

**Countywide Recycling & Disposal Facility  
Ambient Air Monitoring  
Monthly Report #27  
August 20, 2009**

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

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**Countywide Recycling & Disposal Facility  
Ambient Air Monitoring  
Monthly Report #27**

**Monitoring Events #127 through #131**

**August 20, 2009**

**TABLE OF CONTENTS**

<b>1.0 INTRODUCTION</b>	<b>1</b>
<b>1.1 Current Activities</b>	<b>1</b>
<b>1.2 Background</b>	<b>1</b>
<b>2.0 AMBIENT CONDITIONS</b>	<b>3</b>
<b>3.0 ANALYTICAL RESULTS</b>	<b>4</b>
<b>3.1 Volatile Organic Compounds</b>	<b>5</b>
<b>3.2 Sulfur Compounds</b>	<b>7</b>
<b>3.3 Aldehydes</b>	<b>7</b>
<b>3.4 Hydrogen Chloride and Hydrogen Fluoride</b>	<b>9</b>
<b>4.0 SUMMARY</b>	<b>11</b>
<b>4.1 Volatile Organic Compounds</b>	<b>11</b>
<b>4.2 Aldehydes</b>	<b>12</b>
<b>4.3 Hydrogen Chloride and Hydrogen Fluoride</b>	<b>12</b>
<b>4.4 Laboratory Issues</b>	<b>13</b>
<b>4.5 Conclusions</b>	<b>13</b>

**LIST OF TABLES**

<b>Table 1. Event #127 Sunday June 21 to Monday June 22: VOCs Detected Above PRGs</b>
<b>Table 2. Event #128 Saturday June 27 to Sunday June 28: VOCs Detected Above PRGs</b>
<b>Table 3. Event #129 Friday July 3 to Saturday July 4: VOCs Detected Above PRGs</b>
<b>Table 4. Event #130 Thursday July 9 to Friday July 10: VOCs Detected Above PRGs</b>
<b>Table 5. Event #131 Wednesday July 15 to Thursday July 16: VOCs Detected Above PRGs</b>
<b>Table 6. Event #127 Sunday June 21 to Monday June 22: Aldehydes</b>
<b>Table 7. Event #128 Saturday June 27 to Sunday June 28: Aldehydes</b>
<b>Table 8. Event #129 Friday July 3 to Saturday July 4: Aldehydes</b>
<b>Table 9. Event #130 Thursday July 9 to Friday July 10: Aldehydes</b>
<b>Table 10. Event #131 Wednesday July 15 to Thursday July 16: Aldehydes</b>
<b>Table 11. Event #127 Sunday June 21 to Monday June 22: Inorganic Acids</b>
<b>Table 12. Event #128 Saturday June 27 to Sunday June 28: Inorganic Acids</b>
<b>Table 13. Event #129 Friday July 3 to Saturday July 4: Inorganic Acids</b>
<b>Table 14. Event #130 Thursday July 9 to Friday July 10: Inorganic Acids</b>
<b>Table 15. Event #131 Wednesday July 15 to Thursday July 16: Inorganic Acids</b>

## **EPA METHOD TO-15 SUMMARY TABLES**

- Table 1. Event #127 Sunday June 21 to Monday June 22: VOC Summary**
- Table 2. Event #128 Saturday June 27 to Sunday June 28: VOC Summary**
- Table 3. Event #129 Friday July 3 to Saturday July 4: VOC Summary**
- Table 4. Event #130 Thursday July 9 to Friday July 10: VOC Summary**
- Table 5. Event #131 Wednesday July 15 to Thursday July 16: VOC Summary**

## **LIST OF APPENDICES**

- APPENDIX A. Laboratory Analytical Results from Event #127**
- APPENDIX B. Laboratory Analytical Results from Event #128**
- APPENDIX C. Laboratory Analytical Results from Event #129**
- APPENDIX D. Laboratory Analytical Results from Event #130**
- APPENDIX E. Laboratory Analytical Results from Event #131**

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**Monitoring Events #127 through #131**

## **1.0 INTRODUCTION**

### **1.1 Current Activities**

As described in Section 1.2 below, 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 Community Monitoring Events.

Event #127: Sunday June 21 to Monday June 22  
Event #128: Saturday June 27 to Sunday June 28  
Event #129: Friday July 3 to Saturday July 4  
Event #130: Thursday July 9 to Friday July 10  
Event #131: Wednesday July 15 to Thursday July 16

Previous Monthly Reports describe modifications that have been made to the sampling apparatus and sampling protocol to minimize/eliminate sources of variability. No other modifications have been made to the system during the time period reflected in this Monthly Report.

### **1.2 Background**

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

VOCs were analyzed by TestAmerica Inc., 5815 Middlebrook Pike, Knoxville, TN 37921. The analyses for aldehydes (EPA Method TO-11A) and hydrogen fluoride / hydrogen chloride (NIOSH Method 7903) were performed by TestAmerica Inc. Phoenix, 4625 E. Cotton Center Blvd, Suite 189, Phoenix, AZ 85040. Prior to April 2009, analyses for aldehydes and hydrogen fluoride/hydrogen chloride were performed by Integrated Analytical Laboratory (IAL), Randolph, NJ.

In order to identify conditions that may be of concern, results from the community monitoring are compared to conservative risk-based concentrations for compounds in air in non-occupational settings. The most conservative (lowest) comparison is the USEPA

Region 9 Preliminary Remediation Goals (PRGs). Where available, we have compared the results to the Agency for Toxic Substances and Disease Registry (ATSDR) Minimal Risk Levels (MRLs). The differences between these screening levels are briefly discussed below.

The USEPA Region 9 PRG is the concentration of a compound in the ambient air that is estimated to be without significant risk to a person who would breathe that level of compound continuously over many decades. The Region 9 PRGs are derived using conservative mathematical formulas and do not represent the level of a compound in the air (or other environmental media) where health effects are likely to occur. Region 9 PRGs are generally accepted as extremely conservative screening values even over a lifetime of exposure, such that if the concentration of a compound 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.

Many of the compounds that are 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 (0.25 ug/m<sup>3</sup>) is lower than the laboratory reporting limit (0.64 ug/m<sup>3</sup>) and lower than the average background concentration of 1.96 ug/m<sup>3</sup> in ambient air in Ohio (Ohio EPA, *Portsmouth Ohio Air Quality Study 2003*). Consequently, finding certain compounds in ambient air at levels above PRGs is not uncommon and may simply reflect fluctuations in background sources. Additionally, not all of the compounds found in the air samples have corresponding PRGs.

Analytical results are also compared to the ATSDR Acute and Chronic Minimal Risk Levels (MRLs) where available. An 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. PRGs and MRLs are useful screening levels that assist risk assessors in identifying those compounds that may pose a health concern. Neither PRGs nor MRLs represent levels of exposure that have been documented to cause actual health effects.

Most of the compounds that were either not detected or detected at levels 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 #127: Sunday June 21 to Monday June 22**

**June 21:** Average temperature in degrees F: 74, Max. 81, Min. 64.

Winds were 6 mph with max gusts of 21 mph out of the NW.

Average relative humidity 67% with no precipitation recorded.

Complaints: There were no odor complaints during this time.

