

**Countywide Recycling & Disposal Facility
Ambient Air Monitoring
Monthly Report #15
August 20, 2008**

**To Fulfill the Requirements Set Forth in Order 5.A. of the Ohio EPA
Director's Findings and Orders Dated March 28, 2007**

**Republic Services of Ohio II, LLC
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**Countywide Recycling & Disposal Facility
Ambient Air Monitoring
Monthly Report #15
August 20, 2008
Monitoring Events #66 through 70**

1.0 INTRODUCTION

Beginning on Monday May 21, 2007 ambient air sampling is being conducted every six days as mandated by Order 5.A. of the Ohio EPA Director's Findings and Orders dated March 28, 2007. This report covers the analytical results from the following Monitoring Events.

- Event #66: Friday June 20 to Saturday June 21.
- Event #67: Thursday June 26 to Friday June 27.
- Event #68: Wednesday July 2 to Thursday July 3.
- Event #69: Tuesday July 8 to Wednesday July 9.
- Event #70: Monday July 14 to Tuesday July 15.

Air samples were collected over a 24-hour period at four locations: Bolivar Elementary School (School); the cell tower on the Countywide facility (Cell Tower); near the top of the hill at the KOA campground to the northeast of the landfill (Campground); and east of the landfill near the floodgates located on Gracemont, off the Tri-County horse trail (Wetland). (Figure 1). As of the end of July 2008, the Wetland monitoring station has been moved from the temporary location off of Gracemont back to the low-lying area accessible from Dueber Road and will be reflected in the next Monthly Report #16. The normal specified route for trucks entering the Countywide facility is Dueber Road and Gracemont Road through a wetland.

As specified by the Ohio EPA in Bryan Zima's March 28, 2007 letter to Jason Perdion of Baker & Hostetler, air samples were analyzed for the following groups of compounds:

- Volatile Organic Compounds (VOCs): EPA Method TO-15 modified with Tentatively Identified Compounds (TICs)
- Sulfur Compounds: EPA Method TO-15 modified
- Aldehydes and Ketones: EPA Method TO-11A
- Hydrogen Fluoride and Hydrogen Chloride: NIOSH Method 7903

EPA Method TO-15 Modified analyses were performed by Test America Laboratories, Inc. 5815 Middlebrook Pike, Knoxville, TN 37921. EPA Method TO-11A and NIOSH Method 7903 were performed by Integrated Analytical Laboratory (IAL), Randolph, NJ. Certification numbers: ELAP-11402; NJDEP-14751; AIHA-100201.

As a conservative first evaluation, the concentrations of chemicals detected in the air samples were compared to the corresponding USEPA Region 9 Preliminary Remediation Goals (PRGs). The USEPA Region 9 PRG is the concentration of a chemical in the ambient air that is estimated to be without significant risk to a person who would breathe that level of chemical continuously over many decades. The Region 9 PRGs are derived using conservative mathematical formulas and do not represent the level of a chemical in the air (or other environmental media) where health effects are likely to occur. Region 9 PRGs are generally accepted as conservative screening values, such that if the concentration of a chemical in the air is less than the corresponding PRG, most public health officials and regulators are confident that there is no risk to human health. On the other hand, an analytical result that exceeds the corresponding PRG does not mean that there is an unacceptable risk to public health. The chemicals that were detected in these Monitoring Events are commonly found at low levels in ambient air. For some compounds such as benzene, the mathematically-derived Region 9 PRG of 0.25 ug/m³ is lower than the average background concentration of 1.96 ug/m³ in ambient air in Ohio (Ohio EPA, *Portsmouth Ohio Air Quality Study 2003*). Consequently, finding certain chemicals in ambient air at levels above PRGs that are very close to analytical detection limits is not uncommon and may simply reflect fluctuations in background sources. It should be noted that not all of the compounds found in the air samples have corresponding PRGs.

Beginning with this monthly report, analytical results for VOCs will be compared to both the corresponding Region 9 PRG and to the Agency for Toxic Substances & Disease Registry (ATSDR) Acute and Chronic Minimum Risk Levels (MRLs) where available. A MRL is an estimate of the daily human exposure to a hazardous substance that is likely to be without appreciable risk of adverse non-cancer health effects over a specified duration of exposure. Unlike PRGs which address either cancer or non-cancer health effects for a chemical (depending upon which is more conservative, i.e. results in a lower concentration), the ATSDR MRLs do not consider cancer health effects. PRGs and MRLs are useful screening levels that assist risk assessors in identifying those chemicals that may pose a health concern. Neither PRGs nor MRLs represent levels of exposure that have been documented to cause actual health effects.

Chemicals that were detected below PRGs or MRLs will not be discussed unless those particular results help to explain other findings.

Ambient environmental/climate conditions are discussed in Section 2.0. Results of the monitoring are discussed in Section 3.0 and summarized in Section 4.0 of this report. Analytical results from the laboratory are provided in the Appendices.

2.0 AMBIENT CONDITIONS

The descriptions of ambient conditions are taken from the Daily Odor Monitoring Summary compiled by Countywide's consultant, Diversified Engineering.

Event #66, Friday/Saturday June 20/21, 2008:

June 20: Average temperature in degrees F: 66, Max. 80, Min. 51.

Winds were 3 mph with a max speed of 8 mph out of the SSE.

Average relative humidity 67% with 0.01 inches of precipitation recorded.

Complaints: There were no odor complaints during this time.

June 21: Average temperature in degrees F: 70, Max. 84, Min. 55

Winds were 4 mph with max gusts of 36 mph out of the SSW.

Average relative humidity 72% with 0.13 inches of precipitation recorded.

Complaints: A complaint occurred at 9:52am from 3232 Downing Street in East Sparta.

Pump maintenance and Area D toe collector were potentially odor-causing activities noted on the Daily Odor Monitoring Summary.

