCS-1	10/18/16	0.200	0.193	0.94	0.205	102	2.00	
N-Nitrosomethylethylamine	10595-95-6	LCS-1	10/21/16	0.200	0.199	0.98	0.203	101	1.29	
N-Nitrosomethylethylamine	10595-95-6	LCS-1	10/21/16	0.200	0.201	1.03	0.195	97.4	2.67	
N-Nitrosomethylethylamine	10595-95-6	LCS-1	10/21/16	0.200	0.187	0.93	0.200	100	3.43	
N-Nitrosomethylethylamine	10595-95-6	LCS-1	10/22/16	0.200	0.198	0.97	0.203	101	1.33).
N-Nitrosomorpholine	59-89-2	LCS-1	10/18/16	0.200	0.192	0.91	0.211	105	5.55	
N-Nitrosomorpholine	59-89-2	1004	10/18/16	0.200	0.197	0.97	0.203	101	1.34	d

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Analyte	CAS No.	Sample ID	Analyzed Date	Expecte d	Result µg/tube	DE	DE Corrected	REC %	RSD %	Qualifier
N-Nitrosomorpholine	59-89-2	LCS-1	10/21/16	0.200	0.195	0.97	0.201	100	1.15	
N-Nitrosomorpholine	59-89-2	LCS-1	10/21/16	0.200	0.199	1.04	0.192	95.9	4.13	
N-Nitrosomorpholine	59-89-2	LCS-1	10/21/16	0.200	0.186	0.93	0.201	101	3.51	
N-Nitrosomorpholine	59-89-2	LCS-1	10/22/16	0.200	0.195	0.97	0.202	101	0.798	
N-Nitrosopiperidine	100-75-4	LCS-1	10/18/16	0.200	0.182	0.88	0.206	103	3.79	
N-Nitrosopiperidine	100-75-4	LCS-1	10/18/16	0.200	0.194	0.95	0.205	102	2.27	
N-Nitrosopiperidine	100-75-4	LCS-1	10/21/16	0.200	0.195	0.97	0.202	101	0.908	1
N-Nitrosopiperidine	100-75-4	LCS-1	10/21/16	0.200	0.199	1.04	0.191	95.6	3.96	
N-Nitrosopiperidine	100-75-4	LCS-1	10/21/16	0.200	0.185	0.93	0.199	99.6	2.84	
N-Nitrosopiperidine	100-75-4	LCS-1	10/22/16	0.200	0.195	0.96	0.204	102	1.61	
N-Nitrosopyrrolidine	930-55-2	LCS-1	10/18/16	0.200	0.191	0.90	0.212	106	6.40	
N-Nitrosopyrrolidine	930-55-2	LCS-1	10/18/16	0.200	0.190	0.92	0.207	103	3.22	7
N-Nitrosopyrrolidine	930-55-2	LCS-1	10/21/16	0.200	0.195	0.99	0.196	98.2	2.62	
N-Nitrosopyrrolidine	930-55-2	LCS-1	10/21/16	0.200	0.199	1.04	0.192	95.6	3.97	
N-Nitrosopyrrolidine	930-55-2	LCS-1	10/21/16	0.200	0.187	0.92	0.203	102	2.82	
N-Nitrosopyrrolidine	930-55-2	LCS-1	10/22/16	0.200	0.193	0.96	0.202	101	1.07	
N-Nitrosodiethylamine	55-18-5	LCS-2	10/18/16	0.200	0.182	0.90	0.203	101	4.32	
N-Nitrosodiethylamine	55-18-5	LCS-2	10/18/16	0.200	0.184	0.92	0.201	100	3.52	
N-Nitrosodiethylamine	55-18-5	LCS-2	10/21/16	0.200	0.193	0.95	0.202	101	1.23	
N-Nitrosodiethylamine	55-18-5	LCS-2	10/21/16	0.200	0.204	1.02	0.199	99.6	2.42	
N-Nitrosodiethylamine	55-18-5	LCS-2	10/21/16	0.200	0.189	0.93	0.204	102	3.37	
N-Nitrosodiethylamine	55-18-5	LCS-2	10/22/16	0.200	0.194	0.97	0.200	99.7	1.22	
N-Nitrosodimethylamine	62-75-9	LCS-2	10/18/16	0.200	0.167	0.84	0.200	99.5	5.71	
N-Nitrosodimethylamine	62-75-9	LCS-2	10/18/16	0.200	0.181	0.92	0.198	98.6	2.50	
N-Nitrosodimethylamine	62-75-9	LCS-2	10/21/16	0.200	0.196	0.96	0.205	102	1.84	
N-Nitrosodimethylamine	62-75-9	LCS-2	10/21/16	0.200	0.198	0.99	0.200	100	3.30	
N-Nitrosodimethylamine	62-75-9	LCS-2	10/21/16	0.200	0.180	0.89	0.202	101	3.95	
N-Nitrosodimethylamine	62-75-9	LCS-2	10/22/16	0.200	0.173	0.89	0.194	96.6	2.99	
N-Nitrosodi-n-butylamine	924-16-3	LCS-2	10/18/16	0.200	0.179	0.89	0.202	101	1.79	
N-Nitrosodi-n-butylamine	924-16-3	LCS-2	10/18/16	0.200	0.189	0.95	0.200	99.8	0.265	
N-Nitrosodi-n-butylamine	924-16-3	LCS-2	10/21/16	0.200	0.189	0.95	0.200	99.8	0.279	
N-Nitrosodi-n-butylamine	924-16-3	LCS-2	10/21/16	0.200	0.208	1.03	0.201	101	2.48	
N-Nitrosodi-n-butylamine	924-16-3	LCS-2	10/21/16	0.200	0.188	0.92	0.203	101	1.10	
N-Nitrosodi-n-butylamine	924-16-3	LCS-2	10/22/16	0.200	0.196	0.97	0.202	101	2.43	4
N-Nitrosodi-n-propylamine	621-64-7		10/18/16	0.200	0.184	0.91	0.202	101	3.50	
N-Nitrosodi-n-propylamine	621-64-7		10/18/16	0.200	0.192	0.96	0.200	100	1.44	
N-Nitrosodi-n-propylamine	621-64-7		10/21/16	0.200	0.194	0.97	0.201	100	0.969	
N-Nitrosodi-n-propylamine	621-64-7		10/21/16	0.200	0.209	1.04	0.201	100.0	2.98	
N-Nitrosodi-n-propylamine	621-64-7	LCS-2	10/21/16	0.200	0.194	0.94	0.205	103	3.56	

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Analyte	CAS No.	Sample ID	Analyzed Date	Expecte d	Result µg/tube	DE	DE Corrected	REC %	RSD %	Qualifier
N-Nitrosodi-n-propylamine	621-64-7	LCS-2	10/22/16	0.200	0.191	0.97	0.196	98.0	2.01	
N-Nitrosomethylethylamine	10595-95-6	LCS-2	10/18/16	0.200	0.179	0.89	0.201	100	4.91	
N-Nitrosomethylethylamine	10595-95-6	LCS-2	10/18/16	0.200	0.189	0.94	0.200	99.8	2.00	
N-Nitrosomethylethylamine	10595-95-6	LCS-2	10/21/16	0.200	0.197	0.98	0.201	100	1.29	
N-Nitrosomethylethylamine	10595-95-6	LCS-2	10/21/16	0.200	0.206	1.03	0.200	99.8	2.67	
N-Nitrosomethylethylamine	10595-95-6	LCS-2	10/21/16	0.200	0.193	0.93	0.207	103	3.43	
N-Nitrosomethylethylamine	10595-95-6	LCS-2	10/22/16	0.200	0.193	0.97	0.198	98.8	1.33	
N-Nitrosomorpholine	59-89-2	LCS-2	10/18/16	0.200	0.184	0.91	0.202	101	5.55	
N-Nitrosomorpholine	59-89-2	LCS-2	10/18/16	0.200	0.195	0.97	0.201	100	1.34	
N-Nitrosomorpholine	59-89-2	LCS-2	10/21/16	0.200	0.197	0.97	0.203	101	1.15	
N-Nitrosomorpholine	59-89-2	LCS-2	10/21/16	0.200	0.208	1.04	0.201	100	4.13	11
N-Nitrosomorpholine	59-89-2	LCS-2	10/21/16	0.200	0.191	0.93	0.206	103	3.51	
N-Nitrosomorpholine	59-89-2	LCS-2	10/22/16	0.200	0.194	0.97	0.201	100	0.798	
N-Nitrosopiperidine	100-75-4	LCS-2	10/18/16	0.200	0.179	0.88	0.203	101	3.79	
N-Nitrosopiperidine	100-75-4	LCS-2	10/18/16	0.200	0.185	0.95	0.195	97.6	2.27	
N-Nitrosopiperidine	100-75-4	LCS-2	10/21/16	0.200	0.192	0.97	0.199	99.0	0.908	
N-Nitrosopiperidine	100-75-4	LCS-2	10/21/16	0.200	0.211	1.04	0.203	101	3.96	
N-Nitrosopiperidine	100-75-4	LCS-2	10/21/16	0.200	0.192	0.93	0.207	103	2.84	
N-Nitrosopiperidine	100-75-4	LCS-2	10/22/16	0.200	0.192	0.96	0.201	100.0	1.61	
N-Nitrosopyrrolidine	930-55-2	LCS-2	10/18/16	0.200	0.181	0.90	0.201	100	6.40	
N-Nitrosopyrrolidine	930-55-2	LCS-2	10/18/16	0.200	0.178	0.92	0.194	97.1	3.22	
N-Nitrosopyrrolidine	930-55-2	LCS-2	10/21/16	0.200	0.205	0.99	0.206	103	2.62	
N-Nitrosopyrrolidine	930-55-2	LCS-2	10/21/16	0.200	0.210	1.04	0.202	101	3.97	
N-Nitrosopyrrolidine	930-55-2	LCS-2	10/21/16	0.200	0.187	0.92	0.203	102	2.82	
N-Nitrosopyrrolidine	930-55-2	LCS-2	10/22/16	0.200	0.189	0.96	0.198	98.9	1.07	
N-Nitrosodiethylamine	55-18-5	LCS-3	10/18/16	0.200	0.171	0.90	0.190	95.2	4.32	
N-Nitrosodiethylamine	55-18-5	LCS-3	10/18/16	0.200	0.177	0.92	0.193	96.4	3.52	
N-Nitrosodiethylamine	55-18-5	LCS-3	10/21/16	0.200	0.189	0.95	0.198	98.7	1.23	
N-Nitrosodiethylamine	55-18-5	LCS-3	10/21/16	0.200	0.210	1.02	0.205	103	2.42	
N-Nitrosodiethylamine	55-18-5	LCS-3	10/21/16	0.200	0.179	0.93	0.193	96.1	3.37	
N-Nitrosodiethylamine	55-18-5	LCS-3	10/22/16	0.200	0.192	0.97	0.198	98.9	1.22	
N-Nitrosodimethylamine	62-75-9	LCS-3	10/18/16	0.200	0.158	0.84	0.189	94.5	5.71	
N-Nitrosodimethylamine	62-75-9	LCS-3	10/18/16	0.200	0.181	0.92	0.198	98.5	2.50	
N-Nitrosodimethylamine	62-75-9	LCS-3	10/21/16	0.200	0.189	0.96	0.198	98.4	1.84	
N-Nitrosodimethylamine	62-75-9	LCS-3	10/21/16	0.200	0.204	0.99	0.206	103	3.30	0
N-Nitrosodimethylamine	62-75-9	LCS-3	10/21/16	0.200	0.170	0.89	0.191	95.6	3.95	
N-Nitrosodimethylamine	62-75-9	LCS-3	10/22/16	0.200	0.182	0.89	0.204	102	2.99	
N-Nitrosodi-n-butylamine	924-16-3	LCS-3	10/18/16	0.200	0.174	0.89	0.196	97.9	1.79	
N-Nitrosodi-n-butylamine	924-16-3	LCS-3	10/18/16	0.200	0.189	0.95	0.200	99.9	0.265	

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Analyte	CAS No.	Sample ID	Analyzed Date	Expecte d	Result µg/tube	DE	DE Corrected	REC %	RSD %	Qualifier
N-Nitrosodi-n-butylamine	924-16-3	LCS-3	10/21/16	0.200	0.190	0.95	0.201	99.9	0.279	
N-Nitrosodi-n-butylamine	924-16-3	LCS-3	10/21/16	0.200	0.211	1.03	0.204	102	2.48	2
N-Nitrosodi-n-butylamine	924-16-3	LCS-3	10/21/16	0.200	0.182	0.92	0.198	99.1	1.10	
N-Nitrosodi-n-butylamine	924-16-3	LCS-3	10/22/16	0.200	0.189	0.97	0.195	97.2	2.43	
N-Nitrosodi-n-propylamine	621-64-7	LCS-3	10/18/16	0.200	0.175	0.91	0.192	96.2	3.50	
N-Nitrosodi-n-propylamine	621-64-7	LCS-3	10/18/16	0.200	0.190	0.96	0.198	98.6	1.44	-
N-Nitrosodi-n-propylamine	621-64-7	LCS-3	10/21/16	0.200	0.192	0.97	0.199	98.9	0.969	
N-Nitrosodi-n-propylamine	621-64-7	LCS-3	10/21/16	0.200	0.215	1.04	0.206	103	2.98	
N-Nitrosodi-n-propylamine	621-64-7	LCS-3	10/21/16	0.200	0.182	0.94	0.193	96.0	3.56	
N-Nitrosodi-n-propylamine	621-64-7	LCS-3	10/22/16	0.200	0.195	0.97	0.200	100.0	2.01	
N-Nitrosomethylethylamine	10595-95-6	LCS-3	10/18/16	0.200	0.170	0.89	0.191	95.0	4.91	
N-Nitrosomethylethylamine	10595-95-6		10/18/16	0.200	0.185	0.94	0.196	98.1	2.00	
N-Nitrosomethylethylamine	10595-95-6	LCS-3	10/21/16	0.200	0.194	0.98	0.198	98.6	1.29	
N-Nitrosomethylethylamine	10595-95-6	LCS-3	10/21/16	0.200	0.212	1.03	0.205	103	2.67	
N-Nitrosomethylethylamine	10595-95-6	LCS-3	10/21/16	0.200	0.180	0.93	0.193	96.6	3.43	
N-Nitrosomethylethylamine	10595-95-6	LCS-3	10/22/16	0.200	0.195	0.97	0.200	99.7	1.33	
N-Nitrosomorpholine	59-89-2	LCS-3	10/18/16	0.200	0.172	0.91	0.189	94.0	5.55	
N-Nitrosomorpholine	59-89-2	LCS-3	10/18/16	0.200	0.191	0.97	0.197	98.6	1.34	
N-Nitrosomorpholine	59-89-2	LCS-3	10/21/16	0.200	0.192	0.97	0.198	98.7	1.15	
N-Nitrosomorpholine	59-89-2		10/21/16	0.200	0.216	1.04	0.208	104	4.13	
N-Nitrosomorpholine	59-89-2	LCS-3	10/21/16	0.200	0.178	0.93	0.192	96.3	3.51	
N-Nitrosomorpholine	59-89-2	LCS-3	10/22/16	0.200	0.192	0.97	0.199	99.1	0.798	6
N-Nitrosopiperidine	100-75-4	LCS-3	10/18/16	0.200	0.169	0.88	0.191	95.7	3.79	
N-Nitrosopiperidine	100-75-4	LCS-3	10/18/16	0.200	0.190	0.95	0.200	100	2.27	
N-Nitrosopiperidine	100-75-4	LCS-3	10/21/16	0.200	0.194	0.97	0.201	100	0.908	
N-Nitrosopiperidine	100-75-4	LCS-3	10/21/16	0.200	0.215	1.04	0.207	103	3.96	
N-Nitrosopiperidine	100-75-4	LCS-3	10/21/16	0.200	0.181	0.93	0.195	97.4	2.84	
N-Nitrosopiperidine	100-75-4	LCS-3	10/22/16	0.200	0.189	0.96	0.197	98.4	1.61	
N-Nitrosopyrrolidine	930-55-2	LCS-3	10/18/16	0.200	0.168	0.90	0.187	93.4	6.40	
N-Nitrosopyrrolidine	930-55-2	LCS-3	10/18/16	0.200	0.182	0.92	0.199	99.4	3.22	
N-Nitrosopyrrolidine	930-55-2	LCS-3	10/21/16	0.200	0.197	0.99	0.198	98.9	2.62	
N-Nitrosopyrrolidine	930-55-2	LCS-3	10/21/16	0.200	0.215	1.04	0.207	103	3.97	
N-Nitrosopyrrolidine	930-55-2	LCS-3	10/21/16	0.200	0.178	0.92	0.193	96.7	2.82	
N-Nitrosopyrrolidine	930-55-2	LCS-3	10/22/16	0.200	0.192	0.96	0.201	100	1.07	
N-Nitrosodiethylamine	55-18-5		10/18/16		0.00	0.90	0.00			
N-Nitrosodiethylamine	55-18-5		10/19/16		0.00	0.92	0.00			
N-Nitrosodiethylamine	55-18-5	MB	10/21/16		0.00	0.95	0.00			
N-Nitrosodiethylamine	55-18-5		10/21/16		0.00	1.02	0.00			
N-Nitrosodiethylamine	55-18-5	MB	10/21/16		0.00	0.93	0.00			

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Analyte	CAS No.	Sample ID	Analyzed Date	Expecte d	Result µg/tube	DE	DE Corrected	REC %	RSD %	Qualifier
N-Nitrosodiethylamine	55-18-5	MB	10/22/16		0.00	0.97	0.00	_	_	
N-Nitrosodimethylamine	62-75-9	MB	10/18/16		0.00	0.84	0.00			
N-Nitrosodimethylamine	62-75-9	MB	10/19/16		0.00	0.92	0.00			
N-Nitrosodimethylamine	62-75-9	MB	10/21/16		0.00	0.96	0.00			
N-Nitrosodimethylamine	62-75-9	MB	10/21/16		0.00	0.99	0.00			
N-Nitrosodimethylamine	62-75-9	MB	10/21/16		0.00	0.89	0.00			
N-Nitrosodimethylamine	62-75-9	MB	10/22/16		0.00	0.89	0.00			
N-Nitrosodi-n-butylamine	924-16-3	MB	10/18/16		0.00	0.89	0.00			
N-Nitrosodi-n-butylamine	924-16-3	MB	10/19/16		0.00	0.95	0.00			
N-Nitrosodi-n-butylamine	924-16-3	MB	10/21/16		0.00	0.95	0.00			
N-Nitrosodi-n-butylamine	924-16-3	MB	10/21/16		0.00	1.03	0.00			
N-Nitrosodi-n-butylamine	924-16-3	MB	10/21/16		0.00	0.92	0.00			
N-Nitrosodi-n-butylamine	924-16-3	MB	10/22/16		0.00	0.97	0.00			
N-Nitrosodi-n-propylamine	621-64-7	MB	10/18/16		0.00	0.91	0.00			
N-Nitrosodi-n-propylamine	621-64-7	MB	10/19/16		0.00	0.96	0.00			
N-Nitrosodi-n-propylamine	621-64-7	MB	10/21/16		0.00	0.97	0.00			
N-Nitrosodi-n-propylamine	621-64-7	MB	10/21/16		0.00	1.04	0.00			
N-Nitrosodi-n-propylamine	621-64-7	MB	10/21/16		0.00	0.94	0.00			
N-Nitrosodi-n-propylamine	621-64-7	MB.	10/22/16		0.00	0.97	0.00			
N-Nitrosomethylethylamine	10595-95-6	MB	10/18/16		0.00	0.89	0.00			
N-Nitrosomethylethylamine	10595-95-6	MB	10/19/16		0.00	0.94	0.00			
N-Nitrosomethylethylamine	10595-95-6	MB	10/21/16		0.00	0.98	0.00			
N-Nitrosomethylethylamine	10595-95-6	MB	10/21/16		0.00	1.03	0.00			
N-Nitrosomethylethylamine	10595-95-6	MB	10/21/16		0.00	0.93	0.00			
N-Nitrosomethylethylamine	10595-95-6	MB	10/22/16		0.00	0.97	0.00			
N-Nitrosomorpholine	59-89-2	MB	10/18/16		0.00	0.91	0.00			
N-Nitrosomorpholine	59-89-2	MB	10/19/16		0.00	0.97	0.00			
N-Nitrosomorpholine	59-89-2	MB	10/21/16		0.00	0.97	0.00			
N-Nitrosomorpholine	59-89-2	MB	10/21/16		0.00	1.04	0.00			
N-Nitrosomorpholine	59-89-2	MB	10/21/16		0.00	0.93	0.00			
N-Nitrosomorpholine	59-89-2	MB	10/22/16		0.00	0.97	0.00			
N-Nitrosopiperidine	100-75-4	MB	10/18/16		0.00	0.88	0.00			
N-Nitrosopiperidine	100-75-4	MB	10/19/16		0.00	0.95	0.00			
N-Nitrosopiperidine	100-75-4	MB	10/21/16		0.00	0.97	0.00			
N-Nitrosopiperidine	100-75-4	MB	10/21/16		0.00	1.04	0.00			
N-Nitrosopiperidine	100-75-4	MB	10/21/16		0.00	0.93	0.00			
N-Nitrosopiperidine	100-75-4		10/22/16		0.00	0.96	0.00			
N-Nitrosopyrrolidine	930-55-2	MB	10/18/16		0.00	0.90	0.00			
N-Nitrosopyrrolidine	930-55-2	ир	10/19/16		0.00	0.92	0.00			

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Analyte	CAS No.	Sample ID	Analyzed Date	Expecte d	Result µg/tube	DE	DE Corrected	REC %	RSD %	Qualifier
N-Nitrosopyrrolidine	930-55-2	MB	10/21/16		0.00	0.99	0.00			
N-Nitrosopyrrolidine	930-55-2	MB	10/21/16		0.00	1.04	0.00			
N-Nitrosopyrrolidine	930-55-2	MB	10/21/16		0.00	0.92	0.00			
N-Nitrosopyrrolidine	930-55-2	MB	10/22/16		0.00	0.96	0.00			
N-Nitrosodiethylamine	55-18-5	MRL	10/18/16	0.020	0.020	0.90	0.022	109		
N-Nitrosodiethylamine	55-18-5	MRL	10/18/16	0.020	0.018	0.92	0.020	101		
N-Nitrosodiethylamine	55-18-5	MRL	10/21/16	0.020	0.017	0.95	0.018	91.8		
N-Nitrosodiethylamine	55-18-5	MRL	10/21/16	0.020	0.019	1.02	0.019	93.5		
N-Nitrosodiethylamine	55-18-5	MRL	10/21/16	0.020	0.022	0.93	0.024	119		
N-Nitrosodiethylamine	55-18-5	MRL	10/22/16	0.020	0.022	0.97	0.023	112		
N-Nitrosodimethylamine	62-75-9	MRL	10/18/16	0.020	0.022	0.84	0.026	132		
N-Nitrosodimethylamine	62-75-9	MRL	10/18/16	0.020	0.023	0.92	0.025	126		
N-Nitrosodimethylamine	62-75-9	MRL	10/21/16	0.020	0.017	0.96	0.018	92.2		
N-Nitrosodimethylamine	62-75-9	MRL	10/21/16	0.020	0.022	0.99	0.022	112		
N-Nitrosodimethylamine	62-75-9	MRL	10/21/16	0.020	0.021	0.89	0.024	119		
N-Nitrosodimethylamine	62-75-9	MRL	10/22/16	0.020	0.021	0.89	0.024	118		
N-Nitrosodi-n-butylamine	924-16-3	MRL	10/18/16	0.020	0.020	0.89	0.023	115		
N-Nitrosodi-n-butylamine	924-16-3	MRL	10/18/16	0.020	0.022	0.95	0.023	117		
N-Nitrosodi-n-butylamine	924-16-3	MRL	10/21/16	0.020	0.019	0.95	0.020	101		
N-Nitrosodi-n-butylamine	924-16-3	MRL	10/21/16	0.020	0.020	1.03	0.019	93.7		
N-Nitrosodi-n-butylamine	924-16-3	MRL	10/21/16	0.020	0.020	0.92	0.022	112		
N-Nitrosodi-n-butylamine	924-16-3	MRL	10/22/16	0.020	0.020	0.97	0.021	105		
N-Nitrosodi-n-propylamine	621-64-7	MRL	10/18/16	0.020	0.020	0.91	0.022	109		
N-Nitrosodi-n-propylamine	621-64-7	MRL	10/18/16	0.020	0.020	0.96	0.021	107		
N-Nitrosodi-n-propylamine	621-64-7	MRL	10/21/16	0.020	0.018	0.97	0.019	93.3		
N-Nitrosodi-n-propylamine	621-64-7	MRL	10/21/16	0.020	0.018	1.04	0.017	83.3		
N-Nitrosodi-n-propylamine	621-64-7	MRL	10/21/16	0.020	0.022	0.94	0.023	114		
N-Nitrosodi-n-propylamine	621-64-7	MRL	10/22/16	0.020	0.019	0.97	0.020	99.7		
N-Nitrosomethylethylamine	10595-95-6	MRL	10/18/16	0.020	0.021	0.89	0.024	120		
N-Nitrosomethylethylamine	10595-95-6	MRL	10/18/16	0.020	0.021	0.94	0.022	108		
N-Nitrosomethylethylamine	10595-95-6	MRL	10/21/16	0.020	0.018	0.98	0.018	87.6		
N-Nitrosomethylethylamine	10595-95-6	MRL	10/21/16	0.020	0.019	1.03	0.018	92.3		
N-Nitrosomethylethylamine	10595-95-6	MRL	10/21/16	0.020	0.022	0.93	0.024	118		
N-Nitrosomethylethylamine	10595-95-6	MRL	10/22/16	0.020	0.022	0.97	0.023	113		
N-Nitrosomorpholine	59-89-2		10/18/16	0.020	0.022	0.91	0.024	122		
N-Nitrosomorpholine	59-89-2		10/18/16	0.020	0.021	0.97	0.022	109		
N-Nitrosomorpholine	59-89-2		10/21/16	0.020	0.017	0.97	0.018	87.7		
N-Nitrosomorpholine	59-89-2		10/21/16	0.020	0.020	1.04	0.019	94.7		
N-Nitrosomorpholine	59-89-2	MRL	10/21/16	0.020	0.022	0.93	0.024	120		

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Analyte	CAS No.	Sample ID	Analyzed Date	Expecte d	Result µg/tube	DE	DE Corrected	REC %	RSD %	Qualifier
N-Nitrosomorpholine	59-89-2	MRL	10/22/16	0.020	0.021	0.97	0.022	111		
N-Nitrosopiperidine	100-75-4	MRL	10/18/16	0.020	0.018	0.88	0.020	102		
N-Nitrosopiperidine	100-75-4	MRL	10/18/16	0.020	0.024	0.95	0.025	123		
N-Nitrosopiperidine	100-75-4	MRL	10/21/16	0.020	0.019	0.97	0.020	97.9		
N-Nitrosopiperidine	100-75-4	MRL	10/21/16	0.020	0.019	1.04	0.018	89.6		
N-Nitrosopiperidine	100-75-4	MRL	10/21/16	0.020	0.020	0.93	0.022	108		
N-Nitrosopiperidine	100-75-4	MRL	10/22/16	0.020	0.022	0.96	0.023	114		
N-Nitrosopyrrolidine	930-55-2	MRL	10/18/16	0.020	0.021	0.90	0.023	114		
N-Nitrosopyrrolidine	930-55-2	MRL	10/18/16	0.020	0.021	0.92	0.023	115		
N-Nitrosopyrrolidine	930-55-2	MRL	10/21/16	0.020	0.018	0.99	0.018	92.2		
N-Nitrosopyrrolidine	930-55-2	MRL	10/21/16	0.020	0.020	1.04	0.019	93.0		
N-Nitrosopyrrolidine	930-55-2	MRL	10/21/16	0.020	0.021	0.92	0.023	113		
N-Nitrosopyrrolidine	930-55-2	MRL	10/22/16	0.020	0.021	0.96	0.022	110		

Report Qualifience

- A = Target Analyte media breakthrough suspect, we analytical separt
- D = Analyte analysed in a dilution
- E = Report concentration uses above the instrument calibration range
- E. Report overceivation was above the indivariant collisation; neigh-[» Analyte detected below quantitation limits, convenientation is estimated. P. « Library spartners match, and addits in R.F. match. R. « RPD including poweral difference) enabled accepted occurry limits. II. « Analyte analyzed for Inst and detected.