**June 22:** Average temperature in degrees F: 70, Max. 84, Min. 57

Winds were 2 mph with a max speed of 8 mph out of the N.

Average relative humidity 70% with no precipitation recorded.

Complaints: There were no odor complaints during this time.

**June 23<sup>1</sup>:** Average temperature in degrees F: 70, Max. 87, Min. 59

Winds were 3 mph with max gusts of 22 mph out of the NE.

Average relative humidity 64% with no precipitation recorded.

Complaints: There were no odor complaints during this time.

### **Event #128: Saturday June 27 to Sunday June 28**

**June 27:** Average temperature in degrees F: 69, Max. 82, Min. 57.

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

Average relative humidity 68% with no precipitation recorded.

Complaints: There were no odor complaints during this time.

**June 28:** Average temperature in degrees F: 72, Max. 84, Min. 59.

Winds were 3 mph with max gusts of 25 mph out of the W.

Average relative humidity 70% with 0.09 inches of precipitation recorded.

Complaints: There were no odor complaints during this time.

### **Event #129: Friday July 3 to Saturday July 4**

**July 3:** Average temperature in degrees F: 66, Max. 73, Min. 61.

Winds were calm with max gusts of 21 mph out of the NW.

Average relative humidity 73% with no precipitation recorded.

Complaints: There were no odor complaints during this time.

**July 4:** Average temperature in degrees F: 64, Max. 73, Min. 55

Winds were calm with a max speed of 8 mph out of the NNW.

Average relative humidity 78% with 0.01 inches of precipitation recorded.

Complaints: There were no odor complaints during this time.

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<sup>1</sup> Due to a gate being locked, the Cell Tower unit was not deployed until June 22 and sampled to June 23.

**Event #130: Thursday July 9 to Friday July 10**

**July 9:** Average temperature in degrees F: 68, Max. 82, Min. 54.

Winds were calm with a max speed of 7 mph out of the ESE.

Average relative humidity 60% with no precipitation recorded.

Complaints: There were no odor complaints during this time.

**July 10:** Average temperature in degrees F: 70, Max. 86, Min. 55.

Winds were calm with a max speed of 7 mph out of the SSW.

Average relative humidity 70% with no precipitation recorded.

Complaints: A complaint occurred at 12:24pm from 3232 Downing Street, SW in East Sparta. Trench for subcap drainage and gas pipe installation were potentially odor-causing activities noted on the Daily Odor Monitoring Summary.

**Event #131: Wednesday July 15 to Thursday July 16**

**July 15:** Average temperature in degrees F: 70, Max. 86, Min. 55.

Winds were 2 mph with max gusts of 17 mph out of the E.

Average relative humidity 58% with no precipitation recorded.

Complaints: There were no odor complaints during this time.

**July 16:** Average temperature in degrees F: 77, Max. 88, Min. 64.

Winds were 5 mph with max gusts of 24 mph out of the NW.

Average relative humidity 58% with no precipitation recorded.

Complaints: There were no odor complaints during this time.

Only one odor complaint was received during these events – during Event #130 at a location that was nominally downwind of the landfill during part of the sampling event. No precipitation was noted.

**3.0 ANALYTICAL RESULTS**

The laboratory analyzed the air samples for a large number of compounds. 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.

The prevailing wind direction for each monitoring station relative to the landfill is designated as:

- C: Crosswind
- D: Downwind
- U: Upwind
- V: Variable

Wind direction is indicated for the first and second days of the regularly scheduled monitoring event separated by a right slash (“/”).

### 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 TestAmerica Inc., Knoxville, TN. 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.

Only VOCs that were detected at concentrations exceeding the respective Region 9 PRG (most conservative screening level) in one or more samples during a monitoring event are presented in the summary tables that follow. The results from the analytical laboratory can be found in the Appendix noted.

Analytical results for the routinely detected compounds, benzene and carbon tetrachloride, are presented in Tables 1 through 5, below. Additional compounds, which exceeded their respective PRGs, were detected during the sampling events covered by this report. However, our review of these analytes indicated that they were infrequently detected, not associated with landfill gas, or not highly associated with the sampling locations relative position to the landfill and/or the analyte(s) were common laboratory contaminants; therefore, after careful review, the landfill was determined not to be the source and these compounds were not evaluated further. Nevertheless, these constituents will be monitored in future events to identify any emerging trends.

None of the concentrations of the detected VOC analytes exceeded their respective acute or chronic MRL, where applicable.

#### **Event #127: Sunday June 21 to Monday June 22**

Analytical results are summarized in Table 1 and provided in Appendix A.

**Table 1. Event #127: VOCs Detected Above PRGs  
Concentrations in ug/m<sup>3</sup>**

Compound	Acute MRL	Chronic MRL	PRG	School	Cell Tower*		Camp-ground	Wetland
					Co-located			
Prevailing wind direction				C/C	D/D		C/C	C/C
Benzene	29	10	0.25	0.62	0.64	1.0	0.91	0.65
Carbon tetrachloride	188	188	0.13	0.54J	0.82J	0.58J	0.50J	0.57J
* Sample from Cell Tower was collected Monday June 22, 2009 to Tuesday June 23, 2009 Bold indicates result exceeded Region 9 PRG Shading indicates result exceeded ATSDR Minimal Risk Level (MRL) Laboratory Data Qualifiers: J = Estimated concentration below laboratory reporting limit								

**Event #128: Saturday June 27 to Sunday June 28**

Analytical results are summarized in Table 2 and provided in Appendix B.

**Table 2. Event #128: VOCs Detected Above PRGs  
Concentrations in ug/m<sup>3</sup>**

Compound	Acute MRL	Chronic MRL	PRG	School		Cell Tower	Camp ground	Wetland
				Co-located				
Prevailing wind direction				D/U		D/C	U/D	C/D
Benzene	29	10	<b>0.25</b>	<b>0.78</b>	<b>0.72</b>	<b>1.4</b>	<b>0.85</b>	<b>0.53J</b>
Carbon tetrachloride	188	188	<b>0.13</b>	<b>0.53J</b>	<b>0.55J</b>	<b>0.71J</b>	<b>0.51J</b>	<b>0.72J</b>

Bold indicates result exceeded Region 9 PRG  
Shading indicates result exceeded ATSDR Minimal Risk Level (MRL)  
Laboratory Data Qualifiers:  
J = Estimated concentration below laboratory reporting limit

**Event #129: Friday July 3 to Saturday July 4**

Analytical results are summarized in Table 3 and provided in Appendix C.

**Table 3. Event #129: VOCs Detected Above PRGs  
Concentrations in ug/m<sup>3</sup>**

Compound	Acute MRL	Chronic MRL	PRG	School	Cell Tower	Campground		Wetland
						Co-located		
Prevailing wind direction				C/C	C/D	C/C		C/C
Benzene	29	10	<b>0.25</b>	<b>0.60J</b>	<b>0.61J</b>	<b>0.61J</b>	<b>0.64</b>	<b>0.59J</b>
Carbon tetrachloride	188	188	<b>0.13</b>	<b>0.53J</b>	<b>0.45J</b>	<b>0.47J</b>	<b>0.55J</b>	<b>0.49J</b>

Bold indicates result exceeded Region 9 PRG  
Shading indicates result exceeded ATSDR Minimal Risk Level (MRL)  
Laboratory Data Qualifiers:  
J = Estimated concentration below laboratory reporting limit

**Event #130: Thursday July 9 to Friday July 10**

Analytical results are summarized in Table 4 and provided in Appendix D.

