



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
 REGION 5 CHICAGO REGIONAL LABORATORY
 536 SOUTH CLARK STREET
 CHICAGO, ILLINOIS 60605



Date: 3/19/2018

Subject: Review of Region 5 Data for Mid America Steel Drum, Inc.

To: Air Division, US EPA Region 5
 77 West Jackson Boulevard
 Chicago, IL 60605

From: Wayne Whipple, Chemist
 US EPA Region 5 Chicago Regional Laboratory

The data transmitted under this cover memo successfully passed CRL’s data review procedures as documented in the current Quality Management Plan and applicable Standard Operating Procedures. In accordance with the EPA QA/G-8 *Guidance on Environmental Data Verification and Data Validation* and the U.S. EPA Region 5 RMD QMP, CRL performs data verification on all the data generated internally. CRL does not perform data validation or quality assessment procedures.

This report was reviewed and the information provided herein accurately represents the analysis performed.

X _____

Please contact the analyst with any technical report issues, Robert Thompson at (312)-353-9078 for sample project concerns, and Sylvia Griffin at (312)-353-9073 with data transmittal questions. Thank you.

Attached are Results for: Mid America Steel Drum, Inc.

_____/_____/_____
 Data Coordinator and Date Transmitted

Analyses included in this report:

Air Toxics Reimer 5



Environmental Protection Agency Region 5 Chicago Regional Laboratory

536 South Clark Street, Chicago, IL 60605
Phone:(312)353-8370 Fax:(312)886-2591

Air Division, US EPA Region 5
77 West Jackson Boulevard
Chicago IL, 60605

Project: Mid America Steel Drum, Inc.
Project Number: [none]
Project Manager: Alexandra Letuchy

Reported:
Mar-19-18 10:10

Analysis Case Narrative for Volatile Organic Compounds (VOC) Air Toxics

Wayne J. Whipple, Ph.D.

phone (312) 353-9063

email whipple.wayne@epa.gov

General Information:

One 2.7 L canisters was received on 18 January, 2018 in good condition. The sample was analyzed within the 30 day holding time.

The sample was analyzed using the CRL SOP MS005 ver 2 with Pen and Ink 8327, 9436 and 9102 which allows for the use of the new Entech 7200 Preconcentrator and 7650 Robotic arm for sample analysis and an extended list of target compounds and clarifies a discrepancy between analytical and data review SOPs with the ICV recoveries.

The project objectives were to quantify target analytes and the presence of any other high concentration analytes detectable by this laboratory's SOP that is based on the TO-15 analysis. Data verification was performed and the data is acceptable to use for this purpose.

Preliminary results were sent on January 31, 2018. Detection and reporting limits along with data qualifiers have been changed and added to account for interferences found in the sample chromatograms.

Data are reported to the detection limit.

Sample Analysis and Results:

Samples were received and the initial pressure was recorded in the canister.

Acrolein and acrylonitrile have major ions present but are believed to be from coeluting non-target compounds and therefore are flagged as "MI", matrix interference. The detection level is raised to the concentration detected in the sample because the concentration of the target analyte cannot be determined at or below the interfering result.

Propene cannot be resolved from propane and therefore the result is estimated as propene + propane and flagged "J".

Quality Control:

Isobutene had a duplicate result greater than an allowed difference and therefore it is flagged estimated.

Acetaldehyde did not pass the calibration criteria and was severely nonlinear and therefore was rejected.

Ethanol's (100pptv), 1-propanol (50pptv) and isobutene's (100pptv) detection and reporting limit were set to the first level in the calibration curve that passed the acceptance criteria. The problem was interferences from system background contamination.

Methanol sample results were above the highest calibration level and therefore is flagged as estimated, "J".

Compounds flagged B have method blank interferences which are common at low detection concentrations.



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ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
0634	1801009-01	Air	Jan-17-18 12:22	Jan-18-18 14:00



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Air Toxics by GC/MS, EPA TO-15 (modified) US EPA Region 5 Chicago Regional Laboratory

0634 (1801009-01) Matrix: Air Sampled: Jan-17-18 12:22 Received: Jan-18-18 14:00

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Chlorodifluoromethane (HCFC-22) (R-22)	0.260		2.50E-3	0.0250	ppbv	1	B18A011	Jan-29-18	Jan-30-18
Propene + propane	0.554	J	2.50E-3	0.0250	"	"	"	"	"
Chloromethane	0.530		2.50E-3	0.0250	"	"	"	"	"
Methanol	4.89	J	0.400	5.00	"	"	"	"	"
Vinyl chloride	U		2.50E-3	0.0250	"	"	"	"	"
Isobutene	0.0683	J	2.50E-3	0.100	"	"	"	"	"
1,3-butadiene	U		2.50E-3	0.0250	"	"	"	"	"
Acetaldehyde	Rejected		0.500	5.00	"	"	"	"	"
Bromomethane	7.50E-3	J	2.50E-3	0.0250	"	"	"	"	"
Chloroethane	U		2.50E-3	0.0250	"	"	"	"	"
Ethanol	1.75		0.100	0.100	"	"	"	"	"
Acrolein	0.0940	B, MI	0.0940	0.0940	"	"	"	"	"
Acetonitrile	0.0478	B	2.50E-3	0.0250	"	"	"	"	"
Isopropyl alcohol	0.0869		2.50E-3	0.0250	"	"	"	"	"
Propanal	0.175	B	2.50E-3	0.0250	"	"	"	"	"
Acetone	1.01	B	0.0250	0.0250	"	"	"	"	"
Pentane	0.157		2.50E-3	0.0250	"	"	"	"	"
Isoprene	5.48E-3	B, J	2.50E-3	0.0250	"	"	"	"	"
1,1-Dichloroethene	U		2.50E-3	0.0250	"	"	"	"	"
Methyl iodide	U		2.50E-3	0.0250	"	"	"	"	"
Acrylonitrile	U	MI	0.0110	0.0250	"	"	"	"	"
Methylene chloride	0.0908		2.50E-3	0.0250	"	"	"	"	"
Carbon disulfide	6.25E-3	B, J	2.50E-3	0.0250	"	"	"	"	"
1-Propanol	U		0.0500	0.0500	"	"	"	"	"
Cyclopentane	0.0391		0.0250	0.0250	"	"	"	"	"
Methyl tert-butyl ether	8.18E-3	J	2.50E-3	0.0250	"	"	"	"	"
Methacrolein	0.0532	B	2.50E-3	0.0250	"	"	"	"	"
1,1-Dichloroethane	U		2.50E-3	0.0250	"	"	"	"	"
Vinyl acetate	U		2.50E-3	0.0250	"	"	"	"	"



