MASSACHUSETTS DEPARTMENT OF

ENVIRONMENTAL PROTECTION

FIELD ASSESSMENT AND SUPPORT TEAM (FAST)

Fire at LIFOAM™ Facility

2 Fifth Street

Peabody

July 2016

Background

At about 3:30 PM on July 12, 2016, a fire of unknown origin and cause broke out at the LIFOAM™ manufacturing facility on 2 Fifth Street in Peabody, resulting in the discharge of thick black smoke that traveled in a northeasterly direction into an abutting neighborhood area surrounding Jubilee Drive.

LIFOAM™ is a manufacturer of foam-based coolers and other consumer products. The facility at 2 Fifth Street is a very large (4 acres +/-) building, which presumably contained large quantities of expanded polystyrene raw materials and/or finished products. Other chemicals reportedly present within this building were sodium polyacrylate (a water-absorbent polymer), sulfuric acid, and hydraulic oil.

The fire continued to emit black plumes of smoke well into the evening hours, from multiple locations throughout the large structure, and was very difficult to contain and extinguish.

Figure 1 - Site Locus

MassDEP responders arrived on scene by about 5:30 PM. By approximately 8:30 PM, the MassDEP Field Assessment and Support Team (FAST) mobile laboratory arrived on site and began to sample and analyze air and water samples for a variety of contaminants likely to be present in the smoke and firefighting water runoff.

Meteorological Conditions and Testing Strategy

Metrological records from the Beverly Municipal airport are presented in Figure 2, and document that wind direction was consistently from the South/Southwest during the time of most intense smoke emissions. This was verified during the time of FAST deployment by an on-board Weatherpak weather station raised to a 10 meter height, though recorded wind velocities on-site were somewhat lower than the values recorded at the airport.

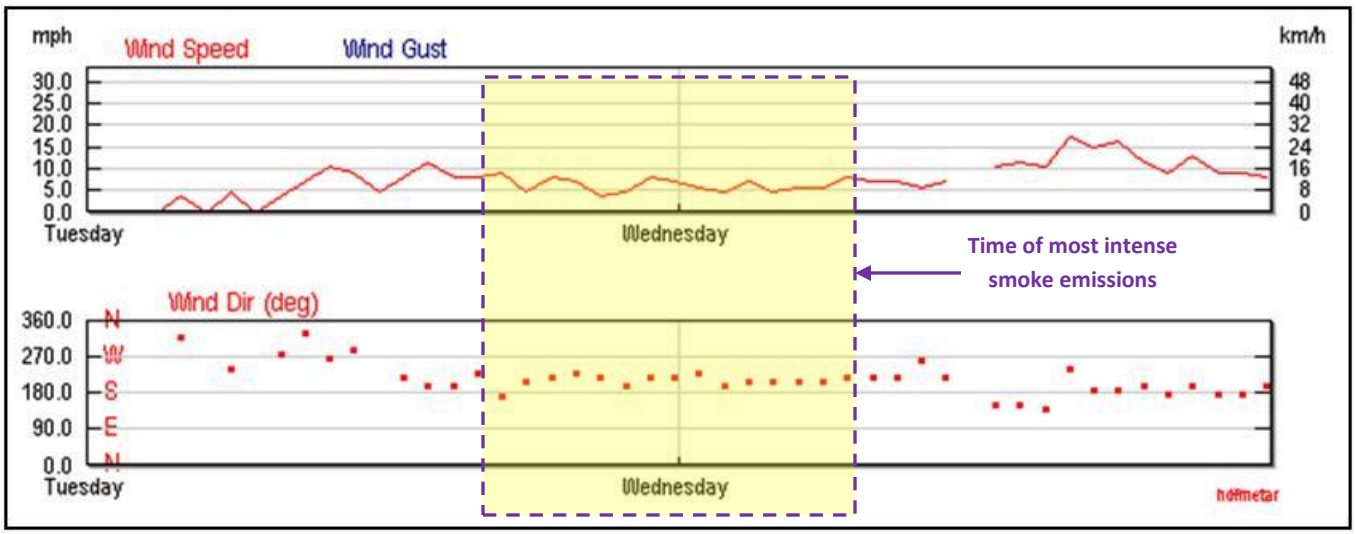

Figure 2 – Wind Direction and Velocity (Weather Underground)

The air monitoring strategy implemented by FAST personnel initially focused on obtaining "worst case" samples near the smoldering building, followed by the acquisition of data from residential areas located to the northeast (i.e., downwind directions)

Testing Assets

The primary concern at this event was the concentration of Volatile Organic Compounds (VOCs) in the smoke, along with Hydrogen Cyanide (a combustion by-product in most fires). Of additional concern was the presence of VOCs in the firefighting runoff water.

VOCs were evaluated on-site in the FAST mobile laboratory using two Inficon HAPSITE gas chromatographs with mass spectrometers (GC/MS), calibrated to detect very low concentrations (parts-per-trillion) of 35 common VOCs, and capable of tentatively identifying and quantifying more than 100,000 additional organic compounds via use of a NIST mass spectra database and computer matching algorithms

Hydrogen Cyanide was tested using a RAE systems V-RAE meter with an appropriate electrochemical sensor.

Quality Control

The HAPSITE GC/MS units are calibrated for 35 common ("TO-14") Volatile Organic Compounds via a 4 to 8 point calibration curve. The Reporting Limit (RL) for each compound is the lowest point in the calibration curve. Target analytes that were positively detected by the mass spectrometer below the Reporting Limit were listed as estimated "J" values. The operation and calibration state of each GC/MS units were evaluated via the daily analysis of a 5.9 ppbV check standard containing each of the 35 method analytes.

The operation and calibration state of the RAE meter was established by "bump testing" the unit with a 10 ppmV calibration gas standard in the FAST vehicle immediately prior to use.

Sample Collection and Testing

Air samples were obtained in 1-liter Kynar bags and were analyzed on the GC/MS units within 1 hour of collection. The water sample from the receiving brook was obtained by half-filling a 40 mL VOA vial and allowing dissolved volatile organic compounds to partition into the overlying headspace. This process was accelerated by shaking the vial periodically over a period of about 30 minutes. A 2 to 4 mL headspace sample was then injected into the GC/MS. The gaseous-phase result from this analysis was then converted into an estimated aqueous concentration via the application of Henry's Law.

The locations of the air samples are provided in Figure 3. The location of the water samples are provided in Figure 4. All test data for the air is provided in Appendix-1; all test data for the water samples are in Appendix 2. These data report forms also contain the relevant evaluation metrics (i.e., to judge whether the detected concentrations may be threat to human or ecological receptors).

Air Testing Results

The highest concentrations of air contaminants were detected at Sample Location Air-3, located north of the LIFOAM building. The predominant contaminants were Styrene and Benzene, as would be the expectation, given the presence of the polystyrene materials. The total ion chromatogram for this sample was evaluated to look for the presence of contaminants not included in the 35 Target Analyte list. No significant levels of such contaminants were noted.

Figure 3 – Air Sampling Locations

Table 1 – Concentration of Major Air Contaminants (ppmV)						
Station	Location	Date/Time	Styrene	8-hour AEGL	Benzene	8-hour AEGL
Air-2	South side building	7/12 – 9 PM +/-	1.7	20	1.1	9
Air-3	North side building	7/12 – 9 PM +/-	3.2	20	1.3	9
Air-4	1 Farm Ave	7/12 – 10:00 PM	0.044	20	0.015	9
		7/13 – 10:18 AM	< 0.005	20	0.0018	9
Air-5	650 Jubilee Drive	7/12 – 10:08 PM	0.0093	20	0.0019	9
Air-6	540 Jubilee Drive	7/12 – 10:12 PM	0.038	20	0.017	9
		7/12 – 11:50 PM	0.088	20	< 0.001	9
		7/13 – 10:05 AM	0.0042	20	< 0.001	9
Air-7	460 Jubilee Drive	7/12 – 10:14 PM	0.043	20	0.048	9
		7/12 – 11:48 AM	0.046	20	0.027	9
		7/13 – 10:12 AM	< 0.005	20	0.0011	9

It was noted that the concentrations of Styrene and Benzene in this "worst case" sample were less than the Acute Exposure Guideline Levels for Airborne Chemicals (AEGLs), which are those levels of chemicals that the general public can be exposed to over a short period of time without significant and long-lasting health effects (see Table 1). This is true even if Styrene was present at twice its detected concentration of 3.2 ppmV, which may have been the case, given the propensity of this chemical to "stick" to the bag used to sample the air.

On this basis, it was determined that levels of Volatile Organic Compounds in the downwind neighborhood were unlikely to be present at levels that exceeded the AEGL limit. However, a series of samples were obtained in the neighborhood to verify this assumption and monitor trends. These data are presented in Table 1.

As can be seen, Styrene concentrations within the neighborhood late on 7/12/16 were as high as 0.088 ppmV; Benzene as high as 0.048 ppmV – both well below AEGL limits. These levels had dropped sharply by 10 AM the next morning, to concentrations that were approaching a "background" condition.

With respect to Hydrogen Cyanide, the concentration detected at "worst case" location Air-3 was 2 ppmV, compared to an AEGL limit of 1 ppmV. However, the 2 ppmV value registered on the RAE meter was likely biased high, as the electrochemical cell used in this meter will also respond to the presence of carbon monoxide, which is typically at high concentrations immediately downwind of a fire. No levels of Hydrogen Cyanide were detected in the neighborhood area.

Water Testing Results

Firefighting runoff water often contains some amount of the chemicals present in the smoke plume, and has the potential to contaminate nearby surface waters and even drinking water supplies.

Firefighting runoff water at the site flows into a wetland/pond area located south of the LIFOAM building (see Figure 4). Outflow from the wetland/pond is to a small brook that flows easterly, crossing under First Street. Eventually, this brook flows into Spring Pond Reservoir, a drinking water supply for the city of Peabody. However, this reservoir is located about 17,000 feet downstream from the LIFOAM facility.

Initially, a sample was obtained of water runoff (RO-1) from the west side of the building. As with the air samples, Styrene and Benzene were the predominant contaminants, with Styrene detected at 200 μg/L, and Benzene at 40 μg/L (see Table 2)

A sample was then obtained at the first downstream road crossing culvert at First Street, which identified only Styrene at a concentration of 10 μg/L. This is well below the concentration which would be expected to impact aquatic life in the stream (2500 μg/L), and well below the drinking water standard of 100 μg/L. On this basis, it was concluded that runoff water was not significantly impacting aquatic life or threatening the Spring Pond reservoir.

To ensure that levels were not rising, water samples were again obtained the next morning (7/13) from the First Street culvert and from a culvert on Corwin Street. No contaminants were detected in either sample.

