Ohio Environmental Protection Agency

2016 ALLEN COUNTY AIR QUALITY REPORT

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Introduction

The purpose of this report is to provide results of Ohio EPA air toxics monitoring, along with information on the 2015 Toxic Release Inventory (TRI) and criteria pollutant monitoring programs, for Allen County, Ohio. The air toxics monitoring includes data from three individual monitoring dates in the industrial area on Lima, Ohio's southwest side.

Background

The air toxics monitoring addressed in this report is follow-up monitoring as recommended in the Battelle study "Results of Air Pollutant Measurements in Allen County" dated October 15, 1991. The Battelle study was broadly aimed and used widespread sampling sites to assess the potential for the county's population to be exposed to toxic air pollutants. Ohio EPA's follow-up monitoring was conducted to provide information on the localized industrial area on the southwest side of Lima.

Air Toxics Monitoring in Allen County

The methodology Ohio EPA used to sample and analyze for air toxic compounds is the same methodology as that outlined in the Battelle study in section 3.3.1 – VOCs Sampling and Analysis. A stainless steel canister of known volume is filled with a sample of air and then laboratory analysis is conducted using a gas chromatograph to determine individual air toxic compound concentration (also known as speciation). Ohio EPA collected the samples during one-hour periods, whereas the Battelle study used 24-hour sampling durations.

Locations and Dates for Monitoring

Each monitoring day, Ohio EPA sets up a canister downwind of the city's industrial area that represents the highest air toxics concentration. Monitoring locations and dates are unannounced and known only to Ohio EPA personnel. Locations and dates are listed below and can also be found in Appendix A.

Test Number	Date	Monitoring Location
1	November 17, 2016	2200-2300 block of Adgate Rd., Lima
2	February 6, 2017	400 block of Paul St., Lima
3	April 25, 2017	1000 block of Oxford Ave., Lima

Toxics Compounds Monitored

The 65 toxic compounds listed below were monitored on the three dates listed above. The compounds include the 41 toxic compounds monitored in the Battelle study (see Table 3 on page 21 of the Battelle study).

1. acetone
2. acetonitrile
3. acrylonitrile
4. benzene
5. benzyl chloride
6. bromodichloromethane
7. bromoform
8. bromomethane/methyl bromide
9. 1,3-butadiene
10. n-butane
11. 2-butanone
12. carbon disulfide
13. carbon tetrachloride
14. chlorobenzene
15. chloroethane/ethyl chloride
16. chloroform/trichloromethane
17. chloromethane/methyl chloride
18. 3-chloropropene
19. cumene
20. cyclohexane
21. dibromochloromethane
22. 1,2-dibromoethane
23. 1,2-dichlorobenzene (ortho)
24. 1,3-dichlorobenzene (meta)

25. 1,4-dichlorobenzene (para)
26. dichlorodifluoromethane
27. 1,1-dichloroethane
28. 1,2-dichloroethane
29. 1,1-dichloroethene
30. cis-1,2-dichloroethene
31. trans-1,2-dichloroethene
32. 1,2-dichloropropane
33. cis-1,3-dichloropropene
34. trans-1,3-dichloropropene
35. 1,2-dichloro-1,1,2,2-tetrafluoroethane
36. ethanol
37. ethylbenzene
38. 4-ethyltoluene
39. n-heptane
40. hexachlorobutadiene
41. hexane
42. methyl butyl ether
43. methylene chloride/dichloromethane
44. 4-methyl-2-pentanone
45. naphthalene
46. n-nonane
47. n-pentane
48. n-propyl benzene
49. propylene
50. styrene
51. 1,1,2,2-tetrachloroethane
52. tetrachloroethylene/tetrachloroethene
53. toluene
54. 1,2,4-trichlorobenzene
55. 1,1,1-trichloroethane
56. 1,1,2-trichloroethane
57. trichloroethene
58. trichlorofluoromethane
59. 1,1,2-trichloro-1,2,2-trifluoroethane
60. 1,2,4-trimethylbenzene
61. 1,3,5-trimethylbenzene
62. vinyl acetate
63. vinyl chloride

64. o-xylene
65. total m+p-xylene

Ohio EPA implemented a new sampling program which removed the following compounds from the target list.

1. Acetonitrile
2. Chlorodifluromethane
3. Decane
4. Dibromomethane
5. a-Methylstyrene
6. n-Octane
7. Propane
8. n-undecane

While acetonitrile was not monitored during the April 25, 2017 test. When conducting future air toxics monitoring, a request will be made to include acetonitrile in the list of targeted compounds.

Summary of Air Toxics Monitoring Results

Detailed listings of the results of the air toxics monitoring can be found in Appendix B. The tables in Appendix B contain the name of each air toxic compound and the concentration in parts per billion (ppb).