- N/A = Not Applicable

- $\mathcal{B} = \mathcal{A} \text{nully for detected in the associated blank$
- d = Date that exceeds the RSD critimia set by the SOP
- H = $Hdding\ times\ for\ properation\ or\ enablesis\ exceeded$
- L = Sample condition at societ and of compliance with method defined conditions
- Q = Result ant of method specific acceptance QC criteria
- S = Spike Researcy entriale excepted researcy limits <math>Z = Not ELAP exception analyte

ND = Net Detected

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These results are submitted pursuant to RI Lee Group's current terms and conditions of rate, including the company's standard uncounty and limitation of liability practicions. No responsibility or liability is accounted for the manner in which the results are used or interpreted. Unless notified in uniting to return the samples covered by this report, RI Lee Group utili store the samples for a period of ninety 100 days before disconting. A slighting and hundring for will be account for the setting of any samples. Unless otherwise untel, samples over-sected in an acceptable condition. This laboratory spectrum in accountment with 180 (1905) guidelines, and both limbels of secretalists and with CRELAT Let Code 481.

ABAS-LAP, LLC Lab 10 178656 EPA ID WARLES and WA DOE Lab ID CESS. This report may not be used to claim product endowment by any laboratory according agency. The results contained in this report relate only to the items heded or to the sample's: as received by the laboratory. Any repostaction of this document must be in full for the report to be

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Approved: Report Time Stamp:

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	n process	Received By	RE RO	Yes No	MIEEO	Nitro	Sitro	Sitto	STEED	Sitro	Sitro	Nitro	Sitte	Sitto	4	8.	ment	Package	SOLENOY	ytor V	AIN O
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Dance Smith Dan	- co		A Spirit	SPECIAL INSTRUCTIONS Spend Results to Carl Howald IV 4 Greg Scanlan Carl W HowaldErl.gov and Gregory L. ScanlanErl.gov are 50W for email COMPRACT 55503 RELEASE 5	Nitrosamines 16-08635-12-BASE-IN	Nitrosamines 16-08635-12-BASE-EFF \	Sitrosamines 16-08635-12-IN-D 1	Sitrosamines 16-08635-12-134-C	Nitrosamines 16-08635-12-DH-B \	Nitrosamines 16-08635-12-1N-A L	Sitrosamines 16-08635-12-EFF-H N	Mitrosamines 16-08635-12-8FF-G +	Witrosamines 16-08635-12-EFF-F \	16-08635-12-888-8 ;	San					1009/29	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST
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N/N			Sitrocomines 16-68635-12-88F-C	Nitrosan	Thermosorb-W		9/23/16	VA	\$147033496	
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Disposed By Denne Sc. Sanith A & & A ris container or site of origin.		in process) Dewner The process of	Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposal Method (e.g., Return to customer, per lab procedure, used in process) Denomical Solvitories and containing hazardous materials shall be picked up by requester and returned to pasent container or sits of origin	eturn to customer, CONSUNED its shall be picked u	COM:	Disposal Method (e.g. laining hazardous mate	FINAL SAMPLE DISPOSITION All samples con
Date/Time DS		Received By	Date/Time				Retinquished By
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0	7	Hecewed By Print S	Date/Time	9.37.16	E S	of the Mary	Reinquished By
SON for email	SPECIAL MISTRUCTIONS Send Results to Carl Howald IV & Greg Sentlan Carl W Howalderi.gov and GregSTP_L_Scanlaneri.gov see SON for email	⊙ 8	wastes) MSDS O Yes	st all known v	VRKS (U	POSSIBLE SAMPLE HAZAROSIREMARKS (List all known wastes)	POSSIBLE SAI
	LL-2 , -	Mitrosamines 16-08636-12-27F-F /	Thermoserb-N	/16	9/24/16	\$16T033511 VA	
	FF-E / -	Witrosamines 16-08636-12-27F-8 /	Thermosorb-N	91,	9/24/16	816E033510 VA	
	FF-0/	Hitrosamines 16-08636-12-8FF-D/	Thermosorb-N	91,	9/24/16	KA 6058804918	
	FF-0 / -	Mitrosamines 16-08636-12-8FF-C .	Thermosorb-N	91,	9/24/16	816T033508 VA	
	18-87	Mitrosamines 16-08636-12-EFF-B /	N-discontrolli	91.	9/24/16	\$16T033507 VA	
	1 4-33	Mitrosamines 16-18636-12-8FF-A	Thermosorb-N	91,	9/24/16	WA. 9052201919	
	- , 83-3897	Mitrosamines 16-08636-12-814ME-EM /	Themseach-M	91/	9/24/16	WA SOSTEOMOTS	
	LANE-SEA	Hitrosamines 16-08636-12-81ANK-EFF P	Thermosorb-N	91,	9/24/16	816E033504 VA	
	- Val-28V	Mitrosamines 16-08636-12-BASE-IN/ -	N-dannoused.	16	9/24/16	816T033503 VA	
	732-25E	Mitrosamimos 16-08636-12-8ASE-EFF /	Ebermosorb-N	91/	9/24/16	WA 205002919	
18	Sample Analysis	No.	ne No/Type Container	the Time	Date	Lab ID .	Sample No.
Parts and Return No.	Parts a	ınd	Data Tumaround				Pretocel S/A
Bill of Lading/Air Bill No.	Balon	prisent	Method of Shipment			8	Shipped To (Lab)
loe Chest No.	loe C	k Package No.	Logbook/ Work Package No			MOLLON	Project Title CARTRIDGE EVALUATION
Purchase Order/Charge Code 203003/0920	2030	ALUATION	Sample Origin				SAF No.
Telephone No 373-6861	Telep	estor	Contact/Requestor				Collector
IS REQUEST	LE ANALYS	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	<u>د</u>				N/Y
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DISPOSITION	-	Retirquished By	Relinquished By Property Molder Relinquished By Relinquished B	POSSIBLE SAMPLE HAZARDSREMARKS (List all known wastes)	\$1	88.2	85	44	08 9.7	51.	100	118	45	81.8	Sample Na.	Protocol N/A	Shipped To (Lab)	Project Title	SAF No.	Collector	M-1-M
	osal Method		E 10 200	HAZARDSI	\$167033521	8167033520	\$167033519	\$167033518	\$167033517	\$167033516	8167033515	8167033514	8167033513	8167033512	LabiD			ON			
	(e.g., R		3/100	EMAR	SA.	5	VA.	ş	VA.	N.V	VA.	××	V.V.	ş							
CONSUMED	durn to oust		AN ES	OS (List all k	9/24/16	9/24/16	9/24/16	9/24/16	9/24/16	9/24/16	9/24/16	9/24/16	9/24/16	9/24/16	Date						
(E)	omer, per		4.23	nown was											Time						
	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Cate/Time R	2-22 & 123-9	tes) MSDS O Yes	Thermosorb-N	Thermosorb-N	Thermosorb-8	Thermosorb-8	Thermosorb-K	Thermosorb-N	Thermosorb-N	Thermosorb-N	Thermosorb-S	Thermosorb-S	No.Type Container	Data Turnaround	Method of Shipment	Logbook/Work Package No N/A	CANTRIDG SYMUNTION CANTRIDG SYMUNTION	CARL HOWER IV	H2
Denness Smith		Received By	A 9-17-11 O'Bb Rc Roger Sizedan Jahr	⊙ No	Mitrosamines 16-08636-12-IN-8 /	Nitrosamines 16-0863	Mitrosamines 16-08636-12-18-F &	Mitrosamines 16-08636-12-IN-E	Mitrosamines 16-08636-12-IN-D	Mitrosomines 16-08634-12-18-0	Nitrosamines 16-0863	Witropasines 16-08636-12-18-A	Mitrosamines 16-08636-12-EFF-H.	Sitrosazines 16-0863		d	nent	Package No.	SOLLAND	25	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST
きるかれ	Disposed By		12-6 Sept. 25-6	SPECIALINSTRUCTIONS Send Sesuits to Carl Mowald IV 6 Greg Scanlan Grant M MowaldBrl.gov and GregOTP_I_ScanlanBrl.gov see SCW for enail CONTRACT 55503 RELEASE 5	6-12-18-8 / -	16-08636-12-18-0 / =	6-12-18-F J -	6-12-TS-E	6-12-IN-D /	4-12-18-C, →	16-08636-12-18-8 :	6-12-18-A	6-12-EFF-H	16-08636-12-EFF-G # -	Sample Analysis						SAMPLE ANALY
		Date/Time	Date/line - 9-27-/6 0 93.0 9-27- U 12-50 fraup Date/line	d IV & Greg											Analysis	Parts and Return No.	Bill of Lading/Air Bill No.	ice Chest No.	Purchase Order/Charge Cod 2020/37/C829	Telephone No 373-6861	'SIS REQUEST
		0S =																			
11/02/16	Date/Time	Drum Solids	de de la company	Hotd Time														Temp. 2		MSIN FAX	201
15:25	88	= Coher			N/A	A/N	N/A	X/X	8/78	A/X	N/A	K/N	N/A	A/R	Preservative			7.3		FAX 372-1878	4 04 4

Appendix D Data Reduction Steps

Appendix D

Data Reduction Steps

- 1. Only chemicals in the current Chemicals of Potential Concern (COPC) list were included in the calculated data. Nitrous oxide and methanol were not measured in the study. Any other missing COPCs were analyzed as "Tentatively Identified Compounds."
- 2. The COPCs are ranked in the order of their COPC number. Within the data section for each COPC, data are ranked in the order of survey (1 and 2). Within every survey, data are ranked in the order of inlet and outlet and following the time sequence.
- 3. Except for mercury, COPC concentrations were converted into parts per million (ppm) using their molecular weights and corresponding flow rates after volume correction as shown in the following equation:

$$C = 24.25 \frac{r}{M V}$$

where C is the concentration of COPC in ppmv; r is the analytical result with units of μ g/sample (if the analytical result unit is expressed in mg/sample, the value of C needs to be multiplied by 1000; if the analytical result unit is in ng/sample the value of C needs to be divided by 1000); V is the collected volume in 2 hours expressed in liters; M is the molecular weight of COPC expressed as g/mol. When the ratio between concentration and the corresponding Occupational Exposure Limit (OEL) is larger than 10%, the fraction is shown in red.

4. The reported volume measurements in Appendix C were made via DryCal devices placed downstream of each sample media tube. This allowed for precise volume measurements through each of the tubes. However, to perform the concentration conversion to ppm, the "actual" volumetric values required conversion to standard temperature and pressure conditions.

Ideal gas behavior was assumed for these volume corrections, and standard temperatures and pressures were assumed to be 298 K ($T_{standard}$) and 760 Torr ($P_{standard}$), respectively. For temperatures, the reported upstream temperatures for each time period were used ($T_{upstream}$, in Kelvin), and the temperature correction factor (i.e., the factor multiplied by each reported volume) was simply $T_{standard}/T_{upstream}$.

For the pressure corrections, additional pressure drop information was gathered so that the pressure at the point of the DryCal device could be calculated. Each time step had reported upstream pressures (Pupstream, or upstream of the respirator cartridges). Therefore, pressure drop measurements across the respirator cartridge and each sample media tube were performed offline to gather the additional information necessary for the correction.

The average reported pressure drop reading for the respirator cartridge (P_{cartridge}) tested was 3.2 inches of water column (WC). The pressure drop measurements across the individual sample tubes are shown in the table below (all expressed as inches of WC).

The average pressure drops were then used in a pressure correction factor for the reported volumes. Note that all pressure values were first converted to units of Torr. For measurements made at the inlet of the respirator cartridge the pressure correction factor is $(P_{upstream} - P_{tube}) \div P_{standard}$. For measurements made at the outlet of the respirator cartridge the pressure correction factor is $(P_{upstream} - P_{cartridge} - P_{tube}) \div P_{standard}$.

Tube Location	First Measure (inches of WC, tube on cartridge inlet side)	Second Measure (inches of WC, tube on cartridge outlet side)	Average of Both Measurements (P _{tube} , inches of WC)
A	5.0	12.4	8.7
В	6.9	7.2	7.1
C	2.3	2.5	2.4
D	0.8	0.8	0.8
E	1.9	2.1	2.0
F	3.8	6.8	5.3
G	1.6	1.7	1.7
H	7.7	6.5	7.1
I	5.2	4.0	4.6
J	15.9	16.3	16.1
K	10.1	9.7	9.9

An example calculation of the correction factors follows. For a given time period, assume that the reported upstream pressure ($P_{upstream}$) was 734 Torr and the corresponding temperature ($T_{upstream}$) was 85.9°F (or 302.9 K). Here, for tube location 'A' and upstream of the respirator cartridge, the corresponding temperature correction factor would be 0.984, and the pressure correction factor for the respirator cartridge outlet would be 0.944. When multiplied, these two factors equal 0.929, which would be the overall correction to the reported volume measurement.

- 5. The analytical detection limit—or reporting limit in some cases—for every COPC was obtained from the raw analytical data. Here, the average flow rate was used to calculate the approximate analytical detection limit as the percentage of the OEL for each COPC. Because the flow rates vary, the calculated concentrations were different for each point, even though some of the results are less than the detection limit (DL) in the original reading. The last column in the tables below indicate if the original readings were less than the DL or not.
 - For ammonia and mercury, only the results obtained from using method of total vapor of ammonia and mercury were used.
 - For furan, results from the furan category instead of volatile organic compound (VOC) (or volatile organic analyte) were used. For acetonitrile, results from the VOC category were used. For butanal, the results from the VOC category instead of the aldehydes category were used. For pyridine and 2,4-dimethylpyridine, the results from the VOC category were used.
 - For N-Nitrosodimethylamine and other nitrosamines, data values above analytical DLs for the same time and position were added together because the original sample was diluted into three samples for measurements. This same rule applies to 1,3-Butadiene. The results in the plots and tables reflect the sum of results.
- 6. Analytical results frequently have data qualifier flags documented for specific sample analyses. Depending on the data qualifier, specific data may be considered for deletion or removal from the analysis, or results described with appropriate clarifying language to indicate whether there are possible limitations to the data. The following flags were found to be associated with at least one of the COPC compounds analyzed through this effort. Here, key qualifier codes are given, along with their definitions and how they are being handled with the cartridge testing analysis. This list is not inclusive of all flags that the analytical team may assign, but is inclusive of the flags found associated with the data set compiled within this report.

Action	Flag	Flag Description
Retain (Result is treated in	J	 The "J" flag is applied to results that are considered estimates. Some examples of when a "J" flag are applied include (but are not limited to): Results with concentrations ≥ MDL but < the RL. When results are reported based on the RL, the "J" is removed from the reported data. Raw data are left as received from the Chemist. Unknown constituents—tentatively identified compounds (TIC) or positively identified compounds (PIC).
the analysis as a valid data point)	Е	The "E" flag is applied to each analyte that exceeded the calibration range of the instrument.
	U	The "U" flag is applied to analytes that were analyzed for, but were not detected, or were detected below the MDL. If results are reported based on RL, this flag is removed from the reported data. Raw data are left as received from the Chemist.
	D	The "D" flag is applied to all analytes in a sample that were diluted prior to analysis.
Retain/Evaluate (Result is treated in the analysis as a valid data point, but evaluated on a case-by-	L	The "L" flag is applied to analyte results (both detected and not detected) within a sample batch that included a low level standard (LLS) with a percent recovery for that analyte that was outside the analytical method specified range.
case basis to determine whether clarification is needed in the analysis report to document the uncertainty or potential limitations of the data)	Y	The "Y" flag is a user-defined flag and is applied to results that require written descriptions or qualifying comments. This flag is used by the Chemist, PC, or other technical authority to identify data that is questionable or may be inaccurate because of interferences, sampling problems, sample collection media (e.g., tubes or summa canisters) certification failures, or instrumentation limitations.
Delete (Result is seriously suspect and should be screened out and not reported)	N/A	

The following tables show the calculated concentrations for each of the COPC measurements conducted in this study. Red highlighted values reflect measurements that were above 10% of the respective OEL values. COPCs with these highlights are plotted and shown in Section 5.0. Orange highlighted values reflect measurements in the 2 to 10% of the OEL range. COPCs with these highlights (only) are plotted and shown in Appendix E.

COPC#	Analyte	End Time	Position	Conc.	OEL (new)	Conc.	Measurement	Approx	Analytica
1	Ammonia	(h)	8635-A1	(ppm) 24.49	(ppm) 25	(% of OEL)	< DL/RL7	DL/RL 2.49%	Flags
1		2							
1	Ammonia Ammonia	6	8635-61 8635-C1	25.94 25.62	25 25	104%		2.49%	
1	Ammonia	8	8635-C1	25.44	25	102%		2.49%	
1									
	Ammonia	10	8635-E1	24.05	25	96.2%		2.49%	
1	Ammonia	12	8635-F1	10.44	25 25	41.8%		2.49%	
1	Ammonia Ammonia	14 16	8635-G1 8635-H1	26.42	25	106%		2.49%	
1	Ammonia	2	8635-A2	0.58	25	2.32%	YES	2.49%	
1	Ammonia	4	8635-B2	0.60	25	2.40%	YES	2.49%	
1		6	8635-C2	0.62	25		YES	2.49%	
1	Ammonia Ammonia	8	8635-D2	0.62	25	2.47%	YES	2.49%	
1		10	8635-E2	0.62	25	2.47%	YES	2.49%	
1	Ammonia	12	8635-F2		25		YES		
1	Ammonia	14	8635-G2	1.08	25	2.48% 4.32%	165	2.49%	
1	Ammonia	16	8635-H2	1.83	25	7,31%		2.49%	
1	Ammonia	2	8636-A1		25	97.8%		2.49%	
1	Ammonia	4	8636-B1	24.45	25			2.49%	
1	Ammonia	6			25	104%			
	Ammonia		8636-C1	26.52		106%		2.49%	
1	Ammonia	8	8636-D1	23.74	25	94.9%		2.49%	
1	Ammonia	10	8636-E1	25.03	25	100%		2.49%	
1	Ammonia	12	8636-F1	14.06	25	56.2%		2.49%	
1	Ammonia	14	8636-G1	22.38	25	89.5%		2.49%	
1	Ammonia	16	8636-H1	24.51	25	98.1%	Line	2.49%	
1	Ammonia	2	8636-A2	0.62	25	2.48%	YES	2.49%	
1	Ammonia	4	8636-82	0.54	25	2.16%	YES	2.49%	
1	Ammonia	6	8636-C2	0.56	25	2.24%	YES	2.49%	
1	Ammonia	8	8636-D2	0.61	25	2.45%	YES	2.49%	
1	Ammonia	10	8636-E2	0.88	25	3.51%		2.49%	
1	Ammonia	12	8636-F2	1.60	25	6.41%		2.49%	
1	Ammonia	14	8636-G2	2.60	25	10.4%		2.49%	
1	Ammonia	16	8636-H2	4.15	25	16.6%		2.49%	
3	Mercury	2	8635-A1	0.00021	0.003	6.74%	YES	9.89%	
3	Mercury	4	8635-81	0.00021	0.003	7.04%	YES	9.89%	
3	Mercury	6	8635-C1	0.00021	0.003	6.99%	YES	9.89%	
3	Mercury	5	8635-D1	0.00021	0.003	6.91%	YES	9.59%	
3	Mercury	10	\$635-E1	0.00021	0.003	6.87%	YES	9.89%	
3	Mercury	12	8635+F1	0.00021	0.003	6.75%	YES	9.89%	
3	Mercury	14	8635-G1	0.00022	0.003	7.29%		9.89%	
3	Mercury	16	8635-H1	0.00021	0.003	6.87%	YES	9.89%	
3	Mercury	2	8635-A2	0.00020	0.003	6.69%	YES	9.89%	
3	Mercury	4	8635-B2	0.00021	0.003	6.85%	YES	9.89%	
3	Mercury	6	8635-C2	0.00021	0.003	7.01%	YES	9.89%	
3	Mercury	8	8635-D2	0.00021	0.003	6.88%	YES	9.89%	
3	Mercury	10	8635-E2	0.00022	0.003	7.07%	YES	9.89%	
3	Mercury	12	8635-F2	0.00021	0.003	6.82%	YES	9.89%	
3	Mercury	14	8635-G2	0.00020	0.003	6.72%	YES	9.89%	
3	Mercury	16	8635-H2	0.00021	0.003	6.78%	YES	9.89%	
3	Mercury	2	8636-A1	0.00020	0.003	6.68%	YES	9.89%	
3	Mercury	4	8636-81	0.00021	0.003	6.96%	YES	9.89%	
3	Mercury	6	\$636-C1	0.00020	0.003	6.66%	YES	9.49%	
3	Mercury	8	8636-D1	0.00021	0.003	7.05%	YES	9.89%	
3	Mercury	10	8636-E1	0.00021	0.003	7.01%	YES	9.89%	
3	Mercury	12	8636-F1	0.00022	0.003	7.1196	YES	9.89%	
3	Mercury	14	8636-G1	0.00021	0.003	6.81%	YES	9.89%	
3	Mercury	16	8636-H1	0.00021	0.003	6.78%	YES	9.89%	
3	Mercury	2	8636-A2	0.00021	0.003	6.94%	YES	9.89%	
3	Mercury	4	8636-82	0.00030	0.003	9.89%	YES	9.89%	
	Mercury	6	8636-C2	0.00020	0.003	6.67%	YES	9.89%	
3								4.04.1	
3	Mercury	8	8636-D2	0.00021	0.003	6.85%	YES	9.89%	
3 3 3	Mercury	8	8636-D2 8636-E2	0.00021	0.003	6.85%	YES	9.89%	

COPC#	Analyte	End Time (h)	Position	Conc. (ppm)	(ppm)	Conc. (% of OEL)	Measurement < DL/RL?	Approx DL/RL	Analytica Flags
3	Mercury	14	8636-G2	0.00021	0.003	6.99%	YES	9.89%	riage
3	Mercury	16	8636-H2	0.00021	0.003	6.96%	YES	9.89%	
4	1,3-Butadiene	2	8635-A1	0.019	1	1.92%	YES	2.03%	
4	1,3-Butadiene	4	8635-81	0.019	1	1.94%	YES	2.03%	
4	1,3-Butadiene	6	8635-C1	0.019	1	1.94%	YES	2.03%	
4	1,3-Butadiene	8	8635-D1	0.019	1	1.93%	YES	2.03%	
4	1,3-Butadiene	10	8635-E1	0.020	1	1.95%	YES	2.03%	
4	1,3-Butadiene	12	8635-F1	0.019	1	1.94%	YES	2.03%	
4	1,3-Butadiene	14	8635-G1	0.019	1	1.92%	YES	2.03%	
4	1,3-Butadiene	16	8635-H1	0.019	1	1.92%	YES	2.03%	
4	1,3-Butadiene	2	8635-A2	0.020	1	1.95%	YES	2.03%	
4	1,3-Butadiene	4	8635-82	0.020	1	1.95%	YES	2.03%	
4	1,3-Butadiene 1,3-Butadiene	6 8	8635-C2 8635-D2	0.019	1	1.93%	YES	2.03%	
4	1,3-Butadiene	10	8635-E2	0.020	1	1.98%	YES	2.03%	
4	1,3-Butadiene	12	8635-F2	0.020	1	1.95%	YES	2.03%	
4	1,3-Butadiene	14	8635-G2	0.019	i	1.91%	YES	2.03%	
4	1,3-Butadiene	16	8635-H2	0.019	1	1.92%	YES	2.03%	
4	1,3-Butadiene	2	8636-A1	0.019	1	1.94%	YES	2.03%	
4	1,3-Butadiene	4	8636-81	0.019	1	1.92%	YES	2.03%	
4	1,3-Butadiene	6	8636-C1	0.018	1	1.80%	YES	2.03%	
4	1,3-Butadiene	5	8636-D1	0.020	1	1.97%	YES	2.03%	
4	1,3-Butadiene	10	5636-E1	0.020	1	1.99%	YES	2.03%	
4	1,3-Butadiene	12	8636-F1	0.020	1	2.02%	YES	2.03%	
4	1,3-Butadiene	14	8636-G1	0.020	1	1.96%	YES	2.03%	
4	1,3-Butadiene	16	8636-H1	0.019	1	1.94%	YES	2.03%	
4	1,3-Butadiene	2	8636-A2	0.019	1	1.91%	YES	2.03%	
4	1,3-Butadiene	4	8636-82	0.019	1	1.92%	YES	2.03%	
4	1,3-Butadiene 1,3-Butadiene	6 8	8636-C2 8636-D2	0.018	1	2.02%	YES	2.03%	
4	1,3-Butadiene	10	8636-E2	0.020	1	2.02%	YES	2.03%	
4	1.3-Butadiene	12	8636-F2	0.020	1	1.99%	YES	2.03%	
4	1,3-Butadiene	14	8636-G2	0.020	1	2.03%	YES	2.03%	
4	1,3-Butadiene	16	8636-H2	0.019	1	1.91%	YES	2.03%	
5	Benzene	2	8635-A1	0.00014	0.5	0.028%		0.026%	J
5	Benzene	4	8635-61	0.00012	0.5	0.023%		0.026%	1
5	Benzene	6	8635-C1	0.00011	0.5	0.022%		0.026%	1
5	Benzene	5	8635-D1	0.00013	0.5	0.025%		0.026%	1
5	Benzene	10	8635-E1	0.00013	0.5	0.027%		0.026%	1
5	Benzene	12	8635-F1	0.00012	0.5	0.023%		0.026%	1
5	Benzene	1.4	8635-G1	0.00012	0.5	0.024%		0.026%	1
5	Benzene	16	8635-H1	0.00013	0.5	0.025%		0.026%	1
5	Benzene	2	8635-A2	0.00010	0.5	0.020%	YES	0.026%	U
5	Benzene	4	8635-82	0.00010	0.5	0.019%	YES	0.026%	U
5	Benzene	6	8635-C2	0.00010	0.5	0.021%	YES	0.026%	U
5	Benzene	8	8635-D2 8635-E2	0.00011	0.5	0.022%	YES	0.026%	U
5	Benzene	10	8635-E2	0.00010	0.5	0.021%	YES	0.026%	u
5	Benzene	14	8635-GZ	0.00010	0.5	0.020%	YES	0.026%	U
5	Benzene	16	8635-H2	0.00010	0.5	0.020%	YES	0.026%	U
5	Benzene	2	8636-A1	0.00016	0.5	0.031%		0.026%	ı
5	Benzene	4	8636-81	0.00015	0.5	0.031%		0.026%	1
5	Benzene	6	8636-C1	0.00015	0.5	0.030%		0.026%	1
5	Benzene	8	8636-D1	0.00016	0.5	0.031%		0.026%	1
5	Benzene	10	8636-E1	0.00015	0.5	0.029%		0.026%	1
5	Benzene	12	8636-F1	0.00017	0.5	0.033%		0.026%	J
5	Benzene	14	8636-G1	0.00022	0.5	0.044%		0.026%	1
5	Benzene	16	8636-H1	0.00020	0.5	0.039%		0.026%	1
5	Benzene	2	8636-A2	0.00012	0.5	0.024%	YES	0.026%	U
5	Benzene	4	8636-82	0.00012	0.5	0.024%	YES	0.026%	U