Event #67, Thursday/Friday June 26/27, 2008:

June 26: Average temperature in degrees F: 78, Max. 89, Min. 68.

Winds were 5 mph with max gusts at 21 mph out of the SW.

Average relative humidity 72% with 2.29 inches of precipitation recorded.

Complaints: There were no odor complaints during this time.

June 27: Average temperature in degree F: 75, Max. 86, Min. 66.

Winds were 3 mph with a max speed of 8 mph out of the SW.

Average relative humidity 76% with 0.01 inches of precipitation recorded.

Complaints: A complaint occurred at 9:06am from 8200 Dueber Avenue in East Sparta.

Temporary cap maintenance and pump maintenance were potentially odor-causing activities noted on the Daily Odor Monitoring Summary.

Event #68: Wednesday/Thursday July 02/03, 2008:

July 02: Average temperature in degrees F: 68, Max. 84, Min. 54.

Winds were calm with max gusts of 16 mph out of the SW..

Average relative humidity 61% with 0.01 inches of precipitation recorded.

Complaints: Complaints occurred at 11:37 from 3232 Downing Street in East Sparta and at 11:55am from 8200 Dueber Avenue in East Sparta. PW-131R drilling and pipeline construction were potentially odor-causing activities noted on the Daily Odor Monitoring Summary.

July 03: Average temperature in degrees F: 70, Max. 77, Min. 66.

Winds were 3 mph with a max speed of 8 mph out of the WSW.

Average relative humidity 73% with 0.33 inches of precipitation recorded.

Complaints: There were no odor complaints during this time.

Event #69: Tuesday/Wednesday July 08/09, 2008:

July 08: Average temperature in degrees F: 78, Max. 90, Min. 66

Winds had max gusts at 33 mph out of the S.

Average relative humidity was 76% with 1.71 inches of precipitation recorded.

Complaints: A complaint occurred at 4:09pm from 3813 Haut Street in East Sparta.

Pump maintenance; pipeline construction; flare #7 maintenance; drilling at PW-359 and

PW-358; and temporary cap repair were potentially odor-causing activities noted on the Daily Odor Monitoring Summary.

July 09: Average temperature in degrees F: 76, Max. 88, Min. 66.

Winds were 1 mph with max speed of 20 mph out of the SW/NW.

Average relative humidity was 75% with 0.10 inches of precipitation recorded.

Complaints: There were no odor complaints during this time.

Event #70, Monday/Tuesday July 14/15, 2008:

July 14: Average temperature in degrees F: 70, Max. 82, Min. 57

Winds were 2 mph with max speed of 17 mph out of the W.

Average relative humidity 66% with no precipitation recorded.

Complaints: Complaints occurred at 9:25am from 8338 Dueber Avenue in East Sparta and at 9:45am from 3232 Downing Street in East Sparta. Pump maintenance; pipeline construction; and drilling of PW-119R and PW-149 were potentially odor-causing activities noted on the Daily Odor Monitoring Summary.

July 15: Average temperature in degrees F: 70, Max. 86, Min. 57.

Winds were 1 mph with a max speed of 7 mph out of the W.

Average relative humidity was 68% with 0.01 inches of precipitation recorded.

Complaints: A complaint occurred at 9:25am from Dueber Avenue, north of Battlesburg Avenue in East Sparta. Pump maintenance; pipeline construction; drilling of PE-142R; and temporary cap repair were a potentially odor-causing activity noted on the Daily Odor Monitoring Summary.

3.0 ANALYTICAL RESULTS

The laboratory analyzed the air samples for a large number of chemicals. Only those results that exceeded Region 9 PRGs and/or ATSDR MRLs will be discussed in the body of this report (see Section 1.0). Other compounds may have been detected in a sample, but were quantified at concentrations below the respective PRG. Analytical results from the laboratory are provided in the Appendices.

3.1 Volatile Organic Compounds

Compounds detected by Method TO-15 modified (TO-15M) are summarized in Tables 1 through 5. TO-15M analyzes air samples collected in a summa canister for the presence of an extensive list of volatile organic compounds. In addition to a "standard analyte" list, we have requested that the laboratory tentatively identify and estimate the concentration of numerous compounds that are not on the "standard" list. These Tentatively Identified Compounds (TICs) include some compounds for which there are other specific analytical methods, such as acetaldehyde which is a target analyte for EPA Method TO-11A (TO-11A). All of the TO-15M analyses presented in this monthly report were performed by Test America. Laboratory data reports are provided in the Appendices. The QA/QC packages from Test America are not included in the Appendices because of their large size but can be made available upon request. L&A's

QA/QC team is in the process of reviewing and validating the data presented in this report. Any unusual findings will be addressed as an addendum.

Event #66, June 20/21, 2008:

Analytical results for TO-15M for Event #66 are summarized in Table 1 and provided in Appendix A. Results exceeding the Region 9 PRG or ATSDR MRL are summarized in the table below.

**Event #66: VOCs Detected Above PRGs
Concentrations in ug/m³**

Compound	Acute MRL	Chronic MRL	PRG	School Upwind/Upwind	Cell Tower Upwind/Upwind	Campground Crosswind/Downwind	Wetland Crosswind/Crosswind
Benzene	28.75	9.58	0.25	1.1	NA	27	0.6J
Carbon tetrachloride	188.02	188.02	0.13	0.53J	0.52J	ND	0.55J
Chloroethane	1032.52	NA	2.3	ND	ND	3.1	ND
Tetrahydrofuran	NA	NA	0.99	0.32J	ND	4.5J	ND
Vinyl chloride	1278.12	76.69	0.11	ND	ND	3.4	ND

Bold indicates result exceeded region 9 PRG

Shading indicates result exceeded ATSDR Minimum Risk Level (MRL)

Laboratory Data Qualifiers

B = Compound was detected in the blank

J = Estimated concentration below laboratory reporting limit

Event #67, June 26/27, 2008:

Analytical results for TO-15M for Event #67 are summarized in Table 2 and provided in Appendix B. Results exceeding the Region 9 PRG or ATSDR MRL are summarized in the table below.