Ohio EPA evaluates control of air toxic pollutants through determinations of best available technology. These evaluations require that no new air pollution source can emit an air toxic to the ambient air to such an extent that the resulting ambient air concentration would exceed one forty-second (1/42) of the Threshold Limit Value (TLV) for any air toxic pollutant.

The TLV refers to the concentration of a substance under which it is believed that a person may be repeatedly exposed to day after day without adverse health effects. For purposes of this evaluation, an air toxic compound is defined as one for which the American Conference of Governmental Industrial Hygienists (ACGIH) has established a TLV. TLV/42 values for given air pollutants are contained in column two in the Appendix B tables. The TLV/42 is also referred to as the maximum acceptable ground level concentration (MAGLC).

A review of information contained in Appendix B indicates that all monitoring results were in compliance with respective MAGLC values.

TOXIC RELEASE INVENTORY (TRI) DATA

Background and Description of TRI Program

The TRI is a publicly available database that contains specific toxic chemical release, transfer, waste management and pollution prevention information for manufacturing facilities across the United States. This inventory was established under the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA), which the U.S. Congress passed to promote planning for chemical emergencies, and to provide information to the public about the presence and release of toxic and hazardous chemicals in their communities. In 1988, the Ohio General Assembly passed the Ohio Right-to-Know Act, Substitute Bill 367. This law provides for state implementation of EPCRA. Ohio's TRI program is coordinated by the Division of Air Pollution Control.

Each year, facilities with 10 or more employees that meet the established thresholds for manufacturing, processing or otherwise used chemicals, must report to the U.S. EPA and the state where the facility is located, their estimated releases and transfers of toxic chemicals, along with waste management and pollution prevention activities. The current reporting thresholds are:

- Manufacturing chemicals – 25,000 pounds;
- Processing chemicals – 25,000 pounds; and
- Otherwise used chemicals – 10,000 pounds.

In addition to these reporting thresholds, certain persistent, bio-accumulative and toxic chemicals (PBTs) with increased toxicity have the following reporting thresholds:

- 100 pounds of aldrin, lead, lead compounds, methoxyclor, pendimethalin, polycyclic aromatic compounds (PACs), tetrabromobisphenol A and trifluralin;
- 10 pounds of benzo(g,h,i)perylene, chlordane, heptachlor, hexachlorobenzene, isodrin, mercury, mercury compounds, octachlorostyrene, pentachlorobenzene, polychlorinated biphenyl (PCBs) and toxaphene; and
- 0.1 gram of dioxin and dioxin-like compounds

The current TRI toxic chemical list contains over 650 chemicals and chemical categories. Reports are due by July 1 for the previous calendar year. These reports are called Form R or, in some instances, alternate Form A. For reporting years 1987

through 1997, manufacturing facilities with Standard Industrial Classification codes 20 through 39 were subject to TRI regulations. On May 1, 1997, seven non-manufacturing industrial sectors were added. These include metal mining, coal mining, coal and oil-fired electricity generating facilities, commercial hazardous waste treatment facilities, chemicals and allied products (wholesale), petroleum bulk stations (wholesale) and solvent recovery services. TRI reports for these non-manufacturing industrial sectors were first filed July 1, 1999, covering calendar year 1998.

Historically, Ohio EPA would provide the TRI data to the public in the form of an annual report, along with an electronic database with county summaries maintained on the agency's website. Starting with TRI 2015 reporting year, Ohio EPA will be using the report generated by U.S. EPA instead of creating a state specific report. The 2015 TRI reporting year is also the last year Ohio EPA will maintain a county summaries database.

For Allen County, TRI data please refer to U.S. EPA's TRI website provided at the link below:

https://iaspub.epa.gov/triexplorer/tri_factsheet.factsheet?&pstate=OH&pcounty=allen&pyear=2015&pParent=TRI&pDataSet=TRIQ1

Summary of Changes for TRI Reporting

Over the years there have been numerous changes and additions to the TRI reporting requirements. This report only lists those changes impacting the TRI reporting period for 2015, 2016 and 2017.

On September 30, 2014, U.S. EPA published a final rule adding a nonylphenol category to the TRI list of reportable chemicals. The final rule is effective for the 2015 TRI reporting year with the first reports were due July 1, 2016.

On November 23, 2015, U.S. EPA published a final rule adding 1-bromopropane to the TRI list of reportable chemicals. The final rule was effective for the 2016 TRI reporting year so the first reports were due July 1, 2017.

On November 28, 2016, U.S. EPA added a hexabromocyclododecane (HBCD) category to the TRI list of reportable chemicals. The final rule is effective for the 2017 TRI reporting year so the first reports will be due July 1, 2018.

On July 11, 2016, Ohio EPA proposed an amendment to the current state rules to be consistent with U.S. EPA reporting language found in 40 CFR 370.28. The amendment is intended to clarify the requirement to aggregate extremely hazardous substances in mixtures.