COPC#	Analyte	End Time (h)	Position	Conc. (ppm)	(ppm)	Conc. (% of OEL)	Measurement < DL/RL7	Approx DL/RL	Analytica Flags
5	Resident	6	8636-C2	0.00011	(ppm) 0.5	0.023%	YES	0.026%	U
5	Benzene Benzene	5	8636-D2	0.00013	0.5	0.025%	YES	0.026%	U
5	Benzene	10	8636-E2	0.00013	0.5	0.025%	YES	0.026%	U
5	Benzene	12	8636-F2	0.00012	0.5	0.025%	YES	0.026%	U
5		14	8636-G2	0.00012	0.5	0.024%	YES	0.026%	U
5	Benzene Benzene	16	5636-H2	0.00012	0.5	0.024%	YES	0.026%	Ü
•	penzene	20	auau-n2	0.00012	0.5	0.024%	163	0.02676	٠
6	Biphenyl	2	8635-A1	0.00016	0.2	0.082%	YES	0.141%	U
6	Biphenyl	4						0.141%	
6	Biphenyl	6	8635-C1	0.00017	0.2	0.054%	YES	0.141%	U
6	Biphenyl	8	8635-D1	0.00017	0.2	0.084%	YES	0.141%	U
6	Biphenyl	10	8635-E1	0.00017	0.2	0.086%	YES	0.141%	U
6	Biphenyl	12	8635-F1	0.00017	0.2	0.084%	YES	0.141%	U
6	Biphenyl	14	8635-G1	0.00015	0.2	0.077%	YES	0.141%	U
6	Biphenyl	16	8635-H1	0.00016	0.2	0.078%	YES	0.141%	U
6	Sipheryl	2	8635-A2	0.00016	0.2	0.082%	YES	0.141%	u
6	Bipheryl	4	8635-82	0.00017	0.2	0.084%	YES	0.141%	U
6	Biphenyl	6	8635-C2	0.00017	0.2	0.084%	YES	0.141%	V
6	Bipheryl	8	8635-D2	0.00017	0.2	0.085%	YES	0.141%	U
6	Biphenyl	10	8635-E2	0.00017	0.2	0.083%	YES	0.141%	U
6	Biphenyl	12	8635-F2	0.00028	0.2	0.141%	YES	0.141%	U
6	Biphenyl	14	8635-G2	0.00014	0.2	0.072%	YES	0.141%	U
6	Siphenyl	16	8635-H2	0.00015	0.2	0.077%	YES	0.141%	U
6	Biphenyl	2	5636-A1	0.00016	0.2	0.051%	YES	0.141%	U
6	Siphenyl	4	8636-81	0.00016	0.2	0.078%	YES	0.141%	U
6	Biphenyl	6	8636-C1	0.00016	0.2	0.080%	YES	0.141%	ш
6	Biphenyl	8	8636-D1	0.00017	0.2	0.086%	YES	0.141%	u
6	Biphenyl	10	8636-E1	0.00017	0.2	0.086%	YES	0.141%	U
6	Biphenyl	12	8636-F1	0.00016	0.2	0.081%	YES	0.141%	u
6	Sipheryl	14	000011	0.00010	0.2	0.00270	163	0.141%	
6	Biphenyl	16	8636-H1	0.00016	0.2	0.079%	YES	0.141%	U
6	Bipheryl	2	8636-A2	0.00018	0.2	0.088%	YES	0.141%	Ü
6	Siphenyl	4	8636-82	0.00017	0.2	0.087%	YES	0.141%	Ü
		6		0.00017					U
6	Biphenyl		8636-C2		0.2	0.081%	YES	0.141%	
6	Biphenyl	8	8636-D2	0.00018	0.2	0.088%	YES	0.141%	U
6	Biphenyl	10	8636-62	0.00016	0.2	0.079%	YES	0.141%	U
6	Biphenyl	12	8636-F2	0.00015	0.2	0.077%	YES	0.141%	U
6	Biphenyl	14	8636-G2	0.00015	0.2	0.077%	YES	0.141%	U
6	Biphenyl	16	8636•H2	0.00015	0.2	0.077%	YES	0.141%	U
7	1-Butanol	2	8635-A1	0.2022	20	1.011%		0.004%	ELY
7	1-Butanol	4	8635-81	0.1949	20	0.974%		0.004%	ELY
7	1-Butanol	6	8635-C1	0.2000	20	1.000%		0.004%	ELY
7	1-Butanol	8	8635-D1	0.2051	20	1.025%		0.004%	ELY
7	1-Butanol	10	8635-E1	0.2127	20	1.064%		0.004%	ELY
7	1-Butanol	12	8635-F1	0.2010	20	1.005%		0.004%	ELY
7	1-Butanol	14	8635-G1	0.2071	20	1.035%		0.004%	ELY
7	1-Butanol	16	8635-H1	0.2001	20	1.000%		0.004%	ELY
7	1-Butanol	2	8635-A2	0.0008	20	0.004%	YES	0.004%	LUY
7									LUY
7	1-Butanol	4	8635-82 8635-62	0.0008	20	0.004%	YES	0.004%	
	1-Butanol	6	8635-C2	0.0008	20	0.004%	YES	0.004%	LUY
7	1-Butanol	8	8635-D2	0.0009	20	0.004%	YES	0.004%	LUY
7	1-Butanol	10	8635-E2	0.0008	20	0.004%	YES	0.004%	LUY
7	1-Butanol	12	8635-F2	0.0008	20	0.004%	YES	0.004%	LUY
7	1-Butanol	14	8635-G2	0.0008	20	0.004%	YES	0.004%	LUY
7	1-Butanol	16	8635-H2	0.0008	20	0.004%	YES	0.004%	LUY
7	1-Butanol	2	8636-A1	0.1284	20	0.642%		0.004%	E
7	1-Butanol	4	8636-81	0.1358	20	0.679%		0.004%	E
7	1-Butanol	6	8636-C1	0.1319	20	0.659%		0.004%	E
7	1-Butanol	8	8636-D1	0.1361	20	0.681%		0.004%	Ε
7	1-Butanol	10	8636-E1	0.1288	20	0.644%		0.004%	E
7									E

COPC#	Analyte	End Time	Position	Conc.	OEL	Conc.	Measurement	Approx	Analytica
		(h)	0.0000000000000000000000000000000000000	(ppm)	(ppm)	(% of OEL)	< DL/RL7	DL/RL	Flags
7	1-Butanol	14	8636-G1	0.1254	20	0.627%		0.004%	E
7	1-Butanol	16	8636-H1	0.1300	20	0.650%		0.004%	E
7	1-Butanol	2	8636-A2	0.0004	20	0.002%	YES	0.004%	U
7	1-Butanol	4	8636-82	0.0014	20	0.007%		0.004%	1
7	1-Butanol	6	8636-C2	0.0003	20	0.002%	YES	0.004%	U
7	1-Butanol	8	8636-D2	0.0004	20	0.002%	YES	0.004%	U
7	1-Butanol	10	8636-E2	0.0004	20	0.002%	YES	0.004%	U
7	1-Butanol	12	8636-F2	0.0004	20	0.002%	YES	0.004%	U
7	1-Butanol	14	8636-G2	0.0004	20	0.002%	YES	0.004%	U
7	1-Butanol	16	8636-H2	0.0004	20	0.002%	YES	0.004%	U
9	2-Hexanone	2	8635-A1	0.00019	5	0.0038%		0.0034%	1
9	2-Hexanone	4	8635-81	0.00022	5	0.0044%		0.0034%	1
9	2-Hexanone	6	8635-C1	0.00024	5	0.0048%		0.0034%	1
9	2-Hexanone	8	8635-D1	0.00020	5	0.0040%		0.0034%	1
9	2-Hexanone	10	8635-€1	0.00020	5	0.0039%		0.0034%	1
9	2-Hexanone	12	8635-F1	0.00019	5	0.0038%		0.0034%	1
9	2-Hexanone	14	8635-G1	0.00019	5	0.0038%		0.0034%	1
9	2-Hexanone	16	8635-H1	0.00019	5	0.0038%		0.0034%	1
9	2-Hexanone	2	8635-A2	0.00008	5	0.0015%	YES	0.0034%	U
9	2-Hexanone	4	8635-82	0.00008	5	0.0015%	YES	0.0034%	U
9	2-Hexanone	6	8635-C2	0.00008	5	0.0016%	YES	0.0034%	U
9	2-Hexanone	5	8635-D2	0.00009	5	0.0017%	YES	0.0034%	U
9	2-Hexanone	10	8635-E2	0.00008	5	0.0016%	YES	0.0034%	U
9	2-Hexanone	12	8635-F2	0.00008	5	0.0016%	YES	0.0034%	U
9	2-Hexanone	14	8635-G2	0.00008	5	0.0016%	YES	0.0034%	ш
9	2-Hexanone	16	8635-H2	0.00008	5	0.0016%	YES	0.0034%	U
9	2-Hexanone	2	8636-A1	0.00018	5	0.0037%		0.0034%	1
9	2-Hexanone	4	8636-81	0.00025	5	0.0050%		0.0034%	1
9	2-Hexanone	6	8636-C1	0.00026	5	0.0051%		0.0034%	1
9	2-Hexanone	8	8636-D1	0.00023	5	0.0046%		0.0034%	1
9	2-Hexanone	10	8636-E1	0.00021	5	0.0042%		0.0034%	í
9	2-Hexanone	12	8636-F1	0.00019	5	0.0037%		0.0034%	í
9	2-Hexanone	14	8636-G1	0.00017	5	0.0037%		0.0034%	1
9	2-Hexanone	16	8636-H1	0.00021	5	0.0042%		0.0034%	1
9	2-Hexanone	2	8636-A2	0.00016	5	0.0032%	YES	0.0034%	u
9	2-Hexanone	4	8636-B2	0.00015	5	0.0031%	YES	0.0034%	U
9	2-Hexanone	6	8636-C2	0.00015	5	0.0030%	YES	0.0034%	U
9	2-Hexanone	8	8636-D2	0.00016	5	0.0033%	YES	0.0034%	u
9	2-Hexanone	10	8636-E2	0.00017	5	0.0034%	YES	0.0034%	и
9	2-Hexanone	12	8636-F2	0.00016	5	0.0032%	YES	0.0034%	U
9	2-Hexanone	14	8636-G2	0.00015	5	0.0031%	YES	0.0034%	U
9	2-Hexanone	16	8636-H2	0.00015	5	0.0031%	YES	0.0034%	u
11	4.Marked 2 haveners		0635.41	0.00007	0.5	0.0146	wer	0.0016	
11	4-Methyl-2-hexanone	2	8635-A1	0.00007	7.77	0.014%	YES	0.031%	u
11	4-Methyl-2-hexanone	4	8635-81	0.00007	0.5	0.014%	YES	0.031%	
11	4-Methyl-2-hexanone	6	8635-C1	0.00008	0.5	0.015%	YES	0.031%	U
11	4-Methyl-2-hexanone	8	8635-D1	0.00008	0.5	0.015%	YES	0.031%	U
11	4-Methyl-2-hexanone	10	8635-E1	0.00007	0.5	0.015%	YES	0.031%	U
11	4-Methyl-2-hexanone	12	8635-F1	0.00007	0.5	0.015%	YES	0.031%	U
11	4-Methyl-2-hexanone	14	8635-G1	0.00007	0.5	0.014%	YES	0.031%	U
11	4-Methyl-2-hexanone	16	8635-H1	0.00007	0.5	0.014%	YES	0.031%	U
11	4-Methyl-2-hexanone	2	8635-A2	0.00007	0.5	0.015%	YES	0.031%	U
11	4-Methyl-2-hexanone	4	8635-B2	0.00007	0.5	0.014%	YES	0.031%	U
11	4-Methyl-2-hexanone	6	8635-C2	0.00008	0.5	0.015%	YES	0.031%	U
11	4-Methyl-2-hexanone	8	8635-D2	0.00008	0.5	0.017%	YES	0.031%	U
11	4-Methyl-2-hexanone	10	8635-E2	0.00008	0.5	0.015%	YES	0.031%	U
11	4-Methyl-2-hexanone	12	8635-F2	0.00007	0.5	0.015%	YES	0.031%	U
11	4-Methyl-2-hexanone	14	8635-G2	0.00007	0.5	0.015%	YES	0.031%	U
11	4-Methyl-2-hexanone	16	8635-H2	0.00007	0.5	0.015%	YES	0.031%	U
11	4-Methyl-2-hexanone	2	8636-A1	0.00015	0.5	0.031%	YES	0.031%	U
	4-Methyl-2-hexanone	4	8636-81	0.00014	0.5	0.029%	YES	0.031%	U

COPC#	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Conc. (% of OEL)	Measurement < DL/RL?	Approx DL/RL	Analytical Flags
11	4-Methyl-2-hexanone	6	8636-C1	0.00014	0.5	0.028%	YES	0.031%	U
11	4-Methyl-2-hexanone	8	8636-D1	0.00015	0.5	0.031%	YES	0.031%	U
11	4-Methyl-2-hexanone	10	8636-E1	0.00014	0.5	0.029%	YES	0.031%	U
11	4-Methyl-2-hexanone	12	8636-F1	0.00015	0.5	0.029%	YES	0.031%	U
11	4-Methyl-2-hexanone	14	8636-G1	0.00014	0.5	0.028%	YES	0.031%	U
11	4-Methyl-2-hexanone	16	5636-H1	0.00015	0.5	0.029%	YES	0.031%	U
11	4-Methyl-2-hexanone	2	8636-A2	0.00014	0.5	0.029%	YES	0.031%	U
11	4-Methyl-2-hexanone	4	8636-82	0.00014	0.5	0.028%	YES	0.031%	U
11	4-Methyl-2-hexanone	6	8636-C2	0.00014	0.5	0.027%	YES	0.031%	u
11	4-Methyl-2-hexanone	8	8636-D2	0.00015	0.5	0.030%	YES	0.031%	U
11	4-Methyl-2-hexanone	10	8636-E2	0.00015	0.5	0.031%	YES	0.031%	U
11	4-Methyl-2-hexanone	12	8636-F2	0.00015	0.5	0.029%	YES	0.031%	U
11	4-Methyl-2-hexanone	14	8636-G2	0.00014	0.5	0.028%	YES	0.031%	U
11	4-Methyl-2-hexanone	16	8636-H2	0.00014	0.5	0.028%	YES	0.031%	U
13	3-Buten-2-one	2	8635-A1	0.00058	0.2	0.29%		0.09%	1
13	3-Buten-2-one	4	8635-81	0.00059	0.2	0.30%		0.09%	1
13	3-Buten-2-one	6	8635-C1	0.00062	0.2	0.31%		0.09%	1
13	3-Buten-2-one	8	8635-D1	0.00061	0.2	0.31%		0.09%	1
13	3-Buten-2-one	10	8635-E1	0.00051	0.2	0.25%		0.09%	J
13	3-Buten-2-one	12	8635-F1	0.00050	0.2	0.25%		0.09%	J
13	3-Buten-2-one	14	8635-G1	0.00045	0.2	0.22%		0.09%	1
13	3-Buten-2-one	16	8635-H1	0.00042	0.2	0.21%		0.09%	1
13	3-Buten-2-one	2	5635-A2	0.00016	0.2	0.05%	YES	0.09%	U
13	3-Buten-2-one	4	8635-82	0.00015	0.2	0.08%	YES	0.09%	U
13	3-Buten-2-one	6	8635-C2	0.00016	0.2	0.08%	YES	0.09%	U
13	3-Buten-2-one	8	8635-D2	0.00018	0.2	0.09%	YES	0.09%	U
13	3-Buten-2-one	10	8635-E2	0.00016	0.2	0.08%	YES	0.09%	U
13	3-Buten-2-one	12	8635-F2	0.00016	0.2	0.08%	YES	0.09%	U
13	3-Buten-2-one	14	8635-G2	0.00016	0.2	0.08%	YES	0.09%	U
13	3-Buten-2-one	16	8635-H2	0.00016	0.2	0.08%	YES	0.09%	U
13	3-Buten-2-one	2	8636-A1	0.00046	0.2	0.23%		0.09%	1
13	3-Buten-2-one	4	8636-81	0.00060	0.2	0.30%		0.09%	J
13	3-Buten-2-one	6	8636-C1	0.00059	0.2	0.30%		0.09%	1
13	3-Buten-2-one	8	8636-D1	0.00056	0.2	0.28%		0.09%	1
13	3-Buten-2-one	10	\$636-E1	0.00052	0.2	0.26%		0.09%	1
13	3-Buten-2-one	12	8636-F1	0.00052	0.2	0.26%		0.09%	1
13	3-Buten-2-one	14	8636-G1	0.00045	0.2	0.23%		0.09%	1
13	3-Buten-2-one	16	8636-H1	0.00046	0.2	0.23%		0.09%	1
13	3-Buten-2-one	2	8636-A2	0.00017	0.2	0.09%	YES	0.09%	u
13	3-Buten-2-one	4	8636-82	0.00017	0.2	0.08%	YES	0.09%	U
13	3-Buten-2-one	6	8636-C2	0.00016	0.2	0.08%	YES	0.09%	U
13	3-Buten-2-one	8	8636-D2	0.00018	0.2	0.09%	YES	0.09%	U
13	3-Buten-2-one	10	8636-E2	0.00018	0.2	0.09%	YES	0.09%	U
13	3-Buten-2-one	12	8636-F2	0.00018	0.2	0.09%	YES	0.09%	U
13	3-Buten-2-one 3-Buten-2-one	14 16	8636-G2 8636-H2	0.00017	0.2	0.08%	YES	0.09%	U
14	Formaldehyde	2	8635-A1	0.0067	0.3	2.24%		0.61%	
14	Formaldehyde	4	8635-81	0.0018	0.3	0.62%		0.61%	
14	Formaldehyde	6	8635-C1	0.0018	0.3	0.60%	YES	0.61%	
14	Formaldehyde	8	8635-D1	0.0021	0.3	0.70%		0.61%	
14	Formaldehyde	10	\$635-E1	0.0032	0.3	1.06%		0.61%	
14	Formaldehyde	12	8635-F1	0.0030	0.3	0.99%		0.61%	
14	Formaldehyde	14	8635-G1	0.0022	0.3	0.74%		0.61%	
14	Formaldehyde	16	8635-H1	0.0017	0.3	0.58%	YES	0.61%	
14	Formaldehyde	2	8635-A2	0.0017	0.3	0.56%	YES	0.61%	
14	Formaldehyde	4	8635-82	0.0017	0.3	0.58%	YES	0.61%	
14	Formaldehyde	6	8635-C2	0.0018	0.3	0.61%	YES	0.61%	
14	Formaldehyde	8	8635-D2	0.0018	0.3	0.61%	YES	0.61%	
14	Formaldehyde	10	8635-E2	0.0018	0.3	0.59%	YES	0.61%	
14	Formaldehyde	12	8635-F2	0.0017	0.3	0.58%	YES	0.61%	

COPC#	Analyte	End Time	Position	Conc.	OEL	Conc.	Measurement	Approx	Analytica
oures.		(h)	rosidon	(ppm)	(ppm)	(% of OEL)	< DL/RL7	DL/RL	Flags
14	Formaldehyde	14	8635-G2	0.0017	0.3	0.56%	YES	0.61%	
14	Formaldehyde	16	8635-H2	0.0017	0.3	0.58%	YES	0.61%	
14	Formaldehyde	2	8636-A1	0.0079	0.3	2.64%		0.61%	
14	Formaldehyde	4	8636-81	0.0026	0.3	0.86%		0.61%	
14	Formaldehyde	6	8636-C1	0.0016	0.3	0.55%	YES	0.61%	
14	Formaldehyde	8	8636-D1	0.0022	0.3	0.74%		0.61%	
14	Formaldehyde	10	8636-E1	0.0033	0.3	1.09%		0.61%	
1.4	Formaldehyde	12	8636-F1	0.0031	0.3	1.03%		0.61%	
14	Formaldehyde	14	8636-G1	0.0025	0.3	0.84%		0.61%	
14	Formaldehyde	16	8636-H1	0.0026	0.3	0.88%		0.61%	
14	Formaldehyde	2	8636-A2	0.0020	0.3	0.67%		0.61%	
14	Formaldehyde	4	8636-82	0.0017	0.3	0.58%	YES	0.61%	
14	Formaldehyde	6	8636-C2	0.0016	0.3	0.54%	YES	0.61%	
14	Formaldehyde	8	8636-D2	0.0018	0.3	0.59%	YES	0.61%	
14	Formaldehyde	10	8636-E2	0.0028	0.3	0.95%		0.61%	
14	Formaldehyde	12	8636-F2	0.0018	0.3	0.59%	YES	0.61%	
14	Formaldehyde	14	8636-G2	0.0018	0.3	0.60%	YES	0.61%	
14	Formaldehyde	16	8636-H2	0.0018	0.3	0.60%	YES	0.61%	
15	Acetaldehyde	2	8635-A1	0.017	25	0.067%		0.005%	
15	Acetaldehyde	4	8635-81	0.017	25	0.068%		0.005%	
15	Acetaldehyde	6	8635-C1	0.016	25	0.065%		0.005%	
15	Acetaldehyde	5	8635-D1	0.016	25	0.064%		0.005%	
15	Acetaldehyde	10	\$635-E1	0.016	25	0.064%		0.005%	
15	Acetaldehyde	12	8635-F1	0.015	25	0.061%		0.005%	
15	Acetaldehyde	14	8635-G1	0.016	25	0.062%		0.005%	
15	Acetaldehyde	16	8635-H1	0.016	25	0.063%		0.005%	
15	Acetaldehyde	2	8635-A2	0.006	25	0.026%		0.005%	
15	Acetaldehyde	4	8635-82	0.010	25	0.040%		0.005%	
15	Acetaldehyde	6	8635-C2	0.010	25	0.040%		0.005%	
15	Acetaldehyde	8	8635-D2	0.010	25	0.041%		0.005%	
15	Acetaldehyde	10	8635-E2	0.010	25	0.040%		0.005%	
15	Acetaldehyde	12	8635-F2	0.010	25	0.040%		0.005%	
15	Acetaldehyde	14	8635-G2	0.010	25	0.042%		0.005%	
15	Acetaldehyde	16	8635-H2	0.010	25	0.039%		0.005%	
15	Acetaldehyde	2	8636-A1	0.017	25	0.067%		0.005%	
15	Acetaldehyde	4	8636-B1	0.016	25	0.064%		0.005%	
15	Acetaldehyde	6	8636-C1	0.017	25	0.066%		0.005%	
15	Acetaldehyde	8	8636-D1	0.016	25	0.062%		0.005%	
15	Acetaldehyde	10	8636-E1	0.016	25	0.064%		0.005%	
15	Acetaldehyde	12	8636-F1	0.015	25	0.060%		0.005%	
15	Acetaldehyde	14	8636-G1	0.012	25	0.049%		0.005%	
15	Acetaldehyde	16	8636-H1	0.015	25	0.058%		0.005%	
15		2	8636-A2	0.008	25			0.005%	
15	Acetaldehyde Acetaldehyde	4	8636-82	0.008	25	0.033%		0.005%	
15	Acetaldehyde	6	8636-C2	0.010	25	0.041%		0.005%	
15	Acetaldehyde	8	8636-D2	0.010	25	0.040%		0.005%	
15	Acetaldehyde	10	8636-E2	0.012	25	0.047%		0.005%	
15	Acetaldehyde	12	8636-F2	0.011	25	0.045%		0.005%	
15	Acetaldehyde	14	8636-G2	0.011	25	0.044%		0.005%	
15	Acetaldehyde	16	8636-H2	0.011	25	0.042%		0.005%	
15	B. donal		9595 44	0.00175		0.00500		0.00440	
16	Butanal	2	8635-A1	0.00125	25	0.0050%		0.0011%	
16	Butanal	4	8635-81	0.00142	25	0.0057%		0.0011%	
16	Butanal	6	8635-C1	0.00215	25	0.0086%		0.0011%	
16	Butanal	8	8635-D1	0.00128	25	0.0051%		0.0011%	
16	Butanal	10	8635-E1	0.00128	25	0.0051%		0.0011%	
16	Butanal	12	8635-F1	0.00135	25	0.0054%		0.0011%	
16	Butanal	14	8635-G1	0.00111	25	0.0044%		0.0011%	
16	Butanal	16	8635-H1	0.00103	25	0.0041%		0.0011%	1
16	Butanal	2	8635-A2	0.00019	25	0.0007%	YES	0.0011%	U
16	Butanal	4	8635-82	0.00018	25	0.0007%	YES	0.0011%	U

COPC#	Analyte	End Time (h)	Position	Conc. (ppm)	OEL (ppm)	Conc. (% of OEL)	Measurement < DL/RL7	Approx DL/RL	Analytical Flags
16	Butanal	6	8635-C2	0.00020	(ppm) 25	0.0008%	YES	0.0011%	U
16	Butanal	8	8635-D2	0.00021	25	0.0008%	YES	0.0011%	U
16	Butanal	10	8635-E2	0.00020	25	0.0008%	YES	0.0011%	U
16	Butanal	12	8635-F2	0.00019	25	0.0008%	YES	0.0011%	U
16	Butanal	14	8635-G2	0.00019	25	0.0008%	YES	0.0011%	U
16	Butanal	16	5635-H2	0.00019	25	0.0008%	YES	0.0011%	Ü
16	Butanal	2	8636-A1	0.00104	25	0.0041%	100	0.0011%	3000
16	Butanal	4	8636-81	0.00131	25	0.0052%		0.0011%	
16	Butanal	6	8636-C1	0.00161	25	0.0064%		0.0011%	
16	Butanal	8	8636-D1	0.00131	25	0.0052%		0.0011%	
16	Butanal	10	8636-E1	0.00124	25	0.0049%		0.0011%	
16	Butanal	12	8636-F1	0.00089	25	0.0036%		0.0011%	
16	Butanal	14	8636-G1	0.00120	25	0.0048%		0.0011%	
16	Butanal	16	8636-H1	0.00116	25	0.0046%		0.0011%	
16	Butenel	2	8636-A2	0.00026	25	0.0011%	YES	0.0011%	U
16	Butanal	4	8636-82	0.00026	25	0.0010%	YES	0.0011%	U
16	Butanal	6	8636-C2	0.00025	25	0.0010%	YES	0.0011%	U
16	Butanal	В	8636-D2	0.00027	25	0.0011%	YES	0.0011%	U
16	Butanal	10	8636-E2	0.00028	25	0.0011%	YES	0.0011%	ш
16	Butanal	12	8636-F2	0.00027	25	0.0011%	YES	0.0011%	U
16	Butanal	14	8636-G2	0.00026	25	0.0010%	YES	0.0011%	U
16	Butanal	16	8636-H2	0.00026	25	0.0010%	YES	0.0011%	U
									8
19	Furan	2	8635-A1	0.000033	0.001	3.31%	YES	5.65%	U
19	Furan	4	8635-81	0.000033	0.001	3.26%	YES	5.65%	U
19	Furan	6	8635-C1	0.000034	0.001	3.41%	YES	5.65%	U
19	Furan	8	8635-D1	0.000033	0.001	3.35%	YES	5.45%	U
19	Furan	10	8635-E1	0.000035	0.001	3.46%	YES	5.65%	U
19	Furan	12	8635-F1	0.000035	0.001	3.47%	YES	5.65%	U
19	Furan	14	8635-G1	0.000033	0.001	3.34%	YES	5.65%	U
19	Furan	16	8635-H1	0.000033	0.001	3.32%	YES	5.65%	U
19	Furan	2	8635-A2	0.000021	0.001	2.13%	YES	5.65%	U
19	Furan	4	8635-82	0.000021	0.001	2.08%	YES	5.65%	U
19	Furan	6	8635-C2	0.000022	0.001	2.17%	YES	5.65%	U
19	Furan	8	8635-D2	0.000022	0.001	2.21%	YES	5.65%	U
19	Furan	10	\$635-E2	0.000023	0.001	2.27%	YES	5.45%	U
19	Furan	12	8635-F2	0.000023	0.001	2.33%	YES	5.65%	U
19	Furan	14	8635-G2	0.000021	0.001	2.13%	YES	5.65%	U
19	Furan	16	8635-H2	0.000022	0.001	2.15%	YES	5.65%	U
19	Furan	2	8636-A1	0.000054	0.001	5.41%	YES	5.65%	U
19	Furan	4	8636-81	0.000052	0.001	5.22%	YES	5.65%	U
19	Furan	6	8636-C1	0.000049	0.001	4.88%	YES	5.65%	U
19	Furan	8	8636-D1	0.000054	0.001	5.42%	YES	5.65%	U
19	Furan	10	8636-E1	0.000055	0.001	5.52%	YES	5.65%	U
19	Furan	12	8636-F1	0.000056	0.001	5.65%	YES	5.65%	U
19	Furan	14	8636-G1	0.000053	0.001	5.26%	YES	5.65%	U
19	Furan	16						5.65%	
19	Furan	2	8636-A2	0.000033	0.001	3.30%	YES	5.65%	U
19	Furan	4	8636-82	0.000037	0.001	3.69%	YES	5.65%	U
19	Furan	6	8636-C2	0.000035	0.001	3.44%	YES	5.45%	U
19	Furan	8	8636-D2	0.000038	0.001	3.79%	YES	5.65%	U
19	Furan	10	8636-E2	0.000039	0.001	3.86%	YES	5.65%	U
19	Furan	12	8636-F2	0.000038	0.001	3.79%	YES	5.65%	U
19	Furan	14	8636-G2	0.000034	0.001	3.36%	YES	5.65%	U
19	Furan	16	8636-H2	0.000035	0.001	3.52%	YES	5.65%	U
20	2,3-Dihydrofuran	2	8635-A1	0.000025	0.001	2.52%		3.03%	1
20	2,3-Dihydrofuran	4	8635-81	0.000020	0.001	1.97%	YES	3.03%	Ü
20	2,3-Dihydrofuran	6	8635-61	0.000021	0.001	2.06%	YES	3.03%	U
20	2,3-Dihydrofuran	8	8635-D1	0.000021	0.001	2.02%	YES	3.03%	U
	eto-punkanonniani	0	9000.01	0.000020	CANAT	E MAE IN	169	U-M376	
20	2,3-Dihydrofuran	10	8635-E1	0.000021	0.001	2.09%	YES	3.03%	U