**Event #67: VOCs Detected Above PRGs
Concentrations in ug/m³**

Compound	Acute MRL	Chronic MRL	PRG	School Upwind/Upwind	Cell Tower Upwind/Upwind	Campground Downwind/Downwind	Wetland Crosswind/Crosswind
Benzene	28.75	9.58	0.25	2.1	11	180	1.3
1,3-Butadiene	NA	NA	0.061	ND	4.5J	3.9J	ND
Carbon tetrachloride	188.02	188.02	0.13	0.51J	ND	ND	0.48J
Chloroethane	1032.52	NA	2.3	0.34J	22	38	0.4J
Tetrahydrofuran	NA	NA	0.99	1.3J	11J	7.6J	0.96JB
1,2,4-Trimethylbenzene	NA	NA	6.2	2.3	6.6J	ND	4.0
Vinyl chloride	1278.12	76.69	0.11	ND	7.1J	14.0	ND

Bold indicates result exceeded Region 9 PRG

Shading indicates result exceeded ATSDR Minimum Risk Level (MRL)

Laboratory Data Qualifiers:

B = Compound was detected in the blank

J = Estimated concentration below laboratory reporting limit

Event #68, July 02/03, 2008:

Analytical results for TO-15M for Event #68 are summarized in Table 3 and provided in Appendix C. Results exceeding the Region 9 PRG or ATSDR MRL are summarized in the table below.

**Event #68: VOCs Detected Above PRGs
Concentrations in ug/m³**

Compound	Acute MRL	Chronic MRL	PRG	School Upwind/Upwind	Cell Tower Upwind/Upwind	Campground Downwind/Downwind	Wetland Crosswind/Crosswind
Benzene	28.75	9.58	0.25	0.44J	59	10	9.2
Carbon tetrachloride	188.02	188.02	0.13	0.48J	ND	ND	ND
Chloroethane	1032.52	NA	2.3	0.28J	16	11	6.8
Tetrachloroethene	1356.48	271.3	0.32	0.32J	ND	ND	ND
Tetrahydrofuran	NA	NA	0.99	ND	ND	ND	4.6J
Vinyl chloride	1278.12	76.69	0.11	ND	12	8.8	ND

Bold indicates result exceeded Region 9 PRG

Shading indicates result exceeded ATSDR Minimum Risk Level (MRL)

Laboratory Data Qualifiers:

B = Compound was detected in the blank

J = Estimated concentration below laboratory reporting limit

Event #69, July 08/09, 2008:

Analytical results for TO-15M for Event #69 are summarized in Table 4 and provided in Appendix D. Results exceeding the Region 9 PRG or ATSDR MRL are summarized in the table below.

**Event #69: VOCs Detected Above PRGs
Concentrations in ug/m³**

Compound	Acute MRL	Chronic MRL	PRG	School* Upwind/Upwind & Crosswind	Cell Tower Upwind/Upwind & Crosswind	Campground Crosswind/Downwind & Crosswind	Wetland Crosswind/Crosswind
Benzene	28.75	9.58	0.25	3.8	0.77J	0.67	1.4
1,3-Butadiene	NA	NA	0.061	ND	0.99J	0.59J	ND
Carbon tetrachloride	188.02	188.02	0.13	ND	ND	0.35J	0.37J
Chloroform	488.26	97.65	0.083	ND	ND	0.19J	ND
Chloroethane	1032.52	NA	2.3	1.9J	3.1	1.3	0.57
Tetrahydrofuran	NA	NA	0.99	1.7J	0.52J	ND	0.21J
Vinyl chloride	1278.12	76.69	0.11	ND	1.4	0.76	ND

*The laboratory noted that this sample was received with the canister valve in the open position. The sample integrity could have been jeopardized due to changes in ambient pressure after the sample was taken. This would have potentially added, not subtracted air from the canister.

Bold indicates result exceeded Region 9 PRG

Shading indicates result exceeded ATSDR Minimum Risk Level (MRL)

Laboratory Data Qualifiers:

B = Compound was detected in the blank

J = Estimated concentration below laboratory reporting limit

Event #70, July 14/15, 2008:

Analytical results for TO-15M for Event #70 are summarized in Table 5 and provided in Appendix E. Results exceeding the Region 9 PRG or ATSDR MRL are summarized in the table below.

**Event #70: VOCs Detected Above PRGs
Concentrations in ug/m³**

Compound	Acute MRL	Chronic MRL	PRG	School		Cell Tower			Campground			Wetland			
				Crosswind/Crosswind			Upwind & Crosswind/Upwind & Crosswind			Crosswind/Crosswind			Downwind/Downwind		
Benzene	28.75	9.58	0.25	3.8			0.77J			0.67			1.4		
1,3-Butadiene	NA	NA	0.061	ND			0.99J			0.59J			ND		
Carbon tetrachloride	188.02	188.02	0.13	ND			ND			0.35J			0.37J		
Chloroform	488.26	97.65	0.083	ND			ND			0.19J			ND		
Tetrahydrofuran	NA	NA	0.99	1.7J			0.52J			ND			0.21J		
Vinyl chloride	1278.12	76.69	0.11	ND			1.4			0.76			ND		

Bold indicates result exceeded Region 9 PRG

Shading indicates result exceeded ATSDR Minimum Risk Level (MRL)

Laboratory Data Qualifiers:

B = Compound was detected in the blank

J = Estimated concentration below laboratory reporting limit

3.2 Sulfur Compounds

Carbon disulfide was the only sulfur compound detected during the five rounds of sampling reviewed in this report. All detections were extremely low concentrations and are included on the TO-15M Summary Tables.