**Table 4. Event #130: VOCs Detected Above PRGs  
Concentrations in ug/m<sup>3</sup>**

Compound	Acute MRL	Chronic MRL	PRG	School	Cell Tower	Camp-ground	Wetland	
							Co-located	
Prevailing wind direction				C/U	C/U	C/D	C/C	
Benzene	29	10	<b>0.25</b>	<b>0.74</b>	<b>0.51J</b>	<b>0.50J</b>	<b>0.43J</b>	<b>0.50J</b>
Carbon tetrachloride	188	188	<b>0.13</b>	<b>0.50J</b>	<b>0.50J</b>	<b>0.49J</b>	<b>0.51J</b>	<b>0.52J</b>

Bold indicates result exceeded Region 9 PRG  
Shading indicates result exceeded ATSDR Minimal Risk Level (MRL)  
Laboratory Data Qualifiers:  
J = Estimated concentration below laboratory reporting limit

**Event #131: Wednesday July 15 to Thursday July 16**

Analytical results are summarized in Table 5 and provided in Appendix E.

**Table 5. Event #131: VOCs Detected Above PRGs  
Concentrations in ug/m<sup>3</sup>**

Compound	Acute MRL	Chronic MRL	PRG	School	Cell Tower*		Camp-ground	Wetland
					Co-located			
Prevailing wind direction				C/C	C/C		U/U	U/D
Benzene	29	10	<b>0.25</b>	<b>0.46J</b>	<b>0.49J</b>	<b>0.44J</b>	<b>0.42J</b>	<b>0.40J</b>
Carbon tetrachloride	188	188	<b>0.13</b>	<b>0.75J</b>	<b>0.64J</b>	<b>0.62J</b>	<b>0.63J</b>	<b>0.65J</b>

\* Sample from Cell Tower was collected Monday June 22, 2009 to Tuesday June 23, 2009  
Bold indicates result exceeded Region 9 PRG  
Shading indicates result exceeded ATSDR Minimal Risk Level (MRL)  
Laboratory Data Qualifiers:  
J = Estimated concentration below laboratory reporting limit

**3.2 Sulfur Compounds**

Carbon disulfide was the only sulfur compound detected during the five sampling events reviewed in this report for which Method TO-15M was performed. When detected, the concentrations of carbon disulfide were extremely low and well below the Region 9 PRG PRG. All detections 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. These three sample results can then be combined to calculate a 24-hour average concentration. Analyses for aldehydes and ketones by method TO-11A were conducted by TestAmerica Inc., Phoenix Arizona.

Although Method TO-11A analyzes for a number of carbonyl compounds, formaldehyde and acetaldehyde are most frequently detected and are the aldehyde compounds of greatest potential concern from a public health standpoint. In addition to formaldehyde and acetaldehyde, the following carbonyl compounds were occasionally detected in the samples summarized in this Monthly Report #27: acetone, benzaldehyde, propionaldehyde and butyraldehyde. The results for these compounds are included on the laboratory reporting sheets found in the Appendices. Only results for formaldehyde and acetaldehyde are summarized in the tables below.

**Event #127: Sunday June 21 to Monday June 22**

The laboratory report is in Appendix A.

**Table 6. Event #127: Aldehydes Concentrations in ug/m<sup>3</sup>**

Aldehyde	Acute MRL <sup>1</sup>	Chronic MRL <sup>1</sup>	PRG	School			Cell Tower			Campground			Wetland		
				C/C			D/D			C/C			C/C		
Prevailing wind direction				1	2	3	1	2	3	1	2	3	1	2	3
Formaldehyde	50	10	<b>0.15</b>	<b>15.8</b>	<b>3.8</b>	<b>12.6</b>	<b>12.0</b>	<b>5.9</b>	<b>10.1</b>	<b>31.1</b>	<b>10.2</b>	<b>23.7</b>	<b>15.0</b>	<b>4.0</b>	<b>17.2</b>
Acetaldehyde	NA	NA	<b>0.87</b>	<b>37.1</b>	<b>6.8</b>	<b>28.0</b>	<b>25.4</b>	<b>8.2</b>	<b>25.4</b>	<b>39.3</b>	<b>12.1</b>	<b>38.3</b>	<b>27.3</b>	<b>6.2</b>	<b>33.3</b>

1. ATSDR Minimal Risk Levels (MRL) (ATSDR Toxicological Profile for Formaldehyde, July 1999) - Acute MRL 0.04 ppm = 50 ug/m<sup>3</sup>; Chronic MRL 0.008 ppm=10 ug/m<sup>3</sup>  
 Bold indicates concentration exceeded Region 9 PRG  
 Shading indicates concentration exceeded Chronic MRL  
 NA= Not available  
 Note: As indicated previously, all tubing in the sampling apparatus manifolds is now Tygon®.

**Event #128: Saturday June 27 to Sunday June 28**

The laboratory report is in Appendix B.

**Table 7. Event #128: Aldehydes Concentrations in ug/m<sup>3</sup>**

Aldehyde	Acute MRL <sup>1</sup>	Chronic MRL <sup>1</sup>	PRG	School			Cell Tower			Campground			Wetland		
				D/U			D/C			U/D			C/D		
Prevailing wind direction				1	2	3	1	2	3	1	2	3	1	2	3
Formaldehyde	50	10	<b>0.15</b>	<b>20.2</b>	<b>4.5</b>	<b>9.1</b>	<b>20.3</b>	<b>8.3</b>	<b>10.5</b>	<b>24.8</b>	<b>11.6</b>	<b>11.4</b>	<b>17.1</b>	<b>3.8</b>	<b>14.2*</b>
Acetaldehyde	NA	NA	<b>0.87</b>	<b>87.9</b>	<b>11.8</b>	<b>20.5</b>	<b>58.4</b>	<b>18.5</b>	<b>23.7</b>	<b>53.3</b>	<b>18.5</b>	<b>20.5</b>	<b>54.7</b>	<b>10.5</b>	<b>23.4</b>

\*Indicates possible break-through from front to back of sorbent tube.  
 1. ATSDR Minimal Risk Levels (MRL) (ATSDR Toxicological Profile for Formaldehyde, July 1999) - Acute MRL 0.04 ppm = 50 ug/m<sup>3</sup>; Chronic MRL 0.008 ppm=10 ug/m<sup>3</sup>  
 Bold indicates concentration exceeded Region 9 PRG  
 Shading indicates concentration exceeded Chronic MRL  
 NA= Not available  
 Note: As indicated previously, all tubing in the sampling apparatus manifolds is now Tygon®.

**Event #129: Friday July 3 to Saturday July 4**

The laboratory report is in Appendix C.