	Analyte	End Time (h)	Position	Conc. (ppm)	(ppm)	Conc. (% of OEL)	Measurement < DL/RL?	Approx DL/RL	Analytic
20	2,3-Dihydrofuran	14	8635-G1	0.000020	0.001	2.02%	YES	3.03%	U
20	2,3-Dihydrofuran	16	8635-H1	0.000020	0.001	2.01%	YES	3.03%	U
20	2,3-Dihydrofuran	2	8635-A2	0.000013	0.001	1.29%	YES	3.03%	U
20	2,3-Dihydrofuran	4	8635-82	0.000013	0.001	1.26%	YES	3.03%	U
20	2,3-Dihydrofuran	6	8635-C2	0.000013	0.001	1.31%	YES	3.03%	U
20	2,3-Dihydrofuran	5	8635-D2	0.000013	0.001	1.33%	YES	3.03%	ŭ
20	2,3-Dihydrofuran	10	8635-E2	0.000014	0.001	1.37%	YES	3.03%	Ü
20	2,3-Dihydrofuran	12	8635-F2	0.000014	0.001	1.41%	YES	3.03%	u
20	2,3-Dihydrofuran	14	8635-G2	0.000013	0.001	1.29%	YES	3.03%	u
20	2,3-Dihydrofuran	16	8635-H2	0.000013	0.001	1.30%	YES	3.03%	Ü
20	2,3-Dihydrofuran	2	8636-A1	0.000029	0.001	2.90%	YES	3.03%	U
20	2,3-Dihydrofuran	4	8636-B1	0.000028	0.001	2.80%	YES	3.03%	U
20	2,3-Dihydrofuran	6	8636-C1	0.000026	0.001	2.62%	YES	3.03%	U
20	2,3-Dihydrofuran	8	8636-D1	0.000029	0.001	2.90%	YES	3.03%	U
20		10					YES		Ü
	2,3-Dihydrofuran		8636-E1	0.000030	0.001	2.96%		3.03%	U
20	2,3-Dihydrofuran	12	8636-F1	0.000030	0.001	3.03%	YES	3.03%	
20	2,3-Dihydrofuran	14	8636-G1	0.000028	0.001	2.82%	YES	3.03%	U
20	2,3-Dihydrofuran	16	****				some.	3.03%	100
20	2,3-Dihydrofuran	2	8636-A2	0.000018	0.001	1.77%	YES	3.03%	U
20	2,3-Dihydrofuran	4	\$636-B2	0.000020	0.001	1.95%	YES	3.03%	U
20	2,3-Dihydrofuran	6	8636-C2	0.000019	0.001	1.85%	YES	3.03%	U
20	2,3-Dihydrofuran	8	8636-D2	0.000020	0.001	2.03%	YES	3.03%	U
20	2,3-Dihydrofuran	10	8636-E2	0.000021	0.001	2.07%	YES	3.03%	u
20	2,3-Dihydrofuran	12	8636-F2	0.000020	0.001	2.03%	YES	3.03%	U
20	2,3-Dihydrofuran	14	8636-G2	0.000018	0.001	1.80%	YES	3.03%	U
20	2,3-Dihydrofuran	16	8636-H2	0.000019	0.001	1.89%	YES	3.03%	U
21	2,5-Dihydrofuran	2	8635-A1	0.000029	0.001	2.87%	YES	4.26%	U
21	2,5-Dihydrofuran	4	8635-81	0.000028	0.001	2.82%	YES	4.26%	u
21	2,5-Dihydrofuran	6	8635-C1	0.000030	0.001	2.95%	YES	4.26%	u
21	2,5-Dihydrofuran	8	8635-D1	0.000029	0.001	2.90%	YES	4.26%	U
21	2,5-Dihydrofuran	10	8635-E1	0.000030	0.001	3.00%	YES	4.26%	U
21	2,5-Dihydrofuran	12	8635-F1	0.000030	0.001	3.01%	YES	4.26%	U
21	2,5-Dihydrofuran	14	8635-G1	0.000029	0.001	2.90%	YES	4.26%	U
21		16	8635-H1	0.000029	0.001	2.88%	YES	4.26%	U
21	2,5-Dihydrofuran					1.85%	YES		u
	2,5-Dihydrofuran	2	8635-A2	0.000018	0.001			4.26%	
21	2,5-Dihydrofuran	4	8635-B2	0.000018	0.001	1.81%	YES	4.26%	U
21	2,5-Dihydrofuran	6	8635-C2	0.000019	0.001	1.88%	YES	4.26%	U
21	2,5-Dihydrofuran	8	8635-D2	0.000019	0.001	1.91%	YES	4.26%	Ų
21	2,5-Dihydrofuran	10	8635-E2	0.000020	0.001	1.97%	YES	4.26%	u
21	2,5-Dihydrofuran	12	8635-F2	0.000020	0.001	2.02%	YES	4.26%	U
21	2,5-Dihydrofuran	14	8635-G2	0.000018	0.001	1.85%	YES	4.26%	U
21	2,5-Dihydrofuran	16	8635-H2	0.000019	0.001	1.86%	YES	4.26%	U
21	2,5-Dihydrofuran	2	8636-A1	0.000041	0.001	4.08%	YES	4.26%	U
21	2,5-Dihydrofuran	4	8636-81	0.000039	0.001	3.93%	YES	4.26%	U
21	2,5-Dihydrofuran	6	8636-C1	0.000037	0.001	3.68%	YES	4.26%	U
21	2,5-Dihydrofuran	8	8636-D1	0.000041	0.001	4.09%	YES	4.26%	U
21	2,5-Dihydrofuran	10	8636-E1	0.000042	0.001	4.16%	YES	4.26%	U
21	2,5-Dihydrofuran	12	8636-F1	0.000043	0.001	4.26%	YES	4.26%	U
21	2,5-Dihydrofuran	14	8636-G1	0.000040	0.001	3.96%	YES	4.26%	U
21	2,5-Dihydrofuran	16						4.26%	
21	2,5-Dihydrofuran	2	8636-A2	0.000025	0.001	2.49%	YES	4.26%	U
21	2,5-Dihydrofuran	4	8636-82	0.000028	0.001	2.78%	YES	4.26%	U
21	2,5-Dihydrofuran	6	8636-C2	0.000026	0.001	2.60%	YES	4.26%	u
21	2,5-Dihydrofuran	8	8636-D2	0.000029	0.001	2.85%	YES	4.26%	U
21	2,5-Dihydrofuran	10	8636-E2	0.000029	0.001	2.91%	YES	4.26%	U
21	2,5-Dihydrofuran	12	8636-F2	0.000029	0.001	2.85%	YES	4.26%	U
21	2,5-Dihydrofuran	14	8636-G2	0.000025	0.001	2.53%	YES	4.26%	U
44	2,5-Dihydrofuran	16	8636-H2	0.000027	0.001	2,65%	YES	4.26%	U
21	100								
	2-Methylfuran	2	8635-A1	0.000034	0.001	3.42%	YES	3.58%	U

COPC#	Analyte	End Time	Position	Conc.	OEL (nom)	Conc.	Measurement	Approx	Analytical
22	2-Methylfuran	(h) 6	8635-C1	(ppm) 0.000035	(ppm) 0.001	(% of OEL) 3.52%	< DL/RL7 YES	DL/RL 3.58%	Flags
22	2-Methylfuran	5	8635-D1	0.000035	0.001	3.45%	YES	3.58%	U
22	2-Methylfuran	10	8635-E1	0.000036	0.001	3.57%	YES	3.58%	U
22	2-Methylfuran	12	8635-F1	0.000036	0.001	3.58%	YES	3.58%	U
22	2-Methylfuran	14	8635-G1	0.000034	0.001	3.45%	YES	3.58%	U
22	2-Methylfuran	16	8635-H1	0.000034	0.001	3,43%	YES	3.55%	ŭ
22	2-Methylfuran	2	8635-A2	0.000022	0.001	2.20%	YES	3.58%	ŭ
22	2-Methylfuran	4	8635-82	0.000021	0.001	2.15%	YES	3.58%	u
22	2-Methylfuran	6	8635-C2	0.000022	0.001	2.23%	YES	3.58%	U
22	2-Methylfuran	8	8635-D2	0.000023	0.001	2.28%	YES	3.58%	U
22	2-Methylfuran	10	8635-E2	0.000023	0.001	2,34%	YES	3.58%	U
22	2-Methylfuran	12	8635-F2	0.000024	0.001	2.40%	YES	3.58%	U
22	2-Methylfuran	14	8635-G2	0.000022	0.001	2.20%	YES	3.58%	U
22	2-Methylfuran	16	8635-H2	0.000022	0.001	2.22%	YES	3.58%	U
22	2-Methylfuran	2	8636-A1	0.000012	0.001	1.16%	YES	3.58%	Ü
22	2-Methylfuran	4	8636-81	0.000011	0.001	1.12%	YES	3.58%	U
22	2-Methylfuran	6	8636-C1	0.000010	0.001	1.03%	YES	3.58%	U
22	2-Methylfuran	8	8636-D1	0.000012	0.001	1.16%	YES	3.58%	U
22	2-Methylfuran	10	8636-E1	0.000012	0.001	1.18%	YES	3.58%	u
22	2-Methylfuran	12	\$636-F1	0.000012	0.001	1.21%	YES	3.55%	U
22	2-Methylfuran	14	8636-G1	0.000011	0.001	1.13%	YES	3.58%	U
22	2-Methylfuran	16						3.58%	
22	2-Methylfuran	2	8636-A2	0.000007	0.001	0.71%	YES	3.58%	U
22	2-Methylfuran	4	8636-82	0.000008	0.001	0.79%	YES	3.58%	U
22	2-Methylfuran	6	8636-C2	0.000007	0.001	0.74%	YES	3.58%	U
22	2-Methylfuran	8	8636-D2	0.000008	0.001	0.81%	YES	3.58%	U
22	2-Methylfuran	10	8636-E2	8000000	0.001	0.83%	YES	3.58%	U
22	2-Methylfuran	12	8636-F2	0.000008	0.001	0.81%	YES	3.58%	U
22	2-Methylfuran	14	8636-G2	0.000007	0.001	0.72%	YES	3.58%	U
22	2-Methylfuran	16	8636-H2	8000000	0.001	0.75%	YES	3.58%	U
23	2,5-Dimethylfuran	2	8635-A1	0.000048	0.001	4.76%	YES	4.98%	U
23	2,5-Dimethylfuran	4	8635-81	0.000047	0.001	4.68%	YES	4.98%	U
23	2,5-Dimethylfuran	6	8635-C1	0.000049	0.001	4.90%	YES	4.98%	U
23	2,5-Dimethylfuran	8	8635-D1	0.000048	0.001	4.80%	YES	4.98%	U
23	2,5-Dimethylfuran	10	\$635-E1	0.000050	0.001	4.97%	YES	4.98%	U
23	2,5-Dimethylfuran	12	8635-F1	0.000050	0.001	4.98%	YES	4.98%	U
23	2,5-Dimethylfuran	14	8635-G1	0.000048	0.001	4.80%	YES	4.98%	U
23	2,5-Dimethylfuran	16	8635-H1	0.000048	0.001	4.77%	YES	4.98%	U
23	2,5-Dimethylfuran	2	8635-A2	0.000031	0.001	3.06%	YES	4.98%	U
23	2,5-Dimethylfuran	4	8635-82	0.000030	0.001	2.99%	YES	4.98%	U
23	2,5-Dimethylfuran	6	8635-C2	0.000031	0.001	3.11%	YES	4.98%	U
23	2,5-Dimethylfuran	8	8635-D2	0.000032	0.001	3.17%	YES	4.98%	U
23	2,5-Dimethylfuran	10	8635-E2	0.000033	0.001	3.27%	YES	4.98%	U
23	2,5-Dimethylfuran	12	8635-F2	0.000033	0.001	3.34%	YES	4.98%	U
23	2,5-Dimethylfuren	14	8635-G2	0.000031	0.001	3.06%	YES	4.98%	U
23	2,5-Dimethylfuran	16	8635-H2	0.000031	0.001	3.09%	YES	4.98%	U
23	2,5-Dimethylfuran	2	5636-A1	0.000017	0.001	1.72%	YES	4.95%	U
23	2,5-Dimethylfuran	4	8636-B1	0.000017	0.001	1.66%	YES	4.98%	U
23	2,5-Dimethylfuran	6	8636-C1	0.000015	0.001	1.55%	YES	4.98%	U
23	2,5-Dimethylfuran	8	8636-D1	0.000017	0.001	1.72%	YES	4.98%	U
23	2,5-Dimethylfuran	10	8636-E1	0.000018	0.001	1.75%	YES	4.98%	U
23	2,5-Dimethylfuran	12	8636-F1	0.000018	0.001	1.79%	YES	4.98%	U
23	2,5-Dimethylfuran	1.4	8636-G1	0.000017	0.001	1.67%	YES	4.98%	U
23	2,5-Dimethylfuran	16	20225000	41542555100	12 200		200	4.98%	300
23	2,5-Dimethylfuran	2	8636-A2	0.000010	0.001	1.05%	YES	4.98%	U
23	2,5-Dimethylfuran	4	8636-82	0.000012	0.001	1.17%	YES	4.98%	U
23	2,5-Dimethylfuran	6	8636-C2	0.000011	0.001	1.10%	YES	4.98%	U
23	2,5-Dimethylfuran	8	8636-D2	0.000012	0.001	1.20%	YES	4.98%	U
23	2,5-Dimethylfuren	10	8636-E2	0.000012	0.001	1.22%	YES	4.98%	U
23	2,5-Dimethylfuran	12	8636-F2	0.000012	0.001	1.20%	YES	4.98%	U
77	2,5-Dimethylfuran	14	8636-G2	0.000011	0.001	1.07%	YES	4.95%	U
23 23	2,5-Dimethylfuran	16	8636-H2	0.000011	0.001	1.12%	YES	4.98%	U

COPC#	Analysis	End Time	Position	Conc.	OEL	Conc.	Measurement	Approx	Analytica
COPC#	Analyte	(h)	Position	(ppm)	(ppm)	(% of OEL)	< DL/RL7	DL/RL	Flags
	2 2				0.001		wee	4.100	
27 27	2-Pentylfuran	2 4	8635-A1	0.000040	0.001	3.97%	YES	4.16%	U
27	2-Pentylfuran	6	8635-81 8635-C1	0.000041	0.001	3.90% 4.09%	YES	4.16%	u
27	2-Pentylfuran	8			0.001	4.01%	YES	4.16%	
27	2-Pentyifuran 2-Pentyifuran	10	8635-D1 8635-E1	0.000040	0.001	4.14%	YES	4.16%	U
27	2-Pentylfuran	12	8635-F1	0.000042	0.001	4.16%	YES	4.16%	U
27	2-Pentylfuran	14	8635-G1	0.000040	0.001	4.00%	YES	4.16%	U
27	2-Pentylfuran	16	8635-H1	0.000040	0.001	3.98%	YES	4.16%	ŭ
27	2-Pentylfuran	2	8635-A2	0.000026	0.001	2,56%	YES	4.16%	U
27	2-Pentylfuran	4	8635-82	0.000025	0.001	2.50%	YES	4.16%	U
27	2-Pentylfuran	6	8635-C2	0.000026	0.001	2.60%	YES	4.16%	U
27	2-Pentylfuran	8	8635-D2	0.000026	0.001	2.64%	YES	4.16%	U
27	2-Pentylfuran	10	\$635-E2	0.000027	0.001	2.73%	YES	4.16%	U
27	2-Pentylfuran	12	8635-F2	0.000028	0.001	2.79%	YES	4.16%	U
27	2-Pentylfuran	14	8635-G2	0.000026	0.001	2.55%	YES	4.16%	U
27	2-Pentylfuran	16	8635-H2	0.000026	0.001	2.58%	YES	4.16%	U
27	2-Pentylfuran	2	8636-A1	0.000013	0.001	1.33%	YES	4.16%	U
27	2-Pentylfuran	4	8636-81	0.000013	0.001	1.29%	YES	4.16%	U
27	2-Pentylfuran	6	8636-C1	0.000012	0.001	1.20%	YES	4.16%	U
27	2-Pentylfuran	8	8636-D1	0.000013	0.001	1.34%	YES	4.16%	U
27	2-Pentylfuran	10	8636-E1	0.000014	0.001	1.36%	YES	4.16%	U
27	2-Pentylfuran	12	8636-F1	0.000014	0.001	1.39%	YES	4.16%	U
27	2-Pentylfuran	14	8636-G1	0.000013	0.001	1.29%	YES	4.16%	U
27	2-Pentylfuran	16						4.16%	
27	2-Pentylfuran	2	8636-A2	0.000008	0.001	0.81%	YES	4.16%	U
27	2-Pentylfuran	4	8636-B2	0.000009	0.001	0.91%	YES	4.16%	U
27	2-Pentylfuran	6	\$636-C2	0.000009	0.001	0.85%	YES	4.16%	U
27	2-Pentylfuran	8	8636-D2	0.000009	0.001	0.93%	YES	4.16%	U
27	2-Pentylfuran	10	8636-E2	0.000009	0.001	0.95%	YES	4.16%	U
27	2-Pentylfuran	12	8636-F2	0.000009	0.001	0.93%	YES	4.16%	U
27	2-Pentylfuran	14	8636-G2	0.000008	0.001	0.83%	YES	4.16%	U
27	2-Pentylfuran	16	8636-H2	0.000009	0.001	0.87%	YES	4.16%	u
	2022-118-0019-0								
1233	4000000	75250	NURSE	1 (10000000)	9,2033	1000	200200	145000	
28	2-Heptylfuran	2	8635-A1	0.000032	0.001	3.15%	YES	3.30%	v
28	2-Heptylfuran	4	8635-81	0.000031	0.001	3.10%	YES	3.30%	U
28	2-Heptylfuran	6	8635-C1	0.000032	0.001	3.25%	YES	3.30%	U
28	2-Heptylfuran	8	8635-D1	0.000032	0.001	3.19%	YES	8.30%	U
28	2-Heptylfuran	10	8635-E1	0.000033	0.001	3.29%	YES	3.30%	U
28	2-Heptylfuran	12	8635-F1	0.000033	0.001	3.30%	YES	3.30%	U
28	2-Heptylfuran	14	8635-G1	0.000032	0.001	3.18%	YES	3.30%	U
28	2-Heptylfuran	16	8635-H1	0.000032	0.001	3.16%	YES	3.30%	U
28	2-Heptylfuran	2	8635-A2	0.000020	0.001	2.03%	YES	3.30%	U
28	2-Heptylfuran	4	8635-82	0.000020	0.001	1.98%	YES	3.30%	U
28	2-Heptylfuran	6	8635-C2	0.000021	0.001	2.06%	YES	3.30%	U
28	2-Heptylfuran	8	8635-D2	0.000021	0.001	2.10%	YES	3.30%	U
28	2-Heptylfuran	10	8635-E2	0.000022	0.001	2.16%	YES	3.30%	U
28	2-Heptylfuran	12	8635-F2	0.000022	0.001	2.22%	YES	3.30%	U
28	2-Heptylfuran	14	8635-G2	0.000020	0.001	2.03%	YES	3.30%	Ų
28	2-Heptylfuran	16	8635-H2	0.000020	0.001	2.05%	YES	3.30%	u
28	2-Heptylfuran	2	8636-A1	0.000015	0.001	1.45%	YES	3.30%	U
28	2-Heptylfuran	4	8636-81	0.000014	0.001	1.40%	YES	3.30%	U
28	2-Heptylfuran	6	8636-C1	0.000013	0.001	1.31%	YES	3.30%	U
28	2-Heptylfuran	8	8636-D1	0.000015	0.001	1.45%	YES	3.30%	U
28	2-Heptylfuran	10	8636-E1	0.000015	0.001	1.48%	YES	3.30%	U
28	2-Heptylfuran	12	8636-F1	0.000015	0.001	1.52%	YES	3.30%	U
28	2-Heptylfuran	14	8636-G1	0.000014	0.001	1.41%	YES	3.30%	U
28	2-Heptylfuran	16	****					3.30%	
28	2-Heptylfuran	2	8636-A2	0.000009	0.001	0.89%	YES	3.30%	u
28	2-Heptylfuran	4	8636-82	0.000010	0.001	0.99%	YES	3.30%	U
28	2-Heptylfuran	6	8636-C2	0.000009	0.001	0.93%	YES	3.30%	U
28	2-Heptylfuran	8	8636-D2	0.000010	0.001	1.02%	YES	3.30%	1

COPC#	Analyte	End Time	Position	Conc.	OEL	Conc.	Measurement	Approx	Analytical
		(h)	11111111111111	(ppm)	(ppm)	(% of OEL)	< DL/RL7	DL/RL	Flags
25	2-Heptylfuren	10	8636-E2	0.000010	0.001	1.03%	YES	3.30%	U
28	2-Heptylfuran	12	8636-F2	0.000010	0.001	1.02%	YES	3.30%	U
28	2-Heptylfuran	14	8636-G2	0.000009	0.001	0.90%	YES	3.30%	U
28	2-Heptylfuran	16	8636-H2	0.000009	0.001	0.94%	YES	3.30%	U
29	2-Propylfuran	2	8635-A1	0.000034	0.001	3.43%	YES	3.60%	U
29	2-Propylfuran	4	8635-81	0.000034	0.001	3.37%	YES	3.60%	U
29	2-Propylfuren	6	8635-C1	0.000035	0.001	3.53%	YES	3.60%	U
29	2-Propylfuran	5	8635-D1	0.000035	0.001	3,47%	YES	3.60%	U
29	2-Propylfuran	10	\$635-E1	0.000036	0.001	3,58%	YES	3.60%	U
29	2-Propylfuran	12	8635-F1	0.000036	0.001	3.60%	YES	3.60%	U
29	2-Propylfuran	14	8635-G1	0.000035	0.001	3.46%	YES	3.60%	U
29	2-Propylfuran	16	8635-H1	0.000034	0.001	3,44%	YES	3.60%	U
29	2-Propylfuran	2	8635-A2	0.000022	0.001	2.21%	YES	3.60%	U
29	2-Propylfuran	4	8635-82	0.000022	0.001	2.16%	YES	3.60%	U
29	2-Propylfuran	6	8635-C2	0.000022	0.001	2.25%	YES	3.60%	U
29	2-Propylfuran	8	8635-D2	0.000023	0.001	2.29%	YES	3.60%	U
29	2-Propylfuran	10	8635-E2	0.000024	0.001	2.36%	YES	3.60%	U
29	2-Propylfuran	12	8635-F2	0.000024	0.001	2.41%	YES	3.60%	U
29	2-Propylfuran	14	8635-G2	0.000022	0.001	2.21%	YES	3.60%	U
29	2-Propylfuran	16	8635-H2	0.000022	0.001	2.23%	YES	3.60%	U
29	2-Propylfuran	2	8636-A1	0.000012	0.001	1.21%	YES	3.60%	U
29	2-Propylfuran	4	8636-81	0.000012	0.001	1.17%	YES	3.60%	U
29	2-Propylfuran	6	5636-C1	0.000011	0.001	1.09%	YES	3.60%	U
29	2-Propylfuran	8	8636-D1	0.000012	0.001	1.21%	YES	3.60%	U
29	2-Propylfuran	10	8636-E1	0.000012	0.001	1.23%	YES	3.60%	u
29	2-Propylfuran	12	\$636-F1	0.000013	0.001	1.26%	YES	3.60%	u
29	2-Propylfuran	14	8636-G1	0.000012	0.001	1.18%	YES	3.60%	U
29	2-Propylfuran	16						3.60%	
29	2-Propylfuran	2	8636-A2	0.000007	0.001	0.74%	YES	3.60%	U
29	2-Propylfuran	4	8636-82	8000000.0	0.001	0.83%	YES	3.60%	U
29	2-Propylfuran	6	8636-C2	0.000008	0.001	0.77%	YES	3.60%	U
29	2-Propylfuran	8	8636-D2	0.000008	0.001	0.85%	YES	3.60%	U
29	2-Propylfuran	10	8636-E2	0.000009	0.001	0.86%	YES	3.60%	U
29	2-Propylfuran	12	8636-F2	0.000008	0.001	0.85%	YES	3.60%	U
29	2-Propylfuran	14	8636-G2	0.000008	0.001	0.75%	YES	3.40%	U
29	2-Propylfuran	16	8636-H2	0.000008	0.001	0.79%	YES	3.60%	U
33	Birth Libitation					0.036%	LIE .	0.062%	
33	Diethylphthalate	2	8635-A1	0.00020	0.550	0.036%	YES		U
33	Diethylphthelate	4 6	8635-C1	0.00020	0.550	0.037%	YES	0.062%	U
33	Diethylphthalate	8	8635-D1	0.00020	0.550	0.037%	YES	0.062%	Ü
33	Diethylphthalate Diethylphthalate	10	8635-E1	0.00021	0.550	0.038%	YES	0.062%	U
33	Diethylphthalate	12	8635-F1	0.00020	0.550	0.037%	YES	0.062%	U
33		14	8635-G1	0.00020	0.550	0.034%	YES	0.062%	U
	Diethylphthalate Diethylphthalate		8635-H1					0.062%	U
33	Diethylphthalate	16		0.00019	0.550	0.035%	YES		
33	Diethylphthalate	2 4	8635-A2		0.550	0.036%	YES	0.062%	U
33			8635-82	0.00020	0.550	0.037%	YES	0.062%	U
33	Diethylphthalate	6	8635-C2	0.00020	0.550	0.037%	YES	0.062%	U
33	Diethylphthalate	8	8635-D2	0.00021	0.550	0.038%	YES	0.062%	U
33	Diethylphthalate	10	8635-E2	0.00020	0.550	0.037%	YES	0.062%	U
33	Diethylphthalate	12	8635-F2	0.00034	0.550	0.062%	YES	0.062%	U
33	Diethylphthalate	14	8635-G2	0.00018	0.550	0.032%	YES	0.062%	U
33	Diethylphthalate	16	8635-H2	0.00019	0.550	0.034%	YES	0.062%	U
33	Diethylphthalate	2	8636-A1	0.00020	0.550	0.036%	YES	0.062%	U
33	Diethyliphthalate	4	8636-81	0.00019	0.550	0.035%	YES	0.062%	U
33	Diethylphthalate	6	8636-C1	0.00019	0.550	0.035%	YES	0.062%	U
33	Diethylphthalate	8	8636-D1	0.00021	0.550	0.038%	YES	0.062%	U
33	Diethylphthalate	10	8636-E1	0.00021	0.550	0.038%	YES	0.062%	U
33	Diethylphthalate	12	8636-F1	0.00020	0.550	0.036%	YES	0.062%	U
33	Diethylphthalate	14	****			******	1000	0.062%	
33	Diethylphthalate	16	8636-H1	0.00019	0.550	0.035%	YES	0.062%	U

