

Appendix A

Indoor Air Evaluation

AECOM Environment

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Memorandum

Date: March 16, 2010

To: Brian Ray/AECOM (Raleigh)
Amy Quintin and Betsy Ruffle/AECOM

From: (Westford)

Subject: Updated Indoor Air Risk Evaluation for BASF Charlotte Chesapeake Drive Facility, Charlotte, NC

Distribution: _____

The updated indoor air risk evaluation for the BASF Chesapeake Drive Facility (site), located in Charlotte, North Carolina, compares the most recent measured concentrations of target VOCs in the Sulfochlorination and Maintenance on-site buildings to previously developed risk-based screening levels (RBSLs) in order to assess potential risk to a current/future on-site indoor worker.

Background

In January 2008, AECOM (formerly ENSR) conducted a preliminary indoor air risk evaluation of the Maintenance and Sulfochlorination Buildings on-site, using indoor air measurement data collected in December 2007 (ENSR, 2008). An additional round of indoor air samples were collected in December 2008 to aid in assessing remedy effectiveness. The December 2008 data are discussed in a previous memorandum (AECOM, 2009). Historical indoor air from 2007 and 2008 data are presented in **Appendix B**.

Following a review of the analytical data collected from the SVE system wells in June 2009, the valves on SVE wells S-2, S-4, S-5, S-6, S-7, S-8, S-9, S-10, S-12, S-14 and SVE-1 were closed to enhance recovery of CVOCs from other wells. A round of sampling was collected in January 2010 to assess the effectiveness of the shutoff. Based on the results of the January 2010 sampling round, the valves to the SVE wells located near sample SCB-1 were re-opened in February 2010. Consequently, SCB-1 was re-sampled on February 17, 2010.

Data Collection

In January 2010, four indoor air samples and one ambient air sample were collected at both the Sulfochlorination and Maintenance Buildings at the same locations sampled in the December 2007 and December 2008 rounds. One duplicate sample was also collected inside the Maintenance Building. In February 2010, one indoor air sample (SCB-1) was collected at the Sulfochlorination Building at the same location sampled in the previous rounds. **Figure 1** and **Figure 2** present the approximate locations of the air samples in the Sulfochlorination Building and the Maintenance Building, respectively.

Air samples were collected using pre-cleaned Summa canisters supplied by Air Toxics, LTD of Folsom, California. The samples were analyzed using United States Environmental Protection Agency (U.S. EPA) Method TO-15 with Selective Ion Monitoring (SIM) in order to achieve low risk-based detection limits. Samples were collected over an 8-hour sampling period. **Appendix A** presents the laboratory results for the indoor air sampling.

Compounds of Potential Concern

The January 2010 and February 2010 indoor air samples were analyzed for Tetrachloroethene (PCE), Trichloroethene (TCE), and their breakdown products, including cis-1,2-Dichloroethene, 1,2-Dichloropropane, Chloroform, Chloroethane, 1,2-Dichloroethane, 1,1-Dichloroethane, 1,1-Dichloroethene, 1,1,1-Trichloroethane (1,1,1-TCA), and Vinyl Chloride. Consistent with the previous evaluations, these analytes were selected based on a review of soil and groundwater data for the site and results of previous indoor air samples collected from each building.

Table 1 (Sulfochlorination Building) and **Table 2** (Maintenance Building) present the analytical results for the January and February 2010 sampling events. No compounds were detected in the five samples collected at the Maintenance Building.

In the January 2010 Sulfochlorination Building indoor air samples PCE was detected in three out of four samples (SCB-1, SCB-2, and SCB-3) and TCE (SCB-1) was detected in one out of four samples. In the January 2010 ambient air sample (SCB-5) in the Sulfochlorination Building several compounds were detected: 1,1,1-TCA, 1,2-Dichloroethane, PCE, and TCE. No compounds were detected in the February 2010 sample collected in the Sulfochlorination Building (SCB-1).

All VOCs detected in indoor air were identified as Compounds of Potential Concern (COPCs). Therefore, the following chemicals were evaluated in this updated indoor air risk evaluation:

- PCE
- TCE

Table 3 presents the Exposure Point Concentrations (EPC) used in the updated evaluation. EPCs were developed for the two COPCs – PCE and TCE. Consistent with the approach used in the previous evaluations, the detected concentration at each indoor air sample was used as an EPC. Ambient air samples were presented only for comparison against the indoor air samples and were not evaluated further. Indoor air sample concentrations were used to evaluate the potential risk to a current/future on-site indoor worker.

Results of Updated Risk Evaluation

In the January 2008 Preliminary Risk Evaluation conducted for the site, risk-based screening levels (RBSLs) protective of an on-site indoor worker were derived (ENSR, 2008). These RBSLs, as presented in **Table 4**, were calculated using a 1×10^{-6} cancer risk level for carcinogens and a hazard index (HI) of 1 for noncarcinogens. The RBSLs calculated in January 2008 were revised to include the updated cancer slope factor for TCE of $0.007 \text{ mg/kg-day}^{-1}$, (CalEPA, 2009).

In order to calculate potential human health risk to the receptor of interest, the RBSLs were compared to the EPCs for the two detected COPCs. The resulting EPC/RBSL ratios were summed to yield an estimate of cumulative risk to a potential current/future on-site worker.

Tables 5 and 6 present the calculation of potential excess lifetime cancer risks (ELCR) and potential hazard indices (HI), respectively, for the indoor air. For all indoor air samples, the potential HI was

below the target HI of 1.0. The potential cumulative ELCR for two out of the three samples with detections in the January 2010 sampling round was below the target risk level of 1×10^{-6} . The potential ELCR for SCB-1, 5.8×10^{-6} , exceeds the target risk level of 1×10^{-6} , however is within the USEPA target risk range of 1×10^{-6} to 1×10^{-4} . This ELCR exceedance is driven by PCE, with an individual ELCR of 5.7×10^{-6} . Based on the PCE detection at SCB-1, the SVE system in the vicinity of this location was re-started and indoor air at SCB-1 resampled. The February 17, 2010 re-sample at SCB-1 showed that all compounds were not detected.

This updated indoor air risk evaluation indicates that measured concentrations of target VOCs in indoor air at the Maintenance Building at BASF's Chesapeake Drive facility are below target levels for a current/future on-site indoor worker. The January 2010 measured concentrations in the Sulfochlorination Building are also below target levels with the exception of one location (SCB-1). The potential ELCR at SCB-1 of 5.7×10^{-6} exceeds the target risk level of 1×10^{-6} , but is within the USEPA target risk range of 1×10^{-6} to 1×10^{-4} . However, when the February resample of SCB-1 is considered, all risks for the Sulfochlorination Building are below target levels.

Attachments to this Memo

Table 1 – Analytical Results for Indoor Air - Sulfochlorination Building
Table 2 – Analytical Results for Indoor Air - Maintenance Building
Table 3 – Exposure Point Concentrations
Table 4 – Risk Based Screening Levels (RBSL) for Indoor Air (On-site Worker Scenario)
Table 5 – Calculation of Total Potential Excess Lifetime Cancer Risks
Table 6 – Calculation of Total Potential Hazard Indices

Appendix A – Analytical Data
Appendix B – 2007 - 2010 Data Summary Tables

References:

ENSR, 2008. Preliminary Risk Evaluation of Indoor Air at Sulfochlorination and Maintenance Buildings, Chesapeake Drive Facility, Charlotte, NC. January 2008.