**Table 8. Event #129: Aldehydes Concentrations in ug/m<sup>3</sup>**

Aldehyde	Acute MRL <sup>1</sup>	Chronic MRL <sup>1</sup>	PRG	School			Cell Tower			Campground			Wetland		
				C/C			C/D			C/C			C/C		
Prevailing wind direction				1	2	3	1	2	3	1	2	3	1	2	3
Formaldehyde	50	10	<b>0.15</b>	<b>12.1</b>	<b>3.1*</b>	<b>6.5</b>	<b>10.5</b>	<b>5.1</b>	<b>8.7</b>	<b>14.0</b>	<b>7.9</b>	<b>14.9</b>	<b>9.2</b>	<b>2.9*</b>	<b>9.1</b>
Acetaldehyde	NA	NA	<b>0.87</b>	<b>44.3</b>	<b>7.0</b>	<b>18.3</b>	<b>34.8</b>	<b>11.7</b>	<b>25.1</b>	<b>25.0</b>	<b>11.8</b>	<b>27.4</b>	<b>29.3</b>	<b>5.9</b>	<b>20.6</b>

\*Indicates possible break-through from front to back of sorbent tube.  
 1. ATSDR Minimal Risk Levels (MRL) (ATSDR Toxicological Profile for Formaldehyde, July 1999) - Acute MRL 0.04 ppm = 50 ug/m<sup>3</sup>; Chronic MRL 0.008 ppm=10 ug/m<sup>3</sup>  
 Bold indicates concentration exceeded Region 9 PRG  
 Shading indicates concentration exceeded Chronic MRL  
 NA= Not available  
 Note: As indicated previously, all tubing in the sampling apparatus manifolds is now Tygon®.

**Event #130: Thursday July 9 to Friday July 10**

The laboratory report is in Appendix D.

**Table 9. Event #130: Aldehydes Concentrations in ug/m<sup>3</sup>**

Aldehyde	Acute MRL <sup>1</sup>	Chronic MRL <sup>1</sup>	PRG	School			Cell Tower			Campground			Wetland		
				C/U			C/U			C/D			C/C		
Prevailing wind direction				1	2	3	1	2	3	1	2	3	1	2	3
Formaldehyde	50	10	<b>0.15</b>	<b>20.5</b>	<b>3.6*</b>	<b>12.0</b>	<b>13.5</b>	<b>7.5</b>	<b>12.2</b>	<b>23.8</b>	<b>10.6</b>	<b>23.0</b>	<b>13.2</b>	<b>3.1*</b>	<b>11.7</b>
Acetaldehyde	NA	NA	<b>0.87</b>	<b>46.9</b>	<b>6.0</b>	<b>24.2</b>	<b>3.6</b>	<b>3.1</b>	<b>14.9</b>	<b>28.6</b>	<b>11.2</b>	<b>40.7</b>	<b>24.7</b>	<b>5.2</b>	<b>25.8</b>

\*Indicates possible break-through from front to back of sorbent tube.  
 1. ATSDR Minimal Risk Levels (MRL) (ATSDR Toxicological Profile for Formaldehyde, July 1999) - Acute MRL 0.04 ppm = 50 ug/m<sup>3</sup>; Chronic MRL 0.008 ppm=10 ug/m<sup>3</sup>  
 Bold indicates concentration exceeded Region 9 PRG  
 Shading indicates concentration exceeded Chronic MRL  
 NA= Not available  
 Note: As indicated previously, all tubing in the sampling apparatus manifolds is now Tygon®.

**Event #131: Wednesday July 15 to Thursday July 16**

Analytical results are provided in Appendix E.

**Table 10. Event #131: Aldehydes Concentrations in ug/m<sup>3</sup>**

Aldehyde	Acute MRL <sup>1</sup>	Chronic MRL <sup>1</sup>	PRG	School			Cell Tower			Campground			Wetland		
				C/C			C/C			U/U			U/D		
Prevailing wind direction				1	2	3	1	2	3	1	2	3	1	2	3
Formaldehyde	50	10	<b>0.15</b>	<b>24.0</b>	<b>10.5</b>	<b>12.4</b>	<b>18.4</b>	<b>13.2</b>	<b>24.0</b>	<b>17.7</b>	<b>19.5</b>	<b>23.6</b>	<b>17.6</b>	<b>5.9</b>	<b>15.0</b>
Acetaldehyde	NA	NA	<b>0.87</b>	<b>48.4</b>	<b>11.0*</b>	<b>25.8</b>	<b>41.0</b>	<b>16.0</b>	<b>42.7</b>	<b>38.9</b>	<b>20.2</b>	<b>41.1</b>	<b>33.0</b>	<b>8.2</b>	<b>28.0</b>

\*Indicates possible break-through from front to back of sorbent tube.  
 1. ATSDR Minimal Risk Levels (MRL) (ATSDR Toxicological Profile for Formaldehyde, July 1999) - Acute MRL 0.04 ppm = 50 ug/m<sup>3</sup>; Chronic MRL 0.008 ppm=10 ug/m<sup>3</sup>  
 Bold indicates concentration exceeded Region 9 PRG  
 Shading indicates concentration exceeded Chronic MRL  
 NA= Not available  
 Note: As indicated previously, all tubing in the sampling apparatus manifolds is now Tygon®.

**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.

The majority of samples collected from mid-June through mid-July had no detectable amounts of either HF or HCl. Hydrochloric acid was only detected on three occasions: events #127, #128 and #129; and these detections were noted in only one of the three 8-hour sorbent tubes. The highly conservative Region 9 PRG screening value for HCl (21 ug/m<sup>3</sup>) is for essentially constant exposure over many years. The HCL detections above

the PRG may be attributable, in part, to moisture in the sorbent tube (as noted by the analytical laboratory).

None of the sorbent tubes had detectable amounts of HF; thus, none of the samples had concentrations above the HF MRL. There is no Region 9 PRG for hydrogen fluoride.

The HCl and HF results are summarized in the tables below.

**Table 11. Event #127: Sunday June 21 to Monday June 22**  
**Concentrations in ug/m<sup>3</sup>**

Compound	ATSDR MRL <sup>1</sup>	PRG	School			Cell Tower			Campground			Wetland		
			1	2	3	1	2	3	1	2	3	1	2	3
Prevailing wind direction			C/C			D/D			C/C			C/C		
HF	17	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HCl	NA	<b>21</b>	<b>22.1</b>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1. ATSDR MRL – hydrogen fluoride = 2ppm = 17 ug/m <sup>3</sup> (Acute inhalation exposure) Bold indicates concentration exceeded Region 9 PRG Shading indicates concentration exceeded Chronic MRL *Indicates possible break-through from front to back of sorbent tube. Note: As indicated previously, all tubing in the sampling apparatus manifolds is now Tygon®.														

**Table 12. Event #128: Saturday June 27 to Sunday June 28**  
**Concentrations in ug/m<sup>3</sup>**

Compound	ATSDR MRL <sup>1</sup>	PRG	School			Cell Tower			Campground			Wetland		
			1	2	3	1	2	3	1	2	3	1	2	3
Prevailing wind direction			D/U			D/C			U/D			C/D		
HF	17	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HCl	NA	<b>21</b>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	17.4
1. ATSDR MRL – hydrogen fluoride = 2ppm = 17 ug/m <sup>3</sup> (Acute inhalation exposure) Bold indicates concentration exceeded Region 9 PRG Shading indicates concentration exceeded Chronic MRL *Indicates possible break-through from front to back of sorbent tube. Note: As indicated previously, all tubing in the sampling apparatus manifolds is now Tygon®.														