COPC#	Analyte	End Time (h)	Position	Conc. (ppm)	(ppm)	Conc. (% of OEL)	Measurement < DL/RL?	Approx DL/RL	Analytical Flags
33	Diethylphthalate	2	8636-A2	0.00021	0.550	0.039%	YES	0.062%	U
33	Diethylphthalate	4	8636-82	0.00021	0.550	0.038%	YES	0.062%	U
33	Diethylphthalate	6	8636-C2	0.00020	0.550	0.036%	YES	0.062%	U
33	Diethylphthalate	8	8636-D2	0.00021	0.550	0.039%	YES	0.062%	U
33	Diethylphthalate	10	8636-E2	0.00019	0.550	0.035%	YES	0.062%	U
33	Diethylphthalate	12	5636-F2	0.00019	0.550	0.034%	YES	0.062%	ŭ
33	Diethylphthalate	14	8636-G2	0.00019	0.550	0.034%	YES	0.062%	ŭ
33	Diethylphthalate	16	8636-H2	0.00019	0.550	0.034%	YES	0.062%	u
		-							ी
34	Acetonitrile	2	8635-A1	0.0064	20	0.0321%		0.0015%	
34	Acetonitrile	4	8635-81	0.0044	20	0.0220%		0.0015%	
34	Acetonitrile	6	8635-C1	0.0048	20	0.0238%		0.0015%	
34	Acetonitrile	8	8635-D1	0.0069	20	0.0346%		0.0015%	
34	Acetonitrile	10	8635-E1	0.0018	20	0.0088%		0.0015%	1
34	Acetonitrile	12	8635-F1	0.0014	20	0.0072%		0.0015%	1
34	Acetonitrile	14	8635-G1	0.0025	20	0.0127%		0.0015%	
34	Acetonitrile	16	8635-H1	0.0024	20	0.0120%		0.0015%	
34	Acetonitrile	2	8635-A2	0.0013	20	0.0067%		0.0015%	1
34	Acetonitrile	4	8635-82	0.0017	20	0.0084%		0.0015%	1
34	Acetonitrile	6	8635-C2	0.0033	20	0.0165%		0.0015%	
34	Acetonitrile	8	8635-D2	0.0011	20	0.0057%		0.0015%	J
34	Acetonitrile	10	8635-E2	0.0012	20	0.0061%		0.0015%	1
34	Acetonitrile	12	8635-F2	0.0009	20	0.0046%		0.0015%	- 1
34	Acetonitrile	14	8635-G2	0.0008	20	0.0042%		0.0015%	1
34	Acetonitrile	16	8635-H2	0.0009	20	0.0045%		0.0015%	1
34	Acetonitrile	2	8636-A1	0.0397	20	0.1987%		0.0015%	
34	Acetonitrile	4	8636-81	0.0291	20	0.1456%		0.0015%	
34	Acetonitrile	6	8636-C1	0.0140	20	0.0700%		0.0015%	
34	Acetonitrile	8	8636-D1	0.0197	20	0.0983%		0.0015%	
34	Acetonitrile	10	8636-E1	0.0051	20	0.0256%		0.0015%	
34	Acetonitrile	12	8636-F1	0.0057	20	0.0283%		0.0015%	
34	Acetonitrile	14	8636-G1	0.0045	20	0.0227%		0.0015%	
34	Acetonitrile	16	8636-H1	0.1001	20	0.5007%		0.0015%	
34	Acetonitrile	2	8636-A2	0.0294	20	0.1471%		0.0015%	
34	Acetonitrile	4	8636-82	0.0423	20	0.2117%		0.0015%	
34	Acetonitrile	6	\$636-C2	0.0333	20	0.1646%		0.0015%	
34	Acetonitrile	8	8636-D2	0.0069	20	0.0343%		0.0015%	
34	Acetonitrile	10	8636-E2	0.0510	20	0.2550%		0.0015%	
34	Acetonitrile	12	8636-F2	0.0614	20	0.3068%		0.0015%	
34	Acetonitrile	14	8636-G2	0.0045	20	0.0226%		0.0015%	
34	Acetonitrile	16	8636-H2	0.2558	20	1.2792%		0.0015%	Ε
35	Propanenitrile	2	8635-A1	0.00033	6	0.0054%		0.0037%	1
35	Propanenitrile	4	8635-81	0.00031	6	0.0051%		0.0037%	1
35	Propanenitrile	6	8635-C1	0.00033	6	0.0055%		0.0037%	1
35	Propanenitrile	8	8635-D1	0.00034	6	0.0056%		0.0037%	1
35	Propanenitrile	10	8635-E1	0.00029	6	0.0048%		0.0037%	1
35	Propanenitrile	12	8635-F1	0.00028	6	0.0047%		0.0037%	1
35	Propanenitrile	14	8635-G1	0.00032	6	0.0054%		0.0037%	1
35	Propanenitrile	16	8635-H1	0.00030	6	0.0050%	100	0.0037%	1
35	Propanenitrile	2	8635-A2	0.00016	6	0.0027%	YES	0.0037%	U
35	Propanenitrile	4	8635-62	0.00016	6	0.0027%	YES	0.0037%	U
35	Propanenitrile	6	8635-C2	0.00017	6	0.0029%	YES	0.0037%	U
35	Propanenitrile	5	8635-D2	0.00018	6	0.0031%	YES	0.0037%	U
35	Propanenitrile	10	8635-E2	0.00017	6	0.0028%	YES	0.0037%	U
35	Propanenitrile	12	8635-F2	0.00017	6	0.0028%	YES	0.0037%	U
35	Propanenitrile	14	8635-G2	0.00017	6	0.0028%	YES	0.0037%	U
35	Propanenitrile	16	8635-H2	0.00017	6	0.0028%	YES	0.0037%	U
35	Propanenitrile	2	8636-A1	0.00028	6	0.0047%		0.0037%	1
35	Propanenitrile	4	8636-81	0.00035	6	0.0059%		0.0037%	1
35	Propanenitrile	6	8636-C1	0.00033	6	0.0055%		0.0037%	1
35	Propanenitrile	8	8636-D1	0.00032	6	0.0053%		0.0037%	1

COPC#	Analyte	End Time	Position	Conc.	OEL	Conc.	Measurement	Approx	Analytical
		(h)	0.0000000000000000000000000000000000000	(ppm)	(ppm)	(% of OEL)	< DL/RL7	DL/RL	Flags
35	Propenenitrile	10	8636-E1	0.00032	6	0.0054%		0.0037%	1
35	Propanenitrile	12	8636-F1	0.00034	6	0.0057%		0.0037%	1
35	Propanenitrile	14	8636-G1	0.00027	6	0.0045%		0.0037%	1
35	Propanenitrile	16	8636-H1	0.00030	6	0.0051%	192201	0.0037%	1
35	Propenenitrile	2	8636-A2	0.00021	6	0.0035%	YES	0.0037%	U
35	Propanenitrile	4	8636-82	0.00020	6	0.0034%	YES	0.0037%	U
35	Propanenitrile	6	8636-C2	0.00019	6	0.0032%	YES	0.0037%	U
35	Propanenitrile	8	8636-D2	0.00021	6	0.0036%	YES	0.0037%	U
35	Propanenitrile	10	8636-E2	0.00022	6	0.0037%	YES	0.0037%	U
35	Propanenitrile	12	8636-F2	0.00021	6	0.0035%	YES	0.0037%	U
35	Propanenitrile	14	8636-G2	0.00020	6	0.0034%	YES	0.0037%	U
35	Propanenitrile	16	8636-H2	0.00020	6	0.0034%	YES	0.0037%	u
36	Butanenitrile	2	8635-A1	0.00016	8	0.0021%		0.0026%	1
36	Butanenitrile	4	8635-81	0.00015	8	0.0019%		0.0026%	1
36	Butanenitrile	6	8635-C1	0.00019	8	0.0023%		0.0026%	1
36	Butanenitrile	8	8635-D1	0.00014	8	0.0018%		0.0026%	1
36	Butanenitrile	10	8635-E1	0.00014	8	0.0018%		0.0026%	1
36	Butanenitrile	12	8635-F1	0.00014	8	0.0018%		0.0026%	1
36	Butanenitrile	14	8635-G1	0.00013	8	0.0017%		0.0026%	1
36	Butanenitrile	16	8635-H1	0.00015	8	0.0019%		0.0026%	1
36	Butanenitrile	2	8635-A2	0.00011	8	0.0014%	YES	0.0026%	U
36	Butanenitrile	4	8635-82	0.00011	5	0.0014%	YES	0.0026%	U
36	Butanenitrile	6	8635-C2	0.00012	5	0.0015%	YES	0.0026%	U
36	Butanenitrile	8	8635-D2	0.00013	8	0.0016%	YES	0.0026%	U
36	Butanenitrile	10	8635-E2	0.00012	8	0.0015%	YES	0.0026%	ш
36	Butanenitrile	12	8635-F2	0.00011		0.0014%	YES	0.0026%	u
36	Butanenitrile	14	8635-G2	0.00011	8	0.0014%	YES	0.0026%	U
36	Butanenitrile	16	8635-H2	0.00011	8	0.0014%	YES	0.0026%	U
36	Butanenitrile	2	8636-A1	0.00021	8	0.0026%	YES	0.0026%	u
36	Butanenitrile	4	8636-81	0.00019	8	0.0024%	YES	0.0026%	U
36	Butanenitrile	6	8636-C1	0.00019	8	0.0023%	YES	0.0026%	U
36	Butanenitrile	8	8636-D1	0.00020	8	0.0026%	YES	0.0026%	U
36	Butanenitrile	10	8636-E1	0.00019	8	0.0024%	YES	0.0026%	U
36	Butanenitrile	12	8636-F1	0.00021	8	0.0026%	123	0.0026%	1
36	Butanenitrile	14	8636-G1	0.00019		0.0024%	VES	0.0026%	u
36	Butanenitrile	16	8636-H1	0.00020	8	0.0024%	YES	0.0026%	U
36	Butanenitrile	2	8636-A2	0.00019	8	0.0024%	YES	0.0026%	U
36	Butanenitrile	4	8636-B2	0.00019		0.0024%	YES	0.0026%	u
36	Butanenitrile	6	8636-C2	0.00018		0.0023%	YES	0.0026%	u
36	Butanenitrile	8	8636-D2	0.00020	8	0.0025%	YES	0.0026%	U
36	Butanenitrile	10	8636-E2	0.00021	8	0.0026%	YES	0.0026%	U
36	Butanenitrile	12	8636-F2	0.00020		0.0025%	YES	0.0026%	U
36	Butanenitrile	14	8636-G2	0.00019	8	0.0023%	YES	0.0026%	U
36	Butanenitrile	16	8636-H2	0.00019	8	0.0023%	YES	0.0026%	U
37	Pentanenitrile	2	8635-A1	0.00012	6	0.0019%	YES	0.0035%	U
37	Pentanenitrile	4	8635-81	0.00012	6	0.0019%	YES	0.0035%	U
37	Pentanenitrile	6	8635-C1	0.00013	6	0.0022%	YES	0.0035%	U
37	Pentanenitrile	8	8635-D1	0.00013	6	0.0021%	YES	0.0035%	U
37	Pentanenitrile	10	8635-E1	0.00013	6	0.0021%	YES	0.0035%	U
37	Pentanenitrile	12	8635-F1	0.00012	6	0.0021%	YES	0.0035%	U
37	Pentanenitrile	14	8635-G1	0.00012	6	0.0020%	YES	0.0035%	U
37	Pentanenitrile	16	8635-H1	0.00012	6	0.0020%	YES	0.0035%	U
37	Pentanenitrile	2	8635-A2	0.00012	6	0.0021%	YES	0.0035%	U
37	Pentanenitrile	4	8635-82	0.00012	6	0.0020%	YES	0.0035%	U
37	Pentanenitrile	6	8635-C2	0.00013	6	0.0022%	YES	0.0035%	U
37	Pentanenitrile	8	8635-D2	0.00014	6	0.0023%	YES	0.0035%	U
37	Pentanenitrile	10	8635-E2	0.00013	6	0.0022%	YES	0.0035%	U
37	Pentanenitrile	12	8635-F2	0.00013	6	0.0021%	YES	0.0035%	U
37	Pentanenitrile	14	8635-G2	0.00013	6	0.0021%	YES	0.0035%	U

COPC#	Analyte	End Time (h)	Position	Conc. (ppm)	(ppm)	Conc. (% of OEL)	Measurement < DL/RL?	Approx DL/RL	Analytica Flags
37	Pentanenitrile	2	8636-A1	0.00021	6	0.0035%	YES	0.0035%	U
37	Pentanenitrile	4	8636-81	0.00020	6	0.0033%	YES	0.0035%	U
37	Pentanenitrile	6	8636-C1	0.00019	6	0.0032%	YES	0.0035%	U
37	Pentanenitrile	8	8636-D1	0.00021	6	0.0035%	YES	0.0035%	U
37	Pentanenitrile	10	8636-E1	0.00020	6	0.0033%	YES	0.0035%	U
37	Pentanenitrile	12	5636-F1	0.00020	6	0.0034%	YES	0.0035%	U
37	Pentanenitrile	14	8636-G1	0.00019	6	0.0032%	YES	0.0035%	U
37	Pentanenitrile	16	8636-H1	0.00020	6	0.0033%	YES	0.0035%	U
37	Pentanenitrile	2	8636-A2	0.00020	6	0.0033%	YES	0.0035%	U
37	Pentanenitrile	4	8636-82	0.00019	6	0.0032%	YES	0.0035%	U
37	Pentanenitrile	6	8636-C2	0.00019	6	0.0031%	YES	0.0035%	U
37	Pentanenitrile	8	8636-D2	0.00020	6	0.0034%	YES	0.0035%	u
37	Pentanenitrile	10	8636-E2	0.00021	6	0.0035%	YES	0.0035%	U
37	Pentanenitrile	12	8636-F2	0.00020	6	0.0034%	YES	0.0035%	U
37	Pentanenitrile	14	8636-G2	0.00019	6	0.0032%	YES	0.0035%	U
37	Pentanenitrile	16	8636-H2	0.00019	6	0.0032%	YES	0.0035%	U
38	Hexanenitrile	2	8635-A1	0.00009	6	0.0015%		0.0030%	j
38	Hexanenitrile	4	8635-81	0.00009	6	0.0015%	YES	0.0030%	u
38	Hexanenitrile	6	8635-C1	0.00010	6	0.0017%	YES	0.0030%	U
38	Hexanenitrile	8	8635-D1	0.00010	6	0.0017%	YES	0.0030%	U
38	Hexanenitrile	10	8635-E1	0.00010	6	0.0017%	YES	0.0030%	U
35	Hexanenitrile	12	8635-F1	0.00010	6	0.0017%	YES	0.0030%	U
35	Hexanenitrile	14	8635-G1	0.00009	6	0.0016%	YES	0.0030%	U
38	Hexanenitrile	16	8635-H1	0.00010	6	0.0016%	YES	0.0030%	U
38	Hexanenitrile	2	8635-A2	0.00010	6	0.0016%	YES	0.0030%	ш
3.6	Hexanenitrile	4	8635-82	0.00010	6	0.0016%	YES	0.0030%	u
38	Hexanenitrile	6	8635-C2	0.00010	6	0.0017%	YES	0.0030%	U
38	Hexanenitrile	8	8635-D2	0.00011	6	0.0019%	YES	0.0030%	u
38	Hexanenitrile	10	8635-E2	0.00010	6	0.0017%	YES	0.0030%	u
38	Hexanenitrile	12	8635-F2	0.00010	6	0.0017%	YES	0.0030%	U
38	Hexanenitrile	14	8635-G2	0.00010	6	0.0017%	YES	0.0030%	U
35	Hexanenitrile	16	8635-H2	0.00010	6	0.0017%	YES	0.0030%	U
38	Hexanenitrile	2	8636-A1	0.00018	6	0.0030%	YES	0.0030%	U
38	Hexanenitrile	4	8636-81	0.00017	6	0.0028%	YES	0.0030%	U
35	Hexanenitrile	6	8636-C1	0.00016	6	0.0027%	YES	0.0030%	u
38	Hexanenitrile	8	8636-D1	0.00018	6	0.0030%	YES	0.0030%	U
38	Hexanenitrile	10	8636-E1	0.00017	6	0.0028%	YES	0.0030%	u
38	Hexanenitrile	12	8636-F1	0.00017	6	0.0029%	YES	0.0030%	u
38	Hexanenitrile	14	8636-G1	0.00017	6	0.0028%	YES	0.0030%	и
38	Hexanenitrile	16	8636-H1	0.00017	6	0.0029%	YES	0.0030%	U
38	Hexanenitrile	2	8636-A2	0.00017	6	0.0028%	YES	0.0030%	u
38	Hexanenitrile	4	8636-82	0.00017	6	0.0028%	YES	0.0030%	u
38	Hexanenitrile	6	8636-C2	0.00016	6	0.0027%	YES	0.0030%	U
38	Hexanenitrile	8	8636-D2	0.00018	6	0.0029%	YES	0.0030%	U
35	Hexanenitrile	10	8636-E2	0.00018	6	0.0030%	YES	0.0030%	U
38	Hexanenitrile	12	8636-F2	0.00017	6	0.0029%	YES	0.0030%	U
35	Hexanenitrile	14	5636-G2	0.00017	6	0.0028%	YES	0.0030%	U
38	Hexanenitrile	16	8636-H2	0.00017	6	0.0028%	YES	0.0030%	U
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42	Ethylamine	2	8635-A1	0.0045	5	0.09%	YES	0.10%	
42	Ethylamine	4	8635-61	0.0044	5	0.09%	YES	0.10%	
42	Ethylamine	6	8635-C1	0.0045	5	0.09%	YES	0.10%	
42	Ethylamine	5	8635-D1	0.0045	5	0.09%	YES	0.10%	
42	Ethylamine	10	8635-E1	0.0046	5	0.09%	YES	0.10%	
42	Ethylamine	12	8635-F1	0.0046	5	0.09%	YES	0.10%	
42	Ethylamine	14	8635-G1	0.0046	5	0.09%	YES	0.10%	
42	Ethylamine	16	8635-H1	0.0046	5	0.09%	YES	0.10%	
42	Ethylamine	2	8635-A2	0.0043	5	0.09%	YES	0.10%	
42	Ethylamine	4	8635-82	0.0046	5	0.09%	YES	0.10%	
42	Ethylamine	6	8635-C2	0.0045	5	0.09%	YES	0.10%	
42	Ethylamine	8	8635-D2	0.0046	5	0.09%	YES	0.10%	

COPC#	Analyte	End Time	Position	Conc.	OEL (nom)	Conc.	Measurement	Approx	Analytical
42	Ethylamine	(h) 10	8635-E2	(ppm) 0.0047	(ppm) 5	(% of OEL) 0.09%	< DL/RL7 YES	DL/RL 0.10%	Flags
42	Ethylamine	12	8635-FZ	0.0047	5	0.09%	YES	0.10%	
42	Ethylamine	14	8635-G2	0.0046	5	0.09%	YES	0.10%	
42	Ethylamine	16	8635-H2	0.0046	5	0.09%	YES	0.10%	
42	Ethylamine	2	8636-A1	0.0044	5	0.09%	YES	0.10%	
42	Ethylamine	4	5636-51	0.0043	5	0.09%	YES	0.10%	
42	Ethylamine	6	8636-C1	0.0043	5	0.09%	YES	0.10%	
42	Ethylamine	8	8636-D1	0.0048	5	0.10%	YES	0.10%	
42	Ethylamine	10	8636-61	0.0049	5	0.10%	YES	0.10%	
42	Ethylamine	12	8636-F1	0.0049	5	0.10%	YES	0.10%	
42	Ethylamine	14	8636-G1	0.0046	5	0.09%	YES	0.10%	
42	Ethylamine	16	8636-H1	0.0046	5	0.09%	YES	0.10%	
42	Ethylamine	2	8636-A2	0.0046	5	0.09%	YES	0.10%	
42	Ethylamine	4	8636-82	0.0044	5	0.09%	YES	0.10%	
42	Ethylamine	6	8636-C2	0.0042	5	0.08%	YES	0.10%	
42	Ethylamine	8	8636-D2	0.0046	5	0.09%	YES	0.10%	
42	Ethylamine	10	8636-E2	0.0047	5	0.09%	YES	0.10%	
42	Ethylamine	12	8636-F2	0.0048	5	0.10%	YES	0.10%	
42	Ethylamine	14	8636-G2	0.0049	5	0.10%	YES	0.10%	
42	Ethylamine	16	8636-H2	0.0046	5	0.09%	YES	0.10%	
43	N-Nitrosodimethylamine	2	8635-A1	0.004522	0.0003	1507%		10.7%	D
43	N-Nitrosodimethylamine	4	8635-81	0.004654	0.0003	1551%		10.7%	D
43	N-Nitrosodimethylamine	6	8635-C1	0.004689	0.0003	1563%		10.7%	D
43	N-Nitrosodimethylamine	8	8635-D1	0.004913	0.0003	1638%		10.7%	D
43	N-Nitrosodimethylamine	10	8635-E1	0.004285	0.0003	1428%		10.7%	D
43	N-Nitrosodimethylamine	12	8635-F1	0.004457	0.0003	1486%		10.7%	D
43	N-Nitrosodimethylamine	14	8635-G1	0.004176	0.0003	1392%		10.7%	D
43	N-Nitrosodimethylamine	16	8635-H1	0.004013	0.0003	1338%		10.7%	D
43	N-Nitrosodimethylamine	2	8635-A2	0.000025	0.0003	8.33%	YES	10.7%	
43	N-Nitrosodimethylamine	4	8635-82	0.000024	0.0003	8.08%	YES	10.7%	
43	N-Nitrosodimethylemine	6	8635-C2	0.000025	0.0003	8.33%	YES	10.7%	
43	N-Nitrosodimethylamine	8	8635-D2	0.000025	0.0003	8.44%	YES	10.7%	
43	N-Nitrosodimethylamine	10	8635-E2	0.000025	0.0003	8.26%	YES	10.7%	
43	N-Nitrosodimethylamine	12	8635-F2	0.000024	0.0003	8.16%	YES	10.7%	
43	N-Nitrosodimethylamine	14	8635-G2	0.000024	0.0003	8.12%	YES	10.7%	
43	N-Nitrosodimethylamine	16	8635-H2	0.000024	0.0003	8.10%	YES	10.7%	
43	N-Nitrosodimethylamine	2	8636-A1	0.004309	0.0003	1436%		10.7%	D
43	N-Nitrosodimethylamine	4	8636-81	0.001729	0.0003	576%		10.7%	D
43	N-Nitrosodimethylamine	6	8636-C1	0.004633	0.0003	1544%		10.7%	D
43	N-Nitrosodimethylamine	8	8636-D1	0.004320	0.0003	1440%		10.7%	D
43	N-Nitrosodimethylamine	10	8636-E1	0.004690	0.0003	1563%		10.7%	D
43	N-Nitrosodimethylamine	12	8636-F1	0.003869	0.0003	1290%		10.7%	D
43	N-Nitrosodimethylamine	14	8636-G1	0.004039	0.0003	1346%		10.7%	D
43	N-Nitrosodimethylemine	16	8636-H1	0.003852	0.0003	1284%		10.7%	D
43	N-Nitrosodimethylemine	2	8636-A2	0.000031	0.0003	10.4%	YES	10.7%	
43	N-Nitrosodimethylamine	4	8636-82	0.000032	0.0003	10.7%	YES	10.7%	
43	N-Nitrosodimethylamine	6	8636-C2	0.000031	0.0003	10.2%	YES	10.7%	
43	N-Nitrosodimethylamine	8	8636-D2	0.000032	0.0003	10.6%	YES	10.7%	
43	N-Nitrosodimethylamine	10	\$636-E2	0.000032	0.0003	10.7%	YES	10.7%	
43	N-Nitrosodimethylamine	12	8636-F2	0.000031	0.0003	10.5%	YES	10.7%	
43	N-Nitrosodimethylamine	14	8636-G2	0.000032	0.0003	10.5%	YES	10.7%	
43	N-Nitrosodimethylamine	16	8636-H2	0.000032	0.0003	10.6%	YES	10.7%	
44	N-Nitrosodiethylamine	2	8635-A1	0.000023	0.0001	22.8%	YES	23.8%	
44	N-Nitrosodiethylamine	4	8635-81	0.000023	0.0001	22.7%	YES	23.8%	
44	N-Nitrosodiethylamine	6	8635-C1	0.000023	0.0001	23.1%	YES	23.8%	
44	N-Nitrosodiethylamine	8	8635-D1	0.000023	0.0001	22.7%	YES	23.8%	
44	N-Nitrosodiethylamine	10	8635-E1	0.000023	0.0001	22.8%	YES	23.8%	
44	N-Nitrosodiethylamine	12	8635-F1	0.000023	0.0001	23.0%	YES	23.8%	
44	N-Nitrosodiethylamine	14	8635-G1	0.000023	0.0001	23.0%	YES	23.8%	