3.3 Aldehydes and Ketones

In order to obtain a continuous 24 hours of data, three separate gel collection tubes were sequentially exposed to ambient air for a period of approximately 8-hours each. Consequently there are three separate sample results for each location for each monitoring event. Analysis for aldehydes and ketones by TO-11A was performed by Integrated Analytical Laboratories.

Event #66, June 20/21, 2008:

Analytical results for aldehydes are summarized below. Formaldehyde was detected in one or more of the three samples from all monitoring locations except the Wetland.

Acetaldehyde was not detected in any sample. Analytical results are in Appendix A.

**Event #66: Aldehydes
Concentrations in ug/m³**

Aldehyde	PRG	School			Cell Tower			Campground			Wetland		
		Upwind/Upwind			Upwind/Upwind			Crosswind/Downwind			Crosswind/Crosswind		
		1	2	3	1	2	3	1	2	3	1	2	3
Formaldehyde	0.15	0.23	0.22	ND	0.29	0.26	0.33	ND	0.21	ND	ND	ND	ND

Event #67, June 26/27, 2008:

Analytical results for aldehydes are summarized below. Formaldehyde was detected in one or more of the three sample tubes from all four monitoring locations at a level above the Region 9 PRG. No acetaldehyde was detected in any of the samples analyzed by TO-11A. Analytical results are in Appendix B.

**Event #67: Aldehydes
Concentrations in ug/m³**

Aldehyde	PRG	School			Cell Tower			Campground			Wetland		
		Upwind/Upwind			Upwind/Upwind			Downwind/Downwind			Crosswind/Crosswind		
		1	2	3	1	2	3	1	2	3	1	2	3
Formaldehyde	0.15	ND	ND	ND	0.27	ND	0.88	ND	ND	0.80*	ND	ND	0.63

*Break through from front to back of sorbent tube (i.e. 10% or more of the mass of the compound found in the front section of the tube was detected in the back section of the tube).

Event #68, July 02/03, 2008:

Formaldehyde was detected in one or more of the three sample tubes from all four monitoring locations at levels above the Region 9 PRG. No acetaldehyde was detected in any of the samples analyzed by TO-11A. Analytical results are in Appendix C.

**Event #68: Aldehydes
Concentrations in ug/m³**

Aldehyde	PRG	School			Cell Tower			Campground			Wetland		
		Upwind/Upwind			Upwind/Upwind			Downwind/Downwind			Crosswind/Crosswind		
		1	2	3	1	2	3	1	2	3	1	2	3
Formaldehyde	0.15	ND	ND	0.50	0.24	ND	0.58	0.23	ND	0.42	ND	ND	0.41

Event #69, July 08/09, 2008:

Formaldehyde was detected in one or more of the three sample tubes from all four monitoring locations at levels above the Region 9 PRG. No acetaldehyde was detected in any of the samples analyzed by TO-11A. Analytical results are in Appendix D.

**Event #69: Aldehydes
Concentrations in ug/m³**

Aldehyde	PRG	School			Cell Tower			Campground			Wetland		
		Upwind/Upwind & Crosswind			Upwind/Upwind & Crosswind			Crosswind/Downwind & Crosswind			Crosswind/Crosswind		
		1	2	3	1	2	3	1	2	3	1	2	3
Formaldehyde	0.15	2.6*	0.79	1.4*	0.54*	1.1*	1.7*	0.25	ND	ND	3.8*	1.1*	2.8*

*Break through from front to back of sorbent tube (i.e. 10% or more of the mass of the compound found in the front section of the tube was detected in the back section of the tube).

** Field blank was ND for all analytes

Event #70, July 14/15, 2008:

Analytical results for formaldehyde are summarized below. No acetaldehyde was detected in any of the samples analyzed by TO-11A. Analytical results are in Appendix E.

**Event #70: Aldehydes
Concentrations in ug/m³**

Aldehyde	PRG	School Crosswind/Crosswind			Cell Tower Upwind & Crosswind/Upwind & Crosswind			Campground Crosswind/Crosswind			Wetland Downwind/Downwind		
		1	2	3	1	2	3	1	2	3	1	2	3
Formaldehyde	0.15	0.46***	0.29	0.21	0.33	0.54*	0.42	0.79*	0.25	0.83*	0.50*	ND	0.29

*Denotes breakthrough from the front to the back of the sorbent tube (i.e. 10% or more of the mass of the compound found in the front section of the tube was detected in the back section of the tube).

**Field blank (C071408A-A) was found to be cracked upon arrival at the laboratory. No aldehydes were found in the field blank.

***All of the formaldehyde was found in the back portion of the sorbent tube.

3.4 Hydrogen Chloride and Hydrogen Fluoride

As with the aldehyde and ketone samples, three separate gel collection tubes were sequentially exposed to ambient air for a period of approximately 8-hours each. Consequently there are three separate sample results for each location for each monitoring event. The concentrations of HF and HCl in the air are quantified based on the mass of fluoride and chloride ion captured on the gel inside the tubes and the volume of air that was passed through the tube.

Analytical results for sampling events #66 through #70 are summarized below. All detected concentrations were very low and did not approach levels of potential concern.

Event #66, June 20/21, 2008 and Event #67, June 26/27, 2008:

Hydrogen fluoride was not detected in any of the samples from any of the four locations. Hydrogen chloride not was detected any of the samples from any of the four locations. Analytical results are in Appendix A.

Event #68, July 02/03, 2008:

Hydrogen fluoride was detected in the second and third tubes from the Cell Tower location at levels just above the detection limits (1.3 and 1.3 ug/m³), but not in any of the other samples from the four locations. Hydrogen chloride not was detected any of the samples from any of the four locations. Analytical results are in Appendix C.