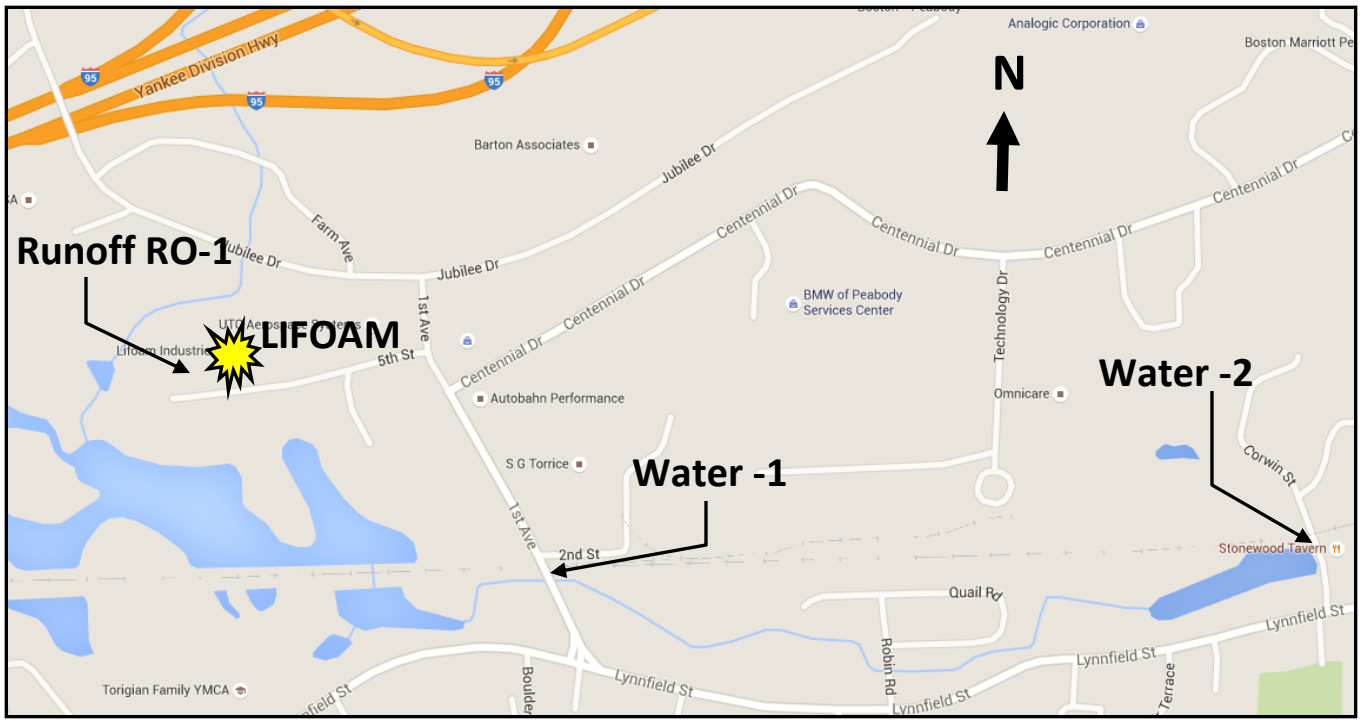

Figure 4 – Water Sampling Locations

Table 2 – Concentration of Major Water Contaminants (µg/L)						
Station	Location	Date/Time	Styrene		Benzene	
			Conc	Acute Aquatic Toxicity Value	Conc	Acute Aquatic Toxicity Value
RO-1	West side building	7/12 – 9:25 PM	200	2500	40	4600
Water-1	At First Street	7/12 – 11:20 PM	10	2500	<1	4600
		7/13 – 10:22 AM	<2	2500	<1	4600
Water-2	At Corwin Street	7/13 – 10:18 AM	<2	2500	<1	4600

Summary and Conclusions

On the basis of the data obtained by MassDEP FAST personnel, the levels of contaminants present in the smoke in the Jubilee Drive neighborhood would not be expected to result in significant or long-lasting health effects, and the contaminants contained in the firefighting runoff water would not be expected to impact aquatic life or drinking water supplies.

Appendix 1 - Air Sample Data

MassDEP Field Assessment and Support Team (FAST)				AIR SCREENING DATA			RTN:			
City or Town:	Peabody		Address:	2 5th Street - Lifoam					Location:	
Date Sampled:	7/12/16	Time:	9:00 PM	Field ID:	A-3	Collector:	Fire Services		North Side of Building	
Date Analyzed:	7/12/16	Time:	9:26 PM	Lab ID:	009	Analyst:	Fitzgerald			
Method Analytes		Conc. in ppmV		Safe Levels[1] (below concentration for given time period) - ppmV						
		Sample	RL	1 hour	8 hour	5 yrs	30 yrs	Odors	Worker	µg/m³/ppb
Vinyl Chloride		N.D.	0.001	250	70	0.06	0.001	150	1	2.58
Chloroethane		0.095	0.001	50	10	NA	NA	4.2	1000	2.64
Trichloromonofluoromethane		N.D.	0.001	500	100	NA	NA	5	1000	5.6
1,1-Dichloroethene		N.D.	0.001	2.5	0.5	NA	NA	120	NA	3.97
Methylene Chloride		N.D.	0.001	4	0.86	0.86	0.01	78	25	3.48
1,1,2-Trichlorotrifluoroethane		N.D.	0.001	500	100	NA	NA	45	1000	7.65
1,1-Dichloroethane		N.D.	0.001	50	10	1.2	0.12	15	100	4.05
Cis 1,2-Dichloroethylene		N.D.	0.001	140	140	0.088	0.009	8.5	100	3.97
Chloroform		N.D.	0.001	0.03	0.01	0.01	<0.001	43	2	4.87
1,2-Dichloroethane		N.D.	0.001	5	1	0.01	<0.001	0.3	1	4.05
1,1,1-Trichloroethane		N.D.	0.001	230	230	9.5	0.95	6	NA	5.46
Benzene		1.3	0.001	52	9	0.07	0.001	0.8	0.1	3.19
Carbon Tetrachloride		N.D.	0.001	44	19	0.02	<0.001	5	2	6.3
1,2-Dichloropropane		N.D.	0.001	5	1	0.02	<0.001	0.1	75	4.62
Trichloroethylene		N.D.	0.001	130	77	0.15	0.003	130	100	5.36
cis-1,3-Dichloropropene		N.D.	0.001	0.02	0.045	0.008	0.001	0.5	NA	4.54
trans-1,3-Dichloropropene		N.D.	0.001	0.5	0.1	0.008	0.001	0.5	1	4.54
1,1,2-Trichloroethane		N.D.	0.001	5	0.1	0.02	<0.001	NA	10	5.46
Toluene		0.17	0.001	200	200	13.3	1.35	4	100	3.76
1,2-Dibromoethane		N.D.	0.001	17	4.6	NA	NA	10	0.045	7.69
Tetrachloroethylene		N.D.	0.001	35	35	<0.001	<0.001	2.3	100	6.79
Chlorobenzene		N.D.	0.001	10	10	0.043	<0.001	0.11	75	4.62
Ethylbenzene		0.053	0.001	33	33	2.3	0.23	0.23	100	4.34
p/m-Xylene (see note)		0.0069	0.001	5	0.8	0.23	0.023	0.005	100	4.34
Styrene*		3.2	0.001	20	20	0.059	0.01	0.16	50	4.25
o-Xylene*		0.012	0.001	5	0.8	0.23	0.023	0.005	100	4.34
1,1,2,2-Tetrachloroethane*		N.D.	0.001	0.5	0.1	0.01	<0.001	0.76	1	6.87
1,3,5-Trimethylbenzene*		0.0018	0.001	140	45	NA	NA	0.23	25	4.91
1,2,4-Trimethylbenzene*		0.0026	0.002	140	45	NA	NA	0.4	25	4.91
1,3-Dichlorobenzene (meta)*		N.D.	0.002	1	0.33	0.33	0.033	NA	NA	6.01
1,2-Dichlorobenzene (ortho)*		N.D.	0.002	13	0.33	0.33	0.033	25	50	6.01
1,4-Dichlorobenzene (para)*		N.D.	0.002	5	0.1	0.03	0.001	0.09	75	6.01
1,2,4-Trichlorobenzene*		N.D.	0.003	0.27	0.27	0.27	0.027	1.5	5	7.4
HexachloroButadiene*		N.D.	0.002	0.01	0.002	0.001	<0.001	0.56	0.02	10.67

Samples obtained in 0.5-1L bags (e.g., Kynar). Results for analytes with * likely biased low by up to factor of 2+/- due to sorption onto bag.

Instrument: HAPSITE ER GC/MS Method: FAST TO-14 Last Calib: 6/22/16. Reporting Limit (RL) ≤ lowest calib standard

Quality Control: 4-8 point calib w/ %RSD<30, Internal Stds, daily blank, daily calib check standard N.D =Not Detected = Less than RL

Actual concentration of p/m Xylenes could be twice listed value (due to co-elution of congeners duiring calibration operations)

[1]Safe Levels: 1 hr =1 hr EPA AEGL-1 or 1 hr California REL or (DOE TEEL-0)/2; 8 hr = 8 hr EPA AEGL-1 or (California REL1hr)/5, or (DOE TEEL-0)/10; 5 yr and 30 year exposure levels per MassDEP MCP; Worker = lower of OSHA PEL or NIOSH REL for 8 hrs.

Dilution Factor =	2.8	If sample was diluted, the Reporting Limits listed above must be multiplied by this Dilution Factor

Comments:

Appendix 1 - Air Sample Data

MassDEP Field Assessment and Support Team (FAST)				AIR SCREENING DATA			RTN:		
City or Town:	Peabody		Address:	2 5th Street (Lifoam)					Location:
Date Sampled:	7/12/16	Time:	9:00 PM	Field ID:	A-2	Collector:	Fire Services		vent on south side of building
Date Analyzed:	7/12/16	Time:	9:35 PM	Lab ID:	009	Analyst:	Fitzgerald		

Method Analytes	Conc. in ppmV		Safe Levels[1] (below concentration for given time period) - ppmV						
	Sample	RL	1 hour	8 hour	5 yrs	30 yrs	Odors	Worker	µg/m³/ppb
Vinyl Chloride	N.D.	0.0002	250	70	0.06	0.001	150	1	2.58
Chloroethane	N.D.	0.002	50	10	NA	NA	4.2	1000	2.64
Trichloromonofluoromethane	N.D.	0.0002	500	100	NA	NA	5	1000	5.6
1,1-Dichloroethene	N.D.	0.0002	2.5	0.5	NA	NA	120	NA	3.97
Methylene Chloride	0.001	0.0002	4	0.86	0.86	0.01	78	25	3.48
1,1,2-Trichlorotrifluoroethane	N.D.	0.0002	500	100	NA	NA	45	1000	7.65
1,1-Dichloroethane	N.D.	0.0002	50	10	1.2	0.12	15	100	4.05
Cis 1,2-Dichloroethylene	N.D.	0.0002	140	140	0.088	0.009	8.5	100	3.97
Chloroform	0.00086	0.0002	0.03	0.01	0.01	<0.001	43	2	4.87
1,2-Dichloroethane	N.D.	0.0002	5	1	0.01	<0.001	0.3	1	4.05
1,1,1-Trichloroethane	N.D.	0.0002	230	230	9.5	0.95	6	NA	5.46
Benzene	1.1	0.0002	52	9	0.07	0.001	0.8	0.1	3.19
Carbon Tetrachloride	0.00088	0.0002	44	19	0.02	<0.001	5	2	6.3
1,2-Dichloropropane	N.D.	0.0002	5	1	0.02	<0.001	0.1	75	4.62
Trichloroethylene	N.D.	0.0002	130	77	0.15	0.003	130	100	5.36
cis-1,3-Dichloropropene	N.D.	0.0002	0.02	0.045	0.008	0.001	0.5	NA	4.54
trans-1,3-Dichloropropene	N.D.	0.0002	0.5	0.1	0.008	0.001	0.5	1	4.54
1,1,2-Trichloroethane	N.D.	0.0002	5	0.1	0.02	<0.001	NA	10	5.46
Toluene	0.25	0.0002	200	200	13.3	1.35	4	100	3.76
1,2-Dibromoethane	N.D.	0.0002	17	4.6	NA	NA	10	0.045	7.69
Tetrachloroethylene	N.D.	0.0002	35	35	<0.001	<0.001	2.3	100	6.79
Chlorobenzene	0.00069	0.0002	10	10	0.043	<0.001	0.11	75	4.62
Ethylbenzene	0.069	0.0002	33	33	2.3	0.23	0.23	100	4.34
p/m-Xylene (see note)	0.025	0.002	5	0.8	0.23	0.023	0.005	100	4.34
Styrene*	1.7	0.005	20	20	0.059	0.01	0.16	50	4.25
o-Xylene*	0.015	0.003	5	0.8	0.23	0.023	0.005	100	4.34
1,1,2,2-Tetrachloroethane*	N.D.	0.0002	0.5	0.1	0.01	<0.001	0.76	1	6.87
1,3,5-Trimethylbenzene*	N.D.	0.005	140	45	NA	NA	0.23	25	4.91
1,2,4-Trimethylbenzene*	N.D.	0.003	140	45	NA	NA	0.4	25	4.91
1,3-Dichlorobenzene (meta)*	N.D.	0.002	1	0.33	0.33	0.033	NA	NA	6.01
1,2-Dichlorobenzene (ortho)*	N.D.	0.001	13	0.33	0.33	0.033	25	50	6.01
1,4-Dichlorobenzene (para)*	N.D.	0.002	5	0.1	0.03	0.001	0.09	75	6.01
1,2,4-Trichlorobenzene*	N.D.	0.005	0.27	0.27	0.27	0.027	1.5	5	7.4
HexachloroButadiene*	N.D.	0.005	0.01	0.002	0.001	<0.001	0.56	0.02	10.67

Samples obtained in 0.5-1L bags (e.g., Kynar). Results for analytes with * likely biased low by up to factor of 2+/- due to sorption onto bag

Instrument: HAPSITE Smart Plus GC/MS Method: FAST TO-14 Last Calib: 4/22/16 Reporting Limit (RL) is lowest calib standard

Quality Control: 4-8 point calib w/ %RSD<30, Internal Stds, daily blank, daily calib check standard N.D =Not Detected = Less than RL

Actual concentration of p/m Xylenes could be twice listed value (due to co-elution of congeners duiring calibration operations)

[1]Safe Levels: 1 hr =1 hr EPA AEGL-1 or 1 hr California REL or (DOE TEEL-0)/2; 8 hr = 8 hr EPA AEGL-1 or (California REL1hr)/5, or (DOE TEEL-0)/10; 5 yr and 30 year exposure levels per MassDEP MCP; Worker = lower of OSHA PEL or NIOSH REL for 8 hrs.

