

**Results of Elizabeth 2006 Air Toxics Special Study
Allegheny County Health Department
Air Quality Program**

May 8, 2008

A study of selected hazardous air pollutants was conducted in the back yard of a private residence in, Elizabeth PA between the dates of 01/17/06 and 12/25/06. Specific pollutants were targeted based on analysis of emission inventories submitted by near-by industrial emission sources.

Sampling Methods

HAP Metals:

Sampling Method:	High Volume PM10 sampler
Sample Media:	High Purity Quartz, 10"x 8" filter
Flow Rate:	40 Cubic Feet per Minute
Duration:	24 hours
Frequency:	Every six days, EPA 2006 particulate sampling schedule
Total Samples:	57
Analysis:	ICP Metals analysis, Allegheny County Dept. of Laboratories

Volatile Organic Compounds:

Sampling Method:	Modified Met One SASS sampler
Sample Media:	SKC Charcoal Tube, Small
Flow Rate:	1.0 slpm
Duration:	24 hours
Frequency:	Every six days, EPA 2006 particulate sampling schedule
Total Samples	57
Analysis:	GC/MS, Allegheny County Dept. of Laboratories

2006 RESULTS SUMMARY
3rd Street, Elizabeth, PA

HAP Metals

Units = ng/m³

n=57

	Cr	As	Pb	Ni	Mn	Zn	Se
Avg	2.37	10.17	7.69	1.71	10.52	26.21	6.95
Max	15.11	20.41	102.71	10.21	24.79	111.87	130.84
IRIS		0.2 *			50.0		
TLV	0.8		3.0	160			20.0

*EPA “one in a million” inhalation cancer risk value

HAP Metals in PM10 Comparison Data

Liberty and Clairton

Arsenic (ng/m³)

Date	Liberty, SA High School	Clairton (501 Waddel St.)
	As (ng/m ³)	As (ng/m ³)
2/03/2005	2.82	1.20
2/09/2005	1.86	0.94
2/15/2005	12.91	<0.69
2/21/2005	2.78	0.87
2/27/2005	-----	3.37
4/19/2005	24.08	-----
4/22/2005	5.53	2.62
4/28/2005	1.16	<0.69
5/1/2005	3.37	-----

Forward Township Fly Ash Study
Rostosky Ridge Road
February through August, 2005

(ng/m3) every 3 day schedule n = 64

Arsenic Average (ng/m3)	Arsenic Maximum (ng/m3)
3.16	22.31

(ng/m3)

	As	Zn	Pb	Cr
2/12/2005	5.29	27.28	8.96	2.62
2/15/2005	5.77	30.08	8.31	4.75
2/17/2005	4.58	26.42	6.61	3.39
2/21/2005	4.04	38.62	10.37	4.57

Dorris Drive, Elizabeth, PA

Arsenic (ng/m3)

Forward, Dorris Drive	
Date	As (ng/m3)
11/23/2003	2.86
12/5/2003	0.92
12/11/2003	3.40
12/17/2003	8.30
12/23/2003	1.26
12/29/2003	1.83