AECOM, 2009. Updated Indoor Air Risk Evaluation for BASF Charlotte Chesapeake Drive Facility, Charlotte, NC. January 29, 2009.

CalEPA, 2009. Technical Support Document for Cancer Potency Factors: Methodologies for derivation, listing of available values, and adjustments to allow for early life stage exposure. May 2009. Appendix B.

Table 1
Analytical Results for Indoor Air - Sulfochlorination Building
Indoor Air Risk Evaluation - January and February 2010
BASF Chesapeake Drive Facility - Charlotte, NC

Compound	Media:	Indoor Air (a)					Outdoor Air (c)
	Location:	SCB-1		SCB-2	SCB-3	SCB-4	SCB-5
	Date: CAS	January-10 (ug/m ³)	(b) February-10 (ug/m ³)	January-10 (ug/m ³)	January-10 (ug/m ³)	January-10 (ug/m ³)	January-10 (ug/m ³)
1,1,1-Trichloroethane	71-55-6	< 1.60E-01	< 1.80E-01	< 1.80E-01	< 1.80E-01	< 1.70E-01	1.70E-01 J
1,1-Dichloroethane	75-34-3	< 1.20E-01	< 1.30E-01	< 1.30E-01	< 1.40E-01	< 1.20E-01	< 1.30E-01
1,1-Dichloroethene	75-35-4	< 5.80E-02	< 6.50E-02	< 6.50E-02	< 6.70E-02	< 6.10E-02	< 6.30E-02
1,2-Dichloroethane	107-06-2	< 1.20E-01	< 1.30E-01	< 1.30E-01	< 1.40E-01	< 1.20E-01	3.40E-01
1,2-Dichloroethene (cis)	156-59-2	< 1.20E-01	< 1.30E-01	< 1.30E-01	< 1.30E-01	< 1.20E-01	< 1.20E-01
1,2-Dichloropropane	78-87-5	< 1.30E-01	< 1.50E-01	< 1.50E-01	< 1.60E-01	< 1.40E-01	< 1.50E-01
Chloroethane	75-00-3	< 1.90E-01	< 2.20E-01	< 2.20E-01	< 2.20E-01	< 2.00E-01	< 2.10E-01
Chloroform	67-66-3	< 1.40E-01	< 1.60E-01	< 1.60E-01	< 1.60E-01	< 1.50E-01	< 1.50E-01
Tetrachloroethene	127-18-4	1.30E+01	< 2.20E-01	5.00E-01	2.20E-01 J	< 2.10E-01	3.20E-01
Trichloroethene	79-01-6	2.90E-01	< 1.80E-01	< 1.80E-01	< 1.80E-01	< 1.70E-01	4.30E-01
Vinyl Chloride	75-01-4	< 3.70E-02	< 4.20E-02	< 4.20E-02	< 4.30E-02	< 4.00E-02	< 4.00E-02

Notes:
< Compound not detected above the detection limit. Detected results shown in bold face type.
CAS - Chemical Abstracts Service.
SCB - Sulfochlorination Building.
J - Estimated value.
(a) Indoor air samples collected inside the Sulfochlorination Building on January 5, 2010 using modified TO-15 SIM.
(b) Indoor air sample collected inside Sulfochlorination Building on February 17, 2010 using modified TO-15 SIM.
(c) Ambient air sample collected outside the Sulfochlorination Building on January 5, 2010.

Table 2
Analytical Results for Indoor Air - Maintenance Building
Indoor Air Risk Evaluation - January and February 2010
BASF Chesapeake Drive Facility - Charlotte, NC

Compound	Media:	Indoor Air (a)				Outdoor Air (b)	
	Location:	MB-1	MB-2	MB-3	MB-4	MB-5	MB-5 Lab Dup
	Date:	January-10	January-10	January-10	January-10	January-10	January-10
CAS	(ug/m ³)						
1,1,1-Trichloroethane	71-55-6	< 1.80E-01	< 1.70E-01	< 1.80E-01	< 1.80E-01	< 1.80E-01	< 1.80E-01
1,1-Dichloroethane	75-34-3	< 1.30E-01	< 1.20E-01	< 1.40E-01	< 1.30E-01	< 1.30E-01	< 1.30E-01
1,1-Dichloroethene	75-35-4	< 6.40E-02	< 6.10E-02	< 6.70E-02	< 6.50E-02	< 6.50E-02	< 6.50E-02
1,2-Dichloroethane	107-06-2	< 1.30E-01	< 1.20E-01	< 1.40E-01	< 1.30E-01	< 1.30E-01	< 1.30E-01
1,2-Dichloroethene (cis)	156-59-2	< 1.30E-01	< 1.20E-01	< 1.30E-01	< 1.30E-01	< 1.30E-01	< 1.30E-01
1,2-Dichloropropane	78-87-5	< 1.50E-01	< 1.40E-01	< 1.60E-01	< 1.50E-01	< 1.50E-01	< 1.50E-01
Chloroethane	75-00-3	< 2.10E-01	< 2.00E-01	< 2.20E-01	< 2.20E-01	< 2.20E-01	< 2.20E-01
Chloroform	67-66-3	< 1.60E-01	< 1.50E-01	< 1.60E-01	< 1.60E-01	< 1.60E-01	< 1.60E-01
Tetrachloroethene	127-18-4	< 2.20E-01	< 2.10E-01	< 2.30E-01	< 2.20E-01	< 2.20E-01	< 2.20E-01
Trichloroethene	79-01-6	< 1.70E-01	< 1.70E-01	< 1.80E-01	< 1.80E-01	< 1.80E-01	< 1.80E-01
Vinyl Chloride	75-01-4	< 4.10E-02	< 4.00E-02	< 4.30E-02	< 4.20E-02	< 4.20E-02	< 4.20E-02

Notes:
< Compound not detected above the detection limit. Detected results shown in bold face type.
CAS - Chemical Abstracts Service.
MB - Maintenance Building.
(a) Indoor air samples collected inside the Maintenance Building on January 5, 2010 using Modified TO-15 SIM.
(b) Ambient air samples collected outside the Maintenance Building on January 5, 2010.

Table 3
 Exposure Point Concentrations
 Indoor Air Risk Evaluation - January and February 2010
 BASF Chesapeake Drive Facility - Charlotte, NC

Compound (a)	Media:	Indoor Air									Ambient Air	
	Location:	SCB-1		SCB-2	SCB-3	SCB-4	MB-1	MB-2	MB-3	MB-4	SCB-5	MB-5 (b)
	Date: CAS	January-10 (mg/m ³)	February-10 (mg/m ³)	January-10 (mg/m ³)								
Tetrachloroethene	127-18-4	1.30E-02	ND	5.00E-04	2.20E-04	ND	ND	ND	ND	ND	3.20E-04	ND
Trichloroethene	79-01-6	2.90E-04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:
 CAS - Chemical Abstract Service.
 SCB - Sulfochlorination Building.
 MB - Maintenance Building.
 ND - Not detected.
 (a) Only compounds with at least one detected result in indoor air are shown. Ambient air samples shown for comparison only and are not evaluated further.
 (b) Average of parent and duplicate sample.