Dilution Factor =	9	If sample was diluted, the Reporting Limits listed above must be multiplied by this Dilution Factor

COMMENTS:

Appendix 1 - Air Sample Data

MassDEP Field Assessment and Support Team (FAST)				AIR SCREENING DATA			RTN:	0
City or Town:	Peabody		Address:	Farm Ave				Location:
Date Sampled:	7/12/16	Time:	10:00 PM	Field ID:	A-4	Collector:	Clark	Farm Ave at #1
Date Analyzed:	7/12/16	Time:	10:27 PM	Lab ID:	010	Analyst:	Fitzgerald	

Method Analytes	Conc. in ppmV		Safe Levels[1] (below concentration for given time period) - ppmV						
	Sample	RL	1 hour	8 hour	5 yrs	30 yrs	Odors	Worker	µg/m³/ppb
Vinyl Chloride	N.D.	0.001	250	70	0.06	0.001	150	1	2.58
Chloroethane	**0.011**	0.001	50	10	NA	NA	4.2	1000	2.64
Trichloromonofluoromethane	N.D.	0.001	500	100	NA	NA	5	1000	5.6
1,1-Dichloroethene	N.D.	0.001	2.5	0.5	NA	NA	120	NA	3.97
Methylene Chloride	N.D.	0.001	4	0.86	0.86	0.01	78	25	3.48
1,1,2-Trichlorotrifluoroethane	N.D.	0.001	500	100	NA	NA	45	1000	7.65
1,1-Dichloroethane	N.D.	0.001	50	10	1.2	0.12	15	100	4.05
Cis 1,2-Dichloroethylene	N.D.	0.001	140	140	0.088	0.009	8.5	100	3.97
Chloroform	N.D.	0.001	0.03	0.01	0.01	<0.001	43	2	4.87
1,2-Dichloroethane	N.D.	0.001	5	1	0.01	<0.001	0.3	1	4.05
1,1,1-Trichloroethane	N.D.	0.001	230	230	9.5	0.95	6	NA	5.46
Benzene	**0.015**	0.001	52	9	0.07	0.001	0.8	0.1	3.19
Carbon Tetrachloride	N.D.	0.001	44	19	0.02	<0.001	5	2	6.3
1,2-Dichloropropane	N.D.	0.001	5	1	0.02	<0.001	0.1	75	4.62
Trichloroethylene	N.D.	0.001	130	77	0.15	0.003	130	100	5.36
cis-1,3-Dichloropropene	N.D.	0.001	0.02	0.045	0.008	0.001	0.5	NA	4.54
trans-1,3-Dichloropropene	N.D.	0.001	0.5	0.1	0.008	0.001	0.5	1	4.54
1,1,2-Trichloroethane	N.D.	0.001	5	0.1	0.02	<0.001	NA	10	5.46
Toluene	**0.0026**	0.001	200	200	13.3	1.35	4	100	3.76
1,2-Dibromoethane	N.D.	0.001	17	4.6	NA	NA	10	0.045	7.69
Tetrachloroethylene	N.D.	0.001	35	35	<0.001	<0.001	2.3	100	6.79
Chlorobenzene	N.D.	0.001	10	10	0.043	<0.001	0.11	75	4.62
Ethylbenzene	N.D.	0.001	33	33	2.3	0.23	0.23	100	4.34
p/m-Xylene (see note)	N.D.	0.001	5	0.8	0.23	0.023	0.005	100	4.34
Styrene*	**0.044**	0.001	20	20	0.059	0.01	0.16	50	4.25
o-Xylene*	N.D.	0.001	5	0.8	0.23	0.023	0.005	100	4.34
1,1,2,2-Tetrachloroethane*	N.D.	0.001	0.5	0.1	0.01	<0.001	0.76	1	6.87
1,3,5-Trimethylbenzene*	N.D.	0.001	140	45	NA	NA	0.23	25	4.91
1,2,4-Trimethylbenzene*	N.D.	0.002	140	45	NA	NA	0.4	25	4.91
1,3-Dichlorobenzene (meta)*	N.D.	0.002	1	0.33	0.33	0.033	NA	NA	6.01
1,2-Dichlorobenzene (ortho)*	N.D.	0.002	13	0.33	0.33	0.033	25	50	6.01
1,4-Dichlorobenzene (para)*	N.D.	0.002	5	0.1	0.03	0.001	0.09	75	6.01
1,2,4-Trichlorobenzene*	N.D.	0.003	0.27	0.27	0.27	0.027	1.5	5	7.4
HexachloroButadiene*	N.D.	0.002	0.01	0.002	0.001	<0.001	0.56	0.02	10.67

Samples obtained in 0.5-1L bags (e.g., Kynar). Results for analytes with * likely biased low by up to factor of 2+/- due to sorption onto bag.

Instrument: HAPSITE ER GC/MS Method: FAST TO-14 Last Calib: 6/22/16. Reporting Limit (RL) ≤ lowest calib standard

Quality Control: 4-8 point calib w/ %RSD<30, Internal Stds, daily blank, daily calib check standard N.D =Not Detected = Less than RL

Actual concentration of p/m Xylenes could be twice listed value (due to co-elution of congeners duiring calibration operations)

[1]Safe Levels: 1 hr =1 hr EPA AEGL-1 or 1 hr California REL or (DOE TEEL-0)/2; 8 hr = 8 hr EPA AEGL-1 or (California REL1hr)/5, or (DOE TEEL-0)/10; 5 yr and 30 year exposure levels per MassDEP MCP; Worker = lower of OSHA PEL or NIOSH REL for 8 hrs.

Dilution Factor =	1	If sample was diluted, the Reporting Limits listed above must be multiplied by this Dilution Factor

Comments:

Appendix 1 - Air Sample Data

MassDEP Field Assessment and Support Team (FAST)				AIR SCREENING DATA			RTN:	0
City or Town:	Peabody		Address:	Jubilee Drive at #650				Location:
Date Sampled:	7/12/16	Time:	10:08 PM	Field ID:	A-5	Collector:	Clark	
Date Analyzed:	7/12/16	Time:	10:45 PM	Lab ID:	011	Analyst:	Fitzgerald	

Method Analytes	Conc. in ppmV		Safe Levels[1] (below concentration for given time period) - ppmV						
	Sample	RL	1 hour	8 hour	5 yrs	30 yrs	Odors	Worker	µg/m³/ppb
Vinyl Chloride	N.D.	0.0002	250	70	0.06	0.001	150	1	2.58
Chloroethane	N.D.	0.002	50	10	NA	NA	4.2	1000	2.64
Trichloromonofluoromethane	0.00037	0.0002	500	100	NA	NA	5	1000	5.6
1,1-Dichloroethene	N.D.	0.0002	2.5	0.5	NA	NA	120	NA	3.97
Methylene Chloride	N.D.	0.0002	4	0.86	0.86	0.01	78	25	3.48
1,1,2-Trichlorotrifluoroethane	N.D.	0.0002	500	100	NA	NA	45	1000	7.65
1,1-Dichloroethane	N.D.	0.0002	50	10	1.2	0.12	15	100	4.05
Cis 1,2-Dichloroethylene	N.D.	0.0002	140	140	0.088	0.009	8.5	100	3.97
Chloroform	N.D.	0.0002	0.03	0.01	0.01	<0.001	43	2	4.87
1,2-Dichloroethane	N.D.	0.0002	5	1	0.01	<0.001	0.3	1	4.05
1,1,1-Trichloroethane	N.D.	0.0002	230	230	9.5	0.95	6	NA	5.46
Benzene	0.0019	0.0002	52	9	0.07	0.001	0.8	0.1	3.19
Carbon Tetrachloride	N.D.	0.0002	44	19	0.02	<0.001	5	2	6.3
1,2-Dichloropropane	N.D.	0.0002	5	1	0.02	<0.001	0.1	75	4.62
Trichloroethylene	N.D.	0.0002	130	77	0.15	0.003	130	100	5.36
cis-1,3-Dichloropropene	N.D.	0.0002	0.02	0.045	0.008	0.001	0.5	NA	4.54
trans-1,3-Dichloropropene	N.D.	0.0002	0.5	0.1	0.008	0.001	0.5	1	4.54
1,1,2-Trichloroethane	N.D.	0.0002	5	0.1	0.02	<0.001	NA	10	5.46
Toluene	0.0037	0.0002	200	200	13.3	1.35	4	100	3.76
1,2-Dibromoethane	N.D.	0.0002	17	4.6	NA	NA	10	0.045	7.69
Tetrachloroethylene	N.D.	0.0002	35	35	<0.001	<0.001	2.3	100	6.79
Chlorobenzene	N.D.	0.0002	10	10	0.043	<0.001	0.11	75	4.62
Ethylbenzene	0.00059	0.0002	33	33	2.3	0.23	0.23	100	4.34
p/m-Xylene (see note)	N.D.	0.002	5	0.8	0.23	0.023	0.005	100	4.34
Styrene*	0.0093	0.005	20	20	0.059	0.01	0.16	50	4.25
o-Xylene*	N.D.	0.003	5	0.8	0.23	0.023	0.005	100	4.34
1,1,2,2-Tetrachloroethane*	N.D.	0.0002	0.5	0.1	0.01	<0.001	0.76	1	6.87
1,3,5-Trimethylbenzene*	N.D.	0.005	140	45	NA	NA	0.23	25	4.91
1,2,4-Trimethylbenzene*	N.D.	0.003	140	45	NA	NA	0.4	25	4.91
1,3-Dichlorobenzene (meta)*	N.D.	0.002	1	0.33	0.33	0.033	NA	NA	6.01
1,2-Dichlorobenzene (ortho)*	N.D.	0.001	13	0.33	0.33	0.033	25	50	6.01
1,4-Dichlorobenzene (para)*	N.D.	0.002	5	0.1	0.03	0.001	0.09	75	6.01
1,2,4-Trichlorobenzene*	N.D.	0.005	0.27	0.27	0.27	0.027	1.5	5	7.4
HexachloroButadiene*	N.D.	0.005	0.01	0.002	0.001	<0.001	0.56	0.02	10.67

Samples obtained in 0.5-1L bags (e.g., Kynar). Results for analytes with * likely biased low by up to factor of 2+/- due to sorption onto bag

Instrument: HAPSITE Smart Plus GC/MS Method: FAST TO-14 Last Calib: 4/22/16 Reporting Limit (RL) is lowest calib standard

Quality Control: 4-8 point calib w/ %RSD<30, Internal Stds, daily blank, daily calib check standard N.D =Not Detected = Less than RL

Actual concentration of p/m Xylenes could be twice listed value (due to co-elution of congeners duiring calibration operations)

[1]Safe Levels: 1 hr =1 hr EPA AEGL-1 or 1 hr California REL or (DOE TEEL-0)/2; 8 hr = 8 hr EPA AEGL-1 or (California REL1hr)/5, or (DOE TEEL-0)/10; 5 yr and 30 year exposure levels per MassDEP MCP; Worker = lower of OSHA PEL or NIOSH REL for 8 hrs.

