AIR CP_ 100810928 _RP_
20400778_
Stack Test

STERIS®

July 28, 2016

RECEIVED
AUG 03 2016
PROGRAM SUPPORT
SECTION

SENT VIA FEDEX

Mr. Jon Williams
Texas Commission on Environmental Quality
401 E. Franklin Blvd., Suite 560
El Paso, Texas 79901-1206

AIR PERMITS DIVISION
AUG 02 2016
RECEIVED

SUBMISSION OF ANNUAL PERFORMANCE TEST RESULTS AND NOTIFICATION OF COMPLIANCE STATUS

Isomedix Operations, Inc. operates a contract sterilization facility located at 1435 Isomedix Place in El Paso, TX which is subject to the requirements of Subpart O of 40 CFR Part 63. The facility conducted annual testing on its catalytic oxidizers to demonstrate continued compliance with the work practice standard found at 40 CFR 363(b)(4)(i) on June 23, 2016. Following is a partial summary of the test results:

Units Tested	Control Device	Results of Testing	Standard
Primary Aeration	Abator 1	99.91%	99% or < 1 ppm
Secondary Aeration	Abator 2	99.89%	99% or < 1 ppm

As required under 40 CFR 63.10(d)(2), the results of the performance test are being submitted as part of the notification of compliance status, required under 40 CFR 63.9(h). I hereby submit the applicable notification of compliance, certify its accuracy, and attest that the source has complied with the relevant standard. The test report will provide the pertinent details required under 40 CFR 63.9(h)(2)(i). If you have any questions or need any additional information, feel free to contact me at (847) 367-5039.

Sincerely,

Hayden Schoen

Hayden Schoen

Attachment

RECEIVED
AUG 05 2016
TCEQ
CENTRAL FILE ROOM

cc: Mr. Matt Brennan, Manager Plant Operations

TCEQ
P.O. Box 13087
Austin, TX 78711-3087

REPORT OF
AIR POLLUTION SOURCE TESTING
OF AN ETHYLENE OXIDE EMISSION-CONTROL SYSTEM
OPERATED BY STERIS ISOMEDIX SERVICES
IN EL PASO, TEXAS
ON JUNE 23, 2016

Submitted to:

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
401 E. Franklin Blvd., Suite 560
El Paso, Texas 79901-1206

Submitted for:

STERIS ISOMEDIX SERVICES
1435 Isomedix Place
El Paso, Texas 79936

Permit Number 19348

Prepared by:

ECSi
PO Box 848
San Clemente, California 92674-0848

Prepared on:

July 19, 2016

ECSi

CONTACT SUMMARY

CLIENT

Mr. Hayden Schoen
Environmental Compliance Manager
STERIS ISOMEDIX SERVICES
1880 Industrial Drive
Libertyville, Illinois 60048

Phone: (847)367-5039
FAX: (847)367-5644
email: Hayden_Schoen@steris.com

TEST DATE

June 23, 2016

REGULATORY AGENCY

Mr. John Williams
TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
401 E. Franklin Blvd., Suite 560
El Paso, Texas 79901-1206

Phone: (915)834-4949
FAX: (915)834-4940
email: jwilliams@tceq.state.tx.us

TESTING CONTRACTOR

Daniel P. Kremer
Project Manager
ECSi, Inc.
PO Box 848
San Clemente, California 92674-0848

Phone: (949)400-9145
FAX: (949)281-2169
email: dankremer@ecsi1.com

TABLE OF CONTENTS

		PAGE NO.
CONTACT SUMMARY		i
TABLE OF CONTENTS		ii
LIST OF TABLES		iii
LIST OF APPENDICES		iv
1.0	**INTRODUCTION**	1
2.0	**EQUIPMENT**	2
3.0	**TESTING**	3
4.0	**RULE/COMPLIANCE REQUIREMENTS**	4
5.0	**TEST METHOD REFERENCE**	5
5.1	Summary/Introduction	5
5.2	Volumetric Flow Measurement	5
5.3	EtO Mass-Emissions Measurement	6
5.4	Sample Transport	6
5.5	GC Injection	6
5.6	GC Conditions	6
5.7	Calibration Standards	7
5.8	Sampling Duration	7
5.9	Mass-Emissions Calculations	7
6.0	**TEST SCENARIO**	9
7.0	**QA/QC**	10
7.1	Field Testing Quality Assurance	10
7.2	Calibration Procedures	10
8.0	**TEST RESULTS**	**11**
TABLES		**12**
APPENDICES		**15**

LIST OF TABLES

TABLE	DESCRIPTION	PAGE NO.
1	Ethylene Oxide Control Efficiency – Abator #1	13
2	Ethylene Oxide Control Efficiency – Abator #2	14

ECSi

LIST OF APPENDICES

APPENDIX	DESCRIPTION	PAGE NO.
A	Calibration Data	A-1
B	Run #1 Chromatograms – Abator #1 & #2	B-1
C	Run #2 Chromatograms – Abator #1 & #2	C-1
D	Run #3 Chromatograms – Abator #1 & #2	D-1
E	Field Data and Calculation Worksheets	E-1
F	Calibration Gas Certificates	F-1

ECSi

1.0 INTRODUCTION

On Thursday, June 23, 2016, ECSi performed air pollution source testing of an ethylene oxide (EtO) emission-control system operated by STERIS Isomedix Services in El Paso, Texas. The control devices tested include two catalytic oxidizers, one of which is currently used to control emissions from the primary aeration process, and one of which is used to control emissions from the secondary aeration process. The purpose of the testing program was to evaluate continued compliance with the conditions established in the Air Quality Permit granted to STERIS Isomedix Services by the Texas Commission on Environmental Quality (TCEQ).

2.0 EQUIPMENT

The gas-sterilization system is comprised of four batch-cycle sterilization chambers, each discharged through a vacuum pump to a Glygen Scrubber System. Sterilized product is transferred into two aeration rooms, each discharged to its own dedicated catalytic oxidizer emission control device. The gas-sterilization and emission-control equipment consists of the following:

- Four commercial gas sterilizers, 13-pallet, each consisting of a heated, 2100 cubic foot interior volume sterilization chamber, a vacuum pump chamber evacuation system, and a backdraft valve exhaust vent;
- Two aeration rooms, one primary and one secondary, each comprised of a heated aeration chamber and a chamber exhaust system.

The sterilizer vacuum pump emissions are controlled by:

- Two individual Glygen Scrubber two-stage control devices, each attached to two of the four sterilizer chambers (Glygen System #1 for Sterilizers 1 and 2, Glygen System #2 for Sterilizers 3 and 4). Each individual Glygen unit consists of a 128 cubic foot tank with ceramic diffusers that allow the vapors from the sterilization chamber vacuum pump to be bubbled through and acidic scrubbing liquid.

Emissions from the aeration process are controlled by:

- One Donaldson EtO Abator System (primary aeration), 9,000 SCFM, equipped with a prefilter, an electric heater, an exhaust gas heat exchanger, a reactive catalyst bed, and an exhaust blower.

- One Donaldson EtO Abator System (secondary aeration), 4,500 SCFM, equipped with a prefilter, an electric heater, an exhaust gas heat exchanger, a reactive catalyst bed, and an exhaust blower.

3.0 TESTING

EtO source testing was performed in accordance with the procedures outlined in USEPA CFR40, Part 63.365. EtO emissions monitoring were conducted simultaneously at the inlet and outlet of the each Abator during the aeration process. A total of three aeration-phase test runs were performed for each Abator, for a total of six test runs.

During aeration-phase testing, EtO emissions at the inlet and the outlet of the Abators were determined using direct source sample injection into the gas chromatograph (GC). All aeration testing was performed with freshly sterilized product in the aeration chambers. The testing program was conducted in accordance with the procedures outlined in the following sections.

4.0 RULE/COMPLIANCE REQUIREMENTS

The EtO gas-sterilization system at STERIS Isomedix Services was tested to evaluate compliance with the requirements specified in the TCEQ Permit. The current testing was performed to demonstrate continued compliance with the following requirement:

- The aeration emissions must be discharged to control equipment with an EtO emission-reduction efficiency of at least 99 % by weight, or with reduction of outlet EtO emissions to less than 1 ppmv.

Testing is required to demonstrate compliance with these requirements. Source testing of the emission-control device is required initially, and is required annually thereafter.

5.0 TEST METHOD REFERENCE

5.1 INTRODUCTION

EtO source testing was conducted in accordance with the procedures outlined in USEPA CFR40, Part 63.365. EtO emissions monitoring were conducted simultaneously at the inlet and outlet of the each Abator during the aeration process. A total of three aeration-phase test runs were performed for each Abator, for a total of six test runs.

During aeration-phase testing, EtO emissions at the inlet and the outlet of the Abators were determined using direct source sample injection into the gas chromatograph (GC). All aeration testing was performed with freshly sterilized product in the aeration chambers.

Operation and documentation of process conditions was performed by personnel from STERIS Isomedix Services using existing monitoring instruments installed by the manufacturer of the equipment to be tested. In accordance with TCEQ requirements, and the procedures established in USEPA CFR40, Part 63, Subpart O, the following parameter was recorded: catalyst bed operating temperature for each of the two Abators.

5.2 VOLUMETRIC FLOW MEASUREMENT

Exhaust gas flow at the outlet of the Abators was determined by EPA Method 2C using a standard pitot tube and an inclined-oil manometer. Sampling ports were installed in accordance with EPA Method 1, and were located far enough from any flow disturbances to permit accurate flow measurement.

Temperature measurements were obtained from a type K thermocouple and thermometer attached to the sampling probe. Exhaust gas composition was assumed to be air and small amounts of water vapor. Water vapor content was determined during the test using a wet bulb/dry bulb psychrometer. Water vapor was negligible, at about 3 percent.

5.3 CONTROL EFFICIENCY AND MASS EMISSIONS MEASUREMENT

During aeration-phase testing, EtO emissions at the inlet and outlet of each Abator were determined using direct source sample injection into the GC. The mass of EtO discharged to the inlet and from the outlet was determined using the equation shown below in Section 5.9. Mass-mass control-efficiency of EtO during aeration was calculated by comparing the mass of EtO discharged to the Abator inlet to the mass of EtO discharged from the Abator outlet.

During aeration, source gas was analyzed by an SRI, Model 8610, portable gas chromatograph (GC), equipped with the following: dual, heated sample loops and injectors; dual columns; and dual detectors. A flame ionization detector (FID) was used to quantify inlet EtO emissions, and a photoionization detector (PID) was used to quantify low-level EtO emissions at the emission-control device outlet.

5.4 SAMPLE TRANSPORT

Source gas was pumped to the GC at approximately 1000 cubic centimeters per minute (cc/min) from the sampling ports through two lengths of Teflon® sample line, each with a nominal volume of approximately 75 cubic centimeters (cc) and an outer diameter of 0.25 inch. At the inlet, the sampling port was located immediately upstream of the Abator catalyst bed. At the outlet of each Abator, sampling ports were located in the exhaust stack.

5.5 GC INJECTION

Source-gas samples were then injected into the GC which was equipped with two heated sampling loops, each containing a volume of approximately 2cc and maintained at 100 degrees Celsius (C). Injections occurred at approximately five minute intervals during the aeration-phase testing. Helium was the carrier gas for both the FID and PID.

5.6 GC CONDITIONS

The packed columns for the GC were both operated at 80 degrees C. The columns were stainless steel, 6 feet long, 0.125 inch outer diameter, packed with 1 percent SP-1000 on 60/80 mesh Carbopack B.

During the analysis, the FID was operated at 250 degrees C. The support gases for the FID were helium (99.999% pure), hydrogen (99.995% pure) and air (99.9999% pure). Any unused sample gas was vented from the GC system back to the inlet of the control device being tested.

5.7 CALIBRATION STANDARDS

The FID was calibrated for low to mid-range part-per-million-by-volume (ppmv) level analyses using gas proportions similar to the following:

1) 100 ppmv EtO, balance nitrogen
2) 50 ppmv EtO, balance nitrogen (audit gas)
3) 10 ppmv EtO, balance nitrogen
4) 1 ppmv EtO, balance nitrogen

The PID was calibrated for low-range ppmv level analyses using gas proportions similar to the following:

1) 100 ppmv EtO, balance nitrogen
2) 50 ppmv EtO, balance nitrogen (audit gas)
3) 10 ppmv EtO, balance nitrogen
4) 1 ppmv EtO, balance nitrogen

Each of these calibration standards was in a separate, certified manufacturer's cylinder. Copies of the calibration gas laboratory certificates are attached as Appendix F.

5.8 SAMPLING DURATION

Aeration-phase EtO measurements were taken for a 60-minute time period for each test run. A total of six test runs were performed. Testing was performed with freshly sterilized product in the aeration process.

5.9 CONTROL-EFFICIENCY/MASS-EMISSIONS CALCULATIONS

Mass emissions of EtO during aeration were calculated using the following equation:

$$MassRate = (VolFlow)(MolWt)(ppmv\ EtO/10^6)/(MolVol)$$

Where:

MassRate	=	EtO mass flow rate, pounds per minute
VolFlow	=	Corrected volumetric flow rate, standard cubic feet per minute at 68 degrees F
MolWt	=	44.05 pounds EtO per pound mole
ppmv EtO	=	EtO concentration, parts per million by volume
10^6	=	Conversion factor, ppmv per "cubic foot per cubic foot"
MolVol	=	385.32 cubic feet per pound mole at one atmosphere and 68 degrees F

Mass-mass control efficiency of EtO was calculated for aeration. Results of the control-efficiency testing are presented in Tables 1 and 2.

6.0 TEST SCENARIO

All testing was performed with freshly sterilized product in the aeration chambers. Three aeration phase test runs were performed for each Abator, for a total of six test runs. The testing schedule was as follows:

1) Testing equipment was set up and calibrated.
2) Abator #1 Aeration Test Run #1 was performed. Sampling was conducted at the inlet and the outlet of Abator #1.
3) Abator #2 Aeration Test Run #1 was performed. Sampling was conducted at the inlet and the outlet of Abator #2.
4) Abator #1 Aeration Test Run #2 was performed. Sampling was conducted at the inlet and the outlet of Abator #1.
5) Abator #2 Aeration Test Run #2 was performed. Sampling was conducted at the inlet and the outlet of Abator #2.
6) Abator #1 Aeration Test Run #3 was performed. Sampling was conducted at the inlet and the outlet of Abator #1.
7) Abator #2 Aeration Test Run #3 was performed. Sampling was conducted at the inlet and the outlet of Abator #2.
8) Post calibration check was performed, testing equipment was packed.

7.0 QA/QC

7.1 FIELD TESTING QUALITY ASSURANCE

At the beginning of the test, the sampling system was leak checked at a vacuum of 15 inches of mercury. The sampling system was considered leak free when the flow indicated by the rotameters fell to zero.

At the beginning of the test, a system blank was analyzed to ensure that the sampling system was free of EtO. Ambient air was introduced at the end of the heated sampling line and drawn through the sampling system line to the GC for analysis. The resulting chromatogram also provided a background level for non-EtO components (i.e. ambient air, carbon dioxide, water vapor) which are present in the source gas stream due to the ambient dilution air which is drawn into the emission-control device, and due to the destruction of EtO by the emission-control device which produces carbon dioxide and water vapor. This chromatogram, designated AMB, is included with the calibration data in Appendix A.

7.2 CALIBRATION PROCEDURES

The GC system was calibrated at the beginning and conclusion of each day's testing. Using the Peaksimple II analytical software, a point-to-point calibration curve was constructed for each detector. A gas cylinder of similar composition as the calibration gases, but certified by a separate supplier, was used to verify calibration gas composition and GC performance.

All calibration gases and support gases used were of the highest purity and quality available. A copy of the laboratory certification for each calibration gas is attached as Appendix F.

8.0 TEST RESULTS

For the three test runs performed, Abator #1 was found to have an average EtO control efficiency of 99.91 percent for aeration. Abator #2 was found to have an average EtO control efficiency of 99.89 percent for aeration. In accordance with state and federal requirements, aeration discharge streams must be vented to control equipment with an EtO emission-reduction efficiency of at least 99 percent by weight. Both emission-control devices met this requirement.

The test results are summarized in Tables 1 and 2. These tables include results for EtO control efficiency and mass emissions of the emission-control device for each of the two Abators. Chromatograms and chromatographic supporting data are attached as Appendices A through D. Copies of field data and calculation worksheets are attached as Appendix E.

TABLES

ECSi

ED_005957_00000371-00018

TABLE 1
ETHYLENE OXIDE CONTROL EFFICIENCY
OF AN ETHYLENE OXIDE EMISSION CONTROL DEVICE (ABATOR #1)
OPERATED BY STERIS ISOMEDIX SERVICES
IN EL PASO, TEXAS
ON JUNE 23, 2016

RUN NUMBER	INJECTION TIME	INLET ETO CONC. (PPM)(1)	OUTLET ETO CONC. (PPM)(2)	ETO CONTROL EFFICIENCY
1(3)	1359	17.9	0.01	99.9441
1	1404	17.8	0.01	99.9438
1	1409	17.4	0.01	99.9425
1	1414	18.1	0.01	99.9448
1	1419	17.5	0.01	99.9429
1	1424	17.5	0.01	99.9429
1	1429	17.0	0.01	99.9412
1	1434	17.0	0.01	99.9412
1	1439	16.8	0.01	99.9405
1	1444	17.1	0.01	99.9415
1	1449	17.3	0.01	99.9422
1	1454	16.7	0.01	99.9401
TIME-WEIGHTED AVERAGE:		**17.34**	**0.0100**	**99.9423**
2(4)	1459	16.6	0.01	99.9398
2	1504	17.0	0.01	99.9412
2	1509	16.0	0.01	99.9375
2	1514	16.6	0.01	99.9398
2	1519	18.3	0.01	99.9454
2	1524	13.9	0.01	99.9281
2	1529	10.8	0.01	99.9074
2	1534	9.96	0.01	99.8996
2	1539	10.5	0.01	99.9048
2	1544	10.3	0.01	99.9029
2	1549	9.82	0.01	99.8982
2	1554	9.63	0.01	99.8962
TIME-WEIGHTED AVERAGE:		**13.28**	**0.0100**	**99.9201**
3(5)	1559	8.12	0.01	99.8768
3	1604	7.44	0.01	99.8656
3	1609	6.94	0.01	99.8559
3	1614	9.30	0.01	99.8925
3	1619	6.06	0.01	99.8350
3	1624	7.36	0.01	99.8641
3	1629	7.14	0.01	99.8599
3	1634	6.81	0.01	99.8532
3	1639	6.29	0.01	99.8410
3	1644	6.30	0.01	99.8413
3	1649	6.25	0.01	99.8400
3	1654	6.20	0.01	99.8387
TIME-WEIGHTED AVERAGE:		**7.018**	**0.0100**	**99.8553**
			AVERAGE CONTROL EFFICIENCY:	**99.9059**
			TCEQ REQUIRED CONTROL EFFICIENCY:	**99.0**

Notes:
(1) - PPM = parts per million by volume
(2) - 0.01 ppm is the quantification limit for the detector used at the outlet.
(3) - Primary Aeration Run #1 started at 13:57, ended at 14:57.
(4) - Primary Aeration Run #2 started at 14:57, ended at 15:57.
(5) - Primary Aeration Run #3 started at 15:57, ended at 16:57.

ECSi

TABLE 2
ETHYLENE OXIDE CONTROL EFFICIENCY
OF AN ETHYLENE OXIDE EMISSION CONTROL DEVICE (ABATOR #2)
OPERATED BY STERIS ISOMEDIX SERVICES
IN EL PASO, TEXAS
ON JUNE 23, 2016

RUN NUMBER	INJECTION TIME	INLET ETO CONC. (PPM)(1)	OUTLET ETO CONC. (PPM)(2)	ETO CONTROL EFFICIENCY
1(3)	1401	6.86	0.01	99.8542
1	1406	6.96	0.01	99.8563
1	1411	6.84	0.01	99.8538
1	1416	6.40	0.01	99.8438
1	1421	7.51	0.01	99.8668
1	1426	7.17	0.01	99.8605
1	1431	7.48	0.01	99.8663
1	1436	7.26	0.01	99.8623
1	1441	7.32	0.01	99.8634
1	1446	8.31	0.01	99.8797
1	1451	8.30	0.01	99.8795
1	1456	9.82	0.01	99.8982
TIME-WEIGHTED AVERAGE:		**7.519**	**0.0100**	**99.8654**
2(4)	1501	7.46	0.01	99.8660
2	1506	6.80	0.01	99.8529
2	1511	6.66	0.01	99.8498
2	1516	7.40	0.01	99.8649
2	1521	7.30	0.01	99.8630
2	1526	7.41	0.01	99.8650
2	1531	6.81	0.01	99.8532
2	1536	7.23	0.01	99.8617
2	1541	7.60	0.01	99.8684
2	1546	7.59	0.01	99.8682
2	1551	8.61	0.01	99.8839
2	1556	9.45	0.01	99.8942
TIME-WEIGHTED AVERAGE:		**7.527**	**0.0100**	**99.8659**
3(5)	1601	11.7	0.01	99.9145
3	1606	13.1	0.01	99.9237
3	1611	15.8	0.01	99.9367
3	1616	14.0	0.01	99.9286
3	1621	12.8	0.01	99.9219
3	1626	14.2	0.01	99.9296
3	1631	14.1	0.01	99.9291
3	1636	13.8	0.01	99.9275
3	1641	13.7	0.01	99.9270
3	1646	14.3	0.01	99.9301
3	1651	14.0	0.01	99.9286
3	1656	14.3	0.01	99.9301
TIME-WEIGHTED AVERAGE:		**13.82**	**0.0100**	**99.9273**
			AVERAGE CONTROL EFFICIENCY:	**99.8862**
			TCEQ REQUIRED CONTROL EFFICIENCY:	**99.0**

Notes:
(1) - PPM = parts per million by volume
(2) - 0.01 ppm is the quantification limit for the detector used at the outlet.
(3) - Secondary Aeration Run #1 started at 13:59, ended at 14:59.
(4) - Secondary Aeration Run #2 started at 14:59, ended at 15:59.
(5) - Secondary Aeration Run #3 started at 15:59, ended at 16:59.

ECSi

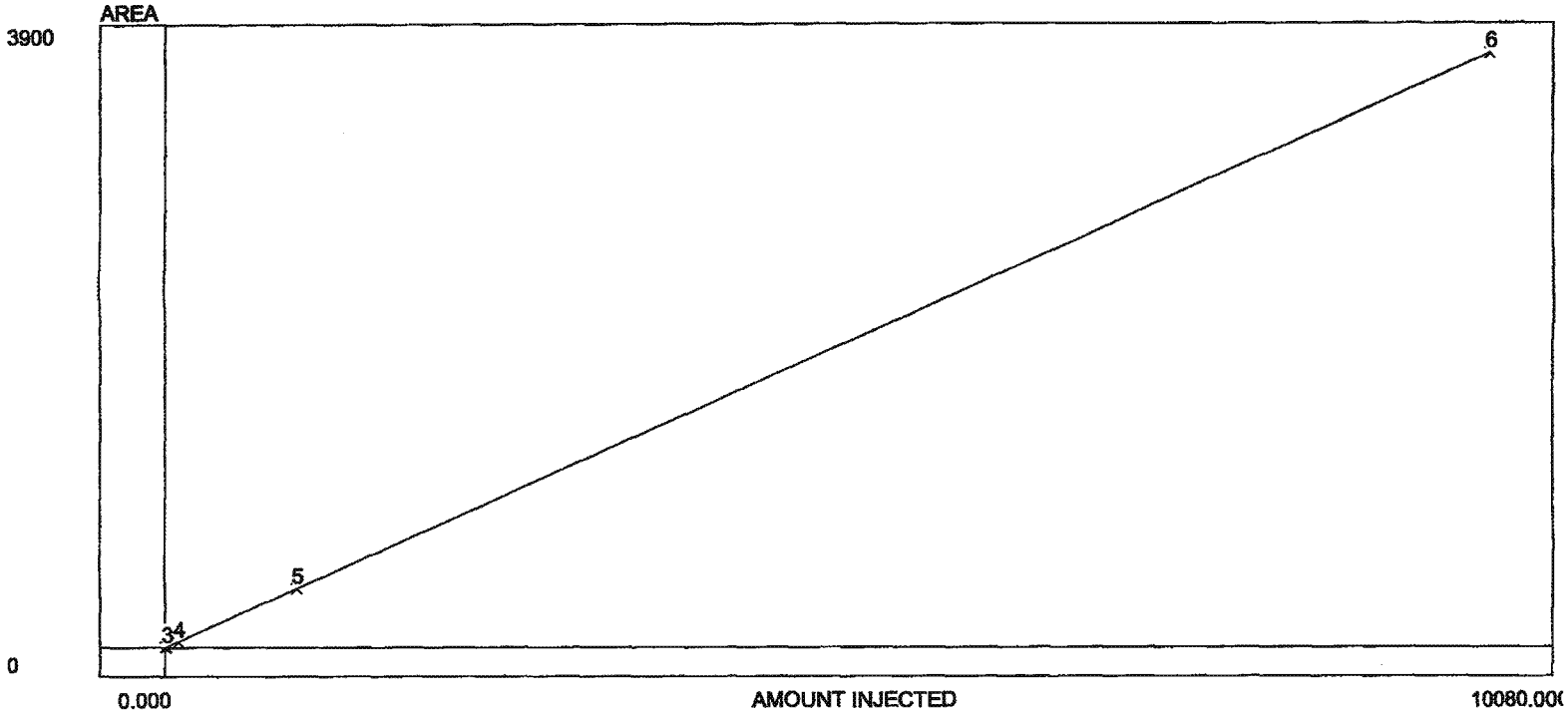
APPENDICES

APPENDIX A

Calibration Data

Peak	Name	Start	End	Calibration	Int.Std	Units
1	Dead Vol / Air	0.000	0.350		0.000	
2	Ambient H2O	0.350	0.500		0.000	
3	Ethylene Oxide	0.500	0.600	C:\peak359\1Ster	0.000016	ppm
4	Acetaldehyde	0.600	0.800		0.000	
5	CO2	0.800	1.000		0.000	