Table 4
 Risk Based Screening Levels (RBSL) for Indoor Air (On-site Worker Scenario)
 Indoor Air Risk Evaluation - January and February 2010
 BASF Chesapeake Drive Facility - Charlotte, NC

Compound	CAS	Risk Based Screening Level (c)	
		Cancer (a) (mg/m ³)	Noncancer (b) (mg/m ³)
1,1,1-Trichloroethane	71-55-6	NC	2.44E+01
1,1-Dichloroethane	75-34-3	NC	1.70E+00
1,1-Dichloroethene	75-35-4	NC	1.02E+00
1,2-Dichloroethane	107-06-2	5.24E-04	2.38E-02
1,2-Dichloroethene (cis)	156-59-2	NC	3.41E-01
1,2-Dichloropropane	78-87-5	1.32E-03	1.94E-02
Chloroethane	75-00-3	1.64E-02	4.87E+01
Chloroform	67-66-3	5.92E-04	2.44E-01
Tetrachloroethene	127-18-4	2.27E-03	1.70E-01
Trichloroethene	79-01-6	6.81E-03 (d)	1.94E-01
Vinyl Chloride	75-01-4	3.10E-03	4.87E-01

Notes:
 CAS - Chemical Abstracts Service.
 RBSL - Risk Based Screening Level.
 NC - Not calculated.
 (a) RBSL corresponding to a target risk level of 1x10⁻⁶.
 (b) RBSL corresponding to a target hazard index of 1.
 (c) RBSLs developed in previous risk evaluation. ENSR. 2008. Preliminary Risk Evaluation of Indoor Air at Sulfochlorination and Maintenance Buildings, Chesapeake Drive Facility, Charlotte, NC. (DRAFT). January 2008.
 (d) RBSL for trichloroethene has been revised to include the updated cancer slope factor of 0.007 (mg/kg-day)⁻¹ (CalEPA, 2009).

Table 5
 Calculation of Total Potential Excess Lifetime Cancer Risks
 Indoor Air Risk Evaluation - January and February 2010
 BASF Chesapeake Drive Facility - Charlotte, NC

Media: Location: Date:	Units:	CAS	RBSL (a) (mg/m ³)	Indoor Air																	
				SCB-1				SCB-2		SCB-3		SCB-4		MB-1		MB-2		MB-3		MB-4	
				January-10		February-10		January-10													
				EPC (mg/m ³)	ELCR (-)																
1,1,1-Trichloroethane		71-55-6	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC
1,1-Dichloroethane		75-34-3	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC
1,1-Dichloroethene		75-35-4	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC
1,2-Dichloroethane		107-06-2	5.24E-04	ND	NC																
1,2-Dichloroethene (cis)		156-59-2	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC
1,2-Dichloropropane		78-87-5	1.32E-03	ND	NC																
Chloroethane		75-00-3	1.64E-02	ND	NC																
Chloroform		67-66-3	5.92E-04	ND	NC																
Tetrachloroethene		127-18-4	2.27E-03	1.3E-02	5.72E-06	ND	NC	5.0E-04	2.20E-07	2.2E-04	9.69E-08	ND	NC								
Trichloroethene		79-01-6	6.81E-03	2.9E-04	4.26E-08	ND	NC														
Vinyl Chloride		75-01-4	3.10E-03	ND	NC																
Total Potential ELCR:				5.77E-06		NC		2.20E-07		9.69E-08		NC									

Notes:
Highlighted total potential ELCRs exceed the target risk limit of 1x10⁻⁶.
 CAS - Chemical Abstracts Service.
 ELCR - Excess Lifetime Cancer Risk. Calculated as follows: (EPC / RBSL) x (1x10⁻⁶).
 EPC - Exposure Point Concentration.
 HI - Hazard Index.
 MB - Maintenance Building.
 NC - Not calculated.
 ND - Not detected.
 RBSL - Risk Based Screening Level. Shown on Table 4.
 SCB - Sulfochlorination Building.
 (a) RBSL based on a Excess Lifetime Cancer Risk of 1x10⁻⁶.

Table 6
 Calculation of Total Potential Hazard Indices
 Indoor Air Risk Evaluation - January and February 2010
 BASF Chesapeake Drive Facility - Charlotte, NC

Media: Location: Date:	Units:	CAS	RBSL (a) (mg/m ³)	Indoor Air																			
				SCB-1				SCB-2				SCB-3		SCB-4		MB-1		MB-2		MB-3		MB-4	
				January-10		February-10		January-10		January-10		January-10		January-10		January-10		January-10		January-10		January-10	
				EPC (mg/m ³)	HQ (-)	EPC (mg/m ³)	HQ (-)	EPC (mg/m ³)	HQ (-)	EPC (mg/m ³)	HQ (-)	EPC (mg/m ³)	HQ (-)	EPC (mg/m ³)	HQ (-)	EPC (mg/m ³)	HQ (-)	EPC (mg/m ³)	HQ (-)	EPC (mg/m ³)	HQ (-)	EPC (mg/m ³)	HQ (-)
1,1,1-Trichloroethane	71-55-6	2.44E+01	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	
1,1-Dichloroethane	75-34-3	1.70E+00	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	
1,1-Dichloroethene	75-35-4	1.02E+00	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	
1,2-Dichloroethane	107-06-2	2.38E-02	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	
1,2-Dichloroethene (cis)	156-59-2	3.41E-01	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	
1,2-Dichloropropane	78-87-5	1.94E-02	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	
Chloroethane	75-00-3	4.87E+01	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	
Chloroform	67-66-3	2.44E-01	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	
Tetrachloroethene	127-18-4	1.70E-01	1.3E-02	7.63E-02	ND	NC	5.0E-04	2.94E-03	2.2E-04	1.29E-03	ND	NC											
Trichloroethene	79-01-6	1.94E-01	2.9E-04	1.49E-03	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	
Vinyl Chloride	75-01-4	4.87E-01	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	ND	NC	
Total HI:			7.78E-02		NC		2.94E-03		1.29E-03		NC												
Notes: CAS - Chemical Abstracts Service. EPC - Exposure Point Concentration. HI - Hazard Index. Sum of Hazard Quotients. HQ - Hazard Quotient. Calculated as follows: (EPC / RBSL). MB - Maintenance Building. NC - Not Calculated. ND - Not detected. RBSL - Risk Based Screening Level. Shown on Table 4. SCB - Sulfochlorination Building. (a) RBSL based on a Hazard Index of 1.																							