Dilution Factor =	1	If sample was diluted, the Reporting Limits listed above must be multiplied by this Dilution Factor

Comments:

Appendix 1 - Air Sample Data

MassDEP Field Assessment and Support Team (FAST)				AIR SCREENING DATA			RTN:	0
City or Town:	Peabody		Address:	Jubilee Drive at #540				Location:
Date Sampled:	7/12/16	Time:	10:12 PM	Field ID:	A-6	Collector:	Clark	
Date Analyzed:	7/12/16	Time:	11:01 PM	Lab ID:	011	Analyst:	Fitzgerald	

Method Analytes	Conc. in ppmV		Safe Levels[1] (below concentration for given time period) - ppmV						
	Sample	RL	1 hour	8 hour	5 yrs	30 yrs	Odors	Worker	µg/m³/ppb
Vinyl Chloride	N.D.	0.001	250	70	0.06	0.001	150	1	2.58
Chloroethane	0.0055	0.001	50	10	NA	NA	4.2	1000	2.64
Trichloromonofluoromethane	N.D.	0.001	500	100	NA	NA	5	1000	5.6
1,1-Dichloroethene	N.D.	0.001	2.5	0.5	NA	NA	120	NA	3.97
Methylene Chloride	N.D.	0.001	4	0.86	0.86	0.01	78	25	3.48
1,1,2-Trichlorotrifluoroethane	N.D.	0.001	500	100	NA	NA	45	1000	7.65
1,1-Dichloroethane	N.D.	0.001	50	10	1.2	0.12	15	100	4.05
Cis 1,2-Dichloroethylene	N.D.	0.001	140	140	0.088	0.009	8.5	100	3.97
Chloroform	N.D.	0.001	0.03	0.01	0.01	<0.001	43	2	4.87
1,2-Dichloroethane	N.D.	0.001	5	1	0.01	<0.001	0.3	1	4.05
1,1,1-Trichloroethane	N.D.	0.001	230	230	9.5	0.95	6	NA	5.46
Benzene	0.017	0.001	52	9	0.07	0.001	0.8	0.1	3.19
Carbon Tetrachloride	N.D.	0.001	44	19	0.02	<0.001	5	2	6.3
1,2-Dichloropropane	N.D.	0.001	5	1	0.02	<0.001	0.1	75	4.62
Trichloroethylene	N.D.	0.001	130	77	0.15	0.003	130	100	5.36
cis-1,3-Dichloropropene	N.D.	0.001	0.02	0.045	0.008	0.001	0.5	NA	4.54
trans-1,3-Dichloropropene	N.D.	0.001	0.5	0.1	0.008	0.001	0.5	1	4.54
1,1,2-Trichloroethane	N.D.	0.001	5	0.1	0.02	<0.001	NA	10	5.46
Toluene	0.0031	0.001	200	200	13.3	1.35	4	100	3.76
1,2-Dibromoethane	N.D.	0.001	17	4.6	NA	NA	10	0.045	7.69
Tetrachloroethylene	N.D.	0.001	35	35	<0.001	<0.001	2.3	100	6.79
Chlorobenzene	N.D.	0.001	10	10	0.043	<0.001	0.11	75	4.62
Ethylbenzene	N.D.	0.001	33	33	2.3	0.23	0.23	100	4.34
p/m-Xylene (see note)	N.D.	0.001	5	0.8	0.23	0.023	0.005	100	4.34
Styrene*	0.038	0.001	20	20	0.059	0.01	0.16	50	4.25
o-Xylene*	N.D.	0.001	5	0.8	0.23	0.023	0.005	100	4.34
1,1,2,2-Tetrachloroethane*	N.D.	0.001	0.5	0.1	0.01	<0.001	0.76	1	6.87
1,3,5-Trimethylbenzene*	N.D.	0.001	140	45	NA	NA	0.23	25	4.91
1,2,4-Trimethylbenzene*	N.D.	0.002	140	45	NA	NA	0.4	25	4.91
1,3-Dichlorobenzene (meta)*	N.D.	0.002	1	0.33	0.33	0.033	NA	NA	6.01
1,2-Dichlorobenzene (ortho)*	N.D.	0.002	13	0.33	0.33	0.033	25	50	6.01
1,4-Dichlorobenzene (para)*	N.D.	0.002	5	0.1	0.03	0.001	0.09	75	6.01
1,2,4-Trichlorobenzene*	N.D.	0.003	0.27	0.27	0.27	0.027	1.5	5	7.4
HexachloroButadiene*	N.D.	0.002	0.01	0.002	0.001	<0.001	0.56	0.02	10.67

Samples obtained in 0.5-1L bags (e.g., Kynar). Results for analytes with * likely biased low by up to factor of 2+/- due to sorption onto bag.

Instrument: HAPSITE ER GC/MS Method: FAST TO-14 Last Calib: 6/22/16. Reporting Limit (RL) ≤ lowest calib standard

Quality Control: 4-8 point calib w/ %RSD<30, Internal Stds, daily blank, daily calib check standard N.D =Not Detected = Less than RL

Actual concentration of p/m Xylenes could be twice listed value (due to co-elution of congeners duiring calibration operations)

[1]Safe Levels: 1 hr =1 hr EPA AEGL-1 or 1 hr California REL or (DOE TEEL-0)/2; 8 hr = 8 hr EPA AEGL-1 or (California REL1hr)/5, or (DOE TEEL-0)/10; 5 yr and 30 year exposure levels per MassDEP MCP; Worker = lower of OSHA PEL or NIOSH REL for 8 hrs.

Dilution Factor =	1	If sample was diluted, the Reporting Limits listed above must be multiplied by this Dilution Factor

Comments:

Appendix 1 - Air Sample Data

MassDEP Field Assessment and Support Team (FAST)				AIR SCREENING DATA			RTN:	0
City or Town:	Peabody		Address:	Jubilee Drive at #460				Location:
Date Sampled:	7/12/16	Time:	10:14 PM	Field ID:	A-7	Collector:	Clark	
Date Analyzed:	7/12/16	Time:	11:16 PM	Lab ID:	012	Analyst:	Fitzgerald	

Method Analytes	Conc. in ppmV		Safe Levels[1] (below concentration for given time period) - ppmV						
	Sample	RL	1 hour	8 hour	5 yrs	30 yrs	Odors	Worker	µg/m³/ppb
Vinyl Chloride	N.D.	0.0002	250	70	0.06	0.001	150	1	2.58
Chloroethane	N.D.	0.002	50	10	NA	NA	4.2	1000	2.64
Trichloromonofluoromethane	N.D.	0.0002	500	100	NA	NA	5	1000	5.6
1,1-Dichloroethene	N.D.	0.0002	2.5	0.5	NA	NA	120	NA	3.97
Methylene Chloride	N.D.	0.0002	4	0.86	0.86	0.01	78	25	3.48
1,1,2-Trichlorotrifluoroethane	N.D.	0.0002	500	100	NA	NA	45	1000	7.65
1,1-Dichloroethane	N.D.	0.0002	50	10	1.2	0.12	15	100	4.05
Cis 1,2-Dichloroethylene	N.D.	0.0002	140	140	0.088	0.009	8.5	100	3.97
Chloroform	N.D.	0.0002	0.03	0.01	0.01	<0.001	43	2	4.87
1,2-Dichloroethane	N.D.	0.0002	5	1	0.01	<0.001	0.3	1	4.05
1,1,1-Trichloroethane	N.D.	0.0002	230	230	9.5	0.95	6	NA	5.46
Benzene	**0.048**	0.0002	52	9	0.07	0.001	0.8	0.1	3.19
Carbon Tetrachloride	N.D.	0.0002	44	19	0.02	<0.001	5	2	6.3
1,2-Dichloropropane	N.D.	0.0002	5	1	0.02	<0.001	0.1	75	4.62
Trichloroethylene	N.D.	0.0002	130	77	0.15	0.003	130	100	5.36
cis-1,3-Dichloropropene	N.D.	0.0002	0.02	0.045	0.008	0.001	0.5	NA	4.54
trans-1,3-Dichloropropene	N.D.	0.0002	0.5	0.1	0.008	0.001	0.5	1	4.54
1,1,2-Trichloroethane	N.D.	0.0002	5	0.1	0.02	<0.001	NA	10	5.46
Toluene	**0.0077**	0.0002	200	200	13.3	1.35	4	100	3.76
1,2-Dibromoethane	N.D.	0.0002	17	4.6	NA	NA	10	0.045	7.69
Tetrachloroethylene	**0.00058**	0.0002	35	35	<0.001	<0.001	2.3	100	6.79
Chlorobenzene	N.D.	0.0002	10	10	0.043	<0.001	0.11	75	4.62
Ethylbenzene	**0.0021**	0.0002	33	33	2.3	0.23	0.23	100	4.34
p/m-Xylene (see note)	N.D.	0.002	5	0.8	0.23	0.023	0.005	100	4.34
Styrene*	**0.043**	0.005	20	20	0.059	0.01	0.16	50	4.25
o-Xylene*	N.D.	0.003	5	0.8	0.23	0.023	0.005	100	4.34
1,1,2,2-Tetrachloroethane*	N.D.	0.0002	0.5	0.1	0.01	<0.001	0.76	1	6.87
1,3,5-Trimethylbenzene*	N.D.	0.005	140	45	NA	NA	0.23	25	4.91
1,2,4-Trimethylbenzene*	N.D.	0.003	140	45	NA	NA	0.4	25	4.91
1,3-Dichlorobenzene (meta)*	N.D.	0.002	1	0.33	0.33	0.033	NA	NA	6.01
1,2-Dichlorobenzene (ortho)*	N.D.	0.001	13	0.33	0.33	0.033	25	50	6.01
1,4-Dichlorobenzene (para)*	N.D.	0.002	5	0.1	0.03	0.001	0.09	75	6.01
1,2,4-Trichlorobenzene*	N.D.	0.005	0.27	0.27	0.27	0.027	1.5	5	7.4
HexachloroButadiene*	N.D.	0.005	0.01	0.002	0.001	<0.001	0.56	0.02	10.67

Samples obtained in 0.5-1L bags (e.g., Kynar). Results for analytes with * likely biased low by up to factor of 2+/- due to sorption onto bag

Instrument: HAPSITE Smart Plus GC/MS Method: FAST TO-14 Last Calib: 4/22/16 Reporting Limit (RL) is lowest calib standard

Quality Control: 4-8 point calib w/ %RSD<30, Internal Stds, daily blank, daily calib check standard N.D =Not Detected = Less than RL

Actual concentration of p/m Xylenes could be twice listed value (due to co-elution of congeners duiring calibration operations)

[1]Safe Levels: 1 hr =1 hr EPA AEGL-1 or 1 hr California REL or (DOE TEEL-0)/2; 8 hr = 8 hr EPA AEGL-1 or (California REL1hr)/5, or (DOE TEEL-0)/10; 5 yr and 30 year exposure levels per MassDEP MCP; Worker = lower of OSHA PEL or NIOSH REL for 8 hrs.