Event #69, July 08/09, 2008:

Hydrogen fluoride was not detected in any of the samples from any of the four locations. Hydrogen chloride was detected in the second tube from the school (1.5 ug/m³) and from

the second tube at the wetland (1.2 ug/m³), but not in any other sample from any of the four locations. A trip blank was collected during this round of sampling and had no detectable levels of either HF or HCl. Analytical results are in Appendix D.

Event #70, July 14/15, 2008:

Hydrogen fluoride was detected in all three tubes from the school (1.3, 1.4 and 1.8 ug/m³); in the third tube from the campground (1.8 ug/m³); the third tube from the wetland (1.6 ug/m³); and the second tube from the cell tower (1.3 ug/m³). A field blank (C071408A-H) was submitted and found to contain 1.5ug/m³ HF, but this tube was cracked and the results are not considered reliable. Hydrogen chloride was not detected in any of the samples from any of the four locations. Analytical results are in Appendix E.

4.0 SUMMARY

4.1 Volatile Organic Compounds

The following VOCs were detected at concentrations above the respective Region 9 PRGs in one or more of the samples summarized in this report: benzene, 1,3-butadiene, carbon tetrachloride, chloroethane, chloroform, chloromethane, tetrahydrofuran, 1,2,4-trimethylbenzene, and vinyl chloride. Benzene was detected at a concentration exceeding the ATSDR Chronic MRL in the following samples: the Campground during Event #66; the Cell Tower during Event #67; and the Cell Tower and Wetland during Events #68 & 69. The concentration of benzene measured at the Campground during Event #67 and the Cell Tower during Event # 68 exceeded the ATSDR Acute MRL.

It should be noted that for all of the compounds that were measured at concentrations (or estimated concentrations as designated by a "J" qualifier) above the Region 9 PRGs, the PRG value is either very near or in some cases below the reporting limit for the analytical laboratory. Consequently almost any quantifiable detection of the chemical will exceed the highly conservative Region 9 PRG. The ATSDR MRLs provide a more realistic basis of comparison since all of the MRLs are above the range of laboratory reporting limits for those compounds that have MRLs.

With the possible exception of those results that exceeded the ATSDR Acute MRL, all of the benzene concentrations measured during the monitoring events were within the range of background or were likely influenced by vehicle emissions. For example lawn mowing, emissions from the heavy equipment working on the nearby expansion area of the landfill and emissions from motor vehicles near the monitoring equipment may have contributed to these results.

The laboratory (Test America) noted that the valve was open on the canister taken from the School on July 8/9 (Event #69) when it arrived at the laboratory. Changes in ambient pressure could have presented an opportunity for air not associated with the sampling event at the school to enter the canister. This could have added, but not subtracted air from the canister. However, review of the data from the school for Event #69 suggests that these results are very similar to the other three locations and consistent with previous findings.

Based on prevailing winds from the SW, the campground monitor would have been downwind with respect to the landfill for all or part of the time during Events #66, 67, 68, and 69. However, as in the past prevailing wind direction does not appear to be reliably associated with levels of benzene detected at the community monitoring locations. The concentrations of benzene found at the Campground were not consistently higher than the other three locations during those Events when the campground was downwind (at least part of the time).

4.2 Aldehydes (Carbonyl Compounds)

As in previous rounds of sampling, low levels of formaldehyde were occasionally detected. Acetaldehyde was not detected by Method TO-11A in any of the five rounds of sampling presented in this monthly report. There were several instances of breakthrough from the front to the back of the sorbent tubes, which presents some uncertainty in interpreting the results.

There were no apparent differences in the concentrations of formaldehyde found upwind as opposed to downwind with respect to the landfill. It is likely that the low concentrations of formaldehyde simply reflect regional air quality, have numerous sources and are not related to emissions from the landfill.

4.3 Hydrogen Fluoride and Hydrogen Chloride

Low concentrations of these two inorganic acids were found sporadically. However, the analytical laboratory noted that many of the samples had issues with breakthrough. This sampling method is particularly sensitive to moisture and we have frequently had unreliable results related to breakthrough from the front to the back of the sorbent tubes. The occasional low levels of HF and HCl detected in the ambient air do not present a risk to public health and are not clearly related to any single source.

4.4 Laboratory Issues

All of the Method TO-15 analyses presented in this report were performed by Test America Laboratories. Several differences are apparent when comparing Test America to Integrated Analytical with regard to reporting format. The TO-15 target analyte list differs slightly between the two laboratories. For example, tetrahydrofuran is a target analyte for Test America, but is reported as a TIC by Integrated Analytical. On the other hand, Integrated Analytical typically reports and quantifies a greater number of TICs than Test America. Test America displays data-qualifiers on their reports, while Integrated Analytical typically does not. Methylene chloride was clearly identified as a laboratory contaminant by Test America, supporting our earlier suspicions that the sporadic detections of this compound over the past year are at least in part attributable to laboratory artifact.

As a part of our investigation into the anomalous benzene results reported from the campground location in our previous Monthly Report #14, Earth Tech conducted an extensive data validation of the suspect results from both Test America and Integrated

Analytical. Their findings did not uncover any irregularities in the laboratory procedures (for either laboratory) that would invalidate the results as reported. The Earth Tech QA/QC officer discussed his evaluation in the August 1, 2008 conference call in which both Ohio EPA and USEPA participated.

Starting in early August, we began making modifications to identify and eliminate sources of uncertainty potentially associated with the physical attributes of the sampling apparatus. We will provide more discussion of these modifications and any potential effect on the analytical results in the next monthly report.

Integrated Analytical will continue to perform the analyses for Method TO-11A (carbonyl compounds) and hydrogen fluoride-hydrogen chloride.