Calibration file: C:\peak359\1SterisEP2016.cal



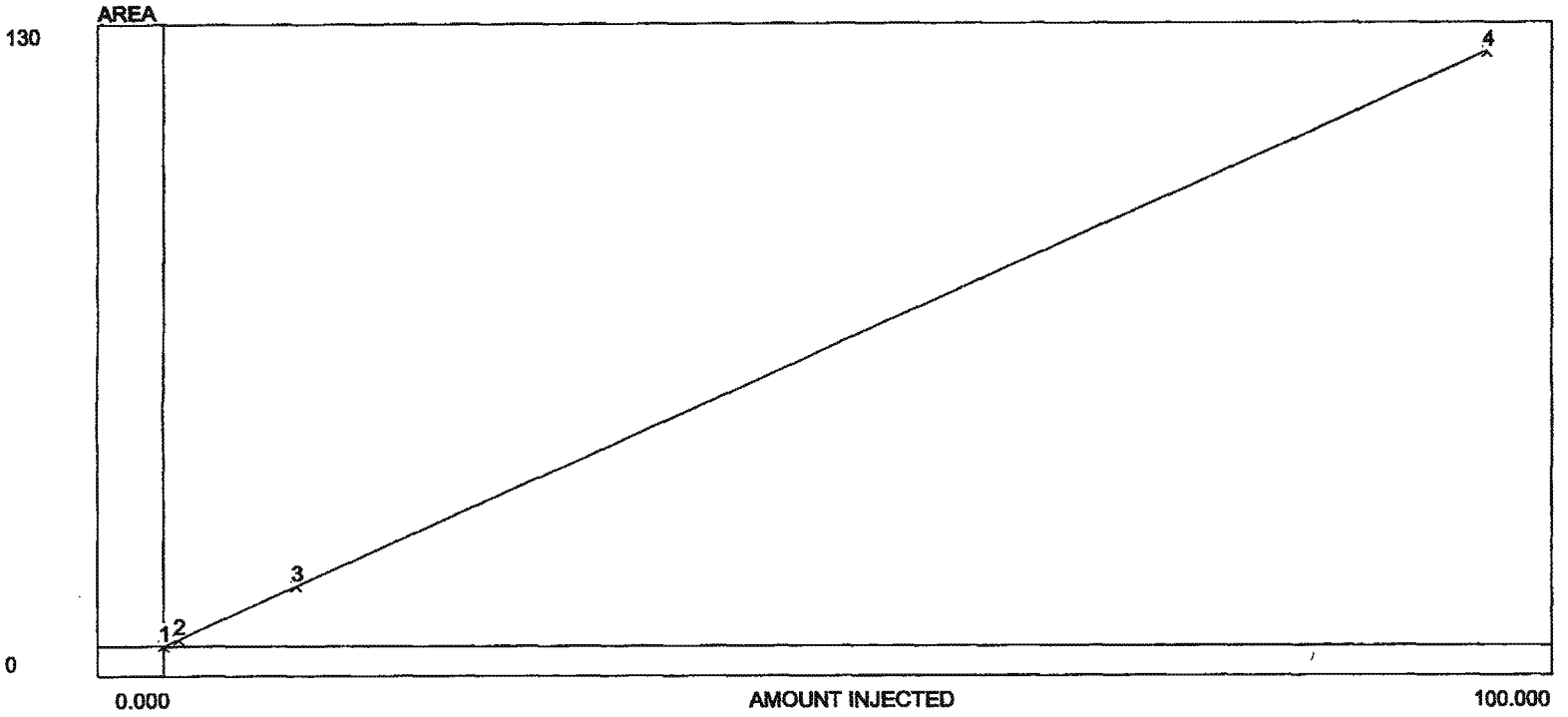
Avg slope of curve: 0.39
Y-axis intercept: 0.00
Linearity: 1.00
Number of levels: 6
SD/rel SD of CF's: 0.2/49.0
Y=0.3871X
r2: 1.0000
Last calibrated: Thu Jun 23 13:44:24 2016

Lvl.	Area/ht.	Amount	CF	Current	Previous #1	Previous #2
1	0.000	0.000	0.000	0.000	N/A	N/A
2	0.426	1.100	0.387	0.426	N/A	N/A
3	3.910	10.100	0.387	3.910	N/A	N/A
4	38.700	100.000	0.387	38.700	N/A	N/A
5	387.000	1000.000	0.387	387.000	N/A	N/A
6	3900.000	10080.000	0.387	3900.000	N/A	N/A

Component file: [illegible]

Peak	Name	Start	End	Calibration	Int.Std	Units
1	Dead Vol / Air	0.000	0.350		0.000	
2	Ambient H2O	0.350	0.500		0.000	
3	Ethylene Oxide	0.500	0.600	C:\peak359\2Steri	0.000016	ppm
4	Acetaldehyde	0.600	0.800		0.000	
5	CO2	0.800	1.000		0.000	

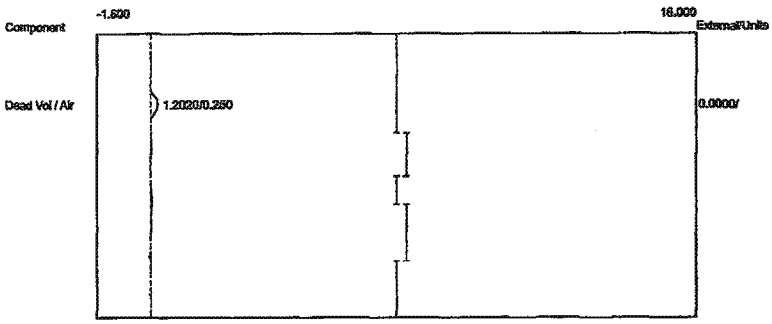
Calibration file: C:\peak359\2SterisEP2016.cal



Avg slope of curve: 1.30
Y-axis intercept: 0.00
Linearity: 1.00
Number of levels: 4
SD/rel SD of CF's: 0.7/66.7
Y=1.3023X
r2: 1.0000
Last calibrated: Thu Jun 23 13:43:29 2016

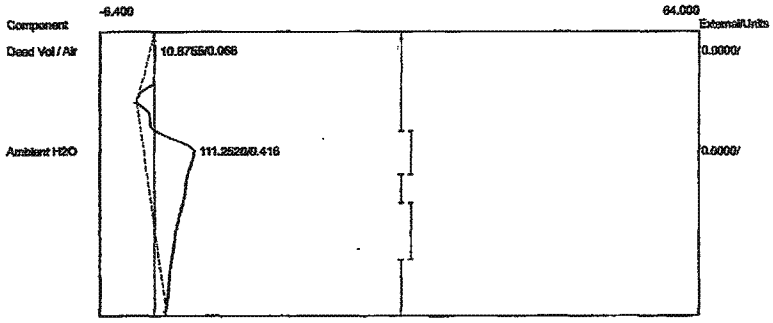
Lvl.	Area/ht.	Amount	CF	Current	Previous #1	Previous #2
1	0.000	0.000	0.000	0.000	N/A	N/A
2	1.430	1.100	1.300	1.430	N/A	N/A
3	13.200	10.100	1.307	13.200	N/A	N/A
4	130.000	100.000	1.300	130.000	N/A	N/A

Lab name: ECCI
Client: Steris - El Paso 1
Client ID: PreCal
Analysis date: 06/23/2016 13:23:49
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-Amb.CHR (c:\peak359)
Sample: Ambient Background
Operator: D. Kremer



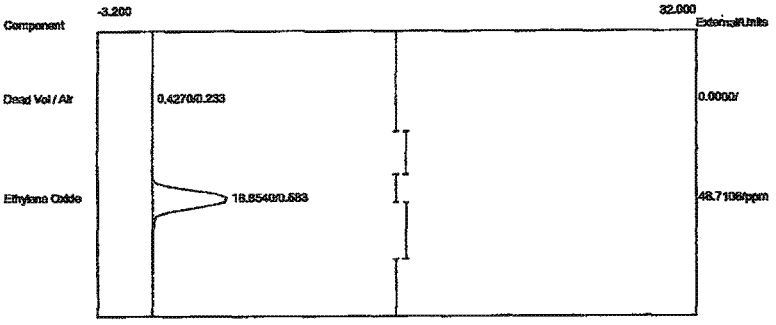
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.2020	0.0000	
		1.2020	0.0000	

Lab name: ECCI
Client: Steris - El Paso 1
Client ID: PreCal
Analysis date: 06/23/2016 13:23:49
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-Amb.CHR (c:\peak359)
Sample: Ambient Background
Operator: D. Kremer



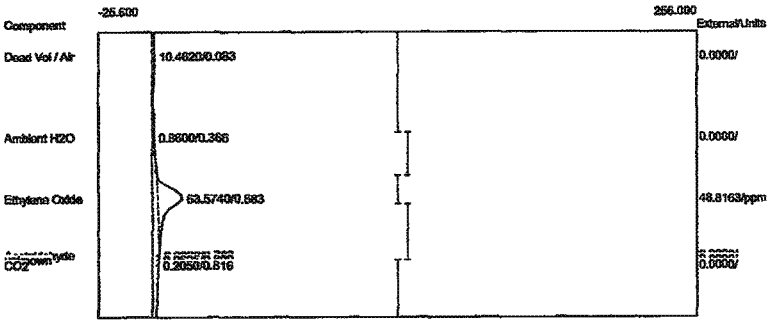
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	10.8755	0.0000	
Ambient H2O	0.416	111.2520	0.0000	
		122.1275	0.0000	

Lab name: ECSI
Client: Steris - El Paso 1
Client ID: PreCal
Analysis date: 06/23/2016 13:40:20
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-Audit.CHR (c:\peak359)
Sample: 48.8 ppm EtO audit std
Operator: D. Kremer



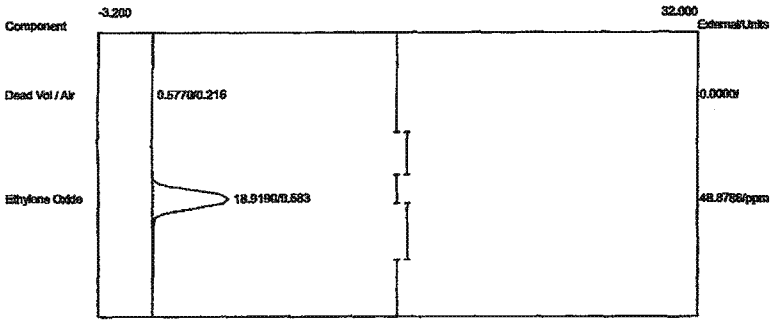
Component	Retention	Area	External	Units
Dead Vol / Air	0.233	0.4270	0.0000	
Ethylene Oxide	0.583	18.8540	48.7106	ppm
		19.2810	48.7106	

Lab name: ECSI
Client: Steris - El Paso 1
Client ID: PreCal
Analysis date: 06/23/2016 13:40:20
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-Audit.CHR (c:\peak359)
Sample: 48.8 ppm EtO audit std
Operator: D. Kremer



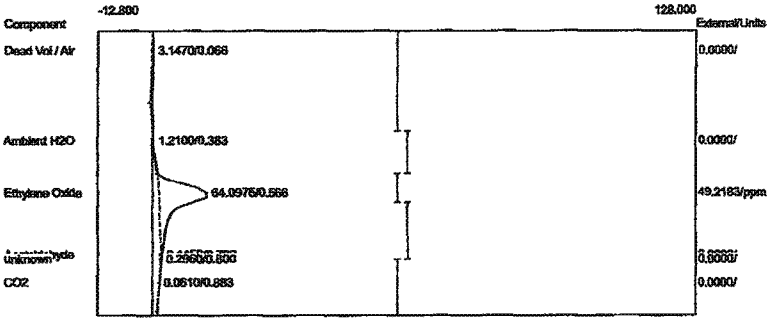
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	10.4620	0.0000	
Ambient H2O	0.366	0.8600	0.0000	
Ethylene Oxide	0.583	63.5740	48.8163	ppm
Acetaldehyde	0.783	0.0820	0.0000	
CO2	0.816	0.2050	0.0000	
		75.1830	48.8163	

Lab name: ECSI
Client: Steris - El Paso 1
Client ID: PostCal
Analysis date: 06/23/2016 17:17:05
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-PAudit.CHR (c:\peak359)
Sample: 48.8 ppm EtO audit std
Operator: D. Kremer



Component	Retention	Area	External	Units
Dead Vol / Air	0.216	0.5770	0.0000	
Ethylene Oxide	0.583	18.9190	48.8786	ppm
		19.4960	48.8786	

Lab name: ECSI
Client: Steris - El Paso 1
Client ID: PostCal
Analysis date: 06/23/2016 17:17:05
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-PAudit.CHR (c:\peak359)
Sample: 48.8 ppm EtO audit std
Operator: D. Kremer



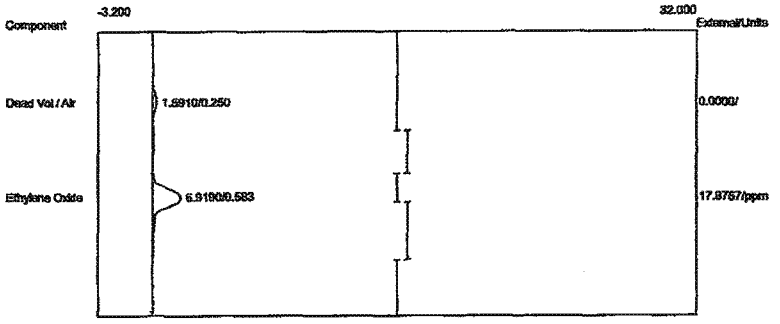
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	3.1470	0.0000	
Ambient H2O	0.383	1.2100	0.0000	
Ethylene Oxide	0.566	64.0975	49.2183	ppm
Acetaldehyde	0.783	0.1450	0.0000	
CO2	0.883	0.0610	0.0000	
		68.6605	49.2183	

APPENDIX B

Run #1 Chromatograms – Abator #1 & #2

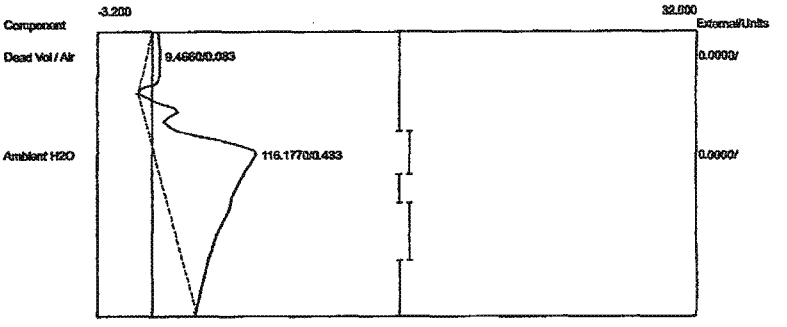
ECSi

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 13:59:02
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-1A01.CHR (c:\peak359)
Sample: Abator #1 Inlet
Operator: D. Kremer



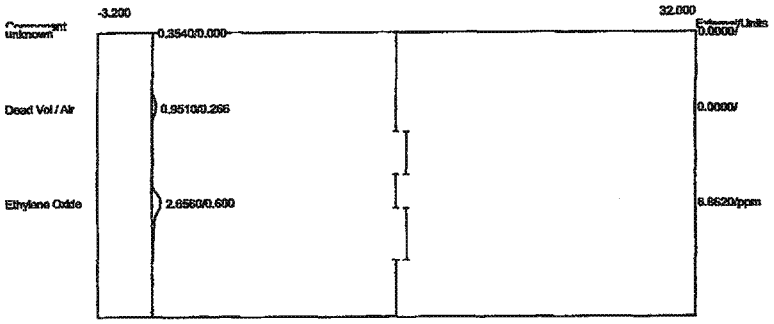
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.5910	0.0000	
Ethylene Oxide	0.583	6.9190	17.8757	ppm
		8.5100	17.8757	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 13:59:02
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-1A01.CHR (c:\peak359)
Sample: Abator #1 Outlet
Operator: D. Kremer



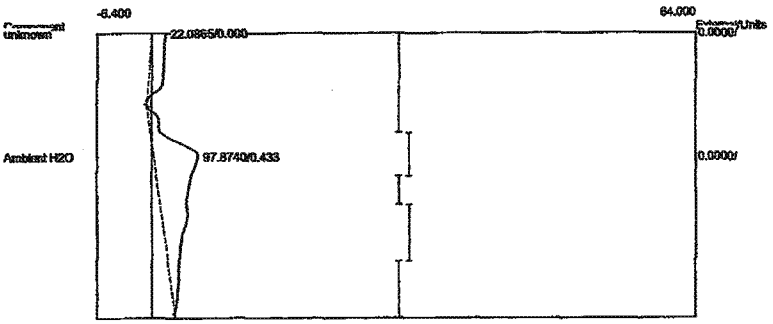
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	9.4660	0.0000	
Ambient H2O	0.433	116.1770	0.0000	
		125.6430	0.0000	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:01:03
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-1A02.CHR (c:\peak359)
Sample: Abator #2 Inlet
Operator: D. Kremer



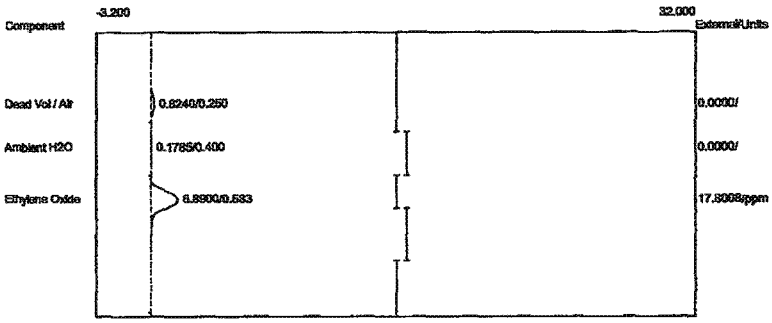
Component	Retention	Area	External	Units
Dead Vol / Air	0.266	0.9510	0.0000	
Ethylene Oxide	0.600	2.6560	6.8620	ppm
		3.6070	6.8620	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:01:03
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-1A02.CHR (c:\peak359)
Sample: Abator #2 Outlet
Operator: D. Kremer



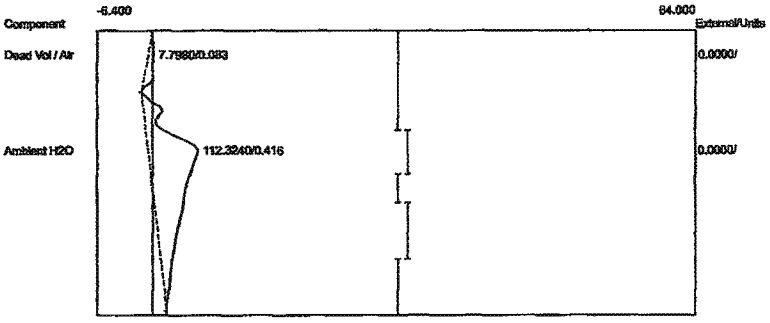
Component	Retention	Area	External	Units
Ambient H2O	0.433	97.8740	0.0000	
		97.8740	0.0000	

Lab name: EOSI
Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:04:22
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-1A03.CHR (c:\peak359)
Sample: Abator #1 Inlet
Operator: D. Kremer



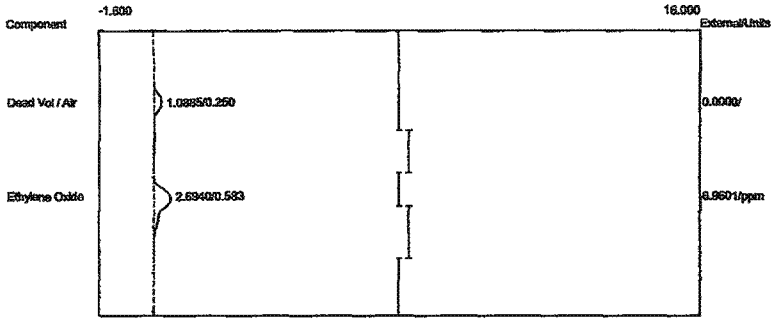
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	0.8240	0.0000	
Ambient H2O	0.400	0.1785	0.0000	
Ethylene Oxide	0.583	6.8900	17.8008	ppm
		7.8925	17.8008	

Lab name: EOSI
Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:04:22
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-1A03.CHR (c:\peak359)
Sample: Abator #1 Outlet
Operator: D. Kremer



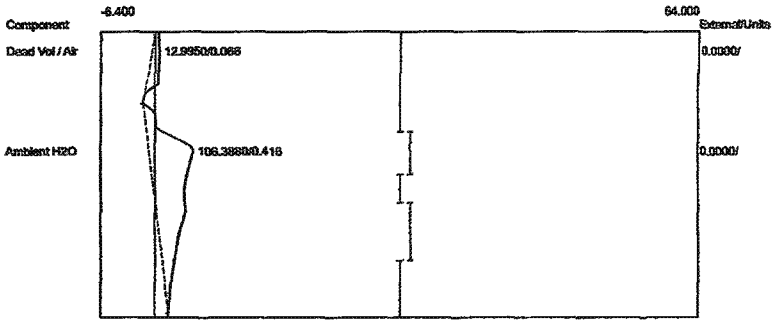
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	7.7980	0.0000	
Ambient H2O	0.416	112.3240	0.0000	
		120.1220	0.0000	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:06:34
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-1A04.CHR (c:\peak359)
Sample: Abator #2 Inlet
Operator: D. Kremer



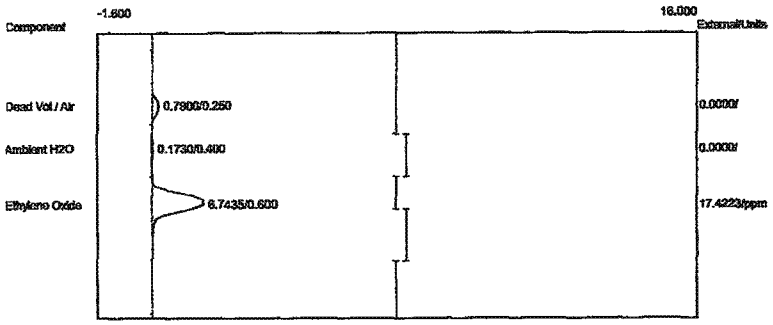
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.0885	0.0000	
Ethylene Oxide	0.583	2.6940	6.9601	ppm
		3.7825	6.9601	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:06:34
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-1A04.CHR (c:\peak359)
Sample: Abator #2 Outlet
Operator: D. Kremer



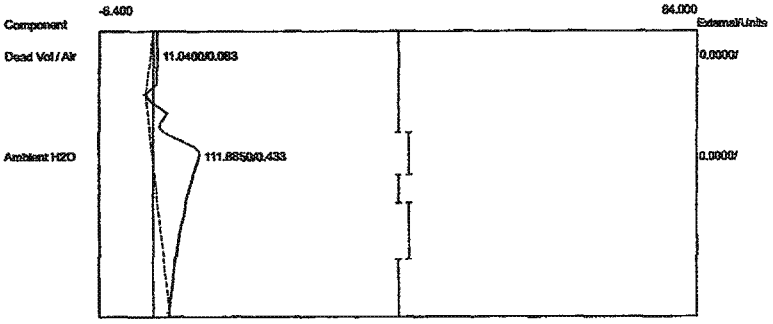
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	12.9950	0.0000	
Ambient H2O	0.416	106.3880	0.0000	
		119.3830	0.0000	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:09:07
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-1A05.CHR (c:\peak359)
Sample: Abator #1 Inlet
Operator: D. Kremer



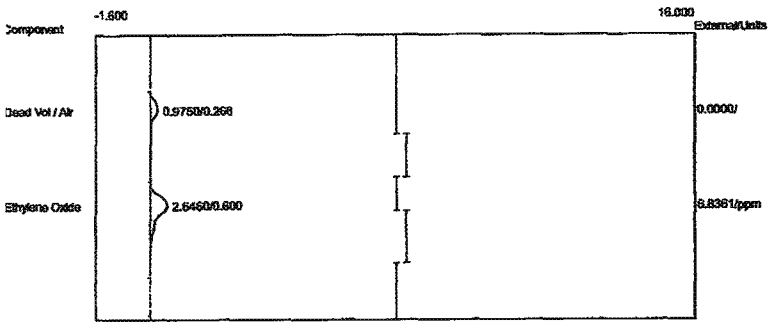
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	0.7900	0.0000	
Ambient H2O	0.400	0.1730	0.0000	
Ethylene Oxide	0.600	6.7435	17.4223	ppm
		7.7065	17.4223	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:09:07
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-1A05.CHR (c:\peak359)
Sample: Abator #1 Outlet
Operator: D. Kremer



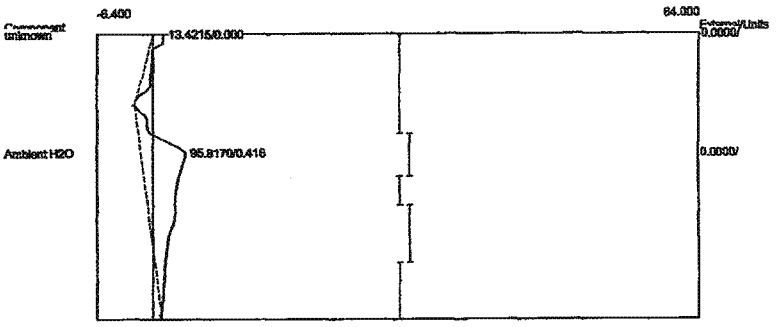
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	11.0400	0.0000	
Ambient H2O	0.433	111.8850	0.0000	
		122.9250	0.0000	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:11:05
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-1A06.CHR (c:\peak359)
Sample: Abator #2 Inlet
Operator: D. Kremer



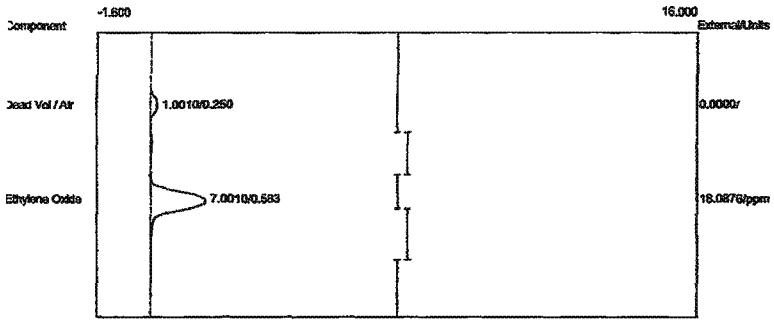
Component	Retention	Area	External	Units
Dead Vol / Air	0.266	0.9750	0.0000	
Ethylene Oxide	0.600	2.6460	6.8361	ppm
		3.6210	6.8361	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:11:05
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-1A06.CHR (c:\peak359)
Sample: Abator #2 Outlet
Operator: D. Kremer



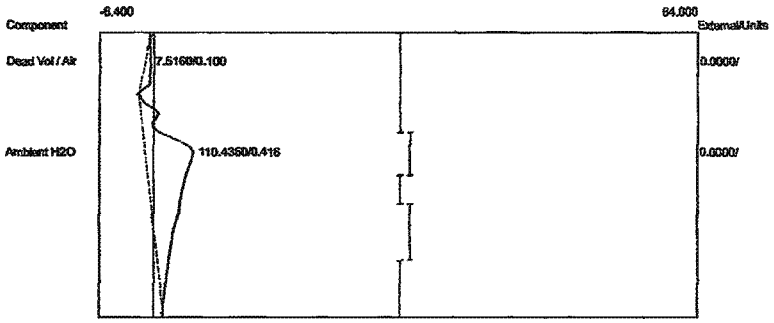
Component	Retention	Area	External	Units
Ambient H2O	0.416	95.8170	0.0000	
		95.8170	0.0000	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:14:36
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-1A07.CHR (c:\peak359)
Sample: Abator #1 Inlet
Operator: D. Kremer