COPC#	Analyte	End Time	Position	Conc.	OEL	Conc.	Measurement	Approx	Analytic
		(h)		(ppm)	(ppm)	(% of OEL)	< DL/RL7	DL/RL	Flags
44	N-Nitrosodiethylamine	2	8635-A2	0.000023	0.0001	23.5%	YES	23.8%	
44	N-Nitrosodiethylamine	4	8635-82	0.000023	0.0001	22.8%	YES	23.8%	
44	N-Nitrosodiethylamine	6	8635-C2	0.000023	0.0001	23.5%	YES	23.8%	
44	N-Nitrosodiethylamine	В	8635-D2	0.000024	0.0001	23.8%	YES	23.8%	
44	N-Nitrosodiethylamine	10	8635-E2	0.000023	0.0001	23.3%	YES	23.8%	
44	N-Nitrosodiethylamine	12	\$635-F2	0.000023	0.0001	23.0%	YES	23.5%	
44	N-Nitrosodiethylamine	14	8635-G2	0.000023	0.0001	22.9%	YES	23.8%	
44	N-Nitrosodiethylamine	16	8635-H2	0.000023	0.0001	22.8%	YES	23.8%	
44	N-Nitrosodiethylamine	2	8636-A1	0.000023	0.0001	22.6%	YES	23.8%	
44	N-Nitrosodiethylamine	4	8636-81	0.000023	0.0001	22.9%	YES	23.8%	
44	N-Nitrosodiethylamine	6	8636-C1	0.000022	0.0001	21.8%	YES	23.8%	
44	N-Nitrosodiethylamine	8	8636-D1	0.000023	0.0001	23.1%	YES	23.8%	
44	N-Nitrosodiethylamine	10	8636-E1	0.000023	0.0001	22.8%	YES	23.8%	
44	N-Nitrosodiethylamine	12	8636-F1	0.000023	0.0001	22.9%	YES	23.8%	
44	N-Nitrosodiethylamine	14	8636-G1	0.000023	0.0001	23.4%	YES	23.8%	
44	N-Nitrosodiethylamine	16	8636-H1	0.000023	0.0001	23.1%	YES	23.8%	
44	N-Nitrosodiethylamine	2	8636-A2	0.000023	0.0001	22.7%	YES	23.8%	
44	N-Nitrosodiethylamine	4	8636-82	0.000023	0.0001	23.2%	YES	23.8%	
44	N-Nitrosodiethylamine	6	8636-C2	0.000022	0.0001	22.1%	YES	23.8%	
44	N-Nitrosodiethylamine	8	8636-D2	0.000023	0.0001	23.1%	YES	23.5%	
44	N-Nitrosodiethylamine	10	8636-E2	0.000023	0.0001	23.2%	YES	23.8%	
44	N-Nitrosodiethylamine	12	8636-F2	0.000023	0.0001	22.8%	YES	23.8%	
44	N-Nitrosodiethylamine	14	8636-G2	0.000023	0.0001	22.9%	YES	23.8%	
44	N-Nitrosodiethylamine	16	8636-H2	0.000023	0.0001	23.0%	YES	23.8%	
45	N Nitracomethylathylanian	2	8635-A1	0.000030	0.0003	9.99%		9.18%	
45	N-Nitrosomethylethylamine	4	8635-B1		0.0003	12.0%		9.18%	
	N-Nitrosomethylethylamine			0.000036					
45	N-Nitrosomethylethylamine N-Nitrosomethylethylamine	6	8635-C1 8635-D1	0.000039	0.0003	13.0%		9.18%	
45	N-Nitrosomethylethylamine	10	8635-E1	0.000037	0.0003	12.4%		9.18%	
45	N-Nitrosomethylethylamine	12	8635-F1	0.000035	0.0003	11.7%		9.18%	
45	N-Nitrosomethylethylamine	14	8635-G1	0.000039	0.0003	12.9%		9.18%	
45	N-Nitrosomethylethylemine	16	8635-H1	0.000030	0.0003	10.1%		9.18%	
45	N-Nitrosomethylethylamine	2	8635-A2	0.000027	0.0003	9.07%	YES	9.18%	
45	N-Nitrosomethylethylamine	4	8635-82	0.000026	0.0003	8.79%	YES	9.18%	
45	N-Nitrosomethylethylamine	6	8635-C2	0.000027	0.0003	9.07%	YES	9.18%	
45	N-Nitrosomethylethylamine	8	8635-D2	0.000028	0.0003	9.18%	YES	9.18%	
45	N-Nitrosomethylethylamine	10	8635-E2	0.000027	0.0003	8.99%	YES	9.18%	
45	N-Nitrosomethylethylamine	12	8635-F2	0.000027	0.0003	8.88%	YES	9.18%	
45	N-Nitrosomethylethylamine	14	8635-G2	0.000027	0.0003	8.83%	YES	9.18%	
45	N-Nitrosomethylethylamine	16	8635-H2	0.000026	0.0003	8.81%	YES	9.18%	
45	N-Nitrosomethylethylamine	2	8636-A1	0.000033	0.0003	11.1%	160	9.18%	
45	N-Nitrosomethylethylamine	4	8636-81	0.000025	0.0003	8.44%	YES	9.18%	
45	N-Nitrosomethylethylamine	6	8636-C1	0.000040	0.0003	13.4%	160	9.18%	
45	N-Nitrosomethylethylamine	8	8636-D1	0.000038	0.0003	12.6%		9.18%	
45	N-Nitrosomethylethylemine	10	8636-E1	0.000042	0.0003	14.0%		9.18%	
45	N-Nitrosomethylethylemine	12	8636-F1	0.000036	0.0003	12.1%		9.18%	
45	N-Nitrosomethylethylamine	14	8636-G1	0.000037	0.0003	12.3%		9.15%	
45	N-Nitrosomethylethylamine	16	8636-H1	0.000033	0.0003	11.0%		9.18%	
45	N-Nitrosomethylethylamine	2	8636-A2	0.000025	0.0003	8.35%	YES	9.18%	
45	N-Nitrosomethylethylamine	4	8636-82	0.000026	0.0003	8.56%	YES	9.18%	
45	N-Nitrosomethylethylamine	6	8636-C2	0.000026	0.0003	8.16%	YES	9.18%	
45	N-Nitrosomethylethylamine	8	8636-D2	0.000024	0.0003	8.52%	YES	9.18%	
45	N-Nitrosomethylethylamine	10	8636-E2	0.000026	0.0003	8.56%	YES	9.18%	
45	N-Nitrosomethylethylamine						YES	9.18%	
45	N-Nitrosomethylethylamine	12	8636-F2	0.000025	0.0003	8.42%			
45	N-Nitrosomethylethylamine N-Nitrosomethylethylamine	14 16	8636-G2 8636-H2	0.000025	0.0003	8.43% 8.47%	YES	9.18%	
46	N-Nitrosomorpholine	2	8635-A1	0.000037	0.0006	6.22%		3.48%	
46	N-Nitrosomorpholine	4	8635-81	0.000037	0.0006	6.21%		3.48%	
46	N-Nitrosomorpholine	6	8635-C1	0.000033	0.0006	5.54%		3.48%	
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COPC#	Analyte	End Time	Position	Conc.	OEL	Conc.	Measurement	Approx	Analytical
		(h)		(ppm)	(ppm)	(% of OEL)	< DL/RL7	DL/RL	Flags
46	N-Nitrosomorpholine	10	8635-E1	0.000029	0.0006	4.87%		3.48%	
46	N-Nitrosomorpholine	12	8635-F1	0.000020	0.0006	3.37%	YES	3.48%	
46	N-Nitrasomorpholine	14	8635-G1	0.000020	0.0006	3.38%	YES	3.48%	
46	N-Nitrosomorpholine	16	8635-H1	0.000020	0.0006	3.36%	YES	3.48%	
46	N-Nitrosomorpholine	2	8635-A2	0.000021	0.0006	3.44%	YES	3.48%	
46	N-Nitrosomorpholine	4	\$635-62	0.000020	0.0006	3.34%	YES	3.45%	
46	N-Nitrosomorpholine	6	8635-C2	0.000021	0.0006	3.44%	YES	3.48%	
46	N-Nitrosomorpholine	8	8635-D2	0.000021	0.0006	3.48%	YES	3.48%	
46	N-Nitrosomorpholine	10	8635-E2	0.000020	0.0006	3.41%	YES	3.48%	
46	N-Nitrosomorpholine	12	8635-F2	0.000020	0.0006	3.37%	YES	3.48%	
46	N-Nitrosomorpholine	14	8635-G2	0.000020	0.0006	3.35%	YES	3.48%	
46	N-Nitrosomorpholine	16	8635-H2	0.000020	0.0006	3.34%	YES	3.48%	
46	N-Nitrosomorpholine	2	8636-A1	0.000033	0.0006	5.58%	335773	3.48%	
46	N-Nitrosomorpholine	4	8636-81	0.000019	0.0006	3.20%	YES	3.48%	
46	N-Nitrosomorpholine	6	8636-C1	0.000028	0.0006	4.64%		3.48%	
46	N-Nitrosomorpholine	8	8636-D1	0.000029	0.0006	4.78%		3.48%	
46	N-Nitrosomorpholine	10	8636-E1	0.000029	0.0006	4.87%		3.48%	
46	N-Nitrosomorpholine	12	8636-F1	0.000024	0.0006	3.97%		3.48%	
		14			0.0006				
46	N-Nitrosomorpholine		8636-G1	0.000022		3.74%	Name .	3.48%	
46	N-Nitrasomorpholine	16	8636-H1	0.000019	0.0006	3.24%	YES	3.48%	
46	N-Nitrosomorpholine	2	8636-A2	0.000019	0.0006	3.17%	YES	3.48%	
46	N-Nitrosomorpholine	4	8636-82	0.000019	0.0006	3.25%	YES	3.48%	
46	N-Nitrosomorpholine	6	8636-C2	0.000019	0.0006	3.10%	YES	3.48%	
46	N-Nitrosomorpholine	8	8636-D2	0.000019	0.0006	3.23%	YES	3.48%	
46	N-Nitrosomorpholine	10	8636-E2	0.000019	0.0006	3.25%	YES	3.48%	
46	N-Nitrosomorpholine	12	8636-F2	0.000019	0.0006	3.20%	YES	3.48%	
46	N-Nitrosomorpholine	14	8636-G2	0.000019	0.0006	3.20%	YES	3.48%	
46	N-Nitrosomorpholine	16	8636-H2	0.000019	0.0006	3.22%	YES	3.48%	
47 47	Tributyl phosphate Tributyl phosphate	2	8635-A1	0.00013	0.2	0.066%	YES	0.114%	U
47	Tributyl phosphate	6	8635-C1	0.00014	0.2	0.068%	YES	0.114%	U
47	Tributyl phosphate	8	8635-D1	0.00014	0.2	0.068%	YES	0.114%	U
47	Tributyl phosphate	10	8635-E1	0.00014	0.2	0.069%	YES	0.114%	U
47	Tributyl phosphate	12	8635-F1	0.00014	0.2	0.068%	YES	0.114%	U
47	Tributyl phosphate	14	8635-G1	0.00012	0.2	0.062%	YES	0.114%	u
47		16	8635-H1	0.00012	0.2	0.063%	YES	0.114%	U
47	Tributyl phosphate				0.2				u
	Tributyl phosphate	2	8635-A2	0.00013		0.066%	YES	0.114%	
47	Tributyl phosphate	4	8635-82	0.00014	0.2	0.068%	YES	0.114%	U
47	Tributyl phosphate	6	8635-C2	0.00014	0.2	0.068%	YES	0.114%	u
47	Tributyl phosphate	8	8635-02	0.00014	0.2	0.069%	YES	0.114%	U
47	Tributyl phosphate	10	8635-E2	0.00013	0.2	0.067%	YES	0.114%	U
47	Tributyl phosphate	12	8635-F2	0.00023	0.2	0.114%	YES	0.114%	U
47	Tributyl phosphate	14	8635-G2	0.00012	0.2	0.059%	YES	0.114%	U
47	Tributyl phosphate	16	8635-H2	0.00013	0.2	0.063%	YES	0.114%	U
47	Tributyl phosphate	2	8636-A1	0.00013	0.2	0.066%	YES	0.114%	U
47	Tributyl phosphate	4	8636-81	0.00013	0.2	0.064%	YES	0.114%	U
47	Tributyl phosphate	6	5636-C1	0.00013	0.2	0.065%	YES	0.114%	U
47	Tributyl phosphate	8	8636-D1	0.00014	0.2	0.070%	YES	0.114%	U
47	Tributyl phosphate	10	8636-E1	0.00014	0.2	0.070%	YES	0.114%	U
47	Tributyl phosphate	12	8636-F1	0.00013	0.2	0.065%	YES	0.114%	U
47	Tributyl phosphate	14						0.114%	
47	Tributyl phosphate	16	8636-H1	0.00013	0.2	0.064%	YES	0.114%	U
47	Tributyl phosphate	2	8636-A2	0.00014	0.2	0.071%	YES	0.114%	U
47	Tributyl phosphate	4	8636-82	0.00014	0.2	0.071%	YES	0.114%	U
47	Tributyl phosphate	6	8636-C2	0.00013	0.2	0.066%	YES	0.114%	U
47	Tributyl phosphate	8	8636-D2	0.00014	0.2	0.071%	YES	0.114%	U
47	Tributyl phosphate	10	8636-E2	0.00013	0.2	0.064%	YES	0.114%	U
47	Tributyl phosphate	12	8636-F2	0.00013	0.2	0.062%	YES	0.114%	U
47	Tributyl phosphate	14	8636-G2	0.00012	0.2	0.062%	YES	0.114%	Ü
47				0.00013	0.2				
70	Tributyl phosphate	16	8636-H2	0.00012	0.4	0.063%	YES	0.114%	U

5	OPC#	Analyte	End Time	Position	Conc.	OEL	Conc.	Measurement	Approx	Analytical
AB District butyliphosphenate A				11.150.75.75						Flags
1.5				8635-A1	0.00009	0.007	1.30%	YES		U
AB				*********	0.00000	0.007	1 226	ver		
AB										U
AB										U
AB										U
AB Distry bury/lobsphonate 16 8615-42 0.00009 0.007 1.24% YES 2.23%										U
Belluty bury/bosphonate 2 86/35-82 0.00009 0.007 1.30% YES 2.23%										U
AB Dibury bury/lons/phonate AB B835-B2 0.00009 0.007 1.32% YES 2.23%										U
AB										U
AB										U
AB										U
AB										U
48										U
45										U
AS										U
48 Dibutyl butylphosphonate 4 853-6-1 0.00009 0.007 1.24% YES 2.23% 48 Dibutyl butylphosphonate 8 8636-01 0.00010 0.007 1.27% YES 2.23% 48 Dibutyl butylphosphonate 10 8636-11 0.00009 0.007 1.16% YES 2.23% 48 Dibutyl butylphosphonate 14 0.0007 1.28% YES 2.23% 48 Dibutyl butylphosphonate 14 0.0007 1.25% YES 2.23% 48 Dibutyl butylphosphonate 2 8636-82 0.00010 0.007 1.40% YES 2.23% 48 Dibutyl butylphosphonate 4 8636-82 0.00010 0.007 1.38% YES 2.23% 48 Dibutyl butylphosphonate 8 8636-02 0.00010 0.007 1.38% YES 2.23% 45 Dibutyl butylphosphonate 8 8636-02 0.00010 0.007 1.29% YES										U
AB										U
AB										U
AB	48	Dibutyl butylphosphonate	6	8636-C1	0.00009	0.007	1.27%	YES	2.23%	U
AB	45	Dibutyl butylphosphonate	8	8636-D1	0.00010		1.36%	YES	2.23%	U
### Dibutyl butylphosphonate		Dibutyl butylphosphonate								U
AB		Dibutyl butylphosphonate		8636-F1	0.00009	0.007	1.28%	YES	2.23%	U
A8	48	Dibutyl butylphosphonate	14						2.23%	
A8	48	Dibutyl butylphosphonate	16	8636-H1	0.00009	0.007	1.25%	YES	2.23%	U
Dibuty buty phosphonate	48	Dibutyl butylphosphonate	2	8636-A2	0.00010	0.007	1.40%	YES	2.23%	U
Dibuty buty phosphonate	48	Dibutyl butylphosphonate	4	8636-82	0.00010	0.007	1.38%	YES	2.23%	U
Dibuty buty phosphonate	48	Dibutyl butylphosphonate	6	8636-C2	0.00009	0.007	1.29%	YES	2.23%	U
Dibutyl butylphosphonate 12 8636-F2 0.00008 0.007 1.21% YES 2.23% 45 Dibutyl butylphosphonate 14 8636-G2 0.00009 0.007 1.22% YES 2.23% 45 Dibutyl butylphosphonate 16 8636-H2 0.00009 0.007 1.22% YES 2.23% 45 Dibutyl butylphosphonate 16 8636-H2 0.00009 0.007 1.22% YES 2.23% 45 Dibutyl butylphosphonate 16 8636-H2 0.00009 1 0.029% YES 0.035% 51 Pyridine 4 8635-81 0.00029 1 0.029% YES 0.035% 51 Pyridine 8 8635-D1 0.00032 1 0.032% YES 0.035% 51 Pyridine 10 8635-E1 0.00032 1 0.032% YES 0.035% 51 Pyridine 12 8635-F1 0.00032 1 0.032% YES 0.035% 51 Pyridine 14 8635-G1 0.00029 1 0.029% YES 0.035% 51 Pyridine 14 8635-G1 0.00029 1 0.029% YES 0.035% 51 Pyridine 16 8635-H1 0.00031 1 0.031% YES 0.035% 51 Pyridine 2 8635-H2 0.00031 1 0.031% YES 0.035% 51 Pyridine 4 8635-G2 0.00031 1 0.031% YES 0.035% 51 Pyridine 4 8635-G2 0.00033 1 0.033% YES 0.035% 51 Pyridine 8 8635-D2 0.00033 1 0.033% YES 0.035% 51 Pyridine 8 8635-D2 0.00033 1 0.033% YES 0.035% 71 Pyridine 16 8635-F2 0.00033 1 0.033% YES 0.035% 71 Pyridine 16 8635-F2 0.00031 1 0.031% YES 0.035% 71 Pyridine 16 8635-F2 0.00031 1 0.031% YES 0.035% 71 Pyridine 16 8635-F2 0.00031 1 0.031% YES 0.035% 71 Pyridine 16 8635-F2 0.00031 1 0.031% YES 0.035% 71 Pyridine 16 8635-F1 0.00031 1 0.031% YES 0.035% 71 Pyridine 16 8635-F1 0.00031 1 0.031% YES 0.035% 71 Pyridine 16 8635-F1 0.00031 1 0.031% YES 0.035% 71 Pyridine 16 8635-F1 0.00031 1 0.00034 1 0.0004% YES 0.0005% 71 Pyridine 16 8636-F1 0.00022 1 0.00024 1 0.00004 YES 0.0005% 71 Pyridine 16 8636-F1 0.00002 1 0.0004% YES 0.0005% 71	48	Dibutyl butylphosphonate	8	8636-D2	0.00010	0.007	1.39%	YES	2.23%	U
AB	45	Dibutyl butylphosphonate	10	8636-E2	0.00009	0.007	1.26%	YES	2.23%	U
Dibutyl butylphosphonate 16	45	Dibutyl butylphosphonate	12	8636-F2	0.00008	0.007	1.21%	YES	2.23%	U
S1	45	Dibutyl butylphosphonate	14	8636-G2	0.00009	0.007	1.22%	YES	2.23%	U
51 Pyridine 4 8635-81 0.00029 1 0.029% YES 0.035% 51 Pyridine 6 8635-C1 0.00032 1 0.032% YES 0.035% 51 Pyridine 10 8635-C1 0.00032 1 0.032% YES 0.035% 51 Pyridine 12 8635-F1 0.00031 1 0.031% YES 0.035% 51 Pyridine 14 8635-G1 0.0009 1 0.031% YES 0.035% 51 Pyridine 16 8635-H1 0.0009 1 0.030% YES 0.035% 51 Pyridine 2 8635-A2 0.00031 1 0.031% YES 0.035% 51 Pyridine 4 8835-B2 0.00031 1 0.030% YES 0.035% 51 Pyridine 8 8835-C2 0.00033 1 0.035% YES 0.035% 51 Pyr	48	Dibutyl butylphosphonate	16	8636-H2	0.00009	0.007	1.22%	YES	2.23%	U
51 Pyridine 4 8635-81 0.00029 1 0.029% YES 0.035% 51 Pyridine 6 8435-C1 0.00032 1 0.032% YES 0.035% 51 Pyridine 10 8635-C1 0.00032 1 0.032% YES 0.035% 51 Pyridine 12 8635-F1 0.00031 1 0.031% YES 0.035% 51 Pyridine 14 8635-G1 0.00099 1 0.031% YES 0.035% 51 Pyridine 16 8635-H1 0.00099 1 0.030% YES 0.035% 51 Pyridine 16 8635-H1 0.00030 1 0.030% YES 0.035% 51 Pyridine 2 8635-B2 0.00031 1 0.030% YES 0.035% 51 Pyridine 6 8635-C2 0.00033 1 0.033% YES 0.035% 51										
51 Pyridine 6 8635-C1 0.00032 1 0.032% YES 0.035% 51 Pyridine 10 8635-C1 0.00032 1 0.032% YES 0.035% 51 Pyridine 12 8635-F1 0.00031 1 0.031% YES 0.035% 51 Pyridine 14 8635-G1 0.00029 1 0.029% YES 0.035% 51 Pyridine 16 8635-H1 0.00030 1 0.031% YES 0.035% 51 Pyridine 2 8635-A2 0.00031 1 0.031% YES 0.035% 51 Pyridine 4 8635-B2 0.00031 1 0.031% YES 0.035% 51 Pyridine 6 8635-C2 0.00033 1 0.033% YES 0.035% 51 Pyridine 8 8635-D2 0.00032 1 0.035% YES 0.035% 51 P	51	Pyridine	2	8635-A1	0.00029	1	0.029%	YES	0.035%	U
51 Pyridine 8 8635-D1 0.00032 1 0.032% YES 0.035% 51 Pyridine 10 8635-E1 0.00032 1 0.032% YES 0.035% 51 Pyridine 12 8635-E1 0.00031 1 0.031% YES 0.035% 51 Pyridine 14 8635-G1 0.00029 1 0.029% YES 0.035% 51 Pyridine 16 8635-H1 0.00030 1 0.030% YES 0.035% 51 Pyridine 2 8635-A2 0.00031 1 0.031% YES 0.035% 51 Pyridine 4 8635-B2 0.00033 1 0.033% YES 0.035% 51 Pyridine 8 8635-C2 0.00033 1 0.033% YES 0.035% 51 Pyridine 10 2635-E2 0.00032 1 0.035% YES 0.035% 51	51	Pyridine	4	8635-81	0.00029	1	0.029%	YES	0.035%	U
51 Pyridine 10 8635-E1 0.00032 1 0.032% YES 0.035% 51 Pyridine 12 8635-F1 0.00031 1 0.031% YES 0.035% 51 Pyridine 14 8635-G1 0.00039 1 0.029% YES 0.035% 51 Pyridine 16 8635-H1 0.00030 1 0.030% YES 0.035% 51 Pyridine 2 8635-A2 0.00031 1 0.030% YES 0.035% 51 Pyridine 4 3635-B2 0.00033 1 0.030% YES 0.035% 51 Pyridine 8 8635-D2 0.00033 1 0.033% YES 0.035% 51 Pyridine 10 8635-E2 0.00035 1 0.035% YES 0.035% 51 Pyridine 12 8635-H2 0.00031 1 0.032% YES 0.035% 51 <td< td=""><td>51</td><td>Pyridine</td><td>6</td><td>8635-C1</td><td>0.00032</td><td>1</td><td>0.032%</td><td>YES</td><td>0.035%</td><td>U</td></td<>	51	Pyridine	6	8635-C1	0.00032	1	0.032%	YES	0.035%	U
51 Pyridine 12 8635-F1 0.00031 1 0.031% YES 0.035% 51 Pyridine 14 8635-G1 0.00029 1 0.029% YES 0.035% 51 Pyridine 16 8635-H2 0.00030 1 0.030% YES 0.035% 51 Pyridine 2 8635-A2 0.00031 1 0.030% YES 0.035% 51 Pyridine 4 8635-B2 0.00033 1 0.030% YES 0.035% 51 Pyridine 8 8635-D2 0.00033 1 0.033% YES 0.035% 51 Pyridine 10 8635-D2 0.00032 1 0.035% YES 0.035% 51 Pyridine 12 8635-D2 0.00031 1 0.031% YES 0.035% 51 Pyridine 12 8635-D2 0.00031 1 0.031% YES 0.035% 51 <td< td=""><td>51</td><td>Pyridine</td><td>8</td><td>8635-D1</td><td>0.00032</td><td>1</td><td>0.032%</td><td>YES</td><td>0.035%</td><td>U</td></td<>	51	Pyridine	8	8635-D1	0.00032	1	0.032%	YES	0.035%	U
51 Pyridine 14 8635-G1 0.00029 1 0.029% YES 0.035% 51 Pyridine 16 8635-H1 0.00030 1 0.030% YES 0.035% 51 Pyridine 2 8635-A2 0.00031 1 0.031% YES 0.035% 51 Pyridine 4 8635-B2 0.00033 1 0.033% YES 0.035% 51 Pyridine 6 8635-C2 0.00033 1 0.033% YES 0.035% 51 Pyridine 10 8635-E2 0.00032 1 0.032% YES 0.035% 51 Pyridine 12 8635-E2 0.00031 1 0.031% YES 0.035% 51 Pyridine 12 8635-E2 0.00031 1 0.031% YES 0.035% 51 Pyridine 14 8635-G2 0.00031 1 0.031% YES 0.035% 51 <td< td=""><td>51</td><td>Pyridine</td><td>10</td><td>8635-E1</td><td>0.00032</td><td>1</td><td>0.032%</td><td>YES</td><td>0.035%</td><td>U</td></td<>	51	Pyridine	10	8635-E1	0.00032	1	0.032%	YES	0.035%	U
51 Pyridine 16 8635-H1 0.00030 1 0.030% YES 0.035% 51 Pyridine 2 8635-82 0.00031 1 0.030% YES 0.035% 51 Pyridine 4 8635-82 0.00033 1 0.030% YES 0.035% 51 Pyridine 6 8635-02 0.00033 1 0.033% YES 0.035% 51 Pyridine 8 8635-02 0.00032 1 0.033% YES 0.035% 51 Pyridine 10 8635-62 0.00032 1 0.032% YES 0.035% 51 Pyridine 14 8635-62 0.00031 1 0.031% YES 0.035% 51 Pyridine 16 8635-H2 0.00031 1 0.031% YES 0.035% 51 Pyridine 2 8636-B1 0.00024 1 0.024% YES 0.035% 51 P	51	Pyridine	12	8635-F1	0.00031	1	0.031%	YES	0.035%	U
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51 Pyridine 6 8635-C2 0.00033 1 0.033% YES 0.035% 51 Pyridine 8 8635-D2 0.00035 1 0.035% YES 0.035% 51 Pyridine 10 8635-E2 0.00032 1 0.032% YES 0.035% 51 Pyridine 12 8635-F2 0.00031 1 0.031% YES 0.035% 51 Pyridine 16 8635-H2 0.00031 1 0.031% YES 0.035% 51 Pyridine 2 8636-H2 0.00031 1 0.031% YES 0.035% 51 Pyridine 2 8636-H1 0.00024 1 0.024% YES 0.035% 51 Pyridine 4 8636-B1 0.00022 1 0.022% YES 0.035% 51 Pyridine 8 8636-D1 0.00024 1 0.024% YES 0.035% 51 Py	51			8635-82	0.00030		0.030%	YES		U
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51 Pyridine 12 8635-F2 0.00031 1 0.031% YES 0.035% 51 Pyridine 14 8635-G2 0.00032 1 0.032% YES 0.035% 51 Pyridine 16 8635-H2 0.00031 1 0.031% YES 0.035% 51 Pyridine 2 8636-A1 0.00024 1 0.024% YES 0.035% 51 Pyridine 4 8636-B1 0.00022 1 0.022% YES 0.035% 51 Pyridine 6 8636-C1 0.00022 1 0.022% YES 0.035% 51 Pyridine 8 8636-D1 0.00024 1 0.024% YES 0.035% 51 Pyridine 10 8636-E1 0.00023 1 0.023% YES 0.035% 51 Pyridine 14 8636-G1 0.00023 1 0.023% YES 0.035% 51	51		10	8635-E2	0.00032	1	0.032%	YES	0.035%	U
51 Pyridine 14 8635-G2 0.00032 1 0.032% YES 0.035% 51 Pyridine 16 8635-H2 0.00031 1 0.031% YES 0.035% 51 Pyridine 2 8636-A1 0.00024 1 0.024% YES 0.035% 51 Pyridine 4 8636-B1 0.00022 1 0.022% YES 0.035% 51 Pyridine 6 836-C1 0.00022 1 0.022% YES 0.035% 51 Pyridine 8 8636-D1 0.00024 1 0.024% YES 0.035% 51 Pyridine 10 8636-E1 0.00023 1 0.023% YES 0.035% 51 Pyridine 12 8636-E1 0.00023 1 0.023% YES 0.035% 51 Pyridine 14 8636-G1 0.00022 1 0.023% YES 0.035% 51 P				8635-F2						U
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51 Pyridine 8 8636-D2 0.00023 1 0.023% YES 0.035%										U
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51 Pyridine 10 8636-EZ 0.00024 1 0.024% TES 0.035% 51 Pyridine 12 8636-FZ 0.00023 1 0.023% YES 0.035%	51	Pyridine	10	8636-E2	0.00024	1	0.024%	YES	0.035%	U

COPC#		End Time	Decision.	Conc.	OEL	Conc.	Measurement	Approx	Analytica
COPC#	Analyte	(h)	Position	(ppm)	(ppm)	(% of OEL)	< DL/RL7	DL/RL	Flags
51	Pyridine	14	8636-G2	0.00022	1	0.022%	YES	0.035%	U
51	Pyridine	16	8636-H2	0.00022	1	0.022%	YES	0.035%	U
52	2,4-Dimethylpyridine	2	8635-A1	0.00018	0.5	0.037%	YES	0.052%	u
52	2,4-Dimethylpyridine	4	8635-81	0.00019	0.5	0.037%	YES	0.052%	u
52	2,4-Dimethylpyridine	6	8635-C1	0.00021	0.5	0.042%	YES	0.052%	U
52	2,4-Dimethylpyridine	8	8635-D1	0.00020	0.5	0.041%	YES	0.052%	U
52	2,4-Dimethylpyridine	10	8635-E1	0.00020	0.5	0.040%	YES	0.052%	U
52	2,4-Dimethylpyridine	12	8635-F1	0.00020	0.5	0.040%	YES	0.052%	U
52	2,4-Dimethylpyridine	14	8635-G1	0.00019	0.5	0.035%	YES	0.052%	U
52	2,4-Dimethylpyridine	16	8635-H1	0.00019	0.5	0.038%	YES	0.052%	U
52	2,4-Dimethylpyridine	2	8635-A2	0.00020	0.5	0.039%	YES	0.052%	u
52	2,4-Dimethylpyridine	4	8635-82	0.00019	0.5	0.039%	YES	0.052%	U
52	2,4-Dimethylpyridine	6	8635-C2	0.00021	0.5	0.042%	YES	0.052%	U
52	2,4-Dimethylpyridine	8	8635-D2	0.00022	0.5	0.045%	YES	0.052%	u
52	2,4-Dimethylpyridine	10	8635-€2	0.00021	0.5	0.041%	YES	0.052%	u
52	2,4-Dimethylpyridine	12	8635-F2	0.00020	0.5	0.040%	YES	0.052%	U
52	2,4-Dimethylpyridine	14	8635-G2	0.00020	0.5	0.040%	YES	0.052%	V
52	2,4-Dimethylpyridine	16	8635-H2	0.00020	0.5	0.040%	YES	0.052%	U
52	2,4-Dimethylpyridine	2	8636-A1	0.00026	0.5	0.052%	YES	0.052%	U
52	2,4-Dimethylpyridine	4	8636-81	0.00024	0.5	0.048%	YES	0.052%	U
52	2,4-Dimethylpyridine	6	8636-C1	0.00023	0.5	0.047%	YES	0.052%	U
52	2,4-Dimethylpyridine	5	8636-D1	0.00026	0.5	0.051%	YES	0.052%	U
52	2,4-Dimethylpyridine	10	5636-E1	0.00024	0.5	0.049%	YES	0.052%	U
52	2,4-Dimethylpyridine	12	8636-F1	0.00025	0.5	0.049%	YES	0.052%	U
52	2,4-Dimethylpyridine	14	8636-G1	0.00024	0.5	0.047%	YES	0.052%	u
52	2,4-Dimethylpyridine	16	8636-H1	0.00025	0.5	0.049%	YES	0.052%	U
52	2,4-Dimethylpyridine	2	8636-A2	0.00024	0.5	0.049%	YES	0.052%	U
52	2,4-Dimethylpyridine	4	8636-82	0.00024	0.5	0.047%	YES	0.052%	U
52	2,4-Dimethylpyridine	6	8636-C2	0.00023	0.5	0.046%	YES	0.052%	U
52	2,4-Dimethylpyridine	8	8636-D2	0.00025	0.5	0.050%	YES	0.052%	U
52	2,4-Dimethylpyridine	10	8636-E2	0.00026	0.5	0.052%	YES	0.052%	U
52	2,4-Dimethylpyridine	12	8636-F2	0.00025	0.5	0.049%	YES	0.052%	U
52	2,4-Dimethylpyridine	14	8636-G2	0.00024	0.5	0.047%	YES	0.052%	U
52	2,4-Dimethylpyridine	16	8636-H2	0.00024	0.5	0.047%	YES	0.052%	U

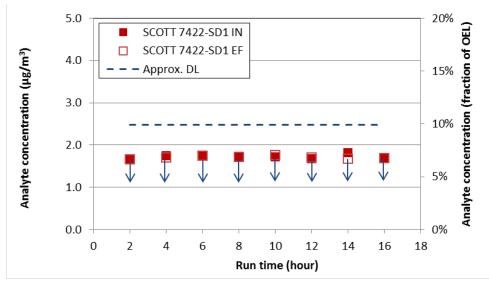
Appendix E

Plots of Other COPCs with Significant (2–10% of the OEL)
Detected Values

Appendix E

Plots of Other COPCs with Significant (2–10% of the OEL) Detected Values

Mercury (see Figure E.1) – The detection limit (DL) for mercury corresponds to approximately 9.9% of the OEL. All inlet concentrations measured throughout the testing period for both cartridges were less than the analytical DL. Correspondingly, all outlet concentrations were below the DL, indicating no evidence of breakthrough over the measured time period for either cartridge tested.