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Air Toxics by GC/MS, EPA TO-15 (modified) US EPA Region 5 Chicago Regional Laboratory

0634 (1801009-01)

Matrix: Air

Sampled: Jan-17-18 12:22

Received: Jan-18-18 14:00

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
Methyl vinyl ketone	U		2.50E-3	0.0250	ppbv	1	B18A011	Jan-29-18	Jan-30-18
Butanal	0.0862	B	0.0250	0.0250	"	"	"	"	"
Hexane	0.0789		2.50E-3	0.0250	"	"	"	"	"
2-Butanone	0.136	(DUP), J	2.50E-3	0.0250	"	"	"	"	"
cis-1,2-Dichloroethene	U		2.50E-3	0.0250	"	"	"	"	"
trans-1,2-Dichloroethene	U		2.50E-3	0.0250	"	"	"	"	"
Chloroform	0.0200	J	2.50E-3	0.0250	"	"	"	"	"
1,2-Dichloroethane	0.0163	J	2.50E-3	0.0250	"	"	"	"	"
1-Butanol	0.0182	B, J	0.0130	0.0250	"	"	"	"	"
Cyclohexane	U		0.250	0.250	"	"	"	"	"
Benzene	0.158		2.50E-3	0.0250	"	"	"	"	"
2-Pentanone	0.0225	B, J	0.0130	0.0250	"	"	"	"	"
3-Pentanone	0.0173	B, J	0.0130	0.0250	"	"	"	"	"
Pentanal	0.0371		0.0250	0.0250	"	"	"	"	"
1,2-Dichloropropane	6.03E-3	J	2.50E-3	0.0250	"	"	"	"	"
Trichloroethene	2.70E-3	J	2.50E-3	0.0250	"	"	"	"	"
Bromodichloromethane	U		2.50E-3	0.0250	"	"	"	"	"
1,4-Dioxane	U		2.50E-3	0.0250	"	"	"	"	"
cis-1,3-Dichloropropene	U		2.50E-3	0.0250	"	"	"	"	"
4-Methyl-2-pentanone	5.03E-3	B, J	2.50E-3	0.0250	"	"	"	"	"
trans-1,3-Dichloropropene	U		2.50E-3	0.0250	"	"	"	"	"
1,1,2-Trichloroethane	U		2.50E-3	0.0250	"	"	"	"	"
Dibromochloromethane	U		2.50E-3	0.0250	"	"	"	"	"
Toluene	0.102		2.50E-3	0.0250	"	"	"	"	"
3-Hexanone	U		0.0250	0.0250	"	"	"	"	"
2-Hexanone	0.0208	J	0.0130	0.0250	"	"	"	"	"
Hexanal	0.0748		0.0130	0.0250	"	"	"	"	"
1,2-Dibromoethane (EDB)	U		2.50E-3	0.0250	"	"	"	"	"
Tetrachloroethene	6.34E-3	J	2.50E-3	0.0250	"	"	"	"	"
Chlorobenzene	U		2.50E-3	0.0250	"	"	"	"	"
Ethylbenzene	0.0154	J	2.50E-3	0.0250	"	"	"	"	"
m+p-Xylene	0.0356	J	5.00E-3	0.0500	"	"	"	"	"
Bromoform	2.68E-3	J	2.50E-3	0.0250	"	"	"	"	"
Styrene	6.63E-3	B, J	2.50E-3	0.0250	"	"	"	"	"
1,1,1,2-Tetrachloroethane	U		2.50E-3	0.0250	"	"	"	"	"



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Project: Mid America Steel Drum, Inc.
Project Number: [none]
Project Manager: Alexandra Letuchy

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Air Toxics by GC/MS, EPA TO-15 (modified) US EPA Region 5 Chicago Regional Laboratory

0634 (1801009-01)

Matrix: Air

Sampled: Jan-17-18 12:22

Received: Jan-18-18 14:00

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed
o-Xylene	0.0157	J	2.50E-3	0.0250	ppbv	1	B18A011	Jan-29-18	Jan-30-18
1,3,5-Trimethylbenzene	6.18E-3	B, J	2.50E-3	0.0250	"	"	"	"	"
1,2,4-Trimethylbenzene	0.0126	J	2.50E-3	0.0250	"	"	"	"	"
1,3-Dichlorobenzene	U		2.50E-3	0.0250	"	"	"	"	"
Benzyl chloride	U		2.50E-3	0.0250	"	"	"	"	"
1,4-Dichlorobenzene	U		2.50E-3	0.0250	"	"	"	"	"
1,2,3-Trimethylbenzene	U		2.50E-3	0.0250	"	"	"	"	"
1,2-Dichlorobenzene	U		2.50E-3	0.0250	"	"	"	"	"
Hexachlorobutadiene	U		2.50E-3	0.0250	"	"	"	"	"
1,2,4-Trichlorobenzene	U		2.50E-3	0.0250	"	"	"	"	"
Naphthalene	3.82E-3	B, J	2.50E-3	0.0250	"	"	"	"	"

Surogate	Result	%REC	%REC Limits	Batch	Prepared	Analyzed
<i>Dichlorodifluoromethane</i>	0.556	109%	70-130	"	"	"
<i>Dichlorotetrafluoroethane</i>	0.0180	90%	60-140	"	"	"
<i>Trichlorofluoromethane</i>	0.238	101%	70-130	"	"	"
<i>1,1,2-trichloro-1,2,2-trifluoroethane (Freon 113)</i>	0.0743	103%	70-130	"	"	"
<i>1,1,1-Trichloroethane</i>	2.58E-3	64%	50-150	"	"	"
<i>Carbon tetrachloride</i>	0.0850	102%	70-130	"	"	"