4.5 Conclusion

The analytical results from the five monitoring Events summarized in this Monthly Report #15 indicate the presence of very low levels of a number of VOCs-many of which are related to petroleum fuels. Many of the compounds were found at similar levels in both upwind and downwind locations. Our conclusions are summarized below:

- Low levels of a number of VOCs are frequently reported and may be representative of a number of local and regional sources such as: motor vehicle traffic on I-77, on the roadways surrounding the landfill and at the Bolivar Elementary School; local industries and commercial operations; coal mining and oil and gas wells; the Marathon refinery on the south side of Canton; and the landfill.
- There are no clear trends with regard to the specific compounds or the concentrations of those compounds detected with respect whether the monitoring location was upwind or downwind of the landfill during the monitoring event.
- Sporadic detections of what appear to be anomalously high concentrations of benzene continue, although the number of anomalies that occurred during late June through mid-July had declined from the immediately preceding month. It is too early to determine if this is genuinely a trend towards declining frequency of anomalous benzene results.
- We are continuing to evaluate our monitoring protocols and equipment to identify potential sources of variability that may have contributed to previous anomalously high concentrations of benzene.

**Countywide Recycling & Disposal Facility
Ambient Air Monitoring
Monthly Report #15**

August 20, 2008

EPA Method TO-15 SUMMARY TABLES

Countywide Recycling & Disposal Facility										
EPA Method TO-15 Modified: Volatile Organic Compounds										
Table 1: Event #66 June 20/21, 2008										
Analyte	Acute MRL	Chronic MRL	PRG	School Upwind/Upwind	Cell Tower Upwind/Upwind	Monitoring Location		Wetland Crosswind/Cross wind		
						Campground Crosswind/Downwi nd				
All results in ug/m3										
Method TO-15 Modified										
Acetone	61761.96	30880.98	3300	10J	57	260		7.3J		
Benzene	28.75	9.58	0.25	1.1	ND	27		0.6J		
Bromomethane	194.17	19.42	5.2	ND	0.33J	ND		ND		
tert-Butyl alcohol	NA	NA	NA	0.79J	ND	94		0.3J		
Carbon disulfide	NA	933.74	730	0.89J	0.1J	ND		0.2J		
Carbon tetrachloride	188.02	188.02	0.13	0.53J	0.52J	ND		0.55J		
Chloroethane	39582.82	NA	2.3	ND	ND	3.1		ND		
Chloromethane	1032.52	103.25	95	1.1	1.1	11		1.0		
Cyclohexane	NA	NA	6200	0.31J	0.14J	6.7J		0.25J		
Dichlorodifluoromethane	NA	NA	210	2.3	2.3	3.2J		2.3		
Ethylbenzene	43419.22	1302.58	1100	1.9	ND	3.6		1.0		
4-Ethyltoluene	NA	NA	NA	1.9J	ND	ND		0.95J		
Heptane	NA	NA	NA	1.8J	0.65J	34		1.3J		
Hexane	NA	2114.85	210	0.85J	0.51J	8.0		0.85J		
Methyl ethyl ketone	NA	NA	5100	1.3J	10	42		1.1J		
Methyl isobutyl ketone	NA	NA	3100	0.34J	1.1J	2.5J		0.2J		
Methylene chloride	2084.17	1042.09	4.1	1.5JB	ND	9.0B		1.6JB		
Styrene	8520.25	852.02	1100	0.29J	ND	ND		ND		
Tetrahydrofuran	NA	NA	0.99	0.32J	ND	4.5J		ND		
Toluene	3768.1	301.45	400	6.1	1.7	22		3.5		
1,1,2-Trichloro-1,2,2-trifluoroethane	NA	NA	NA	0.57J	0.58J	ND		0.55J		
Trichlorofluoromethane	NA	NA	730	1.2	1.2	1.3J		1.2		
1,2,4-Trimethylbenzene	NA	NA	6.2	6	0.35J	4.8		2.6		
1,3,5-Trimethylbenzene	NA	NA	6.2	1.5	ND	ND		0.67J		
2,2,4-Trimethylpentane	NA	NA	NA	.5J	ND	1.3J		ND		
Vinyl Chloride	1278.12	76.69	0.11	ND	ND	3.4		ND		
m/p-Xylene	8687.12	8687.12	110	7.1	0.87	12		3.9		

Analyte	Monitoring Location			
	School Upwind/Upwind	Cell Tower Upwind/Upwind	Campground Crosswind/Downwind	Wetland Crosswind/Crosswind
All results in ug/m3				
Tentatively Identified Compounds				
Acetaldehyde	NA	0.87	ND	ND
Heptane, 3-methylene	NA	NA	ND	ND
1-Hexene	NA	NA	Y	ND
1R- .alpha. -Pinene	NA	NA	Y	ND
1-Propene-2-methyl	NA	NA	Y	ND
			2 Unknowns	
ND = Not Detected				
NA = Not Available				
Bold indicates result exceeds Region 9 PRG				
Shading indicates result exceeds ATSDR MRL				
Laboratory Data Qualifiers:				
B = Compound present in blank				
J = Estimated concentration below laboratory reporting limit				
D = Dilution				
E = Exceeds calibration range of instrument				
TICs: Compound has been tentatively identified but the estimated concentration is highly uncertain.				