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APPENDIX A

Analytical Data

3/3/2010

Mr. Brian Ray
AECOM Environment
8540 Colonnade Center Drive
Suite 306
Raleigh NC 27615

Project Name: 60132884
Project #: BASF Charlotte
Workorder #: 1002382

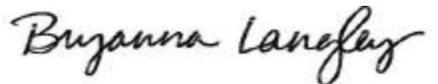
Dear Mr. Brian Ray

The following report includes the data for the above referenced project for sample(s) received on 2/18/2010 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 SIM are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Bryanna Langley at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



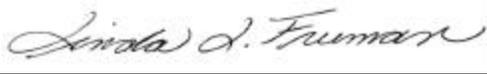
Bryanna Langley
Project Manager

WORK ORDER #: 1002382

Work Order Summary

CLIENT:	Mr. Brian Ray AECOM Environment 8540 Colonnade Center Drive Suite 306 Raleigh, NC 27615	BILL TO:	Accounts Payable AECOM Environment 2 Technology Drive Westford, MA 01886-3140
PHONE:	919.872.6600	P.O. #	4381ACM
FAX:		PROJECT #	BASF Charlotte 60132884
DATE RECEIVED:	02/18/2010	CONTACT:	Bryanna Langley
DATE COMPLETED:	03/03/2010		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	SCB-1	Modified TO-15 SIM	5.5 "Hg	5 psi
02A	Lab Blank	Modified TO-15 SIM	NA	NA
03A	CCV	Modified TO-15 SIM	NA	NA
04A	LCS	Modified TO-15 SIM	NA	NA

CERTIFIED BY: 

DATE: 03/03/10

Laboratory Director

Certification numbers: CA NELAP - 02110CA, LA NELAP/LELAP- AI 30763,
NY NELAP - 11291, UT NELAP - 9166389892, AZ Licensure AZ0719

Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 07/01/09, Expiration date: 06/30/10

Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Air Toxics Ltd.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
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LABORATORY NARRATIVE
Modified TO-15 SIM
AECOM Environment
Workorder# 1002382

One 6 Liter Summa Canister (SIM Certified) sample was received on February 18, 2010. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the SIM acquisition mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the ATL modifications.

<i>Requirement</i>	<i>TO-15</i>	<i>ATL Modifications</i>
ICAL %RSD acceptance criteria	$\leq 30\%$ RSD with 2 compounds allowed out to <math>< 40\%</math> RSD	Project specific; default criteria is $\leq 30\%$ RSD with 10% of compounds allowed out to <math>< 40\%</math> RSD
Daily Calibration	+/- 30% Difference	Project specific; default criteria is $\leq 30\%$ Difference with 10% of compounds allowed out up to $\leq 40\%$.; flag and narrate outliers
Blank and standards	Zero air	Nitrogen
Method Detection Limit	Follow 40CFR Pt.136 App. B	The MDL met all relevant requirements in Method TO-15 (statistical MDL less than the LOQ). The concentration of the spiked replicate may have exceeded 10X the calculated MDL in some cases

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue



Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS SIM

Client Sample ID: SCB-1

Lab ID#: 1002382-01A

No Detections Were Found.

Client Sample ID: SCB-1

Lab ID#: 1002382-01A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	c022317	Date of Collection: 2/17/10 8:00:00 AM
Dil. Factor:	1.64	Date of Analysis: 2/24/10 09:38 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.042	Not Detected
Chloroethane	0.082	Not Detected	0.22	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.065	Not Detected
1,1-Dichloroethane	0.033	Not Detected	0.13	Not Detected
cis-1,2-Dichloroethene	0.033	Not Detected	0.13	Not Detected
Chloroform	0.033	Not Detected	0.16	Not Detected
1,1,1-Trichloroethane	0.033	Not Detected	0.18	Not Detected
1,2-Dichloroethane	0.033	Not Detected	0.13	Not Detected
Trichloroethene	0.033	Not Detected	0.18	Not Detected
1,2-Dichloropropane	0.033	Not Detected	0.15	Not Detected
Tetrachloroethene	0.033	Not Detected	0.22	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	108	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	102	70-130

Client Sample ID: Lab Blank

Lab ID#: 1002382-02A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	c022307	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 2/23/10 06:25 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.010	Not Detected	0.026	Not Detected
Chloroethane	0.050	Not Detected	0.13	Not Detected
1,1-Dichloroethene	0.010	Not Detected	0.040	Not Detected
1,1-Dichloroethane	0.020	Not Detected	0.081	Not Detected
cis-1,2-Dichloroethene	0.020	Not Detected	0.079	Not Detected
Chloroform	0.020	Not Detected	0.098	Not Detected
1,1,1-Trichloroethane	0.020	Not Detected	0.11	Not Detected
1,2-Dichloroethane	0.020	Not Detected	0.081	Not Detected
Trichloroethene	0.020	Not Detected	0.11	Not Detected
1,2-Dichloropropane	0.020	Not Detected	0.092	Not Detected
Tetrachloroethene	0.020	Not Detected	0.14	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	109	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	97	70-130

Client Sample ID: CCV

Lab ID#: 1002382-03A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	c022302	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 2/23/10 11:42 AM

Compound	%Recovery
Vinyl Chloride	99
Chloroethane	104
1,1-Dichloroethene	84
1,1-Dichloroethane	99
cis-1,2-Dichloroethene	98
Chloroform	103
1,1,1-Trichloroethane	101
1,2-Dichloroethane	116
Trichloroethene	101
1,2-Dichloropropane	104
Tetrachloroethene	98

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	105	70-130
4-Bromofluorobenzene	121	70-130

Client Sample ID: LCS

Lab ID#: 1002382-04A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	c022304	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 2/23/10 03:06 PM

Compound	%Recovery
Vinyl Chloride	116
Chloroethane	112
1,1-Dichloroethene	74
1,1-Dichloroethane	97
cis-1,2-Dichloroethene	99
Chloroform	104
1,1,1-Trichloroethane	102
1,2-Dichloroethane	120
Trichloroethene	105
1,2-Dichloropropane	108
Tetrachloroethene	106

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	106	70-130
4-Bromofluorobenzene	114	70-130

1/15/2010

Mr. Brian Ray
AECOM Environment
7041 Old Wake Forest Road
Suite 103
Raleigh NC 27616-3013

Project Name: BASF Charlotte
Project #:
Workorder #: 1001060A

Dear Mr. Brian Ray

The following report includes the data for the above referenced project for sample(s) received on 1/6/2010 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 SIM are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Bryanna Langley at 916-985-1000 if you have any questions regarding the data in this report.

Regards,



Bryanna Langley
Project Manager

WORK ORDER #: 1001060A

Work Order Summary

CLIENT:	Mr. Brian Ray AECOM Environment 7041 Old Wake Forest Road Suite 103 Raleigh, NC 27616-3013	BILL TO:	Accounts Payable AECOM Environment 2 Technology Drive Westford, MA 01886-3140
PHONE:	919-872-6600 x224	P.O. #	2070474
FAX:		PROJECT #	BASF Charlotte
DATE RECEIVED:	01/06/2010	CONTACT:	Bryanna Langley
DATE COMPLETED:	01/15/2010		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>	<u>RECEIPT VAC./PRES.</u>	<u>FINAL PRESSURE</u>
01A	SCB-1	Modified TO-15 SIM	2.5 "Hg	5 psi
02A	SCB-2	Modified TO-15 SIM	5.5 "Hg	5 psi
03A	SCB-3	Modified TO-15 SIM	6.0 "Hg	5 psi
04A	SCB-4	Modified TO-15 SIM	4.0 "Hg	5 psi
05A	SCB-5	Modified TO-15 SIM	4.5 "Hg	5 psi
06A	MB-1	Modified TO-15 SIM	5.0 "Hg	5 psi
07A	MB-2	Modified TO-15 SIM	4.0 "Hg	5 psi
08A	MB-3	Modified TO-15 SIM	6.0 "Hg	5 psi
09A	MB-4	Modified TO-15 SIM	5.5 "Hg	5 psi
10A	MB-5	Modified TO-15 SIM	5.5 "Hg	5 psi
10AA	MB-5 Lab Duplicate	Modified TO-15 SIM	5.5 "Hg	5 psi
11A	Lab Blank	Modified TO-15 SIM	NA	NA
11B	Lab Blank	Modified TO-15 SIM	NA	NA
12A	CCV	Modified TO-15 SIM	NA	NA
12B	CCV	Modified TO-15 SIM	NA	NA
13A	LCS	Modified TO-15 SIM	NA	NA
13B	LCS	Modified TO-15 SIM	NA	NA

CERTIFIED BY: 

DATE: 01/15/10

Laboratory Director

Certification numbers: CA NELAP - 02110CA, LA NELAP/LELAP- AI 30763, NJ NELAP - CA004
NY NELAP - 11291, UT NELAP - 9166389892, AZ Licensure AZ0719

Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 07/01/09, Expiration date: 06/30/10

Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Air Toxics Ltd.