On July 13, 2016, Ohio EPA issued a draft amendment of the Toxic Chemical Release Reporting Rules under OAC Chapter 3745-100. Changes to the rule include updating the list of applicable chemicals to be consistent with those listed in the federal register and updating the reporting rule to require electronic submittal.

For additional information please refer to U.S. EPA's website at the link below:

https://www.epa.gov/toxics-release-inventory-tri-program

Limitations for Use of TRI Data

When interpreting TRI data, the user should be aware of various limitations in order to accurately assess the significance of annual releases. These limitations include:

- TRI covers only certain manufacturing and non-manufacturing industries. Other industries not covered under TRI regulations may release toxic chemicals into the environment that are not required to be reported.

- The TRI list of chemicals and chemical categories does not represent all chemicals used by all industries.

- Releases are reported in total annual quantities without referencing the frequency or duration and thus are not sufficient to assess health or environmental impacts.

- The majority of releases are based on estimates, which can result in data variability. For instance, facilities are required to base releases on actual monitoring if required in a permit. Release estimates are allowed when monitoring data is not a requirement.

- High volume releases of relatively non-toxic chemicals may appear to be a more serious issue than lower volume releases of highly toxic chemicals. The opposite might be true. The user should examine the characteristics of individual chemicals before drawing conclusions.

- TRI reports contain information on chemical releases, but not the public's exposure to these chemicals. Some chemicals break down when exposed to the environment, while others disperse rapidly when released and some may not disperse due to inert chemical properties. Disposal of chemicals by underground deep well injection does not expose the public since the material is injected thousands of feet below ground level.

Summary of Allen County TRI Data

Results of the 2015 TRI program for Allen County are contained in Appendix C. Allen County ranks fourth in Ohio with regard to total toxic chemical releases and transfers, and tenth with regard to total air pollutant releases. The trend for air pollutant releases in Allen County during the past six reporting years (2010 – 2015) has shown some variation. This appears to be related to increases or decreases in facility production since the number of reporting facilities has remained similar from year to year (between 18 and 21 facilities).

Criteria Pollutant Monitoring

Background Information

National Ambient Air Quality Standards (NAAQS) were established for seven air pollutants in order to protect public health and welfare. The seven pollutants with established NAAQS are:

- Particulate Matter less than or equal to 2.5 micron diameter ($PM_{2.5}$)
- Particulate Matter less than or equal to 10 micron diameter (PM_{10})
- Sulfur Dioxide (SO_2)
- Carbon Monoxide (CO)
- Ozone (O_3)
- (NO_2)
- Lead (Pb).

The Clean Air Act requires that U.S. EPA evaluate the NAAQS every five years to ensure that air quality standards are protective of public health and the environment.

The tables on the following two pages show the current NAAQS values.

U.S. EPA and Ohio EPA Ambient Air Quality Standards

National Ambient Air Quality Standards

Pollutant	Duration	Restriction	Primary Standard	Secondary Standard
$PM_{2.5}$	1-yr concentration	Not to be exceeded, 3-year average of annual arithmetic mean	12 µg/m3	15 µg/m3
	24-hr concentration	Not to be exceeded, 3-year average of 98th percentile	35 µg/m3	35 µg/m3
PM_{10}	24-hr concentration	Not to be exceeded more than once per year averaged over 3 years	150 µg/m3	150 µg/m3
SO_2	1-hr mean concentration	Not to be exceeded, 3-year average of 99th percentile of daily maximum	0.075 ppm (200 µg/m3)	None
	3-hr mean concentration	Not to be exceeded more than once per year	None	0.5 ppm
CO	8-hr mean concentration	Not to be exceeded more than once per year	9 ppm (10 mg/m3)	None
	1-hr concentration	Not to be exceeded more than once per year	35 ppm (40 mg/m3)	None

U.S. EPA & Ohio EPA Ambient Air Quality Standards

National Ambient Air Quality Standards (Continued)

Pollutant	Duration	Restriction	Primary Standard	Secondary Standard
O_3	8-hr concentration	Not to be exceeded, annual fourth highest concentration averaged over 3 years	0.070 ppm	0.070 ppm
NO_2	1-yr concentration	Not to be exceeded, annual arithmetic mean	0.053 ppm (100 µg/m3)	0.053 ppm (100 µg/m3)
	1-hr concentration	Not to be exceeded, 3-year average of 98th percentile of daily maximum	0.10 ppm (189 µg/m3)	None
Pb	Rolling 3-month mean concentration	Not to be exceeded	0.15 µg/m3	0.15 µg/m3

Notes

Primary standards are established for the protection of public health.

Secondary standards are established for the protection of public welfare.