**Table 13. Event #129: Friday July 3 to Saturday July 4**  
**Concentrations in ug/m<sup>3</sup>**

Compound	ATSDR MRL <sup>1</sup>	PRG	School			Cell Tower			Campground			Wetland		
			1	2	3	1	2	3	1	2	3	1	2	3
Prevailing wind direction			C/C			C/D			C/C			C/C		
HF	17	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HCl	NA	<b>21</b>	ND	ND	ND	<b>28.7</b>	ND	ND	ND	ND	ND	ND	ND	ND
1. ATSDR MRL – hydrogen fluoride = 2ppm = 17 ug/m <sup>3</sup> (Acute inhalation exposure) Bold indicates concentration exceeded Region 9 PRG Shading indicates concentration exceeded Chronic MRL *Indicates possible break-through from front to back of sorbent tube. Note: As indicated previously, all tubing in the sampling apparatus manifolds is now Tygon®.														

**Table 14. Event #130: Thursday July 9 to Friday July 10**  
**Concentrations in ug/m<sup>3</sup>**

Compound	ATSDR MRL <sup>1</sup>	PRG	School			Cell Tower			Campground			Wetland		
			1	2	3	1	2	3	1	2	3	1	2	3
Prevailing wind direction			C/U			C/U			C/D			C/C		
HF	17	<b>NA</b>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HCl	NA	<b>21</b>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

1. ATSDR MRL – hydrogen fluoride = 2ppm = 17 ug/m<sup>3</sup> (Acute inhalation exposure)  
 Bold indicates concentration exceeded Region 9 PRG  
 Shading indicates concentration exceeded Chronic MRL  
 \*Indicates possible break-through from front to back of sorbent tube.  
 Note: As indicated previously, all tubing in the sampling apparatus manifolds is now Tygon®.

**Table 15. Event #131: Wednesday July 15 to Thursday July 16**  
**Concentrations in ug/m<sup>3</sup>**

Compound	ATSDR MRL <sup>1</sup>	PRG	School			Cell Tower			Campground			Wetland		
			1	2	3	1	2	3	1	2	3	1	2	3
Prevailing wind direction			C/C			C/C			U/U			U/D		
HF	17	<b>NA</b>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HCl	NA	<b>21</b>	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

1. ATSDR MRL – hydrogen fluoride = 2ppm = 17 ug/m<sup>3</sup> (Acute inhalation exposure)  
 Bold indicates concentration exceeded Region 9 PRG  
 Shading indicates concentration exceeded Chronic MRL  
 \*Indicates possible break-through from front to back of sorbent tube.  
 Note: As indicated previously, all tubing in the sampling apparatus manifolds is now Tygon®.

The laboratory analytical results for HF and HCl are included in Appendices A through E of this Report #27.

#### 4.0 SUMMARY

##### 4.1 Volatile Organic Compounds

All of the reported benzene concentrations were within the range of background levels reported in the literature and by other investigators. The concentration of benzene detected from all samples conducted from mid-June to mid-July ranged from 0.40 ug/m<sup>3</sup> to 1.4 ug/m<sup>3</sup> (average 0.78 ug/m<sup>3</sup>); these concentrations are well below the average background concentration (1.96 ug/m<sup>3</sup>) in ambient air in Ohio (Ohio EPA, *Portsmouth Ohio Air Quality Study 2003*). As mentioned in previous Monthly Reports, there are numerous local and area sources of benzene and related compounds, including lawn mowing, emissions from the heavy equipment working on the nearby expansion area of the landfill, motor vehicles on nearby roads and Interstate 77, the Marathon refinery on the south side of Canton, and the landfill. The sources of carbon tetrachloride are not known, but the consistently low concentrations of this environmentally persistent compound across all monitoring locations (irrespective of wind direction) indicate that, like benzene, it is present in background air not related to the landfill.

Note: The two compounds, benzene and carbon tetrachloride, that were measured at concentrations (or estimated concentrations as designated by a “J” qualifier) above their

Region 9 PRGs (0.25 ug/m<sup>3</sup> and 0.13 ug/m<sup>3</sup>, respectively) have PRGs that are below the reporting limit (0.64 ug/m<sup>3</sup> and 1.3 ug/m<sup>3</sup>, respectively) for the analytical laboratory. Consequently, any quantifiable detection of these compounds will exceed the highly conservative Region 9 PRG. Therefore, the ATSDR MRLs provide a more realistic basis of comparison, since all of the MRLs are above the range of laboratory reporting limits. Neither benzene nor carbon tetrachloride concentrations in any sample exceeded or even approached their respective acute or chronic ATSDR MRL.

#### **4.2 Aldehydes (Carbonyl Compounds)**

Formaldehyde and acetaldehyde were detected at all community sampling locations. The Region 9 PRGs for formaldehyde and acetaldehyde (0.15 ug/m<sup>3</sup> and 0.87 ug/m<sup>3</sup>, respectively) are very close to the laboratory reporting limits for these compounds. Consequently, almost any measurable levels of formaldehyde and acetaldehyde will exceed the respective Region 9 PRG. Therefore, the ATSDR Acute and Chronic MRLs for formaldehyde are more relevant guidelines for interpreting the analytical results. ATSDR MRL standards for acetaldehyde are not available.

The ATSDR Acute MRL value for formaldehyde (50 ug/m<sup>3</sup>), which is a guideline for exposures lasting 1 to 14 days, was not exceeded in any sample covered in this report. The ATSDR Chronic MRL *value* (10 ug/m<sup>3</sup>) for formaldehyde was exceeded in one or more samples during each sampling events covered in this report. However, the ATSDR chronic MRL is intended as a guideline for the assessment of long term exposure (greater than 365 days). A review of the historical data collected at the Countywide Recycling & Disposal Facility (July 26<sup>th</sup>, 2007 to June 16<sup>th</sup>, 2009) yields an average formaldehyde concentration of 5.73 ug/m<sup>3</sup>, which is well below both the ATSDR acute and chronic MRL values.

Additionally, there are no apparent correlations between the sampling location's orientation to the landfill and prevailing wind (upwind, downwind or crosswind) and the concentration of either formaldehyde or acetaldehyde. This suggests that the concentrations of these compounds may be derived from other common sources, such as vehicle exhaust.

As noted in previous reports, the first and third sorbent tubes tend to capture the highest concentrations of aldehydes. The first sorbent tube is programmed to turn on at 3:00 PM and run until 11:00 PM; the second tube samples air from 11:00 PM to 7:00 AM; and the third tube samples air form 7:00 AM to 3:00 PM. Thus, the first and third tubes are drawing air samples during the evening and morning rush hours, respectively. Again, this suggests that the density of motor vehicle traffic may help explain the observed increased levels of aldehydes in sorbent tubes #1 and #3.