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

**LABORATORY NARRATIVE
Modified TO-15 SIM
AECOM Environment
Workorder# 1001060A**

Ten 6 Liter Summa Canister (SIM Certified) samples were received on January 06, 2010. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the SIM acquisition mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the ATL modifications.

<i>Requirement</i>	<i>TO-15</i>	<i>ATL Modifications</i>
ICAL %RSD acceptance criteria	$\leq 30\%$ RSD with 2 compounds allowed out to <math>< 40\%</math> RSD	Project specific; default criteria is $\leq 30\%$ RSD with 10% of compounds allowed out to <math>< 40\%</math> RSD
Daily Calibration	+/- 30% Difference	Project specific; default criteria is $\leq 30\%$ Difference with 10% of compounds allowed out up to $\leq 40\%$; flag and narrate outliers
Blank and standards	Zero air	Nitrogen
Method Detection Limit	Follow 40CFR Pt.136 App. B	The MDL met all relevant requirements in Method TO-15 (statistical MDL less than the LOQ). The concentration of the spiked replicate may have exceeded 10X the calculated MDL in some cases

Receiving Notes

The Chain of Custody was missing method information. ATL proceeded with the analysis as per the original contract or verbal agreement.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

**Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS SIM**

Client Sample ID: SCB-1

Lab ID#: 1001060A-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Trichloroethene	0.029	0.055	0.16	0.29
Tetrachloroethene	0.029	2.0	0.20	13

Client Sample ID: SCB-2

Lab ID#: 1001060A-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	0.033	0.074	0.22	0.50

Client Sample ID: SCB-3

Lab ID#: 1001060A-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	0.034	0.033 J	0.23	0.22 J

Client Sample ID: SCB-4

Lab ID#: 1001060A-04A

No Detections Were Found.

Client Sample ID: SCB-5

Lab ID#: 1001060A-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
1,1,1-Trichloroethane	0.032	0.031 J	0.17	0.17 J
1,2-Dichloroethane	0.032	0.083	0.13	0.34
Trichloroethene	0.032	0.079	0.17	0.43
Tetrachloroethene	0.032	0.046	0.21	0.32

Client Sample ID: MB-1

Lab ID#: 1001060A-06A

No Detections Were Found.

**Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS SIM**

Client Sample ID: MB-2

Lab ID#: 1001060A-07A

No Detections Were Found.

Client Sample ID: MB-3

Lab ID#: 1001060A-08A

No Detections Were Found.

Client Sample ID: MB-4

Lab ID#: 1001060A-09A

No Detections Were Found.

Client Sample ID: MB-5

Lab ID#: 1001060A-10A

No Detections Were Found.

Client Sample ID: MB-5 Lab Duplicate

Lab ID#: 1001060A-10AA

No Detections Were Found.

Client Sample ID: SCB-1

Lab ID#: 1001060A-01A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	c011213	Date of Collection: 1/5/10 8:37:00 AM
Dil. Factor:	1.46	Date of Analysis: 1/13/10 11:07 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.015	Not Detected	0.037	Not Detected
Chloroethane	0.073	Not Detected	0.19	Not Detected
1,1-Dichloroethene	0.015	Not Detected	0.058	Not Detected
1,1-Dichloroethane	0.029	Not Detected	0.12	Not Detected
cis-1,2-Dichloroethene	0.029	Not Detected	0.12	Not Detected
Chloroform	0.029	Not Detected	0.14	Not Detected
1,1,1-Trichloroethane	0.029	Not Detected	0.16	Not Detected
1,2-Dichloroethane	0.029	Not Detected	0.12	Not Detected
Trichloroethene	0.029	0.055	0.16	0.29
1,2-Dichloropropane	0.029	Not Detected	0.13	Not Detected
Tetrachloroethene	0.029	2.0	0.20	13

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	117	70-130
Toluene-d8	97	70-130
4-Bromofluorobenzene	94	70-130

Client Sample ID: SCB-2

Lab ID#: 1001060A-02A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	c011214	Date of Collection: 1/5/10 8:39:00 AM
Dil. Factor:	1.64	Date of Analysis: 1/13/10 12:17 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.042	Not Detected
Chloroethane	0.082	Not Detected	0.22	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.065	Not Detected
1,1-Dichloroethane	0.033	Not Detected	0.13	Not Detected
cis-1,2-Dichloroethene	0.033	Not Detected	0.13	Not Detected
Chloroform	0.033	Not Detected	0.16	Not Detected
1,1,1-Trichloroethane	0.033	Not Detected	0.18	Not Detected
1,2-Dichloroethane	0.033	Not Detected	0.13	Not Detected
Trichloroethene	0.033	Not Detected	0.18	Not Detected
1,2-Dichloropropane	0.033	Not Detected	0.15	Not Detected
Tetrachloroethene	0.033	0.074	0.22	0.50

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	116	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	95	70-130

Client Sample ID: SCB-3

Lab ID#: 1001060A-03A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	c011215	Date of Collection: 1/5/10 8:41:00 AM
Dil. Factor:	1.68	Date of Analysis: 1/13/10 12:50 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.017	Not Detected	0.043	Not Detected
Chloroethane	0.084	Not Detected	0.22	Not Detected
1,1-Dichloroethene	0.017	Not Detected	0.067	Not Detected
1,1-Dichloroethane	0.034	Not Detected	0.14	Not Detected
cis-1,2-Dichloroethene	0.034	Not Detected	0.13	Not Detected
Chloroform	0.034	Not Detected	0.16	Not Detected
1,1,1-Trichloroethane	0.034	Not Detected	0.18	Not Detected
1,2-Dichloroethane	0.034	Not Detected	0.14	Not Detected
Trichloroethene	0.034	Not Detected	0.18	Not Detected
1,2-Dichloropropane	0.034	Not Detected	0.16	Not Detected
Tetrachloroethene	0.034	0.033 J	0.23	0.22 J

J = Estimated value.