Countywide Recycling & Disposal Facility

EPA Method TO-15 Modified: Volatile Organic Compounds

Table 2: Event #67 June 26/27, 2008

Analyte	Monitoring Location			PRG	All results in ug/m3		
	School Upwind/Upwind	Cell Tower Upwind/Upwind	Campground Downwind/Downwind		Wetland Crosswind/Crosswind		
Method TO-15 Modified	Acute MRL	Chronic MRL	PRG				
Acetone	61761.96	30880.98	3300	71	820	1400	57
Benzene	28.75	9.58	0.25	2.1	11	180	1.3
Bromomethane	194.17	19.42	5.2	ND	ND	ND	ND
1,3-Butadiene	NA	NA	0.061	ND	4.5J	3.9J	ND
tert-Butyl alcohol	NA	NA	NA	27	180	220	5.8J
Carbon disulfide	NA	933.74	730	0.2J	1.9J	3.2J	0.52J
Carbon tetrachloride	188.02	188.02	0.13	0.51J	ND	ND	0.48J
Chloroethane	39582.82	NA	2.3	0.34J	22	38	0.4J
Chloroform	488.28	97.65	0.083	ND	ND	ND	ND
Chloromethane	1032.52	103.25	95	2.8	48	45	2.7
Cyclohexane	NA	NA	6200	0.85J	ND	ND	0.57J
Dichlorodifluoromethane	NA	NA	210	2.8	ND	ND	2.9
Ethylbenzene	43419.22	1302.58	1100	2.0	6.6J	5.6J	2.5
4-Ethyltoluene	NA	NA	NA	0.81J	ND	ND	1.7J
Heptane	NA	NA	NA	4.4	65	160	3.6
Hexane	NA	2114.85	210	2.5	21J	28J	3.2
Methyl ethyl ketone	NA	NA	5100	9.6	160	340	8.3
Methyl isobutyl ketone	NA	NA	3100	0.87J	7.1J	14.0J	2.8
Methylene chloride	2084.17	1042.09	4.1	1.2JB	10JB	21.0JB	0.96JB
Styrene	8520.25	852.02	1100	ND	ND	ND	ND
Tetrahydrofuran	NA	NA	0.99	1.3J	11J	7.6J	0.96JB
Tetrachloroethene	1356.48	271.30	0.32	ND	ND	ND	5.6
Toluene	3768.10	301.45	400	8.5	46	39	9.4
1,1,1-Trichloroethane	10912.07	3819.22	2300	ND	ND	ND	ND
1,1,2-Trichloro-1,1,2-trifluoroethane	NA	NA	NA	0.54J	ND	ND	0.53J
Trichlorofluoromethane	NA	NA	730	1.2	3.5J	2.9J	1.2
1,2,4-Trimethylbenzene	NA	NA	6.2	2.3	6.6J	ND	4.0
1,3,5-Trimethylbenzene	NA	NA	6.2	0.66J	ND	ND	1.2
2,2,4-Trimethylpentane	NA	NA	NA	0.42J	ND	ND	0.34J
Vinyl Chloride	1278.12	76.69	0.11	ND	7.1J	14.0	ND
m/p-Xylene	8687.12	8687.12	110	7.3	21	18.0	8.3
o-Xylene	8687.12	8687.12	110	2.3	6.8J	5.8J	3.1

Countywide Recycling & Disposal Facility									
EPA Method TO-15 Modified: Volatile Organic Compounds									
Table 3: Event #68 July 02/03, 2008									
Analyte	Acute MRL	Chronic MRL	PRG	School	Cell Tower	Monitoring Location		Wetland	Crosswind/Crosswind
						Upwind/Upwind	Upwind/Upwind		
All results in ug/m3									
Method TO-15 Modified	Acute MRL	Chronic MRL	PRG						
Acetone	61761.96	30880.98	3300	40	890	670		820	
Benzene	28.75	9.58	0.25	0.44J	59	10		9.2	
Bromomethane	194.17	19.42	5.2	ND	ND	3.1J		ND	
tert-Butyl alcohol	NA	NA	NA	4J	110	110		90	
Carbon disulfide	NA	933.74	730	ND	ND	ND		ND	
Carbon tetrachloride	188.02	188.02	0.13	0.48J	ND	ND		ND	
Chloroethane	39582.82	NA	2.3	0.28J	16	11		6.8	
Chloroform	488.26	97.65	0.083	ND	ND	ND		ND	
Chloromethane	1032.52	103.25	95	2.2	26	28		7.9J	
Cyclohexane	NA	NA	NA	ND	ND	ND		ND	
Dichlorodifluoromethane	NA	NA	210	2.5	3.5J	3.4J		3.6J	
Ethylbenzene	43419.22	1302.58	1100	ND	ND	ND		6.5J	
Heptane	NA	NA	NA	0.74J	79	82		29	
Hexane	NA	2114.85	210	0.57J	13J	38		12J	
Methyl ethyl ketone	NA	NA	5100	3.8	130	67		ND	
Methyl isobutyl ketone	NA	NA	3100	ND	3J	ND		4.4J	
Methylene chloride	2084.17	1042.09	4.1	2B	5.7JB	5.7JB		5.2JB	
Tetrachloroethene	1356.48	271.3	0.32	0.32J	ND	ND		ND	
Tetrahydrofuran	NA	NA	0.99	ND	ND	ND		4.6J	
Toluene	3768.1	301.45	400	1.7	10	18		40	
1,1,2-Trichloro-1,2,2-trifluoroethane	NA	NA	NA	0.61J	ND	ND		ND	
Trichlorofluoromethane	NA	NA	730	1.3	1.4J	2.8J		1.9J	
1,2,4-Trimethylbenzene	NA	NA	6.2	0.43J	ND	ND		4.6J	
1,3,5-Trimethylbenzene	NA	NA	6.2	ND	ND	ND		ND	
Vinyl Chloride	1278.12	76.69	0.11	ND	12	8.8		ND	
m/p-Xylene	8687.12	8687.12	110	0.73J	ND	ND		19	
o-Xylene	8687.12	8687.12	110	0.32J	ND	ND		5.9J	