Dilution Factor =	1	If sample was diluted, the Reporting Limits listed above must be multiplied by this Dilution Factor

Comments:

Appendix 1 - Air Sample Data

MassDEP Field Assessment and Support Team (FAST)				AIR SCREENING DATA			RTN:	0
City or Town:	Peabody		Address:	Jubilee Drive at #460				Location:
Date Sampled:	7/12/16	Time:	11:48 PM	Field ID:	A-8	Collector:	Clark	
Date Analyzed:	7/13/16	Time:	12:12 AM	Lab ID:	001	Analyst:	Fitzgerald	

Method Analytes	Conc. in ppmV		Safe Levels[1] (below concentration for given time period) - ppmV						
	Sample	RL	1 hour	8 hour	5 yrs	30 yrs	Odors	Worker	µg/m³/ppb
Vinyl Chloride	N.D.	0.0002	250	70	0.06	0.001	150	1	2.58
Chloroethane	N.D.	0.002	50	10	NA	NA	4.2	1000	2.64
Trichloromonofluoromethane	0.00022	0.0002	500	100	NA	NA	5	1000	5.6
1,1-Dichloroethene	N.D.	0.0002	2.5	0.5	NA	NA	120	NA	3.97
Methylene Chloride	N.D.	0.0002	4	0.86	0.86	0.01	78	25	3.48
1,1,2-Trichlorotrifluoroethane	N.D.	0.0002	500	100	NA	NA	45	1000	7.65
1,1-Dichloroethane	N.D.	0.0002	50	10	1.2	0.12	15	100	4.05
Cis 1,2-Dichloroethylene	N.D.	0.0002	140	140	0.088	0.009	8.5	100	3.97
Chloroform	N.D.	0.0002	0.03	0.01	0.01	<0.001	43	2	4.87
1,2-Dichloroethane	N.D.	0.0002	5	1	0.01	<0.001	0.3	1	4.05
1,1,1-Trichloroethane	N.D.	0.0002	230	230	9.5	0.95	6	NA	5.46
Benzene	0.027	0.0002	52	9	0.07	0.001	0.8	0.1	3.19
Carbon Tetrachloride	N.D.	0.0002	44	19	0.02	<0.001	5	2	6.3
1,2-Dichloropropane	N.D.	0.0002	5	1	0.02	<0.001	0.1	75	4.62
Trichloroethylene	N.D.	0.0002	130	77	0.15	0.003	130	100	5.36
cis-1,3-Dichloropropene	N.D.	0.0002	0.02	0.045	0.008	0.001	0.5	NA	4.54
trans-1,3-Dichloropropene	N.D.	0.0002	0.5	0.1	0.008	0.001	0.5	1	4.54
1,1,2-Trichloroethane	N.D.	0.0002	5	0.1	0.02	<0.001	NA	10	5.46
Toluene	0.0075	0.0002	200	200	13.3	1.35	4	100	3.76
1,2-Dibromoethane	N.D.	0.0002	17	4.6	NA	NA	10	0.045	7.69
Tetrachloroethylene	N.D.	0.0002	35	35	<0.001	<0.001	2.3	100	6.79
Chlorobenzene	N.D.	0.0002	10	10	0.043	<0.001	0.11	75	4.62
Ethylbenzene	0.0027	0.0002	33	33	2.3	0.23	0.23	100	4.34
p/m-Xylene (see note)	N.D.	0.002	5	0.8	0.23	0.023	0.005	100	4.34
Styrene*	0.046	0.005	20	20	0.059	0.01	0.16	50	4.25
o-Xylene*	N.D.	0.003	5	0.8	0.23	0.023	0.005	100	4.34
1,1,2,2-Tetrachloroethane*	N.D.	0.0002	0.5	0.1	0.01	<0.001	0.76	1	6.87
1,3,5-Trimethylbenzene*	N.D.	0.005	140	45	NA	NA	0.23	25	4.91
1,2,4-Trimethylbenzene*	N.D.	0.003	140	45	NA	NA	0.4	25	4.91
1,3-Dichlorobenzene (meta)*	N.D.	0.002	1	0.33	0.33	0.033	NA	NA	6.01
1,2-Dichlorobenzene (ortho)*	N.D.	0.001	13	0.33	0.33	0.033	25	50	6.01
1,4-Dichlorobenzene (para)*	N.D.	0.002	5	0.1	0.03	0.001	0.09	75	6.01
1,2,4-Trichlorobenzene*	N.D.	0.005	0.27	0.27	0.27	0.027	1.5	5	7.4
HexachloroButadiene*	N.D.	0.005	0.01	0.002	0.001	<0.001	0.56	0.02	10.67

Samples obtained in 0.5-1L bags (e.g., Kynar). Results for analytes with * likely biased low by up to factor of 2+/- due to sorption onto bag

Instrument: HAPSITE Smart Plus GC/MS Method: FAST TO-14 Last Calib: 4/22/16 Reporting Limit (RL) is lowest calib standard

Quality Control: 4-8 point calib w/ %RSD<30, Internal Stds, daily blank, daily calib check standard N.D =Not Detected = Less than RL

Actual concentration of p/m Xylenes could be twice listed value (due to co-elution of congeners duiring calibration operations)

[1]Safe Levels: 1 hr =1 hr EPA AEGL-1 or 1 hr California REL or (DOE TEEL-0)/2; 8 hr = 8 hr EPA AEGL-1 or (California REL1hr)/5, or (DOE TEEL-0)/10; 5 yr and 30 year exposure levels per MassDEP MCP; Worker = lower of OSHA PEL or NIOSH REL for 8 hrs.

Dilution Factor =	1	If sample was diluted, the Reporting Limits listed above must be multiplied by this Dilution Factor

Comments:

Appendix 1 - Air Sample Data

MassDEP Field Assessment and Support Team (FAST)				AIR SCREENING DATA			RTN:	0
City or Town:	Peabody		Address:	Jubilee Drive at # 540				Location:
Date Sampled:	7/12/16	Time:	11:50 PM	Field ID:	A-9	Collector:	Clark	
Date Analyzed:	7/13/16	Time:	12:05 AM	Lab ID:	001	Analyst:	Fitzgerald	

Method Analytes	Conc. in ppmV		Safe Levels[1] (below concentration for given time period) - ppmV						
	Sample	RL	1 hour	8 hour	5 yrs	30 yrs	Odors	Worker	µg/m³/ppb
Vinyl Chloride	N.D.	0.001	250	70	0.06	0.001	150	1	2.58
Chloroethane	0.0027	0.001	50	10	NA	NA	4.2	1000	2.64
Trichloromonofluoromethane	N.D.	0.001	500	100	NA	NA	5	1000	5.6
1,1-Dichloroethene	N.D.	0.001	2.5	0.5	NA	NA	120	NA	3.97
Methylene Chloride	N.D.	0.001	4	0.86	0.86	0.01	78	25	3.48
1,1,2-Trichlorotrifluoroethane	N.D.	0.001	500	100	NA	NA	45	1000	7.65
1,1-Dichloroethane	N.D.	0.001	50	10	1.2	0.12	15	100	4.05
Cis 1,2-Dichloroethylene	N.D.	0.001	140	140	0.088	0.009	8.5	100	3.97
Chloroform	N.D.	0.001	0.03	0.01	0.01	<0.001	43	2	4.87
1,2-Dichloroethane	N.D.	0.001	5	1	0.01	<0.001	0.3	1	4.05
1,1,1-Trichloroethane	N.D.	0.001	230	230	9.5	0.95	6	NA	5.46
Benzene	N.D.	0.001	52	9	0.07	0.001	0.8	0.1	3.19
Carbon Tetrachloride	N.D.	0.001	44	19	0.02	<0.001	5	2	6.3
1,2-Dichloropropane	N.D.	0.001	5	1	0.02	<0.001	0.1	75	4.62
Trichloroethylene	N.D.	0.001	130	77	0.15	0.003	130	100	5.36
cis-1,3-Dichloropropene	N.D.	0.001	0.02	0.045	0.008	0.001	0.5	NA	4.54
trans-1,3-Dichloropropene	N.D.	0.001	0.5	0.1	0.008	0.001	0.5	1	4.54
1,1,2-Trichloroethane	N.D.	0.001	5	0.1	0.02	<0.001	NA	10	5.46
Toluene	N.D.	0.001	200	200	13.3	1.35	4	100	3.76
1,2-Dibromoethane	N.D.	0.001	17	4.6	NA	NA	10	0.045	7.69
Tetrachloroethylene	N.D.	0.001	35	35	<0.001	<0.001	2.3	100	6.79
Chlorobenzene	N.D.	0.001	10	10	0.043	<0.001	0.11	75	4.62
Ethylbenzene	N.D.	0.001	33	33	2.3	0.23	0.23	100	4.34
p/m-Xylene (see note)	N.D.	0.001	5	0.8	0.23	0.023	0.005	100	4.34
Styrene*	0.0088	0.001	20	20	0.059	0.01	0.16	50	4.25
o-Xylene*	N.D.	0.001	5	0.8	0.23	0.023	0.005	100	4.34
1,1,2,2-Tetrachloroethane*	N.D.	0.001	0.5	0.1	0.01	<0.001	0.76	1	6.87
1,3,5-Trimethylbenzene*	N.D.	0.001	140	45	NA	NA	0.23	25	4.91
1,2,4-Trimethylbenzene*	N.D.	0.002	140	45	NA	NA	0.4	25	4.91
1,3-Dichlorobenzene (meta)*	N.D.	0.002	1	0.33	0.33	0.033	NA	NA	6.01
1,2-Dichlorobenzene (ortho)*	N.D.	0.002	13	0.33	0.33	0.033	25	50	6.01
1,4-Dichlorobenzene (para)*	N.D.	0.002	5	0.1	0.03	0.001	0.09	75	6.01
1,2,4-Trichlorobenzene*	N.D.	0.003	0.27	0.27	0.27	0.027	1.5	5	7.4
HexachloroButadiene*	N.D.	0.002	0.01	0.002	0.001	<0.001	0.56	0.02	10.67

Samples obtained in 0.5-1L bags (e.g., Kynar). Results for analytes with * likely biased low by up to factor of 2+/- due to sorption onto bag.

Instrument: HAPSITE ER GC/MS Method: FAST TO-14 Last Calib: 6/22/16. Reporting Limit (RL) ≤ lowest calib standard

Quality Control: 4-8 point calib w/ %RSD<30, Internal Stds, daily blank, daily calib check standard N.D =Not Detected = Less than RL

Actual concentration of p/m Xylenes could be twice listed value (due to co-elution of congeners duiring calibration operations)

[1]Safe Levels: 1 hr =1 hr EPA AEGL-1 or 1 hr California REL or (DOE TEEL-0)/2; 8 hr = 8 hr EPA AEGL-1 or (California REL1hr)/5, or (DOE TEEL-0)/10; 5 yr and 30 year exposure levels per MassDEP MCP; Worker = lower of OSHA PEL or NIOSH REL for 8 hrs.