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Air Toxics by GC/MS, EPA TO-15 (modified) - Quality Control
US EPA Region 5 Chicago Regional Laboratory

Batch B18A011 - ColdTrap Dehydration

Blank (B18A011-BLK1)

Prepared: Jan-29-18 Analyzed: Jan-30-18

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Chlorodifluoromethane (HCFC-22) (R-22)	U		2.50E-3	0.0250	ppbv						
Propene	0.0944		2.50E-3	0.0250	"						
Chloromethane	0.0177	J	2.50E-3	0.0250	"						
Methanol	U		0.500	5.00	"						
Vinyl chloride	U		2.50E-3	0.0250	"						
Isobutene	4.84E-3	J, Q	2.50E-3	0.100	"						
1,3-butadiene	U		2.50E-3	0.0250	"						
Acetaldehyde	Rejected		0.500	5.00	"						
Bromomethane	U		2.50E-3	0.0250	"						
Chloroethane	U		2.50E-3	0.0250	"						
Ethanol	U		0.100	0.100	"						
Acrolein	0.0352		2.50E-3	0.0250	"						
Acetonitrile	0.0103	J	2.50E-3	0.0250	"						
Isopropyl alcohol	0.0117	J	2.50E-3	0.0250	"						
Propanal	0.115		2.50E-3	0.0250	"						
Acetone	0.220	Q	0.0250	0.0250	"						
Pentane	4.69E-3	J, Q	2.50E-3	0.0250	"						
Isoprene	2.58E-3	J, Q	2.50E-3	0.0250	"						
1,1-Dichloroethene	U		2.50E-3	0.0250	"						
Methyl iodide	U		2.50E-3	0.0250	"						
Acrylonitrile	U		0.0250	0.0250	"						
Methylene chloride	3.33E-3	J, Q	2.50E-3	0.0250	"						
Carbon disulfide	7.74E-3	J, Q	2.50E-3	0.0250	"						
1-Propanol	U		0.0500	0.0500	"						



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Batch B18A011 - ColdTrap Dehydration

Blank (B18A011-BLK1)

Prepared: Jan-29-18 Analyzed: Jan-30-18

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Cyclopentane	U		0.0250	0.0250	ppbv						
Methyl tert-butyl ether	U		2.50E-3	0.0250	"						
Methacrolein	0.374		2.50E-3	0.0250	"						
1,1-Dichloroethane	U		2.50E-3	0.0250	"						
Vinyl acetate	U		2.50E-3	0.0250	"						
Methyl vinyl ketone	0.0112	J	2.50E-3	0.0250	"						
Butanal	0.0664	Q	0.0250	0.0250	"						
Hexane	U		2.50E-3	0.0250	"						
2-Butanone	3.48E-3	J, Q	2.50E-3	0.0250	"						
cis-1,2-Dichloroethene	U		2.50E-3	0.0250	"						
trans-1,2-Dichloroethene	0.0169	J	2.50E-3	0.0250	"						
Chloroform	U		2.50E-3	0.0250	"						
1,2-Dichloroethane	U		2.50E-3	0.0250	"						
1-Butanol	0.0333	Q	0.0130	0.0250	"						
Cyclohexane	U		0.250	0.250	"						
Benzene	9.17E-3	J, Q	2.50E-3	0.0250	"						
2-Pentanone	0.0184	J, Q	0.0130	0.0250	"						
Pentanal	U		0.0250	0.0250	"						
3-Pentanone	U		0.0130	0.0250	"						
1,2-Dichloropropane	U		2.50E-3	0.0250	"						
Trichloroethene	U		2.50E-3	0.0250	"						
Bromodichloromethane	U		2.50E-3	0.0250	"						
1,4-Dioxane	U		2.50E-3	0.0250	"						
cis-1,3-Dichloropropene	U		2.50E-3	0.0250	"						
4-Methyl-2-pentanone	4.57E-3	J, Q	2.50E-3	0.0250	"						
trans-1,3-Dichloropropene	U		2.50E-3	0.0250	"						
1,1,2-Trichloroethane	U		2.50E-3	0.0250	"						
Dibromochloromethane	U		2.50E-3	0.0250	"						
Toluene	9.51E-3	J, Q	2.50E-3	0.0250	"						
3-Hexanone	U		0.0250	0.0250	"						



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Air Toxics by GC/MS, EPA TO-15 (modified) - Quality Control US EPA Region 5 Chicago Regional Laboratory

Batch B18A011 - ColdTrap Dehydration

Blank (B18A011-BLK1)

Prepared: Jan-29-18 Analyzed: Jan-30-18

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
2-Hexanone	U		0.0130	0.0250	ppbv						
Hexanal	U		0.0130	0.0250	"						
1,2-Dibromoethane (EDB)	U		2.50E-3	0.0250	"						
Tetrachloroethene	U		2.50E-3	0.0250	"						
Chlorobenzene	U		2.50E-3	0.0250	"						
Ethylbenzene	U		2.50E-3	0.0250	"						
m+p-Xylene	7.15E-3	J, Q	5.00E-3	0.0500	"						
Bromoform	U		2.50E-3	0.0250	"						
Styrene	3.24E-3	J, Q	2.50E-3	0.0250	"						
1,1,1,2-Tetrachloroethane	U		2.50E-3	0.0250	"						
o-Xylene	U		2.50E-3	0.0250	"						
1,3,5-Trimethylbenzene	3.18E-3	J, Q	2.50E-3	0.0250	"						
1,2,4-Trimethylbenzene	U		2.50E-3	0.0250	"						
1,3-Dichlorobenzene	2.92E-3	J, Q	2.50E-3	0.0250	"						
Benzyl chloride	U		2.50E-3	0.0250	"						
1,4-Dichlorobenzene	3.17E-3	J, Q	2.50E-3	0.0250	"						
1,2,3-Trimethylbenzene	U		2.50E-3	0.0250	"						
1,2-Dichlorobenzene	U		2.50E-3	0.0250	"						
Hexachlorobutadiene	U		2.50E-3	0.0250	"						
1,2,4-Trichlorobenzene	3.13E-3	J, Q	2.50E-3	0.0250	"						
Naphthalene	4.28E-3	J, Q	2.50E-3	0.0250	"						
Surrogate: Dichlorodifluoromethane	U		2.50E-3	0.0250	"				70-130		
Surrogate: Dichlorotetrafluoroethane	U		2.50E-3	0.0250	"				60-140		
Surrogate: Trichlorofluoromethane	U		2.50E-3	0.0250	"				70-130		
Surrogate: 1,1,2-trichloro-1,2,2-trifluoroethane (Freon)	U		2.50E-3	0.0250	"				70-130		
Surrogate: 1,1,1-Trichloroethane	U		2.50E-3	0.0250	"				50-150		
Surrogate: Carbon tetrachloride	U		2.50E-3	0.0250	"				70-130		