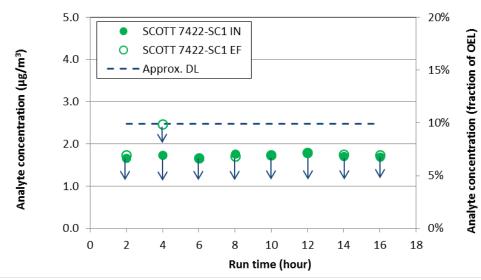


Figure E.1. Plot of Measured Mercury Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL. Outlet data points not visible are obscured by the inlet data points.

1,3-Butadiene (see Figure E.2) – The DL for 1,3-butadiene corresponds to approximately 2.0% of the OEL. All inlet and outlet concentration measurements were below the DL. Based on the data there is no evidence of breakthrough over the measured time period for either cartridge tested.

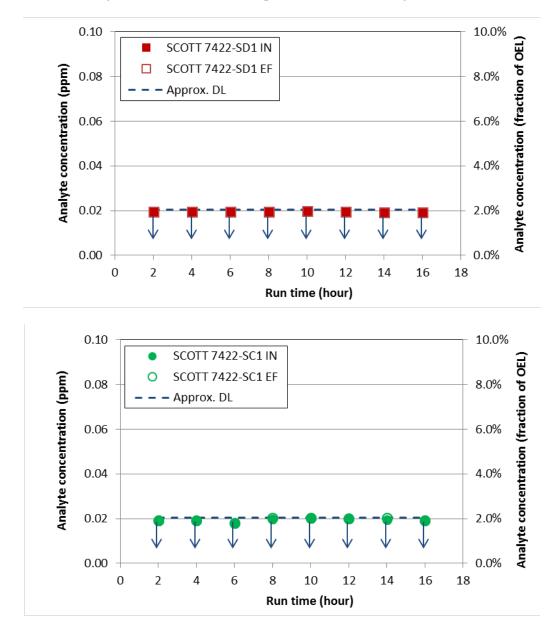


Figure E.2. Plot of Measured 1,3-Butadiene Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or reporting limit (RL). Outlet data points not visible are obscured by the inlet data points.

Formaldehyde (see Figure E.3) – The DL for formaldehyde corresponds to approximately 0.6% of its OEL. All inlet and outlet values measured for both respirator cartridges were less than 10% of the OEL; specifically less than 2.7% of the OEL. The initial inlet concentrations measured throughout the testing period for both cartridges were higher than the DL at the beginning of each cartridge test but decreased after the first inlet measurement. The latter outlet measurements for both cartridges were all less than the DL. This same trend was observed in prior tank analyses, suggesting possible environmental background interference, but this root cause still needs to be confirmed. Nevertheless, all outlet concentrations were less than 1% of the OEL which is significantly lower than 10%. Based on the data, there is no evidence of breakthrough over the measured time period for either cartridge tested.

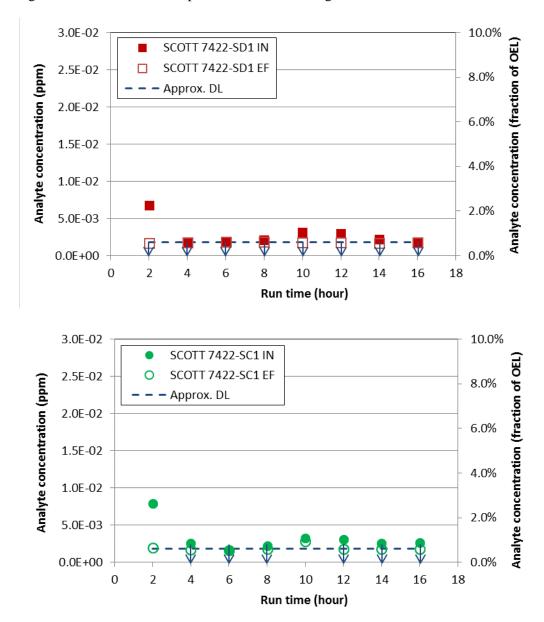


Figure E.3. Plot of Measured Formaldehyde Concentrations before the Inlets and after the Outlets of the two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL. Outlet data points not visible are obscured by the inlet data points.

Furan (see Figure E.4) – The DL for furan corresponds to approximately 5.7% of its OEL. All inlet and outlet values measured for the two respirator cartridges were less than 10% of the OEL; specifically less than the analytical DL. Based on the data, there is no evidence of breakthrough over the measured time period for either cartridge tested.

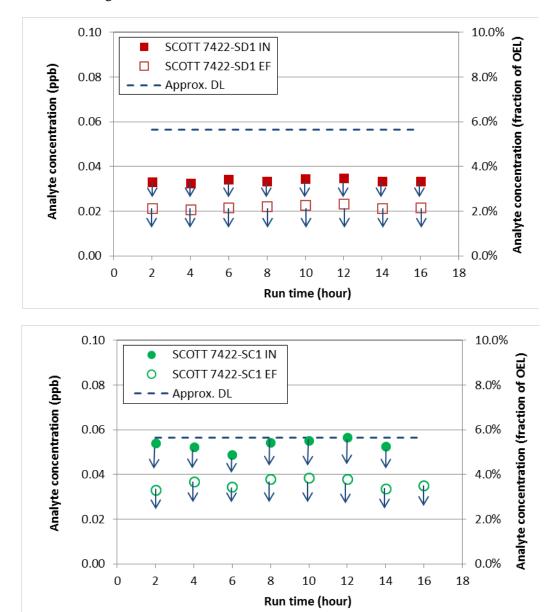
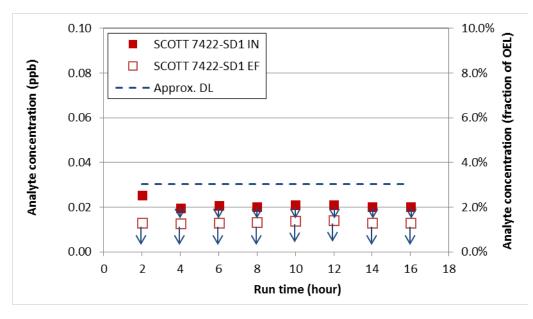


Figure E.4. Plot of Measured Furan Concentrations before the Inlets and after the Outlets of the two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL.

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¹ Inlet concentration results for furan and all substituted furans for the 16-hour period (SCOTT 7422-SC1) were not recorded because of either a broken sorbent tube or analytical laboratory malfunction.

2,3-Dihydrofuran (see Figure E.5) – The DL for 2,3-dihydrofuran corresponds to approximately 3.0% of its OEL. All inlet and outlet values measured for the two respirator cartridges were less than 10% of the OEL; specifically less than the analytical DL. One exception was the first inlet concentration (2 hour) for the SCOTT 7422-SD1 cartridge, which was greater than DL but still less than 3.0%. Based on the data, there is no evidence of breakthrough over the measured time period for either cartridge tested.



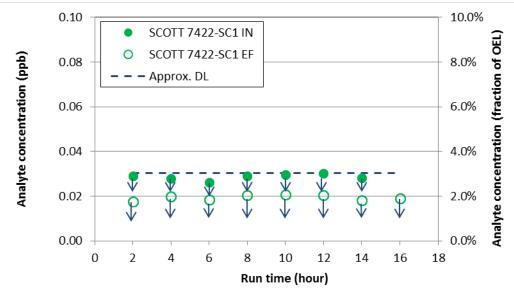


Figure E.5. Plot of Measured 2,3-Dihydrofuran Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL.

2,5-Dihydrofuran (see Figure E.6) – The DL for 2,5-dihydrofuran corresponds to approximately 4.3% of its OEL. All inlet and outlet values measured for the two respirator cartridges were less than 10% of the OEL; specifically less than the analytical DL. Based on the data, there is no evidence of breakthrough over the measured time period for either cartridge tested.

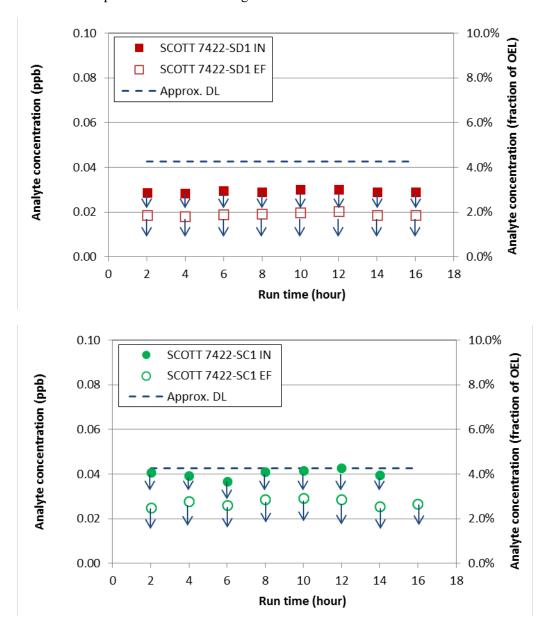


Figure E.6. Plot of Measured 2,5-Dihydrofuran Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL.

2-Methylfuran (see Figure E.7) – The DL for 2-methylfuran corresponds to approximately 3.6% of its OEL. All inlet and outlet values measured for the two respirator cartridges were less than 10% of the OEL; specifically less than the analytical DL. Based on the data, there is no evidence of breakthrough over the measured time period for either cartridge tested.

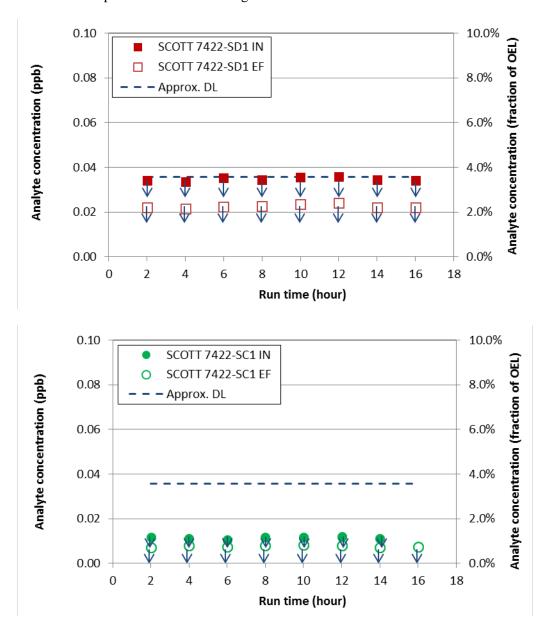


Figure E.7. Plot of Measured 2-Methylfuran Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL.

2,5-Dimethylfuran (see Figure E.8) – The DL for 2,5-dimethylfuran corresponds to approximately 5.0% of its OEL. All inlet and outlet values measured for the two respirator cartridges were less than 10% of the OEL; specifically less than the analytical DL. Based on the data, there is no evidence of breakthrough over the measured time period for either cartridge tested.

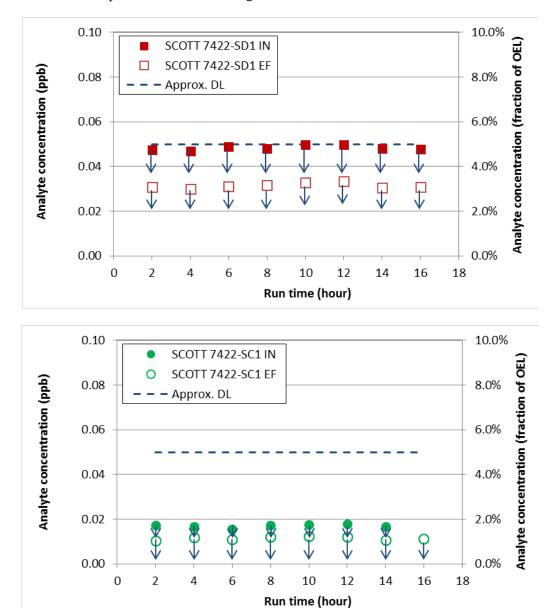


Figure E.8. Plot of Measured 2,5-Dimethylfuran Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL.

2-Pentylfuran (see Figure E.9) – The DL for 2-pentylfuran corresponds to approximately 4.2% of its OEL. All inlet and outlet values measured for the two respirator cartridges were less than 10% of the OEL; specifically less than the analytical DL. Based on the data, there is no evidence of breakthrough over the measured time period for either cartridge tested.

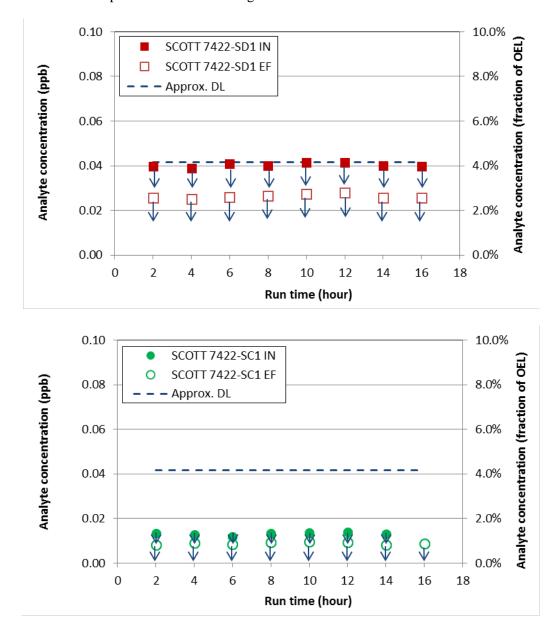


Figure E.9. Plot of Measured 2-Pentylfuran Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL.

2-Heptylfuran (see Figure E.10) – The DL for 2-heptylfuran corresponds to approximately 3.3% of its OEL. All inlet and outlet values measured for the two respirator cartridges were less than 10% of the OEL; specifically less than the analytical DL. Based on the data, there is no evidence of breakthrough over the measured time period for either cartridge tested.

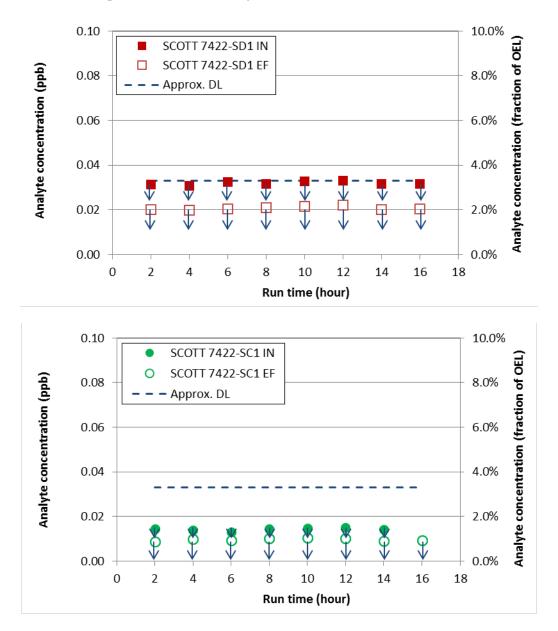


Figure E.10. Plot of Measured 2-Heptylfuran Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL.

2-Propylfuran (see Figure E.11) – The DL for 2-propylfuran corresponds to approximately 3.6% of its OEL. All inlet and outlet values measured for the two respirator cartridges were less than 10% of the OEL; specifically less than the analytical DL. Based on the data, there is no evidence of breakthrough over the measured time period for either cartridge tested.

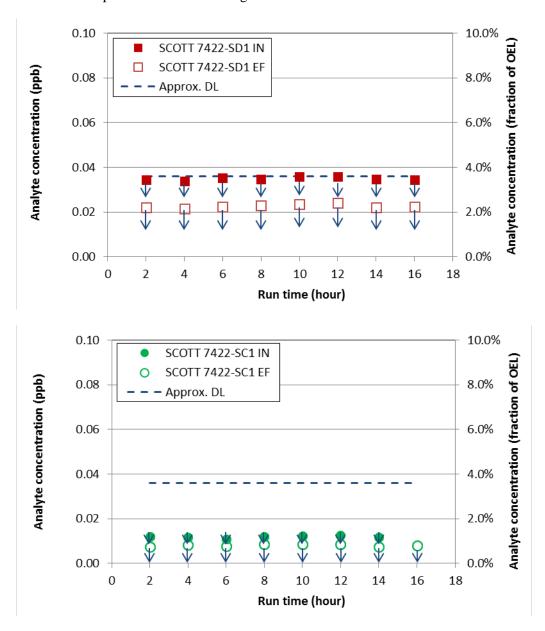


Figure E.11. Plot of Measured 2-Propylfuran Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL.

N-Nitrosomorpholine (see Figure E.12) – The DL for N-Nitrosomorpholine corresponds to approximately 3.5% of its OEL. The respirator cartridge inlet N-Nitrosomorpholine concentrations for both cartridges were as high 6.2% of the OEL at the beginning of testing and then decreased gradually, reaching the analytical DL by the end of testing for both cartridges. All outlet concentrations were less than the analytical reporting limit, indicating no breakthrough for either cartridge.

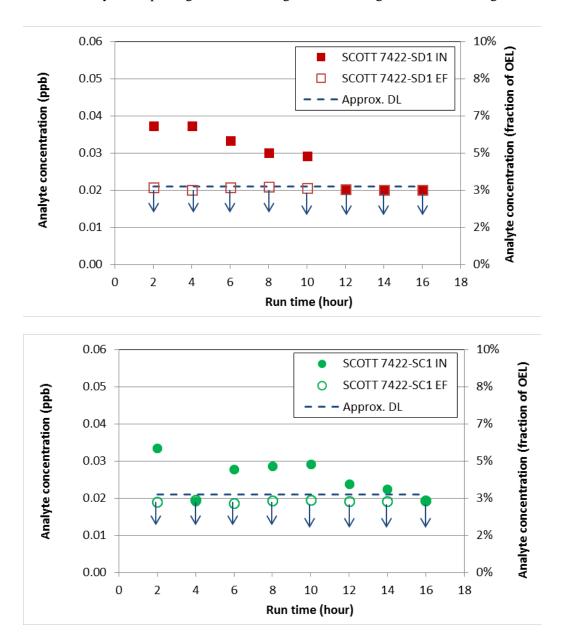


Figure E.12. Plot of Measured N-Nitrosomorpholine Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL. Outlet data points not visible are obscured by the inlet data points.

Dibutyl butylphosphonate (see Figure E.13) – The DL for dibutyl butylphosphonate corresponds to approximately 2.2% of its OEL. All inlet and outlet values measured for the two respirator cartridges were less than 10% of the OEL; specifically less than the analytical DL. Based on the data, there is no evidence of breakthrough over the measured time period for either cartridge tested.

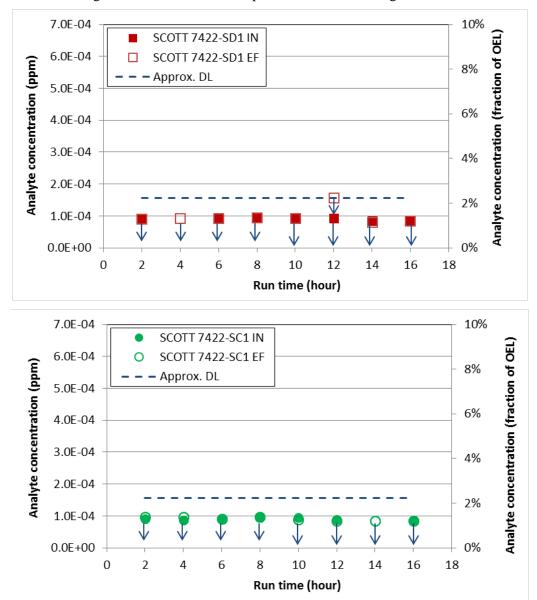


Figure E.13. Plot of Dibutyl butylphosphonate Concentrations before the Inlets and after the Outlets of the Two Respirator Cartridges Tested (SCOTT 7422-SD1 and SCOTT 7422-SC1). Data points noted with ↓ indicates measurements less than the DL or RL. Outlet data points not visible are obscured by the inlet data points.

Appendix F Historical Data Comparison

Appendix F

Historical Data Comparison

Headspace-characterization data and industrial-hygiene (IH) data—hereafter referred to as "TWINS HS" and "TWINS IH"—were obtained from the Tank Characterization Database via the Tank Waste Information Network System (TWINS). All vapor analysis results for the AW exhaust were obtained via a TWINS query on June 20, 2016, for TWINS HS,⁽¹⁾ and another query on December 21, 2016, for TWINS IH. More recent headspace data were also obtained from the Site-Wide Industrial Hygiene Database (SWIHD) by a query on December 21, 2016, that obtained all headspace data that were present as of that date, producing a set referred to as "SWIHD HS."

TWINS HS and TWINS IH data were eliminated from consideration if they were

- Quality Assurance samples (blanks, laboratory control samples, or spikes)
- Marked as suspect (Data Qualifier flag S)
- Associated with a contaminant in a blank, trip blank, or field blank (Data Qualifier flags B, T, or F)
- A laboratory control sample that was out of range (Data Qualifier flag a)
- An excessive relative percent difference (Data Qualifier flag c)
- Marked with a laboratory-defined flag whose meaning was not generically defined and might indicate a serious data-quality issue (Data Qualifier flags L or Y).

Flags a, c, and L were found only in the TWINS IH database, not in TWINS HS.

The exclusions for the SWIHD HS data set were similar:

- Having a laboratory control sample that was out of range (flag a)
- Associated with a contaminant in a blank (flags b or B)
- Having an excessive relative percent difference or relative standard deviation (flags c or d)
- Having an excessive difference between the sample result and its serial dilution (flag e)
- Having a failed mass spectrometer reading on the sample but not on its serial dilution (flag f)
- Marked with a laboratory-defined flag whose meaning was not generically defined and might indicate a serious data-quality issue (flags L or Y).

TWINS HS results associated with chemicals that were ambiguously identified (e.g., "alkane," "unknown," "C6 ketone") were deleted unless the molecular weight of one of the chemicals could be unambiguously specified (e.g., "octanenitrile and others" was kept). In these mixture cases, where the Chemical ID consisted of a Chemical Abstracts Service (CAS) number followed by M, the molecular weight of the identified chemical was added to the data record, the CAS number was used for the

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¹ No data have been added to TWINS HS since April 2005, so the June 2016 download does not require updating.

Chemical ID, and the concentration expressed in parts per million (absent from the downloaded database) was calculated from the concentration in milligrams per cubic meter at 25°C and the molecular weight.

A number of chemicals in the TWINS IH data set had "needs conversion" notes in the concentration (mg/m³ and ppm) columns, rather than numbers, and required calculations to supply these concentrations. The calculations made use of values already in the database: the molecular weight, the Reported Value and its units, and the Sample Volume and its units. A temperature of 25°C and a pressure of 1 atm were assumed.

The method described above was consistent with that used in PNNL-25880, except that measurements that were non-reports – less than the reporting limit (RL) for the analyte – were excluded in PNNL-25880 and were not excluded in this study.

For comparison to cartridge tests that were made using a gas stream from AW Stack, only exhaust measurements were appropriate. The TWINS HS database contained data identified as having the location "AW Ventilation", which were included as part of this analysis. The SWIHD HS database contained no data for the AW stack. The TWINS IH database required sorting, as described below, so that only exhaust data were used.

The AW Farm data in the TWINS IH database that were used in analysis all had the location "Primary Exhauster" listed. Data where the location was an individual tank name, "CAM Cabinet", or "Inside Farm" were not used. Survey titles for the "Inside Farm" location included descriptors such as "evaporator pot dump", "motor housing", or "inlet filter AWxxx", none of which seemed relevant to instack concentrations. Of the data with location "Primary Exhauster", all were used except for those whose survey title included "fan motor housing sampling." The data that were used almost all had "stack" somewhere in the survey title.

Maximum and average⁽¹⁾ exhaust concentrations were found for each analyte for the combined TWINS IH and SWIHD HS databases.⁽²⁾ These maxima and averages are given in Table F.1, together with Occupational Exposure Limits (OELs) and counts of the number of samples. The notation "n/a" is used where there were no measurements of the analyte.

Because the TWINS HS data were older, they were considered less representative of the vapors present during cartridge testing and the default was to omit them from calculations. However, in some cases the maximum and average for an analyte were considerably different if they were determined from a combination of all three databases. Whenever this was the case, the results for the three-database combination are tabulated along with those for the default two-database combination. That is, Table F.1 contains two rows for the chemical instead of one, with the upper row (the default two-database combination) in normal font and the lower row (the two-database combination) in italics. The two criteria for tabulating this extra information were (1) that at least one concentration for the chemical exceeded the OEL, and (2) that there was a significant difference between the value obtained from the two-database combination and that from the three-database combination. The significant difference could be either that there were data for the three-database set but no data for the two-database set (i.e., data only in TWINS HS), or that there was a difference of a factor of three or more, in either direction, between the value obtained from the two-database combination and that from the three-database combination.

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¹ Arithmetic average.

² Because the SWIHD HS database contained no stack data, the TWINS IH data were the only concentrations present in the two-database combination.

Because the reporting limits on concentrations in the historical database were generally higher than the reporting limits or detection limits in the cartridge tests, it was necessary to analyze data in a way that would let the effect of < RL historical data be recognized. To do this, it was assumed that all of the non-reports in the databases had concentrations equal to the measurements' RLs. Then the following rules were applied:

- 1. If a maximum value was a non-report, it was marked as "< RL" in the table.
- 2. If all the data contributing to an average were non-reports, the average was marked as "< RL".
- 3. If the presence of non-reports in an average caused it to be more than a factor of two different, in either direction, from the value it would have had if only the reported concentrations were averaged, the average was marked with an asterisk ("*").