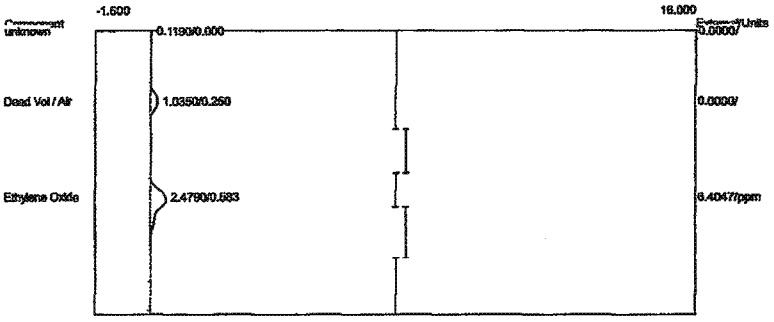
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.0010	0.0000	
Ethylene Oxide	0.583	7.0010	18.0876	ppm
		8.0020	18.0876	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:14:36
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-1A07.CHR (c:\peak359)
Sample: Abator #1 Outlet
Operator: D. Kremer



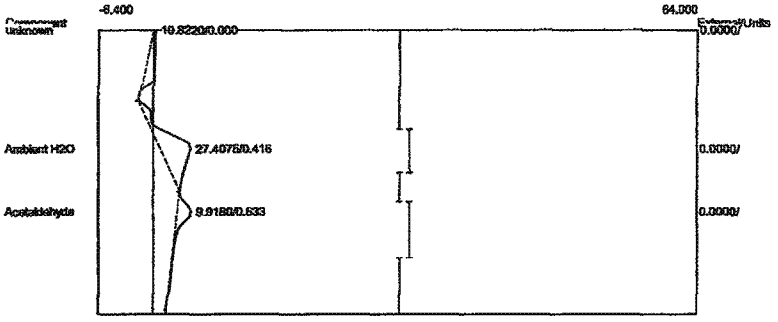
Component	Retention	Area	External	Units
Dead Vol / Air	0.100	7.5160	0.0000	
Ambient H2O	0.416	110.4350	0.0000	
		117.9510	0.0000	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:16:39
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-1A08.CHR (c:\peak359)
Sample: Abator #2 Inlet
Operator: D. Kremer



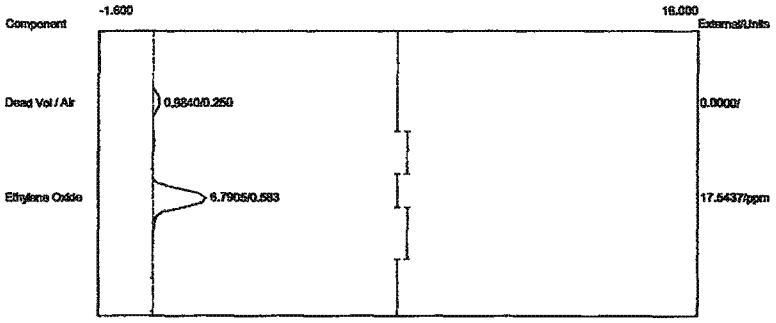
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.0350	0.0000	
Ethylene Oxide	0.583	2.4790	6.4047	ppm
		3.5140	6.4047	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:16:39
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-1A08.CHR (c:\peak359)
Sample: Abator #2 Outlet
Operator: D. Kremer



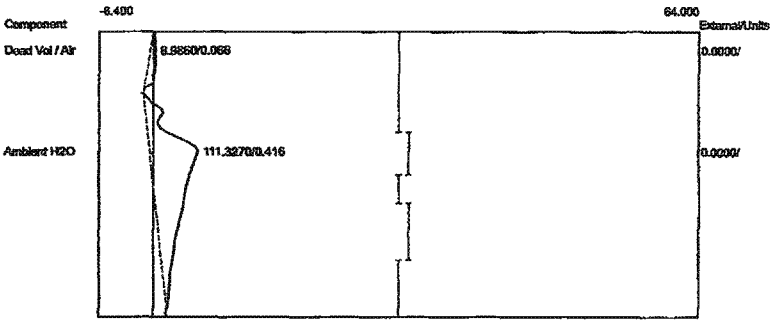
Component	Retention	Area	External	Units
Ambient H2O	0.416	27.4075	0.0000	
Acetaldehyde	0.633	9.9180	0.0000	
		37.3255	0.0000	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:19:07
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-1A09.CHR (c:\peak359)
Sample: Abator #1 Inlet
Operator: D. Kremer



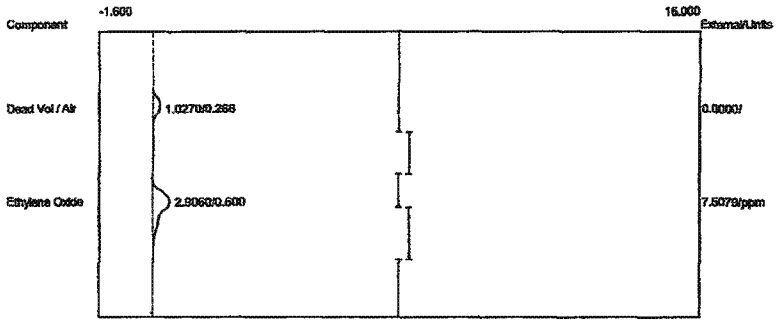
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	0.9840	0.0000	
Ethylene Oxide	0.583	6.7905	17.5437	ppm
		7.7745	17.5437	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:19:07
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-1A09.CHR (c:\peak359)
Sample: Abator #1 Outlet
Operator: D. Kremer



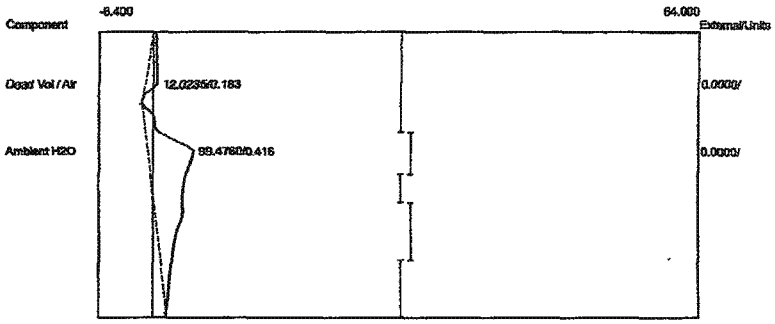
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	8.9860	0.0000	
Ambient H2O	0.416	111.3270	0.0000	
		120.3130	0.0000	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:21:47
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-1A10.CHR (c:\peak359)
Sample: Abator #2 Inlet
Operator: D. Kremer



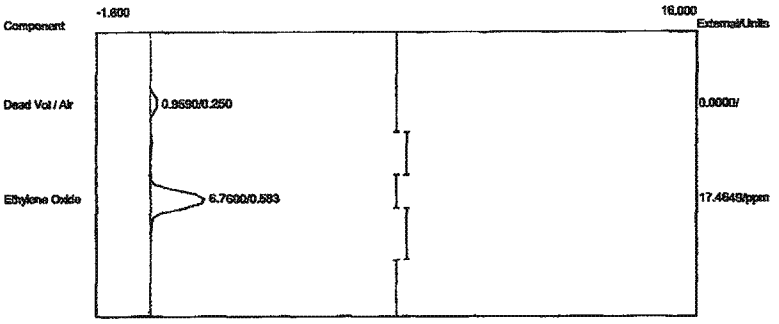
Component	Retention	Area	External	Units
Dead Vol / Air	0.266	1.0270	0.0000	
Ethylene Oxide	0.600	2.9060	7.5079	ppm
		3.9330	7.5079	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:21:47
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-1A10.CHR (c:\peak359)
Sample: Abator #2 Outlet
Operator: D. Kremer



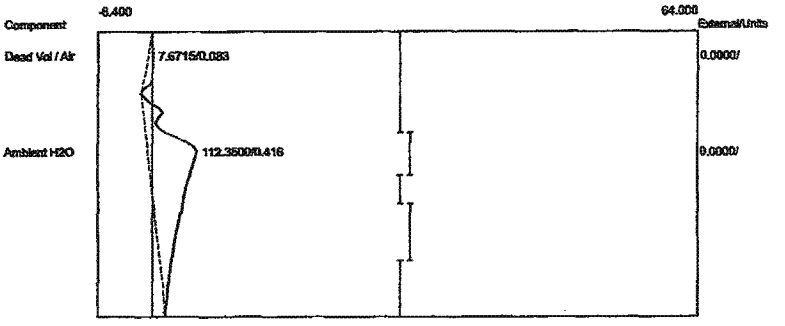
Component	Retention	Area	External	Units
Dead Vol / Air	0.183	12.0235	0.0000	
Ambient H2O	0.416	99.4760	0.0000	
		111.4995	0.0000	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:24:24
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-1A11.CHR (c:\peak359)
Sample: Abator #1 Inlet
Operator: D. Kremer



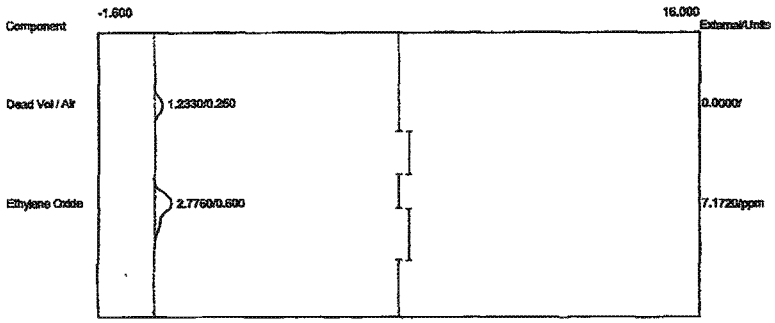
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	0.9590	0.0000	
Ethylene Oxide	0.583	6.7600	17.4649	ppm
		7.7190	17.4649	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:24:24
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-1A11.CHR (c:\peak359)
Sample: Abator #1 Outlet
Operator: D. Kremer



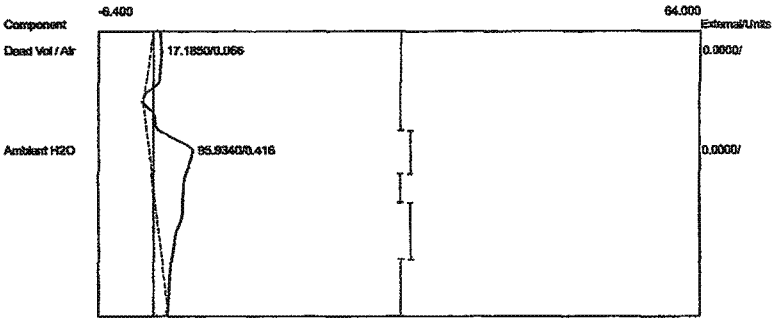
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	7.6715	0.0000	
Ambient H2O	0.416	112.3500	0.0000	
		120.0215	0.0000	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:26:17
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-1A12.CHR (c:\peak359)
Sample: Abator #2 Inlet
Operator: D. Kremer



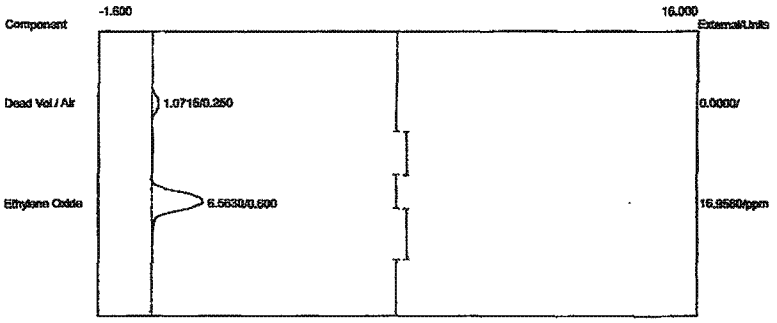
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.2330	0.0000	
Ethylene Oxide	0.600	2.7760	7.1720	ppm
		4.0090	7.1720	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:26:17
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-1A12.CHR (c:\peak359)
Sample: Abator #2 Outlet
Operator: D. Kremer



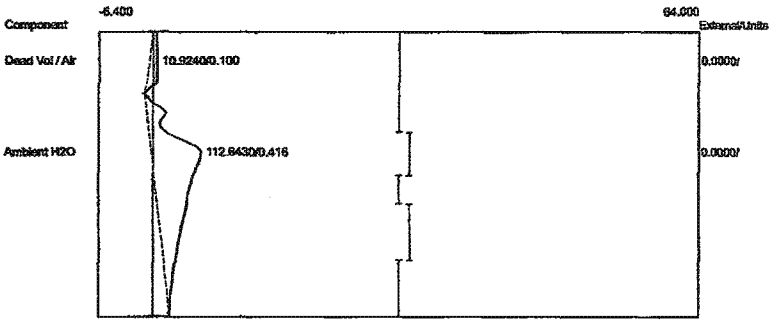
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	17.1850	0.0000	
Ambient H2O	0.416	95.9340	0.0000	
		113.1190	0.0000	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:29:10
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-1A13.CHR (c:\peak359)
Sample: Abator #1 Inlet
Operator: D. Kremer



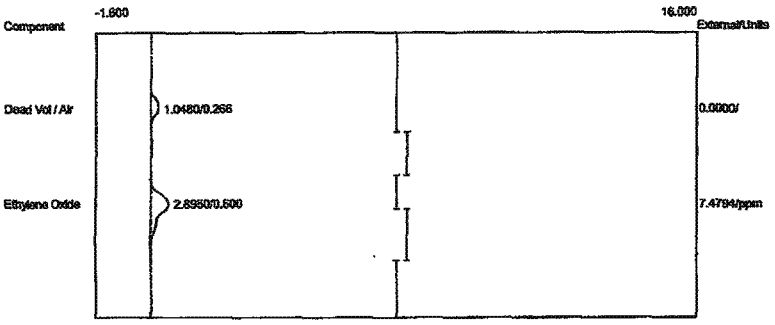
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.0715	0.0000	
Ethylene Oxide	0.600	6.5630	16.9560	ppm
		7.6345	16.9560	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:29:10
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-1A13.CHR (c:\peak359)
Sample: Abator #1 Outlet
Operator: D. Kremer



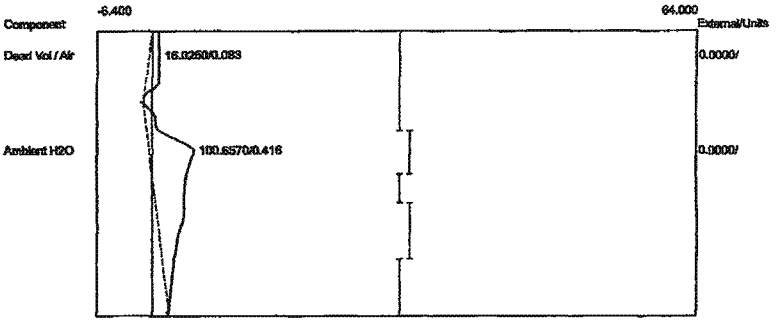
Component	Retention	Area	External	Units
Dead Vol / Air	0.100	10.9240	0.0000	
Ambient H2O	0.416	112.6430	0.0000	
		123.5670	0.0000	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:31:18
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-1A14.CHR (c:\peak359)
Sample: Abator #2 Inlet
Operator: D. Kremer



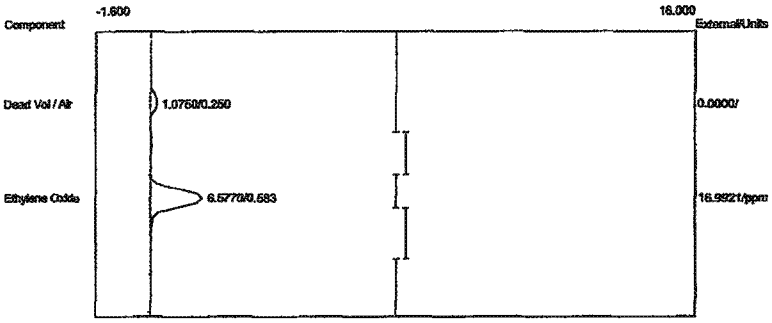
Component	Retention	Area	External	Units
Dead Vol / Air	0.266	1.0480	0.0000	
Ethylene Oxide	0.600	2.8950	7.4794	ppm
		3.9430	7.4794	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:31:18
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-1A14.CHR (c:\peak359)
Sample: Abator #2 Outlet
Operator: D. Kremer



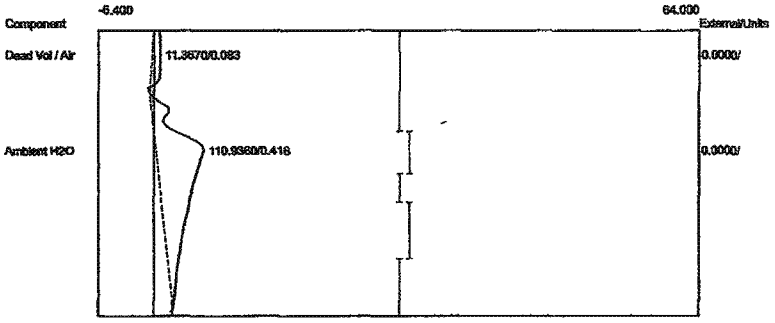
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	16.0250	0.0000	
Ambient H2O	0.416	100.6570	0.0000	
		116.6820	0.0000	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:34:06
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-1A15.CHR (c:\peak359)
Sample: Abator #1 Inlet
Operator: D. Kremer



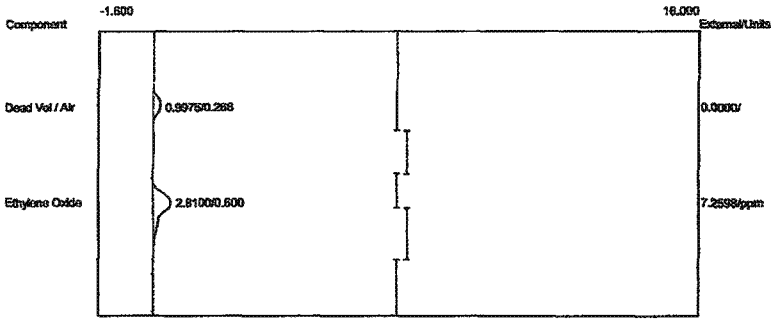
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.0750	0.0000	
Ethylene Oxide	0.583	6.5770	16.9921	ppm
		7.6520	16.9921	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:34:06
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-1A15.CHR (c:\peak359)
Sample: Abator #1 Outlet
Operator: D. Kremer



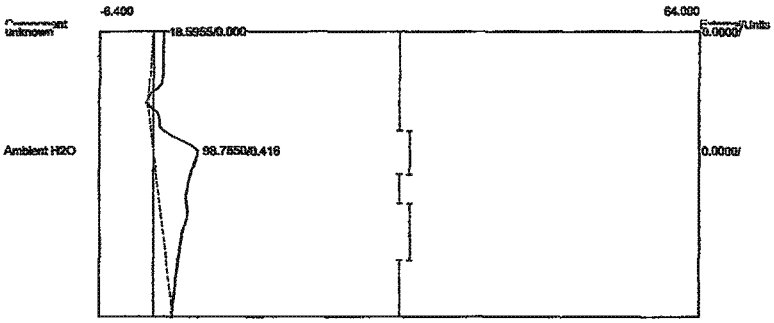
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	11.3670	0.0000	
Ambient H2O	0.416	110.9360	0.0000	
		122.3030	0.0000	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:36:12
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-1A16.CHR (c:\peak359)
Sample: Abator #2 Inlet
Operator: D. Kremer



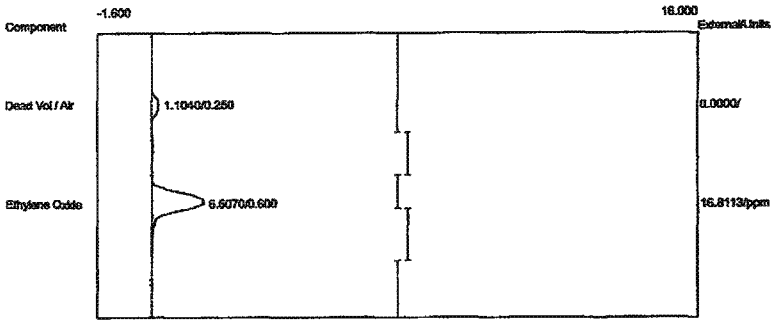
Component	Retention	Area	External	Units
Dead Vol / Air	0.266	0.9975	0.0000	
Ethylene Oxide	0.600	2.8100	7.2598	ppm
		3.8075	7.2598	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:36:12
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-1A16.CHR (c:\peak359)
Sample: Abator #2 Outlet
Operator: D. Kremer



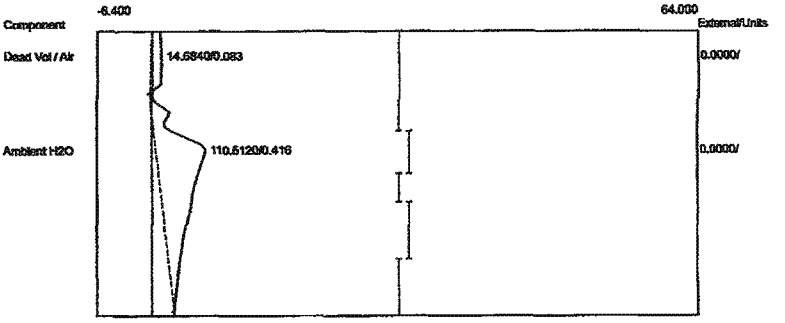
Component	Retention	Area	External	Units
Ambient H2O	0.416	98.7550	0.0000	
		98.7550	0.0000	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:39:25
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-1A17.CHR (c:\peak359)
Sample: Abator #1 Inlet
Operator: D. Kremer



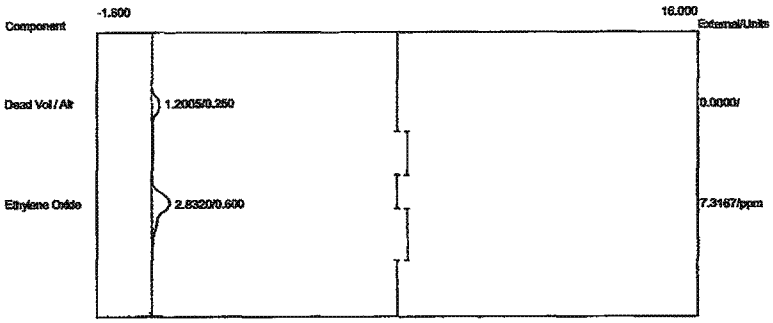
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.1040	0.0000	
Ethylene Oxide	0.600	6.5070	16.8113	ppm
		7.6110	16.8113	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:39:25
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-1A17.CHR (c:\peak359)
Sample: Abator #1 Outlet
Operator: D. Kremer



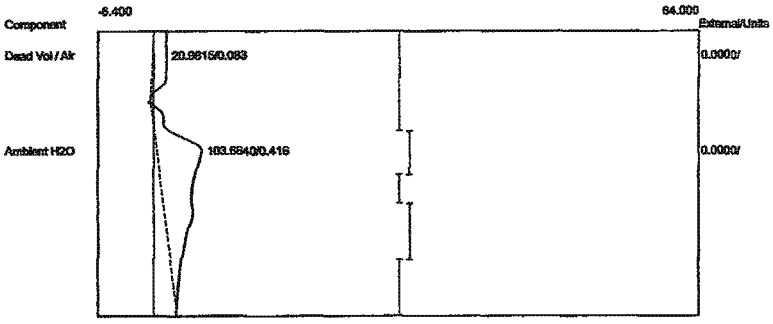
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	14.6840	0.0000	
Ambient H2O	0.416	110.5120	0.0000	
		125.1960	0.0000	

Lab name: ECCI
Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:41:37
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-1A18.CHR (c:\peak359)
Sample: Abator #2 Inlet
Operator: D. Kremer



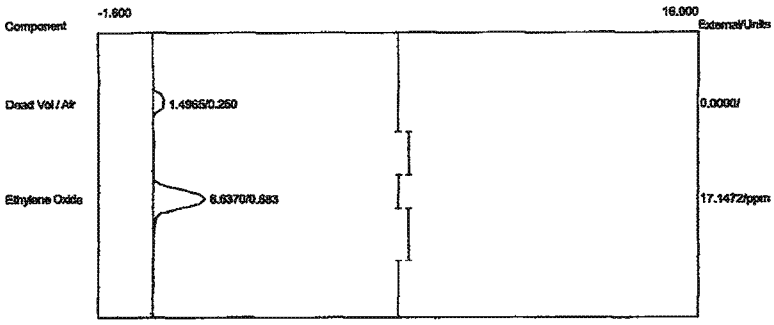
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.2005	0.0000	
Ethylene Oxide	0.600	2.8320	7.3167	ppm
		4.0325	7.3167	

Lab name: ECCI
Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:41:37
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-1A18.CHR (c:\peak359)
Sample: Abator #2 Outlet
Operator: D. Kremer



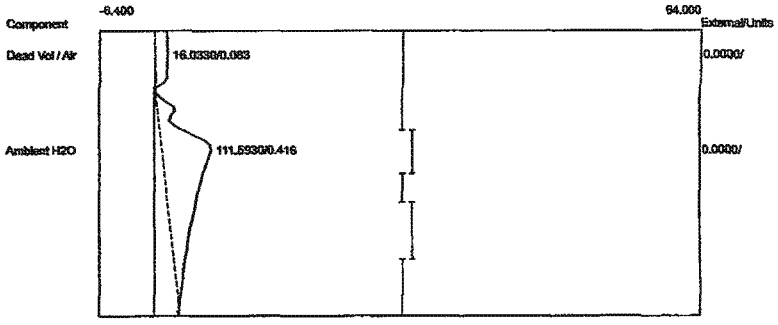
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	20.9815	0.0000	
Ambient H2O	0.416	103.6640	0.0000	
		124.6455	0.0000	

Lab name: ECCI
Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:44:19
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-1A19.CHR (c:\peak359)
Sample: Abator #1 Inlet
Operator: D. Kremer