Countywide Recycling & Disposal Facility

EPA Method TO-15 Modified: Volatile Organic Compounds

Table 4: Event #69 July 8/9, 2008

Analyte	Monitoring Location				Wetland Crosswind/Crosswind		
	School Upwind/Up & Cross	Cell Tower Upwind/Up & Cross	Campground Crosswind/Down & Cross				
	All results in ug/m3						
Method TO-15 Modified	Acute MRL	Chronic MRL	PRG				
Acetone	61761.96	30880.98	3300	50	390	19	170
Benzene	28.75	9.58	0.25	1.4	8.9	0.66	14
1,3-Butadiene	NA	NA	0.061	ND	1.6J	ND	ND
tert-Butyl alcohol	NA	NA	NA	0.71J	190	ND	36J
Carbon disulfide	NA	933.74	730	0.29J	1.1J	0.12J	4.2J
Carbon tetrachloride	188.02	188.02	0.13	0.5J	ND	0.42J	ND
Chloroform	488.26	97.65	0.083	0.38J	ND	0.21J	ND
Chloroethane	39582.82	NA	2.3	ND	6.7	ND	3.4J
Chloromethane	1032.52	103.25	95	1.8	11	1.3	4.4J
Cyclohexane	NA	NA	NA	0.52J	7.9J	ND	9.9J
Dichlorodifluoromethane	NA	NA	210	6.3	ND	2.4	ND
Ethylbenzene	43419.22	1302.58	1100	0.69J	ND	ND	ND
Heptane	NA	NA	NA	0.82J	170	0.52J	25
Hexane	NA	2114.85	210	1.9	38	0.8J	4.3J
Methyl ethyl ketone	NA	NA	5100	6.6	100	2.9J	36
Methyl isobutyl ketone	NA	NA	3100	0.34J	5.6J	0.26J	2.4J
Methylene chloride	2084.17	1042.09	4.1	8.6B	7.7JB	2.9B	6.6JB
Tetrahydrofuran	NA	NA	0.99	0.71J	3.2J	ND	ND
Toluene	3768.1	301.45	400	9.8	15	1.1	4.9J
Trichlorofluoromethane	NA	NA	730	1.3	ND	1.5	ND
1,1,1-Trichloroethane	10912.07	3819.22	2300	0.51J	ND	ND	ND
1,1,2-Trichloro-1,2,2-trifluoroethane	NA	NA	NA	0.58J	ND	0.64J	ND
1,2,4-Trimethylbenzene	NA	NA	6.2	0.96J	ND	ND	ND
2,2,4-Trimethylpentane	NA	NA	NA	0.45J	ND	ND	ND
m/p-Xylene	8687.12	8687.12	110	2	8.6	ND	ND
o-Xylene	8687.12	8687.12	110	0.77J	3.2J	ND	ND

Countywide Recycling & Disposal Facility

EPA Method TO-15 Modified: Volatile Organic Compounds

Table 5: Event #70 July 14/15, 2008

Analyte	Monitoring Location			PRG
	School Crosswind/Crosswind	Cell Tower Upwind & Crosswind	Campground Crosswind/Crosswind	
Method TO-15 Modified	Acute MRL	Chronic MRL	PRG	
Acetone	61761.96	30880.98	3300	
Benzene	28.75	9.58	0.25	39
Bromomethane	194.17	19.42	5.2	1.4
1,3-Butadiene	NA	NA	0.061	ND
tert-Butyl alcohol	NA	NA	NA	ND
Carbon disulfide	NA	933.74	730	4.9J
Carbon tetrachloride	188.02	188.02	0.13	0.32JB
Chloroethane	39582.82	NA	2.3	0.37J
Chloroform	488.26	97.65	0.083	0.57
Chloromethane	1032.52	103.25	95	ND
Cyclohexane	NA	NA	6200	1.7
Dichlorodifluoromethane	NA	NA	210	0.77J
Ethylbenzene	43419.22	1302.58	1100	2.1
4-Ethyltoluene	NA	NA	NA	0.38J
Heptane	NA	NA	NA	0.47J
Hexane	NA	2114.85	210	3.6
Methyl ethyl ketone	NA	NA	5100	2.5
Methyl isobutyl ketone	NA	NA	3100	9.1
Methylene chloride	2084.17	1042.09	4.1	0.62J
Tetrahydrofuran	NA	NA	0.99	0.82JB
Toluene	3768.1	301.45	400	0.21J
Trichlorofluoromethane	NA	NA	730	1.5
1,1,2-Trichloro-1,2,2-trifluoroethane	NA	NA	NA	0.98J
1,2,4-Trimethylbenzene	NA	NA	6.2	0.47J
2,2,4-Trimethylpentane	NA	NA	NA	0.48J
Vinyl chloride	1278.12	76.69	0.11	ND
m/p-Xylene	8687.12	8687.12	110	1.4
o-Xylene	8687.12	8687.12	110	0.79J
				0.3J
				0.58J

All results in ug/m3

Tentatively Identified Compounds									
Butanal	NA	NA	NA	Y	Y	ND	ND	ND	ND
1-Butene	NA	NA	NA	ND	ND	Y	Y	ND	ND
2-Butene	NA	NA	NA	ND	ND	ND	ND	ND	ND
Cyclopropane, ethyl-	NA	NA	NA	ND	Y	Y	Y	ND	ND
Heptane, 3-methylene	NA	NA	NA	Y	Y	ND	ND	Y	Y
1-Hexene	NA	NA	NA	ND	Y	ND	ND	ND	ND
Hexanal	NA	NA	NA	ND	ND	ND	ND	Y	Y
Pentane	NA	NA	NA	ND	ND	Y	Y	ND	ND
1-Pentene,2-methyl	NA	NA	NA	ND	Y	ND	ND	ND	ND
1-Propene, 2-methyl-	NA	NA	NA	Y	Y	Y	Y	Y	Y
				3 Unknown	3 Unknown	4 Unknown	4 Unknown	2 Unknown	2 Unknown
ND = Not Detected									
NA = Not Available									
Bold indicates result exceeds Region 9 PRG									
Shading indicates result exceeds ATSDR MRL									
Laboratory Data Qualifiers									
B = Compound was present in the trip blank									
J = Estimated concentration below laboratory reporting limit									
D = Dilution									
E = Exceeds calibration range of instrument									
TICs: Compound has been tentatively identified but the estimated concentration is highly uncertain.									