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Batch B18A011 - ColdTrap Dehydration

LCS (B18A011-BS1)

Prepared: Jan-29-18 Analyzed: Jan-30-18

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Chlorodifluoromethane (HCFC-22) (R-22)	0.524		2.50E-3	0.0250	ppbv	0.5310		99%	70-130		
Propene	0.513		2.50E-3	0.0250	"	0.5370		96%	70-130		
Chloromethane	0.534		2.50E-3	0.0250	"	0.5490		97%	70-130		
Methanol	0.505	J	0.500	5.00	"	0.5170		98%	60-140		
Vinyl chloride	0.501		2.50E-3	0.0250	"	0.5370		93%	70-130		
Isobutene	0.466	J	2.50E-3	0.100	"	0.5300		88%	70-130		
1,3-butadiene	0.513		2.50E-3	0.0250	"	0.5450		94%	70-130		
Acetaldehyde	Rejected	Q	0.500	5.00	"	0.5390		%	60-140		
Bromomethane	0.550		2.50E-3	0.0250	"	0.5540		99%	70-130		
Chloroethane	0.512		2.50E-3	0.0250	"	0.5510		93%	70-130		
Ethanol	0.476		0.100	0.100	"	0.5060		94%	60-140		
Acrolein	0.470		2.50E-3	0.0250	"	0.5180		91%	60-140		
Acetonitrile	0.475		2.50E-3	0.0250	"	0.5050		94%	60-140		
Isopropyl alcohol	0.466		2.50E-3	0.0250	"	0.5000		93%	60-140		
Propanal	0.486		2.50E-3	0.0250	"	0.5220		93%	60-140		
Acetone	0.504		0.0250	0.0250	"	0.5410		93%	60-140		
Pentane	0.496		2.50E-3	0.0250	"	0.5600		89%	70-130		
Isoprene	0.513		2.50E-3	0.0250	"	0.5420		95%	70-130		
1,1-Dichloroethene	0.498		2.50E-3	0.0250	"	0.5220		95%	70-130		
Methyl iodide	0.481		2.50E-3	0.0250	"	0.5340		90%	70-130		
Acrylonitrile	0.472		0.0250	0.0250	"	0.5010		94%	60-140		
Methylene chloride	0.475		2.50E-3	0.0250	"	0.5000		95%	70-130		
Carbon disulfide	0.509		2.50E-3	0.0250	"	0.4990		102%	60-140		
1-Propanol	0.426		0.0500	0.0500	"	0.4790		89%	60-140		
Cyclopentane	0.443		0.0250	0.0250	"	0.4940		90%	70-130		
Methyl tert-butyl ether	0.454		2.50E-3	0.0250	"	0.5040		90%	60-140		
Methacrolein	0.432		2.50E-3	0.0250	"	0.4790		90%	60-140		
1,1-Dichloroethane	0.482		2.50E-3	0.0250	"	0.4950		97%	70-130		
Vinyl acetate	0.455		2.50E-3	0.0250	"	0.4950		92%	60-140		
Methyl vinyl ketone	0.452		2.50E-3	0.0250	"	0.4920		92%	60-140		



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Air Division, US EPA Region 5
77 West Jackson Boulevard
Chicago IL, 60605

Project: Mid America Steel Drum, Inc.
Project Number: [none]
Project Manager: Alexandra Letuchy

Reported:
Mar-19-18 10:10

Air Toxics by GC/MS, EPA TO-15 (modified) - Quality Control US EPA Region 5 Chicago Regional Laboratory

Batch B18A011 - ColdTrap Dehydration

LCS (B18A011-BS1)