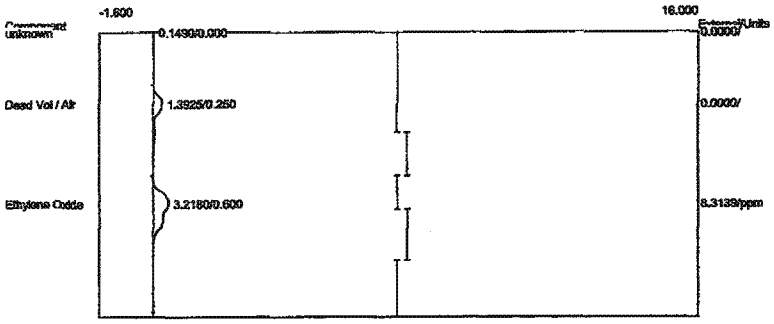
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.4965	0.0000	
Ethylene Oxide	0.583	6.6370	17.1472	ppm
		8.1335	17.1472	

Lab name: ECCI
Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:44:19
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-1A19.CHR (c:\peak359)
Sample: Abator #1 Outlet
Operator: D. Kremer



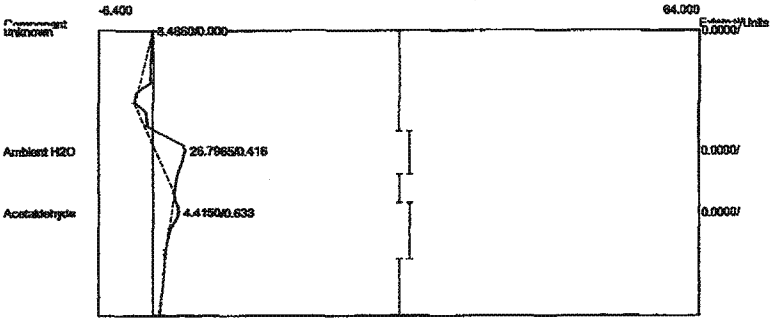
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	16.0330	0.0000	
Ambient H2O	0.416	111.5930	0.0000	
		127.6260	0.0000	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:46:18
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-1A20.CHR (c:\peak359)
Sample: Abator #2 Inlet
Operator: D. Kremer



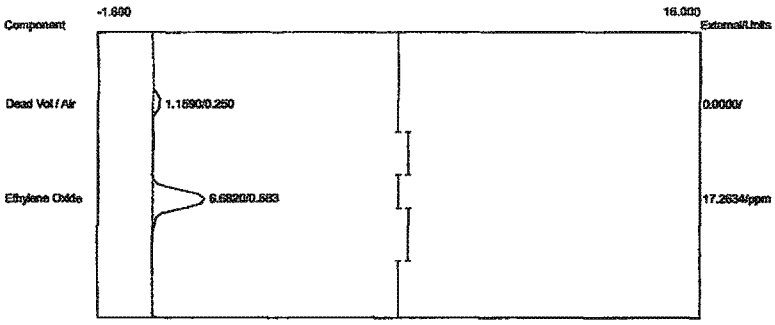
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.3925	0.0000	
Ethylene Oxide	0.600	3.2180	8.3139	ppm
		4.6105	8.3139	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:46:18
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-1A20.CHR (c:\peak359)
Sample: Abator #2 Outlet
Operator: D. Kremer



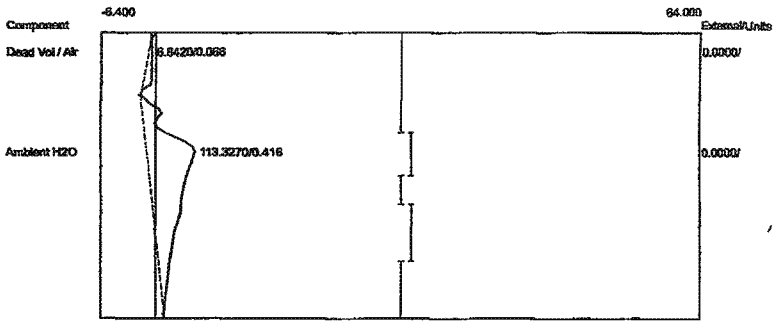
Component	Retention	Area	External	Units
Ambient H2O	0.416	26.7965	0.0000	
Acetaldehyde	0.633	4.4150	0.0000	
		31.2115	0.0000	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:49:45
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-1A21.CHR (c:\peak359)
Sample: Abator #1 Inlet
Operator: D. Kremer



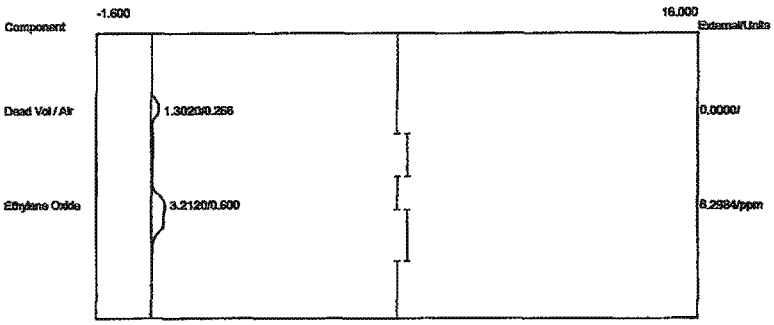
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.1590	0.0000	
Ethylene Oxide	0.583	6.6820	17.2634	ppm
		7.8410	17.2634	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:49:45
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-1A21.CHR (c:\peak359)
Sample: Abator #1 Outlet
Operator: D. Kremer



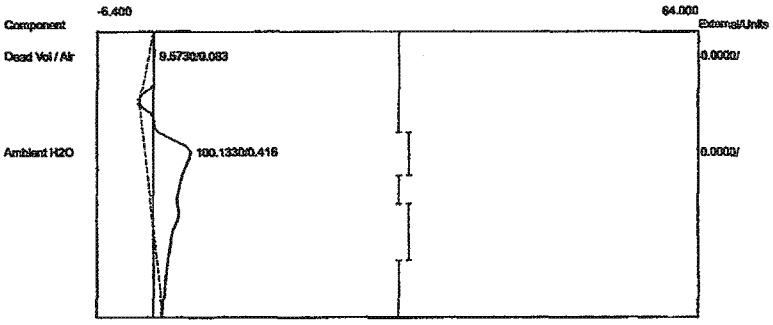
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	6.8420	0.0000	
Ambient H2O	0.416	113.3270	0.0000	
		120.1690	0.0000	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:51:23
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-1A22.CHR (c:\peak359)
Sample: Abator #2 Inlet
Operator: D. Kremer



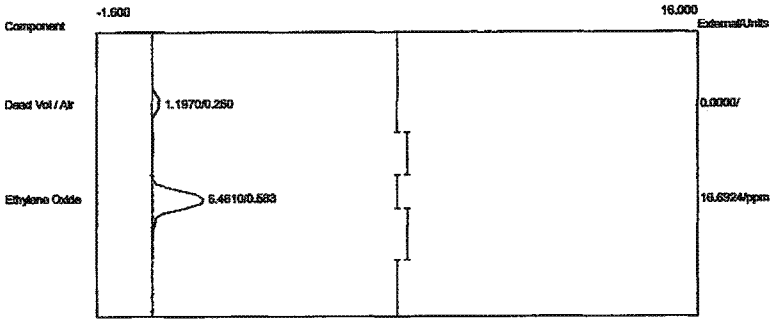
Component	Retention	Area	External	Units
Dead Vol / Air	0.266	1.3020	0.0000	
Ethylene Oxide	0.600	3.2120	8.2984	ppm
		4.5140	8.2984	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:51:23
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-1A22.CHR (c:\peak359)
Sample: Abator #2 Outlet
Operator: D. Kremer



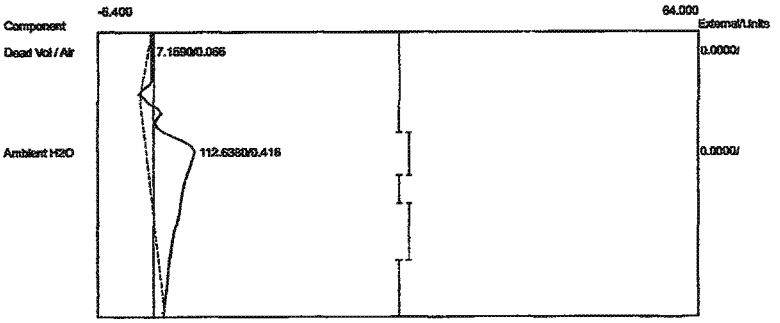
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	9.5730	0.0000	
Ambient H2O	0.416	100.1330	0.0000	
		109.7060	0.0000	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:54:09
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-1A23.CHR (c:\peak359)
Sample: Abator #1 Inlet
Operator: D. Kremer



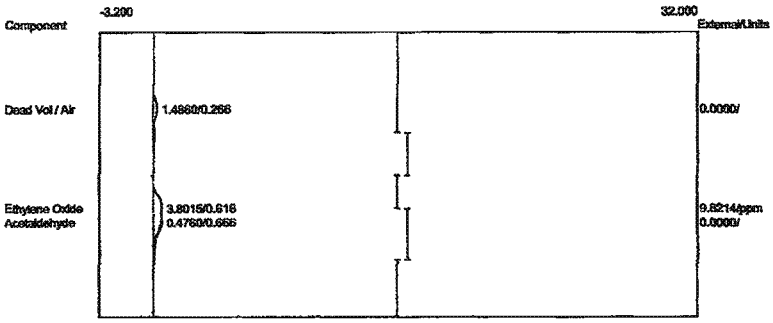
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.1970	0.0000	
Ethylene Oxide	0.583	6.4610	16.6924	ppm
		7.6580	16.6924	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:54:09
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-1A23.CHR (c:\peak359)
Sample: Abator #1 Outlet
Operator: D. Kremer



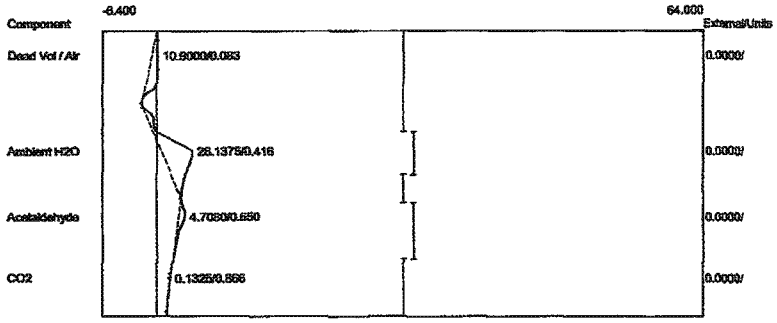
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	7.1590	0.0000	
Ambient H2O	0.416	112.6380	0.0000	
		119.7970	0.0000	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:56:18
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-1A24.CHR (c:\peak359)
Sample: Abator #2 Inlet
Operator: D. Kremer



Component	Retention	Area	External	Units
Dead Vol / Air	0.266	1.4860	0.0000	
Ethylene Oxide	0.616	3.8015	9.8214	ppm
Acetaldehyde	0.666	0.4760	0.0000	
		5.7635	9.8214	

Client: Steris - El Paso 1
Client ID: Run#1Aer
Analysis date: 06/23/2016 14:56:18
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-1A24.CHR (c:\peak359)
Sample: Abator #2 Outlet
Operator: D. Kremer

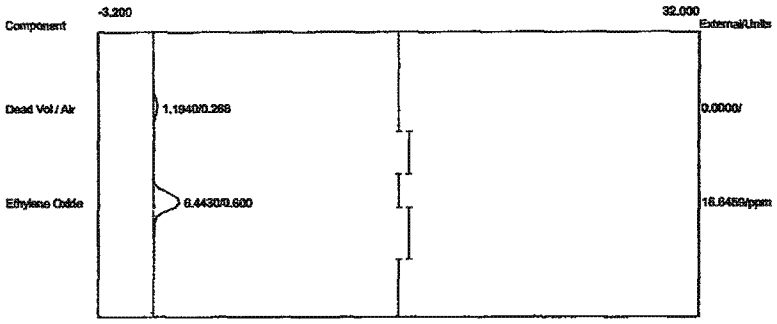


Component	Retention	Area	External	Units
Dead Vol / Air	0.083	10.9000	0.0000	
Ambient H2O	0.416	26.1375	0.0000	
Acetaldehyde	0.650	4.7080	0.0000	
CO2	0.866	0.1325	0.0000	
		41.8780	0.0000	

APPENDIX C

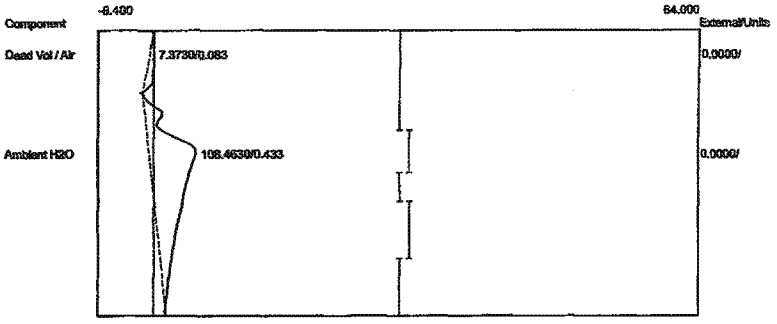
Run #2 Chromatograms – Abator #1 & #2

Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 14:59:12
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-2A01.CHR (c:\peak359)
Sample: Abator #1 Inlet
Operator: D. Kremer



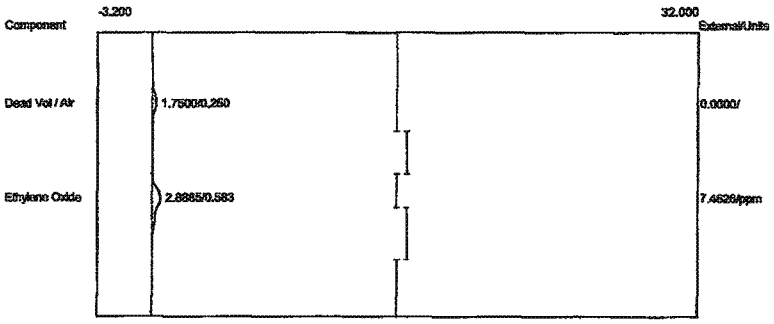
Component	Retention	Area	External	Units
Dead Vol / Air	0.266	1.1940	0.0000	
Ethylene Oxide	0.600	6.4430	16.6459	ppm
		7.6370	16.6459	

Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 14:59:12
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-2A01.CHR (c:\peak359)
Sample: Abator #1 Outlet
Operator: D. Kremer



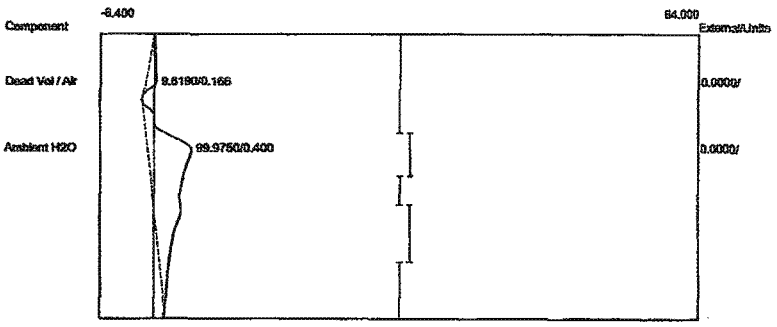
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	7.3730	0.0000	
Ambient H2O	0.433	108.4630	0.0000	
		115.8360	0.0000	

Lab name: ECCI
Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:01:49
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-2A02.CHR (c:\peak359)
Sample: Abator #2 Inlet
Operator: D. Kremer



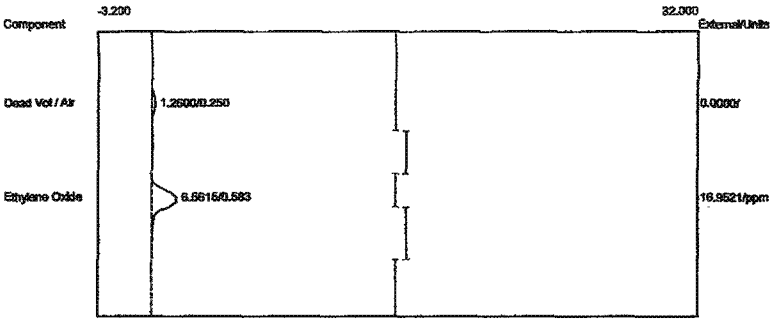
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.7500	0.0000	
Ethylene Oxide	0.583	2.8885	7.4626	ppm
		4.6385	7.4626	

Lab name: ECCI
Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:01:49
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-2A02.CHR (c:\peak359)
Sample: Abator #2 Outlet
Operator: D. Kremer



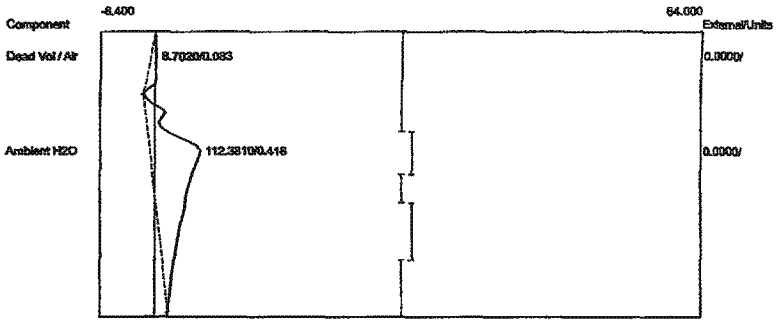
Component	Retention	Area	External	Units
Dead Vol / Air	0.166	9.6190	0.0000	
Ambient H2O	0.400	99.9750	0.0000	
		109.5940	0.0000	

Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:04:42
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-2A03.CHR (c:\peak359)
Sample: Abator #1 Inlet
Operator: D. Kremer



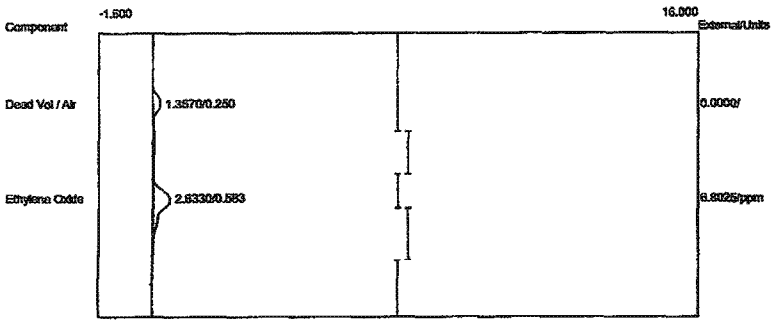
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.2600	0.0000	
Ethylene Oxide	0.583	6.5615	16.9521	ppm
		7.8215	16.9521	

Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:04:42
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-2A03.CHR (c:\peak359)
Sample: Abator #1 Outlet
Operator: D. Kremer



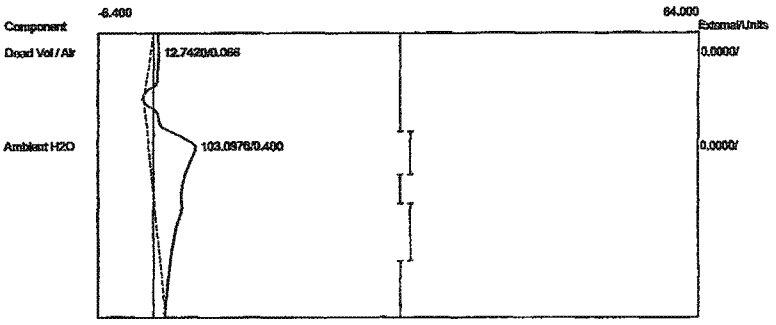
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	8.7020	0.0000	
Ambient H2O	0.416	112.3810	0.0000	
		121.0830	0.0000	

Lab name: ECCI
Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:06:17
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-2A04.CHR (c:\peak359)
Sample: Abator #2 Inlet
Operator: D. Kremer



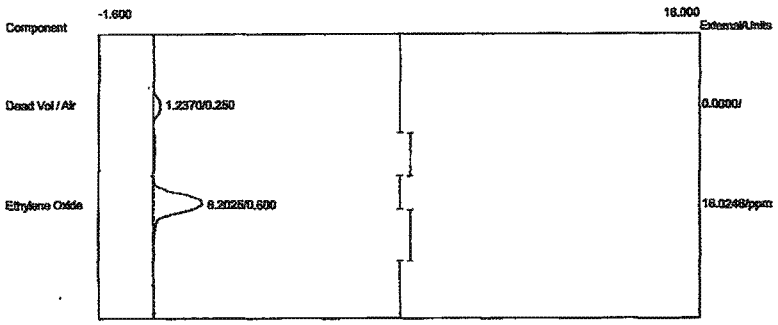
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.3570	0.0000	
Ethylene Oxide	0.583	2.6330	6.8025	ppm
		3.9900	6.8025	

Lab name: ECCI
Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:06:17
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-2A04.CHR (c:\peak359)
Sample: Abator #2 Outlet
Operator: D. Kremer



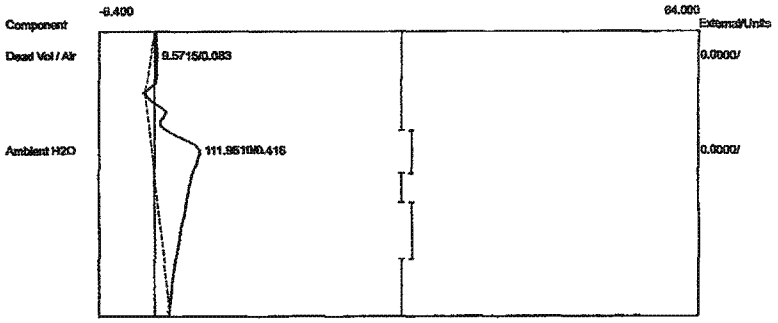
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	12.7420	0.0000	
Ambient H2O	0.400	103.0970	0.0000	
		115.8390	0.0000	

Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:09:31
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-2A05.CHR (c:\peak359)
Sample: Abator #1 Inlet
Operator: D. Kremer



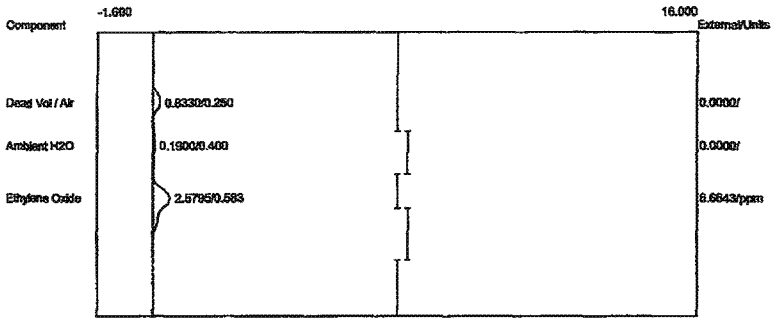
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.2370	0.0000	
Ethylene Oxide	0.600	6.2025	16.0246	ppm
		7.4395	16.0246	

Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:09:31
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-2A05.CHR (c:\peak359)
Sample: Abator #1 Outlet
Operator: D. Kremer



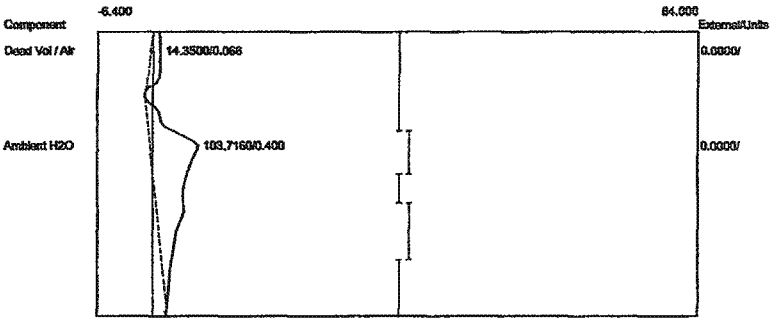
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	9.5715	0.0000	
Ambient H2O	0.416	111.9510	0.0000	
		121.5225	0.0000	

Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:11:06
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-2A06.CHR (c:\peak359)
Sample: Abator #2 Inlet
Operator: D. Kremer



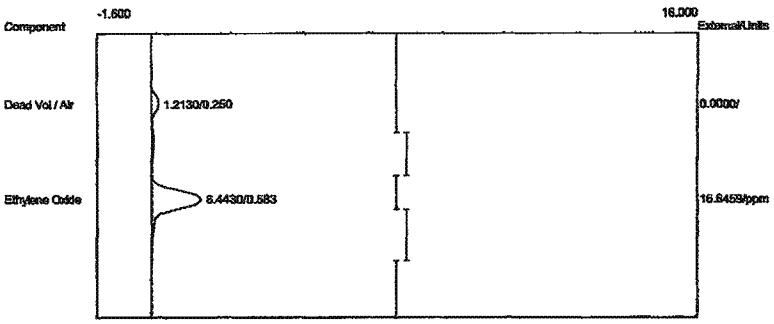
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	0.8330	0.0000	
Ambient H2O	0.400	0.1900	0.0000	
Ethylene Oxide	0.583	2.5795	6.6643	ppm
		3.6025	6.6643	

Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:11:06
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-2A06.CHR (c:\peak359)
Sample: Abator #2 Outlet
Operator: D. Kremer



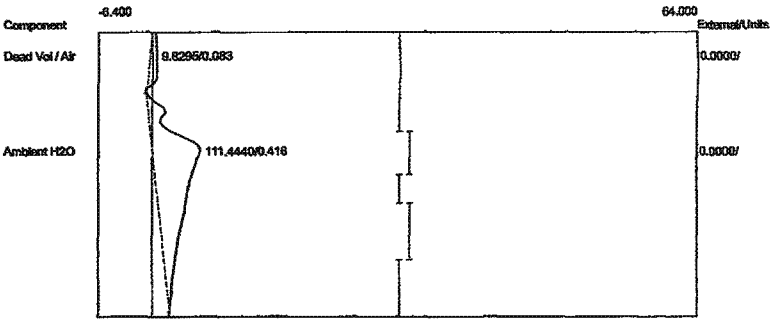
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	14.3500	0.0000	
Ambient H2O	0.400	103.7160	0.0000	
		118.0660	0.0000	

Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:14:06
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-2A07.CHR (c:\peak359)
Sample: Abator #1 Inlet
Operator: D. Kremer



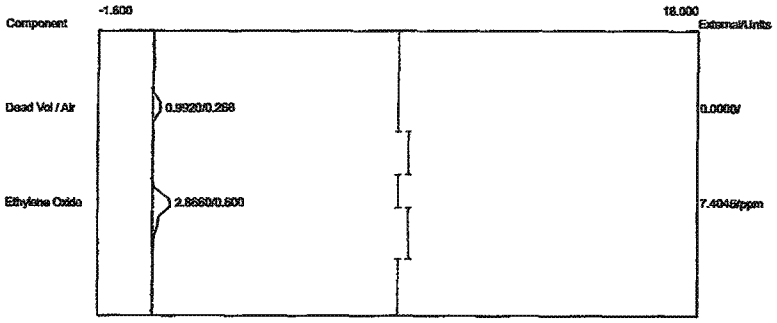
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.2130	0.0000	
Ethylene Oxide	0.583	6.4430	16.6459	ppm
		7.6560	16.6459	

Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:14:06
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-2A07.CHR (c:\peak359)
Sample: Abator #1 Outlet
Operator: D. Kremer



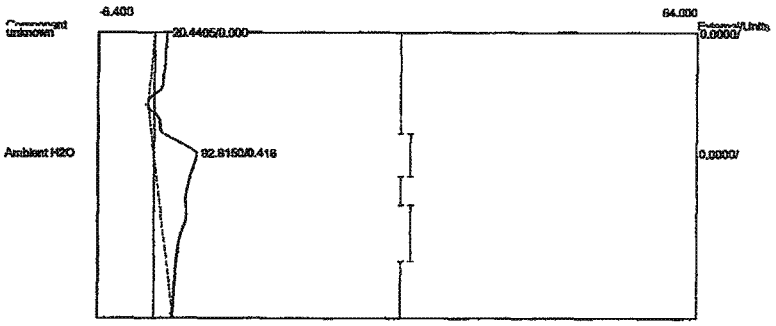
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	9.8295	0.0000	
Ambient H2O	0.416	111.4440	0.0000	
		121.2735	0.0000	

Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:16:03
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-2A08.CHR (c:\peak359)
Sample: Abator #2 Inlet
Operator: D. Kremer



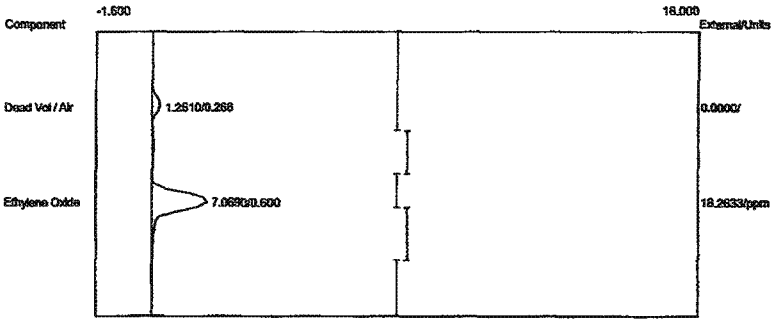
Component	Retention	Area	External	Units
Dead Vol / Air	0.266	0.9920	0.0000	
Ethylene Oxide	0.600	2.8660	7.4045	ppm
		3.8580	7.4045	

Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:16:03
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-2A08.CHR (c:\peak359)
Sample: Abator #2 Outlet
Operator: D. Kremer



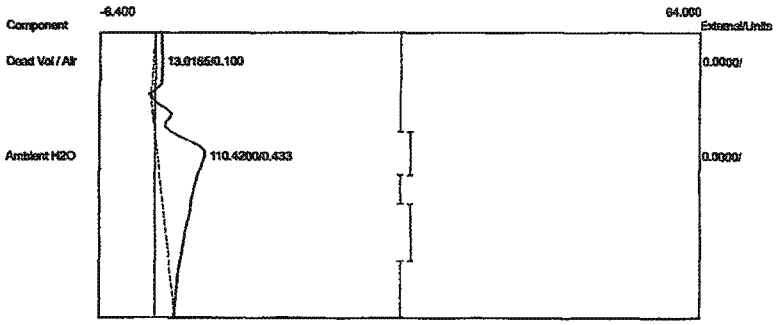
Component	Retention	Area	External	Units
Ambient H2O	0.416	92.8150	0.0000	
		92.8150	0.0000	

Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:19:04
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-2A09.CHR (c:\peak359)
Sample: Abator #1 Inlet
Operator: D. Kremer



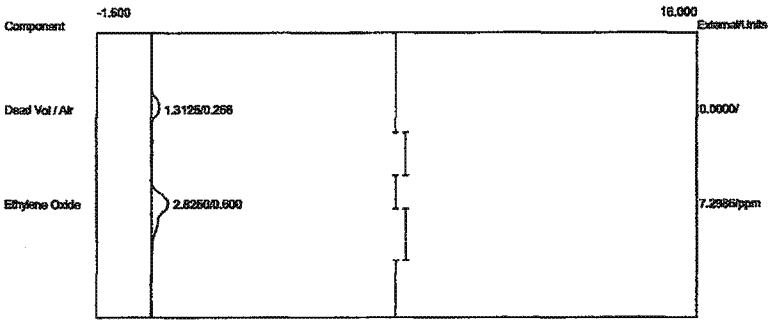
Component	Retention	Area	External	Units
Dead Vol / Air	0.266	1.2510	0.0000	
Ethylene Oxide	0.600	7.0690	18.2633	ppm
		8.3200	18.2633	

Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:19:04
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-2A09.CHR (c:\peak359)
Sample: Abator #1 Outlet
Operator: D. Kremer



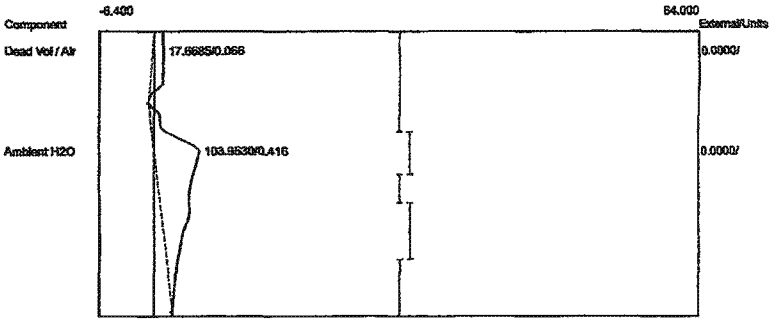
Component	Retention	Area	External	Units
Dead Vol / Air	0.100	13.0165	0.0000	
Ambient H2O	0.433	110.4200	0.0000	
		123.4365	0.0000	

Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:21:24
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-2A10.CHR (c:\peak359)
Sample: Abator #2 Inlet
Operator: D. Kremer



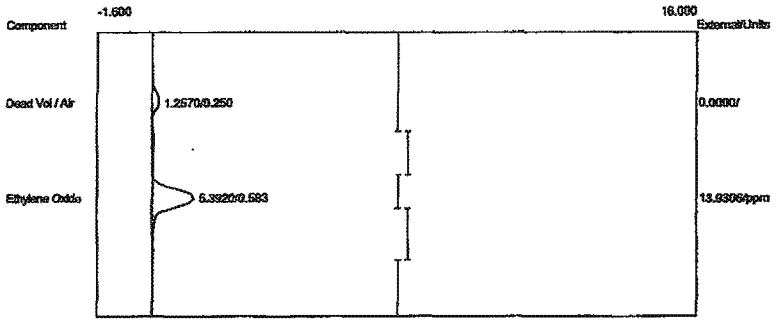
Component	Retention	Area	External	Units
Dead Vol / Air	0.266	1.3125	0.0000	
Ethylene Oxide	0.600	2.8250	7.2986	ppm
		4.1375	7.2986	

Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:21:24
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-2A10.CHR (c:\peak359)
Sample: Abator #2 Outlet
Operator: D. Kremer



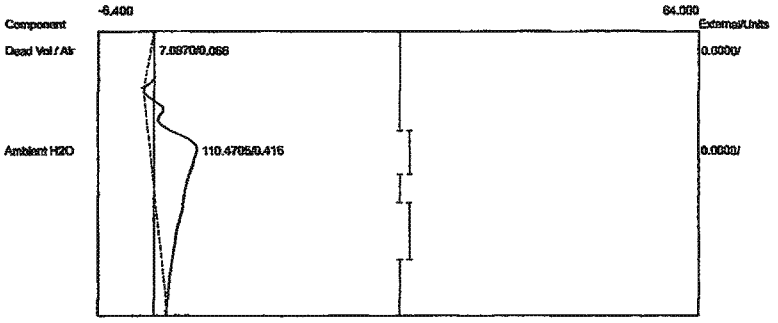
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	17.6685	0.0000	
Ambient H2O	0.416	103.9530	0.0000	
		121.6215	0.0000	

Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:24:09
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-2A11.CHR (c:\peak359)
Sample: Abator #1 Inlet
Operator: D. Kremer



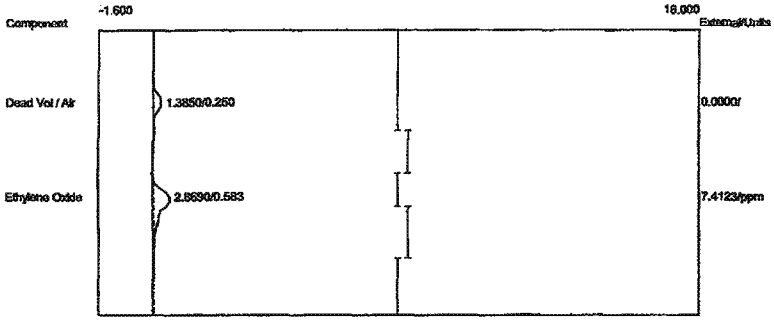
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.2570	0.0000	
Ethylene Oxide	0.583	5.3920	13.9306	ppm
		6.6490	13.9306	

Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:24:09
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-2A11.CHR (c:\peak359)
Sample: Abator #1 Outlet
Operator: D. Kremer



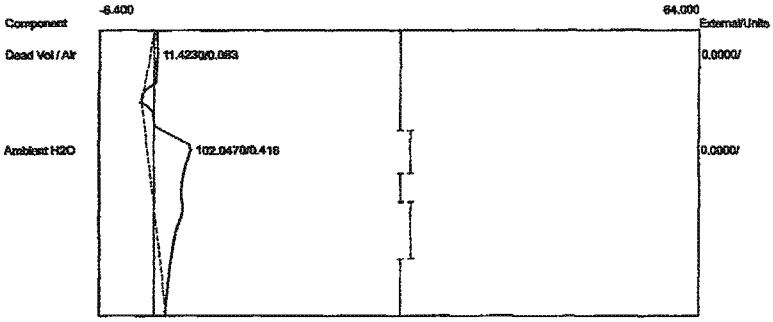
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	7.0870	0.0000	
Ambient H2O	0.416	110.4705	0.0000	
		117.5575	0.0000	

Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:26:21
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-2A12.CHR (c:\peak359)
Sample: Abator #2 Inlet
Operator: D. Kremer



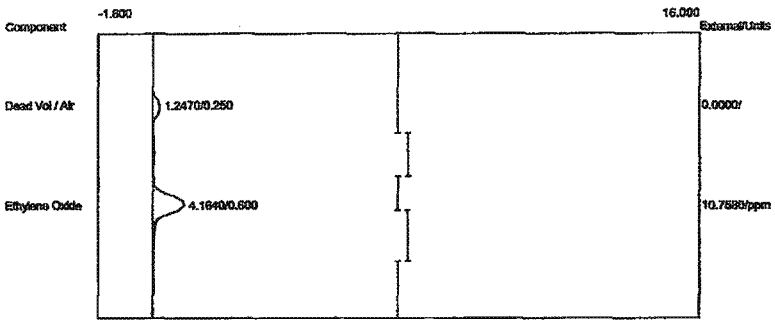
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.3850	0.0000	
Ethylene Oxide	0.583	2.8690	7.4123	ppm
		4.2540	7.4123	

Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:26:21
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-2A12.CHR (c:\peak359)
Sample: Abator #2 Outlet
Operator: D. Kremer



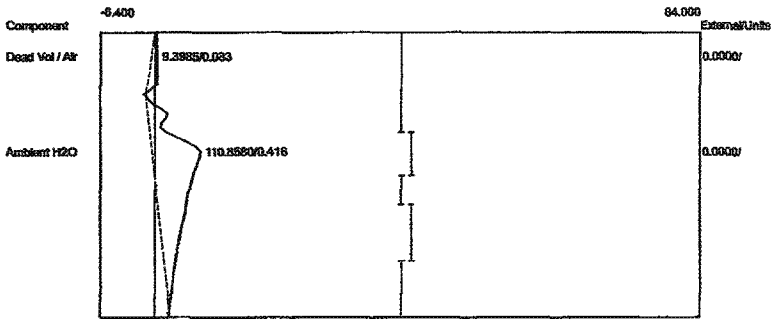
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	11.4230	0.0000	
Ambient H2O	0.416	102.0470	0.0000	
		113.4700	0.0000	

Lab name: ECSI
Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:29:15
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-2A13.CHR (c:\peak359)
Sample: Abator #1 Inlet
Operator: D. Kremer



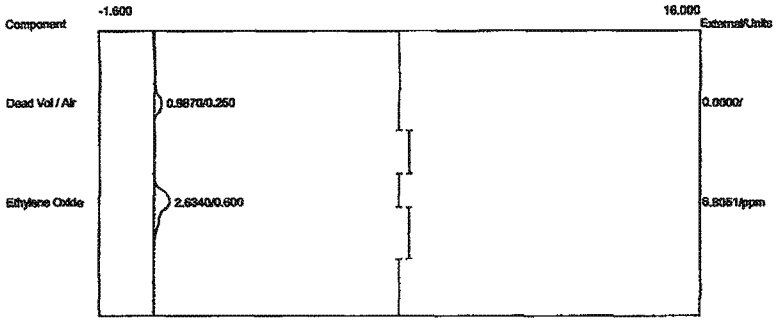
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.2470	0.0000	
Ethylene Oxide	0.600	4.1640	10.7580	ppm
		5.4110	10.7580	

Lab name: ECSI
Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:29:15
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-2A13.CHR (c:\peak359)
Sample: Abator #1 Outlet
Operator: D. Kremer



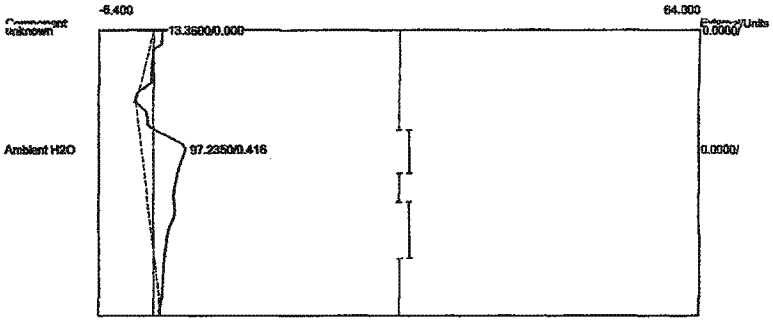
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	9.3985	0.0000	
Ambient H2O	0.416	110.8580	0.0000	
		120.2565	0.0000	

Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:31:13
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-2A14.CHR (c:\peak359)
Sample: Abator #2 Inlet
Operator: D. Kremer



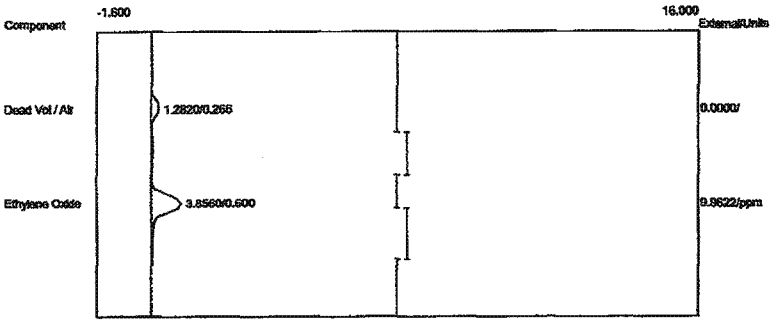
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	0.9870	0.0000	
Ethylene Oxide	0.600	2.6340	6.8051	ppm
		3.6210	6.8051	

Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:31:13
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-2A14.CHR (c:\peak359)
Sample: Abator #2 Outlet
Operator: D. Kremer



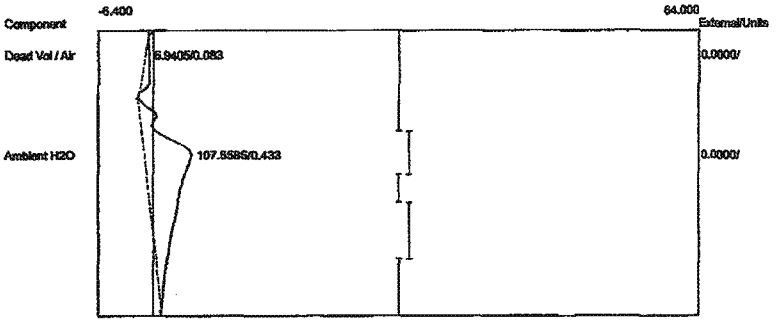
Component	Retention	Area	External	Units
Ambient H2O	0.416	97.2350	0.0000	
		97.2350	0.0000	

Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:34:33
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-2A15.CHR (c:\peak359)
Sample: Abator #1 Inlet
Operator: D. Kremer



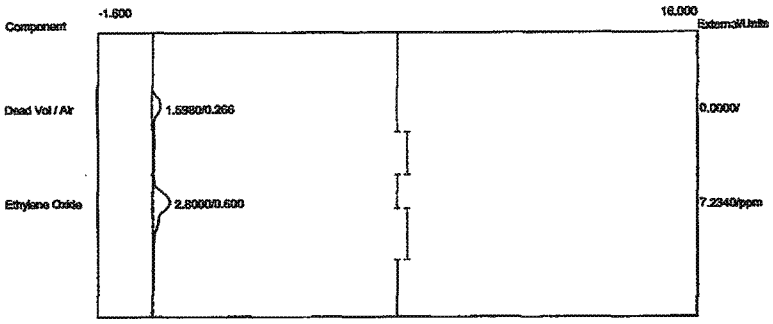
Component	Retention	Area	External	Units
Dead Vol / Air	0.266	1.2820	0.0000	
Ethylene Oxide	0.600	3.8560	9.9622	ppm
		5.1380	9.9622	

Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:34:33
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-2A15.CHR (c:\peak359)
Sample: Abator #1 Outlet
Operator: D. Kremer



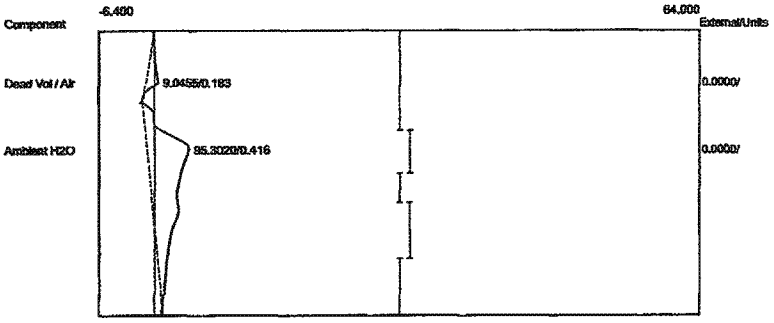
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	6.9405	0.0000	
Ambient H2O	0.433	107.5585	0.0000	
		114.4990	0.0000	

Lab name: ECSI
Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:36:15
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-2A16.CHR (c:\peak359)
Sample: Abator #2 Inlet
Operator: D. Kremer



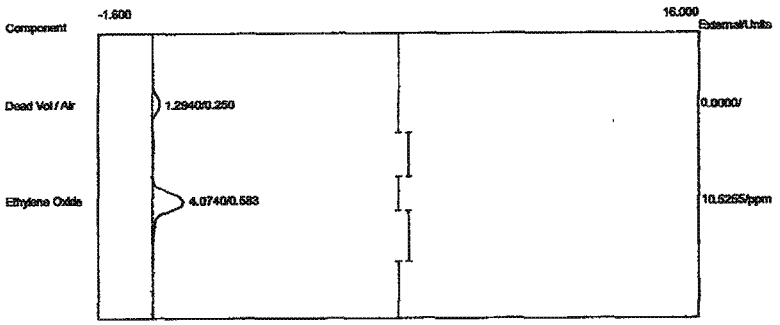
Component	Retention	Area	External	Units
Dead Vol / Air	0.266	1.5980	0.0000	
Ethylene Oxide	0.600	2.8000	7.2340	ppm
		4.3980	7.2340	

Lab name: ECSI
Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:36:15
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-2A16.CHR (c:\peak359)
Sample: Abator #2 Outlet
Operator: D. Kremer



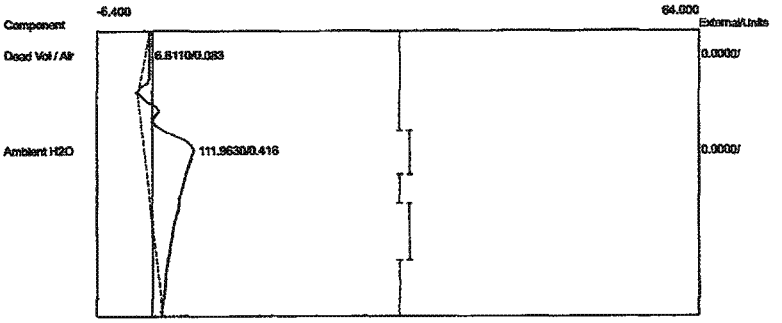
Component	Retention	Area	External	Units
Dead Vol / Air	0.183	9.0455	0.0000	
Ambient H2O	0.416	95.3020	0.0000	
		104.3475	0.0000	

Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:39:19
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-2A17.CHR (c:\peak359)
Sample: Abator #1 Inlet
Operator: D. Kremer



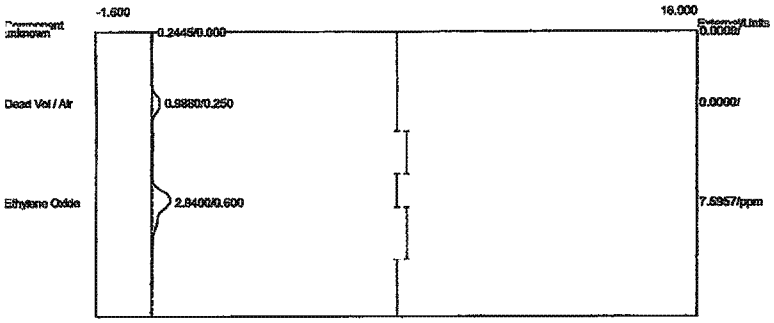
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.2940	0.0000	
Ethylene Oxide	0.583	4.0740	10.5255	ppm
		5.3680	10.5255	

Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:39:19
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-2A17.CHR (c:\peak359)
Sample: Abator #1 Outlet
Operator: D. Kremer



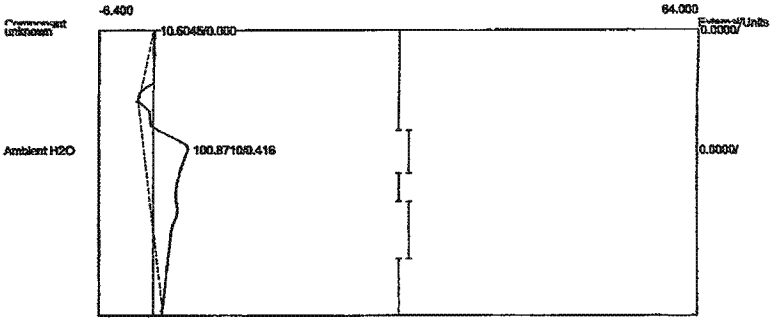
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	6.8110	0.0000	
Ambient H2O	0.416	111.9630	0.0000	
		118.7740	0.0000	

Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:41:22
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-2A18.CHR (c:\peak359)
Sample: Abator #2 Inlet
Operator: D. Kremer



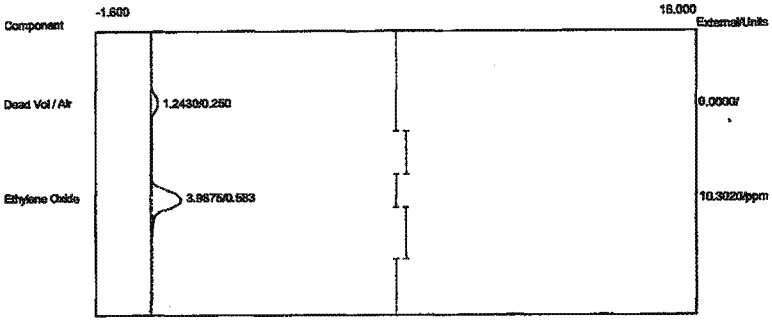
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	0.9880	0.0000	
Ethylene Oxide	0.600	2.9400	7.5957	ppm
		3.9280	7.5957	

Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:41:22
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-2A18.CHR (c:\peak359)
Sample: Abator #2 Outlet
Operator: D. Kremer



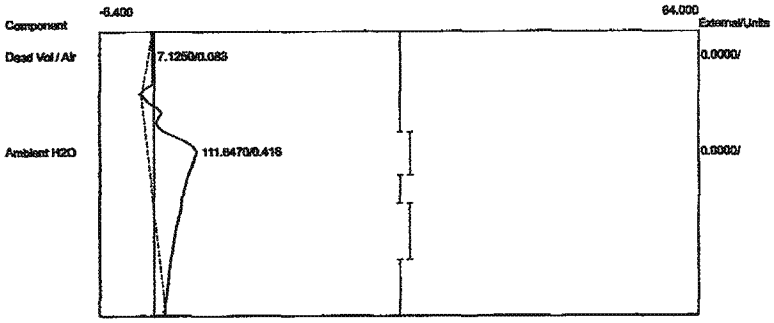
Component	Retention	Area	External	Units
Ambient H2O	0.416	100.8710	0.0000	
		100.8710	0.0000	

Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:44:19
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-2A19.CHR (c:\peak359)
Sample: Abator #1 Inlet
Operator: D. Kremer



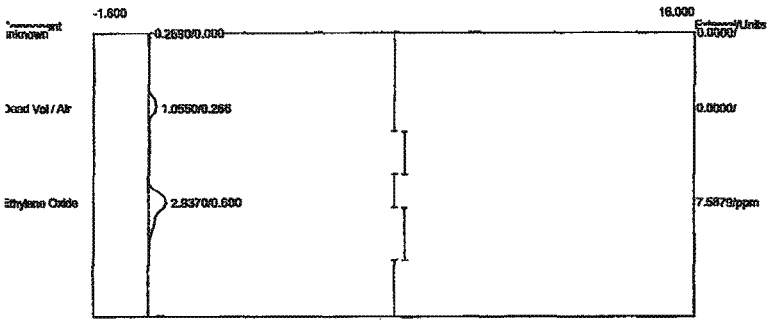
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.2430	0.0000	
Ethylene Oxide	0.583	3.9875	10.3020	ppm
		5.2305	10.3020	

Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:44:19
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-2A19.CHR (c:\peak359)
Sample: Abator #1 Outlet
Operator: D. Kremer



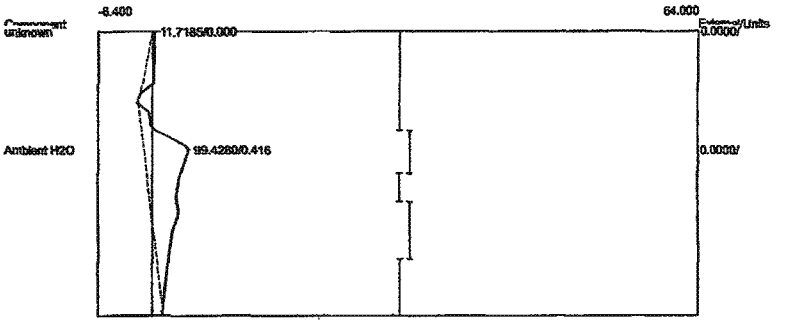
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	7.1250	0.0000	
Ambient H2O	0.416	111.6470	0.0000	
		118.7720	0.0000	

Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:46:22
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-2A20.CHR (c:\peak359)
Sample: Abator #2 Inlet
Operator: D. Kremer



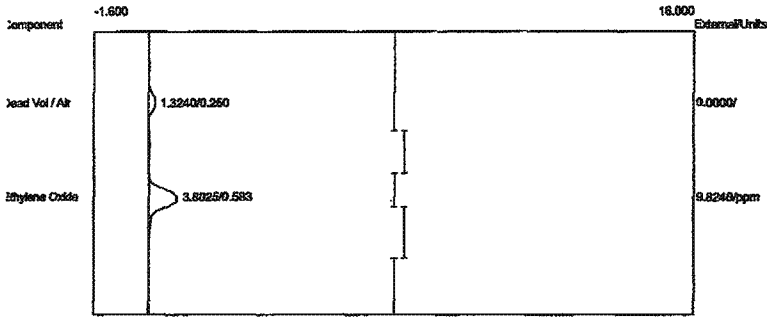
Component	Retention	Area	External	Units
Dead Vol / Air	0.266	1.0550	0.0000	
Ethylene Oxide	0.600	2.9370	7.5879	ppm
		3.9920	7.5879	

Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:46:22
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-2A20.CHR (c:\peak359)
Sample: Abator #2 Outlet
Operator: D. Kremer



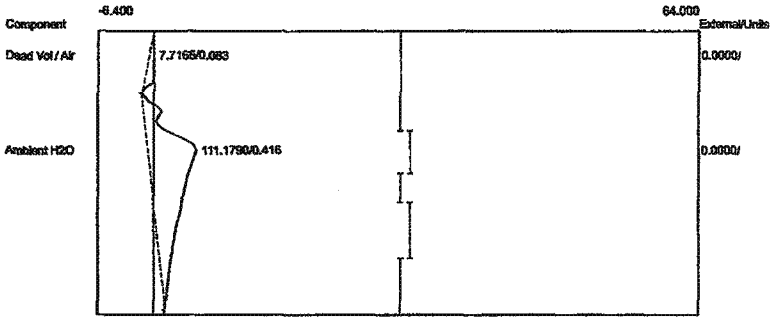
Component	Retention	Area	External	Units
Ambient H2O	0.416	99.4280	0.0000	
		99.4280	0.0000	

Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:49:04
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-2A21.CHR (c:\peak359)
Sample: Abator #1 Inlet
Operator: D. Kremer



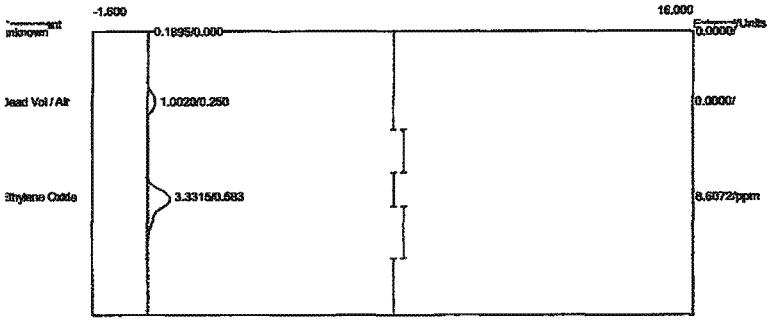
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.3240	0.0000	
Ethylene Oxide	0.583	3.8025	9.8240	ppm
		5.1265	9.8240	

Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:49:04
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-2A21.CHR (c:\peak359)
Sample: Abator #1 Outlet
Operator: D. Kremer



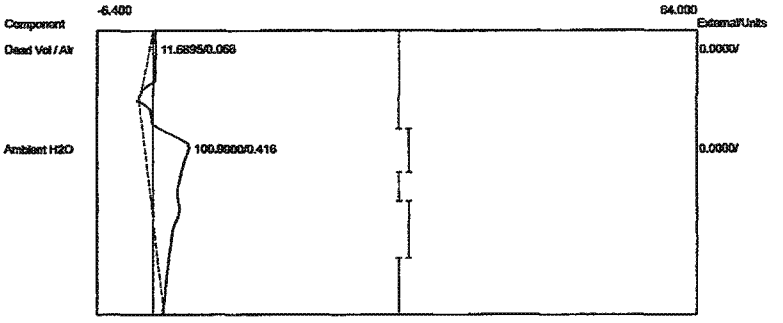
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	7.7165	0.0000	
Ambient H2O	0.416	111.1790	0.0000	
		118.8955	0.0000	

Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:51:09
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-2A22.CHR (c:\peak359)
Sample: Abator #2 Inlet
Operator: D. Kremer



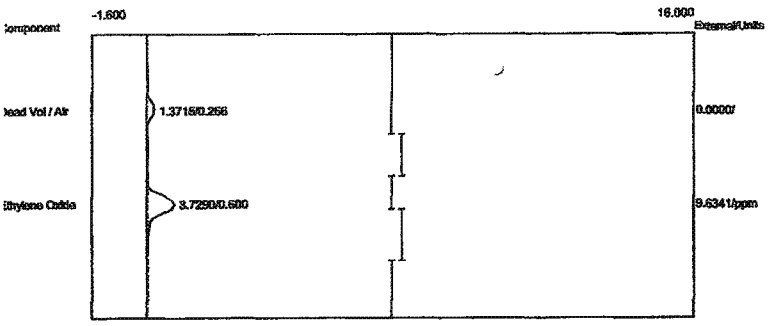
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.0020	0.0000	
Ethylene Oxide	0.583	3.3315	8.6072	ppm
		4.3335	8.6072	

Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:51:09
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-2A22.CHR (c:\peak359)
Sample: Abator #2 Outlet
Operator: D. Kremer



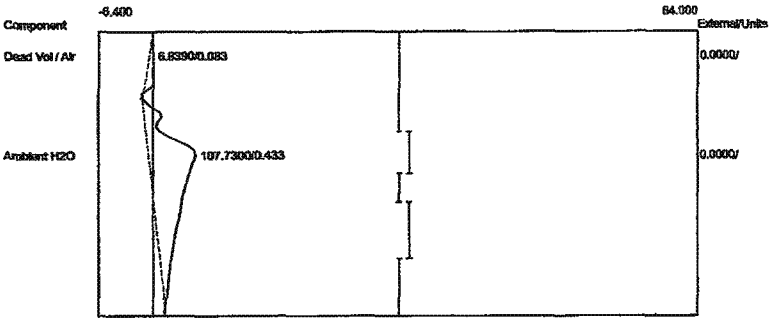
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	11.6895	0.0000	
Ambient H2O	0.416	100.9900	0.0000	
		112.6795	0.0000	

Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:54:03
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-2A23.CHR (c:\peak359)
Sample: Abator #1 Inlet
Operator: D. Kremer



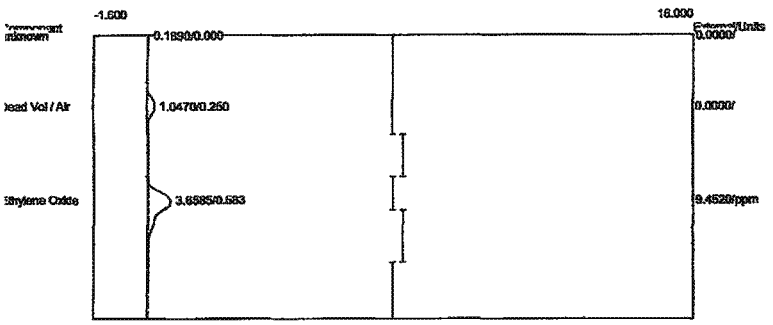
Component	Retention	Area	External	Units
Dead Vol / Air	0.266	1.3715	0.0000	
Ethylene Oxide	0.600	3.7290	9.6341	ppm
		5.1005	9.6341	

Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:54:03
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-2A23.CHR (c:\peak359)
Sample: Abator #1 Outlet
Operator: D. Kremer



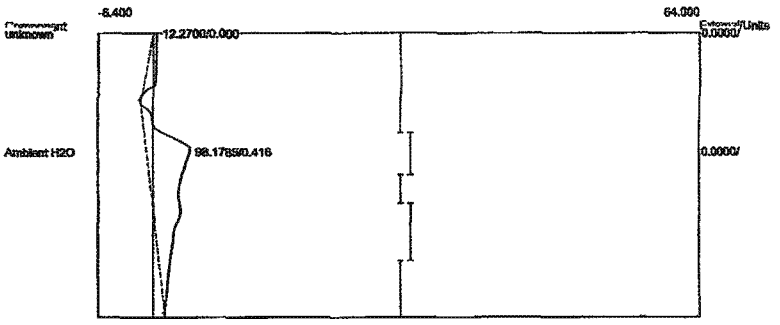
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	6.8390	0.0000	
Ambient H2O	0.433	107.7300	0.0000	
		114.5690	0.0000	

Lab name: ECSI
Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:56:07
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-2A24.CHR (c:\peak359)
Sample: Abator #2 Inlet
Operator: D. Kremer



Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.0470	0.0000	
Ethylene Oxide	0.583	3.6585	9.4520	ppm
		4.7055	9.4520	

Lab name: ECSI
Client: Steris - El Paso 1
Client ID: Run#2Aer
Analysis date: 06/23/2016 15:56:07
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-2A24.CHR (c:\peak359)
Sample: Abator #2 Outlet
Operator: D. Kremer

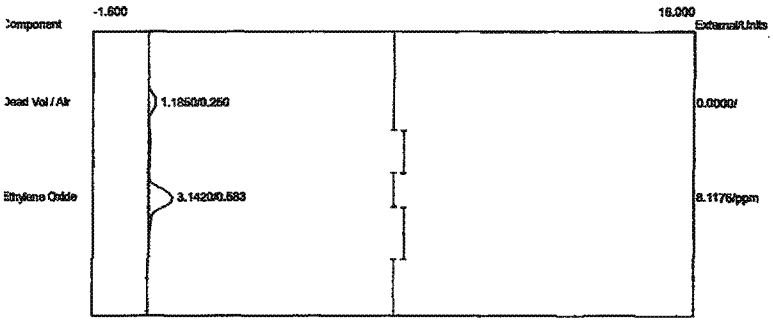


Component	Retention	Area	External	Units
Ambient H2O	0.416	98.1785	0.0000	
		98.1785	0.0000	

APPENDIX D

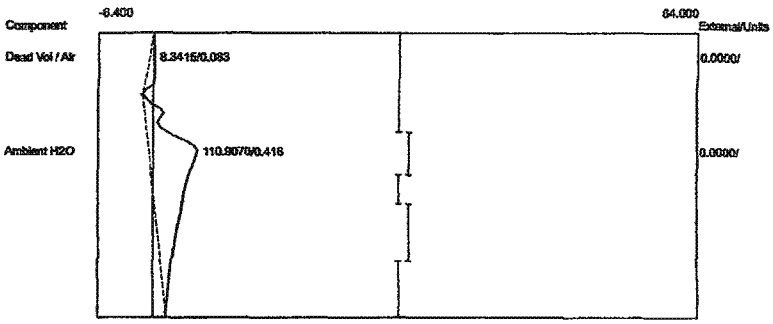
Run #3 Chromatograms – Abator #1 & #2

Lab name: ECSI
Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 15:59:18
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-3A01.CHR (c:\peak359)
Sample: Abator #1 Inlet
Operator: D. Kremer



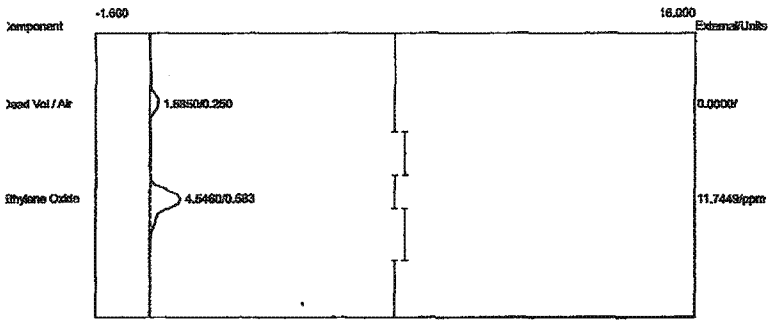
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.1850	0.0000	
Ethylene Oxide	0.583	3.1420	8.1176	ppm
		4.3270	8.1176	

Lab name: ECSI
Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 15:59:18
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-3A01.CHR (c:\peak359)
Sample: Abator #1 Outlet
Operator: D. Kremer



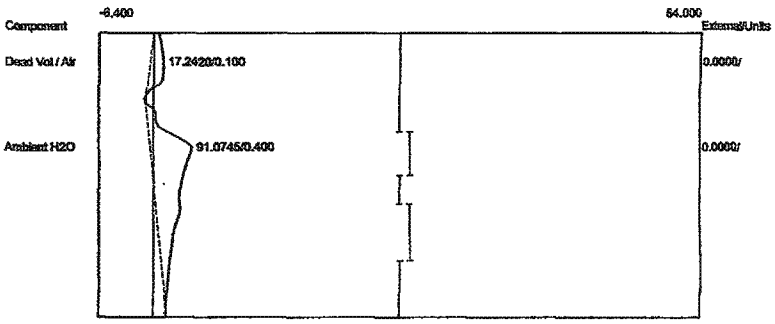
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	8.3415	0.0000	
Ambient H2O	0.416	110.9070	0.0000	
		119.2485	0.0000	

Lab name: ECSI
Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:01:07
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-3A02.CHR (c:\peak359)
Sample: Abator #2 Inlet
Operator: D. Kremer



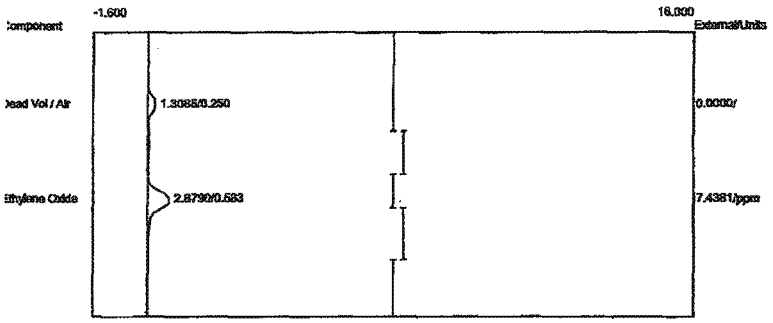
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.5850	0.0000	
Ethylene Oxide	0.583	4.5460	11.7449	ppm
		6.1310	11.7449	

Lab name: ECSI
Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:01:07
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-3A02.CHR (c:\peak359)
Sample: Abator #2 Outlet
Operator: D. Kremer



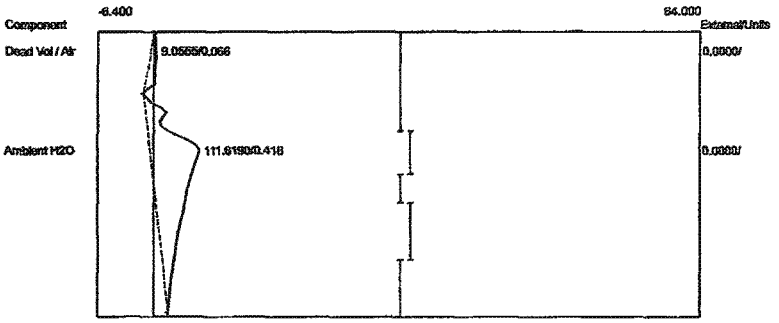
Component	Retention	Area	External	Units
Dead Vol / Air	0.100	17.2420	0.0000	
Ambient H2O	0.400	91.0745	0.0000	
		108.3165	0.0000	

Lab name: ECSI
Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:04:18
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-3A03.CHR (c:\peak359)
Sample: Abator #1 Inlet
Operator: D. Kremer



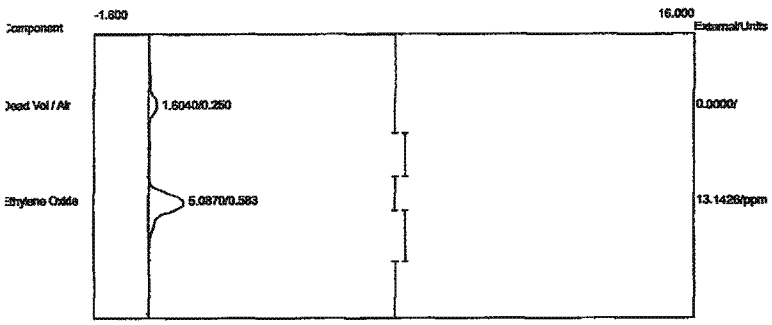
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.3085	0.0000	
Ethylene Oxide	0.583	2.8790	7.4381	ppm
		4.1875	7.4381	

Lab name: ECSI
Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:04:18
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-3A03.CHR (c:\peak359)
Sample: Abator #1 Outlet
Operator: D. Kremer



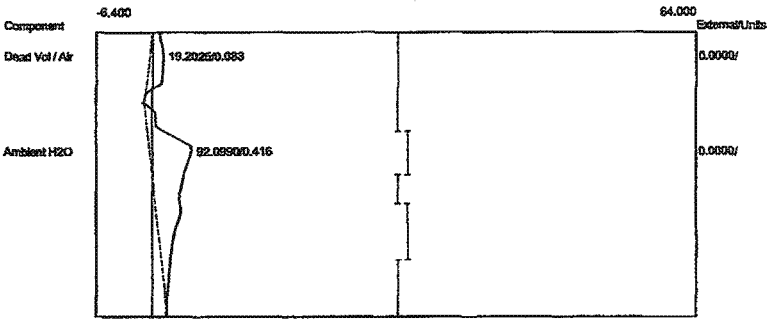
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	9.0555	0.0000	
Ambient H2O	0.416	111.6190	0.0000	
		120.6745	0.0000	

Lab name: EOSI
Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:06:08
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-3A04.CHR (c:\peak359)
Sample: Abator #2 Inlet
Operator: D. Kremer



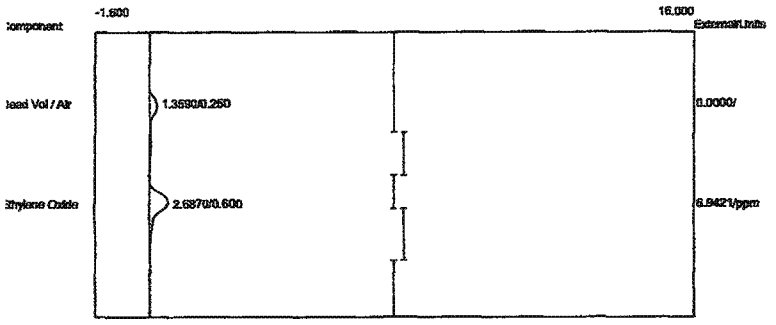
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.6040	0.0000	
Ethylene Oxide	0.583	5.0870	13.1426	ppm
		6.6910	13.1426	

Lab name: EOSI
Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:06:08
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-3A04.CHR (c:\peak359)
Sample: Abator #2 Outlet
Operator: D. Kremer



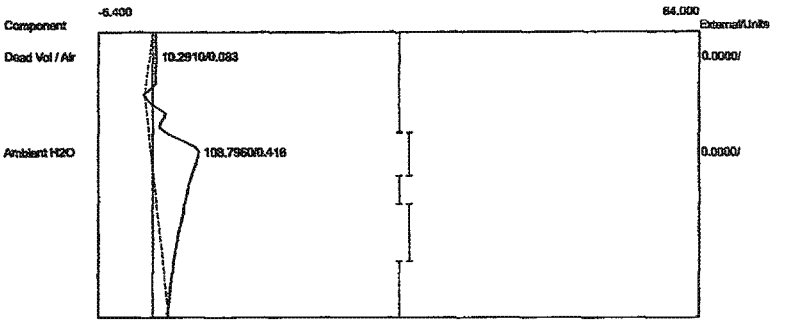
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	19.2025	0.0000	
Ambient H2O	0.416	92.0990	0.0000	
		111.3015	0.0000	

Lab name: ECSI
Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:09:16
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-3A05.CHR (c:\peak359)
Sample: Abator #1 Inlet
Operator: D. Kremer



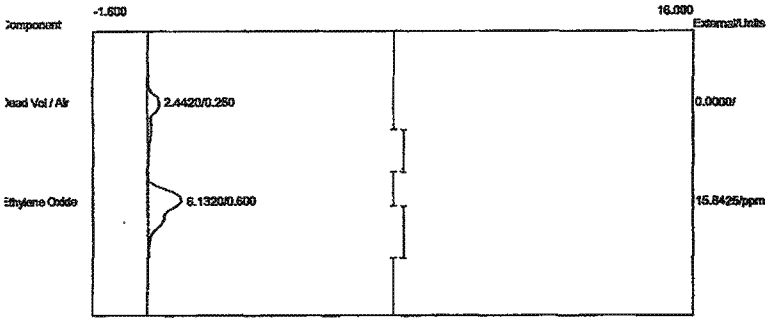
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.3590	0.0000	
Ethylene Oxide	0.600	2.6870	6.9421	ppm
		4.0460	6.9421	

Lab name: ECSI
Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:09:16
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-3A05.CHR (c:\peak359)
Sample: Abator #1 Outlet
Operator: D. Kremer



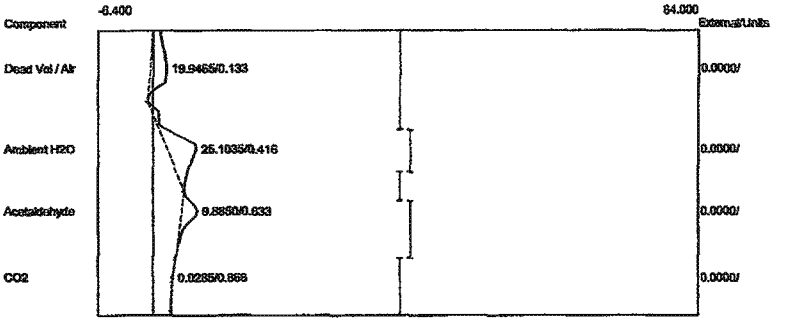
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	10.2910	0.0000	
Ambient H2O	0.416	108.7960	0.0000	
		119.0870	0.0000	

Lab name: ECSI
Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:11:03
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-3A06.CHR (c:\peak359)
Sample: Abator #2 Inlet
Operator: D. Kremer



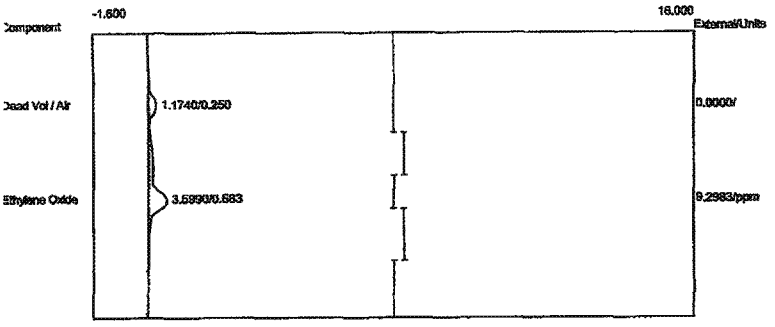
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	2.4420	0.0000	
Ethylene Oxide	0.600	6.1320	15.8425	ppm
		8.5740	15.8425	

Lab name: ECSI
Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:11:03
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-3A06.CHR (c:\peak359)
Sample: Abator #2 Outlet
Operator: D. Kremer



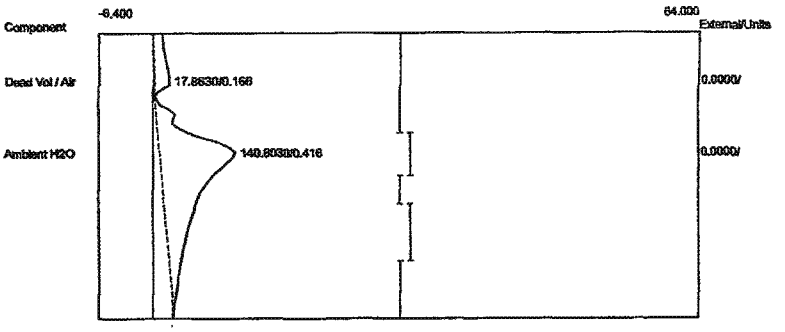
Component	Retention	Area	External	Units
Dead Vol / Air	0.133	19.9465	0.0000	
Ambient H2O	0.416	25.1035	0.0000	
Acetaldehyde	0.633	9.8850	0.0000	
CO2	0.866	0.0285	0.0000	
		54.9635	0.0000	

Lab name: ECSI
Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:14:03
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-3A07.CHR (c:\peak359)
Sample: Abator #1 Inlet
Operator: D. Kremer



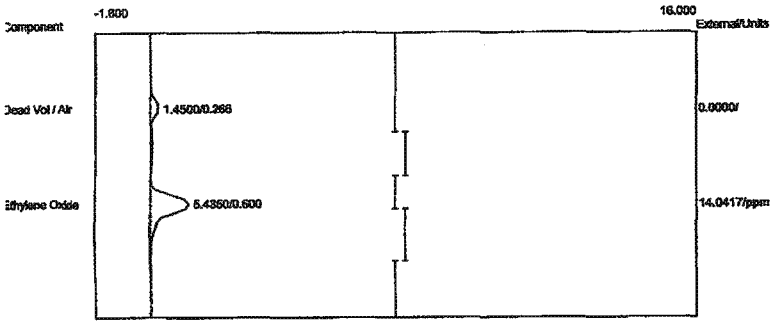
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.1740	0.0000	
Ethylene Oxide	0.583	3.5990	9.2983	ppm
		4.7730	9.2983	

Lab name: ECSI
Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:14:03
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-3A07.CHR (c:\peak359)
Sample: Abator #1 Outlet
Operator: D. Kremer



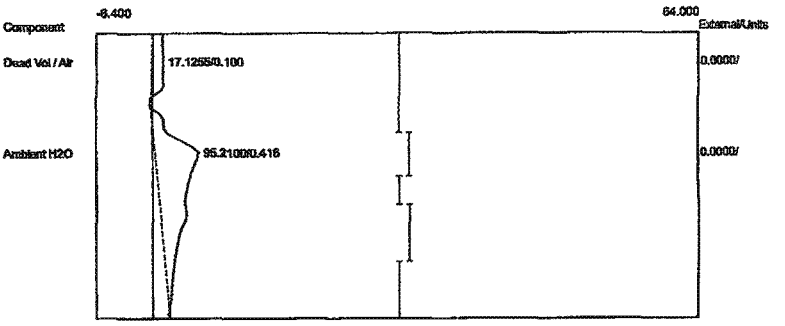
Component	Retention	Area	External	Units
Dead Vol / Air	0.166	17.8630	0.0000	
Ambient H2O	0.416	140.8030	0.0000	
		158.6660	0.0000	

Lab name: ECOI
Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:16:03
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-3A08.CHR (c:\peak359)
Sample: Abator #2 Inlet
Operator: D. Kremer



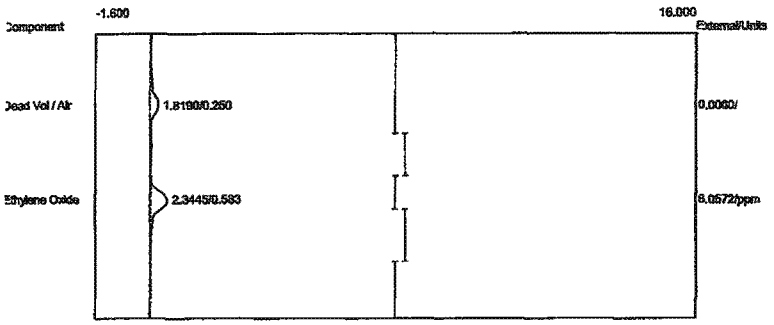
Component	Retention	Area	External	Units
Dead Vol / Air	0.266	1.4500	0.0000	
Ethylene Oxide	0.600	5.4350	14.0417	ppm
		6.8850	14.0417	

Lab name: ECOI
Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:16:03
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-3A08.CHR (c:\peak359)
Sample: Abator #2 Outlet
Operator: D. Kremer



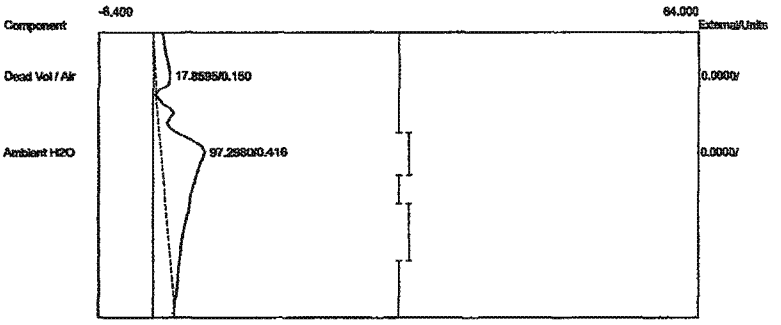
Component	Retention	Area	External	Units
Dead Vol / Air	0.100	17.1255	0.0000	
Ambient H2O	0.416	95.2100	0.0000	
		112.3355	0.0000	

Lab name: ECSI
Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:19:02
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-3A09.CHR (c:\peak359)
Sample: Abator #1 Inlet
Operator: D. Kremer



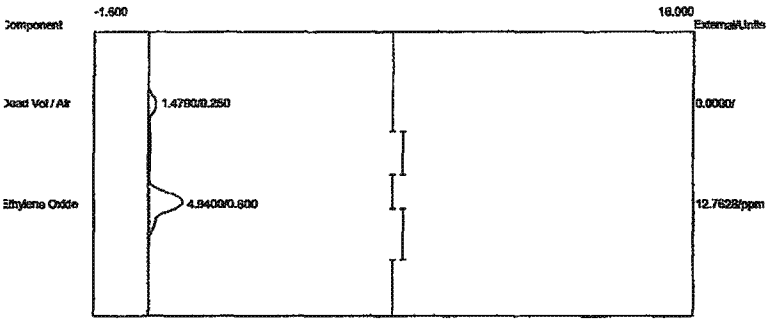
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.8190	0.0000	
Ethylene Oxide	0.583	2.3445	6.0572	ppm
		4.1635	6.0572	

Lab name: ECSI
Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:19:02
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-3A09.CHR (c:\peak359)
Sample: Abator #1 Outlet
Operator: D. Kremer



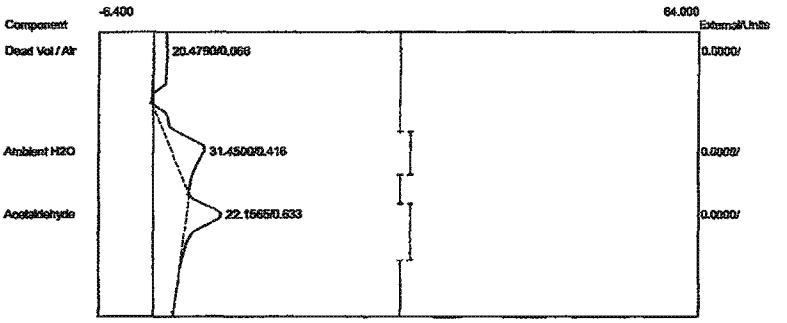
Component	Retention	Area	External	Units
Dead Vol / Air	0.150	17.8595	0.0000	
Ambient H2O	0.416	97.2980	0.0000	
		115.1575	0.0000	

Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:21:35
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-3A10.CHR (c:\peak359)
Sample: Abator #2 Inlet
Operator: D. Kremer



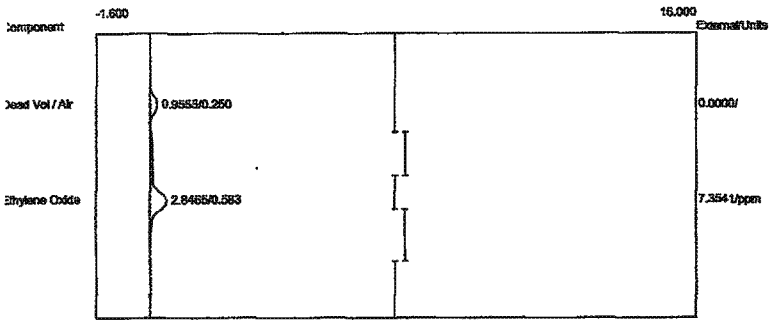
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.4790	0.0000	
Ethylene Oxide	0.600	4.9400	12.7628	ppm
		6.4190	12.7628	

Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:21:35
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-3A10.CHR (c:\peak359)
Sample: Abator #2 Outlet
Operator: D. Kremer



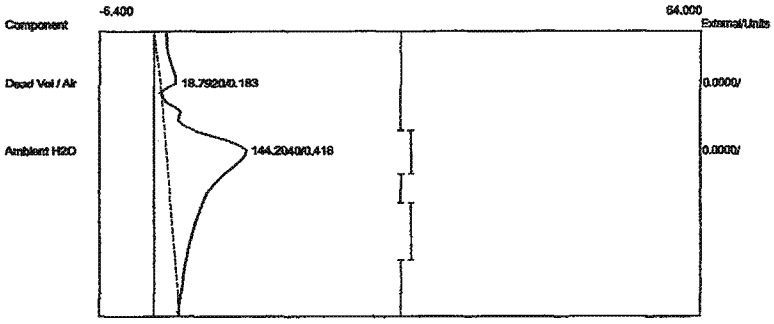
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	20.4790	0.0000	
Ambient H2O	0.416	31.4500	0.0000	
Acetaldehyde	0.633	22.1565	0.0000	
		74.0855	0.0000	

Lab name: ECSI
Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:24:07
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-3A11.CHR (c:\peak359)
Sample: Abator #1 Inlet
Operator: D. Kremer



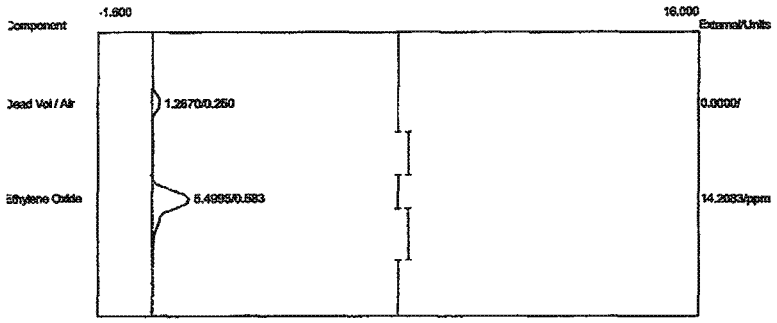
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	0.9555	0.0000	
Ethylene Oxide	0.583	2.8465	7.3541	ppm
		3.8020	7.3541	

Lab name: ECSI
Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:24:07
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-3A11.CHR (c:\peak359)
Sample: Abator #1 Outlet
Operator: D. Kremer



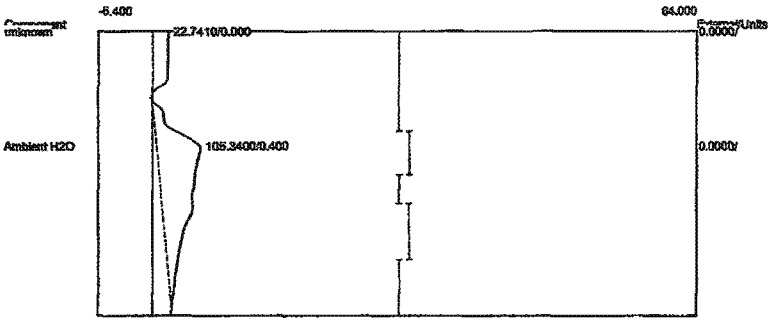
Component	Retention	Area	External	Units
Dead Vol / Air	0.183	18.7920	0.0000	
Ambient H2O	0.416	144.2040	0.0000	
		162.9960	0.0000	

Lab name: ECSI
Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:26:28
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-3A12.CHR (c:\peak359)
Sample: Abator #2 Inlet
Operator: D. Kremer



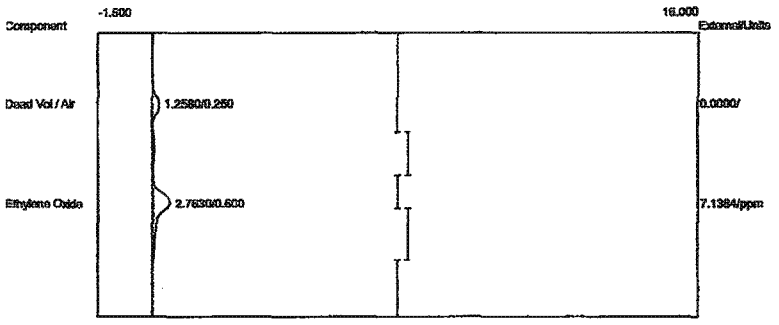
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.2670	0.0000	
Ethylene Oxide	0.583	5.4995	14.2083	ppm
		6.7665	14.2083	

Lab name: ECSI
Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:26:28
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-3A12.CHR (c:\peak359)
Sample: Abator #2 Outlet
Operator: D. Kremer



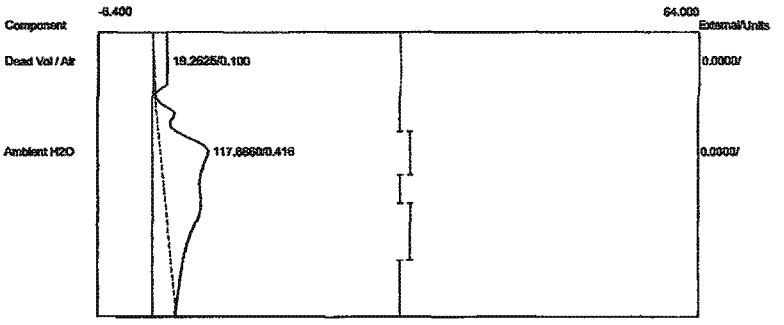
Component	Retention	Area	External	Units
Ambient H2O	0.400	105.3400	0.0000	
		105.3400	0.0000	

Lab name: ECSI
Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:29:03
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-3A13.CHR (c:\peak359)
Sample: Abator #1 Inlet
Operator: D. Kremer



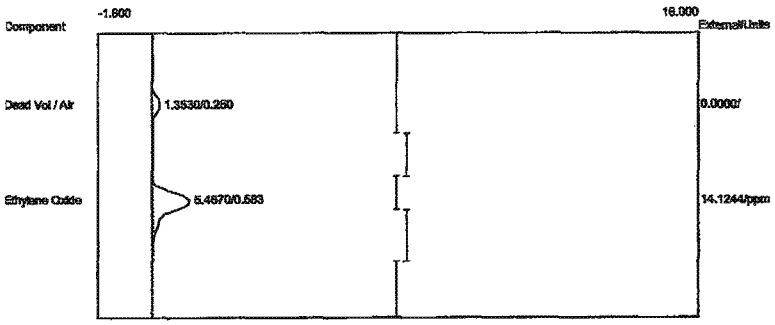
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.2580	0.0000	
Ethylene Oxide	0.600	2.7630	7.1384	ppm
		4.0210	7.1384	

Lab name: ECSI
Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:29:03
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-3A13.CHR (c:\peak359)
Sample: Abator #1 Outlet
Operator: D. Kremer



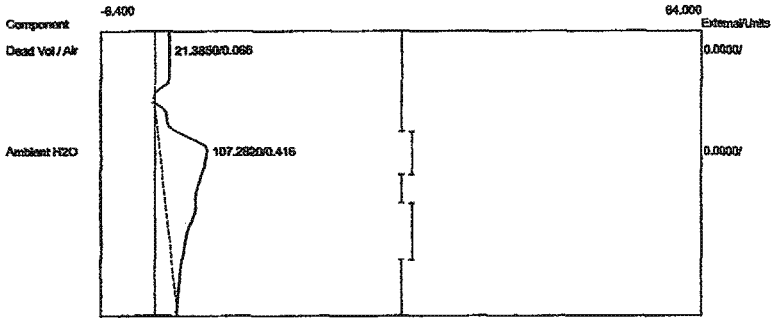
Component	Retention	Area	External	Units
Dead Vol / Air	0.100	19.2625	0.0000	
Ambient H2O	0.416	117.6860	0.0000	
		136.9485	0.0000	

Lab name: ECCI
Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:31:28
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-3A14.CHR (c:\peak359)
Sample: Abator #2 Inlet
Operator: D. Kremer



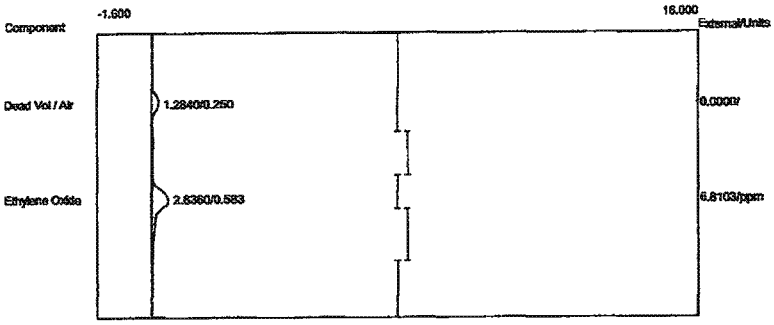
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.3530	0.0000	
Ethylene Oxide	0.583	5.4670	14.1244	ppm
		6.8200	14.1244	

Lab name: ECCI
Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:31:28
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-3A14.CHR (c:\peak359)
Sample: Abator #2 Outlet
Operator: D. Kremer



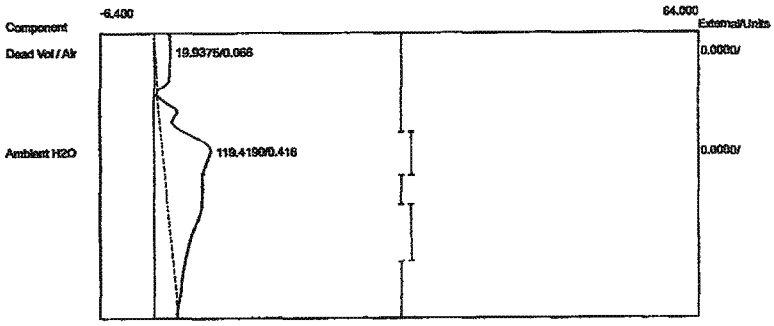
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	21.3850	0.0000	
Ambient H2O	0.416	107.2820	0.0000	
		128.6670	0.0000	

Lab name: ECOI
Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:34:03
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-3A15.CHR (c:\peak359)
Sample: Abator #1 Inlet
Operator: D. Kremer



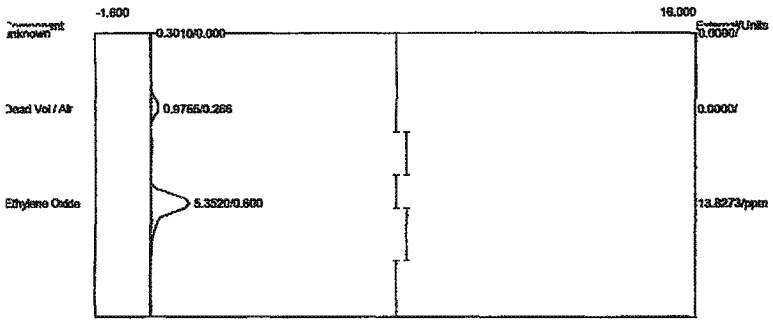
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.2840	0.0000	
Ethylene Oxide	0.583	2.6360	6.8103	ppm
		3.9200	6.8103	

Lab name: ECOI
Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:34:03
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-3A15.CHR (c:\peak359)
Sample: Abator #1 Outlet
Operator: D. Kremer



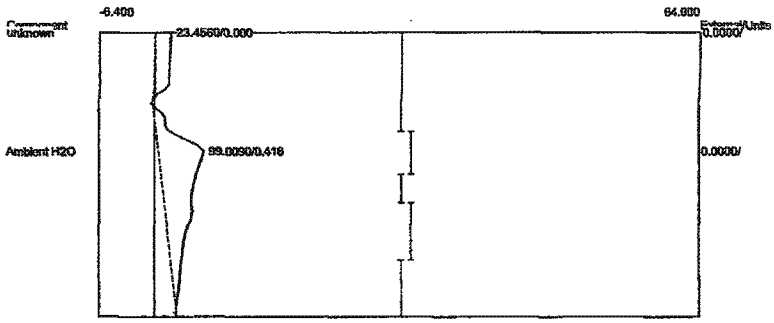
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	19.9375	0.0000	
Ambient H2O	0.416	119.4190	0.0000	
		139.3565	0.0000	

Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:36:04
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-3A16.CHR (c:\peak359)
Sample: Abator #2 Inlet
Operator: D. Kremer



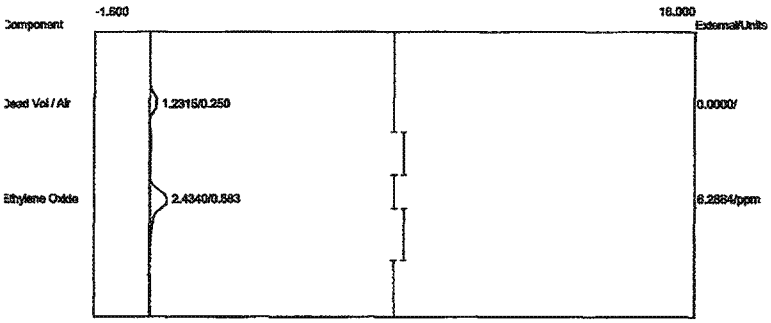
Component	Retention	Area	External	Units
Dead Vol / Air	0.266	0.9755	0.0000	
Ethylene Oxide	0.600	5.3520	13.8273	ppm
		6.3275	13.8273	

Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:36:04
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-3A16.CHR (c:\peak359)
Sample: Abator #2 Outlet
Operator: D. Kremer



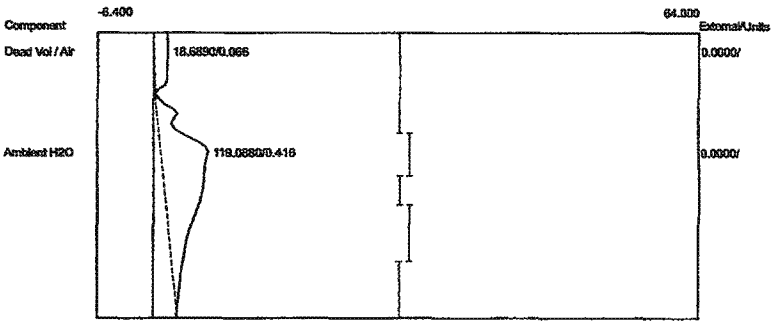
Component	Retention	Area	External	Units
Ambient H2O	0.416	99.0090	0.0000	
		99.0090	0.0000	

Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:39:26
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-3A17.CHR (c:\peak359)
Sample: Abator #1 Inlet
Operator: D. Kremer



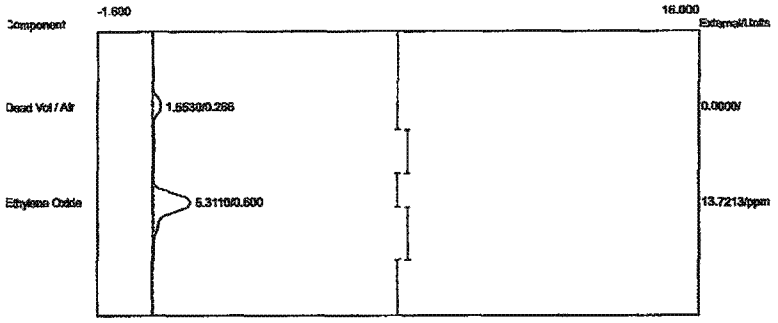
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.2315	0.0000	
Ethylene Oxide	0.583	2.4340	6.2884	ppm
		3.6655	6.2884	

Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:39:26
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-3A17.CHR (c:\peak359)
Sample: Abator #1 Outlet
Operator: D. Kremer



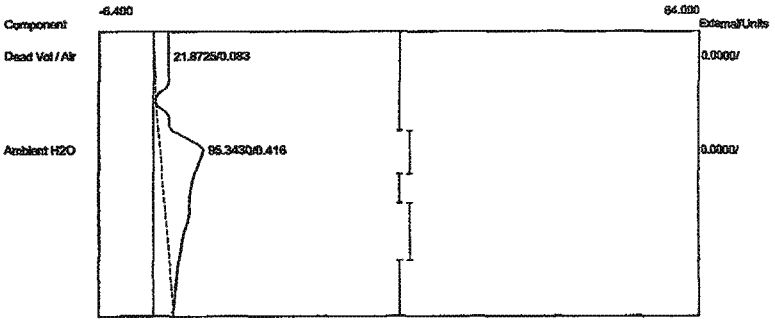
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	18.6890	0.0000	
Ambient H2O	0.416	119.0880	0.0000	
		137.7770	0.0000	

Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:41:05
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-3A18.CHR (c:\peak359)
Sample: Abator #2 Inlet
Operator: D. Kremer



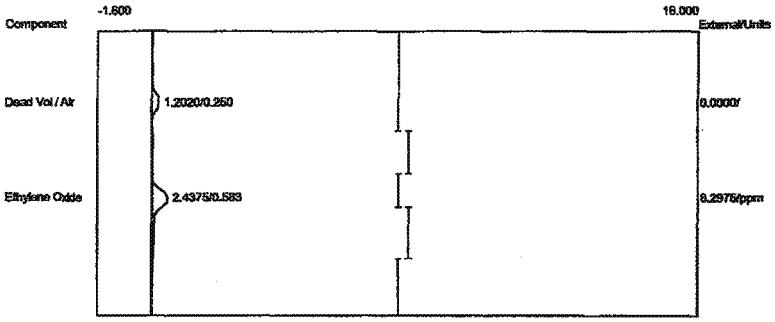
Component	Retention	Area	External	Units
Dead Vol / Air	0.266	1.5530	0.0000	
Ethylene Oxide	0.600	5.3110	13.7213	ppm
		6.8640	13.7213	

Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:41:05
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-3A18.CHR (c:\peak359)
Sample: Abator #2 Outlet
Operator: D. Kremer



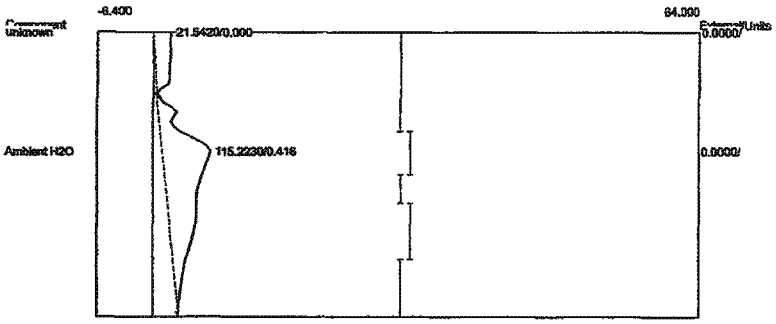
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	21.8725	0.0000	
Ambient H2O	0.416	95.3430	0.0000	
		117.2155	0.0000	

Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:44:20
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-3A19.CHR (c:\peak359)
Sample: Abator #1 Inlet
Operator: D. Kremer



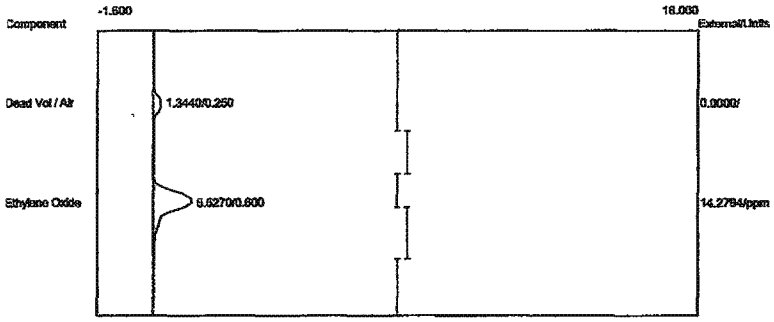
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.2020	0.0000	
Ethylene Oxide	0.583	2.4375	6.2975	ppm
		3.6395	6.2975	

Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:44:20
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-3A19.CHR (c:\peak359)
Sample: Abator #1 Outlet
Operator: D. Kremer



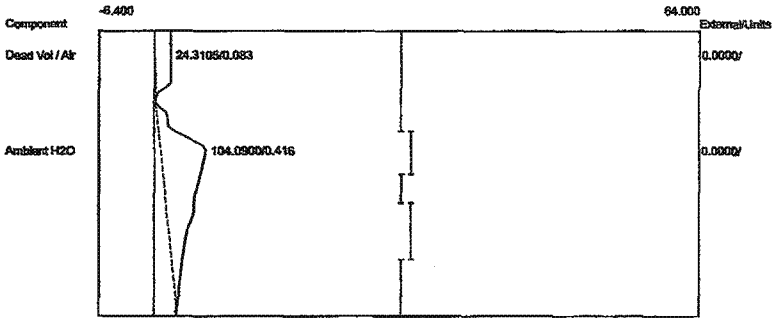
Component	Retention	Area	External	Units
Ambient H2O	0.416	115.2230	0.0000	
		115.2230	0.0000	

Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:46:14
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-3A20.CHR (c:\peak359)
Sample: Abator #2 Inlet
Operator: D. Kremer



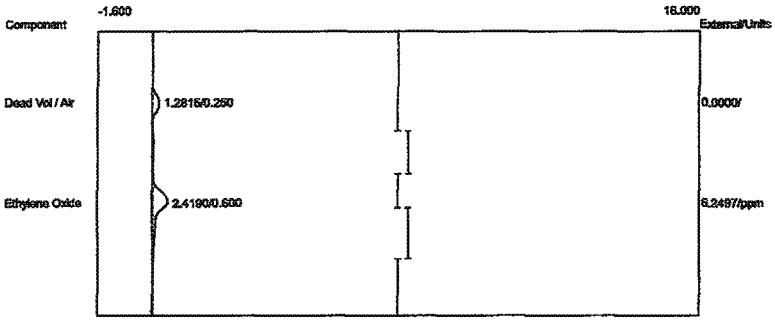
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.3440	0.0000	
Ethylene Oxide	0.600	5.5270	14.2794	ppm
		6.8710	14.2794	

Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:46:14
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-3A20.CHR (c:\peak359)
Sample: Abator #2 Outlet
Operator: D. Kremer



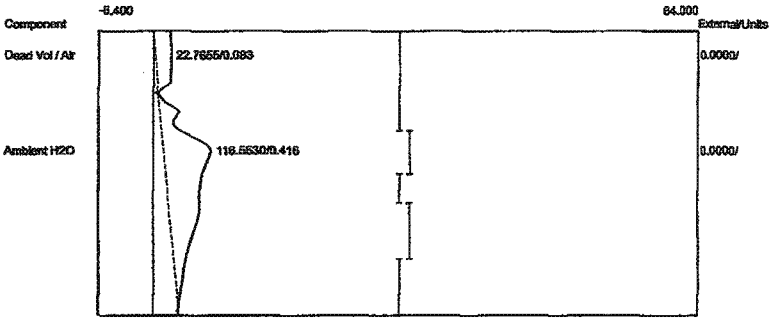
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	24.3105	0.0000	
Ambient H2O	0.416	104.0900	0.0000	
		128.4005	0.0000	

Lab name: ECSI
Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:49:31
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-3A21.CHR (c:\peak359)
Sample: Abator #1 Inlet
Operator: D. Kremer



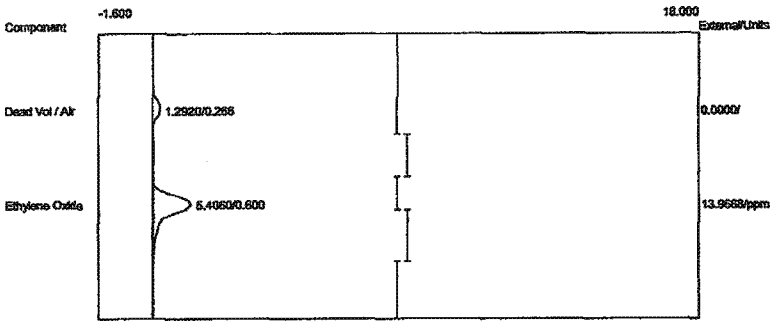
Component	Retention	Area	External	Units
Dead Vol / Air	0.250	1.2815	0.0000	
Ethylene Oxide	0.600	2.4190	6.2497	ppm
		3.7005	6.2497	

Lab name: ECSI
Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:49:31
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-3A21.CHR (c:\peak359)
Sample: Abator #1 Outlet
Operator: D. Kremer



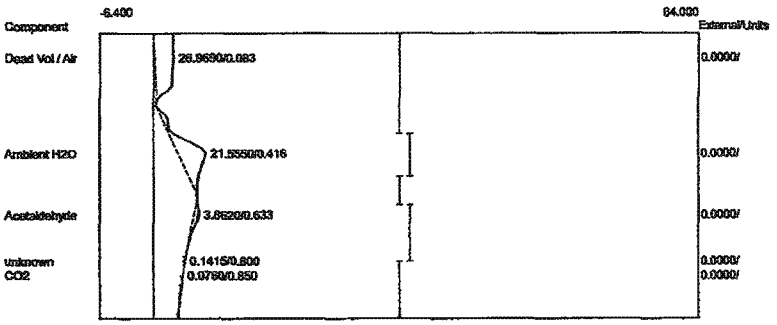
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	22.7655	0.0000	
Ambient H2O	0.416	116.5530	0.0000	
		139.3185	0.0000	

Lab name: ECSI
Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:51:15
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-3A22.CHR (c:\peak359)
Sample: Abator #2 Inlet
Operator: D. Kremer



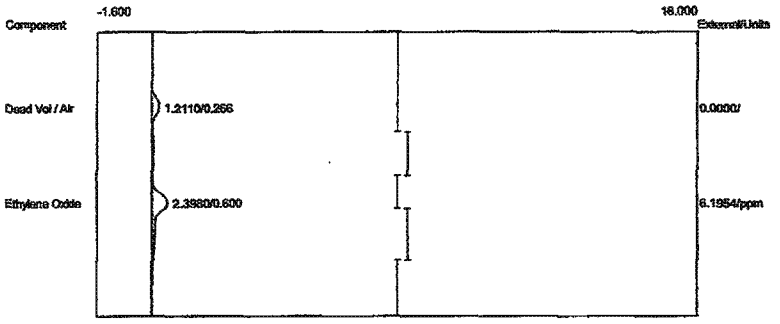
Component	Retention	Area	External	Units
Dead Vol / Air	0.266	1.2920	0.0000	
Ethylene Oxide	0.600	5.4060	13.9668	ppm
		6.6980	13.9668	

Lab name: ECSI
Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:51:15
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-3A22.CHR (c:\peak359)
Sample: Abator #2 Outlet
Operator: D. Kremer



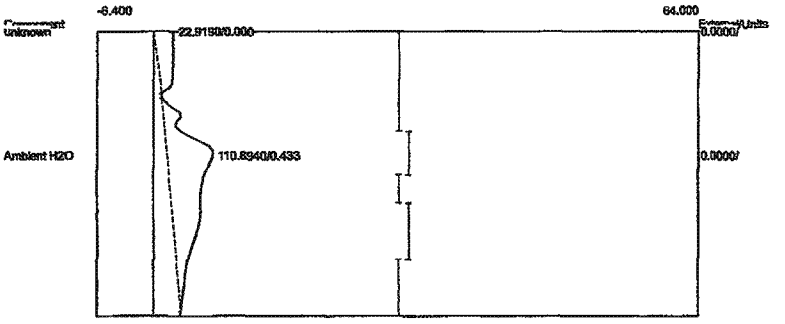
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	26.9690	0.0000	
Ambient H2O	0.416	21.5550	0.0000	
Acetaldehyde	0.633	3.8620	0.0000	
CO2	0.850	0.0760	0.0000	
		52.4620	0.0000	

Lab name: EOSI
Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:54:32
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-3A23.CHR (c:\peak359)
Sample: Abator #1 Inlet
Operator: D. Kremer



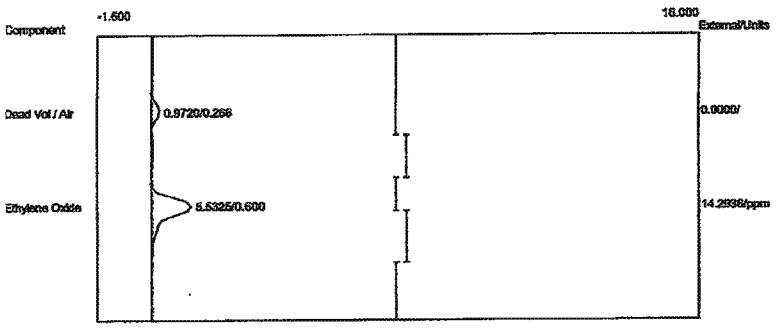
Component	Retention	Area	External	Units
Dead Vol / Air	0.266	1.2110	0.0000	
Ethylene Oxide	0.600	2.3980	6.1954	ppm
		3.6090	6.1954	

Lab name: EOSI
Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:54:32
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-3A23.CHR (c:\peak359)
Sample: Abator #1 Outlet
Operator: D. Kremer



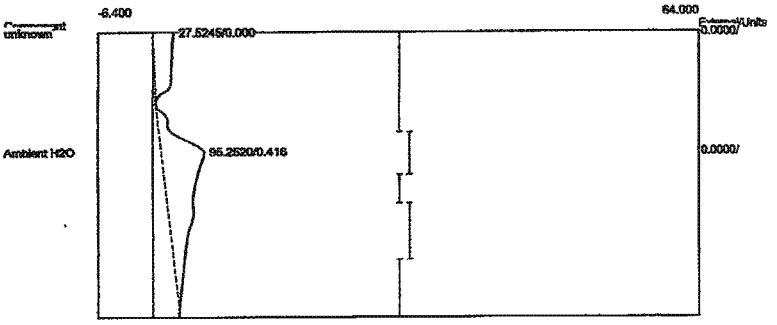
Component	Retention	Area	External	Units
Ambient H2O	0.433	110.8940	0.0000	
		110.8940	0.0000	

Lab name: ECSI
Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:56:30
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterisEP2016-3A24.CHR (c:\peak359)
Sample: Abator #2 Inlet
Operator: D. Kremer



Component	Retention	Area	External	Units
Dead Vol / Air	0.266	0.9720	0.0000	
Ethylene Oxide	0.600	5.5325	14.2936	ppm
		6.5045	14.2936	

Lab name: ECSI
Client: Steris - El Paso 1
Client ID: Run#3Aer
Analysis date: 06/23/2016 16:56:30
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterisEP2016-3A24.CHR (c:\peak359)
Sample: Abator #2 Outlet
Operator: D. Kremer



Component	Retention	Area	External	Units
Ambient H2O	0.416	95.2520	0.0000	
		95.2520	0.0000	

APPENDIX E

Field Data and Calculation Worksheets

ECSi

Ethylene Oxide Mass Emissions Data and Calculations

STERIS Isomedix Services - El Paso, TX - June 23, 2016
Abator #1 - Primary Aeration

DeltaP	SqRtDeltaP	Temp (F)	ppm EtO
	Run #1		
0.33	0.5745	222	0.01
0.33	0.5745	222	0.01
0.33	0.5745	222	0.01
0.33	0.5745	222	0.01
0.33	0.5745	222	0.01
0.33	0.5745	222	0.01
0.33	0.5745	222	0.01
0.33	0.5745	222	0.01
0.33	0.5745	222	0.01
0.33	0.5745	222	0.01
0.33	0.5745	222	0.01
0.33	0.5745	223	0.01
	Run #2		
0.33	0.5745	223	0.01
0.33	0.5745	223	0.01
0.33	0.5745	223	0.01
0.33	0.5745	223	0.01
0.33	0.5745	223	0.01
0.33	0.5745	224	0.01
0.33	0.5745	224	0.01
0.33	0.5745	224	0.01
0.33	0.5745	224	0.01
0.33	0.5745	224	0.01
0.33	0.5745	224	0.01
0.33	0.5745	224	0.01
	Run #3		
0.33	0.5745	224	0.01
0.33	0.5745	223	0.01
0.33	0.5745	223	0.01
0.33	0.5745	223	0.01
0.33	0.5745	223	0.01
0.33	0.5745	223	0.01
0.33	0.5745	222	0.01
0.33	0.5745	222	0.01
0.33	0.5745	222	0.01
0.33	0.5745	222	0.01
0.33	0.5745	222	0.01
0.33	0.5745	222	0.01
Average =			
0.3300	0.5745	223	**0.0100**
	=	683	degR

1-%H2O =	0.972	
mw =	28.54	
stack ID =	30	in.
stack area =	4.91	sq. ft.
press =	25.95	in. Hg
Tstd =	528	deg R
Pstd =	29.92	in Hg
Cp =	0.99	
Kp =	85.49	
Velocity =	46.68	ft/sec
Flow =	**8945**	**dscfm**
MWeto =	44.05	
MolVol =	385.32	
ppmv/ft3 =	1000000	
EtO Mass Flow =	**0.000010**	**lbs/min**
EtO Mass Flow =	**0.000614**	**lbs/hour**

ECSi

Ethylene Oxide Mass Emissions Data and Calculations

STERIS Isomedix Services - El Paso, TX - June 23, 2016
Abator #2 - Secondary Aeration

DeltaP	SqRtDeltaP	Temp (F)	ppm EtO
	Run #1		
0.32	0.5657	224	0.01
0.32	0.5657	224	0.01
0.32	0.5657	224	0.01
0.32	0.5657	224	0.01
0.32	0.5657	224	0.01
0.32	0.5657	224	0.01
0.32	0.5657	224	0.01
0.32	0.5657	224	0.01
0.32	0.5657	224	0.01
0.32	0.5657	224	0.01
0.32	0.5657	225	0.01
0.32	0.5657	225	0.01
	Run #2		
0.32	0.5657	225	0.01
0.32	0.5657	225	0.01
0.32	0.5657	225	0.01
0.32	0.5657	225	0.01
0.32	0.5657	225	0.01
0.32	0.5657	226	0.01
0.32	0.5657	226	0.01
0.32	0.5657	226	0.01
0.32	0.5657	226	0.01
0.32	0.5657	226	0.01
0.32	0.5657	225	0.01
0.32	0.5657	225	0.01
	Run #3		
0.32	0.5657	225	0.01
0.32	0.5657	225	0.01
0.32	0.5657	224	0.01
0.32	0.5657	224	0.01
0.32	0.5657	224	0.01
0.32	0.5657	224	0.01
0.32	0.5657	223	0.01
0.32	0.5657	223	0.01
0.32	0.5657	223	0.01
0.32	0.5657	223	0.01
0.32	0.5657	223	0.01
0.32	0.5657	223	0.01
Average =			
0.3200	0.5657	224	**0.0100**
	=	684	degR

1-%H2O =	0.972	
mw =	28.54	
stack ID =	21	in.
stack area =	2.41	sq. ft.
press =	25.95	in. Hg
Tstd =	528	deg R
Pstd =	29.92	in Hg
Cp =	0.99	
Kp =	85.49	
Velocity =	46.02	ft/sec
Flow =	**4311**	**dscfm**
MWeto =	44.05	
MolVol =	385.32	
ppmv/ft3 =	1000000	
EtO Mass Flow =	**0.000005**	**lbs/min**
EtO Mass Flow =	**0.000296**	**lbs/hour**

APPENDIX F

Gas Certifications

CERTIFIED WORKING CLASS

Single-Certified Calibration Standard

Scott Specialty Gases
600 CAJON BLVD., SAN BERNARDINO, CA 92411 Phone: 909-887-2571 Fax: 909-887-0549

CERTIFICATE OF ACCURACY: Certified Working Class Calibration Standard

Product Information
Project No.: 02-57164-001
Item No.: 02020001310TCL
P.O. No.: VBL – D. KREMER

Cylinder Number: CAL4448
Cylinder Size: CL
Certification Date: 18Apr2016

Customer

ECSI, INC
PO BOX 848
SAN CLEMENTE, CA 92672

CERTIFIED CONCENTRATION

Component Name	Concentration (Moles)		Accuracy (+/-%)
ETHYLENE OXIDE	1.10	PPM	5
NITROGEN		BALANCE	

TRACEABILITY

Traceable To

Scott Reference Standard

APPROVED BY: MT DATE: 4-18-16

SPECIFICATIONS

Component Name	Requested Concentration (Moles)		Certified Concentration (Moles)		Blend Tolerance Result (+/- %)	Certified Accuracy Result (+/- %)
ETHYLENE OXIDE	1.	PPM	1.10	PPM	10.0	5.00
NITROGEN		BAL		BAL		

TRACEABILITY

Traceable To
Scott Reference Standard

PHYSICAL PROPERTIES

Cylinder Size: CL

Pressure: 1300 PSIG
Expiration Date: 18Apr2018

SPECIAL HANDLING INSTRUCTIONS

Do not use or store cylinder at or below the stated dew point temperature. Possible condensation of heavier components could result. In the event the cylinder has been exposed to temperatures at or below the dew point, place cylinder in heated area for 24 hours and then roll cylinder for 15 minutes to re-mix.

Use of calibration standards at or below dew point temperature may result in calibration error.

COMMENTS

CERTIFIED WORKING CLASS

Single-Certified Calibration Standard

Scott Specialty Gases

00 CAJON BLVD., SAN BERNARDINO, CA 92411 Phone: 909-887-2571 Fax: 909-887-0549

CERTIFICATE OF ACCURACY: Certified Working Class Calibration Standard

Product Information
Project No.: 02-57164-003
Item No.: 02020001320TCL
P.O. No.: VBL – D. KREMER

Cylinder Number: CLM003232
Cylinder Size: CL
Certification Date: 18Apr2016

Customer

ECSI, INC
PO BOX 848
SAN CLEMENTE, CA 92672

CERTIFIED CONCENTRATION

Component Name	Concentration (Moles)		Accuracy (+/-%)
ETHYLENE OXIDE	10.1	PPM	5
NITROGEN		BALANCE	

TRACEABILITY

Traceable To

Scott Reference Standard

APPROVED BY: MT
MT

DATE: 4-18-16

SPECIFICATIONS

Component Name	Requested Concentration (Moles)		Certified Concentration (Moles)		Blend Tolerance Result (+/- %)	Certified Accuracy Result (+/- %)
ETHYLENE OXIDE	10.	PPM	10.1	PPM	1.0	5.00
NITROGEN		BAL		BAL		

TRACEABILITY

Traceable To
Scott Reference Standard

PHYSICAL PROPERTIES

Cylinder Size: CL

Pressure: 1400 PSIG
Expiration Date: 18Apr2018

SPECIAL HANDLING INSTRUCTIONS

Do not use or store cylinder at or below the stated dew point temperature. Possible condensation of heavier components could result. In the event the cylinder has been exposed to temperatures at or below the dew point, place cylinder in heated area for 24 hours and then roll cylinder for 15 minutes to re-mix.

Use of calibration standards at or below dew point temperature may result in calibration error.

COMMENTS

CERTIFIED WORKING CLASS

Single-Certified Calibration Standard

Scott Specialty Gases

500 CAJON BLVD., SAN BERNARDINO, CA 92411 Phone: 909-887-2571 Fax: 909-887-0549

CERTIFICATE OF ACCURACY: Certified Working Class Calibration Standard

Product Information
Project No.: 02-57164-004
Item No.: 02020001330TCL
P.O. No.: VBL – D. KREMER

Cylinder Number: CLM011385
Cylinder Size: CL
Certification Date: 18Apr2016

Customer

ECSI, INC
PO BOX 848
SAN CLEMENTE, CA 92672

CERTIFIED CONCENTRATION

Component Name	Concentration (Moles)		Accuracy (+/-%)
ETHYLENE OXIDE	100.	PPM	5
NITROGEN		BALANCE	

TRACEABILITY

Traceable To

Scott Reference Standard

APPROVED BY: B. McCully BLM

DATE: 4-18-16

SPECIFICATIONS

Component Name	Requested Concentration (Moles)		Certified Concentration (Moles)		Blend Tolerance Result (+/- %)	Certified Accuracy Result (+/- %)
ETHYLENE OXIDE	100.	PPM	100.	PPM	.0	5.00
NITROGEN		BAL		BAL		

TRACEABILITY

Traceable To
Scott Reference Standard

PHYSICAL PROPERTIES

Cylinder Size: CL

Pressure: 1400 PSIG
Expiration Date: 18Apr2018

Valve Connection: CGA 350

SPECIAL HANDLING INSTRUCTIONS

Do not use or store cylinder at or below the stated dew point temperature. Possible condensation of heavier components could result. In the event the cylinder has been exposed to temperatures at or below the dew point, place cylinder in heated area for 24 hours and then roll cylinder for 15 minutes to re-mix.

Use of calibration standards at or below dew point temperature may result in calibration error.

COMMENTS

CERTIFIED WORKING CLASS

Single-Certified Calibration Standard

Scott Specialty Gases

00 CAJON BLVD., SAN BERNARDINO, CA 92411 Phone: 909-887-2571 Fax: 909-887-0549

CERTIFICATE OF ACCURACY: Certified Working Class Calibration Standard

Product Information
Project No.: 02-57164-005
Item No.: 02020001340TCL
P.O. No.: VBL – D. KREMER

Cylinder Number: CLM002810
Cylinder Size: CL
Certification Date: 18Apr2016

Customer

ECSI, INC
PO BOX 848
SAN CLEMENTE, CA 92672

CERTIFIED CONCENTRATION

Component Name	Concentration (Moles)		Accuracy (+/-%)
ETHYLENE OXIDE	1,000.	PPM	5
NITROGEN		BALANCE	

TRACEABILITY

Traceable To

Scott Reference Standard

APPROVED BY: B. McCully
BLM

DATE: 4-18-16

SPECIFICATIONS

Component Name	Requested Concentration (Moles)		Certified Concentration (Moles)		Blend Tolerance Result (+/- %)	Certified Accuracy Result (+/- %)
ETHYLENE OXIDE	1,000.	PPM	1,000.	PPM	.0	5.00
NITROGEN		BAL		BAL		

TRACEABILITY

Traceable To
Scott Reference Standard

PHYSICAL PROPERTIES

Cylinder Size: CL

Pressure: 1300 PSIG
Expiration Date: 18Apr2018

Valve Connection: CGA 350

SPECIAL HANDLING INSTRUCTIONS

Do not use or store cylinder at or below the stated dew point temperature. Possible condensation of heavier components could result. In the event the cylinder has been exposed to temperatures at or below the dew point, place cylinder in heated area for 24 hours and then roll cylinder for 15 minutes to re-mix.

Use of calibration standards at or below dew point temperature may result in calibration error.

COMMENTS

CERTIFIED WORKING CLASS

Single-Certified Calibration Standard

Scott Specialty Gases

00 CAJON BLVD., SAN BERNARDINO, CA 92411 Phone: 909-887-2571 Fax: 909-887-0549

CERTIFICATE OF ACCURACY: Certified Working Class Calibration Standard

Product Information
Project No.: 02-57164-006
Item No.: 02020001340TCL
P.O. No.: VBL – D. KREMER

Cylinder Number: CLM005787
Cylinder Size: CL
Certification Date: 18Apr2016

Customer

ECSI, INC
PO BOX 848
SAN CLEMENTE, CA 92672

CERTIFIED CONCENTRATION

Component Name	Concentration (Moles)		Accuracy (+/-%)
ETHYLENE OXIDE	10,080.	PPM	5
NITROGEN		BALANCE	

TRACEABILITY

Traceable To

Scott Reference Standard

APPROVED BY: B. McCully BLM

DATE: 4-18-16

SPECIFICATIONS

Component Name	Requested Concentration (Moles)		Certified Concentration (Moles)		Blend Tolerance Result (+/- %)	Certified Accuracy Result (+/- %)
ETHYLENE OXIDE	10,000.	PPM	10,080.	PPM	.8	5.00
NITROGEN		BAL		BAL		

TRACEABILITY

Traceable To
Scott Reference Standard

PHYSICAL PROPERTIES

Cylinder Size: CL

Pressure: 800 PSIG
Expiration Date: 18Apr2018

Valve Connection: CGA 350

SPECIAL HANDLING INSTRUCTIONS

Do not use or store cylinder at or below the stated dew point temperature. Possible condensation of heavier components could result. In the event the cylinder has been exposed to temperatures at or below the dew point, place cylinder in heated area for 24 hours and then roll cylinder for 15 minutes to re-mix.

Use of calibration standards at or below dew point temperature may result in calibration error.

COMMENTS

CERTIFICATE OF ANALYSIS

Customer Name:	ECSi, Inc.	**Cylinder Number:**	SA25925
Stock or Analyzer Tag Number:	N/A	**Product Class:**	Certified Standard
Customer Reference:	Verbal- Dan	**Cylinder - Contents[1]:**	28 CF @ 2000 PSI
MESA Reference:	104448	**Cylinder-CGA:**	A006-HP-BR/350
Date of Certification:	4/20/2016	**Analysis Method:**	GC-TCD/FID
Recommended Shelf Life:	2 Years	**Preparation Method:**	Gravimetric

Component	Requested Concentration[2]	Reported Concentration[2,3]
Ethylene Oxide	50 ppm	48.8 ppm
Nitrogen	Balance	Balance

Authorized Signature:

1. The fill pressure shown on the COA is as originally quoted. The fill pressure measured by the customer may differ from the fill pressure originally quoted due to temperature effects, compressibility of the individual components when blended together in the cylinder, gauge accuracy or reduction in content volume before shipping as a result of samples withdrawn for laboratory QC necessary to ensure product quality.
2. Unless otherwise stated, concentrations are given in molar units.
3. Vapor pressure mixes are blended at a sufficiently low pressure so as to eliminate phase separation under most low temperature conditions encountered during transport or storage. However, it is generally recommended that cylinders containing vapor pressure restricted mixes be placed on the floor in a horizontal position and rolled back and forth to improve homogeneity of the gas phase mixture before being put into service.

Analytical Gas Standards are prepared and analyzed using combinations of NIST traceable weights, SRM's provided by NIST, or internal gas standards that have been verified for accuracy using procedures published by the US-EPA. Pure gases are analyzed and certified for purity using minor component Analytical Gas Standards prepared according to the methods specified above. Balances are calibrated to NIST test weights covered by NIST test number 822/256175/96. Reference Certification #'s: 163/W, 830/N and 3280. Calibration methods are in conformance with MIL-STD 45662A.

MESA Specialty Gases & Equipment
division of MESA International Technologies, Inc.
3619 Pendleton Avenue, Suite C ♦ Santa Ana, California 92704 ♦ USA
TEL: 714-434-7102 ♦ FAX: 714-434-8006 ♦ E-mail: mail@mesagas.com
On-line Catalog at www.mesagas.com

Drive
60048

SCAN

TCEQ
PO Box 13087
Austin, TX 78711-3087

UNITED STATES POSTAL SERVICE. Retail

P

US POSTAGE PAID
$9.45

Origin: 60068
Destination: 78711
1 Lb 5.30 Oz
Jul 29, 16
1661020068-07

1006

PRIORITY MAIL ®2-Day

Expected Delivery Day: 08/01/2016 B100

USPS TRACKING NUMBER

9505 5122 9381 6211 0160 63

UNITED STATES POSTAL SERVICE®
For Domestic Use Only
PRIORITY ★ MAIL ★
TRACKED ★ ★ ★ INSURED ★
Label 107R, July 2013

UNITED STATES POSTAL SERVICE®
For Domestic Use Only
Label 107R, July 2013

MC174