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	117	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	97	70-130

Client Sample ID: SCB-4

Lab ID#: 1001060A-04A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	c011216	Date of Collection: 1/5/10 8:44:00 AM
Dil. Factor:	1.55	Date of Analysis: 1/13/10 01:23 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.040	Not Detected
Chloroethane	0.078	Not Detected	0.20	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.061	Not Detected
1,1-Dichloroethane	0.031	Not Detected	0.12	Not Detected
cis-1,2-Dichloroethene	0.031	Not Detected	0.12	Not Detected
Chloroform	0.031	Not Detected	0.15	Not Detected
1,1,1-Trichloroethane	0.031	Not Detected	0.17	Not Detected
1,2-Dichloroethane	0.031	Not Detected	0.12	Not Detected
Trichloroethene	0.031	Not Detected	0.17	Not Detected
1,2-Dichloropropane	0.031	Not Detected	0.14	Not Detected
Tetrachloroethene	0.031	Not Detected	0.21	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	117	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	99	70-130

Client Sample ID: SCB-5

Lab ID#: 1001060A-05A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	c011217	Date of Collection: 1/5/10 8:33:00 AM
Dil. Factor:	1.58	Date of Analysis: 1/13/10 01:56 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.040	Not Detected
Chloroethane	0.079	Not Detected	0.21	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.063	Not Detected
1,1-Dichloroethane	0.032	Not Detected	0.13	Not Detected
cis-1,2-Dichloroethene	0.032	Not Detected	0.12	Not Detected
Chloroform	0.032	Not Detected	0.15	Not Detected
1,1,1-Trichloroethane	0.032	0.031 J	0.17	0.17 J
1,2-Dichloroethane	0.032	0.083	0.13	0.34
Trichloroethene	0.032	0.079	0.17	0.43
1,2-Dichloropropane	0.032	Not Detected	0.15	Not Detected
Tetrachloroethene	0.032	0.046	0.21	0.32

J = Estimated value.

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	119	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	95	70-130

Client Sample ID: MB-1

Lab ID#: 1001060A-06A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	c011218	Date of Collection: 1/5/10 8:26:00 AM
Dil. Factor:	1.61	Date of Analysis: 1/13/10 02:30 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.041	Not Detected
Chloroethane	0.080	Not Detected	0.21	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.064	Not Detected
1,1-Dichloroethane	0.032	Not Detected	0.13	Not Detected
cis-1,2-Dichloroethene	0.032	Not Detected	0.13	Not Detected
Chloroform	0.032	Not Detected	0.16	Not Detected
1,1,1-Trichloroethane	0.032	Not Detected	0.18	Not Detected
1,2-Dichloroethane	0.032	Not Detected	0.13	Not Detected
Trichloroethene	0.032	Not Detected	0.17	Not Detected
1,2-Dichloropropane	0.032	Not Detected	0.15	Not Detected
Tetrachloroethene	0.032	Not Detected	0.22	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	117	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	93	70-130

Client Sample ID: MB-2

Lab ID#: 1001060A-07A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	c011219	Date of Collection: 1/5/10 8:27:00 AM
Dil. Factor:	1.55	Date of Analysis: 1/13/10 03:27 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.040	Not Detected
Chloroethane	0.078	Not Detected	0.20	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.061	Not Detected
1,1-Dichloroethane	0.031	Not Detected	0.12	Not Detected
cis-1,2-Dichloroethene	0.031	Not Detected	0.12	Not Detected
Chloroform	0.031	Not Detected	0.15	Not Detected
1,1,1-Trichloroethane	0.031	Not Detected	0.17	Not Detected
1,2-Dichloroethane	0.031	Not Detected	0.12	Not Detected
Trichloroethene	0.031	Not Detected	0.17	Not Detected
1,2-Dichloropropane	0.031	Not Detected	0.14	Not Detected
Tetrachloroethene	0.031	Not Detected	0.21	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	117	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	95	70-130

Client Sample ID: MB-3

Lab ID#: 1001060A-08A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	c011220	Date of Collection: 1/5/10 8:25:00 AM
Dil. Factor:	1.68	Date of Analysis: 1/13/10 04:00 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.017	Not Detected	0.043	Not Detected
Chloroethane	0.084	Not Detected	0.22	Not Detected
1,1-Dichloroethene	0.017	Not Detected	0.067	Not Detected
1,1-Dichloroethane	0.034	Not Detected	0.14	Not Detected
cis-1,2-Dichloroethene	0.034	Not Detected	0.13	Not Detected
Chloroform	0.034	Not Detected	0.16	Not Detected
1,1,1-Trichloroethane	0.034	Not Detected	0.18	Not Detected
1,2-Dichloroethane	0.034	Not Detected	0.14	Not Detected
Trichloroethene	0.034	Not Detected	0.18	Not Detected
1,2-Dichloropropane	0.034	Not Detected	0.16	Not Detected
Tetrachloroethene	0.034	Not Detected	0.23	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	116	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	97	70-130

Client Sample ID: MB-4

Lab ID#: 1001060A-09A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	c011221	Date of Collection: 1/5/10 8:24:00 AM
Dil. Factor:	1.64	Date of Analysis: 1/13/10 04:33 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.042	Not Detected
Chloroethane	0.082	Not Detected	0.22	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.065	Not Detected
1,1-Dichloroethane	0.033	Not Detected	0.13	Not Detected
cis-1,2-Dichloroethene	0.033	Not Detected	0.13	Not Detected
Chloroform	0.033	Not Detected	0.16	Not Detected
1,1,1-Trichloroethane	0.033	Not Detected	0.18	Not Detected
1,2-Dichloroethane	0.033	Not Detected	0.13	Not Detected
Trichloroethene	0.033	Not Detected	0.18	Not Detected
1,2-Dichloropropane	0.033	Not Detected	0.15	Not Detected
Tetrachloroethene	0.033	Not Detected	0.22	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	117	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	97	70-130

Client Sample ID: MB-5

Lab ID#: 1001060A-10A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	c011407	Date of Collection: 1/5/10 8:48:00 AM
Dil. Factor:	1.64	Date of Analysis: 1/14/10 02:03 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.042	Not Detected
Chloroethane	0.082	Not Detected	0.22	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.065	Not Detected
1,1-Dichloroethane	0.033	Not Detected	0.13	Not Detected
cis-1,2-Dichloroethene	0.033	Not Detected	0.13	Not Detected
Chloroform	0.033	Not Detected	0.16	Not Detected
1,1,1-Trichloroethane	0.033	Not Detected	0.18	Not Detected
1,2-Dichloroethane	0.033	Not Detected	0.13	Not Detected
Trichloroethene	0.033	Not Detected	0.18	Not Detected
1,2-Dichloropropane	0.033	Not Detected	0.15	Not Detected
Tetrachloroethene	0.033	Not Detected	0.22	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	116	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	96	70-130

Client Sample ID: MB-5 Lab Duplicate

Lab ID#: 1001060A-10AA

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	c011408	Date of Collection: 1/5/10 8:48:00 AM
Dil. Factor:	1.64	Date of Analysis: 1/14/10 02:36 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.016	Not Detected	0.042	Not Detected
Chloroethane	0.082	Not Detected	0.22	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.065	Not Detected
1,1-Dichloroethane	0.033	Not Detected	0.13	Not Detected
cis-1,2-Dichloroethene	0.033	Not Detected	0.13	Not Detected
Chloroform	0.033	Not Detected	0.16	Not Detected
1,1,1-Trichloroethane	0.033	Not Detected	0.18	Not Detected
1,2-Dichloroethane	0.033	Not Detected	0.13	Not Detected
Trichloroethene	0.033	Not Detected	0.18	Not Detected
1,2-Dichloropropane	0.033	Not Detected	0.15	Not Detected
Tetrachloroethene	0.033	Not Detected	0.22	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	116	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	95	70-130