µg/m3 = micrograms per cubic meter

ppm = parts per million

mg/m3 = milligrams per cubic meter

Particulate Matter NAAQS History

On July 1, 1987, U.S. EPA promulgated revisions to the NAAQS for particulate matter. The primary standard includes only those particles less than or equal to 10 micron diameter (PM_{10}). From July 1, 1987 until July 18, 1997, the annual standard was 50 µg/m3 annual arithmetic mean, averaged over three years. The 24-hour standard, not to be exceeded more than once, was 150 µg/m3. The standard is currently 150 µg/m3, not to be exceeded more than once per year, averaged over three years. On October 17, 2006, U.S. EPA revoked the annual PM_{10} standard.

The standards were changed on July 18, 1997, when the $PM_{2.5}$ standard was promulgated. This NAAQS was established due to research findings concerning particle size. On December 18, 2006, the 24-hour $PM_{2.5}$ standard was revised from 65 µg/m3 to 35 µg/m3. Annual arithmetic mean standards for $PM_{2.5}$ were also promulgated on December 14, 2012. These are 12 µg/m3 primary standards (lowered from an original value of 15 µg/m3) and 15 µg/m3 secondary standard.

Because of U.S. EPA's final action on the $PM_{2.5}$ standard, Ohio's ambient air monitoring network has been expanded. Although monitoring for $PM_{2.5}$ is generally limited to larger metropolitan areas in Ohio, U.S. EPA decided that northwest Ohio lacked this type of monitoring, so a $PM_{2.5}$ monitor was installed at Bath High School (Bath Township) in the Lima area. It measures effects from nearby industry and mobile sources (for example, emissions from vehicles using I-75). The monitor is recording hourly $PM_{2.5}$ data.

Ohio EPA operates 59 $PM_{2.5}$ monitors throughout the state, nine of which are used for chemical speciation. The majority of particulate monitoring in Ohio is done using $PM_{2.5}$, rather than PM_{10} monitors. There are only 15 designated total suspended particulate (TSP) monitors in Ohio, and these are used for specific metals analysis (such as lead) near industrial sites.

Sulfur Dioxide NAAQS History

On June 2, 2010, U.S. EPA promulgated final rules to revise the NAAQS for sulfur dioxide. The annual and 24-hour average primary NAAQS of 0.03 ppm (80 µg/m3) and 0.14 ppm (365 µg/m3) were revoked, and were replaced with a new, one-hour primary NAAQS of 0.075 ppm (200 µg/m3). Attainment status is determined by calculating the three-year average of the 99^{th} percentile of the annual distribution of daily maximum one-hour average concentrations. The new, one-hour primary NAAQS was published in the Federal Register on June 22, 2010.

U.S. EPA also published a final rule on April 3, 2012 retaining the sulfur dioxide secondary NAAQS of 0.5 ppm (1300 µg/m3), as a 3-hour mean concentration not to be exceeded more than once per year.

Ohio EPA operates 33 SO_2 monitors throughout the state

Ozone NAAQS History

On March 12, 2008, U.S. EPA promulgated final rules to revise the NAAQS for ground-level ozone, and lowered the NAAQS from 0.08 ppm to 0.075 ppm as a three-year average of the fourth highest 8-hour average. If the three-year average is greater than 0.075 ppm, a violation of the standard has occurred. Ohio EPA was required to notify U.S. EPA by March 2009 which counties should be designated as nonattainment areas for the revised NAAQS, based on ozone monitoring data.

On June 15, 2007, U.S. EPA designated Allen County as an attainment area for the previous ozone NAAQS of 0.08 ppm as a three-year average of the fourth highest 8-hour average. In the March 9, 2009, letter to U.S. EPA, Ohio EPA recommended that Allen County be designated as an attainment area for the new NAAQS of 0.075 ppm, since recent monitoring data (2006 through 2008) indicated a three-year average of 0.073 ppm.

It was originally expected that U.S. EPA would publish a public notice of each state's recommended designations for attainment or nonattainment areas by mid-November 2009, and a final list of attainment and nonattainment areas for the 0.075 ppm standard by March 12, 2010. However, environmental and industry groups filed petitions with the D.C Circuit Court of Appeals in May 2008 for review of the 2008 ozone standards.

In March 2009, the court granted a request by U.S. EPA to stay the litigation to allow time to review the standards and investigate whether the standards should again be revised. U.S. EPA proposed new ozone primary and secondary standards on January 6, 2010. At the time of proposal, it was expected that the new primary standard would be within a range of 0.060 to 0.070 ppm.

On July 11, 2011, U.S. EPA submitted a draft final rule titled "Reconsideration of the 2008 Ozone Primary and Secondary NAAQS" for review by the Office of Information and Regulatory Affairs under two executive orders. The President of the United States did not support finalizing the rule, so it was sent back to U.S. EPA. to consider the high costs to industry associated with lowering the standard to the 0.060 to 0.070 ppm range.

On October 26, 2015, U.S. EPA submitted a final rule for publication in the Federal Register to revise the primary and secondary ozone NAAQS. The final rule became effective December 28, 2015 lowering the primary and secondary ozone standards from 0.075 ppm to 0.070 ppm. There is a transition period to work through the implementation of the standard.

Ohio EPA operates 49 ozone monitors throughout the state.

Pollutants Monitored

Given the type of industry and mobile sources that exist in Allen County, specifically in the Lima area, the criteria pollutants of most concern are particulate matter (specifically $PM_{2.5}$), sulfur dioxide and ozone.

Particulate matter can harm body tissue such as the linings of the nose, throat and lungs by irritation. Nasal hairs and sneezing are the body's natural defenses against some of the relatively large particles (15 to 100 micron diameter). $PM_{2.5}$ is particulate matter that includes dust, soot, dirt, smoke and/or liquid droplets that can be suspended in the air for long periods. The particles are less than or equal to 2.5 microns in diameter, and are also called "fine" particulate. These small particles pose the greatest health risks due to their small size (approximately $1/30^{th}$ the average diameter of a human hair). $PM_{2.5}$ particles can penetrate deep into the lungs where tissue damage may occur. Sources of $PM_{2.5}$ include combustion activities such as motor vehicles, boilers, wood burning and other industrial processes.

Sulfur dioxide is a colorless gas formed through the combination of sulfur and oxygen during the combustion of fossil fuels, such as coal or oil. Gaseous fuels such as natural gas or propane contain smaller amounts of sulfur-producing material, and thus burn cleaner, producing less sulfur dioxide than coal or oil combustion. Waste gas combustion through flares also produces sulfur dioxide. Conversion to sulfuric acid (H_2SO_4) may occur when sulfur dioxide comes into contact with moisture, either in the atmosphere, on plants and materials or in the lungs. The presence of increased levels of sulfur dioxide in the atmosphere has been associated with a higher incidence of respiratory diseases, mortality rates and property damage.

Ozone is a pollutant that is created photochemically in the lower atmosphere by the reaction of volatile organic compounds (VOCs) and nitrogen oxides (NO_x) in the presence of sunlight. It is not directly emitted into the atmosphere from emissions sources. Due to temperature and sunlight's role in its formation, the largest ozone concentrations occur during the summer months.

Ozone irritates mucous membranes in the nose and throat, causes eye irritation, reduces resistance to respiratory infections, damages plants and contributes to the deterioration of materials. Individuals with asthma, heart or circulatory disease may experience symptoms when concentrations are elevated.

Monitoring Location

Ohio EPA monitors ambient air for $PM_{2.5}$, SO_2 and O_3 concentrations at a permanent monitoring site northeast of Lima, Ohio, in Bath Township. Specifically, the site is at Bath High School, 2650 Bible Road. This site was chosen for three main reasons.

1. It is located downwind from the predominant southwest winds experienced in the area.

2. It is located at a distance from the urban area of Lima that will allow ample time for the formation of O_3 from the photochemical reaction of VOC and NO_x.

3. It provides a location that addresses security concerns such as vandalism, sabotage, etc.

$PM_{2.5}$ and SO_2 are monitored continuously on a year-round basis and O_3 is monitored from March 1 through October 31.

Monitoring Results

The following tables summarize the continuous monitoring results for $PM_{2.5}$, sulfur dioxide and ozone. Concentration (Conc.) results for $PM_{2.5}$ are presented in µg/m3, SO_2 and O_3 are both shown in ppm.

$PM_{2.5}$ Monitoring Results

Year	24-hr Average Conc. (µg/m3)	3-Yr Average of 24-Hr Average Conc. (µg/m3)	Annual Arithmetic Mean Conc. (µg/m3)	3-Yr Average of Annual Arithmetic Mean Conc. (µg/m3)
2016	16.7	22.0	7.5	8.9
2015	21.7	22.8	9.7	9.7
2014	27.7	22.5	9.5	9.8
2013	19.0	22.6	9.9	10.2
2012	20.7	28.0	10.0	10.6

SO_2 Monitoring Results

Year	1-Hr Annual Mean (ppm)	3-Yr Average of 1-Hr Annual Mean (ppm)
2016	0.004	0.009
2015	0.010	0.010
2014	0.013	0.010
2013	0.007	0.011
2012	0.011	0.016
2011	0.014	0.020
2010	0.023	0.022
2009	0.023	0.021

O_3 Monitoring Results

Year	8-Hr 4th Highest (ppm)	3-Yr Average of 8-Hr 4th Highest (ppm)
2016	0.068	0.066
2015	0.064	0.066
2014	0.066	0.071
2013	0.068	0.073
2012	0.079	0.074*
2011	0.073	0.072
2010	0.072	0.070
2009	0.071	0.072
2008	0.067	0.073
2007	0.078	0.078
2006	0.075	0.077
2005	0.081	0.081

*The 2010 through 2012 actual value for 3-Yr Average is 0.07466 ppm. Per U.S. EPA rounding and truncating regulations, the value is truncated to 0.074 ppm and is compliant with the NAAQS of 0.075 ppm.

Conclusions

1. Air toxics have been monitored near the industrial area in southwest Lima, Ohio since 1990. Results of air toxics monitoring are similar to the county-wide monitoring results (from multiple locations in Allen County) from the 1991 Battelle study, indicating individual air toxic concentrations are well within the maximum acceptable ground level concentration (MAGLC).

2. Ohio EPA air toxics monitoring results from the three samples collected between November 17, 2016 and April 25, 2017, (Appendix B) indicate that results for the 65 air toxic compounds are all within the acceptable limits for ambient concentration, so compliance with respective MAGLC values is shown.

3. Monitoring results for $PM_{2.5}$ indicate compliance with the NAAQS as follows:

    - The calculated 3-year average for 2014 through 2016 for the 24-hour average concentration complies with the primary and secondary NAAQS, both of which are 35 µg/m3; and

    - The calculated 3-year average for 2014 through 2016 for the annual arithmetic mean concentration complies with the primary and secondary NAAQS of 12 µg/m3 and 15 µg/m3, respectively.

4. Monitoring results for sulfur dioxide indicate compliance with NAAQS as follows:

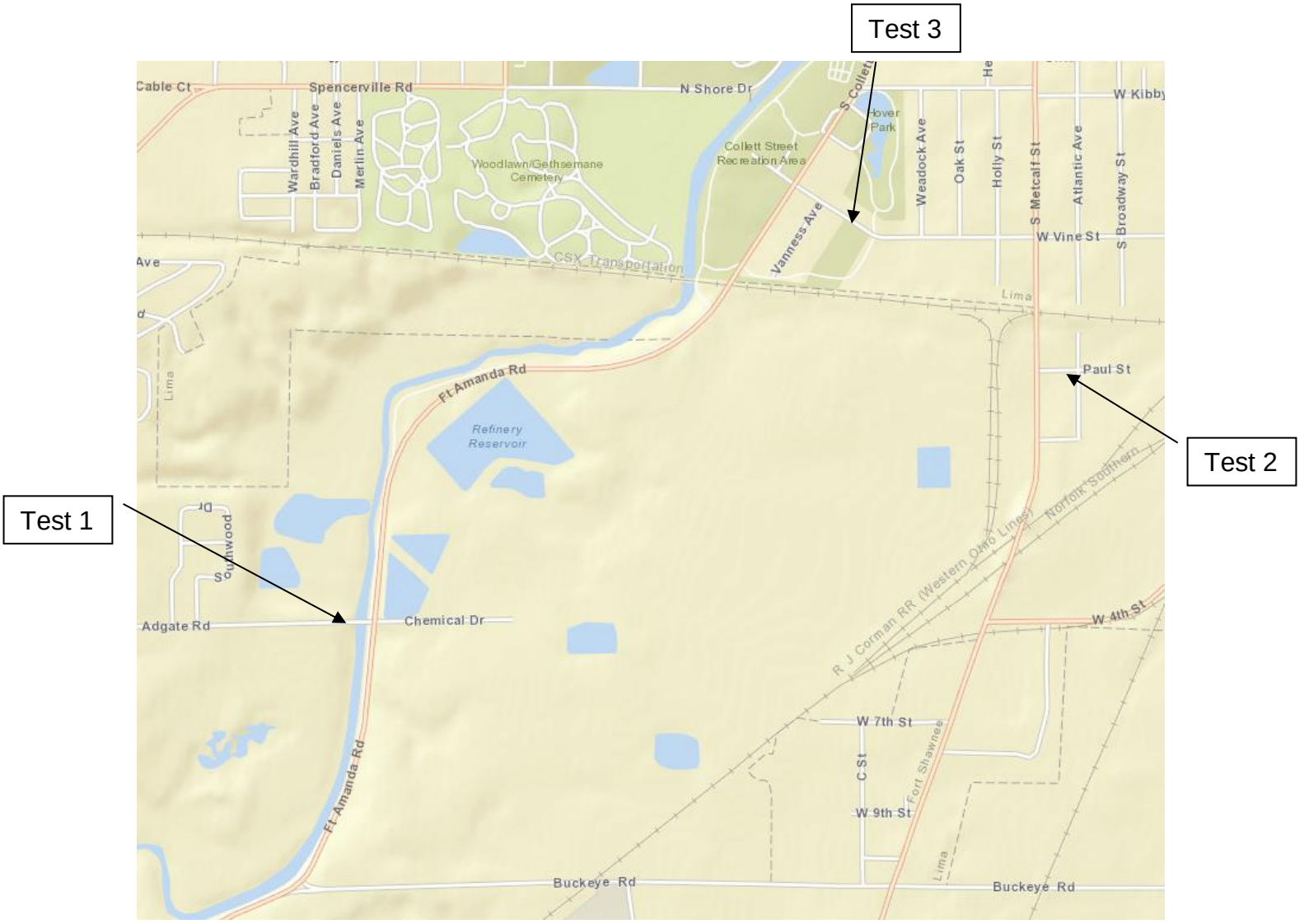
    - The calculated 3-year average for 2014 through 2016 for the 1-hour average concentration complies with the primary standard of 0.075 ppm; and