Prepared: Jan-29-18 Analyzed: Jan-30-18

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Butanal	0.431		0.0250	0.0250	ppbv	0.4790		90%	60-140		
Hexane	0.449		2.50E-3	0.0250	"	0.4970		90%	70-130		
2-Butanone	0.474		2.50E-3	0.0250	"	0.5230		91%	60-140		
cis-1,2-Dichloroethene	0.469		2.50E-3	0.0250	"	0.4960		95%	70-130		
trans-1,2-Dichloroethene	0.472		2.50E-3	0.0250	"	0.5060		93%	70-130		
Chloroform	0.486		2.50E-3	0.0250	"	0.5110		95%	70-130		
1,2-Dichloroethane	0.479		2.50E-3	0.0250	"	0.4950		97%	70-130		
1-Butanol	0.456		0.0130	0.0250	"	0.5030		91%	60-140		
Cyclohexane	0.451		0.250	0.250	"	0.5050		89%	70-130		
Benzene	0.471		2.50E-3	0.0250	"	0.5040		94%	70-130		
2-Pentanone	0.448		0.0130	0.0250	"	0.5020		89%	60-140		
3-Pentanone	0.432		0.0130	0.0250	"	0.5070		85%	60-140		
Pentanal	0.444		0.0250	0.0250	"	0.4940		90%	60-140		
1,2-Dichloropropane	0.479		2.50E-3	0.0250	"	0.5010		96%	70-130		
Trichloroethene	0.404		2.50E-3	0.0250	"	0.5010		81%	70-130		
Bromodichloromethane	0.514		2.50E-3	0.0250	"	0.5240		98%	70-130		
1,4-Dioxane	0.490		2.50E-3	0.0250	"	0.5300		92%	60-140		
cis-1,3-Dichloropropene	0.467		2.50E-3	0.0250	"	0.5100		92%	70-130		
4-Methyl-2-pentanone	0.463		2.50E-3	0.0250	"	0.5020		92%	60-140		
trans-1,3-Dichloropropene	0.485		2.50E-3	0.0250	"	0.5130		95%	70-130		
1,1,2-Trichloroethane	0.485		2.50E-3	0.0250	"	0.5020		97%	70-130		
Dibromochloromethane	0.531		2.50E-3	0.0250	"	0.5060		105%	70-130		
Toluene	0.444		2.50E-3	0.0250	"	0.4920		90%	70-130		
3-Hexanone	0.453		0.0250	0.0250	"	0.5050		90%	60-140		
2-Hexanone	0.407		0.0130	0.0250	"	0.4950		82%	60-140		
Hexanal	0.439		0.0130	0.0250	"	0.5010		88%	60-140		
1,2-Dibromoethane (EDB)	0.484		2.50E-3	0.0250	"	0.5080		95%	70-130		
Tetrachloroethene	0.470		2.50E-3	0.0250	"	0.4990		94%	70-130		
Chlorobenzene	0.457		2.50E-3	0.0250	"	0.5070		90%	70-130		
Ethylbenzene	0.421		2.50E-3	0.0250	"	0.4890		86%	70-130		



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Air Division, US EPA Region 5
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Project: Mid America Steel Drum, Inc.
Project Number: [none]
Project Manager: Alexandra Letuchy

Reported:
Mar-19-18 10:10

Air Toxics by GC/MS, EPA TO-15 (modified) - Quality Control US EPA Region 5 Chicago Regional Laboratory

Batch B18A011 - ColdTrap Dehydration

LCS (B18A011-BS1)

Prepared: Jan-29-18 Analyzed: Jan-30-18

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
m+p-Xylene	0.842		5.00E-3	0.0500	ppbv	0.9850		86%	70-130		
Bromoform	0.504		2.50E-3	0.0250	"	0.5240		96%	70-130		
Styrene	0.453		2.50E-3	0.0250	"	0.5020		90%	70-130		
1,1,2,2-Tetrachloroethane	0.485		2.50E-3	0.0250	"	0.5070		96%	70-130		
o-Xylene	0.424		2.50E-3	0.0250	"	0.4860		87%	70-130		
1,3,5-Trimethylbenzene	0.435		2.50E-3	0.0250	"	0.5030		87%	70-130		
1,2,4-Trimethylbenzene	0.431		2.50E-3	0.0250	"	0.5020		86%	70-130		
1,3-Dichlorobenzene	0.459		2.50E-3	0.0250	"	0.4980		92%	70-130		
Benzyl chloride	0.448		2.50E-3	0.0250	"	0.5150		87%	70-130		
1,4-Dichlorobenzene	0.480		2.50E-3	0.0250	"	0.5260		91%	70-130		
1,2,3-Trimethylbenzene	0.374		2.50E-3	0.0250	"	0.4380		85%	70-130		
1,2-Dichlorobenzene	0.461		2.50E-3	0.0250	"	0.5140		90%	70-130		
Hexachlorobutadiene	0.447		2.50E-3	0.0250	"	0.4890		91%	70-130		
1,2,4-Trichlorobenzene	0.438		2.50E-3	0.0250	"	0.5120		86%	70-130		
Naphthalene	0.438		2.50E-3	0.0250	"	0.5130		85%	70-130		
Surrogate: Dichlorodifluoromethane	0.566		2.50E-3	0.0250	"	0.5210		109%	70-130		
Surrogate: Dichlorotetrafluoroethane	0.500		2.50E-3	0.0250	"	0.5250		95%	70-130		
Surrogate: Trichlorofluoromethane	0.529		2.50E-3	0.0250	"	0.5370		98%	70-130		
Surrogate: 1,1,2-trichloro-1,2,2-trifluoroethane (Freon)	0.472		2.50E-3	0.0250	"	0.5250		90%	70-130		
Surrogate: 1,1,1-Trichloroethane	0.483		2.50E-3	0.0250	"	0.5080		95%	70-130		
Surrogate: Carbon tetrachloride	0.483		2.50E-3	0.0250	"	0.5000		97%	70-130		

LCS Dup (B18A011-BS1)

Prepared: Jan-29-18 Analyzed: Jan-30-18

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Chlorodifluoromethane (HCFC-22) (R-22)	0.530		2.50E-3	0.0250	ppbv	0.5310		100%	70-130	1	30
Propene	0.463		2.50E-3	0.0250	"	0.5370		86%	70-130	10	30
Chloromethane	0.532		2.50E-3	0.0250	"	0.5490		97%	70-130	0.2	30
Methanol	0.468	J	0.460	5.00	"	0.5170		90%	60-140	8	40
Vinyl chloride	0.489		2.50E-3	0.0250	"	0.5370		91%	70-130	2	30



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Phone: (312)353-8370 Fax: (312)886-2591

Air Division, US EPA Region 5
77 West Jackson Boulevard
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Project: Mid America Steel Drum, Inc.
Project Number: [none]
Project Manager: Alexandra Letuchy

Reported:
Mar-19-18 10:10

Air Toxics by GC/MS, EPA TO-15 (modified) - Quality Control US EPA Region 5 Chicago Regional Laboratory

Batch B18A011 - ColdTrap Dehydration

LCS Dup (B18A011-BSD1)