 Table F.1. COPC Comparison to Historical AW Exhauster Measurements

							Historic	Historical Measurements ¹	nents1			Measureme	Measurements in this study	hpr
	COPC Number and Name	CAS Number	Boiling Point (°F)	Boiling Point Source	Occupational Exposure Limit (OEL)	Number of Values	Maximum Value	Average Value	Maximum Value (%0EL)	Average Value (%OEL)	Max Inlet (%0EL)	Avg. Inlet (%OEL)	Max outlet (%OEL)	Approx. DL ¹³ (%OEL)
Inorg	Inorganic													
1	Ammonia	7664-41-7	-28	Poling et al., 2007 ²	25 ppm	25	161	39.5	644%	158%	106%	94%	16.6%	2.49% (RL)
2	Nitrous Oxide	10024-97-2	-127	Poling et al., 2007	50 ppm	2 4	11.3 <rl< td=""><td>8 29*</td><td>23% <rl< td=""><td>16% 58%*</td><td></td><td>Not N</td><td>Not Measured</td><td></td></rl<></td></rl<>	8 29*	23% <rl< td=""><td>16% 58%*</td><td></td><td>Not N</td><td>Not Measured</td><td></td></rl<>	16% 58%*		Not N	Not Measured	
3	Mercury	7439-97-6	674	Poling et al., 2007	0.025 mg/m ³	24	0.296	0.0292	1184%	117%	7.29%	6.91%	<rl< td=""><td>9.89% (RL)</td></rl<>	9.89% (RL)
Hydr	Hydrocarbons													
4	1,3-Butadiene	106-99-0	24	Poling et al., 2007	1 ppm	27	<rl< td=""><td>0.0846</td><td><rl< td=""><td>8.5%</td><td><rl< td=""><td><rl< td=""><td><rl< td=""><td>2.03% (RL)</td></rl<></td></rl<></td></rl<></td></rl<></td></rl<>	0.0846	<rl< td=""><td>8.5%</td><td><rl< td=""><td><rl< td=""><td><rl< td=""><td>2.03% (RL)</td></rl<></td></rl<></td></rl<></td></rl<>	8.5%	<rl< td=""><td><rl< td=""><td><rl< td=""><td>2.03% (RL)</td></rl<></td></rl<></td></rl<>	<rl< td=""><td><rl< td=""><td>2.03% (RL)</td></rl<></td></rl<>	<rl< td=""><td>2.03% (RL)</td></rl<>	2.03% (RL)
2	Benzene	71-43-2	176	Poling et al., 2007	0.5 ppm	22	<rl< td=""><td>0.0022*</td><td><rl< td=""><td>0.44%*</td><td>0.044%</td><td>0.029%</td><td>TQ></td><td>0.026%</td></rl<></td></rl<>	0.0022*	<rl< td=""><td>0.44%*</td><td>0.044%</td><td>0.029%</td><td>TQ></td><td>0.026%</td></rl<>	0.44%*	0.044%	0.029%	TQ>	0.026%
9	Biphenyl	92-52-4	491	Poling et al., 2007	0.2 ppm	19	<rl< td=""><td><rl< td=""><td><rl< td=""><td><rl< td=""><td>1O></td><td>TO></td><td>TQ></td><td>0.14%</td></rl<></td></rl<></td></rl<></td></rl<>	<rl< td=""><td><rl< td=""><td><rl< td=""><td>1O></td><td>TO></td><td>TQ></td><td>0.14%</td></rl<></td></rl<></td></rl<>	<rl< td=""><td><rl< td=""><td>1O></td><td>TO></td><td>TQ></td><td>0.14%</td></rl<></td></rl<>	<rl< td=""><td>1O></td><td>TO></td><td>TQ></td><td>0.14%</td></rl<>	1O>	TO>	TQ>	0.14%
Alcohols	slot													
7	1-Butanol	71-36-3	243	NIOSH	20 ppm	14	1.29	0.305	%5'9	1.5%	1.06%	0.83%	0.007%	0.004%
8	Methanol	67-56-1	148	Poling et al., 2007	200 ppm	17	<rl< td=""><td>0.829*</td><td><rl< td=""><td>0.41%*</td><td></td><td>Not N</td><td>Not Measured</td><td></td></rl<></td></rl<>	0.829*	<rl< td=""><td>0.41%*</td><td></td><td>Not N</td><td>Not Measured</td><td></td></rl<>	0.41%*		Not N	Not Measured	
Ketones	nes													
6	2-Hexanone	591-78-6	262	NIOSH	5 ppm	22	<rl< td=""><td>0.00301</td><td><rl< td=""><td>%90.0</td><td>0.005%</td><td>0.004%</td><td>TQ></td><td>0.003%</td></rl<></td></rl<>	0.00301	<rl< td=""><td>%90.0</td><td>0.005%</td><td>0.004%</td><td>TQ></td><td>0.003%</td></rl<>	%90.0	0.005%	0.004%	TQ>	0.003%
10	3-Methyl-3-butene-2-one	814-78-8	208	CRC Handbook 1989 ⁴	0.02 ppm	0	n/a	n/a	e/u	n/a		Not Dete	Not Detected - TIC ¹²	
11	4-Methyl-2-hexanone	105-42-0	282	Predicted ACD/Labs ⁵	0.5 ppm	11	<rl< td=""><td><rl< td=""><td><rl< td=""><td><rl< td=""><td>TO></td><td><dl< td=""><td>TQ></td><td>0.031%</td></dl<></td></rl<></td></rl<></td></rl<></td></rl<>	<rl< td=""><td><rl< td=""><td><rl< td=""><td>TO></td><td><dl< td=""><td>TQ></td><td>0.031%</td></dl<></td></rl<></td></rl<></td></rl<>	<rl< td=""><td><rl< td=""><td>TO></td><td><dl< td=""><td>TQ></td><td>0.031%</td></dl<></td></rl<></td></rl<>	<rl< td=""><td>TO></td><td><dl< td=""><td>TQ></td><td>0.031%</td></dl<></td></rl<>	TO>	<dl< td=""><td>TQ></td><td>0.031%</td></dl<>	TQ>	0.031%
12	6-Methyl-2-heptanone	928-68-7	333	Predicted ACD/Labs	8 ppm	0	n/a	n/a	n/a	n/a		Not Det	Not Detected - TIC	
13	3-Buten-2-one	78-94-4	179	CRC Handbook 1989	0.2 ppm	18	<rl< td=""><td>0.00257</td><td><rl< td=""><td>1.3%</td><td>0.31%</td><td>0.26%</td><td>7O></td><td>0.092%</td></rl<></td></rl<>	0.00257	<rl< td=""><td>1.3%</td><td>0.31%</td><td>0.26%</td><td>7O></td><td>0.092%</td></rl<>	1.3%	0.31%	0.26%	7O>	0.092%
Alde	Aldehydes													
14	Formaldehyde	50-00-0	-6	NIOSH	0.3 ppm	32	<rl< td=""><td>0.0215*</td><td><rl< td=""><td>7.2%*</td><td>2.64%</td><td>1.01%</td><td>0.95%</td><td>0.61% (RL)</td></rl<></td></rl<>	0.0215*	<rl< td=""><td>7.2%*</td><td>2.64%</td><td>1.01%</td><td>0.95%</td><td>0.61% (RL)</td></rl<>	7.2%*	2.64%	1.01%	0.95%	0.61% (RL)
15	Acetaldehyde	75-07-0	69	NIOSH	25 ppm	17	<rl< td=""><td>0.0774*</td><td><rl< td=""><td>*%0</td><td>0.068%</td><td>0.063%</td><td>0.047%</td><td>0.005% (RL)</td></rl<></td></rl<>	0.0774*	<rl< td=""><td>*%0</td><td>0.068%</td><td>0.063%</td><td>0.047%</td><td>0.005% (RL)</td></rl<>	*%0	0.068%	0.063%	0.047%	0.005% (RL)
16	Butanal	123-72-8	167	Oxford safety data ⁶	25 ppm	30	<rl< td=""><td>0.0279*</td><td><rl< td=""><td>0.11%*</td><td>%600.0</td><td>0.005%</td><td>TO></td><td>0.001%</td></rl<></td></rl<>	0.0279*	<rl< td=""><td>0.11%*</td><td>%600.0</td><td>0.005%</td><td>TO></td><td>0.001%</td></rl<>	0.11%*	%600.0	0.005%	TO>	0.001%
17	2-Methyl-2-butenal	1115-11-3	244	United Nations ⁷	0.03 ppm	0	n/a	n/a	n/a	n/a		Not Det	Not Detected - TIC	
18	2-Ethyl-hex-2-enal	645-62-5	347	Predicted ACD/Labs	0.1 ppm	0	n/a	n/a	n/a	n/a		Not Det	Not Detected - TIC	

Table F.1. (continued)

							Historic	Historical Measurements ¹	nents ¹		_	Measureme	Measurements in this study	ndy
	COPC Number and Name	CAS Number	Boiling Point (°F)	Occupational Boiling Point Source Exposure Limit (OEL)		Number of Values	Number of Maximum Values Value	Average Value	Maximum Value (%OEL)	Average Value (%0EL)	Max Inlet (%0EL)	Avg. Inlet (%OEL)	Avg. Inlet Max outlet (%OEL) (%OEL)	Approx. DL ¹³ (%OEL)
Furans	ans													
19	Furan	110-00-9	88	Poling et al., 2007	1 ppb	22	<rl< td=""><td>1.27</td><td><rl< td=""><td>127%</td><td><dl< td=""><td><dl< td=""><td>TQ></td><td>2.65%</td></dl<></td></dl<></td></rl<></td></rl<>	1.27	<rl< td=""><td>127%</td><td><dl< td=""><td><dl< td=""><td>TQ></td><td>2.65%</td></dl<></td></dl<></td></rl<>	127%	<dl< td=""><td><dl< td=""><td>TQ></td><td>2.65%</td></dl<></td></dl<>	<dl< td=""><td>TQ></td><td>2.65%</td></dl<>	TQ>	2.65%
20	2,3-Dihydrofuran	1191-99-7	130	Alfa Aesar ⁸	1 ppb	6	≺RL	<rl< td=""><td>≺RL</td><td><rl< td=""><td>2.52%</td><td><dl< td=""><td>TO></td><td>3.03%</td></dl<></td></rl<></td></rl<>	≺RL	<rl< td=""><td>2.52%</td><td><dl< td=""><td>TO></td><td>3.03%</td></dl<></td></rl<>	2.52%	<dl< td=""><td>TO></td><td>3.03%</td></dl<>	TO>	3.03%
21	1 2,5-Dihydrofuran	1708-29-8	152	Aldrich ⁹	1 ppb	22	<rl< td=""><td>0.576*</td><td><rl< td=""><td>*%85</td><td>TQ></td><td><dl< td=""><td>TQ></td><td>4.26%</td></dl<></td></rl<></td></rl<>	0.576*	<rl< td=""><td>*%85</td><td>TQ></td><td><dl< td=""><td>TQ></td><td>4.26%</td></dl<></td></rl<>	*%85	TQ>	<dl< td=""><td>TQ></td><td>4.26%</td></dl<>	TQ>	4.26%
22	2 2-Methylfuran	534-22-5	147	Oxford safety data	1 ppb	22	<rl< td=""><td><rl< td=""><td><rl< td=""><td><rl< td=""><td>TO></td><td><dl< td=""><td>TQ></td><td>3.58%</td></dl<></td></rl<></td></rl<></td></rl<></td></rl<>	<rl< td=""><td><rl< td=""><td><rl< td=""><td>TO></td><td><dl< td=""><td>TQ></td><td>3.58%</td></dl<></td></rl<></td></rl<></td></rl<>	<rl< td=""><td><rl< td=""><td>TO></td><td><dl< td=""><td>TQ></td><td>3.58%</td></dl<></td></rl<></td></rl<>	<rl< td=""><td>TO></td><td><dl< td=""><td>TQ></td><td>3.58%</td></dl<></td></rl<>	TO>	<dl< td=""><td>TQ></td><td>3.58%</td></dl<>	TQ>	3.58%
23	3 2,5-Dimethylfuran	625-86-5	199	Alfa Aesar	1 ppb	8	<rl< td=""><td><rl< td=""><td><rl< td=""><td><rl< td=""><td>TO></td><td>TQ></td><td>1Q></td><td>4.99%</td></rl<></td></rl<></td></rl<></td></rl<>	<rl< td=""><td><rl< td=""><td><rl< td=""><td>TO></td><td>TQ></td><td>1Q></td><td>4.99%</td></rl<></td></rl<></td></rl<>	<rl< td=""><td><rl< td=""><td>TO></td><td>TQ></td><td>1Q></td><td>4.99%</td></rl<></td></rl<>	<rl< td=""><td>TO></td><td>TQ></td><td>1Q></td><td>4.99%</td></rl<>	TO>	TQ>	1Q>	4.99%
24	1 2-Ethyl-5-methylfuran	1703-52-2	246	Predicted ACD/Labs	1 ppb	0	n/a	n/a	n/a	n/a		Not De	Not Detected - TIC	
25	5 4-(1-Methylpropyl)-2,3-dihydrofuran	34379-54-9	328	Predicted ACD/Labs	1 ppb	0	n/a	n/a	n/a	n/a		Not De	Not Detected - TIC	
26	3-(1,1-Dimethylethyl)-2,3-dihydrofuran	34314-82-4	306	Predicted ACD/Labs	1 ppb	0	n/a	n/a	n/a	n/a		Not De	Not Detected - TIC	
27	7 2-Pentylfuran	3777-69-3	333	Alfa Aesar	1 ppb	6	<rl< td=""><td><rl< td=""><td><rl< td=""><td><rl< td=""><td>√DL</td><td><dl< td=""><td><dl< td=""><td>4.16%</td></dl<></td></dl<></td></rl<></td></rl<></td></rl<></td></rl<>	<rl< td=""><td><rl< td=""><td><rl< td=""><td>√DL</td><td><dl< td=""><td><dl< td=""><td>4.16%</td></dl<></td></dl<></td></rl<></td></rl<></td></rl<>	<rl< td=""><td><rl< td=""><td>√DL</td><td><dl< td=""><td><dl< td=""><td>4.16%</td></dl<></td></dl<></td></rl<></td></rl<>	<rl< td=""><td>√DL</td><td><dl< td=""><td><dl< td=""><td>4.16%</td></dl<></td></dl<></td></rl<>	√DL	<dl< td=""><td><dl< td=""><td>4.16%</td></dl<></td></dl<>	<dl< td=""><td>4.16%</td></dl<>	4.16%
28	3 2-Heptylfuran	3777-71-7	410	Alfa Aesar	1 ppb	8	<rl< td=""><td><rl< td=""><td><rl< td=""><td><rl< td=""><td>TO></td><td>TQ></td><td>TQ></td><td>3.31%</td></rl<></td></rl<></td></rl<></td></rl<>	<rl< td=""><td><rl< td=""><td><rl< td=""><td>TO></td><td>TQ></td><td>TQ></td><td>3.31%</td></rl<></td></rl<></td></rl<>	<rl< td=""><td><rl< td=""><td>TO></td><td>TQ></td><td>TQ></td><td>3.31%</td></rl<></td></rl<>	<rl< td=""><td>TO></td><td>TQ></td><td>TQ></td><td>3.31%</td></rl<>	TO>	TQ>	TQ>	3.31%
29	2-Propylfuran	4229-91-8	231	Alfa Aesar	1 ppb	6	<rl< td=""><td><rl< td=""><td><rl< td=""><td><rl< td=""><td><dl< td=""><td><dl< td=""><td>TQ></td><td>3.60%</td></dl<></td></dl<></td></rl<></td></rl<></td></rl<></td></rl<>	<rl< td=""><td><rl< td=""><td><rl< td=""><td><dl< td=""><td><dl< td=""><td>TQ></td><td>3.60%</td></dl<></td></dl<></td></rl<></td></rl<></td></rl<>	<rl< td=""><td><rl< td=""><td><dl< td=""><td><dl< td=""><td>TQ></td><td>3.60%</td></dl<></td></dl<></td></rl<></td></rl<>	<rl< td=""><td><dl< td=""><td><dl< td=""><td>TQ></td><td>3.60%</td></dl<></td></dl<></td></rl<>	<dl< td=""><td><dl< td=""><td>TQ></td><td>3.60%</td></dl<></td></dl<>	<dl< td=""><td>TQ></td><td>3.60%</td></dl<>	TQ>	3.60%
30	2-Octylfuran	4179-38-8	452	Predicted ACD/Labs	1 ppb	0	n/a	n/a	n/a	n/a		Not De	Not Detected - TIC	
31	1 2-(3-Oxo-3-phenylprop-1-enyl)furan	717-21-5	909	Predicted ACD/Labs	1 ppb	0	n/a	n/a	n/a	n/a		Not De	Not Detected - TIC	
32	2 (2-Methyl-6-oxoheptyl)furan	51595-87-0	Not available	Not available	1 ppb	0	n/a	n/a	n/a	n/a		Not De	Not Detected - TIC	
Pht	Phthalates													
33	3 Diethylphthalate	84-66-2	563	NIOSH	5 mg/m ³	17	0.0196	0.00251	0.39%	0.05%	-OL	¹O≻	-TO>	0.062%

Table F.1. (continued)

					_		Historica	Historical Measurements ¹	nents1		_	Measureme	Measurements in this study	ndy
	COPC Number and Name	CAS Number	Boiling Point (°F)	Boiling Point Source	Occupational Exposure Limit (OEL)	Number of Maximum Values Value	Maximum Value	Average Value	Maximum Value (%OEL)	Average Value (%OEL)	Max Inlet (%0EL)	Avg. Inlet (%0EL)	Max outlet (%OEL)	Approx. DL ¹³ (%OEL)
Nitriles	es						1							
34	Acetonitrile	75-05-8	179	HSOIN	20 ppm	18	0.385	0.0823	1.9%	0.41%	0.50%	0.078%	1.28%	0.001%
35	Propanenitrile	107-12-0	207	NIOSH	mdd 9	18	<rl< td=""><td>0.00219</td><td><rl< td=""><td>0.04%</td><td>0.006%</td><td>0.005%</td><td><dl< td=""><td>0.004%</td></dl<></td></rl<></td></rl<>	0.00219	<rl< td=""><td>0.04%</td><td>0.006%</td><td>0.005%</td><td><dl< td=""><td>0.004%</td></dl<></td></rl<>	0.04%	0.006%	0.005%	<dl< td=""><td>0.004%</td></dl<>	0.004%
36	Butanenitrile	109-74-0	244	NIOSH	8 ppm	17	<rl< td=""><td>0.00246</td><td><rl< td=""><td>0.03%</td><td>0.003%</td><td>0.002%</td><td>1Q></td><td>0.003%</td></rl<></td></rl<>	0.00246	<rl< td=""><td>0.03%</td><td>0.003%</td><td>0.002%</td><td>1Q></td><td>0.003%</td></rl<>	0.03%	0.003%	0.002%	1Q>	0.003%
37	Pentanenitrile	110-59-8	284	Alfa Aesar	mdd 9	17	0.00495	0.000861*	0.08%	0.01%*	TO>	<dl< td=""><td><dl< td=""><td>0.004%</td></dl<></td></dl<>	<dl< td=""><td>0.004%</td></dl<>	0.004%
38	Hexanenitrile	628-73-9	328	Predicted ACD/Labs	mdd 9	17	0.00757	0.00134*	0.13%	0.02%*	0.002%	0.002%	TO>	0.003%
39	Heptanenitrile	629-08-3	368	Alfa Aesar	mdd 9	0	n/a	n/a	n/a	n/a		Not Det	Not Detected - TIC	
40	2-Methylene butanenitrile	1647-11-6	Not available	Not available	0.3 ppm	0	n/a	n/a	n/a	n/a		Not Det	Not Detected - TIC	
41	2,4-Pentadienenitrile	1615-70-9	278	Predicted ACD/Labs	0.3 ppm	0	n/a	n/a	n/a	n/a		Not Det	Not Detected - TIC	
Amines	sə													
42	Ethylamine	75-04-7	62	Poling et al., 2007	S ppm	17	0.609	0.0644*	12%	1.3%*	<rl< td=""><td><rl< td=""><td><rl< td=""><td>0.099% (RL)</td></rl<></td></rl<></td></rl<>	<rl< td=""><td><rl< td=""><td>0.099% (RL)</td></rl<></td></rl<>	<rl< td=""><td>0.099% (RL)</td></rl<>	0.099% (RL)
Nitro	Nitrosamines													
43	N-Nitrosodimethylamine	62-75-9	306	NIOSH	0.3 ppb	24	6.49	2.89	2163%	%896	1638%	1399%	<rl< td=""><td>10.7% (RL)</td></rl<>	10.7% (RL)
44	N-Nitrosodiethylamine	55-18-5	351	Oxford safety data	0.1 ppb	24	<rl< td=""><td>0.1*</td><td><rl< td=""><td>100%*</td><td><rl< td=""><td><rl< td=""><td><rl< td=""><td>23.8% (RL)</td></rl<></td></rl<></td></rl<></td></rl<></td></rl<>	0.1*	<rl< td=""><td>100%*</td><td><rl< td=""><td><rl< td=""><td><rl< td=""><td>23.8% (RL)</td></rl<></td></rl<></td></rl<></td></rl<>	100%*	<rl< td=""><td><rl< td=""><td><rl< td=""><td>23.8% (RL)</td></rl<></td></rl<></td></rl<>	<rl< td=""><td><rl< td=""><td>23.8% (RL)</td></rl<></td></rl<>	<rl< td=""><td>23.8% (RL)</td></rl<>	23.8% (RL)
45	N-Nitrosomethylethylamine	10595-95-6	310	Predicted ACD/Labs	0.3 ppb	24	<rl< td=""><td>0.12*</td><td><rl< td=""><td>*%04</td><td>14.0%</td><td>11.8%</td><td><rl< td=""><td>9.18% (RL)</td></rl<></td></rl<></td></rl<>	0.12*	<rl< td=""><td>*%04</td><td>14.0%</td><td>11.8%</td><td><rl< td=""><td>9.18% (RL)</td></rl<></td></rl<>	*%04	14.0%	11.8%	<rl< td=""><td>9.18% (RL)</td></rl<>	9.18% (RL)
46	N-Nitrosomorpholine	59-89-2	435	Oxford safety data	0.6 ppb	24	<rl< td=""><td>0.0917*</td><td><rl< td=""><td>15%*</td><td>6.22%</td><td>4.50%</td><td><rl< td=""><td>3.48% (RL)</td></rl<></td></rl<></td></rl<>	0.0917*	<rl< td=""><td>15%*</td><td>6.22%</td><td>4.50%</td><td><rl< td=""><td>3.48% (RL)</td></rl<></td></rl<>	15%*	6.22%	4.50%	<rl< td=""><td>3.48% (RL)</td></rl<>	3.48% (RL)
Orga	Organophospates													
47	Tributyl phosphate	126-73-8	552	NIOSH	0.2 ppm	19	<rl< td=""><td><rl< td=""><td><rl< td=""><td><rl< td=""><td>ZDL <</td><td><dl< td=""><td><dl< td=""><td>0.11%</td></dl<></td></dl<></td></rl<></td></rl<></td></rl<></td></rl<>	<rl< td=""><td><rl< td=""><td><rl< td=""><td>ZDL <</td><td><dl< td=""><td><dl< td=""><td>0.11%</td></dl<></td></dl<></td></rl<></td></rl<></td></rl<>	<rl< td=""><td><rl< td=""><td>ZDL <</td><td><dl< td=""><td><dl< td=""><td>0.11%</td></dl<></td></dl<></td></rl<></td></rl<>	<rl< td=""><td>ZDL <</td><td><dl< td=""><td><dl< td=""><td>0.11%</td></dl<></td></dl<></td></rl<>	ZDL <	<dl< td=""><td><dl< td=""><td>0.11%</td></dl<></td></dl<>	<dl< td=""><td>0.11%</td></dl<>	0.11%
48	Dibutyl butylphosphonate	78-46-6	602	Predicted ACD/Labs	0.007 ppm	19	<rl< td=""><td>≺RL</td><td><rl< td=""><td><rl< td=""><td>10></td><td><dl< td=""><td>Φ,</td><td>2.23%</td></dl<></td></rl<></td></rl<></td></rl<>	≺RL	<rl< td=""><td><rl< td=""><td>10></td><td><dl< td=""><td>Φ,</td><td>2.23%</td></dl<></td></rl<></td></rl<>	<rl< td=""><td>10></td><td><dl< td=""><td>Φ,</td><td>2.23%</td></dl<></td></rl<>	10>	<dl< td=""><td>Φ,</td><td>2.23%</td></dl<>	Φ,	2.23%
Halog	Halogenated													
49	Chlorinated Biphenyls	Varies	Varies	Varies	1 mg/m³	0	n/a	n/a	n/a	n/a		Not Det	Not Detected - TIC	
20	2-Fluoropropene	1184-60-7	-11	SynQuest ¹¹	0.1 ppm	0	n/a	n/a	n/a	n/a		Not Det	Not Detected - TIC	

Table F.1. (continued)

							Historic	Historical Measurements ¹	nents ¹		_	Measuremer	Measurements in this study	hpr
	COPC Number and Name	CAS Number	Boiling Point (°F)	Occupational Boiling Point Source Exposure Limit Values Value (OEL)	Occupational Exposure Limit (OEL)	Number of Values	Maximum Value	Average Value	Maximum Value (%OEL)	Average Value (%OEL)	Max Inlet (%OEL)		Avg. Inlet Max outlet (%OEL)	Approx. DL ¹³ (%OEL)
Pyr	Pyridines													
51	51 Pyridine	110-86-1	240	HSOIN	1 ppm	29	<rl< td=""><td>0.0125</td><td><rl< td=""><td>1.3%</td><td><rl< td=""><td><rl< td=""><td><rl< td=""><td>0.035% (RL)</td></rl<></td></rl<></td></rl<></td></rl<></td></rl<>	0.0125	<rl< td=""><td>1.3%</td><td><rl< td=""><td><rl< td=""><td><rl< td=""><td>0.035% (RL)</td></rl<></td></rl<></td></rl<></td></rl<>	1.3%	<rl< td=""><td><rl< td=""><td><rl< td=""><td>0.035% (RL)</td></rl<></td></rl<></td></rl<>	<rl< td=""><td><rl< td=""><td>0.035% (RL)</td></rl<></td></rl<>	<rl< td=""><td>0.035% (RL)</td></rl<>	0.035% (RL)
53	52 2,4-Dimethylpyridine	108-47-4	318	Alfa Aesar	0.5 ppm	28	<rl< td=""><td>0.00887*</td><td><rl< td=""><td>1.8%*</td><td><rl< td=""><td><rl< td=""><td><rl< td=""><td>0.052% (RL)</td></rl<></td></rl<></td></rl<></td></rl<></td></rl<>	0.00887*	<rl< td=""><td>1.8%*</td><td><rl< td=""><td><rl< td=""><td><rl< td=""><td>0.052% (RL)</td></rl<></td></rl<></td></rl<></td></rl<>	1.8%*	<rl< td=""><td><rl< td=""><td><rl< td=""><td>0.052% (RL)</td></rl<></td></rl<></td></rl<>	<rl< td=""><td><rl< td=""><td>0.052% (RL)</td></rl<></td></rl<>	<rl< td=""><td>0.052% (RL)</td></rl<>	0.052% (RL)
Org	Organonitrites													
53	3 Methyl nitrite	624-91-9	10	Oxford safety data	0.1 ppm	0	n/a	n/a	n/a	n/a		Not Det	Not Detected - TIC	
54	4 Butyl nitrite	544-16-1	172	Alfa Aesar	0.1 ppm	0	n/a	n/a	n/a	n/a		Not Det	Not Detected - TIC	
Org	Organonitrates													
55	5 Butyl nitrate	928-45-0	276	Predicted ACD/Labs	2.5 ppm	0	n/a	n/a	n/a	n/a		Not Det	Not Detected - TIC	
99	5 1,4-Butanediol, dinitrate	3457-91-8	499	Predicted ACD/Labs	0.05 ppm	0	n/a	n/a	n/a	n/a		Not Det	Not Detected - TIC	
57	7 2-Nitro-2-methylpropane	594-70-7	760	Alfa Aesar	0.3 ppm	0	n/a	n/a	n/a	n/a		Not Det	Not Detected - TIC	
58	3 1,2,3-Propanetriol, 1,3-dinitrate	623-87-0	338	Predicted ACD/Labs	0.05 ppm	0	n/a	n/a	e/u	e/u		Not Det	Not Detected - TIC	
Isoc	Isocyanates													
29	Methyl Isocyanate	624-83-9	103	NIOSH	0.02 ppm	1	<rl< td=""><td>≺RL</td><td><rl< td=""><td><rl< td=""><td></td><td>Not Det</td><td>Not Detected - TIC</td><td></td></rl<></td></rl<></td></rl<>	≺RL	<rl< td=""><td><rl< td=""><td></td><td>Not Det</td><td>Not Detected - TIC</td><td></td></rl<></td></rl<>	<rl< td=""><td></td><td>Not Det</td><td>Not Detected - TIC</td><td></td></rl<>		Not Det	Not Detected - TIC	
_														

Historical data from TWINS industrial hygiene vapor database and SWIH database; see text for links and dates of queries. Values in italics include those data plus data from the TWINS headspace database, all samples

^{*} indicates that the value of the average would differ by a factor of 2 or more (in either direction) if non-reports were excluded.
"< RL" indicates that all pertinent measurements of the analyte were less than the reporting limit
Plain font in the table indicates that only the recent databases (SWIHD headspace and TWINS Industrial Hygiene) were included. Italics mean that the pre-2006 TWINS headspace data were also included. "n/a" indicates no historical data was found in the databases

Poling, B. E.; Prausnitz, J. M.; O'Connell, J. P. The Properties of Gases and Liquids. McGraw Hill, 2007.

NIOSH: National Institute of Occupational Safety and Health

CRC Handbook of Chemistry and Physics, CRC Press, 1989.

ACD/Labs software http://www.acdlabs.com/products/percepta/predictors.php

Oxford safety data from The Physical and Theoretical Chemistry Laboratory at Oxford University

Food and Agriculture Organization of the United Nations

⁸ Alfa Aesar: https://www.alfa.com/

Aldrich: https://www.sigmaaldrich.com/

¹⁰ OSHA: Occupational Safety and Health Administration

¹¹ SynQuest: http://synquestlabs.com/product/id/8330.html

¹² TIC. Tentatively Identified Compounds that were not observed in this study using the specified analytical methods.

¹³ Approximate Detection Limit (DL) is calculated using the reported detection limit (or reporting limit) from the analytical laboratory and the average volume (from flowrate x time) of vapor exposed to the sorbent tube.



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