Client Sample ID: Lab Blank

Lab ID#: 1001060A-11A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	c011206a	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 1/12/10 09:07 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.010	Not Detected	0.026	Not Detected
Chloroethane	0.050	Not Detected	0.13	Not Detected
1,1-Dichloroethene	0.010	Not Detected	0.040	Not Detected
1,1-Dichloroethane	0.020	Not Detected	0.081	Not Detected
cis-1,2-Dichloroethene	0.020	Not Detected	0.079	Not Detected
Chloroform	0.020	Not Detected	0.098	Not Detected
1,1,1-Trichloroethane	0.020	Not Detected	0.11	Not Detected
1,2-Dichloroethane	0.020	Not Detected	0.081	Not Detected
Trichloroethene	0.020	Not Detected	0.11	Not Detected
1,2-Dichloropropane	0.020	Not Detected	0.092	Not Detected
Tetrachloroethene	0.020	Not Detected	0.14	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	118	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	94	70-130

Client Sample ID: Lab Blank

Lab ID#: 1001060A-11B

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	c011406a	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 1/14/10 12:46 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.010	Not Detected	0.026	Not Detected
Chloroethane	0.050	Not Detected	0.13	Not Detected
1,1-Dichloroethene	0.010	Not Detected	0.040	Not Detected
1,1-Dichloroethane	0.020	Not Detected	0.081	Not Detected
cis-1,2-Dichloroethene	0.020	Not Detected	0.079	Not Detected
Chloroform	0.020	Not Detected	0.098	Not Detected
1,1,1-Trichloroethane	0.020	Not Detected	0.11	Not Detected
1,2-Dichloroethane	0.020	Not Detected	0.081	Not Detected
Trichloroethene	0.020	Not Detected	0.11	Not Detected
1,2-Dichloropropane	0.020	Not Detected	0.092	Not Detected
Tetrachloroethene	0.020	Not Detected	0.14	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	120	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	94	70-130

Client Sample ID: CCV

Lab ID#: 1001060A-12A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	c011202	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 1/12/10 05:22 PM

Compound	%Recovery
Vinyl Chloride	101
Chloroethane	104
1,1-Dichloroethene	94
1,1-Dichloroethane	108
cis-1,2-Dichloroethene	96
Chloroform	107
1,1,1-Trichloroethane	107
1,2-Dichloroethane	124
Trichloroethene	92
1,2-Dichloropropane	104
Tetrachloroethene	94

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	122	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	101	70-130

Client Sample ID: CCV

Lab ID#: 1001060A-12B

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	c011402	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 1/14/10 09:37 AM

Compound	%Recovery
Vinyl Chloride	107
Chloroethane	105
1,1-Dichloroethene	87
1,1-Dichloroethane	102
cis-1,2-Dichloroethene	90
Chloroform	101
1,1,1-Trichloroethane	104
1,2-Dichloroethane	110
Trichloroethene	87
1,2-Dichloropropane	96
Tetrachloroethene	91

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	119	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	105	70-130

Client Sample ID: LCS

Lab ID#: 1001060A-13A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	c011203	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 1/12/10 06:03 PM

Compound	%Recovery
Vinyl Chloride	96
Chloroethane	94
1,1-Dichloroethene	77
1,1-Dichloroethane	92
cis-1,2-Dichloroethene	83
Chloroform	93
1,1,1-Trichloroethane	94
1,2-Dichloroethane	104
Trichloroethene	80
1,2-Dichloropropane	90
Tetrachloroethene	82

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	129	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	104	70-130

Client Sample ID: LCS

Lab ID#: 1001060A-13B

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	c011403	Date of Collection: NA
Dil. Factor:	1.00	Date of Analysis: 1/14/10 10:11 AM

Compound	%Recovery
Vinyl Chloride	93
Chloroethane	93
1,1-Dichloroethene	73
1,1-Dichloroethane	90
cis-1,2-Dichloroethene	82
Chloroform	91
1,1,1-Trichloroethane	92
1,2-Dichloroethane	104
Trichloroethene	79
1,2-Dichloropropane	89
Tetrachloroethene	80

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	128	70-130
Toluene-d8	102	70-130
4-Bromofluorobenzene	102	70-130

APPENDIX B
2007 - 2010 Data Summary Tables

Table 1
 2007-2010 Analytical Results for Indoor Air - Sulfochlorination Building
 Indoor Air Risk Evaluation
 BASF Chesapeake Drive Facility - Charlotte, NC

Compound	CAS	SCB-1				SCB-2			SCB-3			SCB-4			SCB-5 (a)		
		2007	2008	Jan-10	Feb-10	2007	2008	2010	2007	2008	2010	2007	2008	2010	2007	2008	2010
		(ug/m ³)				(ug/m ³)			(ug/m ³)			(ug/m ³)			(ug/m ³)		
1,1,1-Trichloroethane	71-55-6	< 1.47E-01	< 1.30E+00	< 1.60E-01	< 1.80E-01	< 1.91E-01	< 1.90E-01	< 1.80E-01	< 1.96E-01	< 2.00E-01	< 1.80E-01	< 1.91E-01	> 2.00E-01	< 1.70E-01	< 1.96E-01	< 1.90E-01	1.70E-01
1,1-Dichloroethane	75-34-3	< 1.09E-01	< 9.50E-01	< 1.20E-01	< 1.30E-01	< 1.42E-01	< 1.40E-01	< 1.30E-01	< 1.46E-01	< 1.40E-01	< 1.40E-01	< 1.42E-01	< 1.40E-01	< 1.20E-01	< 1.46E-01	< 1.40E-01	< 1.30E-01
1,1-Dichloroethane	75-35-4	< 5.15E-02	< 4.60E-01	< 5.80E-02	< 6.50E-02	< 7.14E-02	< 6.90E-02	< 6.50E-02	< 7.14E-02	< 7.10E-02	< 6.70E-02	< 7.14E-02	< 7.10E-02	< 6.10E-02	< 7.14E-02	< 6.90E-02	< 6.30E-02
1,2-Dichloroethane	107-06-2	< 1.09E-01	< 9.50E-01	< 1.20E-01	< 1.30E-01	< 1.42E-01	< 1.40E-01	< 1.30E-01	< 1.46E-01	< 1.40E-01	< 1.40E-01	< 1.42E-01	< 1.40E-01	< 1.20E-01	< 1.46E-01	< 1.40E-01	3.40E-01
1,2-Dichloroethene (cis)	156-59-2	< 1.07E-01	< 9.30E-01	< 1.20E-01	< 1.30E-01	< 1.39E-01	< 1.40E-01	< 1.30E-01	< 1.43E-01	< 1.40E-01	< 1.30E-01	< 1.39E-01	< 1.40E-01	< 1.20E-01	< 1.43E-01	< 1.40E-01	< 1.20E-01
1,2-Dichloropropane	78-87-5	< 1.25E-01	< 1.10E+00	< 1.30E-01	< 1.50E-01	< 1.62E-01	< 1.60E-01	< 1.50E-01	< 1.66E-01	< 1.60E-01	< 1.60E-01	< 1.62E-01	< 1.60E-01	< 1.40E-01	< 1.66E-01	< 1.60E-01	< 1.50E-01
Chloroethane	75-00-3	< 1.77E-01	< 1.50E+00	< 1.90E-01	< 2.20E-01	< 2.32E-01	< 2.30E-01	< 2.20E-01	< 2.37E-01	< 2.40E-01	< 2.20E-01	< 2.32E-01	< 2.40E-01	< 2.00E-01	< 2.37E-01	< 2.30E-01	< 2.10E-01
Chloroform	67-66-3	< 1.32E-01	< 1.10E+00	< 1.40E-01	< 1.60E-01	< 1.71E-01	< 1.70E-01	< 1.60E-01	< 1.76E-01	< 1.70E-01	< 1.60E-01	< 1.71E-01	< 1.70E-01	< 1.50E-01	< 1.76E-01	< 1.70E-01	< 1.50E-01
Tetrachloroethene	127-18-4	< 1.83E-01	1.80E+00	1.30E+01	< 2.20E-01	< 2.37E-01	8.90E-01	5.00E-01	< 2.44E-01	7.10E-01	2.20E-01	1.02E+00	5.90E-01	< 2.10E-01	1.29E+00	4.10E-01	3.20E-01
Trichloroethene	79-01-6	< 1.45E-01	< 1.20E+00	2.90E-01	< 1.80E-01	< 1.88E-01	< 1.90E-01	< 1.80E-01	< 1.93E-01	< 1.90E-01	< 1.80E-01	< 1.88E-01	< 1.90E-01	< 1.70E-01	< 1.93E-01	< 1.90E-01	4.30E-01
Vinyl Chloride	75-01-4	< 3.32E-02	< 3.00E-01	< 3.70E-02	< 4.20E-02	< 4.60E-02	< 4.50E-02	< 4.20E-02	< 4.60E-02	< 4.60E-02	< 4.30E-02	< 4.60E-02	< 4.60E-02	< 4.00E-02	< 4.60E-02	< 4.50E-02	< 4.00E-02

Notes:
 < Compound not detected above the detection limit. Detected results shown in bold face type.
 (a) Ambient air samples collected outside the building.

Table 2
 2007-2010 Analytical Results for Indoor Air - Maintenance Building
 Indoor Air Risk Evaluation
 BASF Chesapeake Drive Facility - Charlotte, NC

Compound	CAS	MB-1			MB-2			MB-3			MB-4			MB-5 (a)			MB-5 Lab Dup (a)	
		2007	2008	2010	2007	2008	2010	2007	2008	2010	2007	2008	2010	2007	2008	2010	2007	2010
		(ug/m ³)			(ug/m ³)			(ug/m ³)			(ug/m ³)			(ug/m ³)			(ug/m ³)	
1,1,1-Trichloroethane	71-55-6	< 1.96E-01	< 1.90E-01	< 1.80E-01	< 1.86E-01	< 2.00E-01	< 1.70E-01	< 1.96E-01	< 2.00E-01	< 1.80E-01	< 1.96E-01	< 1.90E-01	< 1.80E-01	> 1.96E-01	< 1.90E-01	< 1.80E-01	> 1.96E-01	< 1.80E-01
1,1-Dichloroethane	75-34-3	< 1.46E-01	< 1.40E-01	< 1.30E-01	< 1.38E-01	< 1.40E-01	< 1.20E-01	< 1.46E-01	< 1.40E-01	< 1.40E-01	< 1.46E-01	< 1.40E-01	< 1.30E-01	> 1.46E-01	< 1.40E-01	< 1.30E-01	> 1.46E-01	< 1.30E-01
1,1-Dichloroethene	75-35-4	< 7.14E-02	< 6.80E-02	< 6.40E-02	< 6.74E-02	< 7.10E-02	< 6.10E-02	< 7.14E-02	< 7.10E-02	< 6.70E-02	< 7.14E-02	< 6.90E-02	< 6.50E-02	> 7.14E-02	< 6.90E-02	< 6.50E-02	> 7.14E-02	< 6.50E-02
1,2-Dichloroethane	107-06-2	< 1.46E-01	< 1.40E-01	< 1.30E-01	< 1.38E-01	< 1.40E-01	< 1.20E-01	< 1.46E-01	< 1.40E-01	< 1.40E-01	< 1.46E-01	< 1.40E-01	< 1.30E-01	> 1.46E-01	< 1.40E-01	< 1.30E-01	> 1.46E-01	< 1.30E-01
1,2-Dichloroethene (cis)	156-59-2	< 1.43E-01	< 1.40E-01	< 1.30E-01	< 1.35E-01	< 1.40E-01	< 1.20E-01	< 1.43E-01	< 1.40E-01	< 1.30E-01	< 1.43E-01	< 1.40E-01	< 1.30E-01	> 1.43E-01	< 1.40E-01	< 1.30E-01	> 1.43E-01	< 1.30E-01
1,2-Dichloropropane	78-87-5	< 1.66E-01	< 1.60E-01	< 1.50E-01	< 1.57E-01	< 1.60E-01	< 1.40E-01	< 1.66E-01	< 1.60E-01	< 1.60E-01	< 1.66E-01	< 1.60E-01	< 1.50E-01	> 1.66E-01	< 1.60E-01	< 1.50E-01	> 1.66E-01	< 1.50E-01
Chloroethane	75-00-3	< 2.37E-01	< 2.20E-01	< 2.10E-01	< 2.27E-01	< 2.40E-01	< 2.00E-01	< 2.37E-01	< 2.40E-01	< 2.20E-01	< 2.37E-01	< 2.30E-01	< 2.20E-01	> 2.37E-01	< 2.30E-01	< 2.20E-01	> 2.37E-01	< 2.20E-01
Chloroform	67-66-3	< 1.76E-01	1.70E-01	< 1.60E-01	< 1.66E-01	< 1.70E-01	< 1.50E-01	3.22E-01	1.90E-01	< 1.60E-01	< 1.76E-01	< 1.70E-01	< 1.60E-01	> 1.76E-01	< 1.70E-01	< 1.60E-01	> 1.76E-01	< 1.60E-01
Tetrachloroethene	127-18-4	1.15E+00	1.00E+00	< 2.20E-01	1.15E+00	9.00E-01	< 2.10E-01	2.10E+00	9.90E-01	< 2.30E-01	8.82E-01	4.70E-01	< 2.20E-01	3.87E-01	3.80E-01	< 2.20E-01	3.46E-01	< 2.20E-01
Trichloroethene	79-01-6	< 1.93E-01	< 1.80E-01	< 1.70E-01	< 1.83E-01	< 1.90E-01	< 1.70E-01	< 1.93E-01	< 1.90E-01	< 1.80E-01	< 1.93E-01	< 1.90E-01	< 1.80E-01	> 1.93E-01	< 1.90E-01	< 1.80E-01	> 1.93E-01	< 1.80E-01
Vinyl Chloride	75-01-4	< 4.60E-02	< 4.40E-02	< 4.10E-02	< 4.35E-02	< 4.60E-02	< 4.00E-02	< 4.60E-02	< 4.60E-02	< 4.30E-02	< 4.60E-02	< 4.50E-02	< 4.20E-02	> 4.60E-02	< 4.50E-02	< 4.20E-02	> 4.60E-02	< 4.20E-02

Notes:
 < Compound not detected above the detection limit. Detected results shown in bold face type
 (a) Ambient air samples collected outside the building.