    - The calculated 2016 1-hour average concentration complies with the secondary standard of 0.5 ppm.

5. Monitoring results for 2014 through 2016 for ozone indicate compliance with the 3-year average, fourth highest 8-hour concentration primary and secondary NAAQS of 0.070 ppm.

Appendix A

Air Toxics Monitoring Locations



1

Test Number	Date	Location
Test 1	November 17, 2016	2200-2300 block of Adgate Rd., Lima
Test 2	February 6, 2017	400 block of Paul St., Lima
Test 3	April 25, 2017	1000 block of Oxford Ave., Lima

1 Map Detail can be found at: http://oepa.maps.arcgis.com/home/webmap/viewer.html

Appendix B

Air Toxics Monitoring Results

Air Toxics Monitoring Results

Compound	TLV/42 (ppb)	Detection limit (ppb)	Test #1 10/17/16 (ppb)	Test #2 2/7/17 (ppb)	Test #3 4/25/17 (ppb)
acetone	5,952	0.5	3.97	9.26	5.28
acetonitrile*	476	0.2	0.12		
acrylonitrile	47.6	0.2	0.09	0.04	
benzene	11.9	0.2	0.07	0.33	0.23
benzyl chloride	23.8	0.2			
bromodichloromethane	none	0.2			
bromoform	11.9	0.2			
bromomethane/ methyl bromide	none	0.2	0.01		
1,3-butadiene	47.6	0.2			
n-butane	23,809	0.2	0.36	3.06	4.66
2-butanone	4,762	0.5	0.25	1.07	0.9
carbon disulfide	23.8	0.5	0.09	0.05	0.01
carbon tetrachloride	119	0.2	0.11	0.09	0.08
chlorobenzene	238	0.2			
chlorodifluoromethane*	23,809	0.2	0.37		
chloroethane/ethyl chloride	2,381	0.2			0.05
chloroform/trichloro-methane	238	0.2			
chloromethane/methyl chloride	1,190	0.2	0.55	0.87	0.88
3-chloropropene	none	0.2			
cumene	1,190	0.2			
cyclohexane	2,381	0.2		0.15	0.1
decane*	none	0.2	0.14		
dibromochloromethane	none	0.2		0.7	0.57
1,2-dibromoethane	none	0.2			
dibromomethane*	none	0.2			
1,2-dichlorobenzene (ortho)	595	0.2			

Compound	TLV/42 (ppb)	Detection limit (ppb)	Test #1 10/17/16 (ppb)	Test #2 2/7/17 (ppb)	Test #3 4/25/17 (ppb)
1,3-dichlorobenzene (meta)	none	0.2			
1,4-dichlorobenzene (para)	238	0.2			
dichlorodifluoro-methane	23,809	0.2	0.02	0.7	0.57
1,1-dichloroethane	2,381	0.2			
1,2-dichloroethane	238	0.2	0.01	0.04	
1,1-dichloroethene	none	0.2			
cis-1,2-dichloroethene	none	0.2			
trans-1,2-dichloro-ethene	4,762	0.2			
1,2-dichloropropane	1,786	0.2			
cis-1,3-dichloro-propene	23.8	0.2			
trans-1,3-dichloro-propene	23.8	0.2			
1,2-dichloro-1,1,2,2-tetrafluoroethane	none	0.2	0.5		
ethanol	23,809	0.2	3.83	20.06	6.92
ethylbenzene	476	0.2	0.02	0.28	0.08
4-ethyltoluene	none	0.2	0.02	0.14	0.02
n-heptane	9,524	0.2	0.02	0.21	0.12
hexachlorobutadiene	0.48	0.2			
hexane	1,190	0.2	0.05	0.42	0.51
methyl butyl ether	none	0.2			
methylene chloride/dichloro-methane	1,190	0.2			0.12
4-methyl-2-pentanone	none	0.2			0.03
a-methylstyrene*	1,190	0.2	0.03		
naphthalene	238	0.2	0.12		0.05
n-nonane	4,762	0.2	0.01		0.03