2006 RESULTS SUMMARY
3rd Street, Elizabeth, PA

Volatile Organic Compounds

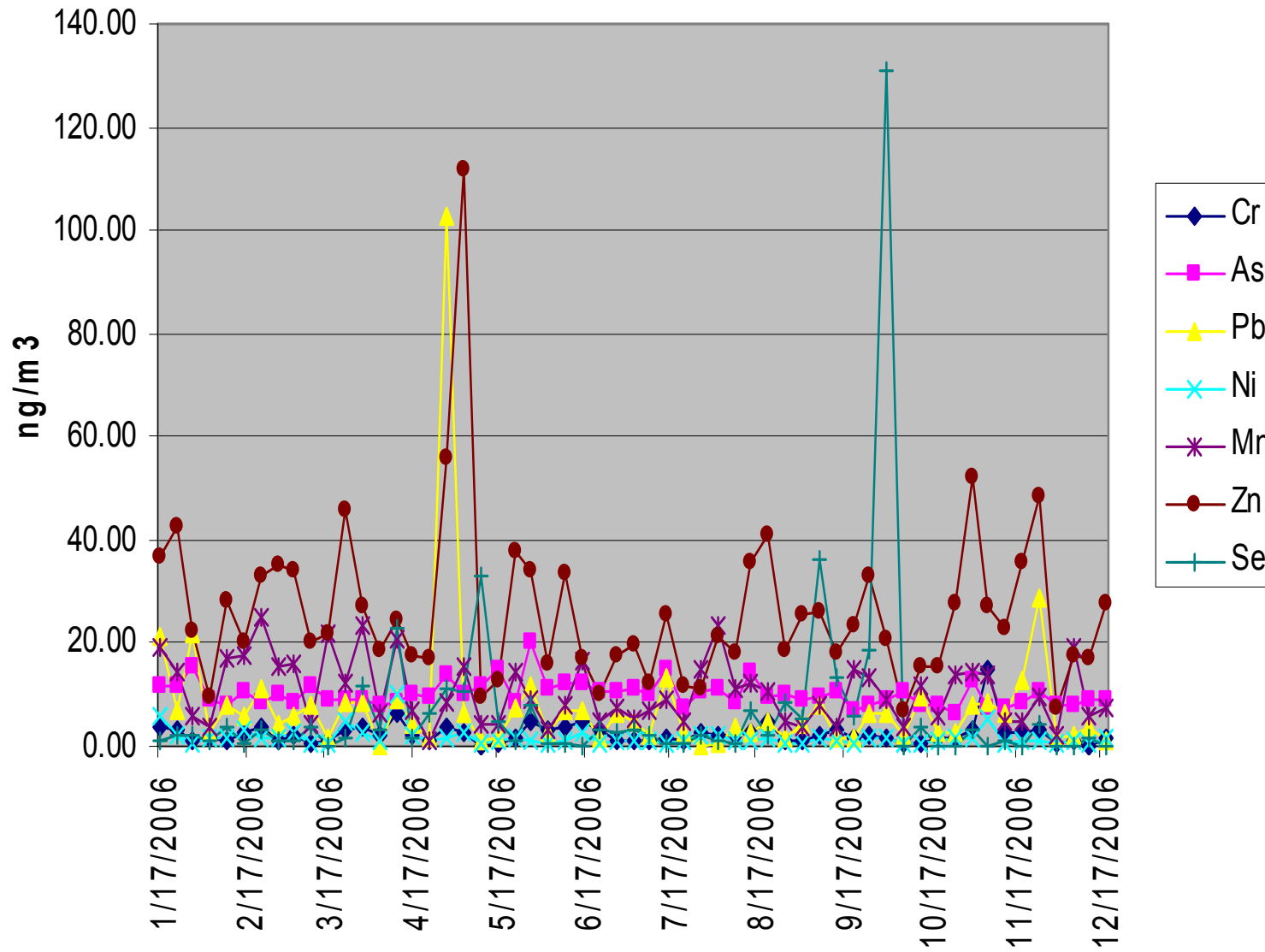
Units = ug/m3	Charcoal Tube Analysis						n=57
	Benzene	Acrylonitrile	Toluene	Ethyl Benzene	p-Xylene	m-Xylene	o-Xylene
Avg	1.09	0.00	6.28	0.55	0.49	1.58	0.42
Max	3.64	0.00	23.62	2.61	2.53	6.20	2.24
IRIS	0.1	0.01	400		*	*	*
TLV				461			

* Xylenes (isomers and mixture) 100 ug/m3

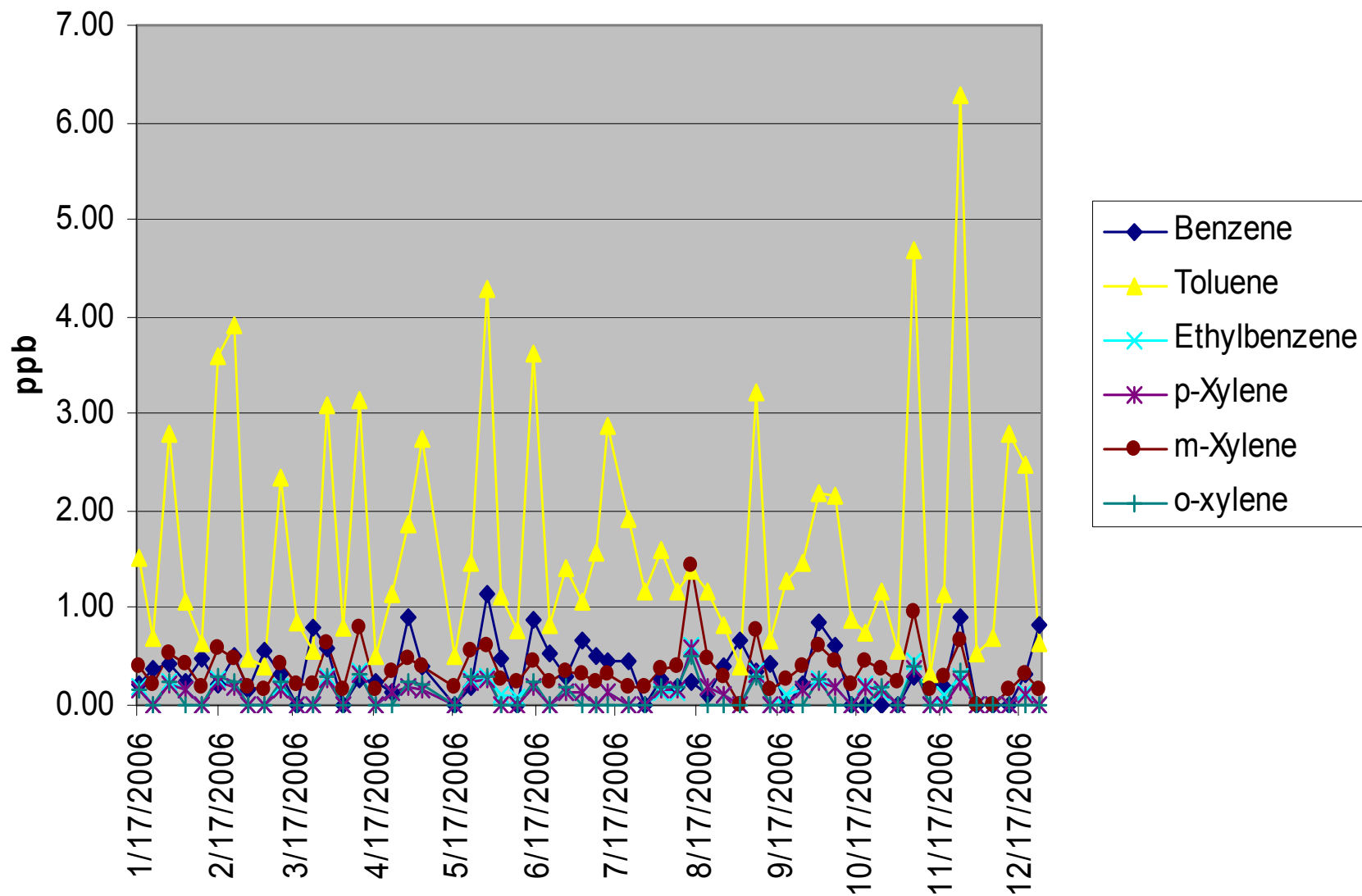
2006 PM10 Mass (ug/m3)

	24 hour Max	Average
Elizabeth	44	22
Braddock	71	30
Liberty	72	24
Clairton	48	18
Avalon	54	25
Manchester	48	22
Moon	44	17
South Fayette	58	17

2006 HAP Metals in Elizabeth



Volatile Organic Compounds / Elizabeth 2006



Air Toxics Special Study
2006 RESULTS SUMMARY

3rd Street, Elizabeth, PA

Conclusions and Observations

Arsenic- Measured levels of arsenic are consistently higher than those measured at other locations. Although arsenic was not measured at any other site in 2006, average levels measured at the 3rd street Elizabeth were over 3 times higher than levels measured at Rostosky Ridge Road in Forward Township during the fly ash contamination incident in 2005. A shorter term analysis of PM10 filters from the South Allegheny High School in Liberty Boro, seem to indicate results closer to the levels seen at the 3rd street location, but only eight samples were analyzed from Liberty. Similar 24 hour maximum concentrations were seen at Liberty and Forward Township sites, but daily levels were consistently higher at the 3rd street location, leading to the much higher annual average concentration.

Chromium- Measured levels of chromium were significant and were close to levels measured at Rostosky Ridge Road in Forward Township during the fly ash contamination incident in 2005, although only four samples were analyzed for chromium during the Forward Township study. Unfortunately, the analytical technique used to collect and analyze all of these samples does not speciate the various types of chromium. An Additional study would be useful that is designed to measure the more harmful hexavalent chromium (VI) portion of the total measured chromium.

In addition to the above observations, three days sample days showed exceptionally high concentrations of zinc, lead and selenium. Three individual days each had large maximum concentrations (over 100 ng/m³) for one of these metals (see table on page 5).

Benzene- Benzene levels are significantly above the IRIS one in a million cancer risk value throughout Allegheny County. Results from the third street study were actually lower than those measured in Downtown Pittsburgh during the same time frame and are similar to those seen in South Fayette, which is a background site for the air monitoring network.

Toluene- Toluene is the most significantly elevated VOC observed in the results from 3rd street. Average and maximum results were over twice those seen in Avalon, during the same span. Avalon was the site that showed the highest toluene levels during the Pittsburgh Air Toxics Study.

Average ethyl benzene and xylene results at Third Street were similar to results seen at the Avalon site, although maximum concentrations were considerably higher at Third Street.