Dilution Factor =	1	If sample was diluted, the Reporting Limits listed above must be multiplied by this Dilution Factor

Comments:

Appendix 1 - Air Sample Data

MassDEP Field Assessment and Support Team (FAST)				AIR SCREENING DATA		RTN:	0
City or Town:	Peabody		Address:	Jubilee Drive at #540			Location:
Date Sampled:	7/13/16	Time:	10:05 AM	Field ID:	A-10	Collector:	Giddings
Date Analyzed:	7/13/16	Time:	12:27 PM	Lab ID:	004	Analyst:	Fitzgerald

Method Analytes	Conc. in ppmV		Safe Levels[1] (below concentration for given time period) - ppmV						
	Sample	RL	1 hour	8 hour	5 yrs	30 yrs	Odors	Worker	µg/m³/ppb
Vinyl Chloride	N.D.	0.001	250	70	0.06	0.001	150	1	2.58
Chloroethane	0.0019	0.001	50	10	NA	NA	4.2	1000	2.64
Trichloromonofluoromethane	N.D.	0.001	500	100	NA	NA	5	1000	5.6
1,1-Dichloroethene	N.D.	0.001	2.5	0.5	NA	NA	120	NA	3.97
Methylene Chloride	N.D.	0.001	4	0.86	0.86	0.01	78	25	3.48
1,1,2-Trichlorotrifluoroethane	N.D.	0.001	500	100	NA	NA	45	1000	7.65
1,1-Dichloroethane	N.D.	0.001	50	10	1.2	0.12	15	100	4.05
Cis 1,2-Dichloroethylene	N.D.	0.001	140	140	0.088	0.009	8.5	100	3.97
Chloroform	N.D.	0.001	0.03	0.01	0.01	<0.001	43	2	4.87
1,2-Dichloroethane	N.D.	0.001	5	1	0.01	<0.001	0.3	1	4.05
1,1,1-Trichloroethane	N.D.	0.001	230	230	9.5	0.95	6	NA	5.46
Benzene	N.D.	0.001	52	9	0.07	0.001	0.8	0.1	3.19
Carbon Tetrachloride	N.D.	0.001	44	19	0.02	<0.001	5	2	6.3
1,2-Dichloropropane	N.D.	0.001	5	1	0.02	<0.001	0.1	75	4.62
Trichloroethylene	N.D.	0.001	130	77	0.15	0.003	130	100	5.36
cis-1,3-Dichloropropene	N.D.	0.001	0.02	0.045	0.008	0.001	0.5	NA	4.54
trans-1,3-Dichloropropene	N.D.	0.001	0.5	0.1	0.008	0.001	0.5	1	4.54
1,1,2-Trichloroethane	N.D.	0.001	5	0.1	0.02	<0.001	NA	10	5.46
Toluene	0.0012	0.001	200	200	13.3	1.35	4	100	3.76
1,2-Dibromoethane	N.D.	0.001	17	4.6	NA	NA	10	0.045	7.69
Tetrachloroethylene	N.D.	0.001	35	35	<0.001	<0.001	2.3	100	6.79
Chlorobenzene	N.D.	0.001	10	10	0.043	<0.001	0.11	75	4.62
Ethylbenzene	N.D.	0.001	33	33	2.3	0.23	0.23	100	4.34
p/m-Xylene (see note)	N.D.	0.001	5	0.8	0.23	0.023	0.005	100	4.34
Styrene*	0.0042	0.001	20	20	0.059	0.01	0.16	50	4.25
o-Xylene*	N.D.	0.001	5	0.8	0.23	0.023	0.005	100	4.34
1,1,2,2-Tetrachloroethane*	N.D.	0.001	0.5	0.1	0.01	<0.001	0.76	1	6.87
1,3,5-Trimethylbenzene*	N.D.	0.001	140	45	NA	NA	0.23	25	4.91
1,2,4-Trimethylbenzene*	N.D.	0.002	140	45	NA	NA	0.4	25	4.91
1,3-Dichlorobenzene (meta)*	N.D.	0.002	1	0.33	0.33	0.033	NA	NA	6.01
1,2-Dichlorobenzene (ortho)*	N.D.	0.002	13	0.33	0.33	0.033	25	50	6.01
1,4-Dichlorobenzene (para)*	N.D.	0.002	5	0.1	0.03	0.001	0.09	75	6.01
1,2,4-Trichlorobenzene*	N.D.	0.003	0.27	0.27	0.27	0.027	1.5	5	7.4
HexachloroButadiene*	N.D.	0.002	0.01	0.002	0.001	<0.001	0.56	0.02	10.67

Samples obtained in 0.5-1L bags (e.g., Kynar). Results for analytes with * likely biased low by up to factor of 2+/- due to sorption onto bag.

Instrument: HAPSITE ER GC/MS Method: FAST TO-14 Last Calib: 6/22/16. Reporting Limit (RL) ≤ lowest calib standard

Quality Control: 4-8 point calib w/ %RSD<30, Internal Stds, daily blank, daily calib check standard N.D =Not Detected = Less than RL

Actual concentration of p/m Xylenes could be twice listed value (due to co-elution of congeners duiring calibration operations)

[1]Safe Levels: 1 hr =1 hr EPA AEGL-1 or 1 hr California REL or (DOE TEEL-0)/2; 8 hr = 8 hr EPA AEGL-1 or (California REL1hr)/5, or (DOE TEEL-0)/10; 5 yr and 30 year exposure levels per MassDEP MCP; Worker = lower of OSHA PEL or NIOSH REL for 8 hrs.

Dilution Factor =	1	If sample was diluted, the Reporting Limits listed above must be multiplied by this Dilution Factor

Comments:

Appendix 1 - Air Sample Data

MassDEP Field Assessment and Support Team (FAST)				AIR SCREENING DATA				RTN:	0
City or Town:	Peabody		Address:	Jubilee Drive at #480					Location:
Date Sampled:	7/13/16	Time:	10:12 AM	Field ID:	A-11	Collector:	Giddings		
Date Analyzed:	7/13/16	Time:	12:40 PM	Lab ID:	004	Analyst:	Clark		

Method Analytes	Conc. in ppmV		Safe Levels[1] (below concentration for given time period) - ppmV						
	Sample	RL	1 hour	8 hour	5 yrs	30 yrs	Odors	Worker	µg/m³/ppb
Vinyl Chloride	N.D.	0.0002	250	70	0.06	0.001	150	1	2.58
Chloroethane	0.002	0.002	50	10	NA	NA	4.2	1000	2.64
Trichloromonofluoromethane	0.00024	0.0002	500	100	NA	NA	5	1000	5.6
1,1-Dichloroethene	N.D.	0.0002	2.5	0.5	NA	NA	120	NA	3.97
Methylene Chloride	N.D.	0.0002	4	0.86	0.86	0.01	78	25	3.48
1,1,2-Trichlorotrifluoroethane	N.D.	0.0002	500	100	NA	NA	45	1000	7.65
1,1-Dichloroethane	N.D.	0.0002	50	10	1.2	0.12	15	100	4.05
Cis 1,2-Dichloroethylene	N.D.	0.0002	140	140	0.088	0.009	8.5	100	3.97
Chloroform	N.D.	0.0002	0.03	0.01	0.01	<0.001	43	2	4.87
1,2-Dichloroethane	N.D.	0.0002	5	1	0.01	<0.001	0.3	1	4.05
1,1,1-Trichloroethane	N.D.	0.0002	230	230	9.5	0.95	6	NA	5.46
Benzene	0.0011	0.0002	52	9	0.07	0.001	0.8	0.1	3.19
Carbon Tetrachloride	N.D.	0.0002	44	19	0.02	<0.001	5	2	6.3
1,2-Dichloropropane	N.D.	0.0002	5	1	0.02	<0.001	0.1	75	4.62
Trichloroethylene	N.D.	0.0002	130	77	0.15	0.003	130	100	5.36
cis-1,3-Dichloropropene	N.D.	0.0002	0.02	0.045	0.008	0.001	0.5	NA	4.54
trans-1,3-Dichloropropene	N.D.	0.0002	0.5	0.1	0.008	0.001	0.5	1	4.54
1,1,2-Trichloroethane	N.D.	0.0002	5	0.1	0.02	<0.001	NA	10	5.46
Toluene	0.0016	0.0002	200	200	13.3	1.35	4	100	3.76
1,2-Dibromoethane	N.D.	0.0002	17	4.6	NA	NA	10	0.045	7.69
Tetrachloroethylene	N.D.	0.0002	35	35	<0.001	<0.001	2.3	100	6.79
Chlorobenzene	N.D.	0.0002	10	10	0.043	<0.001	0.11	75	4.62
Ethylbenzene	0.00031	0.0002	33	33	2.3	0.23	0.23	100	4.34
p/m-Xylene (see note)	N.D.	0.002	5	0.8	0.23	0.023	0.005	100	4.34
Styrene*	N.D.	0.005	20	20	0.059	0.01	0.16	50	4.25
o-Xylene*	N.D.	0.003	5	0.8	0.23	0.023	0.005	100	4.34
1,1,2,2-Tetrachloroethane*	N.D.	0.0002	0.5	0.1	0.01	<0.001	0.76	1	6.87
1,3,5-Trimethylbenzene*	N.D.	0.005	140	45	NA	NA	0.23	25	4.91
1,2,4-Trimethylbenzene*	N.D.	0.003	140	45	NA	NA	0.4	25	4.91
1,3-Dichlorobenzene (meta)*	N.D.	0.002	1	0.33	0.33	0.033	NA	NA	6.01
1,2-Dichlorobenzene (ortho)*	N.D.	0.001	13	0.33	0.33	0.033	25	50	6.01
1,4-Dichlorobenzene (para)*	N.D.	0.002	5	0.1	0.03	0.001	0.09	75	6.01
1,2,4-Trichlorobenzene*	N.D.	0.005	0.27	0.27	0.27	0.027	1.5	5	7.4
HexachloroButadiene*	N.D.	0.005	0.01	0.002	0.001	<0.001	0.56	0.02	10.67

Samples obtained in 0.5-1L bags (e.g., Kynar). Results for analytes with * likely biased low by up to factor of 2+/- due to sorption onto bag

Instrument: HAPSITE Smart Plus GC/MS Method: FAST TO-14 Last Calib: 4/22/16 Reporting Limit (RL) is lowest calib standard

Quality Control: 4-8 point calib w/ %RSD<30, Internal Stds, daily blank, daily calib check standard N.D =Not Detected = Less than RL

Actual concentration of p/m Xylenes could be twice listed value (due to co-elution of congeners duiring calibration operations)

[1]Safe Levels: 1 hr =1 hr EPA AEGL-1 or 1 hr California REL or (DOE TEEL-0)/2; 8 hr = 8 hr EPA AEGL-1 or (California REL1hr)/5, or (DOE TEEL-0)/10; 5 yr and 30 year exposure levels per MassDEP MCP; Worker = lower of OSHA PEL or NIOSH REL for 8 hrs.

Dilution Factor =	1	If sample was diluted, the Reporting Limits listed above must be multiplied by this Dilution Factor

Comments:

Appendix 1 - Air Sample Data

MassDEP Field Assessment and Support Team (FAST)				AIR SCREENING DATA			RTN:	0
City or Town:	Peabody		Address:	Farm Ave at Jubilee				Location:
Date Sampled:	7/13/16	Time:	10:18 AM	Field ID:	A-12	Collector:	Giddings	
Date Analyzed:	7/13/16	Time:	1:12 PM	Lab ID:	005	Analyst:	Fitzgerald	