Prepared: Jan-29-18 Analyzed: Jan-30-18

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Isobutene	0.414	J	2.50E-3	0.100	ppbv	0.5300		78%	70-130	12	30
1,3-butadiene	0.488		2.50E-3	0.0250	"	0.5450		89%	70-130	5	30
Acetaldehyde	Rejected	Q	0.500	5.00	"	0.5390		%	60-140		40
Bromomethane	0.544		2.50E-3	0.0250	"	0.5540		98%	70-130	1	30
Chloroethane	0.530		2.50E-3	0.0250	"	0.5510		96%	70-130	3	30
Ethanol	0.471		0.100	0.100	"	0.5060		93%	60-140	1	40
Acrolein	0.448		2.50E-3	0.0250	"	0.5180		86%	60-140	5	40
Acetonitrile	0.454		2.50E-3	0.0250	"	0.5050		90%	60-140	4	40
Isopropyl alcohol	0.442		2.50E-3	0.0250	"	0.5000		88%	60-140	5	40
Propanal	0.460		2.50E-3	0.0250	"	0.5220		88%	60-140	5	40
Acetone	0.486		0.0250	0.0250	"	0.5410		90%	60-140	4	40
Pentane	0.488		2.50E-3	0.0250	"	0.5600		87%	70-130	2	30
Isoprene	0.489		2.50E-3	0.0250	"	0.5420		90%	70-130	5	30
1,1-Dichloroethene	0.488		2.50E-3	0.0250	"	0.5220		94%	70-130	2	30
Methyl iodide	0.468		2.50E-3	0.0250	"	0.5340		88%	70-130	3	30
Acrylonitrile	0.439		0.0250	0.0250	"	0.5010		88%	60-140	7	40
Methylene chloride	0.466		2.50E-3	0.0250	"	0.5000		93%	70-130	2	30
Carbon disulfide	0.502		2.50E-3	0.0250	"	0.4990		101%	60-140	1	40
1-Propanol	0.407		0.0500	0.0500	"	0.4790		85%	60-140	5	40
Cyclopentane	0.416		0.0250	0.0250	"	0.4940		84%	70-130	6	30
Methyl tert-butyl ether	0.426		2.50E-3	0.0250	"	0.5040		85%	60-140	6	40
Methacrolein	0.412		2.50E-3	0.0250	"	0.4790		86%	60-140	5	40
1,1-Dichloroethane	0.455		2.50E-3	0.0250	"	0.4950		92%	70-130	6	30
Vinyl acetate	0.417		2.50E-3	0.0250	"	0.4950		84%	60-140	9	40
Methyl vinyl ketone	0.420		2.50E-3	0.0250	"	0.4920		85%	60-140	7	40
Butanal	0.398		0.0250	0.0250	"	0.4790		83%	60-140	8	40
Hexane	0.418		2.50E-3	0.0250	"	0.4970		84%	70-130	7	30
2-Butanone	0.435		2.50E-3	0.0250	"	0.5230		83%	60-140	9	40
cis-1,2-Dichloroethene	0.442		2.50E-3	0.0250	"	0.4960		89%	70-130	6	30
trans-1,2-Dichloroethene	0.465		2.50E-3	0.0250	"	0.5060		92%	70-130	1	30



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Phone:(312)353-8370 Fax:(312)886-2591

Air Division, US EPA Region 5
77 West Jackson Boulevard
Chicago IL, 60605

Project: Mid America Steel Drum, Inc.
Project Number: [none]
Project Manager: Alexandra Letuchy

Reported:
Mar-19-18 10:10

Air Toxics by GC/MS, EPA TO-15 (modified) - Quality Control US EPA Region 5 Chicago Regional Laboratory

Batch B18A011 - ColdTrap Dehydration

LCS Dup (B18A011-BSD1)

Prepared: Jan-29-18 Analyzed: Jan-30-18

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Chloroform	0.471		2.50E-3	0.0250	ppbv	0.5110		92%	70-130	3	30
1,2-Dichloroethane	0.453		2.50E-3	0.0250	"	0.4950		92%	70-130	5	30
1-Butanol	0.428		0.0130	0.0250	"	0.5030		85%	60-140	6	40
Cyclohexane	0.419		0.250	0.250	"	0.5050		83%	70-130	7	30
Benzene	0.435		2.50E-3	0.0250	"	0.5040		86%	70-130	8	30
2-Pentanone	0.419		0.0130	0.0250	"	0.5020		84%	60-140	7	40
Pentanal	0.495		0.0250	0.0250	"	0.4940		100%	60-140	11	40
3-Pentanone	0.410		0.0130	0.0250	"	0.5070		81%	60-140	5	40
1,2-Dichloropropane	0.457		2.50E-3	0.0250	"	0.5010		91%	70-130	5	30
Trichloroethene	0.383		2.50E-3	0.0250	"	0.5010		76%	70-130	5	30
Bromodichloromethane	0.492		2.50E-3	0.0250	"	0.5240		94%	70-130	4	30
1,4-Dioxane	0.456		2.50E-3	0.0250	"	0.5300		86%	60-140	7	40
cis-1,3-Dichloropropene	0.441		2.50E-3	0.0250	"	0.5100		86%	70-130	6	30
4-Methyl-2-pentanone	0.450		2.50E-3	0.0250	"	0.5020		90%	60-140	3	40
trans-1,3-Dichloropropene	0.454		2.50E-3	0.0250	"	0.5130		89%	70-130	7	30
1,1,2-Trichloroethane	0.469		2.50E-3	0.0250	"	0.5020		93%	70-130	3	30
Dibromochloromethane	0.514		2.50E-3	0.0250	"	0.5060		102%	70-130	3	30
Toluene	0.411		2.50E-3	0.0250	"	0.4920		84%	70-130	8	30
3-Hexanone	0.428		0.0250	0.0250	"	0.5050		85%	60-140	6	40
2-Hexanone	0.392		0.0130	0.0250	"	0.4950		79%	60-140	4	40
Hexanal	0.410		0.0130	0.0250	"	0.5010		82%	60-140	7	40
1,2-Dibromoethane (EDB)	0.460		2.50E-3	0.0250	"	0.5080		91%	70-130	5	30
Tetrachloroethene	0.445		2.50E-3	0.0250	"	0.4990		89%	70-130	5	30
Chlorobenzene	0.426		2.50E-3	0.0250	"	0.5070		84%	70-130	7	30
Ethylbenzene	0.386		2.50E-3	0.0250	"	0.4890		79%	70-130	9	30
m+p-Xylene	0.782		5.00E-3	0.0500	"	0.9850		79%	70-130	7	30
Bromoform	0.485		2.50E-3	0.0250	"	0.5240		93%	70-130	4	30
Styrene	0.419		2.50E-3	0.0250	"	0.5020		83%	70-130	8	30
1,1,2,2-Tetrachloroethane	0.467		2.50E-3	0.0250	"	0.5070		92%	70-130	4	30
o-Xylene	0.394		2.50E-3	0.0250	"	0.4860		81%	70-130	8	30



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Project: Mid America Steel Drum, Inc.
Project Number: [none]
Project Manager: Alexandra Letuchy

Reported:
Mar-19-18 10:10

Air Toxics by GC/MS, EPA TO-15 (modified) - Quality Control US EPA Region 5 Chicago Regional Laboratory

Batch B18A011 - ColdTrap Dehydration

LCS Dup (B18A011-BSD1)

Prepared: Jan-29-18 Analyzed: Jan-30-18

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
1,3,5-Trimethylbenzene	0.412		2.50E-3	0.0250	ppbv	0.5030		82%	70-130	6	30
1,2,4-Trimethylbenzene	0.406		2.50E-3	0.0250	"	0.5020		81%	70-130	6	30
1,3-Dichlorobenzene	0.437		2.50E-3	0.0250	"	0.4980		88%	70-130	5	30
Benzyl chloride	0.428		2.50E-3	0.0250	"	0.5150		83%	70-130	5	30
1,4-Dichlorobenzene	0.448		2.50E-3	0.0250	"	0.5260		85%	70-130	7	30
1,2,3-Trimethylbenzene	0.352		2.50E-3	0.0250	"	0.4380		80%	70-130	6	30
1,2-Dichlorobenzene	0.436		2.50E-3	0.0250	"	0.5140		85%	70-130	5	30
Hexachlorobutadiene	0.438		2.50E-3	0.0250	"	0.4890		90%	70-130	2	30
1,2,4-Trichlorobenzene	0.422		2.50E-3	0.0250	"	0.5120		82%	70-130	4	30
Naphthalene	0.415		2.50E-3	0.0250	"	0.5130		81%	70-130	5	30
Surrogate: Dichlorodifluoromethane	0.562		2.50E-3	0.0250	"	0.5210		108%	70-130		
Surrogate: Dichlorotetrafluoroethane	0.492		2.50E-3	0.0250	"	0.5250		94%	70-130		
Surrogate: Trichlorofluoromethane	0.538		2.50E-3	0.0250	"	0.5370		100%	70-130		
Surrogate: 1,1,2-trichloro-1,2,2-trifluoroethane (Freon)	0.457		2.50E-3	0.0250	"	0.5250		87%	70-130		
Surrogate: 1,1,1-Trichloroethane	0.461		2.50E-3	0.0250	"	0.5080		91%	70-130		
Surrogate: Carbon tetrachloride	0.466		2.50E-3	0.0250	"	0.5000		93%	70-130		

Duplicate (B18A011-DUP1)

Source: 1801009-01

Prepared: Jan-29-18 Analyzed: Jan-30-18

Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Chlorodifluoromethane (HCFC-22) (R-22)	0.266		2.50E-3	0.0250	ppbv		0.260			2	30
Propene + propane	0.551	J	2.50E-3	0.0250	"		0.554			0.5	30
Chloromethane	0.532		2.50E-3	0.0250	"		0.530			0.4	30
Methanol	4.82	J	0.400	5.00	"		4.89			1	30
Vinyl chloride	U		2.50E-3	0.0250	"		U				30
Isobutene	0.0490	BC, J, Q	2.50E-3	0.100	"		0.0683			33	30
1,3-butadiene	U		2.50E-3	0.0250	"		U				30
Acetaldehyde	Rejected		0.500	5.00	"		Rejected				30
Bromomethane	0.0122	J, Q	2.50E-3	0.0250	"		7.50E-3			47	30
Chloroethane	U		2.50E-3	0.0250	"		U				30



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Air Division, US EPA Region 5
77 West Jackson Boulevard
Chicago IL, 60605

Project: Mid America Steel Drum, Inc.
Project Number: [none]
Project Manager: Alexandra Letuchy

Reported:
Mar-19-18 10:10

Air Toxics by GC/MS, EPA TO-15 (modified) - Quality Control US EPA Region 5 Chicago Regional Laboratory

Batch B18A011 - ColdTrap Dehydration

Duplicate (B18A011-DUP1)	Source: 1801009-01			Prepared: Jan-29-18 Analyzed: Jan-30-18							
Analyte	Result	Flags / Qualifiers	MDL	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Ethanol	1.66		0.100	0.100	ppbv		1.75			6	30
Acrolein	U	B, MI	0.0950	0.0950	"		U				30
Acetonitrile	0.0472	B	2.50E-3	0.0250	"		0.0478			1	30
Isopropyl alcohol	0.0829		2.50E-3	0.0250	"		0.0869			5	30
Propanal	0.170	B	2.50E-3	0.0250	"		0.175			3	30
Acetone	1.01	B	0.0250	0.0250	"		1.01			0.2	30
Pentane	0.157		2.50E-3	0.0250	"		0.157			0.01	30
Isoprene	6.85E-3	B, J	2.50E-3	0.0250	"		5.48E-3			22	30
1,1-Dichloroethene	U		2.50E-3	0.0250	"		U				30
Methyl iodide	U		2.50E-3	0.0250	"		U				30
Acrylonitrile	U	MI	0.0120	0.0250	"		U				30
Methylene chloride	0.0912		2.50E-3	0.0250	"		0.0908			0.4	30
Carbon disulfide	7.09E-3	B, J	2.50E-3	0.0250	"		6.25E-3			13	30
1-Propanol	U		0.0500	0.0500	"		U				30
Cyclopentane	0.0396		0.0250	0.0250	"		0.0391			1	30
Methyl tert-butyl ether	7.34E-3	J	2.50E-3	0.0250	"		8.18E-3			11	30
Methacrolein	0.0507	B	2.50E-3	0.0250	"		0.0532			5	30
1,1-Dichloroethane	U		2.50E-3	0.0250	"		U				30
Vinyl acetate	U		2.50E-3	0.0250	"		U				30
Methyl vinyl ketone	0.0184	(DUP), J	2.50E-3	0.0250	"		U				30
Butanal	0.0878	B	0.0250	0.0250	"		0.0862			2	30
Hexane	0.0737		2.50E-3	0.0250	"		0.0789			7	30
2-Butanone	3.04E-3	(DUP), J, Q	2.50E-3	0.0250	"		0.136			191	30
cis-1,2-Dichloroethene	U		2.50E-3	0.0250	"		U				30
trans-1,2-Dichloroethene	U		2.50E-3	0.0250	"		U				30
Chloroform	0.0200	J	2.50E-3	0.0250	"		0.0200			0.3	30
1,2-Dichloroethane	0.0160	J	2.50E-3	0.0250	"		0.0163			2	30
1-Butanol	U	B	0.0130	0.0250	"		0.0182				30
Cyclohexane	U		0.250	0.250	"		U				30
Benzene	0.153		2.50E-3	0.0250	"		0.158			3	30



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2-Pentanone	0.0258	B	0.0130	0.0250	ppbv		0.0225			13	30
3-Pentanone	0.0169	B, J	0.0130	0.0250	"		0.0173			2	30
Pentanal	0.0348		0.0250	0.0250	"		0.0371			6	30
1,2-Dichloropropane	5.22E-3	J	2.50E-3	0.0250	"		6.03E-3			14	30
Trichloroethene	2.54E-3	J	2.50E-3	0.0250	"		2.70E-3			6	30
Bromodichloromethane	U		2.50E-3	0.0250	"		U				30
1,4-Dioxane	U		2.50E-3	0.0250	"		U				30
cis-1,3-Dichloropropene	U		2.50E-3	0.0250	"		U				30
4-Methyl-2-pentanone	4.58E-3	B, J	2.50E-3	0.0250	"		5.03E-3			9	30
trans-1,3-Dichloropropene	U		2.50E-3	0.0250	"		U				30
1,1,2-Trichloroethane	U		2.50E-3	0.0250	"		U				30
Dibromochloromethane	U		2.50E-3	0.0250	"		U				30
Toluene	0.0996		2.50E-3	0.0250	"		0.102			3	30
3-Hexanone	U		0.0250	0.0250	"		U				30
2-Hexanone	U		0.0130	0.0250	"		0.0208				30
Hexanal	0.0803		0.0130	0.0250	"		0.0748			7	30
1,2-Dibromoethane (EDB)	U		2.50E-3	0.0250	"		U				30
Tetrachloroethene	6.39E-3	J	2.50E-3	0.0250	"		6.34E-3			0.8	30
Chlorobenzene	U		2.50E-3	0.0250	"		U				30
Ethylbenzene	0.0157	J	2.50E-3	0.0250	"		0.0154			2	30
m+p-Xylene	0.0365	J	5.00E-3	0.0500	"		0.0356			3	30
Bromoform	U		2.50E-3	0.0250	"		2.68E-3				30
Styrene	5.82E-3	B, J	2.50E-3	0.0250	"		6.63E-3			13	30
1,1,2,2-Tetrachloroethane	U		2.50E-3	0.0250	"		U				30
o-Xylene	0.0141	J	2.50E-3	0.0250	"		0.0157			11	30
1,3,5-Trimethylbenzene	5.66E-3	B, J	2.50E-3	0.0250	"		6.18E-3			9	30
1,2,4-Trimethylbenzene	0.0115	J	2.50E-3	0.0250	"		0.0126			10	30
1,3-Dichlorobenzene	U		2.50E-3	0.0250	"		U				30
Benzyl chloride	U		2.50E-3	0.0250	"		U				30
1,4-Dichlorobenzene	U		2.50E-3	0.0250	"		U				30



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1,2,3-Trimethylbenzene	9.10E-3	J	2.50E-3	0.0250	ppbv		U			30
1,2-Dichlorobenzene	U		2.50E-3	0.0250	"		U			30
Hexachlorobutadiene	U		2.50E-3	0.0250	"		U			30
1,2,4-Trichlorobenzene	U		2.50E-3	0.0250	"		U			30
Naphthalene	3.10E-3	B, J	2.50E-3	0.0250	"		3.82E-3		21	30
Surrogate: Dichlorodifluoromethane	0.545		2.50E-3	0.0250	"	0.5100		107%		70-130
Surrogate: Dichlorotetrafluoroethane	0.0181		2.50E-3	0.0250	"	2.000E-2		91%		60-140
Surrogate: Trichlorofluoromethane	0.236		2.50E-3	0.0250	"	0.2350		100%		70-130
Surrogate: 1,1,2-trichloro-1,2,2-trifluoroethane (Freon)	0.0747		2.50E-3	0.0250	"	7.200E-2		104%		70-130
Surrogate: 1,1,1-Trichloroethane	2.98E-3		2.50E-3	0.0250	"	4.000E-3		74%		50-150
Surrogate: Carbon tetrachloride	0.0838		2.50E-3	0.0250	"	8.300E-2		101%		70-130



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Notes and Definitions

- R Rejected
- MI Matrix interference
- J The identification of the analyte is acceptable; the reported value is an estimate.
- BC Analyte is detected in the sample within 5x the amount detected in the canister certification blank and may have a high bias from residual contamination in the canister used to sample.
- B Analyte concentration is < 5x that in the associated method blank(s); this concentration may be a high-bias estimate.
- (DUP) Duplicate precision criteria not met for this analyte
- U Not Detected
- NR Not Reported
- Q QC limit Exceeded