#### **4.3 Hydrogen Fluoride and Hydrogen Chloride**

Hydrogen fluoride was not detected during community monitoring from mid-June to mid-July. Hydrogen chloride was detected and exceeded the conservative Region 9 PRG

(21.0 ug/m<sup>3</sup>), during monitoring event #127 (22.1 ug/m<sup>3</sup>–school) and event #128. (28.7 ug/m<sup>3</sup>–cell tower). However, the 24 hour average HCL concentrations did not exceed the conservative Region 9 PRG (21.0 ug/m<sup>3</sup>) in any sampling event covered in this report. Additionally, there are no apparent associations between the sampling location's orientation to the landfill and prevailing wind (upwind, downwind or crosswind) and the concentration of HCL. This suggests that concentrations of this compound may be present in ambient air from other sources.

Note: It should be recognized that NIOSH Method 7903 for inorganic acids was designed for industrial-not ambient environmental applications. The methodology appears to be sensitive to changes in ambient conditions, particularly moisture. HF and HCl were either not present or were only detected at very low levels in the majority of samples that have been collected since the initiation of this monitoring program in May 2007. Even those results that appear to be outside of the “typical range” for this program are extremely low concentrations that do not present a risk to public health.

#### **4.4 Laboratory Issues**

No major laboratory issues have been identified as of the date of this report that would alter the conclusions based upon the monitoring results presented here. Results from the co-located (duplicate) TO-15 samples were similar for all locations and events.

#### **4.5 Conclusions**

No significant concentrations of any VOC, including benzene, have been reported in the months since alterations were made to the sampling apparatus. This is still the case for the monitoring events presented in this Monthly Report #27.

Our specific conclusions are summarized below:

- The levels of benzene recorded at the community monitoring locations during mid-June through mid-July were very low and well within Ohio background as reported by Ohio EPA (Portsmouth Ohio Air Quality Study, 2003).
- Because there are numerous local and regional sources of VOCs, it is expected that many of these compounds will continue to be detected at low levels as the community monitoring program moves forward.
- Concentrations of formaldehyde and acetaldehyde from mid-June through mid-July were comparable to the values observed in previous months. The ATSDR Acute MRL value for formaldehyde (50ug/m<sup>3</sup>) was not exceeded in any sample covered in this report. The 24-hour average concentrations of formaldehyde occasionally exceeded the ASTDR chronic MRL value; however, the historical average level of formaldehyde recorded from all locations from July 2008 through June 2009 (5.73 ug/m<sup>3</sup>) is well below the acute and chronic ATSDR MRL values.

- The results from HCl and HF sampling continue to show no indication of any threat from these constituents; thus, sampling for hydrogen fluoride and hydrogen chloride should be eliminated.
- There are no clear trends with regard to the specific compounds or the concentrations of those compounds detected with respect to whether the monitoring location was upwind or downwind of the landfill during the monitoring event.
- The results presented in this Monthly Report #27 continue to support our conclusions that the occurrence of low levels of VOCs, aldehydes, and inorganic acids in the air of the community surrounding Countywide reflect local and regional sources; and that the levels of these compounds in the ambient air do not represent either an immediate or long-term threat to public health.

**Countywide Recycling & Disposal Facility  
Ambient Air Monitoring  
Monthly Report # 27**

**Monitoring Events #127 through #131**

**August 12, 2009**

**EPA Method TO-15 SUMMARY TABLES**

**List of Tables**

- Table 1. Event #127: Sunday, June 21 to Monday, June 22**
- Table 2. Event #128: Saturday, June 27 to Sunday, June 28**
- Table 3. Event #129: Friday, July 3 to Saturday, July 4**
- Table 4. Event #130: Thursday, July 9 to Friday, July 10**
- Table 5. Event #131: Wednesday, July 15 to Thursday, July 16**

Countywide Recycling & Disposal Facility								
EPA Method TO-15 Modified: Volatile Organic Compounds								
Table 1: Event #127: June 21/22, 2009								
Analyte	Monitoring Location							
				School	***Cell Tower	Campground	Wetland	
	Prevailing Wind Direction			C/C	D/D	C/C	C/C	
All results in ug/m3								
Method TO-15 Modified	Acute MRL	Chronic MRL	PRG					
Acetone	61762	30881	3300	42	29	21	34	67
Benzene	29	10	<b>0.25</b>	<b>0.62</b>	<b>0.64</b>	<b>1.0</b>	<b>0.91</b>	<b>0.65</b>
Bromomethane	194	19	5.2	ND	ND	ND	0.29J	0.27J
1,3-Butadiene	NA	NA	<b>0.061</b>	ND	ND	<b>0.22J</b>	ND	ND
tert-Butyl alcohol	NA	NA	NA	0.53J	0.50J	0.66J	0.66J	0.91J
Carbon disulfide	NA	934	730	0.42J	0.31J	0.14J	0.31J	0.46J
Carbon tetrachloride	188	188	<b>0.13</b>	<b>0.54J</b>	<b>0.82J</b>	<b>0.58J</b>	<b>0.50J</b>	<b>0.57J</b>
Chlorobenzene	NA	NA	62	ND	ND	ND	ND	ND
Chloroethane	39583	NA	2.3	ND	ND	0.39J	ND	0.50J
Chloroform	488	98	<b>0.083</b>	ND	ND	<b>0.19J</b>	ND	<b>1.6</b>
Chloromethane	1033	103	95	1.4	2.4	2.1	1.5	4.1
Cyclohexane	NA	NA	6200	0.16	ND	ND	0.94J	0.23J
1,2-Dichlorobenzene	NA	NA	210	ND	ND	ND	ND	ND
1,4- Dichlorobenzene	12020	60	<b>0.31</b>	ND	ND	ND	<b>0.42J</b>	ND
Dichlorodifluoromethane	NA	NA	210	2.5	3.0	2.4	2.6	2.7
1,1-Dichloroethene	NA	NA	NA	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	NA	NA	37	ND	ND	ND	ND	ND
Ethylbenzene	43419	1303	1100	0.33J	0.32J	0.49J	18	0.33J
4-Ethyltoluene	NA	NA	NA	ND	ND	ND	16	ND
Heptane	NA	NA	NA	1.1J	ND	1.1J	5.6	1.8J
Hexane	NA	2115	210	1.8	0.86J	1.0J	1.8	1.6J
Methyl ethyl ketone	NA	NA	5100	5.2	5.1	3.0	5.5	9.8
Methyl isobutyl ketone	NA	NA	3100	0.57J	0.78J	0.68J	2.7	0.99J
Methylene chloride	2084	1042	<b>4.1</b>	<b>6.2</b>	0.93J	2.5	3.5	<b>4.7</b>
Styrene	8520	852	1100	ND	ND	ND	ND	ND
Tetrachloroethene	1356	271	0.32	ND	ND	ND	ND	ND
Tetrahydrofuran	NA	NA	0.99	ND	ND	0.61J	ND	ND
Toluene	3768	301	400	1.9	2.1	2.6	17	2.4
1,1,1-Trichloroethane	10800	NA	2300	ND	ND	ND	ND	ND
1,1,2-Trichloro-1,2,2-trifluoroethane	NA	NA	NA	0.58J	0.80J	0.59J	0.66J	0.58J
Trichlorofluoromethane	NA	NA	730	2.3	2.1	1.6	1.6	2.3
1,2,4-Trimethylbenzene	NA	NA	6.2	0.40J	ND	0.50J	4.4	0.43J
1,3,5-Trimethylbenzene	NA	NA	<b>6.2</b>	ND	ND	ND	<b>27</b>	ND
2,2,4-Trimethylpentane	NA	NA	NA	0.30J	0.29J	0.21J	55	0.24J
Vinyl Chloride	1278	77	0.11	ND	ND	ND	ND	ND
m/p-Xylene	8687	8687	110	1.1	0.95	1.0	40	1.0
o-Xylene	8687	8687	110	0.41J	0.37J	0.63J	71	0.40J
<b>*** Cell Tower- Access to the Cell Tower on Sunday was locked and as a result the Cell Tower Monitoring-unit was Deployed on Monday, June 22, 2009, and ran through June 23, 2009.</b>								
*Prevailing Wind Direction with respect to the landfill								
U: Upwind								
D: Downwind								
C: Crosswind								
V: Variable								
NS = No Sample								
ND = Not Detected								
NA = Not Available								
Y = TIC present								
Bold indicates result exceeds Region 9 PRG								
Shading indicates result exceeds ATSDR MRL								
<b>Laboratory Data Qualifiers:</b>								
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 #128: June 27/28, 2009								
Analyte	Monitoring Location							
				School	Cell Tower	Campground	Wetland	
	Prevailing Wind Direction			Co-Located	D/C	U/D	C/D	
All results in ug/m3								
Method TO-15 Modified	Acute MRL	Chronic MRL	PRG					
Acetone	61762	30881	3300	33	22	42	51	23
Benzene	29	10	<b>0.25</b>	<b>0.78</b>	<b>0.72</b>	<b>1.4</b>	<b>0.85</b>	<b>0.53J</b>
Bromomethane	194	19	5.2	ND	ND	0.23J	ND	ND
1,3-Butadiene	NA	NA	0.061	ND	ND	ND	ND	ND
tert-Butyl alcohol	NA	NA	NA	0.55J	0.23J	0.63J	0.79J	0.28J
Carbon disulfide	NA	934	730	1.2J	0.45J	0.28J	0.30J	0.17J
Carbon tetrachloride	188	188	<b>0.13</b>	<b>0.53J</b>	<b>0.55J</b>	<b>0.71J</b>	<b>0.51J</b>	<b>0.72J</b>
Chlorobenzene	NA	NA	62	ND	ND	ND	ND	ND
Chloroethane	39583	NA	2.3	ND	ND	0.097J	ND	ND
Chloroform	488	98	<b>0.083</b>	ND	ND	<b>0.20J</b>	ND	<b>0.37J</b>
Chloromethane	1033	103	95	1.7	1.8	1.7	1.4	1.3
Cyclohexane	NA	NA	6200	0.20J	0.50J	0.32J	0.23J	ND
1,2-Dichlorobenzene	NA	NA	210	ND	ND	ND	ND	ND
1,4- Dichlorobenzene	12020	60	0.31	ND	ND	ND	ND	ND
Dichlorodifluoromethane	NA	NA	210	2.4	2.5	2.6	2.4	2.5
1,1-Dichloroethane	NA	NA	520	ND	ND	0.20J	ND	ND
1,2-Dichloroethane	NA	2428	<b>0.0074</b>	ND	ND	<b>0.59J</b>	ND	ND
cis-1,2-Dichloroethene	NA	NA	37	ND	ND	7.8	ND	ND
trans-1,2-Dichloroethene	793	793	210	ND	ND	0.54	ND	ND
Ethylbenzene	43419	1303	1100	0.32J	0.59J	0.44J	0.33J	ND
4-Ethyltoluene	NA	NA	NA	ND	ND	ND	ND	ND
Heptane	NA	NA	NA	0.41J	0.46J	0.89J	0.65J	0.55J
Hexane	NA	2115	210	1.2J	2.6	1.7J	1.3J	0.87J
Methyl ethyl ketone	NA	NA	5100	5.0	2.8	9.8	8.8	2.7J
Methyl isobutyl ketone	NA	NA	3100	0.50J	0.25J	1.3J	0.79J	0.26J
Methylene chloride	2084	1042	<b>4.1</b>	1.3J	<b>11</b>	1.6J	0.98J	2.2
Styrene	8520	852	1100	ND	0.57J	ND	ND	0.26J
Tetrachloroethene	1378	276	<b>0.32</b>	ND	ND	<b>0.38J</b>	<b>0.63</b>	ND
Tetrahydrofuran	NA	NA	<b>0.99</b>	0.19J	ND	0.22J	0.25J	ND
Toluene	3768	301	400	2.1	3.9	3.1	1.8	1.4
1,1,1-Trichloroethane	10800	NA	2300	ND	ND	ND	ND	ND
Trichloroethene	10920	546	<b>0.017</b>	<b>0.23J</b>	ND	ND	ND	ND
1,1,2-Trichloro-1,2,2-trifluoroethane	NA	NA	NA	0.57J	0.60J	0.70J	0.66J	0.61J
Trichlorofluoromethane	NA	NA	730	1.6	2.6	2.0	1.5	2.3
1,2,4-Trimethylbenzene	NA	NA	6.2	0.48J	1.1	2.3	0.44J	0.90J
1,3,5-Trimethylbenzene	NA	NA	6.2	ND	ND	0.52J	ND	ND
2,2,4-Trimethylpentane	NA	NA	NA	0.38J	0.34J	0.40J	0.29J	ND
Vinyl Chloride	1278	77	0.11	ND	ND	ND	ND	ND
m/p-Xylene	8687	8687	110	1.1	1.7	1.5	0.94	0.78J
o-Xylene	8687	8687	110	0.39J	0.70J	0.65J	0.37J	0.29J
*Prevailing Wind Direction with respect to the landfill								
U: Upwind								
D: Downwind								
C: Crosswind								
V: Variable								
NS = No Sample								
ND = Not Detected								
NA = Not Available								
Y = TIC present								
Bold indicates result exceeds Region 9 PRG								
Shading indicates result exceeds ATSDR MRL								
<b>Laboratory Data Qualifiers:</b>								
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 4: Event #130: July 9/10, 2009								
Analyte	Monitoring Location							
				School	Cell Tower	Campground	Wetland	
	Prevailing Wind Direction			C/U	C/U	C/D	Co-Located C/C	
All results in ug/m3								
Method TO-15 Modified	Acute MRL	Chronic MRL	PRG					
Acetone	61762	30881	3300	51	18	48	52	17
Benzene	29	10	<b>0.25</b>	<b>0.74</b>	<b>0.51J</b>	<b>0.50J</b>	<b>0.43J</b>	<b>0.50J</b>
Bromomethane	194	19	5.2	ND	ND	ND	ND	ND
1,3-Butadiene	NA	NA	0.061	ND	ND	ND	ND	ND
tert-Butyl alcohol	NA	NA	NA	0.95J	0.22J	0.41J	0.63J	0.32J
Carbon disulfide	NA	934	730	0.22J	ND	0.12J	0.12J	0.16J
Carbon tetrachloride	188	188	<b>0.13</b>	<b>0.50J</b>	<b>0.50J</b>	<b>0.49J</b>	<b>0.51J</b>	<b>0.52J</b>
Chlorobenzene	NA	NA	62	ND	ND	ND	ND	ND
Chloroethane	39583	NA	2.3	0.12J	ND	ND	0.11J	ND
Chloroform	488	98	0.083	ND	ND	ND	ND	ND
Chloromethane	1033	103	95	1.4	1.2	1.2	1.3	1.7
Cyclohexane	NA	NA	6200	0.24J	ND	0.21J	ND	ND
1,4-Dichlorobenzene	12020	60	0.31	ND	ND	ND	ND	ND
Dichlorodifluoromethane	NA	NA	230	2.3	2.4	2.4	2.4	2.4
1,2-Dichloroethane	NA	2428	0.0074	<b>0.23J</b>	ND	ND	ND	ND
cis-1,2-Dichloroethene	NA	NA	37	ND	ND	ND	ND	ND
Ethylbenzene	43419	1303	1100	0.32J	ND	0.39J	ND	0.30J
4-Ethyltoluene	NA	NA	NA	1.8J	ND	ND	ND	ND
Heptane	NA	NA	NA	0.78J	0.72J	0.94J	0.34J	0.37J
Hexane	NA	2115	210	1.2J	0.96J	1.4J	0.80J	0.65J
Methyl ethyl ketone	NA	NA	5100	9.7	2.9J	11	12	3.2
Methyl isobutyl ketone	NA	NA	3100	0.82J	0.33J	0.91J	1.1J	0.25J
Methylene chloride	2084	1042	4.1	0.74J	0.90J	1.3J	0.64J	0.58J
Styrene	8520	852	1100	0.30J	ND	ND	ND	ND
Tetrahydrofuran	NA	NA	0.99	0.56J	0.26J	0.19J	ND	<b>1.9J</b>
Tetrachloroethene	1356	271	0.32	ND	ND	ND	ND	ND
Toluene	3768	301	400	2.1	1.2	1.7	0.91	1.7
Trichloroethene	10920	546	0.017	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	10800	NA	2300	ND	ND	ND	ND	ND
1,1,2-Trichloro-1,2,2-trifluoroethane	NA	NA	NA	0.55J	0.61J	0.57J	0.59J	0.56J
Trichlorofluoromethane	NA	NA	730	1.3	1.6	1.7	1.4	1.3
1,2,4-Trimethylbenzene	NA	NA	6.2	2.0	ND	0.45J	0.50J	0.97
1,3,5-Trimethylbenzene	NA	NA	6.2	1.0	ND	ND	ND	ND
2,2,4-Trimethylpentane	NA	NA	NA	0.40J	0.21J	0.20J	0.18J	ND
Vinyl Chloride	1278	77	0.11	ND	ND	ND	ND	ND
m/p-Xylene	8687	8687	110	1.1	0.61J	1.3	0.59J	0.85
o-Xylene	8687	8687	110	0.60J	ND	0.28J	ND	0.33J
*Prevailing Wind Direction with respect to the landfill								
U: Upwind								
D: Downwind								
C: Crosswind								
V: Variable								
NS = No Sample								
ND = Not Detected								
NA = Not Available								
Y = TIC present								
Bold indicates result exceeds Region 9 PRG								
Shading indicates result exceeds ATSDR MRL								
<b>Laboratory Data Qualifiers:</b>								
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 5: Event #131: July 15/16, 2009								
Analyte	Monitoring Location							
					School	Cell Tower	Campground	Wetland
	Prevailing Wind Direction				C/C	Co-Located C/C	U/U	U/D
All results in ug/m3								
Method TO-15 Modified	Acute MRL	Chronic MRL	PRG					
Acetone	61762	30881	3300	47	42	19	26	72
Benzene	29	10	<b>0.25</b>	<b>0.46J</b>	<b>0.49J</b>	<b>0.44J</b>	<b>0.42J</b>	<b>0.40J</b>
Bromomethane	194	19	5.2	ND	ND	ND	ND	ND
1,3-Butadiene	NA	NA	0.061	ND	ND	ND	ND	ND
tert-Butyl alcohol	NA	NA	NA	0.59	0.89J	0.22J	0.36J	0.63J
Carbon disulfide	NA	934	730	0.16J	ND	0.24J	0.11J	0.67J
Carbon tetrachloride	188	188	<b>0.13</b>	<b>0.75J</b>	<b>0.64J</b>	<b>0.62J</b>	<b>0.63J</b>	<b>0.65J</b>
Chlorobenzene	NA	NA	62	ND	ND	ND	ND	ND
Chloroethane	39583	NA	2.3	ND	ND	ND	ND	0.21J
Chloroform	488	98	0.083	<b>0.25J</b>	ND	ND	ND	<b>0.38J</b>
Chloromethane	1033	103	95	1.7	1.5	1.4	1.7	2.3
Cyclohexane	NA	NA	6200	0.20J	ND	ND	ND	ND
1,4-Dichlorobenzene	12020	60	0.31	ND	ND	ND	ND	ND
Dichlorodifluoromethane	NA	NA	210	2.5	2.5	2.4	2.6	2.5
1,2-Dichloroethane	NA	2428	0.0074	ND	ND	ND	ND	ND
cis-1,2-Dichloroethene	NA	NA	37	ND	ND	ND	ND	ND
Ethylbenzene	43419	1303	1100	ND	ND	ND	ND	ND
4-Ethyltoluene	NA	NA	NA	ND	ND	ND	ND	ND
Heptane	NA	NA	NA	0.25J	0.34J	0.44J	0.51J	0.48J
Hexane	NA	2115	210	0.64J	0.72J	1.2J	0.66J	0.67J
Methyl ethyl ketone	NA	NA	5100	7.9	5.1	2.6J	4.6	15
Methyl isobutyl ketone	NA	NA	3100	0.76J	0.53J	ND	0.40J	0.99J
Methylene chloride	2084	1042	4.1	1.6J	2.3	3.9	1.5J	1.3J
Styrene	8520	852	1100	ND	ND	ND	ND	ND
Tetrachloroethene	1356	271	0.32	ND	ND	ND	ND	ND
Tetrahydrofuran	NA	NA	0.99	ND	ND	ND	0.20J	0.21J
Toluene	3768	301	400	1.4	1.3	2.4	1.4	2.7
Trichloroethene	10920	546	0.017	ND	ND	ND	ND	ND
1,1,2-Trichloro-1,2,2-trifluoroethane	NA	NA	NA	0.59J	0.59J	0.56J	0.65J	0.59J
Trichlorofluoromethane	NA	NA	730	1.4	1.6	2.2	1.5	1.5
1,2,4-Trimethylbenzene	NA	NA	6.2	0.44J	ND	0.35	ND	0.32J
1,3,5-Trimethylbenzene	NA	NA	6.2	ND	ND	ND	ND	ND
2,2,4-Trimethylpentane	NA	NA	NA	ND	ND	ND	ND	ND
Vinyl Chloride	1278	77	0.11	ND	ND	ND	ND	ND
m/p-Xylene	8687	8687	110	0.73J	ND	0.58J	0.62	0.63J
o-Xylene	8687	8687	110	ND	ND	ND	ND	ND
*Prevailing Wind Direction with respect to the landfill								
U: Upwind								
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