Method Analytes	Conc. in ppmV		Safe Levels[1] (below concentration for given time period) - ppmV						
	Sample	RL	1 hour	8 hour	5 yrs	30 yrs	Odors	Worker	µg/m³/ppb
Vinyl Chloride	N.D.	0.0002	250	70	0.06	0.001	150	1	2.58
Chloroethane	N.D.	0.002	50	10	NA	NA	4.2	1000	2.64
Trichloromonofluoromethane	0.00023	0.0002	500	100	NA	NA	5	1000	5.6
1,1-Dichloroethene	N.D.	0.0002	2.5	0.5	NA	NA	120	NA	3.97
Methylene Chloride	N.D.	0.0002	4	0.86	0.86	0.01	78	25	3.48
1,1,2-Trichlorotrifluoroethane	N.D.	0.0002	500	100	NA	NA	45	1000	7.65
1,1-Dichloroethane	N.D.	0.0002	50	10	1.2	0.12	15	100	4.05
Cis 1,2-Dichloroethylene	N.D.	0.0002	140	140	0.088	0.009	8.5	100	3.97
Chloroform	N.D.	0.0002	0.03	0.01	0.01	<0.001	43	2	4.87
1,2-Dichloroethane	N.D.	0.0002	5	1	0.01	<0.001	0.3	1	4.05
1,1,1-Trichloroethane	N.D.	0.0002	230	230	9.5	0.95	6	NA	5.46
Benzene	0.0018	0.0002	52	9	0.07	0.001	0.8	0.1	3.19
Carbon Tetrachloride	N.D.	0.0002	44	19	0.02	<0.001	5	2	6.3
1,2-Dichloropropane	N.D.	0.0002	5	1	0.02	<0.001	0.1	75	4.62
Trichloroethylene	N.D.	0.0002	130	77	0.15	0.003	130	100	5.36
cis-1,3-Dichloropropene	N.D.	0.0002	0.02	0.045	0.008	0.001	0.5	NA	4.54
trans-1,3-Dichloropropene	N.D.	0.0002	0.5	0.1	0.008	0.001	0.5	1	4.54
1,1,2-Trichloroethane	N.D.	0.0002	5	0.1	0.02	<0.001	NA	10	5.46
Toluene	0.0017	0.0002	200	200	13.3	1.35	4	100	3.76
1,2-Dibromoethane	N.D.	0.0002	17	4.6	NA	NA	10	0.045	7.69
Tetrachloroethylene	N.D.	0.0002	35	35	<0.001	<0.001	2.3	100	6.79
Chlorobenzene	N.D.	0.0002	10	10	0.043	<0.001	0.11	75	4.62
Ethylbenzene	0.00047	0.0002	33	33	2.3	0.23	0.23	100	4.34
p/m-Xylene (see note)	N.D.	0.002	5	0.8	0.23	0.023	0.005	100	4.34
Styrene*	N.D.	0.005	20	20	0.059	0.01	0.16	50	4.25
o-Xylene*	N.D.	0.003	5	0.8	0.23	0.023	0.005	100	4.34
1,1,2,2-Tetrachloroethane*	N.D.	0.0002	0.5	0.1	0.01	<0.001	0.76	1	6.87
1,3,5-Trimethylbenzene*	N.D.	0.005	140	45	NA	NA	0.23	25	4.91
1,2,4-Trimethylbenzene*	N.D.	0.003	140	45	NA	NA	0.4	25	4.91
1,3-Dichlorobenzene (meta)*	N.D.	0.002	1	0.33	0.33	0.033	NA	NA	6.01
1,2-Dichlorobenzene (ortho)*	N.D.	0.001	13	0.33	0.33	0.033	25	50	6.01
1,4-Dichlorobenzene (para)*	N.D.	0.002	5	0.1	0.03	0.001	0.09	75	6.01
1,2,4-Trichlorobenzene*	N.D.	0.005	0.27	0.27	0.27	0.027	1.5	5	7.4
HexachloroButadiene*	N.D.	0.005	0.01	0.002	0.001	<0.001	0.56	0.02	10.67

Samples obtained in 0.5-1L bags (e.g., Kynar). Results for analytes with * likely biased low by up to factor of 2+/- due to sorption onto bag

Instrument: HAPSITE Smart Plus GC/MS Method: FAST TO-14 Last Calib: 4/22/16 Reporting Limit (RL) is lowest calib standard

Quality Control: 4-8 point calib w/ %RSD<30, Internal Stds, daily blank, daily calib check standard N.D =Not Detected = Less than RL

Actual concentration of p/m Xylenes could be twice listed value (due to co-elution of congeners duiring calibration operations)

[1]Safe Levels: 1 hr =1 hr EPA AEGL-1 or 1 hr California REL or (DOE TEEL-0)/2; 8 hr = 8 hr EPA AEGL-1 or (California REL1hr)/5, or (DOE TEEL-0)/10; 5 yr and 30 year exposure levels per MassDEP MCP; Worker = lower of OSHA PEL or NIOSH REL for 8 hrs.

Dilution Factor =	1	If sample was diluted, the Reporting Limits listed above must be multiplied by this Dilution Factor

Comments:

Appendix 2 - Water Data

MassDEP Field Assessment and Support Team (FAST)							SURFACE WATER	RTN:
City or Town:	Peabody		Address:	2 5th Street (Lifoam)				Location:
Date Sampled:	7/12/16	Time:	9:25 PM	Field ID:	RO-1	Collector:	Giddings	Fire fighting water runoff west side
Date Analyzed:	7/12/16	Time:	10:14 PM	Lab ID:	010	Analyst:	Fitzgerald	

NOTE - ALL REPORTED VALUES ARE ESTIMATES, BASED UPON HEADSPACE ANALYSIS AND APPLICATION OF HENRY'S LAW

Method Analytes	Est Conc µg/L		Sample	Dilution	Hdspc	K	DW	Aquatic Toxicty µg/L	
	Result	R.L.	ppbV	Factor	ppbV	(25°C)	µg/L	Acute	Chronic
Vinyl Chloride	N.D.	1	N.D.	85	N.D.	1.14	2	400,000	40,000
Chloroethane	N.D.	20	N.D.	85	N.D.	0.275	NS	NA	NA
Trichloromonofluoromethane	N.D.	15	N.D.	85	N.D.	4.51	NS	NA	NA
1,1-Dichloroethene	N.D.	1	N.D.	85	N.D.	0.634	7	12,000	1,200
Methylene Chloride	N.D.	1	N.D.	85	N.D.	0.09	5	NA	6,700
1,1,2-Trichlorotrifluoroethane	N.D.	17	N.D.	85	N.D.	14.34	NS	NA	NA
1,1-Dichloroethane	N.D.	70	N.D.	85	N.D.	0.012	70	NA	990
Cis 1,2-Dichloroethylene	N.D.	3	N.D.	85	N.D.	0.167	70	140,000	14,000
Chloroform	N.D.	4	N.D.	85	N.D.	0.151	70	NA	970
1,2-Dichloroethane	N.D.	19	N.D.	85	N.D.	0.024	5	NA	990
1,1,1-Trichloroethane	N.D.	1	N.D.	85	N.D.	0.705	200	9000	900
Benzene	**40**	3	21	85	1783	0.116	5	4600	460
Carbon Tetrachloride	N.D.	1	N.D.	85	N.D.	1.132	5	2000	200
1,2-Dichloropropane	N.D.	5	N.D.	85	N.D.	0.116	5	NA	25,000
Trichloroethylene	N.D.	4	N.D.	85	N.D.	0.197	5	1900	190
cis-1,3-Dichloropropene	N.D.	4	N.D.	85	N.D.	0.146	NS	90	9
trans-1,3-Dichloropropene	N.D.	28	N.D.	85	N.D.	0.036	NS	90	9
1,1,2-Trichloroethane	N.D.	18	N.D.	85	N.D.	0.034	5	NA	15,000
Toluene	**7**	2	4	85	316	0.272	1,000	1400	1,400
1,2-Dibromoethane	N.D.	26	N.D.	85	N.D.	0.029	NS	NA	9600
Tetrachloroethylene	N.D.	2	N.D.	85	N.D.	0.726	5	NA	1,100
Chlorobenzene	N.D.	4	N.D.	85	N.D.	0.128	100	NA	38
Ethylbenzene	**3**	2	1	85	119	0.323	700	1800	180
p/m-Xylene (see note)	N.D.	2	N.D.	85	N.D.	0.27	10,000	200	200
Styrene	**200**	5	34	85	2899	0.113	100	2500	250
o-Xylene	N.D.	5	N.D.	85	N.D.	0.114	part of total Xylenes		
1,1,2,2-Tetrachloroethane	N.D.	49	N.D.	85	N.D.	0.015	5	NA	4,000
1,3,5-Trimethylbenzene	N.D.	2	N.D.	85	N.D.	0.272	NS	5400	540
1,2,4-Trimethylbenzene	N.D.	3	N.D.	85	N.D.	0.212	NS	5400	540
1,3-Dichlorobenzene (meta)	N.D.	7	N.D.	85	N.D.	0.108	1	NA	1500
1,2-Dichlorobenzene (ortho)	N.D.	9	N.D.	85	N.D.	0.079	9	780	78
1,4-Dichlorobenzene (para)	N.D.	7	N.D.	85	N.D.	0.099	0.7	NA	310
1,2,4-Trichlorobenzene	N.D.	29	N.D.	85	N.D.	0.058	2	NA	340
HexachloroButadiene	N.D.	9	N.D.	85	N.D.	0.334	6	NA	13

Instrument: HAPSITE Smart Plus GC/MS Method: FAST TO-14 Last Calib: 4/22/16 Reporting Limit (R.L.) is lowest calib standard

Quality Control: 4-8 point calib w/ %RSD<30, Internal Stds, daily blank, daily calib check standard R.L= estimated aqueous conc

Headspace procedure involves half-filling a 40 mL vial and shaking it vigorously 30 seconds twice over a minimum 10 minute time period, at about 25°C. Calculated aqueous concentration assumes 75% of equilbrium conditions using Henry's Law.

N.D. = Not Detected K = dimensionless Henry's Law Constant DW = Drinking Water standard NA = Information Not Available

Aquatic Toxicity values from various sources as selected in MassDEP Method 1 Standard calculations for GW-3 (2014)

COMMENTS:

Appendix 2 - Water Data

MassDEP Field Assessment and Support Team (FAST)				SURFACE WATER			RTN:		
City or Town:	Peabody		Address:	2 5th Street (Lifoam)					Location:
Date Sampled:	7/12/16	Time:	11:20 PM	Field ID:	W-1	Collector:	Clark		Brook at 1st Street
Date Analyzed:	7/12/16	Time:	11:35 PM	Lab ID:	012	Analyst:	Fitzgerald		

NOTE - ALL REPORTED VALUES ARE ESTIMATES, BASED UPON HEADSPACE ANALYSIS AND APPLICATION OF HENRY'S LAW

Method Analytes	Est Conc µg/L		Sample	Dilution	Hdspc	K	DW	Aquatic Toxicty µg/L	
	Result	R.L.	ppbV	Factor	ppbV	(25°C)	µg/L	Acute	Chronic
Vinyl Chloride	N.D.	1	N.D.	43	N.D.	1.14	2	400,000	40,000
Chloroethane	N.D.	7	N.D.	43	N.D.	0.275	NS	NA	NA
Trichloromonofluoromethane	N.D.	7	N.D.	43	N.D.	4.51	NS	NA	NA
1,1-Dichloroethene	N.D.	0	N.D.	43	N.D.	0.634	7	12,000	1,200
Methylene Chloride	N.D.	4	N.D.	43	N.D.	0.09	5	NA	6,700
1,1,2-Trichlorotrifluoroethane	N.D.	9	N.D.	43	N.D.	14.34	NS	NA	NA
1,1-Dichloroethane	N.D.	2	N.D.	43	N.D.	0.012	70	NA	990
Cis 1,2-Dichloroethylene	N.D.	3	N.D.	43	N.D.	0.167	70	140,000	14,000
Chloroform	N.D.	2	N.D.	43	N.D.	0.151	70	NA	970
1,2-Dichloroethane	N.D.	6	N.D.	43	N.D.	0.024	5	NA	990
1,1,1-Trichloroethane	N.D.	1	N.D.	43	N.D.	0.705	200	9000	900
Benzene	N.D.	1	0	43	N.D.	0.116	5	4600	460
Carbon Tetrachloride	N.D.	1	N.D.	43	N.D.	1.132	5	2000	200
1,2-Dichloropropane	N.D.	2	N.D.	43	N.D.	0.116	5	NA	25,000
Trichloroethylene	N.D.	1	N.D.	43	N.D.	0.197	5	1900	190
cis-1,3-Dichloropropene	N.D.	1	N.D.	43	N.D.	0.146	NS	90	9
trans-1,3-Dichloropropene	N.D.	1	N.D.	43	N.D.	0.036	NS	90	9
1,1,2-Trichloroethane	N.D.	9	N.D.	43	N.D.	0.034	5	NA	15,000
Toluene	N.D.	1	0	43	N.D.	0.272	1,000	1400	1,400
1,2-Dibromoethane	N.D.	10	N.D.	43	N.D.	0.029	NS	NA	9600
Tetrachloroethylene	N.D.	1	0	43	N.D.	0.726	5	NA	1,100
Chlorobenzene	N.D.	2	N.D.	43	N.D.	0.128	100	NA	38
Ethylbenzene	N.D.	1	N.D.	43	N.D.	0.323	700	1800	180
p/m-Xylene (see note)	N.D.	1	N.D.	43	N.D.	0.27	10,000	200	200
Styrene	**10**	2	5	43	197	0.113	100	2500	250
o-Xylene	N.D.	1	N.D.	43	N.D.	0.114	part of total Xylenes		
1,1,2,2-Tetrachloroethane	N.D.	20	N.D.	43	N.D.	0.015	5	NA	4,000
1,3,5-Trimethylbenzene	N.D.	2	N.D.	43	N.D.	0.272	NS	5400	540
1,2,4-Trimethylbenzene	N.D.	3	N.D.	43	N.D.	0.212	NS	5400	540
1,3-Dichlorobenzene (meta)	N.D.	7	N.D.	43	N.D.	0.108	1	NA	1500
1,2-Dichlorobenzene (ortho)	N.D.	9	N.D.	43	N.D.	0.079	9	780	78
1,4-Dichlorobenzene (para)	N.D.	7	N.D.	43	N.D.	0.099	0.7	NA	310
1,2,4-Trichlorobenzene	N.D.	20	N.D.	43	N.D.	0.058	2	NA	340
HexachloroButadiene	N.D.	5	N.D.	43	N.D.	0.334	6	NA	13