Compound	TLV/42 (ppb)	Detection limit (ppb)	Test #1 10/17/16 (ppb)	Test #2 2/7/17 (ppb)	Test #3 4/25/17 (ppb)
n-octane*	7,143	0.2	0.11		
n-pentane	23,809	0.2	0.14	3.19	2.77
n-propyl benzene	none	0.2			
propylene	11,905	0.2	0.27	4.4	1.01
styrene	476	0.2		0.1	0.02
1,1,2,2-tetrachloro-ethane	23.8	0.2	0.02		
tetrachloroethylene/ tetrachloroethene	595	0.2			
toluene	1,190	0.2	0.12	2.05	0.64
1,2,4-trichlorobenzene	none	0.2	0.04	0.12	
1,1,1-trichloroethane	8,333	0.2			
1,1,2-trichloroethane	238	0.2			
trichloroethene	none	0.2		0.07	
trichlorofluoromethane	none	0.2	0.24	0.29	0.22
1,1,2-trichloro-1,2,2-trifluoroethane	23,809	0.2	0.07	0.09	0.06
1,2,4-trimethylbenzene	595	0.2	0.05	0.17	0.09
1,3,5-trimethylbenzene	595	0.2	0.02	0.04	0.02
n-undecane	none	0.2	0.03		
vinyl acetate	238	0.2	0.06	0.14	0.36
vinyl chloride	23.8	0.2			
o-xylene	2,381	0.2	0.03	0.29	0.1
total m+p-xylene	2,381	0.4		0.74	0.22

*Toxic compound was not analyzed from the April 25, 2017 sample

Notes:

ppb = parts per billion

If no value is presented in the table for the test date, the results are less than the test method detection limit.

If “none” is listed in column labeled TLV/42 (ppb), this means there is no established

threshold limit value in the American Conference of Governmental Industrial Hygienists (ACGIH) and, thus, no value for TLV/42 can be calculated.

Appendix C

2015 TRI Data for Allen County

State of Ohio Environmental Protection Agency
Toxic Chemical Release Inventory Program
2015 County Summary

ALLEN		2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
County Rank in State		4	7	4	7	10	5	4	3	3	3	2	3	4
Number of Reporting Facilities		23	22	22	22	22	23	21	21	21	21	19	19	19

Environmental Media	All Data Included (lbs)						Normalized Data (lbs)					
	2010	2011	2012	2013	2014	2015	2010	2011	2012	2013	2014	2015
Air	3,394,869	3,979,101	5,696,208	5,858,744	5,028,123	3,252,375	954,202	956,850	1,707,365	1,766,119	1,549,641	1,003,047
Surface Water	304,521	303,359	193,146	185,914	130,702	132,510	2,325	1,283	2,193	2,234	1,886	306
Deepwell Injection	9,867,504	8,889,510	7,362,540	7,157,108	7,344,770	7,570,714	8,344,714	7,019,210	5,674,437	5,414,221	5,357,740	5,327,487
Land On-Site	0	9	0	8	556	1,036	0	0	0	8	556	670
POTW	141	91	59	29	44	36	65	29	23	13	16	19
Off-Site Transfers	608,263	580,409	521,426	579,454	553,748	488,106	418,593	367,167	359,258	372,747	357,044	304,176
Total Releases & Transfers	14,175,298	13,752,479	13,773,379	13,781,257	13,057,943	11,444,777	9,719,899	8,344,539	7,743,276	7,555,342	7,266,883	6,635,705

Top 5 Facilities in County (Based on Total Air Releases)	State Rank	Air Releases (lbs/2015)	Top 5 Facilities in County (Based on Total Releases & Transfers)	State Rank	Total Releases (lbs/2015)
1) PCS NITROGEN OHIO L.P.	1	2,882,989	1) INEOS USA LLC	2	7,681,568
2) LIMA REFINING CO	48	137,589	2) PCS NITROGEN OHIO L.P.	10	2,995,868
3) INEOS USA LLC	54	105,686	3) FORT AMANDA SPECIALTIES LLC	73	361,086
4) DTR INDUSTRIES INC.	70	69,461	4) LIMA REFINING CO	122	161,483
5) GUARDIAN LIMA LLC	127	27,427	5) DTR INDUSTRIES INC.	155	88,151

Top 5 Chemicals in County (Based on Total Air Releases)	Air Releases (lbs/2015)	Top 5 Chemicals in County (Based on Total Releases & Transfers)	Total Releases (lbs/2015)
1) AMMONIA	2,227,347	1) AMMONIA	4,421,055
2) METHANOL	567,910	2) ACETONITRILE	1,563,915
3) NITRIC ACID	101,012	3) METHANOL	1,340,031
4) ETHYLENE GLYCOL	61,655	4) ACRYLAMIDE	1,150,185
5) PROPYLENE	51,125	5) ACRYLONITRILE	968,228