Instrument: HAPSITE ER GC/MS Method: FAST TO-14 Last Calib: 6/22/16. Reporting Limit (R.L.) is lowest calib standard

Quality Control: 4-8 point calib w/ %RSD<30, Internal Stds, daily blank, daily calib check standard R.L= estimated aqueous conc

Headspace procedure involves half-filling a 40 mL vial and shaking it vigorously 30 seconds twice over a minimum 10 minute time period, at about 25°C. Calculated aqueous concentration assumes 75% of equilbrium conditions using Henry's Law.

N.D. = Not Detected K = dimensionless Henry's Law Constant DW = Drinking Water standard NA = Information Not Available

Aquatic Toxicity values from various sources as selected in MassDEP Method 1 Standard calculations for GW-3 (2014)

COMMENTS:

Appendix 2 - Water Data

MassDEP Field Assessment and Support Team (FAST)				SURFACE WATER			RTN:	0
City or Town:	Peabody		Address:	2 5th Street (Lifoam)				Location:
Date Sampled:	7/13/16	Time:	10:22 AM	Field ID:	W-2	Collector:	Giddings	Brook at 1st Street
Date Analyzed:	7/13/16	Time:	1:40 PM	Lab ID:	006	Analyst:	Fitzgerald	

NOTE - ALL REPORTED VALUES ARE ESTIMATES, BASED UPON HEADSPACE ANALYSIS AND APPLICATION OF HENRY'S LAW

Method Analytes	Est Conc µg/L		Sample	Dilution	Hdspc	K	DW	Aquatic Toxicty µg/L	
	Result	R.L.	ppbV	Factor	ppbV	(25°C)	µg/L	Acute	Chronic
Vinyl Chloride	N.D.	1	N.D.	43	N.D.	1.14	2	400,000	40,000
Chloroethane	N.D.	7	N.D.	43	N.D.	0.275	NS	NA	NA
Trichloromonofluoromethane	N.D.	7	N.D.	43	N.D.	4.51	NS	NA	NA
1,1-Dichloroethene	N.D.	0	N.D.	43	N.D.	0.634	7	12,000	1,200
Methylene Chloride	N.D.	4	N.D.	43	N.D.	0.09	5	NA	6,700
1,1,2-Trichlorotrifluoroethane	N.D.	9	N.D.	43	N.D.	14.34	NS	NA	NA
1,1-Dichloroethane	N.D.	2	N.D.	43	N.D.	0.012	70	NA	990
Cis 1,2-Dichloroethylene	N.D.	3	N.D.	43	N.D.	0.167	70	140,000	14,000
Chloroform	N.D.	2	N.D.	43	N.D.	0.151	70	NA	970
1,2-Dichloroethane	N.D.	6	N.D.	43	N.D.	0.024	5	NA	990
1,1,1-Trichloroethane	N.D.	1	N.D.	43	N.D.	0.705	200	9000	900
Benzene	N.D.	1	N.D.	43	N.D.	0.116	5	4600	460
Carbon Tetrachloride	N.D.	1	N.D.	43	N.D.	1.132	5	2000	200
1,2-Dichloropropane	N.D.	2	N.D.	43	N.D.	0.116	5	NA	25,000
Trichloroethylene	N.D.	1	N.D.	43	N.D.	0.197	5	1900	190
cis-1,3-Dichloropropene	N.D.	1	N.D.	43	N.D.	0.146	NS	90	9
trans-1,3-Dichloropropene	N.D.	1	N.D.	43	N.D.	0.036	NS	90	9
1,1,2-Trichloroethane	N.D.	9	N.D.	43	N.D.	0.034	5	NA	15,000
Toluene	N.D.	1	N.D.	43	N.D.	0.272	1,000	1400	1,400
1,2-Dibromoethane	N.D.	10	N.D.	43	N.D.	0.029	NS	NA	9600
Tetrachloroethylene	N.D.	1	N.D.	43	N.D.	0.726	5	NA	1,100
Chlorobenzene	N.D.	2	N.D.	43	N.D.	0.128	100	NA	38
Ethylbenzene	N.D.	1	N.D.	43	N.D.	0.323	700	1800	180
p/m-Xylene (see note)	N.D.	1	N.D.	43	N.D.	0.27	10,000	200	200
Styrene	N.D.	2	N.D.	43	N.D.	0.113	100	2500	250
o-Xylene	N.D.	1	N.D.	43	N.D.	0.114	part of total Xylenes		
1,1,2,2-Tetrachloroethane	N.D.	20	N.D.	43	N.D.	0.015	5	NA	4,000
1,3,5-Trimethylbenzene	N.D.	2	N.D.	43	N.D.	0.272	NS	5400	540
1,2,4-Trimethylbenzene	N.D.	3	N.D.	43	N.D.	0.212	NS	5400	540
1,3-Dichlorobenzene (meta)	N.D.	7	N.D.	43	N.D.	0.108	1	NA	1500
1,2-Dichlorobenzene (ortho)	N.D.	9	N.D.	43	N.D.	0.079	9	780	78
1,4-Dichlorobenzene (para)	N.D.	7	N.D.	43	N.D.	0.099	0.7	NA	310
1,2,4-Trichlorobenzene	N.D.	20	N.D.	43	N.D.	0.058	2	NA	340
HexachloroButadiene	N.D.	5	N.D.	43	N.D.	0.334	6	NA	13

Instrument: HAPSITE ER GC/MS Method: FAST TO-14 Last Calib: 6/22/16. Reporting Limit (R.L.) is lowest calib standard

Quality Control: 4-8 point calib w/ %RSD<30, Internal Stds, daily blank, daily calib check standard R.L= estimated aqueous conc

Headspace procedure involves half-filling a 40 mL vial and shaking it vigorously 30 seconds twice over a minimum 10 minute time period, at about 25°C. Calculated aqueous concentration assumes 75% of equilbrium conditions using Henry's Law.

N.D. = Not Detected K = dimensionless Henry's Law Constant DW = Drinking Water standard NA = Information Not Available

Aquatic Toxicity values from various sources as selected in MassDEP Method 1 Standard calculations for GW-3 (2014)

COMMENTS:

Appendix 2 - Water Data

MassDEP Field Assessment and Support Team (FAST)				SURFACE WATER			RTN:	0
City or Town:	Peabody		Address:	Craig's Pond at Corwin Street				Location:
Date Sampled:	7/13/16	Time:	11:10 AM	Field ID:	W-3	Collector:	Giddings	
Date Analyzed:	7/13/16	Time:	1:02 PM	Lab ID:	005	Analyst:	Fitzgerald	

NOTE - ALL REPORTED VALUES ARE ESTIMATES, BASED UPON HEADSPACE ANALYSIS AND APPLICATION OF HENRY'S LAW

Method Analytes	Est Conc µg/L		Sample	Dilution	Hdspc	K	DW	Aquatic Toxicty µg/L	
	Result	R.L.	ppbV	Factor	ppbV	(25°C)	µg/L	Acute	Chronic
Vinyl Chloride	N.D.	1	N.D.	43	N.D.	1.14	2	400,000	40,000
Chloroethane	N.D.	7	3	43	N.D.	0.275	NS	NA	NA
Trichloromonofluoromethane	N.D.	7	N.D.	43	N.D.	4.51	NS	NA	NA
1,1-Dichloroethene	N.D.	0	N.D.	43	N.D.	0.634	7	12,000	1,200
Methylene Chloride	N.D.	4	N.D.	43	N.D.	0.09	5	NA	6,700
1,1,2-Trichlorotrifluoroethane	N.D.	9	N.D.	43	N.D.	14.34	NS	NA	NA
1,1-Dichloroethane	N.D.	2	N.D.	43	N.D.	0.012	70	NA	990
Cis 1,2-Dichloroethylene	N.D.	3	N.D.	43	N.D.	0.167	70	140,000	14,000
Chloroform	N.D.	2	N.D.	43	N.D.	0.151	70	NA	970
1,2-Dichloroethane	N.D.	6	N.D.	43	N.D.	0.024	5	NA	990
1,1,1-Trichloroethane	N.D.	1	N.D.	43	N.D.	0.705	200	9000	900
Benzene	N.D.	1	N.D.	43	N.D.	0.116	5	4600	460
Carbon Tetrachloride	N.D.	1	N.D.	43	N.D.	1.132	5	2000	200
1,2-Dichloropropane	N.D.	2	N.D.	43	N.D.	0.116	5	NA	25,000
Trichloroethylene	N.D.	1	N.D.	43	N.D.	0.197	5	1900	190
cis-1,3-Dichloropropene	N.D.	1	N.D.	43	N.D.	0.146	NS	90	9
trans-1,3-Dichloropropene	N.D.	1	N.D.	43	N.D.	0.036	NS	90	9
1,1,2-Trichloroethane	N.D.	9	N.D.	43	N.D.	0.034	5	NA	15,000
Toluene	N.D.	1	N.D.	43	N.D.	0.272	1,000	1400	1,400
1,2-Dibromoethane	N.D.	10	N.D.	43	N.D.	0.029	NS	NA	9600
Tetrachloroethylene	N.D.	1	N.D.	43	N.D.	0.726	5	NA	1,100
Chlorobenzene	N.D.	2	N.D.	43	N.D.	0.128	100	NA	38
Ethylbenzene	N.D.	1	N.D.	43	N.D.	0.323	700	1800	180
p/m-Xylene (see note)	N.D.	1	N.D.	43	N.D.	0.27	10,000	200	200
Styrene	N.D.	2	N.D.	43	N.D.	0.113	100	2500	250
o-Xylene	N.D.	1	N.D.	43	N.D.	0.114	part of total Xylenes		
1,1,2,2-Tetrachloroethane	N.D.	20	N.D.	43	N.D.	0.015	5	NA	4,000
1,3,5-Trimethylbenzene	N.D.	2	N.D.	43	N.D.	0.272	NS	5400	540
1,2,4-Trimethylbenzene	N.D.	3	N.D.	43	N.D.	0.212	NS	5400	540
1,3-Dichlorobenzene (meta)	N.D.	7	N.D.	43	N.D.	0.108	1	NA	1500
1,2-Dichlorobenzene (ortho)	N.D.	9	N.D.	43	N.D.	0.079	9	780	78
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HexachloroButadiene	N.D.	5	N.D.	43	N.D.	0.334	6	NA	13

Instrument: HAPSITE ER GC/MS Method: FAST TO-14 Last Calib: 6/22/16. Reporting Limit (R.L.) is lowest calib standard

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Aquatic Toxicity values from various sources as selected in MassDEP Method 1 Standard calculations for GW-3 (2014)

COMMENTS: