STATE OF OHIO
AIR QUALITY
CALENDAR YEAR 2010

PREPARED BY

AIR QUALITY AND ANALYSIS UNIT
DIVISION OF AIR POLLUTION CONTROL
OHIO ENVIRONMENTAL PROTECTION AGENCY

Our Mailing address is:

Ohio EPA, Division of Air Pollution Control
PO Box 1049
Columbus, OH 43216-1049

And we are located at:

Ohio EPA, Division of Air Pollution Control
50 West Town Street, Suite 700
Columbus, OH 43215

Ohio EPA's web address is:

www.epa.ohio.gov

The Ohio EPA's general phone number is:

(614) 644-3020

The Division of Air Pollution Control phone number is:

(614) 644-2270

EXECUTIVE SUMMARY

A. General Review

2010 air quality data are summarized for the seven criteria pollutants: particulate matter less than 10 microns in diameter (PM_{10}) and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), ozone (O_3), and lead (Pb). Data are also summarized for total suspended particulates (TSP).

A section discussing Toxics monitoring projects conducted in 2010 is included.

Trend studies are presented for three criteria pollutants: SO_2, CO, and O_3.

Precision and accuracy data gathered through the quality assurance programs are also included.

B. Discussion of Violations

Violations of multiple-year, annual and short term air quality standards by county and pollutant are shown in Figures 3 through 18 and in Table 3.

C. Conclusions

1. In 2010 there were 36 PM_{10} monitoring sites and 50 $PM_{2.5}$ monitoring sites with 99 monitors 56 of which are Federal Reference Monitors, 29 continuous (3 of which are Federal Equivalent Monitors), and 14 speciation. In 1987 there were 30 PM_{10} and no $PM_{2.5}$ monitoring sites. Nearly all monitoring for particulate matter is conducted using PM_{10} and $PM_{2.5}$ samplers. Monitoring for TSP has essentially been

discontinued. During 2010, 8 TSP sites reported data, down from 217 sites in 1987. Of those 8 sites all are monitoring for lead or other metals and also report TSP data.

2. Sulfur dioxide levels in urban areas have dropped an average of 48.7% in the last ten years. There were no violations of the 3-Hour, 24-Hour or annual SO_2 air quality standards in 2010. There are six counties that are in violation of the 1-Hour standard (2008-2010).

3. No overall trend is indicated for the past several years for carbon monoxide. Figure 22 shows individual urban area trends.

4. The relatively high lead concentrations sampled in Fulton and Cuyahoga Counties are the result of industrial source monitoring.

5. Twenty-five counties are monitoring attainment of the 0.075 ppm eight hour ozone standard. There are seven counties with monitored non-attainment based on data for 2008 through 2010. This report uses the ozone standard in effect during 2010.

6. No violations of air quality standards for nitrogen dioxide were recorded in 2010.

7. No air pollution alerts were declared in 2010.

D. The Ohio Network

In 2010 there were a total of 242 monitors at 128 sites reporting data. There were 12 carbon monoxide, 28 sulfur dioxide, 4 nitrogen dioxide, 50 ozone, 43 10 micron particulate (PM_{10}), 99 2.5 micron particulate monitors ($PM_{2.5}$) and 24 lead monitors.

The only states with comparable or more monitors are California with 868, Texas with 326 and Pennsylvania with 288.

TABLE OF CONTENTS

PAGE

LIST OF TABLES AND FIGURES   Page

MAPS

GRAPHS

TOXICS DATA TABLES

Urban Air Toxics

Heavy Metals Data

I. INTRODUCTION

A. General

A variety of substances are generated and released into the atmosphere by a multitude of manmade and natural sources. Those substances that may affect public health and welfare are regarded as "air pollutants". The U.S. EPA has established National Ambient Air Quality Standards (NAAQS) to safeguard the public health and welfare from selected air pollutants. The pollutants for which standards have been promulgated are: Sulfur Dioxide (SO_2), Nitrogen Dioxide (NO_2), Carbon Monoxide (CO), Ozone (O_3), Lead (Pb), Particulate Matter $\leq$10 microns (PM_{10}) and Particulate Matter $\leq$2.5 microns ($PM_{2.5}$). The standards are ambient concentrations that are expressed in micrograms per cubic meter ($\mu g/m^3$) or parts per million (ppm) per duration (1 hr., 3 hr., etc.) with a restriction (not to be exceeded or not to be exceeded more than once per year, etc.). Table 1 shows the NAAQS in effect at the end of 2010.

In some cases, standards are separated into two parts: primary and secondary. The primary standard sets the level of air pollution above which human health is endangered. The secondary standard sets the level above which the welfare of citizens is endangered due to air pollution damage to crops, animals, vegetation and materials.

This report contains a summary of measured high concentrations of the pollutants, selected statistics, including quality assurance of the data, and trend analyses for various areas in Ohio. A brief description of the pollutants, the sources from which the pollutants originate and the adverse health effects of the pollutants and the monitoring methods, precede the tabulated pollutant concentrations.

Ambient air is generally defined as air that is accessible to the general public. The air that is within (over) the fenced in or guarded areas of facility property is not ambient.

Data for this report were collected by Ohio EPA, local air pollution control agencies and private industry. An indication of the accuracy of data from each reporting organization is located in a separate section on Quality Assurance.

B. Development of the Ohio Air Monitoring System

Society's concern about air pollution brought about the first national law, the Clean Air Act of July 14, 1955. This Act and its subsequent amendments first encouraged, and then authorized, grants to help finance the establishment of state and local air pollution control programs.

In 1963, aided in part by this federal program, the Ohio Department of Health established the Ohio Air Sampling Network (OASN) with 21 monitoring sites. The OASN was designed to measure the levels of "Total Suspended Particulate" (TSP) throughout the state.

The Clean Air Act Amendments of 1970 mandated the promulgation of the NAAQS and delegated authority to develop plans for their attainment to the individual states. To oversee the provisions of this Act, the U.S. EPA was formed in February of 1972 by Presidential Order.

After proposing standards for the criteria air pollutants, the U.S. EPA worked with Ohio to set up the State Implementation Plan (SIP) which included a detailed air monitoring program for the original six criteria pollutants: TSP, sulfur dioxide, carbon monoxide, nitrogen dioxide, lead and ozone. The SIP is a state's master plan for achievement of the NAAQS. The SIP contains detailed provisions for reducing concentrations of each of the regulated pollutants, where necessary, to achieve and maintain the NAAQS.

In October 1972, Ohio EPA was established by State law (Ohio Revised Code Section 3745.01) and the air monitoring program was significantly enlarged. Many local air pollution control agencies and private industries participated in this program. See Figure 1 for the location of the five districts and the nine local air agencies currently supporting the air program.

In 1980, the U.S. EPA and Ohio EPA established and designated certain portions of Ohio's network to be a part of the National Air Monitoring Station (NAMS) network, created for the purpose of tracking national trends. In 1980, the US EPA also required that all sites produce data of adequate quality to meet monitoring objectives and adequate quantity to meet statistical and trend requirements. All NAMS sites were to meet these requirements beginning with 1981 data, and all other sites beginning with 1983 data.

On March 20, 1984, the U.S. EPA proposed a standard for inhalable particles of ten micrometers in diameter and smaller. To enable the states to begin collecting data without excessive delay the U.S. EPA provided the states with monitors in late 1984. Ohio's field offices began collecting PM_{10} data during 1985 and a network of sites was primarily located in urban areas. The PM_{10} standard was promulgated on July 1, 1987 and became effective on July 31, 1987.

The U.S. EPA promulgated new particulate monitoring regulations and National Ambient Air Quality Standards on July 18, 1997. The new particulate standard is for particulate matter less than or equal to 2.5 micrometers in diameter. The first monitors began to collect data in January 1999. Monitors to determine the chemical makeup of the particulate were added in the year 2000 and in 2001 hourly reading monitors were added.

The one hour ozone standard was supplemented on July 18, 1997 with an eight hour standard. The eight hour standard is a three year average of the fourth highest daily eight hour averages. The level of the standard was set at 0.08 ppm which was not to be exceeded.

In 2001 The United States Supreme Court found U.S. EPA’s previously proposed implementation plan for ozone unlawful and further held that, in the setting of a standard for ozone pursuant to Section 109 of the Clean Air Act U.S. EPA must set air quality standards at the level that is "requisite"-no higher or lower than is necessary-to protect the public health with an adequate margin of safety. The Supreme Court then sent the case back to the D.C. Circuit Court of Appeals to review U.S. EPA’s subsequent actions. On March 26, 2002, that court upheld U.S. EPA’s revision of the ozone NAAQS, which had been published in the Federal Register by U.S. EPA as a proposal on November 14, 2001.

In March 2008 the 8-Hour ozone standard was changed to be less than or equal to 0.075 ppm as the three year average of each site’s annual fourth high 8-Hour average. The summary tables in this report use the new standard.

In 2009 the standard for lead (Pb) was changed to 0.15 $\mu g/m^3$ as a three month average. This standard replaces the 1.5 $\mu g/m^3$ calendar quarter average. New monitors near presumed sources are to be operational on the first sampling day of January 2010.

During 2010, more than 260 ambient air monitors were operated in Ohio. Table 2 enumerates the number and type of criteria pollutant monitors that were operated in the various District Office and Local Air Agency jurisdictions.

The goals of the ambient monitoring program are to determine compliance with the ambient air quality standards, to provide real-time monitoring of air pollution episodes, to provide data for trend analyses, regulation evaluation and planning, and to provide information to the public on a daily basis concerning the quality of the air in high population areas, near major emission sources and in rural areas.

C. Remote Ambient Data Systems

The Remote Ambient-Air Data System (RADS) is a system for the automatic acquisition and transmission of data from a remote monitor to a central computer. Each continuous monitoring site operated by Ohio EPA's district offices is furnished with a data logger that is polled automatically once a day by the central computer in Columbus.

A major benefit of RADS is that the data can now be handled more quickly with fewer chances of error. Formerly the data was manually read from recorder strip charts, handwritten on a computer input form, keyed into the computer and then made available for retrieval. This process took three to four weeks.

The data in the RADS computer is available for review by the district and central office staff on a daily basis. The individual sites can also be contacted through the data logger for instantaneous data and interrogated further by remote testing of zero-span for any parameter. This is particularly valuable when pollutant levels are, or may become, elevated, as during an air stagnation episode.

RADS was installed during the fall of 1985 and went into operation on January 1, 1986. Local air agencies have automated their continuous monitors and Ohio EPA has expanded RADS to include the automation of the local air agencies' networks. Industrial networks will also be added.

RADS has been upgraded for remote access to the data by digital cellular wireless technology to telemeter data to the central computer.

D. Data Availability on the Internet

For the past several years Ohio EPA has provided ozone and $PM_{2.5}$ data updates several times a day to the U.S. EPA for a public outreach web site where current data and data forecasts are displayed in the form of tables and maps. This web site can be viewed at: www.epa.gov/airnow/where/. From this site different states can be chosen to view forecasts of ozone and $PM_{2.5}$ levels and to link to animated ozone concentration maps.

As part of the AIRNow effort there is also a page that displays a map of North America that has sites that can be clicked upon for current environmental data. This page is updated frequently and is called Enviroflash at: www.enviroflash.info.

Historical ambient air quality data can also be found at: www.epa.gov/air/data/. This site is a gateway to maps, reports and user selected data that reside in the U.S. EPA's Air Quality System (AQS) database.

A third data source is at: www.epa.gov/airexplorer. This site has interactive maps, graphs and data tables. The data include all of the criteria pollutants as well as $PM_{2.5}$ speciation parameters and Air Quality Index (AQI) values.

For those with specific health concerns (asthma, heart disease) or who want general information for older adults, children or who are active outdoors and who want to compare the air quality of different counties or states, the U.S. EPA has a web site that allows comparisons at: www.epa.gov/aircompare/ .

E. Designation of Air Quality Control Regions

The fact that air pollution does not respect state boundaries was recognized in early control efforts. To effectively deal with pollution and attain the NAAQS, U.S. EPA, with advice from local governments and the public, divided the nation into areas called Air Quality Control Regions (AQCR's). Boundaries for each region were set by consideration of air pollution levels, population density, geography, and common meteorological conditions. While AQCR's may consist of parts of more than one state, each state has the authority to implement air quality standards only in its portion of the region. Portions of Ohio are included in a total of fourteen different AQCR's, each labeled numerically and by geographical description. Figure 2 illustrates the boundaries of Ohio's AQCR's.

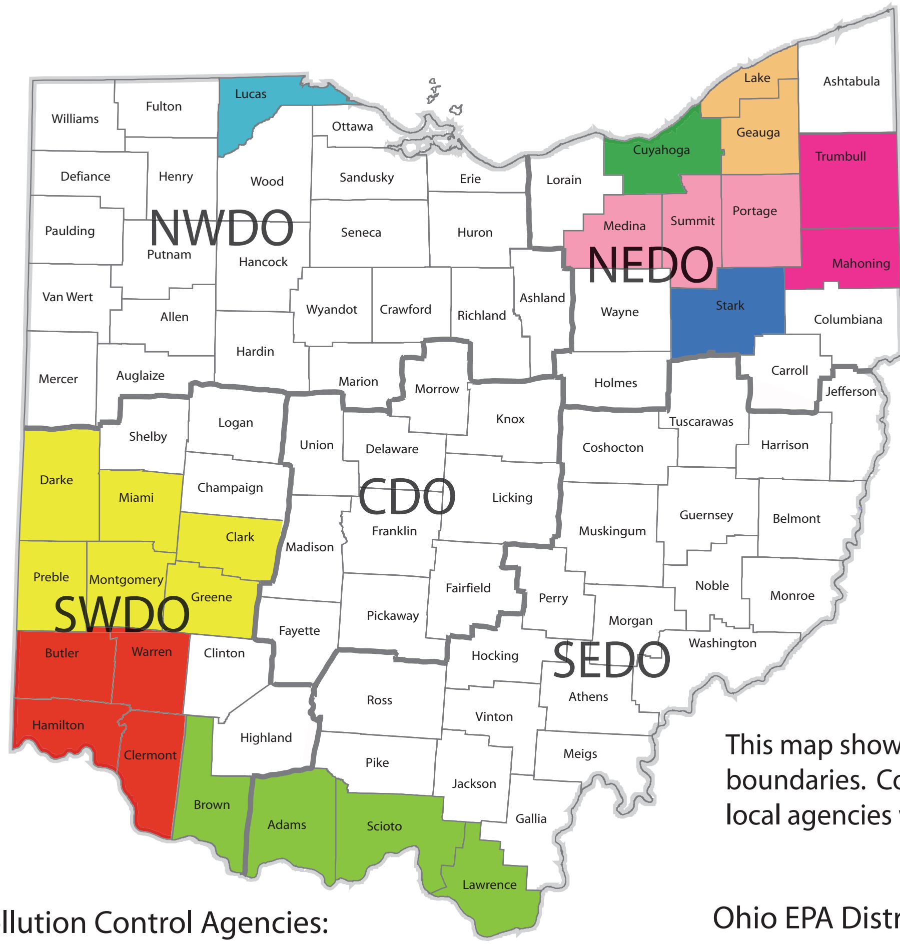
TABLE 1
U.S. EPA & OHIO EPA AMBIENT AIR QUALITY STANDARDS
NATIONAL AMBIENT AIR QUALITY STANDARDS

			MAXIMUM ALLOWABLE CONCENTRATION	
POLLUTANT	DURATION	RESTRICTION	PRIMARY	SECONDARY
$PM_{2.5}$	Annual arithmetic mean	Not to be exceeded Three year average	15.0 μg/m^3	15.0 μg/m^3
	24-Hour concentration	Not to be exceeded Three year average of 98th percentile	35 μg/m^3	35 μg/m^3
PM_{10}	24-Hr concentration	Not to be exceeded more than once per year averaged over three years	150 μg/m^3	150 μg/m^3
SULFUR DIOXIDE	Annual Mean	Not to be exceeded	0.03 ppm (80 μg/m^3)	
	1-Hr mean concentration	Each year's daily 1-Hour maximum 99th percentile value averaged over 3 years	75 ppb	
	24-Hr mean concentration	Not to be exceeded more than once per year	0.14 ppm	
	3-Hour mean concentration	Not to be exceeded more than once per year		0.5 ppm (1300 μg/m^3)
CARBON MONOXIDE	8-Hr mean concentration	Not to be exceeded more than once per year	9 ppm (10 mg/m^3)	
	1-Hr concentration	Not to be exceeded more than once per year	35 ppm (40 mg/m^3)	
OZONE	8-Hr concentration	Each year's fourth high averaged over three years. Not to be exceeded	0.075 ppm	0.075 ppm
	1-Hr concentration*	Not to be exceeded more than three times in three years	0.12 ppm (244 μg/m^3)	0.12 ppm (244 μg/m^3)
NITROGEN DIOXIDE	1-Hour Average	Each year's daily maximum 98th percentile 1-Hour value averaged over 3 years. Not to be exceeded	100 ppb	
	Annual mean	Not to be exceeded	53 ppb	0.053 ppm
LEAD	3-Month mean concentration	Three month rolling average over a three year period. Not to be exceeded.	0.15 μg/m^3	0.15 μg/m^3

Notes:
Primary standards are established for the protection of public health
Secondary standards are established for the protection of public welfare
*revoked for Ohio

μg/m^3 = micrograms per cubic meter
ppm = parts per million
ppb = parts per billion
mg/m^3 = milligrams per cubic meter

Figure 1



This map shows jurisdictional boundaries. Colored areas represent local agencies within Ohio EPA districts

Local Air Pollution Control Agencies:

1 — Bob Hasenyager, Interim Administrator
Akron Regional Air Quality Management District
146 South High St., Room 904
Akron, Ohio 44308
(330) 375-2480 FAX: (330) 375-2402
E-Mail: bhasenyager@schd.org

2 — Terri Dzienis, Interim Administrator
Air Pollution Control Division
Canton City Health Department
420 Market Ave. North
Canton, Ohio 44702-1544
(330) 489-3385 FAX: (330) 489-3335
E-Mail: TDzienis@cantonhealth.org

3 — Cory R. Chadwick, Director
Dept. of Environmental Services
Air Quality Programs
250 William Howard Taft Road
Cincinnati, Ohio 45219-2660
(513) 946-7777 FAX: (513) 946-7778
E-Mail: cory.chadwick@hamilton-co.org

4 — George Baker, Commissioner
Dept. of Public Health & Welfare
Division of Air Quality
75 Erieview Plaza, 2nd Floor
Cleveland, Ohio 44114
(216) 664-2297 FAX: (216) 420-8047
E-Mail: GBaker@city.cleveland.oh.us

5 — John Paul, Director
Regional Air Pollution Control Agency
Montgomery County Health Department
117 South Main St.
PO Box 972
Dayton, Ohio 45422-1280
(937) 225-4435 FAX: (937) 225-3486
E-Mail: paulja@rapca.org

6 — Bert Mechenbier, Supervisor
Lake County General Health District
Air Pollution Control
33 Mill St.
Painesville, Ohio 44077
(440) 350-2543 FAX: (440) 350-2548
E-Mail: bmechenbier@lcghd.org

7 — Cindy Charles, Director
Air Pollution Unit
Portmouth City Health Department
605 Washington Street, Third Floor
Portsmouth, Ohio 45662
(740) 353-5156 FAX: (740) 353-3638
E-Mail: cindy.charles@epa.state.oh.us

8 — Karen Granata, Administrator
City of Toledo
Division of Environmental Services
348 South Erie St.
Toledo, Ohio 43604
(419) 936-3015 FAX: (419) 936-3959
E-Mail: karen.granata@toledo.oh.gov

9 — Tara Cioffi, Interim Administrator
Mahoning-Trumbull APC Agency
345 Oak Hill Ave., Suite 200
Youngstown, Ohio 44502
(330) 743-3333 FAX: (330) 744-1928
E-Mail: tcioffi@cboss.com

Ohio EPA District Offices:

CDO — Adam Ward, APC Supervisor
Central District Office
50 West Town St., Suite 700
Columbus, Ohio 43215
(614) 728-3778 FAX: (614) 728-3898
E-Mail: adam.ward@epa.ohio.gov

SEDO — Bruce Weinberg, APC Supervisor
Southeast District Office
2195 Front St.
Logan, Ohio 43138
(740) 385-8501 FAX: (740) 385-6490
E-Mail: bruce.weinberg@epa.ohio.gov

NEDO — Ed Fasko, APC Supervisor
Northeast District Office
2110 Aurora Rd.
Twinsburg, Ohio 44087
(330) 425-9171 FAX: (330) 487-0769
E-Mail: Ed.Fasko@epa.ohio.gov

NWDO — Mark Budge, APC Supervisor
Northwest District Office
347 North Dunbridge Rd.
Bowling Green, Ohio 43402
(419) 352-8461 FAX: (419) 352-8468
E-Mail: mark.budge@epa.ohio.gov

SWDO — Tom Schneider, APC Supervisor
Southwest District Office
401 East Fifth St.
Dayton, Ohio 45402-2911
(937) 285-6357 FAX: (937) 285-6249
E-Mail: tom.schneider@epa.ohio.gov

6/22/11

Figure 2

Air Quality Control Regions in Ohio

TABLE 2

AMBIENT AIR MONITORING SITES IN OHIO (2010)

Local Air Agency/ District Office	$PM_{2.5}$	PM_{10}	Sulfur Dioxide SO_2	Ozone O_3	Carbon Monoxide CO	Nitrogen Dioxide NO_2	Lead	Total
Akron	5	0	3	4	3	1	0	16
Canton	2	0	0	3	1	0	1	7
Cincinnati (HC-DOES)	10	5	2	7	1	1	1	27
Cleveland	6	5	4	4	3	1	5	28
Lake Co. Health District	1	1	2	3	1	0	0	8
Warren-Youngstown (M-TAPCA)	3	4	1	3	0	0	1	12
Toledo	3	1	0	3	0	0	0	7
Dayton (RAPCA)	4	2	1	6	2	0	0	15
Portsmouth	2	3/3	4/2	2	0	0	0	11/5
CDO	4	1	0	7	1	0	1	14
NEDO	1	3	2	2	0	0	3	11
NWDO	1	0/6	1	2	0	0	2	6/6
SEDO	3	2	6	3	0	1	2	17
SWDO	0	0	0	1	0	0	1	2
Totals	45	27/9	26/2	50	12	4	17	181/11

Sites required by Ohio EPA: Government Operated/Industry Operated

II. Summary of 2010 Air Quality Data

The following pages, in a series of maps and tables, summarize the data presented in Section V of the report.

Figures 3-14 indicate the highest annual and second highest concentrations for PM_{10}, $PM_{2.5}$, SO_2, CO, and NO_2, respectively, in each county where data were collected. Sites not meeting Federal regulatory requirements for data completeness[1] are marked with asterisks.

Figure 15 indicates the second highest 1-Hour concentration of ozone recorded in each county.

FIGURE 16 indicates the counties in which the highest reading ozone monitor recorded a three year average of fourth highest eight hour averages greater than the standard.

Figure 17 indicates the three year average of the 4^{th} high 8-Hour averages of ozone. The highest reading site was used.

Figure 18 indicates the highest three-month average concentration of lead in each county where data were collected.

Table 3 gives a breakdown of air quality standard violations by county.

A more detailed presentation of air quality data can be found in Section V of the report.

---

[1]The Federal averaging criteria for PM_{10} and $PM_{2.5}$ monitors requires that at least seventy-five percent of scheduled samples are collected each quarter. Many intermittent monitors in Ohio run on a six-day sampling schedule (one daily reading every six days) yielding up to sixty-one samples per year. To meet averaging criteria for continuous (hourly) monitors, a monitor must have valid data for at least seventy-five percent of each calendar quarter, approximately 1655 hours. For a valid ozone monitoring day, the monitor must collect at least seventy-five percent of the eight hour averages in the 24-hour period or if the average is greater than the standard.

PM_{10}

Figure 3
2010 PM_{10} Highest Annual Mean Concentration
(In counties where data were collected-values in $\mu g/m^3$)

PM_{10}

Figure 4

2010 PM_{10} 2nd High 24-Hour Concentration

(In counties where data were collected-values in $\mu g/m^3$)

PM$_{2.5}$

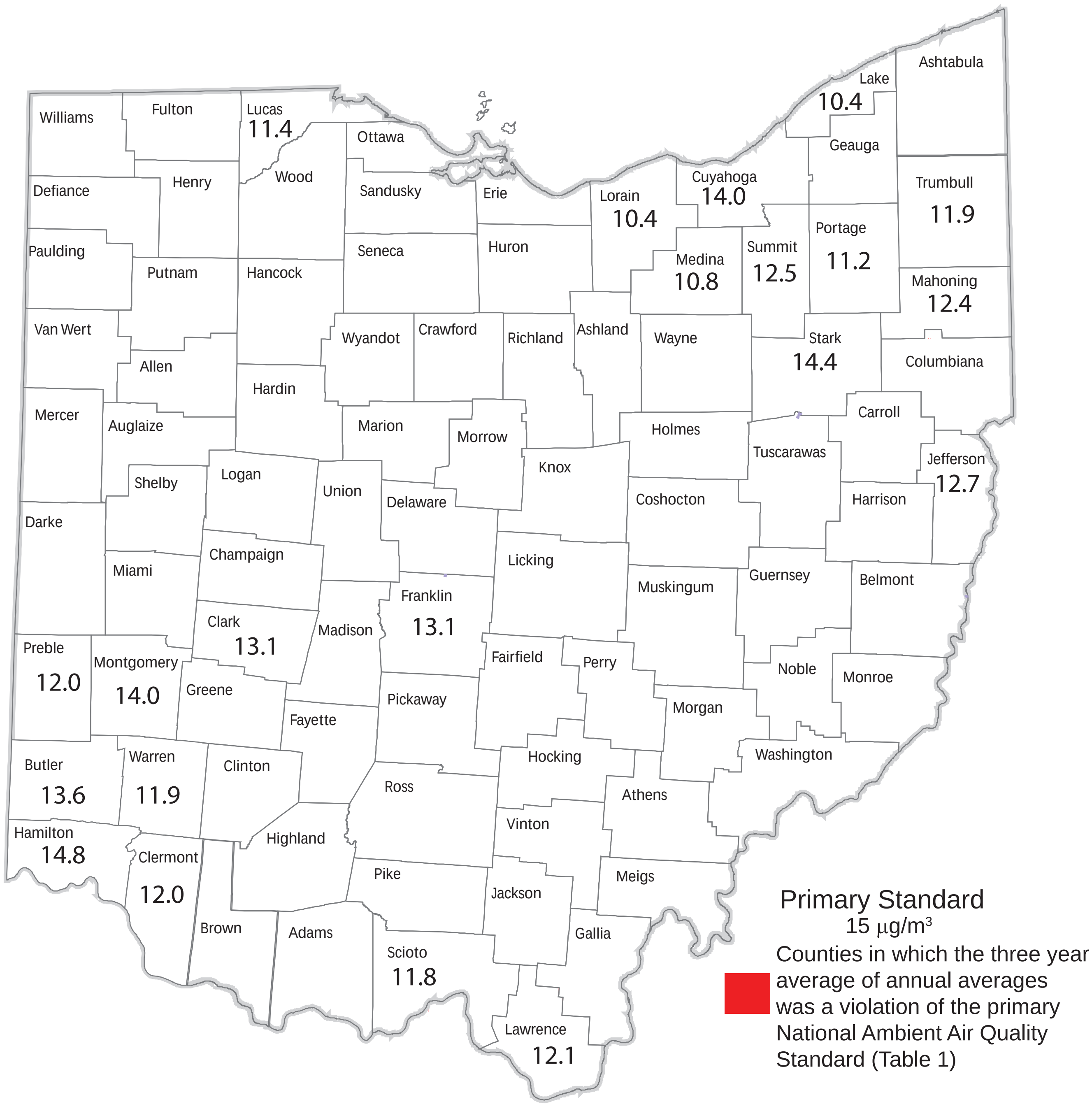


Figure 5
2010 PM$_{2.5}$ Highest Annual Concentration
(In counties where data were collected-values in $\mu g/m^3$)

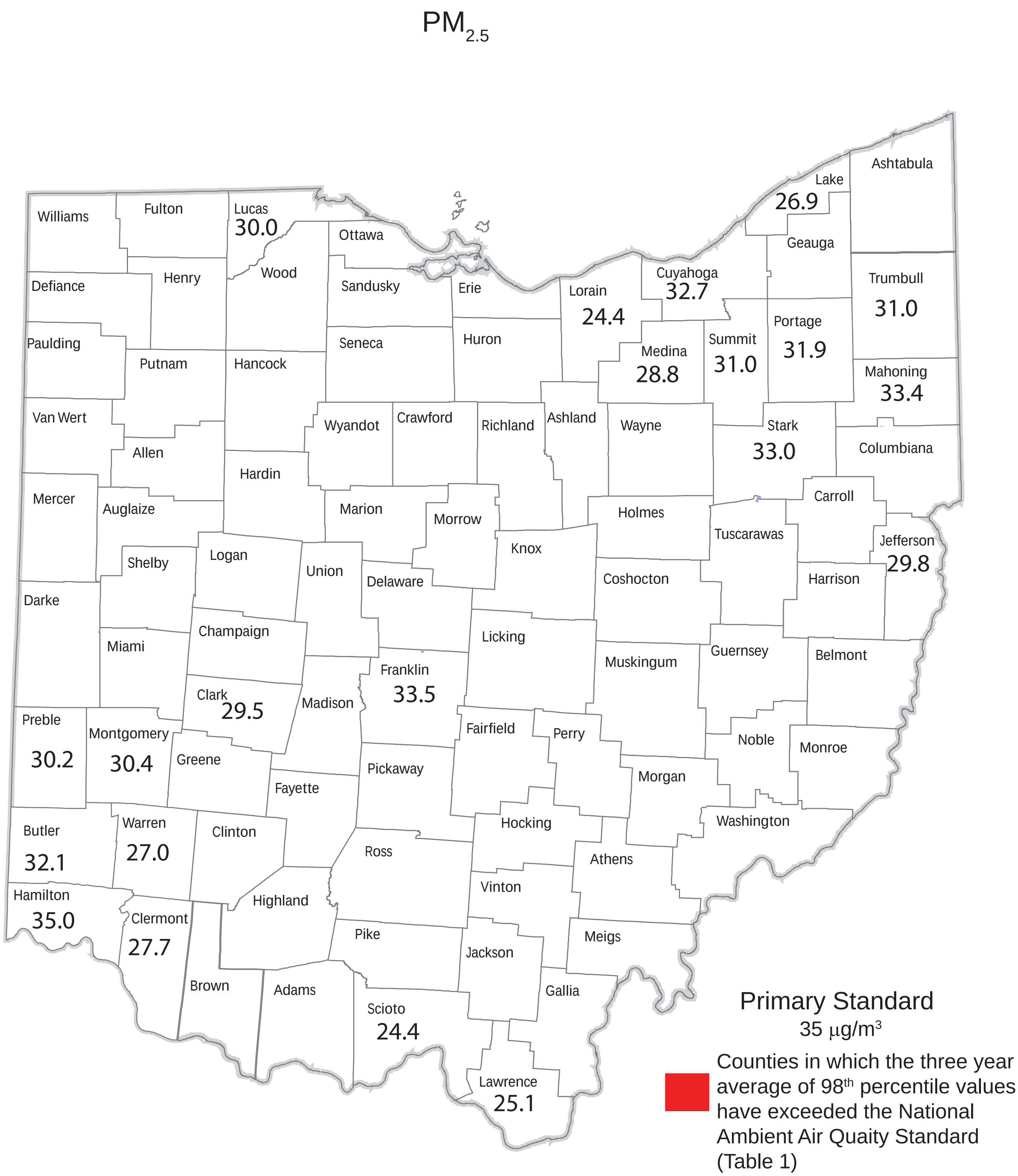


Figure 6

2010 $PM_{2.5}$ 98th Percentile 24-Hour Concentration
(In counties where data were collected-values in $\mu g/m^3$)

$PM_{2.5}$

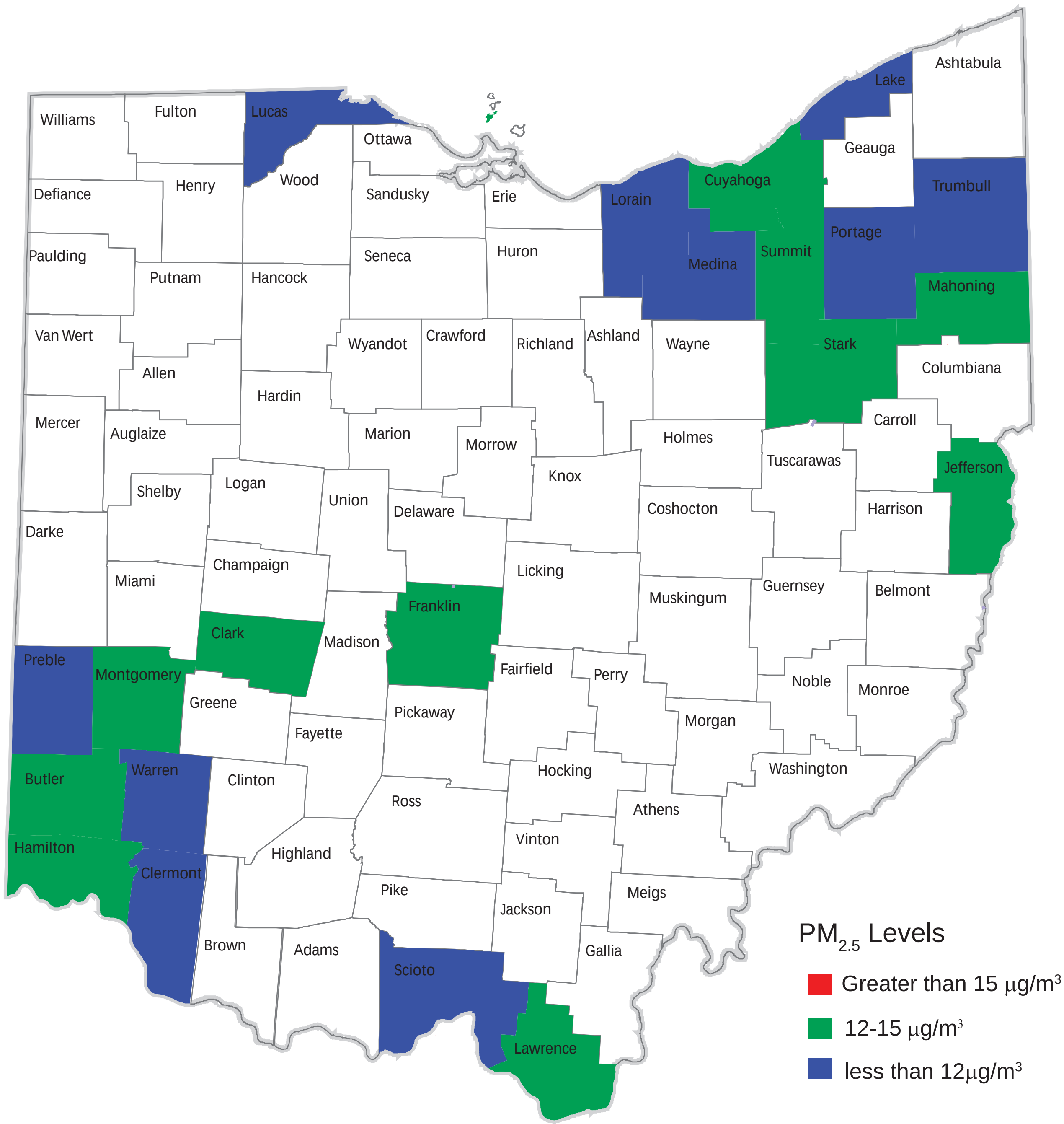


Figure 7

2008-2010 Average of Annual Averages
Highest Site in the County Used

Sulfur Dioxide

Figure 8

2010 SO_2 Highest Annual Arithmetic Mean Concentration

(In counties where data were collected-values in ppm)

Sulfur Dioxide

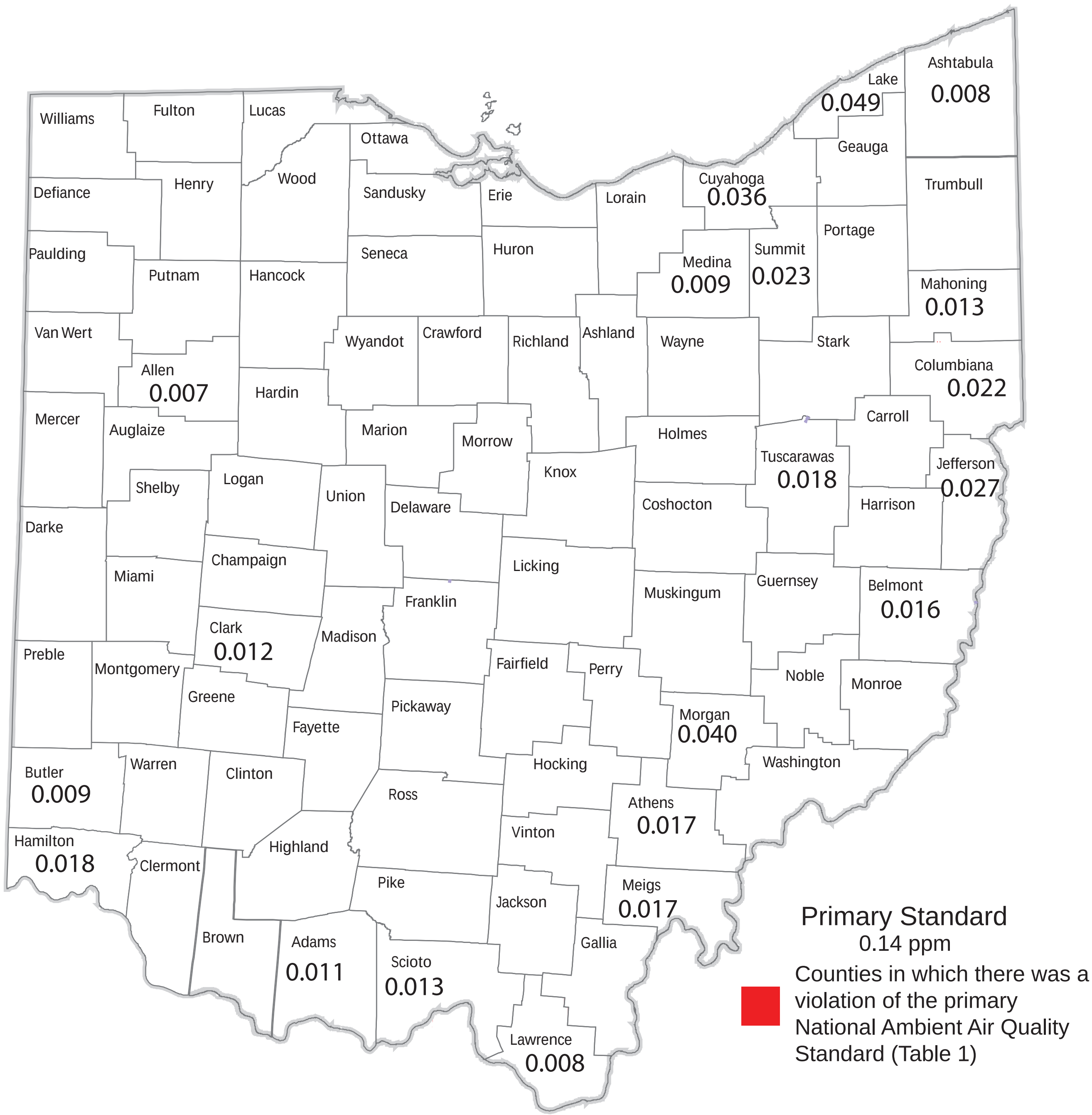


Figure 9
2010 SO_2 2[nd] Highest 24-Hour Concentration
(In counties where data were collected-values in ppm)

Sulfur Dioxide

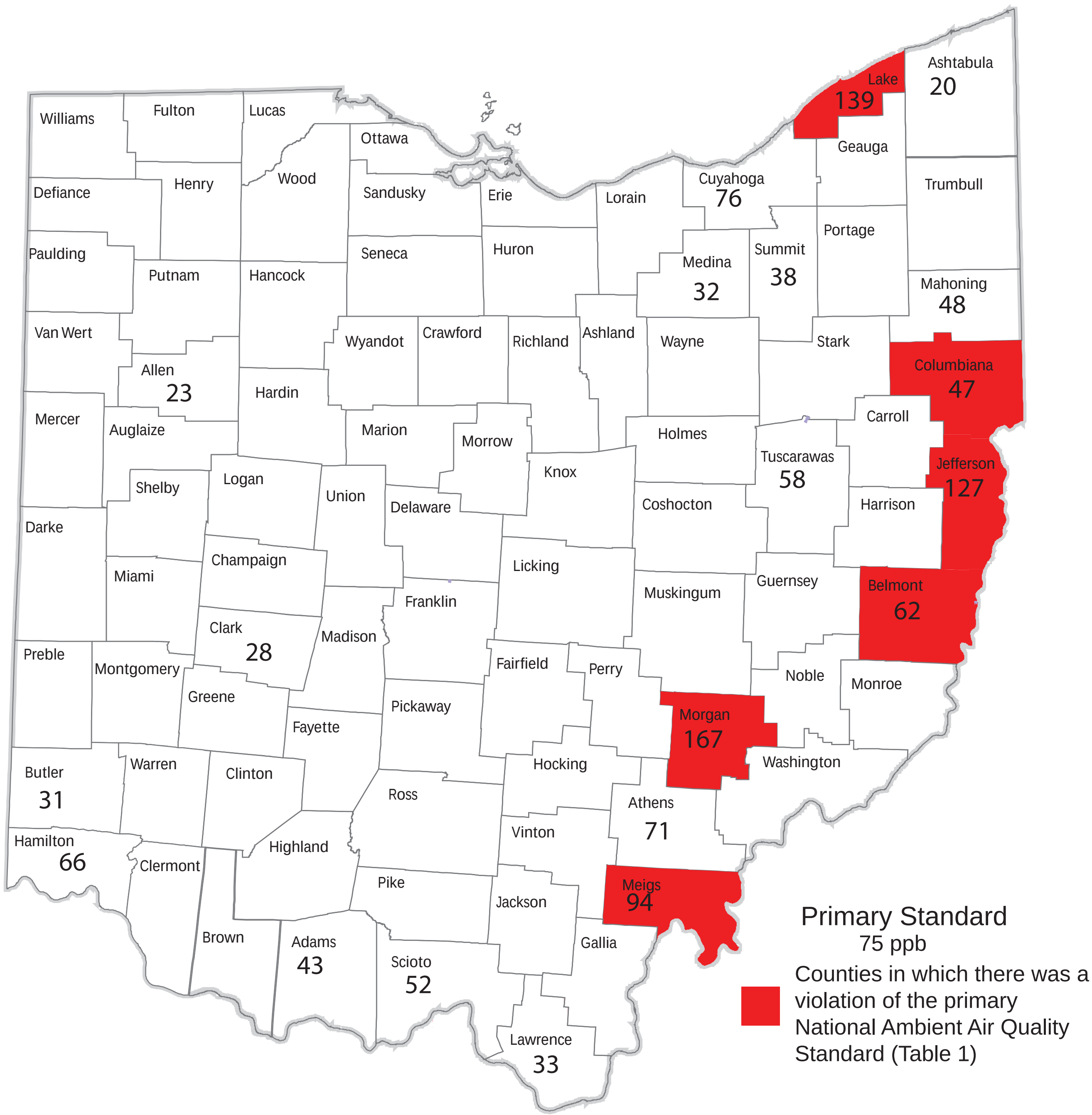


Figure 10

2010 SO_2 99th Percentile 1-Hour Concentration

(In counties where data were collected-values in ppb)

Carbon Monoxide

Figure 11

2010 Carbon Monoxide 2nd Highest 8-Hour Concentration
(In counties where data were collected-values in ppm)

Carbon Monoxide

Figure 12

2010 Carbon Monoxide 2nd Highest 1-Hour Concentration
(In counties where data were collected-values in ppm)

Nitrogen Dioxide

Figure 13

2010 Nitrogen Dioxide Annual Arithmetic Mean Concentration
(In counties where data were collected-values in ppb)

Nitrogen Dioxide

Figure 14

2010 Nitrogen Dioxide 98th Percentile 1-Hour Concentration
(In counties where data were collected-values in ppb)

Ozone

Figure 15

2010 Ozone 2nd Highest 1-Hour Concentration
(In counties where data were collected-values in ppm)

Ozone

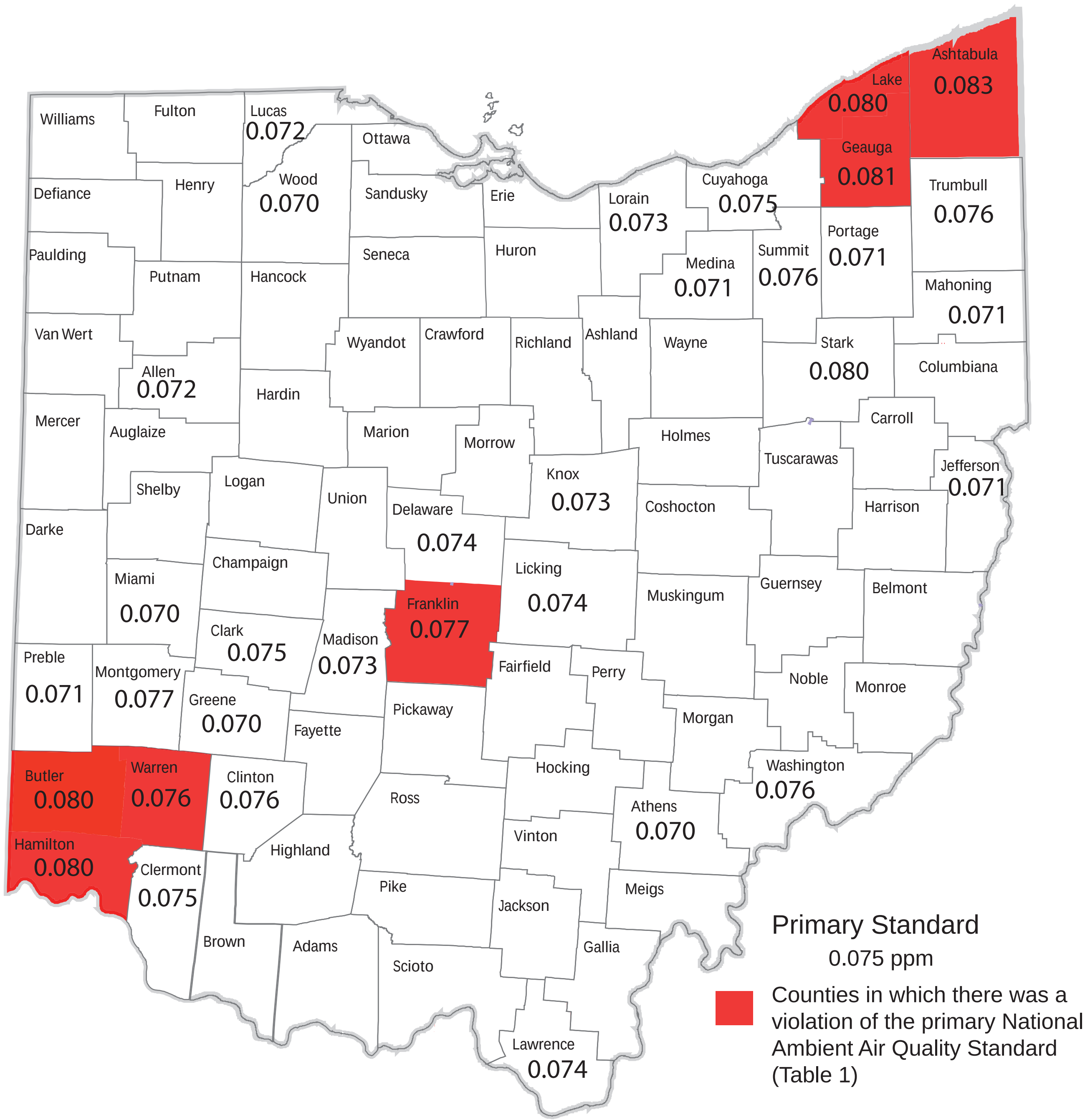


Figure 16

2010 Ozone 4th Highest 8-Hour Concentration

(In counties where data were collected-values in ppm)

Ozone

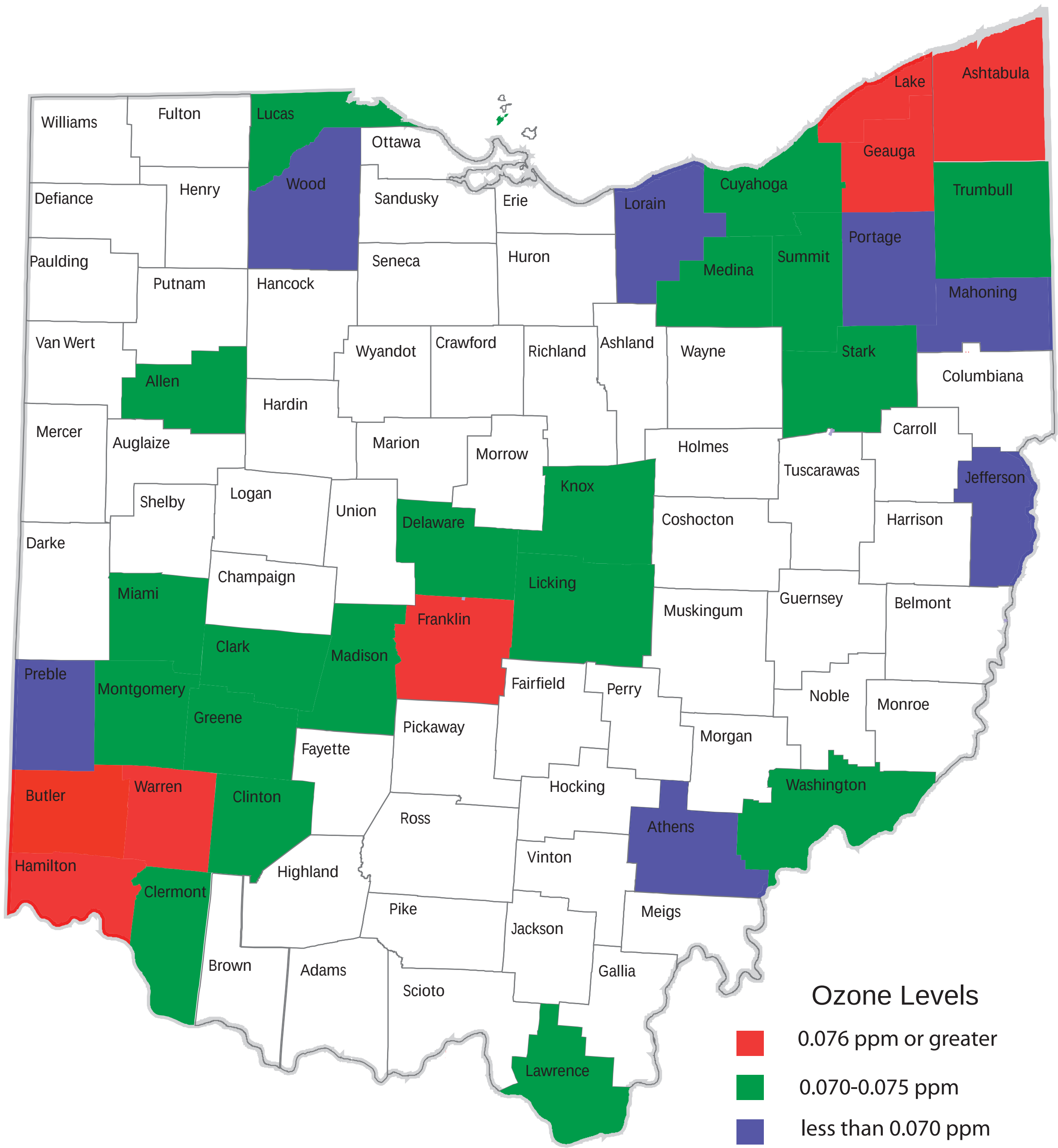


Figure 17

2008-2010 Average of the 4th High 8-Hour Averages using the highest reading site in each county

Lead

Figure 18
2010 Lead, Highest 3 Month Concentration
(In counties where data were collected-values in $\mu g/m^3$)

TABLE 3
VIOLATIONS OF AIR QUALITY STANDARDS BY COUNTY
2010

There were no violations of the PM_{10}, $PM_{2.5}$, NO_2 or CO standards that were in effect during 2010.

Ozone 8-Hour 2008-2010	Lead 3-Month 2010	SO_2 1-Hr 99^{th} Percentile 2008-2010
Ashtabula	Cuyahoga	Belmont
Butler		Columbiana
Franklin		Jefferson
Geauga		Lake
Hamilton		Meigs
Lake		Morgan
Warren		

III. Air Quality Trends

Federal regulations promulgated in 1980 established a number of urban sites in Ohio as part of a national network for determining trends of the criteria pollutants. This network, called National Air Monitoring Stations (NAMS), required the exclusion (for purposes of trend studies only) of those urban sites not designated as NAMS. This requirement permits a more accurate comparison of trends in different areas of the nation. The NAMS group was easily integrated into Ohio's monitoring system starting with the 1980 data.

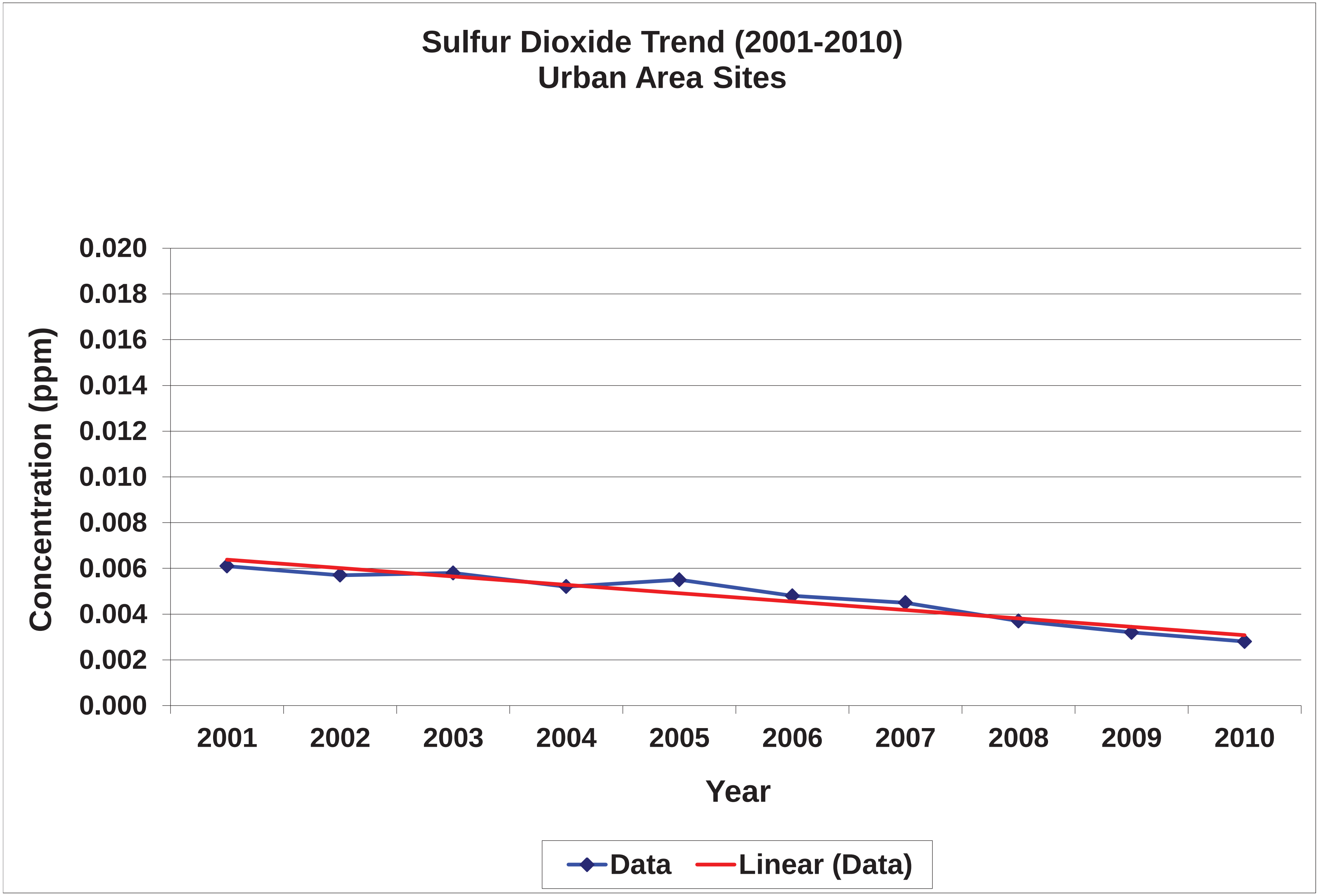
SO_2 TRENDS

Data for SO_2 continuous instruments in urban areas which met the NAMS siting requirements were used to generate an Ohio SO_2 trend study for years 2001 through 2010. The resulting data, based on annual average SO_2 concentrations, are plotted in Figure 18. Percent improvement is calculated using values derived from the method of "least squares".

Table 4

SO_2 TRENDS FOR 2001-2010

SITE CATEGORY	IMPROVEMENT
Urban Area NAMS	48.7%



Sulfur Dioxide Trend (2001-2010)
Urban Area Sites
Concentration (ppm)
0.020
0.018
0.016
0.014
0.012
0.010
0.008
0.006
0.004
0.002
0.000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
Year
Data
Linear (Data)

Figure 19

Ozone Trends

Assessing progress towards the attainment of the ozone air quality standards is difficult because of the influence of meteorology on ozone levels. Differences in weather conditions can cause variations from year to year in both the NAAQS exceedances and the second highest 1-Hour ozone levels.

High temperatures, brilliant sunshine and stagnant air contribute to high levels of evaporation from fuel storage tanks, fuel systems and auto refueling activities emitted by millions of cars and trucks. Also daily emissions of nitrogen oxides and hydrocarbons by millions of cars and trucks are a major contributor to low level ozone pollution during these atmospheric conditions. In the presence of sunlight, hydrocarbons and nitrogen oxides create high levels of ground-level ozone.

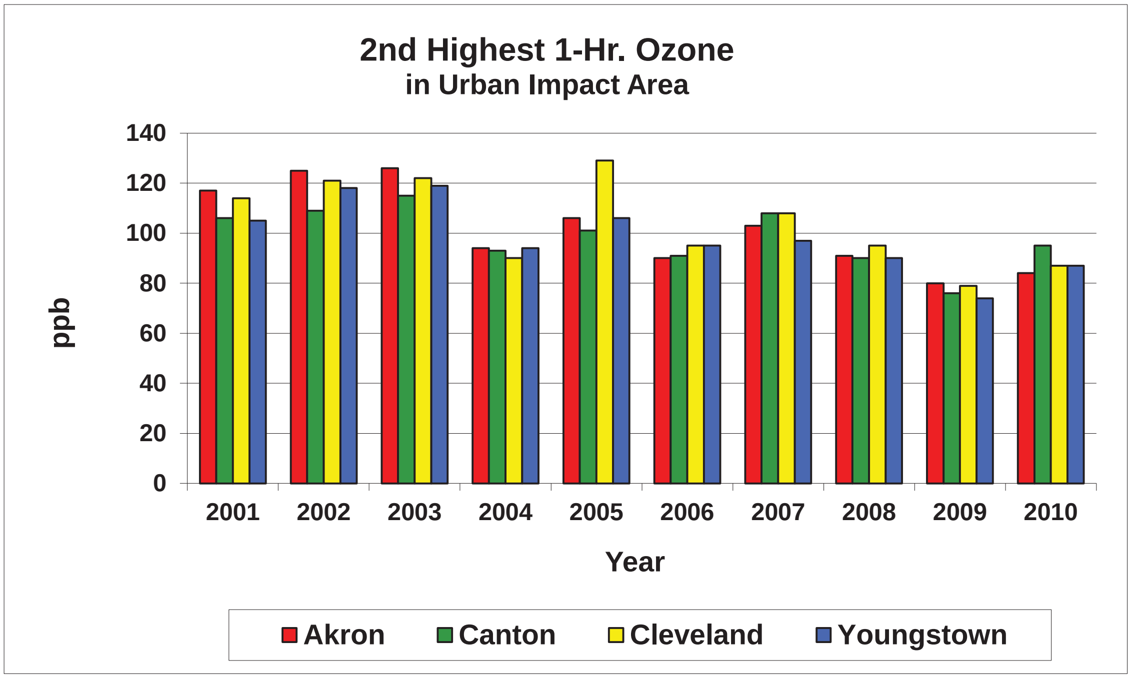
One Hour Data:

Information is presented from eight metropolitan areas in Ohio for the period of 2001 through 2010. Figure 20 is a bar chart which shows, for each year, the second highest 1-Hour average. In an area where ozone is monitored at several sites, the site with the highest second high for each year was used which may be a different site from year to year.

Eight Hour Standard:

Eight metropolitan areas are presented with the three year average of the 4^{th} highest 8-Hour daily ozone averages for the years 2001 through 2010. The year listed is the last year of the three year period. Figure 21 is a bar chart with those concentrations. The ambient air quality standard is a three year average of the fourth high 8-Hour averages, that concentration must be less than or equal to 0.075 parts per million (75 parts per billion) for an area to be in compliance with the standard. The monitor with the highest 4^{th} high in each three year period was used, not necessarily the same monitor for all years.

The three year averages for each site in Ohio are listed in the ozone portion of: Section V. AIR QUALITY DATA 2010.


2nd Highest 1-Hr. Ozone
in Urban Impact Area
ppb
0
20
40
60
80
100
120
140
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
Year
Akron
Canton
Cleveland
Youngstown

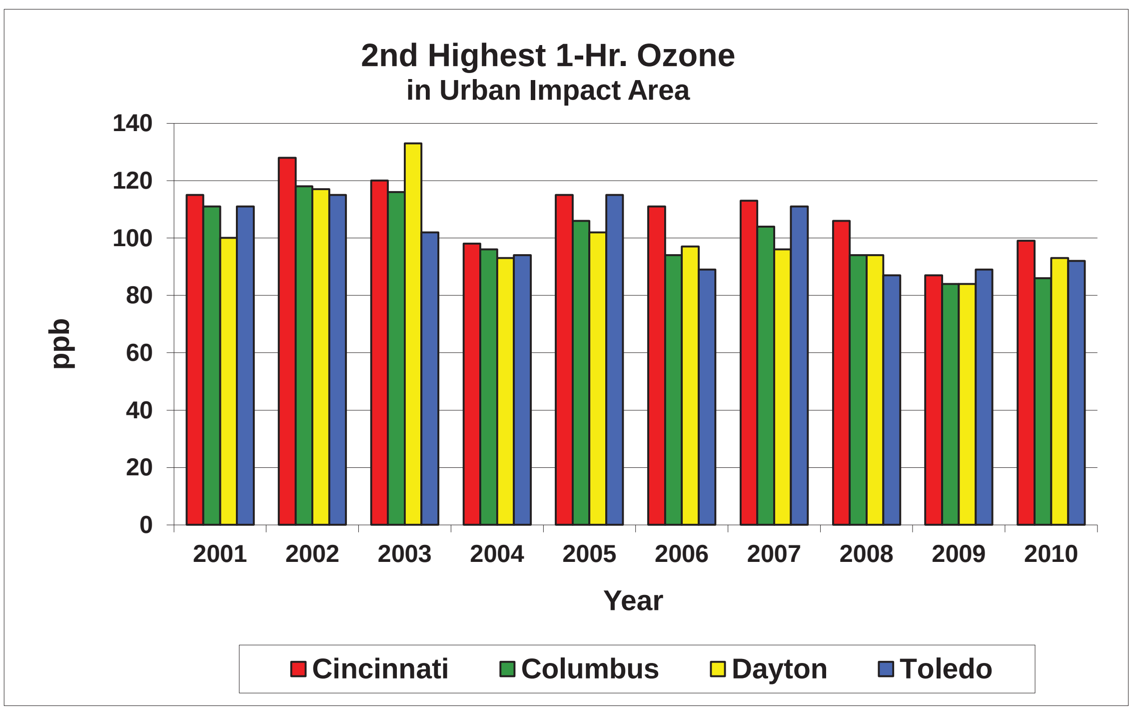
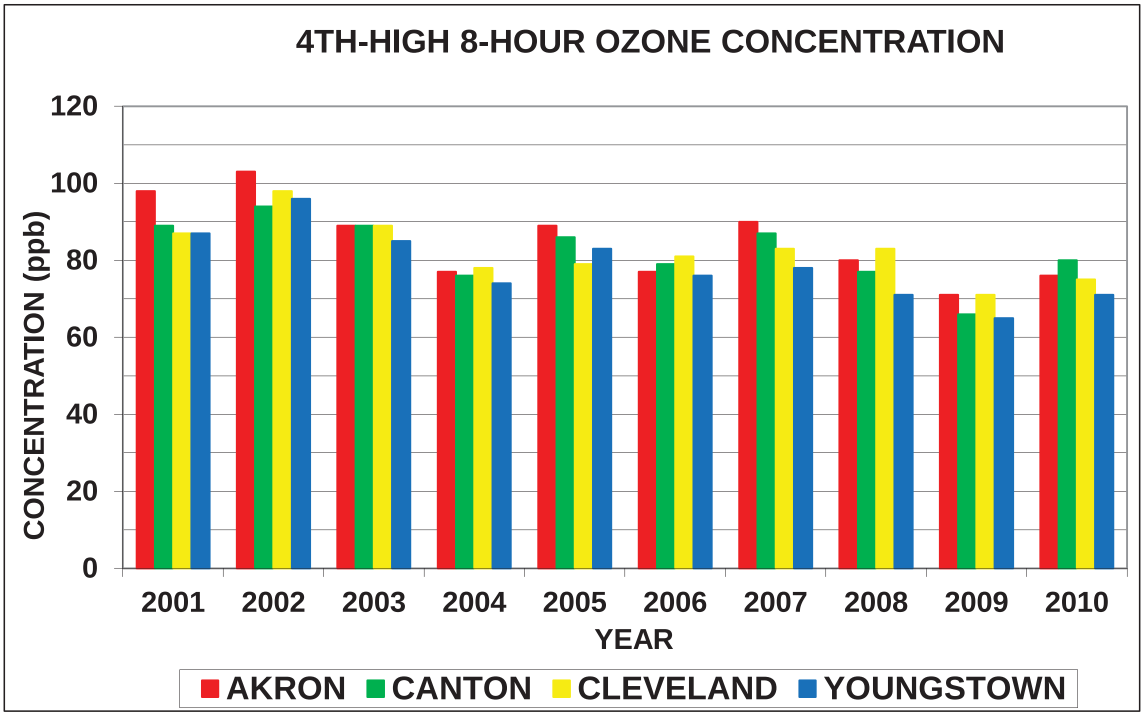

2nd Highest 1-Hr. Ozone
in Urban Impact Area
ppb
0
20
40
60
80
100
120
140
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
Year
Cincinnati
Columbus
Dayton
Toledo

Figure 20


4TH-HIGH 8-HOUR OZONE CONCENTRATION
CONCENTRATION (ppb)
0
20
40
60
80
100
120
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
YEAR
AKRON
CANTON
CLEVELAND
YOUNGSTOWN

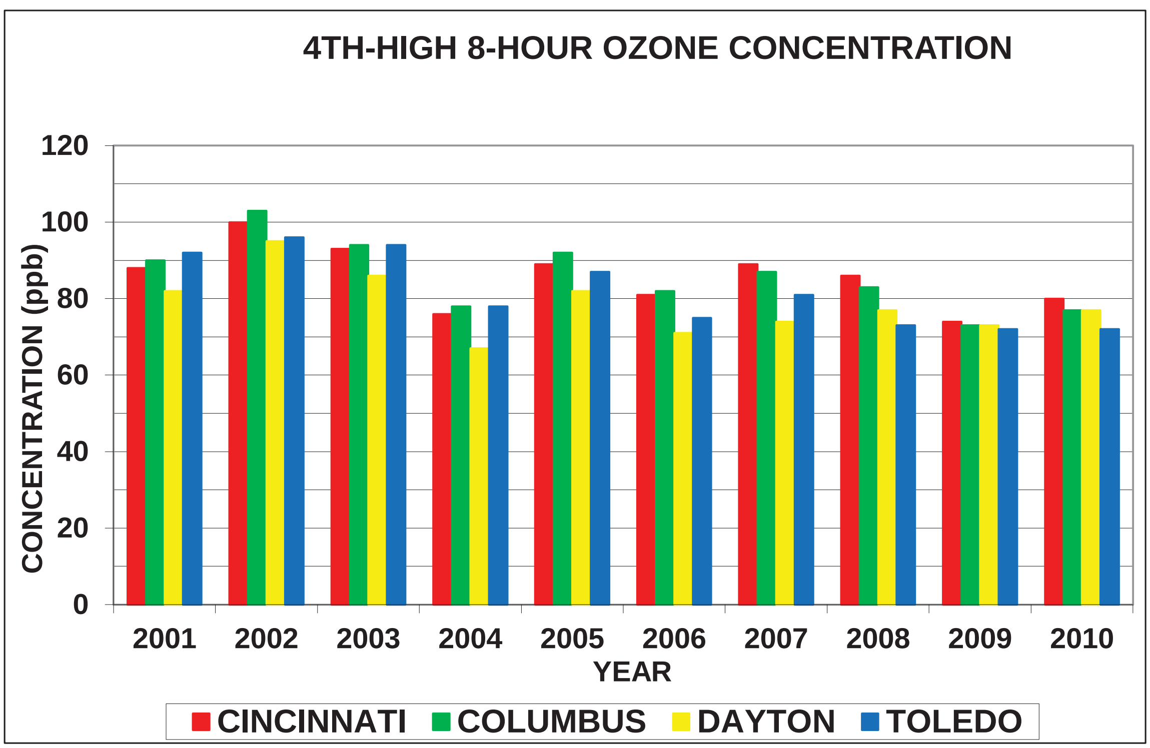
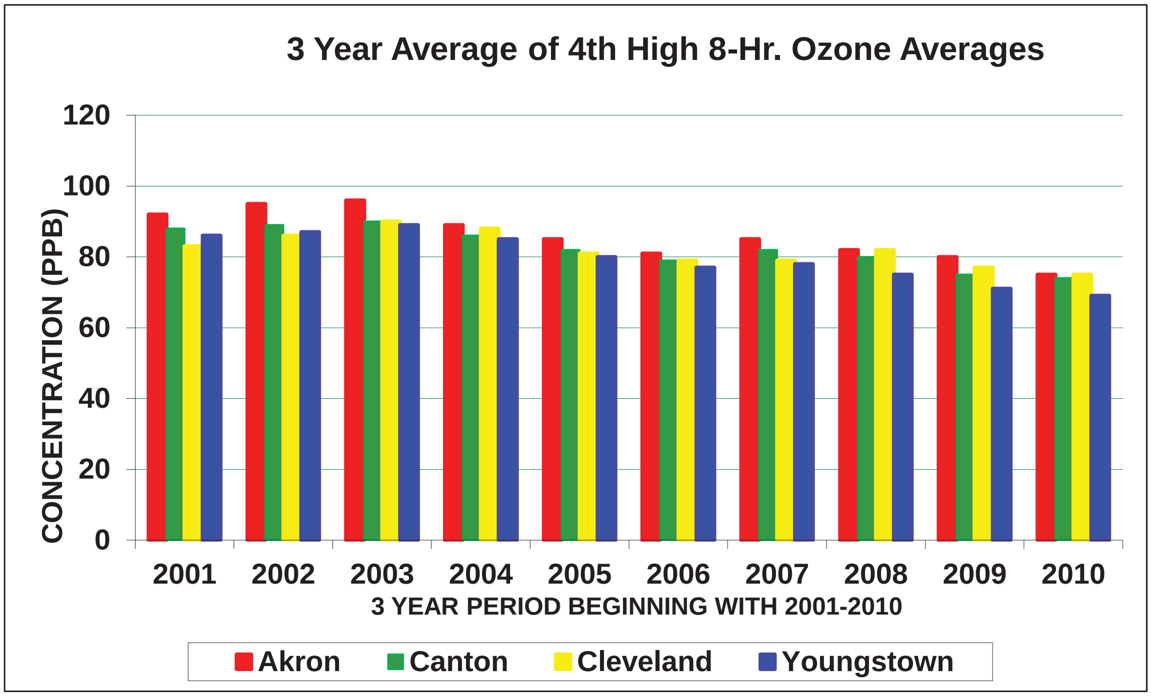

4TH-HIGH 8-HOUR OZONE CONCENTRATION
CONCENTRATION (ppb)
0
20
40
60
80
100
120
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
YEAR
CINCINNATI
COLUMBUS
DAYTON
TOLEDO

Figure 21


3 Year Average of 4th High 8-Hr. Ozone Averages
CONCENTRATION (PPB)
120
100
80
60
40
20
0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
3 YEAR PERIOD BEGINNING WITH 2001-2010
Akron
Canton
Cleveland
Youngstown

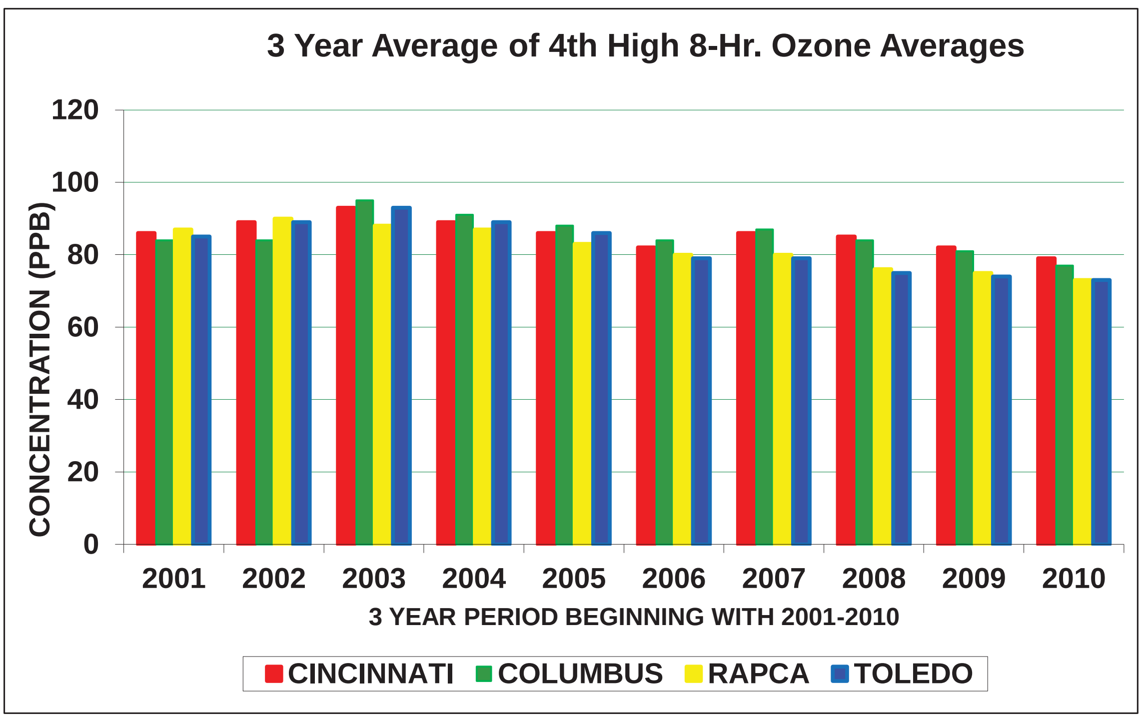
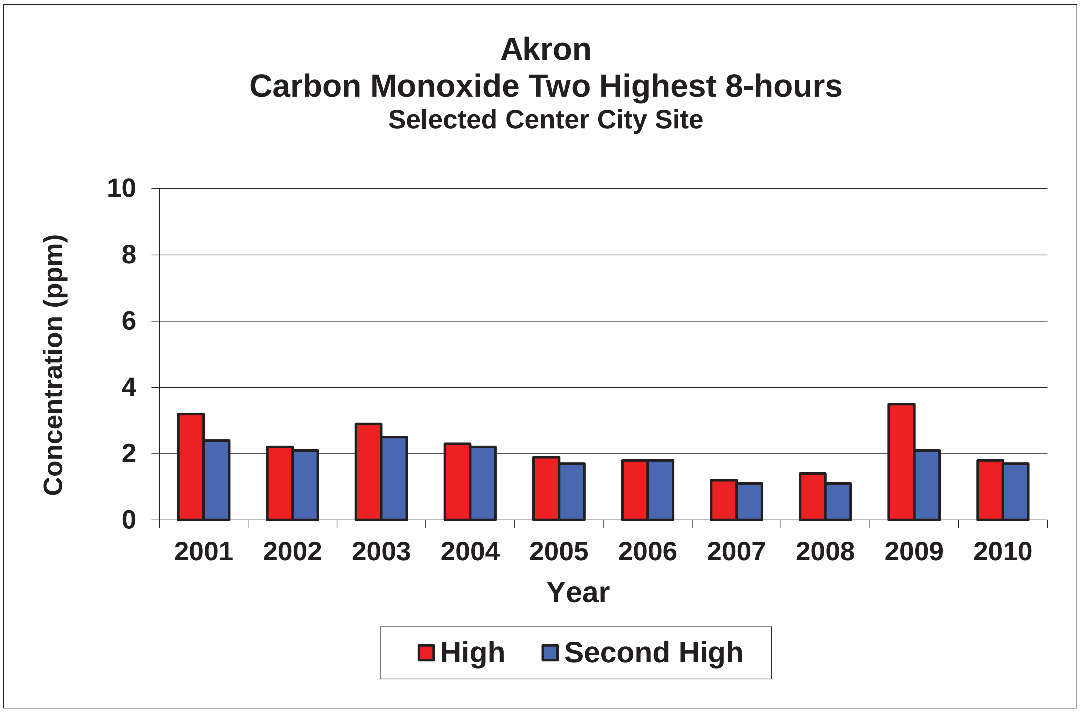

3 Year Average of 4th High 8-Hr. Ozone Averages
CONCENTRATION (PPB)
120
100
80
60
40
20
0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
3 YEAR PERIOD BEGINNING WITH 2001-2010
CINCINNATI
COLUMBUS
RAPCA
TOLEDO

Figure 22

CO Trends

The database for carbon monoxide (CO) is less extensive than for sulfur dioxide or ozone. A comparative plot of changes in CO in past years for ten major Ohio cities is presented. One central-city monitor in each urban area was selected to yield data for a study of 8-hour average CO concentrations. Data for the years 2001-2010 are used in the graphs. See Figure 23 for the results of this study.


Akron
Carbon Monoxide Two Highest 8-hours
Selected Center City Site
Concentration (ppm)
10
8
6
4
2
0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
Year
High
Second High

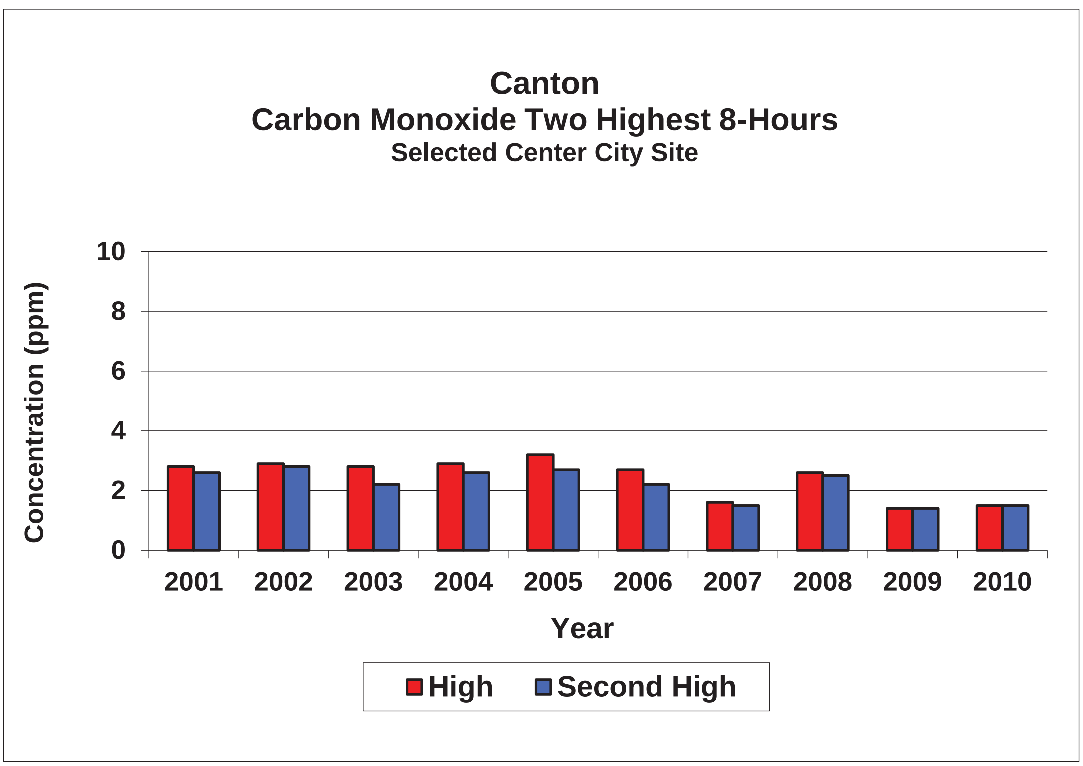
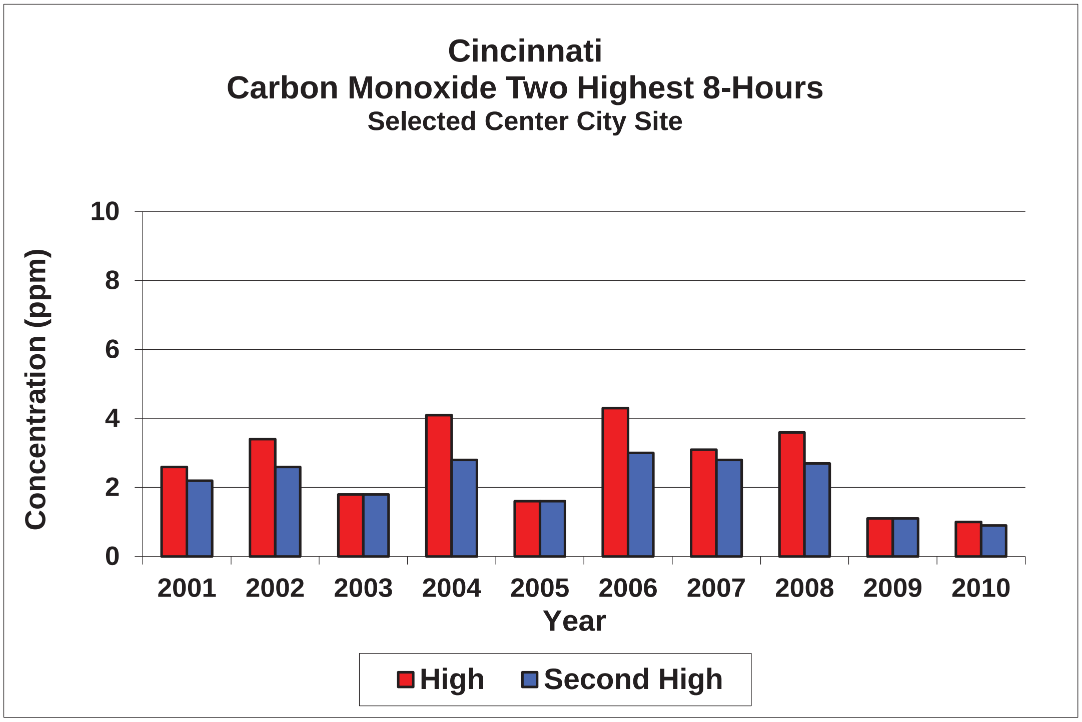

Canton
Carbon Monoxide Two Highest 8-Hours
Selected Center City Site
Concentration (ppm)
10
8
6
4
2
0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
Year
High
Second High

Figure 23



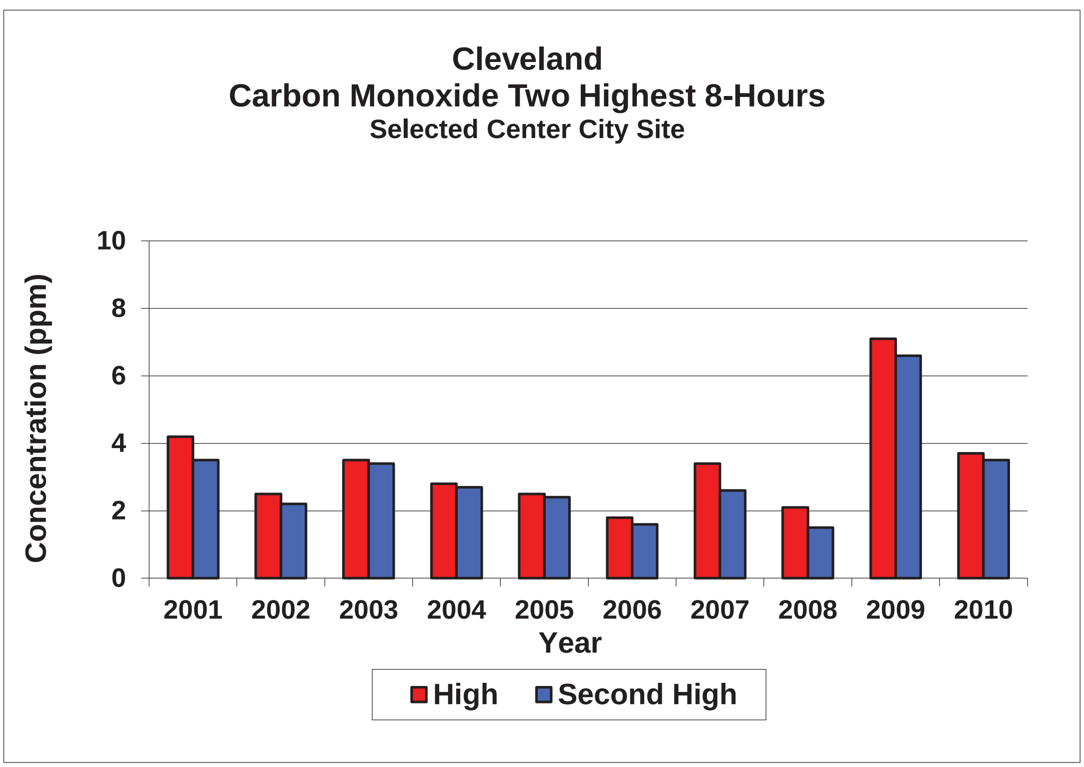
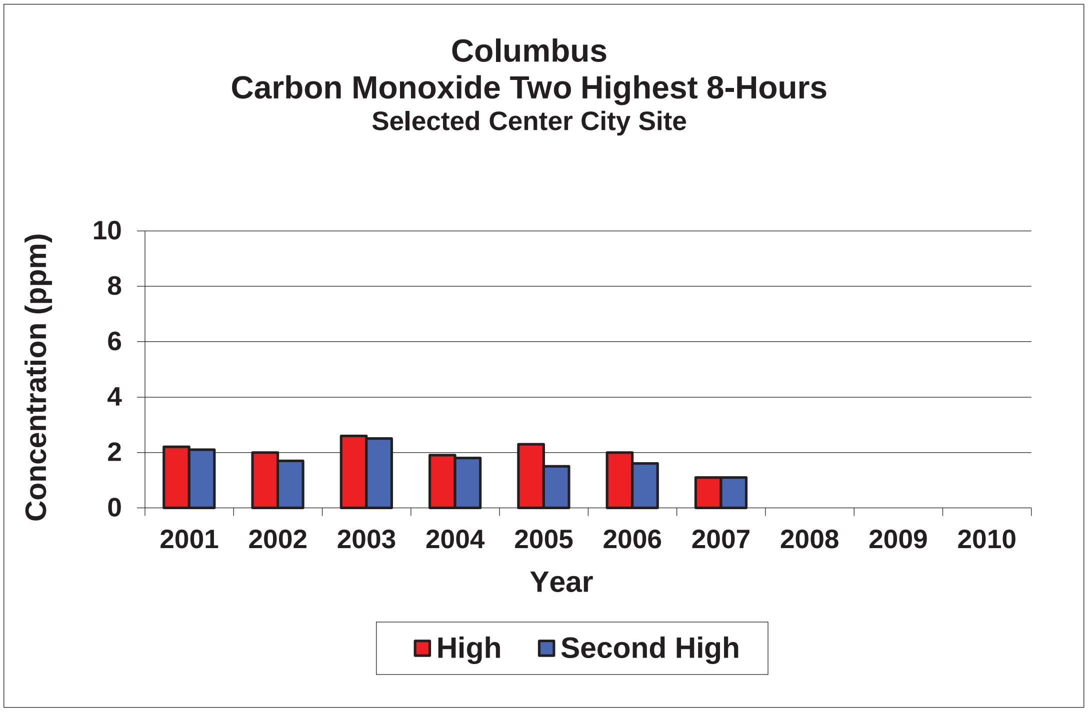


Figure 23 (continued)



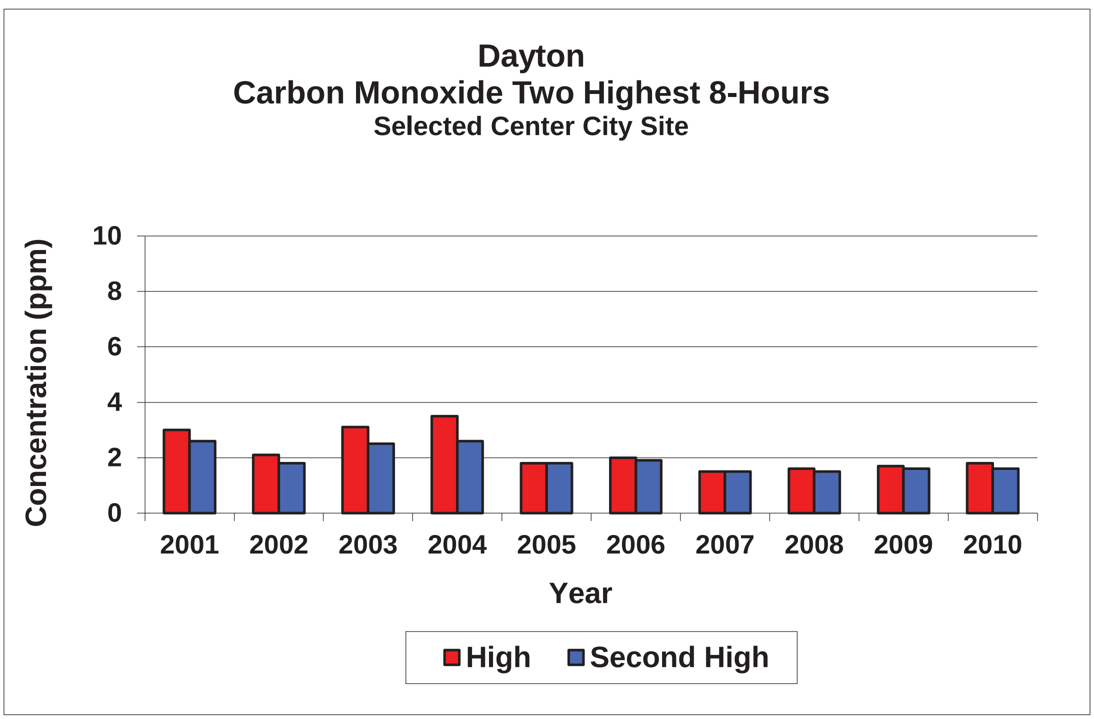
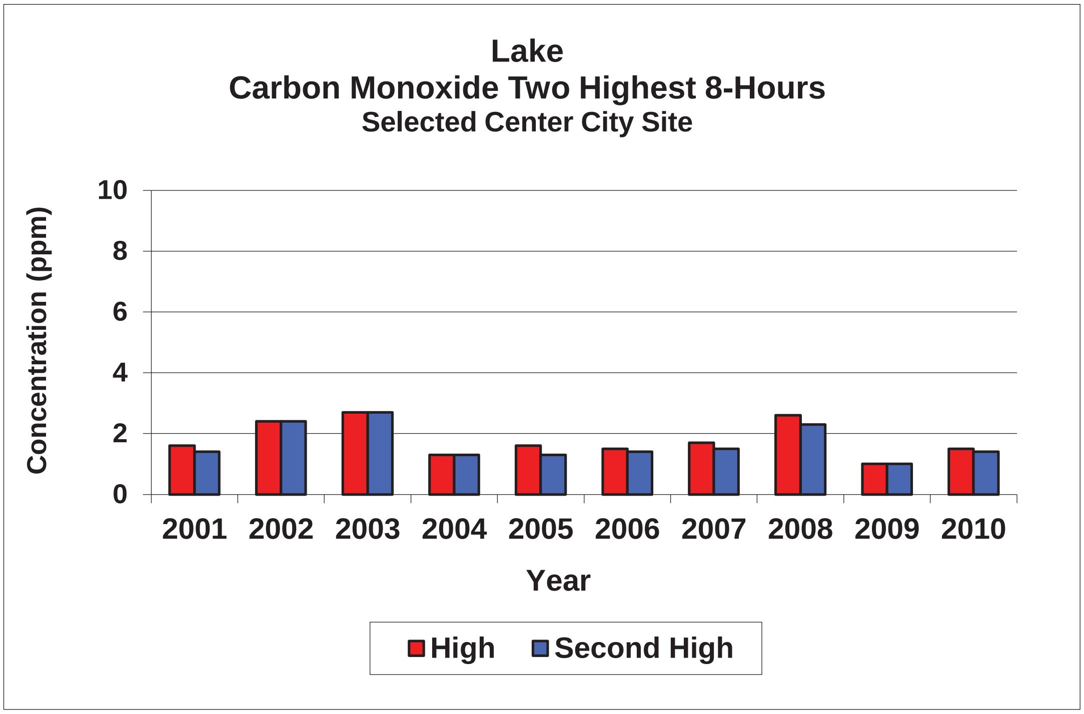


Figure 23 (continued)



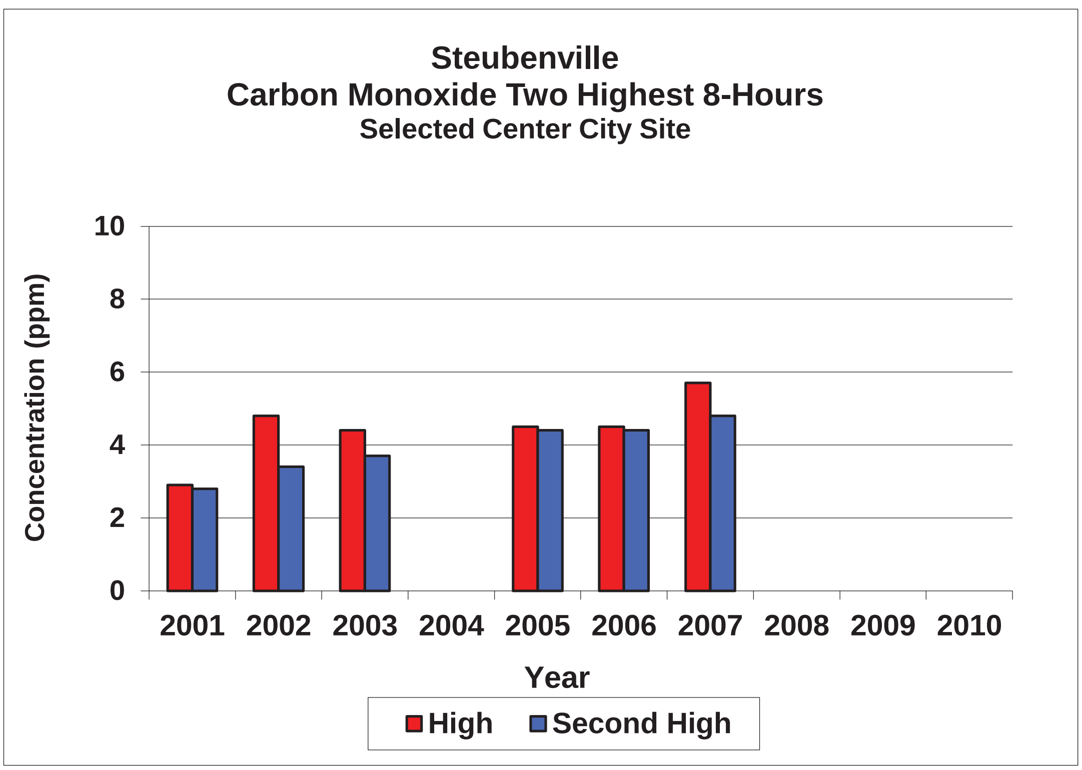


Figure 23 (continued)

IV. QUALITY ASSURANCE PROGRAM

A. GENERAL

Air monitoring data collected by State and Local Air Monitoring Stations (SLAMS)are required to meet Quality Assurance guidance in Appendix A of 40 CFR Part 58. That appendix specifies the minimum quality system requirements for SLAMS data for the pollutants SO_2, NO_2, O_3, CO, Lead, $PM_{2.5}$, and PM_{10}.

Air monitoring agencies are required to have a quality system in place. The quality system is the means by which an organization manages the quality of the monitoring data it produces in a systematic, organized manner. It provides a framework for planning, implementing, assessing and reporting work performed by an organization. It provides for required quality assurance and quality control activities. A quality system includes an overall Quality Management Plan and specific Quality Assurance Project Plans for the pollutants measured.

For air monitoring data the measurements of accuracy and precision are integral to the quality assurance and quality control of the data. Accuracy is defined as the degree the measurement is close to the true value of the parameter measured. Precision is defined as the repeatability of the measurements.

B. Accuracy and Precision Requirements

Accuracy requirements for manual Lead, PM_{10} and $PM_{2.5}$ samplers and continuous PM_{10} and $PM_{2.5}$ monitors include audits of the flow rate of each sampler compared to a known flow rate at least once every 6 months. For continuous monitors for SO_2, NO_2, O_3, and CO, quarterly audits of at least 25% of the analyzers are recommended. One audit per monitor per calendar year is required. During the audits the analyzers are tested with a gas in three specific concentration levels.

Precision requirements for Lead, PM_{10} and $PM_{2.5}$ are met by selecting sites in areas of expected highest concentration for side-by-side (collocated) sampling. Duplicate samples for comparison purposes are collected on an every 12-day schedule although it may be more frequent. Each PM2.5 sampler or continuous $PM_{2.5}$ monitor should have a quality control flow rate verification each month. Each Lead and PM_{10} sampler should have a flow rate verification every quarter. For continuous SO_2, NO_2, O_3, and CO monitors the determination of precision is by a one-point quality control check against a gas of known concentration at least once every two weeks for each analyzer. The analyzers are operated in the normal sampling mode during this check.

The accuracy audit data and the precision data are collected by local and state agencies and reported to the US EPA Air Quality System (AQS) within 90 days of the quarter when they were performed.

C. The Statistics of Accuracy and Precision

Statistical calculations are available from reports in the Air Quality System as calculated from the reported accuracy and precision data. Calculations are as shown in Appendix A of 40 CFR 58. The results of those data are available to the reporting organization that collected the data and to other AQS data users. Statistics that are available for 1-Point Quality Control include results for percent of data completeness, coefficient of variation (CV) and bias for each analyzer plus a combined summary for the reporting organization for the pollutant. Results of collocated data for PM_{10} and for $PM_{2.5}$ include the number of collocated data pairs, the percentage completeness and the coefficient of variation. For manual PM_{10} and PM2.5 accuracy the number of flow rate audits, the percent completeness and the lower and upper confidence limits are included.

For accuracy statistics the summary results that are included in the accompanying tables for SO_2, NO_2, CO and O_3 include 1-Point Confidence Limits and percentage of data between confidence limits.

In general lower numbers for the coefficient of variation are desirable because indicates more consistency of the test measurements. For SO_2, NO_2 and CO 10% is the CV upper target. For those pollutants 10% is the bias target also. For O_3 7% is the CV target and 7% for bias. For PM2.5 10% or less is the target for precision. For PM2.5 accuracy audits less than 5% for design is the upper limit. For QA statistics 100% data completeness is desired.

Tables 5-8 give summaries of the percent completeness, coefficient of variation and bias for precision and 1-point confidence limits and percent of data between confidence limits for accuracy for each reporting organization in the state, for SO_2, NO_2, CO and O_3 monitors.

Tables 9-11 give summaries of number of duplicate samples, percent completeness and coefficient of variation for precision and percent completeness and lower and upper confidence limits for accuracy for PM_{10}, $PM_{2.5}$ and Lead.

TABLE 5
Continuous Sulfur Dioxide
2010 Precision and Accuracy Data

LAA/DO	Precision: % Complete	Precision: CV	Precision: Bias	Accuracy (%): 1-Point Confidence Limits: Lower	Accuracy (%): 1-Point Confidence Limits: Upper	Accuracy (%): %Between Conf. Lim.
Northeast District	100	4.64	+/-3.63	-9.27	7.31	83
Northwest District	100	2.30	+/-1.84	-4.14	3.86	92
Southeast District	100	5.32	+/-3.89	10.22	9.44	100
Akron	100	7.44	+/-5.64	-11.52	15.00	75
HCDOES	67	3.52	+/-3.55	-8.10	3.88	100
Cleveland	100	3.58	+/-2.77	-7.25	5.83	100
RAPCA	100	3.02	-4.93	-8.88	0.74	67
Lake County	90	3.11	+/-2.44	-4.88	5.64	58
Portsmouth	100	5.36	+/-3.97	-9.96	9.12	96
Mahoning-Trumbull	96	1.55	+/-1.35	-2.95	1.95	50

TABLE 6
Continuous Nitrogen Dioxide
2010 Precision and Accuracy Data

	Precision			Accuracy (%)		
LAA/DO	% Complete	CV	Bias	1-Point Confidence Limits		%Between Conf. Lim.
				Lower	Upper	
HCDOES	100	2.59	- 4.35	- 8.09	0.55	33
Cleveland	100	3.27	+/- 2.77	- 6.86	4.20	67

TABLE 7
Continuous Carbon Monoxide
2010 Precision and Accuracy Data

	Precision			Accuracy(%)		
LAA/DO	%Complete	CV	%Bias	1-Point Confidence Limits		%Between Conf. Lim.
				Lower	Upper	
Central District	100	1.06	-1.03	-2.38	1.24	100
Akron	100	4.36	+/-3.46	-7.85	7.73	100
Canton	96	7.46	+12.01	-1.87	21.77	83
HCDOES	100	9.08	-5.16	-11.89	13.55	83
Cleveland	100	4.48	+/-3.92	-8.40	7.68	83
RAPCA	100	2.45	+/-2.04	-4.67	3.67	75
Lake County	92	5.88	-5.75	-6.33	12.21	83

TABLE 8
Continuous Ozone
2010 Precision and Accuracy Data

	Precision			Accuracy(%)		
LAA/DO	% Complete	CV	Bias	1-Point Confidence Limits		%Between Conf. Lim.
				Lower	Upper	
Central District	100	1.62	+/-1.16	-2.87	3.09	70
Northeast District	100	6.26	+/-4.82	-9.39	12.01	100
Northwest District	100	2.69	+2.51	-3.06	6.18	89
Southeast District	100	3.87	+/-3.23	-6.44	6.92	100
Southwest District	100	5.39	+/-4.51	-6.86	10.72	67
Akron	100	4.55	+/-3.18	-8.03	8.11	100
Canton	100	3.91	+/-2.80	-7.31	5.87	78
HCDOES	100	3.22	+/-2.90	-4.06	7.70	96
Cleveland	100	1.83	-1.30	-3.50	3.06	83
RAPCA	100	1.34	-1.06	-1.85	2.91	76
Lake County	91	2.26	-1.66	-4.36	3.18	85
Portsmouth	100	4.71	+/-4.16	-6.37	9.41	94
Toledo	100	0.83	+/-0.48	-1.23	1.63	58
Mahoning-Trumbull	98	0.84	+0.66	-1.12	1.70	74

TABLE 9
PM-2.5
2010 Precision and Accuracy Data

LAA/DO	Precision		Coef. Of Variation			Accuracy	
	Number/Checks	% Complete	CV	Audits	%Com	LO	UP
Central District	56	100	5.29	18	100	-1.73	2.03
Northeast District	57	100	5.16	8	100	-1.74	0.80
Southeast District	48	100	10.58	16	100	-4.23	2.99
Akron	54	100	14.44	17	100	-2.19	1.89
Canton	63	100	4.11	16	100	-1.68	2.80
HCDOES	113	100	4.65	51	100	-3.22	3.16
Cleveland	27	90	7.85	28	100	-24.01	20.35
RAPCA	55	100	4.57	24	100	-1.82	2.08
Lake County	59	100	6.13	8	100	-1.95	3.65
Portsmouth	40	100	6.85	10	100	-1.79	1.51
Toledo	54	100	8.92	16	100	-3.70	3.66
Mahoning-Trumbull	54	100	4.82	16	100	-5.67	1.94

TABLE 10
PM-10
2010 Precision and Accuracy Data

LAA/DO	Precision		Coef. Of Variation			Accuracy	
	Number/Checks	% Complete	CV	Audits	%Com	LO	UP
Central District	57	100	5.53	10	100	-1.24	1.46
Northeast District	55	100	4.47	15	100	-4.57	3.53
Southeast District	55	100	7.21	10	100	-0.64	0.64
HCDOES	55	100	4.79	13	94	-10.64	8.46
Cleveland	60	100	8.30	23	100	-4.07	7.17
RAPCA	58	100	7.48	5	83	-4.01	1.63
Lake County	60	100	4.23	8	100	-8.73	1.67
Portsmouth	59	100	4.74	13	100	-8.77	6.61
Mahoning-Trumbull	117	100	3.04	13	83	-4.87	3.67
Toledo FR Ver.	40	100	0.46	5	100	-0.91	1.07

TABLE 11
Lead
2010 Precision and Accuracy Data

LAA/DO	Precision	Coef. Of Variation					Accuracy	
	Number/Checks	#Valid	%Complete	CV	Audits	%Com	LO	UP
Central District	NA				4	100	-1.91	1.41
Northeast District	55	16	100	7.87	15	100	-2.97	4.41
Northwest District(1)	54	25	100	33.24	18	100	-14.20	12.76
Southeast District	50	0	100	(3)	9	100	-9.46	9.20
Southwest District(1)	54	25	100	33.24	3	100	-4.76	6.91
Cleveland	111	60	100	9.57	13	93	-7.03	7.35
Mahoning-Trumbull(2)	35	1	100	(3)	4	100	-2.72	0.27
Canton(2)	35	1	100	(3)	4	100	-11.34	8.02

(1) Same PQAO
(2) Same PQAO
(3) Most lead colo data below 0.02 $\mu g/m^3$ for statistics

V. AIR QUALITY DATA 2010

Total Suspended Particulate (TSP)

Total suspended particulate matter is defined as any liquid (aerosol) or solid substance found in the atmosphere. Particles larger than approximately 100 microns in diameter settle rapidly due to gravity and are not considered suspended particulates. Fly ash, process dusts, soot and oil aerosols are all common forms of suspended particulate matter. The major sources of particulate pollution are industrial processes, electric power generation, industrial fuel combustion, and dust from plowed fields, roadways, or construction sites. Particulate pollution causes a wide range of damage to materials, as well as limiting visibility and reducing the amount of sunlight reaching the earth. Components of particulates may be harmful, such as sulfates, nitrates and metals. The major adverse health effects on humans are related to damage to the respiratory system through interference with the lung's natural cleansing process.

Such adverse health effects are dependent, in a general sense, upon (1) the concentration, size and chemical composition of the particles of which the TSP consists and (2) the concentration and composition of any pollutant gases in combination with it. Particles greater than 10 microns in diameter can rarely penetrate below the larynx and, therefore, are less likely to damage the respiratory system. Particles less than 6 microns in diameter can penetrate the bronchial passage and those of less than 1 micron in diameter can usually penetrate and be deposited in the capillaries and alveoli of the lungs. (I.M. Campbell, Energy and the Atmosphere: A Physical Chemical Approach, John Wiley & Sons, LTD., 1977).

An inhaled particle may exert a toxic effect in one or more of the following four ways: (1) the particle may be intrinsically toxic because of its inherent chemical or physical characteristics; (2) the particle may interfere with one or more of the mechanisms that normally clear the respiratory track; (3) the particle may act as a carrier of an absorbed toxic substance; or (4) the particle may act as a carrier of an absorbent toxic substance.

It is difficult to obtain direct relationships between exposures to various concentrations of TSP and resulting effects upon human health because of the problems of isolating the effects of TSP from those of other environmental pollutants and of reproducing in the laboratory the exact conditions that prevail in the ambient air. Also, it has been observed that exposure to TSP in combination with other pollutants such as sulfur dioxide (SO_2) produces more severe effects than does exposure to each pollutant separately. Nevertheless, statistical analyses of morbidity and mortality data do indicate a relationship between increased TSP concentrations and increased numbers of hospital and clinic admissions for upper respiratory infections, cardiac diseases, bronchitis, asthma, pneumonia, emphysema and the like. (Air Pollution: Its Origin and Control, Harper & Row, 1976.) TSP ceased to be a criteria pollutant on August 1, 1987, having been replaced by PM_{10}.

Starting in 1987 TSP sampling was gradually replaced by ten micron particulate sampling (PM_{10}). There were over 200 TSP monitors in 1987. In 2010 there were 8 monitors reporting TSP data, all are used for lead or other metals monitoring. In July 1997 the U.S. EPA promulgated regulations adding a National Ambient Air Quality Standard for 2.5 micron particulate matter ($PM_{2.5}$). The $PM_{2.5}$ monitors supplement and partially replace the PM_{10} network. They started collecting data in January 1999.

Sampling Method

TSP is measured by the high-volume air sampler method. This instrument draws measured volumes of air through a pre-weighed glass fiber or quartz filter for a specific time (normally 24 hours). Particulate matter in the air is trapped on the filter, which is then re-weighed to determine the mass of the particulates collected. Results are reported as micrograms of particulate matter per cubic meter of air ($\mu g/m^3$). Normal sampling is done intermittently with 24-hour samples taken once every six days.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
QUICK LOOK REPORT (AMP450)

Suspended particulate (TSP) (11101) Ohio Micrograms/cubic meter (25 C) (001)

24-HOUR

SITE ID	POC	PQAO	CITY	COUNTY	ADDRESS	YEAR	METH	# OBS	1ST MAX	2ND MAX	3RD MAX	4TH MAX	ARITH MEAN	GEO. MEAN	GEO. STD	CERT	EDT
39-017-0015	2	1259	Middletown	Butler	3901 LEFFERSON	2010	091	58	96	84	73	67	38.7	34.5	1.6		0
39-029-0020	1	0807	East Liverpool	Columbiana	2220 MICHIGAN	2010	091	57	166	126	97	88	43.3	36.7	1.8		0
39-035-0038	1	0229	Cleveland	Cuyahoga	2547 ST TIKHON	2010	091	58	151	104	102	97	50.8	44.3	1.7		0
39-035-0042	1	0229	Cleveland	Cuyahoga	3136 LORAIN AVE., F.S. 4	2010	091	59	143	97	80	78	41.9	36.2	1.8		0
39-035-0049	1	0229	Cleveland	Cuyahoga	E. 56TH ST.	2010	091	57	139	126	124	120	61.6	55.2	1.6		0
39-035-0061	1	0229	Cleveland	Cuyahoga	W. SIDE OF WEST 3RD.	2010	091	55	133	126	125	95	51.2	45.9	1.6		0
39-035-0072	1	0229	Not in a city	Cuyahoga	26565 MILES ROAD	2010	091	54	115	81	77	74	35.5	30.6	1.7		0
39-061-0001	2	1259	Cincinnati	Hamilton	800 VINE ST.	2010	091	54	88	74	67	66	37.2	34.2	1.5		0

Particulate Matter (<10µ, PM_{10})

On July 1, 1987, the U.S. EPA promulgated revisions to the National Ambient Air Quality Standards for particulate matter. The primary standard includes only those particles with an aerodynamic diameter smaller than or equal to a nominal 10 micrometers. This standard is referred to as the PM_{10} standard (particulate matter <10 micrometers). From July 1987 until July 18, 1997 the annual standard was 50 µg/m^3 annual arithmetic mean (average over three years' data). The 24-hour standard, not to be exceeded more than once, was 150 µg/m^3. The standard is that the 24-hour level of 150 µg/m^3 is not to be exceeded more than once per year averaged over three years.

The annual standard was retained until the changes to the particulate standards that became effective on December 18, 2006 when the 24-Hour standard was retained and the annual standard was revoked.

The standards were changed in July 1997, when the $PM_{2.5}$ standard was promulgated. Changing the standard from TSP to PM_{10} and then adding $PM_{2.5}$ was due to research findings concerning particle size. Particulate matter can harm body tissue such as the linings of the nose and throat and the lungs by simple mechanical irritation. Nasal hairs and sneezing are the body's natural defenses against some of the relatively large particles (15-100 microns). However, small particles can slip past these defenses and penetrate deep into the lungs where they can damage lung tissues.

Because of the final action to set the fine particulate standards by U.S. EPA to replace TSP, the Ohio Air Monitoring Network was expanded to include 21 PM_{10} sites in 1986, to 45 in 1988 and to a high of 91 in 1997. During the year 2010 monitors were operated at 36 sites.

Samples are taken each weekday at urban sites used in reporting the Air Quality Index (AQI).

PM10 Total 0-10um STP (81102) Ohio Micrograms/cubic meter (25 C) (001)

24-HOUR

SITE ID	POC	PQAO	CITY	COUNTY	ADDRESS	YEAR	METH	#OBS	NUM REQ	VALID DAYS	%OBS	1ST MAX	2ND MAX	3RD MAX	4TH MAX	DAY MAX >STD	EST DAYS >STD	WTD ARITH MEAN	CERT	EDT
39-003-0006	1	0743	Lima	Allen	1314 FINDLAY RD.	2010	062	57	61	57	93	46	39	37	37	0	0	20.2		0
39-003-0007	1	0743	Lima	Allen	ROUSCH RD.	2010	062	56	61	56	92	48	42	41	39	0	0	21.2		0
39-003-0008	1	0743	Lima	Allen	NORTH STREET	2010	062	57	61	57	93	38	38	35	34	0	0	15.9		0
39-017-0003	1	1259	Middletown	Butler	BONITA & ST JOHN	2010	063	61	61	61	100	43	41	33	33	0	0	19.2		0
39-017-0015	1	1259	Middletown	Butler	3901 LEFFERSON	2010	063	60	61	60	98	48	44	41	39	0	0	21.0		0
39-029-0020	1	0807	East Liverpool	Columbiana	2220 MICHIGAN	2010	062	60	61	60	98	69	41	41	39	0	0	22.9		0
39-029-0022	1	0807	East Liverpool	Columbiana	500 MARYLAND	2010	062	58	61	58	95	67	44	43	39	0	0	24.0		0
39-035-0038	1	0229	Cleveland	Cuyahoga	2547 ST TIKHON	2010	063	342	182	180	99	75	70	62	59	0	0	24.3		0
39-035-0045	1	0229	Cleveland	Cuyahoga	4950 BROADWAY AVE.	2010	063	60	61	60	98	106	49	46	46	0	0	25.2		0
39-035-0060	1	0229	Cleveland	Cuyahoga	E. 14TH & ORANGE	2010	063	17	61	17	28	79	58	53	50	0	0	38.2*		0
39-035-0060	3	0229	Cleveland	Cuyahoga	E. 14TH & ORANGE	2010	079	8695	365	364	100	82	72	65	65	0	0	23.7		0
39-035-0065	1	0229	Newburgh Heights	Cuyahoga	4600 HARVARD AVE.	2010	063	56	61	56	92	70	67	66	64	0	0	31.1		0
39-035-1002	1	0229	Brook Park	Cuyahoga	16900 HOLLAND RD.	2010	063	60	61	60	98	45	39	34	33	0	0	16.4		0
39-049-0024	1	0805	Columbus	Franklin	STATE FAIRGROUNDS	2010	063	60	61	60	98	138	126	78	74	0	0	32.3		5
39-049-0024	2	0805	Columbus	Franklin	STATE FAIRGROUNDS	2010	063	57	61	57	93	129	110	90	72	0	0	32.0		5
39-057-0005	1	0287	Yellow Springs	Greene	100 DAYTON ST.	2010	062	51	61	51	84	38	31	30	29	0	0	17.7*		0
39-061-0014	1	1259	Cincinnati	Hamilton	SEYMOUR & VINE ST.	2010	063	55	61	55	90	61	59	52	49	0	0	24.5		0

Note: The * indicates that the mean does not satisfy summary criteria.

PM10 Total 0-10um STP (81102) Ohio Micrograms/cubic meter (25 C) (001)

24-HOUR

SITE ID	POC	PQAO	CITY	COUNTY	ADDRESS	YEAR	METH	#OBS	NUM REQ	VALID DAYS	%OBS	1ST MAX	2ND MAX	3RD MAX	4TH MAX	DAY MAX >STD	EST DAYS >STD	WTD ARITH MEAN	CERT	EDT
39-061-0040	1	1259	Cincinnati	Hamilton	250 WM. HOWARD TAFT	2010	063	61	61	61	100	45	40	37	34	0	0	20.4		0
39-061-0040	9	1259	Cincinnati	Hamilton	250 WM. HOWARD TAFT	2010	079	6082	365	254	70	58	52	51	50	0	0	26.9*		5
39-061-5001	1	1259	Lockland	Hamilton	101 COOPER AVE.	2010	063	57	61	57	93	47	44	42	40	0	0	21.1		0
39-061-5001	2	1259	Lockland	Hamilton	101 COOPER AVE.	2010	063	58	61	58	95	45	43	38	37	0	0	20.9		0
39-063-0002	1	0743	Findlay	Hancock	9860 C.R. 313	2010	062	60	61	60	98	37	31	31	30	0	0	19.2		0
39-063-0003	1	0743	Findlay	Hancock	9860 CR 313	2010	062	61	61	61	100	41	35	34	33	0	0	17.3		0
39-063-0004	1	0743	Findlay	Hancock	C.R. 144	2010	062	61	61	61	100	42	42	42	41	0	0	19.5		0
39-081-0001	1	0809	Not in a city	Jefferson	1004 THIRD ST. BRILLIANT	2010	063	56	61	56	92	61	57	49	46	0	0	26.3		0
39-081-0017	1	0809	Steubenville	Jefferson	618 LOGAN ST.	2010	063	59	61	59	97	77	63	61	54	0	0	30.1		0
39-085-1001	1	0595	Fairport Harbor (Fairport)	Lake	325 VINE ST.	2010	062	60	61	60	98	49	39	37	33	0	0	15.7		0
39-087-0012	1	0880	Ironton	Lawrence	450 Commerce Drive	2010	062	60	61	60	98	43	40	34	30	0	0	19.6		0
39-093-3002	1	0807	Sheffield	Lorain	2180 LAKE BREEZE	2010	062	53	61	53	87	42	35	31	30	0	0	16.9		0
39-095-1003	2	0220	Toledo	Lucas	LEE & FRONT	2010	079	8113	365	336	92	88	87	82	80	0	0	24.1		0
39-099-0005	1	0634	Youngstown	Mahoning	145 MADISON AVE.	2010	063	61	61	61	100	77	48	44	36	0	0	21.0		0
39-099-0006	1	0634	Youngstown	Mahoning	1524 OAKLAND AVE.	2010	063	61	61	61	100	71	49	47	43	0	0	22.3		0
39-099-0006	2	0634	Youngstown	Mahoning	1524 OAKLAND AVE.	2010	063	36	61	36	59	46	39	39	35	0	0	22.1*		0
39-113-7001	1	0287	Moraine	Montgomery	2728 VIKING LANE	2010	063	61	61	61	100	56	45	44	42	0	0	22.8		0
39-113-7001	2	0287	Moraine	Montgomery	2728 VIKING LANE	2010	063	58	61	58	95	52	44	44	44	0	0	21.8		0

Note: The * indicates that the mean does not satisfy summary criteria.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
QUICK LOOK REPORT (AMP450)

PM10 Total 0-10um STP (81102) Ohio Micrograms/cubic meter (25 C) (001)

24-HOUR

SITE ID	POC	PQAO	CITY	COUNTY	ADDRESS	YEAR	METH	#OBS	NUM REQ	VALID DAYS	%OBS	1ST MAX	2ND MAX	3RD MAX	4TH MAX	DAY MAX >STD	EST DAYS >STD	WTD ARITH MEAN	CERT	EDT
39-145-0013	1	0880	New Boston	Scioto	4862 GALLIA	2010	062	61	61	61	100	37	35	32	29	0	0	19.1		0
39-145-0019	1	0880	Portsmouth	Scioto	605 WASHINGTON	2010	062	59	61	59	97	36	31	31	30	0	0	19.0		0
39-145-0020	1	1299	Franklin Furnace	Scioto	2840 BACK RD.	2010	150	8736	365	365	100	41	40	39	38	0	0	16.6		0
39-145-0021	1	1299	Franklin Furnace	Scioto	2446 GALLIA PIKE	2010	150	8703	365	362	99	57	50	49	47	0	0	20.9		0
39-145-0022	1	1299	Franklin Furnace	Scioto	1740 GALLIA PIKE	2010	150	8713	365	364	100	45	43	41	40	0	0	17.0		0
39-155-0005	1	0634	Warren	Trumbull	540 LAIRD AVE.	2010	062	58	61	58	95	58	44	36	35	0	0	19.4		0
39-155-0005	2	0634	Warren	Trumbull	540 LAIRD AVE.	2010	062	35	61	35	57	44	33	32	32	0	0	19.6*		0
39-155-0006	1	0634	Warren	Trumbull	2323 MAIN AVE.	2010	062	60	61	60	98	39	36	32	31	0	0	18.5		0

Note: The * indicates that the mean does not satisfy summary criteria.

Particulate Matter <2.5µ ($PM_{2.5}$)

On July 18, 1997, the U.S. EPA promulgated revisions to the National Ambient Air Quality Standards for particulate matter. The primary standard includes only those particles with an aerodynamic diameter smaller than or equal to a nominal 2.5 micrometers. This new standard is referred to as the $PM_{2.5}$ standard (particulate matter <2.5 micrometers).

The annual standard is 15µg/m^3 annual arithmetic mean (average over three consecutive years' data). The 24-hour standard is met when the 98^{th} percentile concentration averaged over three consecutive years, is less than or equal to 35µg/m^3.

The 24-Hour National Ambient Air Quality Standard was changed from 65µg/m^3 to 35µg/m^3 effective in December 2006.

This revision to the particulate matter program is due to research findings concerning particle size. Particulate matter can harm body tissue such as the linings of the nose and throat and the lungs by simple mechanical irritation. Nasal hairs and sneezing are the body's natural defenses against some of the relatively large particles (15-100 microns). However, small particles can slip past these defenses and penetrate deep into the lungs where they can damage lung tissues.

Because of the final action to set the fine particulate standards by U.S. EPA to supplement PM_{10}, the Ohio Air Monitoring Network had a peak of 52 sites in 2008. There were 49 $PM_{2.5}$ sites in 2010. Those 50 sites have a total of 99 monitors reporting data. There are 29 continuous monitors of which 3 are Federal Equivalent Method monitors and 14 speciation monitors in addition to the 56 Federal Reference monitors.

The Federal Reference and Federal Equivalent Method monitors are used to determine compliance with the National Ambient Air Quality Standards, the speciation monitors are used for analysis to determine the composition of the particulate and the continuous monitors are primarily used for the Air Quality Index and for "real time" reporting of particulate data to the public.

Since most continuous and all speciation analysis monitors are not Federal Reference or Equivalent Methods those data are not used to determine compliance with the National Ambient Air Quality Standards.

PM2.5 - Local Conditions (88101) Ohio Micrograms/cubic meter (LC) (105)

24-HOUR

SITE ID	POC	PQAO	CITY	COUNTY	ADDRESS	YEAR	METH	#OBS	1ST MAX	2ND MAX	3RD MAX	4TH MAX	98TH PERCENTILE VALUE	WTD ARITH MEAN	CERT	EDT
39-003-0009	1	0808	Not in a city	Allen	2850 BIBLE ROAD	2010	142	39	35.2	24.6	21.4	19.5	35.2	10.90*		0
39-009-0003	1	0809	Not in a city	Athens	S.R. 377 GIFFORD STATE FOREST	2010	120	55	23.3	17.1	17.1	16.1	17.1	9.23*		0
39-017-0003	1	1259	Middletown	Butler	BONITA & ST JOHN	2010	120	121	36.7	32.9	31.7	31.6	31.7	13.57		0
39-017-0003	2	1259	Middletown	Butler	BONITA & ST JOHN	2010	120	60	29.8	28.1	25.4	25.1	28.1	13.16		0
39-017-0016	1	1259	Fairfield	Butler	400 NILLES RD.	2010	142	114	34.8	32.7	32.1	31.5	32.1	13.50		0
39-023-0005	1	0287	Springfield	Clark	350 N. FOUNTAIN AVE.	2010	142	122	31.3	29.9	29.5	29.4	29.5	13.13		0
39-025-0022	1	1259	Batavia	Clermont	2400 CLERMONT CENTER DR.	2010	120	114	28.1	28.0	27.7	26.7	27.7	11.97		0
39-035-0034	1	0229	Cleveland	Cuyahoga	891 E. 152 ST.	2010	120	112	40.4	29.7	26.8	26.6	26.8	10.89		0
39-035-0038	1	0229	Cleveland	Cuyahoga	2547 ST TIKHON	2010	120	114	48.4	31.9	30.5	30.2	30.5	13.97		0
39-035-0038	2	0229	Cleveland	Cuyahoga	2547 ST TIKHON	2010	120	27	50.5	29.1	24.4	24.2	50.5	16.70		0
39-035-0045	1	0229	Cleveland	Cuyahoga	4950 BROADWAY AVE.	2010	120	122	39.0	32.7	32.7	30.7	32.7	13.25		0
39-035-0060	1	0229	Cleveland	Cuyahoga	E. 14TH & ORANGE	2010	120	114	52.6	31.0	30.9	30.6	30.9	13.70		0
39-035-0065	1	0229	Newburgh Heights	Cuyahoga	4600 HARVARD AVE.	2010	120	110	40.0	28.6	27.3	27.3	27.3	13.15*		0
39-035-1002	1	0229	Brook Park	Cuyahoga	16900 HOLLAND RD.	2010	120	108	32.0	27.4	26.5	25.8	26.5	11.33		0
39-049-0024	1	0805	Columbus	Franklin	STATE FAIRGROUNDS	2010	120	118	38.9	36.7	30.9	30.6	30.9	13.06		0
39-049-0025	1	0805	Columbus	Franklin	1700 ANN ST.	2010	120	118	38.0	34.1	33.5	28.7	33.5	12.67		0

Note: The * indicates that the mean does not satisfy summary criteria.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
QUICK LOOK REPORT (AMP450)

PM2.5 - Local Conditions (88101) — Ohio — Micrograms/cubic meter (LC) (105)

24-HOUR

SITE ID	POC	PQAO	CITY	COUNTY	ADDRESS	YEAR	METH	#OBS	1ST MAX	2ND MAX	3RD MAX	4TH MAX	98TH PERCENTILE VALUE	WTD ARITH MEAN	CERT	EDT
39-049-0025	2	0805	Columbus	Franklin	1700 ANN ST.	2010	120	59	31.9	28.0	25.0	22.8	28.0	12.52		0
39-049-0029	3	0805	New Albany	Franklin	7600 FODOR RD.	2010	170	4511	37.9	32.8	31.3	29.5	29.5	12.65*		0
39-049-0081	1	0805	Columbus	Franklin	5750 MAPLE CANYON	2010	120	120	34.2	29.2	29.1	27.8	29.1	11.88		0
39-057-0005	1	0287	Yellow Springs	Greene	100 DAYTON ST.	2010	142	104	31.2	27.9	27.6	27.2	27.6	13.17*		0
39-061-0006	1	1259	Cincinnati	Hamilton	11590 GROOMS RD	2010	120	109	35.3	32.3	29.0	27.6	29.0	12.70*		0
39-061-0014	1	1259	Cincinnati	Hamilton	SEYMOUR & VINE ST.	2010	120	348	42.5	39.6	36.1	34.2	32.7	14.86		0
39-061-0014	2	1259	Cincinnati	Hamilton	SEYMOUR & VINE ST.	2010	000	57	34.6	33.7	30.4	27.4	33.7	15.01		0
39-061-0040	1	1259	Cincinnati	Hamilton	250 WM. HOWARD TAFT	2010	142	110	32.2	32.2	28.7	26.9	28.7	13.33		5
39-061-0042	1	1259	Cincinnati	Hamilton	2101 W. 8TH ST.	2010	142	121	45.4	35.8	35.0	29.4	35.0	14.48		5
39-061-7001	1	1259	Norwood	Hamilton	2059 SHERMAN AVE.	2010	142	117	32.8	32.6	32.5	31.5	32.5	14.11		0
39-061-8001	1	1259	St. Bernard	Hamilton	300 MURRAY RD.	2010	120	11	33.3	24.8	22.6	20.0	33.3	17.55*		0
39-081-0017	1	0809	Steubenville	Jefferson	618 LOGAN ST.	2010	120	108	35.3	33.3	29.8	29.1	29.8	12.68		0
39-081-1001	1	0809	Mingo Junction	Jefferson	501 COMMERICAL	2010	120	55	25.9	25.1	23.3	22.5	25.1	12.64		0
39-081-1001	2	0809	Mingo Junction	Jefferson	501 COMMERICAL	2010	120	52	28.2	26.3	25.2	23.6	26.3	13.01*		0
39-085-0007	1	0595	Painesville	Lake	177 MAIN STREET	2010	120	120	33.2	30.4	26.9	25.6	26.9	10.39		0
39-085-0007	2	0595	Painesville	Lake	177 MAIN STREET	2010	120	60	32.1	24.1	21.7	18.9	24.1	10.64		0
39-087-0012	1	0880	Ironton	Lawrence	450 Commerce	2010	120	117	30.7	26.6	25.1	23.9	25.1	12.09		0

Note: The * indicates that the mean does not satisfy summary criteria.

PM2.5 - Local Conditions (88101) Ohio Micrograms/cubic meter (LC) (105)

24-HOUR

SITE ID	POC	PQAO	CITY	COUNTY	ADDRESS	YEAR	METH	#OBS	1ST MAX	2ND MAX	3RD MAX	4TH MAX	98TH PERCENTILE VALUE	WTD ARITH MEAN	CERT	EDT
					Drive											
39-093-3002	1	0807	Sheffield	Lorain	2180 LAKE BREEZE	2010	120	118	39.2	25.6	24.4	23.5	24.4	10.41		0
39-093-3002	2	0807	Sheffield	Lorain	2180 LAKE BREEZE	2010	120	59	38.5	25.3	20.8	19.5	25.3	10.29		0
39-095-0024	1	0220	Toledo	Lucas	348 S. ERIE	2010	120	114	42.6	26.6	26.3	26.2	26.3	11.01		0
39-095-0024	2	0220	Toledo	Lucas	348 S. ERIE	2010	120	57	39.0	38.8	26.1	22.4	38.8	11.65		0
39-095-0026	1	0220	Toledo	Lucas	4208 AIRPORT HIGHWAY	2010	118	113	37.6	30.3	30.0	28.7	30.0	11.40		0
39-095-0028	1	0220	Toledo	Lucas	600 COLLINS PARK	2010	118	111	42.2	31.6	28.2	27.2	28.2	11.41		0
39-099-0005	1	0634	Youngstown	Mahoning	145 MADISON AVE.	2010	120	56	36.1	33.4	21.5	21.2	33.4	12.65		0
39-099-0005	2	0634	Youngstown	Mahoning	145 MADISON AVE.	2010	120	59	37.7	31.3	24.6	23.7	31.3	12.79		0
39-099-0014	1	0634	Youngstown	Mahoning	345 OAKHILL AVE.	2010	120	121	35.5	35.0	29.0	28.6	29.0	12.39		0
39-103-0003	1	0012	Not in a city	Medina	6364 DEERVIEW	2010	120	116	31.8	31.3	28.8	25.1	28.8	10.76		0
39-103-0004	3	0012	Not in a city	Medina	BALLASH ROAD	2010	182	2160	28.2	22.0	21.2	19.9	22.0	7.92*		0
39-113-0032	1	0287	Dayton	Montgomery	215 EAST THIRD ST.	2010	145	119	41.9	32.7	30.4	30.2	30.4	13.97		0
39-113-0032	2	0287	Dayton	Montgomery	215 EAST THIRD ST.	2010	145	57	29.4	29.4	27.6	26.1	29.4	13.27		0
39-133-0002	1	0012	Ravenna	Portage	531 WASHINGTON	2010	120	115	33.4	32.2	31.9	26.9	31.9	11.18		0
39-135-1001	1	0287	New Paris	Preble	6940 OXFORD GETTYSBURG RD.	2010	145	120	35.6	33.1	30.2	26.5	30.2	11.98		0
39-145-0013	1	0880	New Boston	Scioto	4862 GALLIA	2010	120	116	26.1	24.5	24.4	23.9	24.4	11.80		0
39-145-0013	2	0880	New Boston	Scioto	4862 GALLIA	2010	120	57	27.0	26.3	20.8	20.5	26.3	11.99		0

Note: The * indicates that the mean does not satisfy summary criteria.

PM2.5 - Local Conditions (88101) Ohio Micrograms/cubic meter (LC) (105)

24-HOUR

SITE ID	POC	PQAO	CITY	COUNTY	ADDRESS	YEAR	METH	#OBS	1ST MAX	2ND MAX	3RD MAX	4TH MAX	98TH PERCENTILE VALUE	WTD ARITH MEAN	CERT	EDT
39-151-0017	1	0151	Canton	Stark	1330 DUEBER	2010	142	330	43.4	43.4	41.3	38.2	33.0	14.38		0
39-151-0017	2	0151	Canton	Stark	1330 DUEBER	2010	142	60	44.7	42.0	31.3	30.4	42.0	14.99		0
39-151-0020	1	0151	Canton	Stark	420 MARKET	2010	142	112	42.4	37.8	32.2	31.7	32.2	13.76		0
39-153-0017	1	0012	Akron	Summit	80 BRITTAIN	2010	118	351	40.3	36.6	35.3	34.5	31.9	13.23		0
39-153-0017	2	0012	Akron	Summit	80 BRITTAIN	2010	118	55	40.4	32.1	28.6	27.4	32.1	14.11*		0
39-153-0017	3	0012	Akron	Summit	80 BRITTAIN	2010	170	6897	44.5	38.9	36.9	36.3	35.1	15.94*		0
39-153-0023	1	0012	Akron	Summit	660 W. EXCHANGE ST.	2010	000	110	33.9	33.0	30.2	28.6	30.2	12.54		0
39-155-0005	1	0634	Warren	Trumbull	540 LAIRD AVE.	2010	120	119	34.7	32.6	31.0	30.8	31.0	11.95		0
39-165-0007	1	1259	Lebanon	Warren	416 SOUTHEAST ST.	2010	120	118	35.8	29.6	27.0	26.6	27.0	11.90		0

Note: The * indicates that the mean does not satisfy summary criteria.

PM-2.5 Continuous Monitor Data

Site ID	POC	Rep Org	City	County	Address	Year	Method	#OBS	1st Max	2nd Max	3rd Max	4th Max	Arith Mean
39-001-0001	3	0880	West Union	Adams	210 N. Wilson Dr.	2010	750	4272	144.7	128.6	104.5	97.0	13.49
39-003-0009	3	0808		Allen	2850 Bible Rd.	2010	760	3962	74.6	71.9	67.9	64.7	11.13
39-003-0009	3	0808		Allen	2850 Bible Rd.	2010	701	4751	229.0	213.8	187.1	181.3	8.58
39-009-0004	1	1335		Athens	7760 Blackburn Rd.	2010	760	8719	96.5	91.6	86.2	81.9	16.39
39-017-1004	3	1259	Middletown	Butler	Hook Field Airport	2010	731	2018	50.5	46.9	46.7	46.1	14.95
39-023-0005	3	0287	Springfield	Clark	350 N. Fountain Ave.	2010	750	6728	91.3	84.3	77.1	73.0	13.18
39-025-0022	3	1259	Batavia	Clermont	2400 Clermont Center Dr.	2010	760	8687	56.3	54.6	53.2	53.1	12.94
39-035-0038	3	0229	Cleveland	Cuyahoga	2547 St. Tikhon	2010	760	5355	97.1	96.5	83.3	82.7	15.81
39-035-0060	3	0229	Cleveland	Cuyahoga	E. 14th & Orange	2010	760	6481	91.3	88.2	83.2	81.7	17.89
39-049-0029	3	0805	New Albany	Franklin	7600 Fodor Rd.	2010	170	4511	46.8	45.3	45.3	45.1	12.33
39-049-0029	3	0805	New Albany	Franklin	7600 Fodor Rd.	2010	760	96	23.9	20.3	19.4	18.4	10.34
39-049-0029	3	0805	New Albany	Franklin	7600 Fodor Rd.	2010	701	3478	38.3	38.0	37.4	36.8	7.56
39-049-0034	3	0805	Columbus	Franklin	Korbel Ave.	2010	701	8585	90.1	76.1	62.3	55.5	9.09
39-057-0005	3	0287	Yellow Springs	Greene	314 Dayton St.	2010	750	7428	75.9	69.5	65.4	62.8	12.97
39-061-0006	3	1259	Cincinnati	Hamilton	11590 Grooms Rd.	2010	750	7732	54.8	52.7	52.3	51.8	15.20
39-061-0040	3	1259	Cincinnati	Hamilton	250 Wm Howard Taft	2010	760	8543	159.5	142.9	142.8	126.1	18.61
39-081-0017	3	0809	Steubenville	Jefferson	618 Logan St.	2010	760	3934	160.2	143.5	106.1	105.4	15.32
39-081-0017	3	0809	Steubenville	Jefferson	618 Logan St.	2010	701	4601	155.2	126.9	108.1	105.0	10.26
39-085-0007	3	0595	Painesville	Lake	177 Main St.	2010	760	5186	51.0	50.0	49.0	49.0	11.46
39-087-0012	3	0880	Ironton	Lawrence	450 Commerce Dr.	2010	750	6152	298.7	267.3	248.9	236.8	13.77
39-093-3002	3	0807	Sheffield	Lorain	2180 Lake Breeze	2010	760	8339	65.4	64.9	57.1	56.8	12.76
39-095-0024	3	0220	Toledo	Lucas	348 S. Erie	2010	701	7639	56.8	48.6	47.6	47.4	10.81
39-099-0014	3	0634	Youngstown	Mahoning	345 Oakhill Ave.	2010	701	8739	126.9	115.9	107.8	76.3	11.91
39-103-0003	3	0012		Medina	6364 Deerview	2010	760	3517	63.9	63.0	59.1	56.8	14.60
39-103-0004	3	0012		Medina	Ballash Rd.	2010	182	2160	51.3	44.1	42.0	39.0	7.97
39-113-0032	3	0287	Dayton	Montgomery	215 East Third St.	2010	750	8742	149.9	111.7	96.0	69.0	12.67
39-135-1001	3	0287		Preble	National Trails	2010	750	8615	64.7	63.0	62.4	57.9	11.44
39-151-0020	3	0151	Canton	Stark	420 Market	2010	711	7131	76.6	75.2	71.3	70.2	10.97
39-153-0017	3	0012	Akron	Summit	80 Brittain	2010	760	6897	76.5	70.9	69.8	62.0	15.99
39-155-0005	3	0634	Warren	Trumbull	540 Laird Ave.	2010	701	8497	81.6	77.5	71.7	61.3	11.38
39-165-0007	3	1259	Lebanon	Warren	416 Southeast S.	2010	731	8492	79.7	55.8	54.5	53.7	14.21

Hourly data, not to be compared to the National Ambient Air Quality Standards

PM-2.5 Speciation Monitor Data

Site ID	POC	Rep Org	City	County	Address	Year	Method	#OBS	1st Max	2nd Max	3rd Max	4th Max	Arith Mean
39-017-1004	5	1217	Middletown	Butler	Hook Field Airport	2010	810	15	24.5	22.4	22.0	21.2	13.99
39-035-0038	6	1217	Cleveland	Cuyahoga	2547 St. Tikhon	2010	810	48	48.0	29.1	26.1	24.1	14.14
39-035-0060	5	1217	Cleveland	Cuyahoga	E. 14th & Orange	2010	810	98	51.5	31.2	30.4	29.9	14.58
39-035-0060	6	1217	Cleveland	Cuyahoga	E. 14th & Orange	2010	810	55	53.9	38.4	37.6	30.6	16.29
39-049-0081	6	1217	Columbus	Franklin	5750 Maple Canyon	2010	810	61	30.0	29.2	25.7	24.0	13.21
39-061-0040	5	1217	Cincinnati	Hamilton	250 Wm Howard Taft	2010	810	61	32.0	25.1	24.2	23.4	13.73
39-081-1001	5	1217	Mingo Junction	Jefferson	501 Commercial	2010	810	53	57.0	31.3	30.8	27.8	15.03
39-087-0012	5	1217	Ironton	Lawrence	450 Commerce Dr.	2010	810	61	28.5	27.3	27.3	27.1	13.79
39-093-3002	5	1217	Sheffield	Lorain	2180 Lake Breeze	2010	810	60	39.1	26.1	25.7	22.8	11.78
39-095-0026	5	1217	Toledo	Lucas	4208 Airport Highway	2010	810	61	38.1	27.5	25.9	23.6	11.67
39-099-0014	5	1217	Youngstown	Mahoning	345 Oakhill Ave.	2010	810	60	38.8	30.0	29.6	24.4	13.03
39-113-0032	5	1217	Dayton	Montgomery	215 East Third St.	2010	810	59	30.4	28.7	27.2	26.5	13.61
39-151-0017	5	1217	Canton	Stark	1330 Dueber	2010	810	60	43.6	33.7	32.3	28.8	14.89
39-153-0023	5	1217	Akron	Summit	660 W. Exchange St.	2010	810	59	39.9	26.3	25.7	24.1	12.33

PM-2.5 98th Percentile Averages

Site	County	Year 2008	2009	2010	Average 2008-2010
39-003-0009	Allen			35.2	
39-009-0003	Athens	28.0	17.6	17.1	21
39-017-0003	Butler	27.1	27.4	31.7	29
39-017-0016		31.5	27.2	32.1	30
39-023-0005	Clark	29.1	26.3	29.5	28
39-025-0022	Clermont	23.6	22.0	27.7	24
39-035-0027	Cuyahoga	37.7	23.0		
39-035-0034		31.5	24.7	26.8	28
39-035-0038		39.4	29.9	30.5	33
39-035-0045		35.3	23.5	32.7	31
39-035-0060		36.9	28.9	30.9	32
39-035-0065		33.8	28.9	27.3	30
39-035-1002		30.1	20.5	26.5	26
39-049-0024	Franklin	27.8	23.2	30.9	27
39-049-0025		27.1	26.9	33.5	29
39-049-0029				29.5	
39-049-0081		25.3	25.7	29.1	27
39-057-0005	Greene	26.8	25.2	27.6	27
39-061-0006	Hamilton	27.0	24.2	29.0	27
39-061-0014		33.0	27.1	32.3	31
39-061-0040		25.5	24.8	28.7	26
39-061-0042		27.5	27.0	35.0	30
39-061-7001		30.3	25.7	32.5	30
39-061-8001		31.0	28.7	33.3	
39-081-0017	Jefferson	35.2	24.7	29.8	30
39-081-1001		35.0	23.3	25.1	28
39-085-0007	Lake		19.8	26.9	
39-085-3002		28.0			
39-087-0010	Lawrence	16.5			
39-087-0012		27.6	21.4	25.1	25
39-093-3002	Lorain	32.1	21.5	24.4	26
39-095-0024	Lucas	30.1	27.3	26.6	
39-095-0025		32.3			
39-095-0026		31.5	23.5	30.0	28
39-095-0028		20.9	28.8	28.2	30
39-099-0005	Mahoning	31.3	26.6	33.4	30
39-099-0014		30.9	28.1	29.0	29
39-103-0003	Medina	30.3	25.7	28.8	28
39-113-0032	Montgomery	30.1	26.8	30.4	29
39-133-0002	Portage	29.4	23.8	31.9	28
39-135-1001	Preble	24.7	21.1	30.2	25
39-145-0013	Scioto	24.4	21.8	24.4	24
39-151-0017	Stark	37.9	30.0	33.0	34
39-151-0020		29.8	27.5	32.2	30
39-153-0017	Summit	37.6	29.2	32.7	33
39-153-0023		32.7	24.8	30.2	29
39-155-0005	Trumbull			31.0	
39-155-0007		33.8			
39-165-0007	Warren	24.2	23.6	27.0	25

Less than 75% capture (green shading)
Combination of two adjacent site's data (yellow shading)
Data for 2008-2010 corrected to consolidate POC 1 and POC 2 data with AMP-355

PM-2.5 Averages of Annual Averages

Site	County	Year 2008	2009	2010	Average 2008-2010
39-003-0009	Allen			10.9	
39-009-0003	Athens	10.6	9.1	9.2	9.6
39-017-0003	Butler	13.8	12.8	13.6	13.4
39-017-0016		13.8	13.1	13.5	13.5
39-023-0005	Clark	12.7	12.4	13.1	12.7
39-025-0022	Clermont	11.7	11.0	12.0	11.6
39-035-0027	Cuyahoga	13.2	10.6		
39-035-0034		10.9	10.2	10.9	10.7
39-035-0038		14.1	12.8	14.0	13.6
39-035-0045		13.7	11.8	13.3	12.9
39-035-0060		14.1	12.3	13.7	13.4
39-035-0065		14.6	12.4	13.2	13.4
39-035-1002		12.0	10.9	11.3	11.4
39-049-0024	Franklin	12.8	11.5	13.1	12.5
39-049-0025		12.4	11.5	12.6	12.2
39-049-0029				12.6	
39-049-0081		11.1	10.8	11.9	11.3
39-057-0005	Greene	11.6	11.5	13.2	12.1
39-061-0006	Hamilton	12.5	12.1	12.7	12.4
39-061-0014		15.1	13.4	14.8	14.4
39-061-0040		12.6	12.7	13.3	12.9
39-061-0042		14.4	13.7	14.5	14.2
39-061-0043		13.3			
39-061-7001		13.7	13.0	14.1	13.6
39-061-8001		14.4	13.4	17.6	
39-081-0017	Jefferson	14.3	12.1	12.7	13.0
39-081-1001		14.1	11.2	12.7	12.7
39-085-0007	Lake		10.4	10.4	
39-085-3002		11.5			
39-087-0010	Lawrence	10.8			
39-087-0012		13.1	11.3	12.1	
39-093-3002	Lorain	11.4	9.9	10.4	10.6
39-095-0024	Lucas	11.9	11.4	11.2	
39-095-0025		12.3			
39-095-0026		12.3	10.9	11.4	
39-095-0028			11.4	11.4	11.7
39-099-0005	Mahoning	13.2	11.3	12.4	12.3
39-099-0014		13.1	11.7	12.4	12.4
39-103-0003	Medina	11.8	10.8	10.8	11.1
39-113-0032	Montgomery	13.2	12.4	14.0	13.2
39-133-0002	Portage	12.1	11.1	11.2	11.5
39-135-1001	Preble	12.0	11.1	12.0	11.7
39-145-0013	Scioto	12.2	10.9	11.8	11.6
39-151-0017	Stark	13.9	13.1	14.4	13.8
39-151-0020		12.4	11.9	13.8	12.7
39-153-0017	Summit	13.8	12.6	13.4	13.3
39-153-0023		12.9	11.4	12.5	12.3
39-155-0005	Trumbull			11.9	
39-155-0007		12.8			
39-165-0007	Warren	11.9	11.7	11.9	11.8

(green) Less than 75% capture

(yellow) Combination of two adjacent site's data

Data for 2008-2010 corrected to consolidate POC 1 and POC 2 data with AMP-355

Sulfur Dioxide (SO_2)

Sulfur dioxide is a colorless gas formed through the combination of sulfur and oxygen during combustion. The major sources of SO_2 are the burning of sulfur-containing fossil fuels (mainly coal), with lesser amounts caused by industrial processes such as smelting. Over 40% of the SO_2 found in the ambient air is the result of human activities.

The control of SO_2 emissions from these sources is accomplished primarily by burning coal or oil with a relatively low sulfur content. Newer boilers may be equipped with flue gas desulfurization (FGD) systems that use a caustic solution to scrub SO_2 from the exhaust gas stream.

Sulfur dioxide is harmful because it can be converted to sulfuric acid (H_2SO_4) when it comes in contact with moisture, either in the atmosphere, on plants, materials, or in the lungs. Sulfur Dioxide can also be converted to a sulfate (SO_4^{2-}) which as a particulate (aerosol) helps form acid rain and can also be a lung irritant.

The presence of increased levels of SO_2 in the atmosphere has been associated with a higher incidence of respiratory diseases, higher death rates, and property damage.

Sampling Methods

Sulfur dioxide is measured continuously by instruments using pulsed fluorescent techniques.

Fluorescent analyzers irradiate an ambient air sample with ultraviolet light. Sulfur dioxide gas molecules absorb a portion of this energy, and then re-emit the energy at a characteristic wavelength of light. This light energy emitted by SO_2 molecules is sensed by a photomultiplier tube and converted to an electronic signal proportional to the concentration of SO_2 present.

All concentrations for SO_2 are given in parts per million (ppm). Reports for 1995 and earlier used the units 'micrograms per cubic meter' ($\mu g/m^3$) to report data. The primary units to report data were changed by U.S. EPA in May of 1996.

National Ambient Air Quality Standards

On June 22, 2010 the U.S. EPA revised the NAAQS for SO_2 by adding a 1-Hour standard which is the three year average of the 99^{th} percentile concentration in each year at each monitoring site. The level of the standard is 75 ppb which is not to be exceeded.

The older NAAQS: Annual, 24-Hour and 3-Hour were retained.

Sulfur dioxide (42401) Ohio Parts per billion (008)

SITE ID	POC	PQAO	CITY	COUNTY	ADDRESS	YEAR	METH	OBS	COMP QTRS	1ST MAX 1-HR	2ND MAX 1-HR	99TH PCTL 1-HR	1ST MAX 24-HR	2ND MAX 24-HR	Days >24HR STD	ARITH MEAN	CERT	EDT
39-001-0001	1	0880	West Union	Adams	210 N. WILSON DR.	2010	000	8340	4	50.0	47.0	43.0	10.7	10.7	0	2.35		0
39-003-0009	1	0808	Not in a city	Allen	2850 BIBLE ROAD	2010	000	8364	4	42.0	29.0	23.0	10.3	7.1	0	1.88		0
39-007-1001	1	0807	Conneaut	Ashtabula	770 LAKE RD.	2010	060	7855	4	36.0	30.0	20.0	8.7	8.4	0	1.60		0
39-009-0004	1	1335	Athens	Athens	7760 BLACKBURN ROAD	2010	100	8328	4	106.9	77.4	70.5	24.9	17.0	0	4.97		0
39-013-3002	2	0809	Shadyside	Belmont	EAST 40 ST.	2010	060	8344	4	80.0	76.0	62.0	16.4	15.7	0	2.75		0
39-017-1004	1	1259	Middletown	Butler	HOOK FIELD AIRPORT	2010	060	2112	1	31.0	29.0	31.0	11.7	9.3	0	2.63*		0
39-023-0003	1	0287	Not in a city	Clark	5400 SPANGLER	2010	060	8711	4	34.0	34.0	28.0	14.3	12.3	0	1.39		0
39-029-0022	1	0807	East Liverpool	Columbiana	500 MARYLAND	2010	061	8385	4	75.0	63.0	47.0	27.1	21.5	0	2.67		0
39-035-0038	2	0229	Cleveland	Cuyahoga	2547 ST TIKHON	2010	060	8554	4	106.0	95.0	76.0	22.4	21.8	0	4.65		0
39-035-0045	1	0229	Cleveland	Cuyahoga	4950 BROADWAY AVE.	2010	060	8439	4	58.0	44.0	38.0	8.0	7.0	0	1.36		0
39-035-0060	1	0229	Cleveland	Cuyahoga	E. 14TH & ORANGE	2010	100	8237	4	113.0	100.0	75.0	48.9	36.4	0	5.82		0
39-035-0065	1	0229	Newburgh Heights	Cuyahoga	4600 HARVARD AVE.	2010	100	8616	4	65.0	42.0	25.0	7.5	5.5	0	.16		0
39-061-0010	2	1259	Cleves	Hamilton	6950 RIPPLE RD.	2010	060	7364	3	111.0	87.0	66.0	16.3	14.2	0	2.66*		0
39-061-0010	3	1259	Cleves	Hamilton	6950 RIPPLE RD.	2010	592	436	0	57.9	55.7	57.9	21.8	17.7	0	6.18*		0
39-081-0017	1	0809	Steubenville	Jefferson	618 LOGAN ST.	2010	000	8341	4	155.0	141.0	127.0	38.6	26.5	0	4.41		0
39-085-0003	1	0595	Eastlake	Lake	36010 LAKESHORE	2010	077	8595	4	89.0	40.0	31.0	16.1	13.1	0	4.23		0

Note: The * indicates that the mean does not satisfy summary criteria.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
QUICK LOOK REPORT (AMP450)

Sulfur dioxide (42401) | Ohio | Parts per billion (008)

SITE ID	POC	PQAO	CITY	COUNTY	ADDRESS	YEAR	METH	OBS	COMP QTRS	1ST MAX 1-HR	2ND MAX 1-HR	99TH PCTL 1-HR	1ST MAX 24-HR	2ND MAX 24-HR	Days >24HR STD	ARITH MEAN	CERT	EDT
39-085-0007	1	0595	Painesville	Lake	177 MAIN STREET	2010	077	8733	4	188.0	172.0	139.0	54.0	48.7	0	7.61		0
39-087-0006	2	0880	Ironton	Lawrence	2120 S. 8TH	2010	061	2067	1	26.0	26.0	26.0	11.4	8.2	0	2.14*		0
39-087-0012	1	0880	Ironton	Lawrence	450 Commerce Drive	2010	060	6291	3	57.0	43.0	33.0	8.1	8.0	0	1.75*		0
39-099-0013	1	0634	Youngstown	Mahoning	345 OAKHILL	2010	061	8345	4	76.0	59.0	48.0	13.7	13.1	0	2.44		0
39-103-0004	1	0012	Not in a city	Medina	BALLASH ROAD	2010	060	5010	2	38.0	35.0	32.0	10.3	9.1	0	1.44*		0
39-105-1001	1	0809	Pomeroy	Meigs	MULBERRY AVE.	2010	060	8381	4	182.0	96.0	94.0	23.9	16.9	0	3.21		0
39-115-0004	1	0809	Not in a city	Morgan	S.R. 83	2010	100	8377	4	319.0	254.0	167.0	50.3	40.2	0	3.91		0
39-145-0013	1	0880	New Boston	Scioto	4862 GALLIA	2010	061	8241	4	48.0	31.0	24.0	13.7	7.9	0	1.19		0
39-145-0020	1	1299	Franklin Furnace	Scioto	2840 BACK RD.	2010	060	8705	4	95.2	54.7	51.8	13.7	12.8	0	2.37		0
39-145-0022	1	1299	Franklin Furnace	Scioto	1740 GALLIA PIKE	2010	060	8697	4	64.4	64.1	50.2	15.6	11.7	0	1.73		0
39-153-0017	1	0012	Akron	Summit	80 BRITTAIN	2010	000	8217	4	42.0	32.0	27.0	11.0	10.3	0	2.14		0
39-153-0022	1	0012	Akron	Summit	177 S. BROADWAY	2010	100	8335	4	46.0	44.0	38.0	23.5	22.7	0	2.49		0
39-157-0006	1	0809	Sugarcreek	Tuscarawas	527 CRESCENT DR.	2010	000	8278	4	108.0	78.0	58.0	34.7	18.0	0	3.97		0

Note: The * indicates that the mean does not satisfy summary criteria.

Nitrogen Dioxide (NO_2)

Nitrogen dioxide is a toxic gas formed in high temperature combustion processes, when nitrogen in the air is oxidized to nitric oxide (NO) or nitrogen dioxide (NO_2). The major sources of NO_2 are high temperature fuel combustion, motor vehicles, and certain chemical processes.

Nitrogen dioxide has been associated with a variety of respiratory diseases through its ability to reduce cell immunity or resistance to bacteria and viruses. Nitrogen dioxide is also harmful due to its involvement in the production of photochemical oxidants such as ozone (O_3).

Sampling Methods

Continuous monitoring of nitrogen dioxide is based on a chemiluminescent reaction between NO and O_3. When these two gases react, light energy at a specific wavelength is produced. In the monitor, ambient air is drawn along two paths. In the first path, the air is reacted directly with ozone, and the light energy produced is proportional to the amount of nitric oxide in the air. In the second path, the air is reacted with ozone after it passes through a catalytic reduction surface. The reduction surface converts NO_2 to NO and the light energy produced is a measure of the total oxides of nitrogen in the air sample. The electronic difference of these two signals yields the concentration of nitrogen dioxide.

All concentrations for NO_2 are given in parts per billion (ppb).

National Ambient Air Quality Standards

On February 9, 2010 the U.S. EPA revised the NAAQS for NO_2 by adding a 1-Hour standard which is the three year average of the annual 98th percentile values. The level of the standard is 100 ppb which not to be exceeded.

The older annual NAAQS of 53 ppb was retained.

Nitrogen dioxide (NO2) (42602) | Ohio | Parts per billion (008)

SITE ID	POC	PQAO	CITY	COUNTY	ADDRESS	YEAR	METH	COMP QTRS	1ST MAX 1-HR	2ND MAX 1-HR	98TH PCTL	OBS	PCT COMP	ARITH MEAN	CERT	EDT
39-009-0004	1	1335	Athens	Athens	7760 BLACKBURN ROAD	2010	099	4	32.5	31.5	25.7	8263	94	4.04		0
39-035-0060	1	0229	Cleveland	Cuyahoga	E. 14TH & ORANGE	2010	000	4	78.0	73.0	58.0	8138	93	15.82		0
39-061-0040	1	1259	Cincinnati	Hamilton	250 WM. HOWARD TAFT	2010	099	4	69.0	67.0	54.0	8008	91	14.65		0
39-103-0004	1	0012	Not in a city	Medina	BALLASH ROAD	2010	074	2	61.0	52.0	49.0	4569	52	5.11*		0

Note: The * indicates that the mean does not satisfy summary criteria.

Carbon Monoxide (CO)

Carbon monoxide, a colorless and odorless gas, is the most abundant and widely distributed pollutant found in the lower atmosphere. It is produced by the incomplete combustion of carbon containing fuels, primarily in the internal combustion engine. About 95 to 98% of urban carbon monoxide comes from manmade sources, with transportation vehicles ranking as the largest source.

The main effect of CO on human health involves its tendency to reduce the oxygen carrying capacity of the blood by binding chemically to hemoglobin, the substance that carries oxygen to the cells. This may lead to short-term impairment of mental processes. Exposure to concentrations as low as 10-15 ppm for several hours has affected time interval discrimination in test subjects, while exposures of 31 ppm under similar conditions have temporarily altered the function of the brain.

Sampling Method

Carbon monoxide is monitored continuously by analyzers that operate on the infrared absorption principle. Ambient air is drawn into a sample chamber and a beam of infrared light is passed through it. CO absorbs infrared radiation, and any decrease in the intensity of the beam is due to the presence of CO molecules. This decrease is directly related to the concentration of CO in the ambient air. A special detector measures the difference in the radiation between this beam and a duplicate beam passing through a reference chamber with no CO present. This difference in intensity is electronically translated into a reading of the CO present in the ambient air, measured in parts per million.

National Ambient Air Quality Standard

The NAAQS for carbon monoxide are a 1-Hour concentration of 35 ppm which is not to be exceeded more than once per year and an 8-Hour concentration of 9 ppm which is not to be exceeded more than once per year.

Carbon monoxide (42101) Ohio Parts per million (007)

SITE ID	POC	PQAO	CITY	COUNTY	ADDRESS	YEAR	METH	# OBS	1ST MAX 1-HR	2ND MAX 1-HR	OBS >1HR STD	1ST MAX 8-HR	2ND MAX 8-HR	OBS >8HR STD	CERT	EDT
39-035-0051	1	0229	Cleveland	Cuyahoga	1301 E. 9TH ST.	2010	054	8381	9.3	8.8	0	3.7	3.5	0		0
39-035-0053	1	0229	Cleveland	Cuyahoga	4169 PEARL RD.	2010	093	8652	2.8	2.5	0	1.7	1.6	0		0
39-035-0070	1	0229	Cleveland	Cuyahoga	13013 CORLETT AVE.	2010	093	4303	3.0	3.0	0	1.9	1.6	0		0
39-049-0005	1	0805	Columbus	Franklin	1585 MORSE RD.	2010	093	8667	3.1	2.7	0	2.0	1.7	0		0
39-061-0021	1	1259	Cincinnati	Hamilton	100 E. 5TH ST.	2010	093	7948	1.4	1.3	0	1.0	.9	0		0
39-085-0006	1	0595	Mentor	Lake	8443 MENTOR AVE.	2010	051	8670	1.6	1.5	0	1.5	1.4	0		0
39-103-0004	1	0012	Not in a city	Medina	BALLASH ROAD	2010	054	4884	1.2	1.0	0	.9	.8	0		0
39-113-0028	1	0287	Dayton	Montgomery	901 WEST FAIRVIEW AVE.	2010	054	8722	1.5	1.5	0	1.4	1.3	0		0
39-113-0034	1	0287	Dayton	Montgomery	117 SOUTH MAIN ST.	2010	054	8731	3.3	2.5	0	1.8	1.6	0		0
39-151-0020	1	0151	Canton	Stark	420 MARKET	2010	054	8528	2.0	1.8	0	1.5	1.5	0		0
39-153-0020	1	0012	Akron	Summit	800 PATTERSON AVE.	2010	093	8400	6.0	2.2	0	1.4	1.4	0		0
39-153-0022	1	0012	Akron	Summit	177 S. BROADWAY	2010	093	8261	2.2	2.1	0	1.8	1.7	0		0

Ozone (O_3)

Ozone differs from other pollutants in that it is not directly emitted into the atmosphere from sources. Rather, it is created photochemically in the lower atmosphere by the reaction of volatile organic compounds and oxides of nitrogen in the presence of sunlight. For this reason, it is referred to as a secondary pollutant. Ozone is the predominant oxidant component of photochemical smog.

In urban areas, emissions of nitrogen oxides and volatile organic compounds lead to the formation of ozone and other photochemical oxidants in the lower atmosphere. Nitrogen oxides, important in triggering the sequence of photochemical reactions, are emitted primarily from combustion sources such as the internal combustion engine, electric power generation units, and gas and oil-fired space heaters. Volatile organic compounds, important in sustaining the reactions, are emitted in the exhausts of gasoline, diesel and jet engines, through the evaporation of gasoline and solvents such as dry-cleaning fluids, and from industrial and non-industrial surface coating operations such as paint booths, from open burning, and other combustion sources.

Although ozone is beneficial in the upper atmosphere, where it screens out ultraviolet rays from the sun, it is harmful in the lower atmosphere. Due to the role of temperature and sunlight in its formation, the largest concentrations occur during the summer months. Ozone irritates mucous membranes of the nose and throat, causes eye irritation, reduces resistance to respiratory infections, damages plants and contributes to the deterioration of materials. Individuals with asthma or disease of the heart or circulatory system experience symptoms when concentrations are above the air quality standards.

Prior to July 1997 there was a one hour standard of 0.12 ppm with more than three exceedances being a violation of the standard. The one hour standard was revoked in 2006.

The standard from July 1997 to May 27, 2008 was an eight hour average of 0.08 ppm with the fourth high eight hour average averaged in each year over three consecutive years.

The current (2010) standard is a three year average of the fourth highest eight hour averages at each monitoring site. If that three year average is greater than 0.075 ppm (76 ppb or greater) a violation of the standard has occurred

In 2001 The United States Supreme Court found U.S. EPA's previously proposed implementation plan for ozone unlawful and further held that, in the setting of a standard for ozone pursuant to Section 109 of the Clean Air Act U.S. EPA must set air quality standards at the level that is "requisite"-no higher or lower than is necessary-to protect the public health with an adequate margin of safety. The Supreme Court then sent the case back to the D.C. Circuit Court of Appeals to review U.S. EPA's subsequent actions. On March 26, 2002, that court upheld U.S. EPA's revision of the ozone NAAQS, which had been published in the Federal Register by U.S. EPA as a proposal on November 14, 2001.

This report contains a printout of the one hour data and eight hour average data, as in previous reports, and printouts of the three year average of the fourth high eight hour averages calculated for each site in Ohio for the years 2008 through 2010 and the four highest eight hour averages during 2010. A three year average was not calculated if one or more years had insufficient data.

Sampling Methods

Ozone is monitored continuously using analyzers that operate on ultraviolet absorption techniques.

Ozone absorbs ultraviolet light. Analyzers designed to measure ozone by ultraviolet photometry use this property. An air sample is drawn into the analyzer and irradiated with an ultraviolet light of 253.7 nanometers wavelength. The amount of light absorbed is related to the amount of ozone present. This is the type of monitor used by Ohio EPA and our Local Air Agencies.

All concentrations for ozone are given in parts per million (ppm).

On the following pages are tables of ozone sites with the:

- Highest through fourth highest 1-Hour ozone values
- Highest through fourth highest 8-Hour ozone values
- Three year average of fourth highest 8-Hour ozone values (see NAAQS TABLE 1)
- First day in each year from 1992 that recorded an exceedance of the 1-Hour or 8-Hour standard with the number of sites and the total number of exceedances
- Last day in the year upon which an exceedance of the 1-Hour or 8-Hour standard occurred with the number of sites and values listed

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
QUICK LOOK REPORT (AMP450)

Ozone (44201) | Ohio | Parts per million (007)

1-HOUR

SITE ID	POC	PQAO	CITY	COUNTY	ADDRESS	YEAR	METH	VALID DAYS MEAS	NUM DAYS REQ	1ST MAX 1-HR	2ND MAX 1-HR	3RD MAX 1-HR	4TH MAX 1-HR	DAY MAX> STD	EST DAYS> STD	MISS DAYS< STD	CERT	EDT
39-003-0009	1	0808	Not in a city	Allen	2850 BIBLE ROAD	2010	047	214	214	.082	.080	.079	.079	0	0.0	0		0
39-007-1001	1	0807	Conneaut	Ashtabula	770 LAKE RD.	2010	047	214	214	.094	.092	.091	.091	0	0.0	0		0
39-009-0004	1	1335	Athens	Athens	7760 BLACKBURN ROAD	2010	056	184	214	.083	.082	.079	.078	0	0.0	0		0
39-017-0004	1	1259	Hamilton	Butler	SCHULER AND BENDER	2010	087	213	214	.095	.095	.091	.091	0	0.0	1		0
39-017-0018	1	1259	Middletown	Butler	1701 Runway Dr.	2010	087	212	214	.100	.096	.094	.093	0	0.0	2		0
39-023-0001	1	0287	Springfield	Clark	5171 URBANA	2010	047	214	214	.092	.090	.087	.083	0	0.0	0		0
39-023-0003	1	0287	Not in a city	Clark	5400 SPANGLER	2010	047	214	214	.089	.088	.088	.085	0	0.0	0		0
39-025-0022	1	1259	Batavia	Clermont	2400 CLERMONT CENTER DR.	2010	087	212	214	.103	.091	.087	.084	0	0.0	0		0
39-027-1002	1	0810	Wilmington	Clinton	62 LAUREL DR.	2010	047	213	214	.090	.087	.086	.085	0	0.0	1		0
39-035-0034	1	0229	Cleveland	Cuyahoga	891 E. 152 ST.	2010	087	212	214	.089	.085	.083	.081	0	0.0	2		0
39-035-0060	1	0229	Cleveland	Cuyahoga	E. 14TH & ORANGE	2010	087	209	214	.080	.078	.077	.075	0	0.0	3		0
39-035-0064	1	0229	Berea	Cuyahoga	390 FAIR ST.	2010	087	211	214	.087	.086	.081	.081	0	0.0	3		0
39-035-5002	1	0229	Mayfield	Cuyahoga	6116 WILSON MILLS	2010	019	213	214	.093	.087	.084	.082	0	0.0	1		0
39-041-0002	1	0805	Delaware	Delaware	359 MAIN RD.	2010	047	212	214	.088	.086	.082	.081	0	0.0	2		0
39-049-0029	1	0805	New Albany	Franklin	7600 FODOR RD.	2010	047	214	214	.100	.086	.085	.084	0	0.0	0		0
39-049-0037	1	0805	Columbus	Franklin	1777 E. BROAD	2010	047	214	214	.086	.084	.083	.079	0	0.0	0		0
39-049-0081	1	0805	Columbus	Franklin	5750 MAPLE CANYON	2010	047	213	214	.088	.081	.079	.079	0	0.0	1		0
39-055-0004	1	0595	Not in a city	Geauga	13000 AUBURN	2010	087	214	214	.093	.091	.091	.089	0	0.0	0		0
39-057-0006	1	0287	Xenia	Greene	541 LEDBETTER RD.,	2010	047	214	214	.089	.086	.082	.079	0	0.0	0		0
39-061-0006	1	1259	Cincinnati	Hamilton	11590 GROOMS RD	2010	087	214	214	.109	.098	.093	.093	0	0.0	0		0
39-061-0010	1	1259	Cleves	Hamilton	6950 RIPPLE RD.	2010	087	212	214	.109	.099	.091	.089	0	0.0	0		0
39-061-0040	1	1259	Cincinnati	Hamilton	250 WM. HOWARD TAFT	2010	087	214	214	.104	.091	.087	.085	0	0.0	0		0

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
QUICK LOOK REPORT (AMP450)

Ozone (44201) | Ohio | Parts per million (007)

1-HOUR

SITE ID	POC	PQAO	CITY	COUNTY	ADDRESS	YEAR	METH	VALID DAYS MEAS	NUM DAYS REQ	1ST MAX 1-HR	2ND MAX 1-HR	3RD MAX 1-HR	4TH MAX 1-HR	DAY MAX> STD	EST DAYS> STD	MISS DAYS< STD	CERT	EDT
39-081-0017	1	0809	Steubenville	Jefferson	618 LOGAN ST.	2010	047	214	214	.093	.084	.080	.079	0	0.0	0		0
39-083-0002	1	0805	Centerburg	Knox	WATER PLT, SR. 314	2010	047	214	214	.091	.085	.083	.081	0	0.0	0		0
39-085-0003	1	0595	Eastlake	Lake	36010 LAKESHORE	2010	087	211	214	.101	.097	.094	.089	0	0.0	1		0
39-085-0007	1	0595	Painesville	Lake	177 MAIN STREET	2010	087	209	214	.085	.081	.081	.080	0	0.0	0		0
39-087-0011	1	0880	Not in a city	Lawrence	S.R. 141, WILGUS	2010	047	212	214	.092	.087	.086	.083	0	0.0	2		0
39-087-0012	1	0880	Ironton	Lawrence	450 Commerce Drive	2010	047	211	214	.093	.093	.086	.086	0	0.0	3		0
39-089-0005	1	0805	Heath (Fourmile Lock)	Licking	300 LICKING VIEW DR.	2010	047	214	214	.088	.086	.085	.083	0	0.0	0		0
39-093-0018	1	0807	Sheffield	Lorain	4706 DETROIT RD.	2010	047	212	214	.087	.085	.081	.081	0	0.0	2		0
39-095-0024	1	0220	Toledo	Lucas	348 S. ERIE	2010	056	214	214	.104	.091	.073	.072	0	0.0	0		0
39-095-0027	1	0220	Waterville	Lucas	200 SOUTH RIVER RD.	2010	019	205	214	.087	.078	.076	.074	0	0.0	1		0
39-095-0034	1	0220	Not in a city	Lucas	306 N. YONDOTA	2010	056	200	214	.113	.092	.086	.082	0	0.0	3		0
39-097-0007	1	0805	Not in a city	Madison	940 SR 38 SW	2010	047	210	214	.089	.084	.083	.082	0	0.0	1		0
39-099-0013	1	0634	Youngstown	Mahoning	345 OAKHILL	2010	087	213	214	.088	.087	.081	.080	0	0.0	1		0
39-103-0003	1	0012	Not in a city	Medina	6364 DEERVIEW	2010	087	210	214	.093	.076	.074	.074	0	0.0	0		0
39-103-0004	1	0012	Not in a city	Medina	BALLASH ROAD	2010	047	111	214	.104	.084	.080	.079	0	0.0	2		0
39-109-0005	1	0287	Not in a city	Miami	3825 NORTH S. R. 589	2010	047	214	214	.091	.081	.080	.078	0	0.0	0		0
39-113-0037	1	0287	Dayton	Montgomery	1401 Harshman Road	2010	047	211	214	.094	.093	.090	.089	0	0.0	1		0
39-133-1001	1	0012	Not in a city	Portage	1570 RAVENNA RD.	2010	087	213	214	.082	.082	.079	.079	0	0.0	1		0
39-135-1001	1	0287	New Paris	Preble	6940 OXFORD GETTYSBURG RD.	2010	047	214	214	.093	.077	.077	.077	0	0.0	0		0
39-151-0016	1	0151	Canton	Stark	515 25TH. ST.	2010	047	185	214	.091	.090	.087	.087	0	0.0	11		0
39-151-0022	1	0151	Brewster	Stark	45 S. WABASH	2010	047	208	214	.081	.081	.079	.078	0	0.0	2		0

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
QUICK LOOK REPORT (AMP450)

Ozone (44201) | Ohio | Parts per million (007)

1-HOUR

SITE ID	POC	PQAO	CITY	COUNTY	ADDRESS	YEAR	METH	VALID DAYS MEAS	NUM DAYS REQ	1ST MAX 1-HR	2ND MAX 1-HR	3RD MAX 1-HR	4TH MAX 1-HR	DAY MAX> STD	EST DAYS> STD	MISS DAYS< STD	CERT	EDT
					AVENUE, S.R 93													
39-151-4005	1	0151	Alliance	Stark	1175 WEST VINE	2010	047	212	214	.103	.095	.088	.082	0	0.0	2		0
39-153-0020	1	0012	Akron	Summit	800 PATTERSON AVE.	2010	000	211	214	.091	.084	.084	.083	0	0.0	1		0
39-155-0009	1	0634	Not in a city	Trumbull	6346 KINSMAN-BLOOMFIELD RD.	2010	087	214	214	.105	.086	.082	.081	0	0.0	0		0
39-155-0011	1	0634	Vienna Center	Trumbull	842 YOUNGSTOWN-KINGSVILLE RD.	2010	087	210	214	.096	.086	.084	.083	0	0.0	0		0
39-165-0007	1	1259	Lebanon	Warren	416 SOUTHEAST ST.	2010	087	214	214	.097	.091	.089	.087	0	0.0	0		0
39-167-0004	1	0809	Marietta	Washington	2000 4TH STREET	2010	047	214	214	.088	.088	.084	.084	0	0.0	0		0
39-173-0003	1	0808	Bowling Green	Wood	347 N DUNBRIDGE	2010	047	213	214	.086	.081	.078	.077	0	0.0	1		0

Ozone (44201) Ohio Parts per million (007)

8-HOUR

SITE ID	POC	PQAO	CITY	COUNTY	ADDRESS	YEAR	METH	%OBS	VALID DAYS MEAS	NUM DAYS REQ	1ST MAX 8-HR	2ND MAX 8-HR	3RD MAX 8-HR	4TH MAX 8-HR	DAY MAX> STD	CERT	EDT
39-003-0009	1	0808	Not in a city	Allen	2850 BIBLE ROAD	2010	047	100	214	214	.078	.076	.073	.072	2		0
39-007-1001	1	0807	Conneaut	Ashtabula	770 LAKE RD.	2010	047	98	209	214	.088	.085	.085	.083	10		0
39-009-0004	1	1335	Athens	Athens	7760 BLACKBURN ROAD	2010	056	85	182	214	.076	.071	.071	.070	1		0
39-017-0004	1	1259	Hamilton	Butler	SCHULER AND BENDER	2010	087	99	212	214	.083	.083	.081	.077	7		0
39-017-0018	1	1259	Middletown	Butler	1701 Runway Dr.	2010	087	99	212	214	.086	.081	.081	.080	13		0
39-023-0001	1	0287	Springfield	Clark	5171 URBANA	2010	047	100	214	214	.081	.081	.076	.075	3		0
39-023-0003	1	0287	Not in a city	Clark	5400 SPANGLER	2010	047	100	214	214	.080	.078	.074	.074	2		0
39-025-0022	1	1259	Batavia	Clermont	2400 CLERMONT CENTER DR.	2010	087	99	211	214	.087	.078	.078	.075	3		0
39-027-1002	1	0810	Wilmington	Clinton	62 LAUREL DR.	2010	047	99	211	214	.080	.077	.076	.076	4		0
39-035-0034	1	0229	Cleveland	Cuyahoga	891 E. 152 ST.	2010	087	98	210	214	.085	.076	.076	.075	3		0
39-035-0060	1	0229	Cleveland	Cuyahoga	E. 14TH & ORANGE	2010	087	95	204	214	.071	.070	.070	.068	0		0
39-035-0064	1	0229	Berea	Cuyahoga	390 FAIR ST.	2010	087	98	209	214	.081	.077	.073	.072	2		0
39-035-5002	1	0229	Mayfield	Cuyahoga	6116 WILSON MILLS	2010	019	100	213	214	.078	.077	.076	.075	3		0
39-041-0002	1	0805	Delaware	Delaware	359 MAIN RD.	2010	047	99	212	214	.080	.078	.074	.074	2		0
39-049-0029	1	0805	New Albany	Franklin	7600 FODOR RD.	2010	047	99	211	214	.088	.082	.078	.077	5		0
39-049-0037	1	0805	Columbus	Franklin	1777 E. BROAD	2010	047	99	212	214	.079	.078	.073	.072	2		0
39-049-0081	1	0805	Columbus	Franklin	5750 MAPLE CANYON	2010	047	99	211	214	.074	.074	.073	.072	0		0
39-055-0004	1	0595	Not in a city	Geauga	13000 AUBURN	2010	087	100	214	214	.087	.082	.081	.081	6		0
39-057-0006	1	0287	Xenia	Greene	541 LEDBETTER RD.,	2010	047	100	214	214	.075	.074	.071	.070	0		0
39-061-0006	1	1259	Cincinnati	Hamilton	11590 GROOMS RD	2010	087	99	212	214	.092	.089	.083	.080	11		0
39-061-0010	1	1259	Cleves	Hamilton	6950 RIPPLE RD.	2010	087	98	210	214	.094	.084	.083	.079	5		0
39-061-0040	1	1259	Cincinnati	Hamilton	250 WM. HOWARD TAFT	2010	087	100	214	214	.093	.078	.077	.075	3		0

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
AIR QUALITY SYSTEM
QUICK LOOK REPORT (AMP450)

Ozone (44201) Ohio Parts per million (007)

8-HOUR

SITE ID	POC	PQAO	CITY	COUNTY	ADDRESS	YEAR	METH	%OBS	VALID DAYS MEAS	NUM DAYS REQ	1ST MAX 8-HR	2ND MAX 8-HR	3RD MAX 8-HR	4TH MAX 8-HR	DAY MAX> STD	CERT	EDT
39-081-0017	1	0809	Steubenville	Jefferson	618 LOGAN ST.	2010	047	100	214	214	.080	.073	.072	.071	1		0
39-083-0002	1	0805	Centerburg	Knox	WATER PLT, SR. 314	2010	047	100	213	214	.077	.076	.076	.073	3		0
39-085-0003	1	0595	Eastlake	Lake	36010 LAKESHORE	2010	087	98	209	214	.089	.085	.082	.080	10		0
39-085-0007	1	0595	Painesville	Lake	177 MAIN STREET	2010	087	97	208	214	.077	.075	.068	.068	1		0
39-087-0011	1	0880	Not in a city	Lawrence	S.R. 141, WILGUS	2010	047	99	211	214	.076	.072	.069	.069	1		0
39-087-0012	1	0880	Ironton	Lawrence	450 Commerce Drive	2010	047	98	210	214	.079	.077	.075	.074	2		0
39-089-0005	1	0805	Heath (Fourmile Lock)	Licking	300 LICKING VIEW DR.	2010	047	100	214	214	.081	.080	.075	.074	2		0
39-093-0018	1	0807	Sheffield	Lorain	4706 DETROIT RD.	2010	047	98	210	214	.082	.075	.074	.073	1		0
39-095-0024	1	0220	Toledo	Lucas	348 S. ERIE	2010	056	100	214	214	.083	.071	.063	.063	1		0
39-095-0027	1	0220	Waterville	Lucas	200 SOUTH RIVER RD.	2010	019	94	202	214	.074	.066	.064	.064	0		0
39-095-0034	1	0220	Not in a city	Lucas	306 N. YONDOTA	2010	056	91	195	214	.091	.080	.078	.072	3		0
39-097-0007	1	0805	Not in a city	Madison	940 SR 38 SW	2010	047	97	208	214	.078	.076	.076	.073	3		0
39-099-0013	1	0634	Youngstown	Mahoning	345 OAKHILL	2010	087	100	213	214	.082	.079	.076	.071	3		0
39-103-0003	1	0012	Not in a city	Medina	6364 DEERVIEW	2010	087	98	209	214	.079	.074	.070	.070	1		0
39-103-0004	1	0012	Not in a city	Medina	BALLASH ROAD	2010	047	51	109	214	.090	.078	.075	.071	2		0
39-109-0005	1	0287	Not in a city	Miami	3825 NORTH S. R. 589	2010	047	99	212	214	.080	.075	.070	.070	1		0
39-113-0037	1	0287	Dayton	Montgomery	1401 Harshman Road	2010	047	97	208	214	.082	.078	.077	.077	10		0
39-133-1001	1	0012	Not in a city	Portage	1570 RAVENNA RD.	2010	087	100	213	214	.078	.075	.073	.071	1		0
39-135-1001	1	0287	New Paris	Preble	6940 OXFORD GETTYSBURG RD.	2010	047	100	214	214	.081	.072	.072	.071	1		0
39-151-0016	1	0151	Canton	Stark	515 25TH. ST.	2010	047	86	183	214	.086	.082	.081	.080	6		0
39-151-0022	1	0151	Brewster	Stark	45 S. WABASH	2010	047	97	207	214	.077	.074	.073	.072	1		0

Ozone (44201) | Ohio | Parts per million (007)

8-HOUR

SITE ID	POC	PQAO	CITY	COUNTY	ADDRESS	YEAR	METH	%OBS	VALID DAYS MEAS	NUM DAYS REQ	1ST MAX 8-HR	2ND MAX 8-HR	3RD MAX 8-HR	4TH MAX 8-HR	DAY MAX> STD	CERT	EDT
39-151-4005	1	0151	Alliance	Stark	1175 WEST VINE	2010	047	96	206	214	.088	.080	.079	.078	5		0
39-153-0020	1	0012	Akron	Summit	800 PATTERSON AVE.	2010	000	98	210	214	.082	.080	.078	.076	4		0
39-155-0009	1	0634	Not in a city	Trumbull	6346 KINSMAN-BLOOMFIELD RD.	2010	087	100	214	214	.089	.078	.074	.073	2		0
39-155-0011	1	0634	Vienna Center	Trumbull	842 YOUNGSTOWN-KINGSVILLE RD.	2010	087	98	209	214	.088	.081	.076	.076	4		0
39-165-0007	1	1259	Lebanon	Warren	416 SOUTHEAST ST.	2010	087	100	214	214	.085	.078	.077	.076	4		0
39-167-0004	1	0809	Marietta	Washington	2000 4TH STREET	2010	047	100	214	214	.079	.077	.076	.076	4		0
39-173-0003	1	0808	Bowling Green	Wood	347 N DUNBRIDGE	2010	047	100	213	214	.072	.071	.070	.070	0		0

Three Year Average of Fourth High 8-Hr Averages

Site ID	City	County	Address	4th high in Year			3 Year
				2008	2009	2010	Average
39-003-0002		Allen	2650 Bible Rd.	0.067			
39-003-0009		Allen	2650 Bible Rd.		0.071	0.072	
39-007-1001	Conneaut	Ashtabula	JQ Conneaut Water Plant	0.075	0.075	0.083	0.077
39-009-0004	Athens	Athens	7760 Blackburn Rd.	0.069	0.067	0.070	0.068
39-017-0004	Hamilton	Butler	Schuler & Bender Rds.	0.071	0.073	0.077	0.073
39-017-0018	Middletown	Butler	1701 Runway Dr.			0.080	
39-017-1004	Middletown	Butler	Hook Field Municipal Airport	0.079	0.076		
39-023-0001		Clark	5171 Urbana Rd.	0.075	0.071	0.075	0.073
39-023-0003		Clark	5400 Spangler Rd.	0.075	0.072	0.074	0.073
39-025-0022		Clermont	2400 Claremont Center Dr.	0.071	0.069	0.075	0.071
39-027-1002		Clinton	62 Laurel Rd.	0.076	0.070	0.076	0.074
39-035-0034	Cleveland	Cuyahoga	891 E. 152nd St.	0.081	0.071	0.075	0.075
39-035-0060	Cleveland	Cuyahoga	E 14th & Orange			0.068	
39-035-0064	Berea	Cuyahoga	390 Fair St.	0.072	0.062	0.072	0.068
39-035-5002	Mayfield	Cuyahoga	6116 Wilson Mill Rd.	0.083	0.069	0.075	0.075
39-041-0002		Delaware	359 Main Rd.	0.075	0.070	0.074	0.073
39-049-0028	Columbus	Franklin	2521 Fairwood Ave.	0.069			
39-049-0029	New Albany	Franklin	7600 Fodor Rd.	0.083	0.073	0.077	0.077
39-049-0037	Columbus	Franklin	1777 E. Broad St.	0.071	0.070	0.072	0.071
39-049-0081	Columbus	Franklin	5750 Maple Canyon	0.066	0.069	0.072	0.069
39-055-0004		Geauga	13000 Auburn Rd.	0.082	0.068	0.081	0.077
39-057-0006	Xenia	Greene	541 Ledbetter Rd.	0.075	0.071	0.070	0.072
39-061-0006		Hamilton	11590 Grooms Rd.	0.086	0.072	0.080	0.079
39-061-0010		Hamilton	6950 Ripple Rd.	0.077	0.065	0.079	0.073
39-061-0040	Cincinnati	Hamilton	250 Wm. Howard Taft	0.080	0.074	0.075	0.076
39-081-0017	Steubenville	Jefferson	618 Logan	0.073	0.064	0.071	0.069
39-083-0002		Knox	Water Plant SR 3	0.074	0.068	0.073	0.071
39-085-0003	Eastlake	Lake	Jefferson Elementary	0.078	0.072	0.080	0.076
39-085-0007	Painesville	Lake	177 Main St.		0.072	0.068	
39-085-3002	Painesville	Lake	71 E. High St.	0.076			
39-087-0006	Ironton	Lawrence	2120 S. 8th St.	0.082	0.063		
39-087-0011		Lawrence	SR 775 & SR	0.074	0.062	0.069	0.068
39-087-0012	Ironton	Lawrence	450 Commerce Dr.			0.074	
39-089-0005	Heath	Licking	300 Licking View	0.074	0.069	0.074	0.072

Three Year Average of Fourth High 8-Hr Averages

Site ID	City	County	Address	4th high in Year			3 Year
				2008	2009	2010	Average
39-093-0018	Lorain	Lorain	4706 Detroit Rd.	0.075	0.064	0.073	0.070
39-095-0024	Toledo	Lucas	348 S. Erie St.	0.071	0.065	0.063	0.066
39-095-0027	Waterville	Lucas	200 S. Byrne	0.073	0.068	0.064	0.068
39-095-0034	Toledo	Lucas	306 N. Yondota	0.073	0.072	0.072	0.072
39-097-0007		Madison	9940 SR 38 SW	0.071	0.068	0.073	0.070
39-099-0013	Youngstown	Mahoning	345 Oakhill Ave.	0.071	0.065	0.071	0.069
39-103-0003		Medina	6364 Deerview	0.075	0.066	0.070	0.070
39-103-0004		Medina	Ballash Rd			0.071	
39-109-0005		Miami	3825 North State	0.070	0.071	0.070	0.070
39-113-0033	Dayton	Montgomery	1404 Webster	0.077			
39-113-0037	Dayton	Montgomery	1401 Harshman Rd.		0.073	0.077	
39-133-1001		Portage	1570 Ravenna Rd.	0.069	0.063	0.071	0.067
39-135-1001		Preble	National Trails	0.068	0.069	0.071	0.069
39-151-0016	Canton	Stark	Malone College	0.077	0.066	0.080	0.074
39-151-0021		Stark	245 W. 5th St.	0.076			
39-151-0022	Brewster	Stark	45 S. Wabash			0.072	
39-151-0023	Wilmot	Stark	9877 Alabama Ave. SW		0.063		
39-151-4005	Alliance	Stark	1175 West Vine St.	0.077	0.061	0.078	0.072
39-153-0020	Akron	Summit	800 Patterson Av.	0.080	0.071	0.076	0.075
39-155-0009		Trumbull	Community Hall	0.076	0.069	0.073	0.072
39-155-0011		Trumbull	Trumbull Co. Sanitary Engineers	0.077	0.069	0.076	0.074
39-165-0007	Lebanon	Warren	416 Southeast St.	0.082	0.077	0.076	0.078
39-167-0004	Marietta	Washington	2000 Fourth St.	0.078	0.067	0.076	0.073
39-173-0003	Bowling Green	Wood	347 N. Dunbridge	0.070	0.069	0.070	0.069

Count of Ozone Exceedances in Each Year
And the Date Upon Which the First Occurred
The 8-Hour exceedance value used is 0.076 ppm

Year	1-Hr Data Date	Exceedances/Sites	8-Hr Data Date	Exceedances/Sites
1993	17 June	9/44	29 April	610/44
1994	16 June	13/45	14 April	697/45
1995	19 June	15/45	23 May	832/45
1996	28 June	5/45	18 May	782/45
1997	24 June	5/50	4 April	614/50
1998	13 May	15/49	13 April	1155/49
1999	30 May	14/50	8 April	1121/50
2000	9 June	1/48	29 April	326/48
2001	14 June	2/50	8 April	738/50
2002	20 June	22/50	23 May	1436/50
2003	23 June	22/50	15 April	458/50
2004	None	0/50	8 April	178/50
2005	8 June	5/49	10 April	688/49
2006	None	0/49	27 May	236/49
2007	None	0/49	22 April	541/49
2008	None	0/49	17 April	171/49
2009	None	0/49	20 May	31/49
2010	None	0/49	2 April	163/49

Last Ozone Exceedance Dates
1985-2010
One Hour Standard

Year	Date	Sites	Maximum Value
1985	9/22	1	127 ppb
1986	9/14	1	127
1987	9/29	1	125
1988	8/18	3	159
1989	8/14	1	129
1990	8/27	2	155
1991	8/29	1	125
1992	7/09	1	218
1993	8/27	1	137
1994	8/25	1	153
1995	8/26	1	125
1996	8/04	1	131
1997	8/01	1	125
1998	9/14	2	139
1999	7/30	1	130
2000	6/09	1	126
2001	8/06	1	125
2002	9/07	1	127
2003	6/25	4	136
2004	none	0	107
2005	8/02	1	161
2006	none	0	112
2007	none	0	112
2008	none	0	112
2009	none	0	101
2010	none	0	113

Last Ozone Exceedance Dates
1985-2010
Eight Hour Standard (0.075 ppm)

Year	Date	Sites	Maximum Value
1985	9/22	6	108 ppb
1986	9/14	1	87
1987	9/29	1	87
1988	9/11	1	80
1989	10/14	1	78
1990	10/17	1	84
1991	10/09	1	78
1992	9/17	6	89
1993	9/13	7	78
1994	10/07	1	77
1995	10/13	1	78
1996	10/16	1	76
1997	10/08	11	83
1998	10/17	3	77
1999	10/30	5	80
2000	9/20	1	78
2001	9/23	1	78
2002	9/13	10	87
2003	9/17	1	76
2004	9/24	2	78
2005	10/04	1	81
2006	8/26	4	80
2007	10/08	3	80
2008	9/21	1	78
2009	6/27	1	76
2010	10/10	3	80

Lead

Airborne lead in urban areas was once primarily caused by vehicles using leaded fuels. Sources of airborne lead now include lead smelting facilities, lead-acid storage battery manufacturing plants and other manufacturing operations.

In the period 1978-1991 lead concentrations at traffic oriented sites dropped by over 90%, reflecting the removal of lead from gasoline. In March 1999 the U.S. EPA promulgated new rules for lead monitoring that eliminated the requirement for traffic oriented sites and emphasizes monitoring at industrial sources. We discontinued monitoring at traffic oriented sites after the first calendar quarter of 1999.

In September 2008 the U.S. EPA changed the National Ambient Air Quality Standard for lead from 1.5 $\mu g/m^3$ as a calendar quarter average “not to be exceeded” to 0.15 $\mu g/m^3$ as a running three month average. This much stricter standard is designed to provide increased protection to the public, particularly children.

The new lead standard originally required increased monitoring at lead sources that reported emissions of greater than 1.0 ton per year. These source oriented sites were required to be in place and operating as of January 1, 2010. A revision to the lead standard promulgated on December 27, 2010 changed the level of emissions that required review for possible monitoring to 0.5 tons per year.

Lead monitoring is also required at NCore sites in Core based statistical areas (CBSAs) of 500,000 or more persons. There will be three sites in Ohio: Cincinnati, Cleveland and Dayton.

Lead is a stable compound that can accumulate in the human body. Its health related effects include interference with the blood forming process and the normal functions of nervous and renal systems. Young children are the age group most susceptible to the adverse effects of lead.

Sampling and Analysis Method

Lead concentrations in ambient air are determined by the reference method promulgated by U.S. EPA. Lead samples are collected as total suspended particulate matter (TSP) on glass fiber filters according to 40 CFR Part 50, Appendix B, the EPA Reference method for the Determination of Suspended Particulate Matter in the Atmosphere. These filters are then analyzed by the manual Equivalent method: EQL-0710-192, "Heated Nitric Acid Hot Block Digestion and ICP/MS analysis for Lead (Pb) on TSP High-volume filters". In this method, one ¾"x 8" portion or strip, of the TSP filter is dissolved in a solution of nitric acid, heated on a hot block, on which the solution is reduced to final volume for analysis. The extracted solution is then analyzed by inductively coupled plasma-mass spectrometry, (ICP/MS) to determine the amount of lead collected on the original filter.

In the past a month's collection of filters was analyzed as a composite sample. Most sites collect so little lead that individual sampling days' analysis would have lead concentrations below the detection limit of the methods used at the time. Some sites' filters are still analyzed this way. Newer sites and sites that are being used to meet the new monitoring network requirements have individual sampling events (days) analyzed.

Concentrations are reported in micrograms per cubic meter of air (µg/m^3).

Lead Data
Monthly Averages

County	Site	Parameter	POC	Year 2009 November	December	2010 January	February	March	April	May	June	July	August	September	October	November	December	Highest 3 Month Average in the Year*
Butler	39-017-0015	12128	2	0.0082	0.0058													
		14129	1			0.0074	0.0058	0.0060	0.0068	0.0056	0.0048	0.0074	0.0064	0.0054	0.0076	0.0043	0.0044	0.0071
Columbiana	39-029-0019	12128	1	0.0190	0.0071													
		14129	1			0.0090	0.0086	0.0142	0.0274	0.0134	0.0073	0.0203	0.0240	0.0180	0.0168	0.1360	0.0078	0.0569
	39-029-0020	12128	1	0.0099	0.0066													
		14129	1			0.0088	0.0073	0.0160	0.0193	0.0148	0.0064	0.0153	0.0188	0.0146	0.0112	0.0252	0.0090	0.0170
	39-029-0022	12128	1	0.0150	0.0071													
		14129	1			0.0088	0.0098	0.0164	0.0344	0.0096	0.0074	0.0168	0.0180	0.0190	0.0200	0.0464	0.0652	
		14129	2			0.0092	0.0094	0.0144	0.0403	0.0094	0.0053	0.0182	0.0186	0.0223	0.0215	0.0464	0.0720	
		Combined				0.0088	0.0098	0.0164	0.0344	0.0096	0.0074	0.0166	0.0180	0.0190	0.0200	0.0464	0.0652	0.0439
Cuyahoga	39-035-0038	12128	1	0.0140	0.0075													
		14129	1			0.0080	0.0095	0.0138	0.0242	0.0136	0.0108	0.0162	0.0160	0.0110	0.0244	0.0258	0.0123	0.0208
	39-035-0042	12128	1	0.0081	0.0076													
		14129	1			0.0068	0.0096	0.0114	0.0158	0.0168	0.0098	0.0270	0.0174	0.0443	0.0170	0.0166	0.0094	
		14129	2			0.0048	0.0175	0.0124	0.0150	0.0156	0.0104	0.0283	0.0176	0.0445	0.0190	0.0168	0.0087	
		Combined				0.0068	0.0096	0.0114	0.0158	0.0168	0.0098	0.0270	0.0174	0.0443	0.0170	0.0166	0.0094	0.0296
	39-035-0049	12128	1	0.2000	0.0850													
		12128	2	0.2690	0.0806													
		12128	3	0.1644	0.0862													
		14129	1			0.5320	0.0297	0.2996	0.3368	0.1324	0.0510	0.1112	0.2034	0.3468	0.4000	0.7194	0.4734	
		14129	2			0.5870	0.1350	0.2642	0.3712	0.1560	0.0448	0.1178	0.1904	0.3544	0.3912	0.7316	0.4286	
		Combined				0.5320	0.1373	0.2996	0.3368	0.1324	0.0510	0.1112	0.2034	0.3468	0.4000	0.7194	0.4734	0.5309
	39-035-0061	12128	2	0.0110	0.0100													
		14129	1			0.0096	0.0104	0.0122	0.0275	0.0148	0.0164	0.0188	0.0300	0.0202	0.0184	0.0224	0.0122	0.0230
	39-035-0072	14129	1			0.0083	0.0084	0.0108	0.0130	0.0098	0.0124	0.0068	0.0108	0.0146	0.0116	0.0316	0.0204	0.0212
Franklin	39-049-0025	12128	1	0.0110	0.0064													
		14129	1			0.0090	0.0078	0.0092	0.0106	0.0098	0.0070	0.0105	0.0112	0.0100	0.0114	0.0116	0.0078	0.0110
Fulton	39-051-0001	12128	1	0.0890	0.1200													
		12128	2	0.0910	0.1171													
		12128	3	0.0836	0.1172													
		14129	1			0.0796	0.0580	0.0092	0.0092	0.0632	0.0574	0.0398	0.1450	0.0262	0.0772	0.0580	0.0390	
		14129	2			0.1066	0.0554	0.0075	0.0110	0.0442	0.0688	0.0488	0.0876	0.0256	0.0834	0.0557	0.0513	
		Combined				0.0796	0.0580	0.0092	0.0092	0.0632	0.0574	0.0398	0.1450	0.0262	0.0772	0.0580	0.0390	0.0962
Logan	39-091-0006	14129	1			0.0052	0.0057	0.0080	0.0056	0.0043	0.0034	0.0045	0.0040	0.0044	0.0038	0.0050	0.0026	0.0064
Marion	39-101-0003	14129	1					0.0261	0.0269	0.0418	0.0307	0.0359	0.0351	0.0405	0.0658	0.0251	0.0325	0.0471
Stark	39-151-0017	14129	1			0.0090	0.0076	0.0276	0.0240	0.0185	0.0096	0.0180	0.0213	0.0160	0.0152	0.0248	0.0094	0.0234
Trumbull	39-155-0012	14129	1							0.0042	0.0042	0.0058	0.0068	0.0064	0.0170	0.0078	0.0078	
		14129	2							0.0046	0.0044	0.0058	0.0080	0.0063	0.0200	0.0070	0.0085	
		Combined								0.0042	0.0042	0.0058	0.0068	0.0064	0.0170	0.0078	0.0078	0.0109
Washington	39-167-0008	12128	1	0.0100	0.0030													
		14129	1			0.0240	0.0042	0.0066	0.0060	0.0040	0.0042	0.0052	0.0058	0.0078	0.0060	0.0080	0.0063	0.0123
	39-167-0010	12128	1	0.0082	0.0038													
		14129	1			0.0050	0.0042	0.0064	0.0066	0.0054	0.0052	0.0053	0.0050	0.0060	0.0104	0.0066	0.0055	
		14129	2			0.0052	0.0028	0.0068	0.0058	0.0044	0.0054	0.0053	0.0056	0.0060	0.0120	0.0068	0.0050	
		Combined				0.0050	0.0042	0.0064	0.0066	0.0054	0.0052	0.0053	0.0050	0.0060	0.0104	0.0066	0.0055	0.0077

No data
Month greater than 0.15 ug/m^3
Months with the POC 2 data added to augment the POC 1 missed data
Combined value for Parameter Code 14129 different from the POC1 value

*The monitoring year begins with November of the prior calendar year

VI. Air Toxics Monitoring 2010

AIR TOXICS MONITORING

INTRODUCTION

As part of its air quality monitoring program, Ohio EPA, Division of Air Pollution Control (DAPC) operates a network of air toxics monitors as part of a state wide Air Toxics Monitoring Program (ATMP). This Air Toxic sampling network is modeled after programs and methodologies recommended by U.S. EPA. The emphasis has been on urban toxics monitoring for volatile organic compounds and heavy metals. Brief sections describing the sampling and analytical procedures for the pollutants follow the introduction.

1.) Main focus of the ATMP is on urban monitoring, looking for major risk areas where people live. In this effort sampling has concentrated on groups of compounds.

volatile organic compounds (VOC), examples:
    benzene, chloroform, styrene, toluene etc.
heavy metals, examples:
    arsenic, cadmium

The majority of the sampling has been conducted at semi-permanent monitoring sites where monitoring extends beyond a 6 month period. The intermittent sampling stations at these types of sites have been dedicated to VOCs and heavy metals monitoring. See the list following the description of the volatile organic analysis method for the VOC target compounds. The list of target metals is included in the metals description section.

Semi-permanent monitoring projects have been conducted in:

- Cleveland - VOC - Urban, Metals - Urban
- Middletown - VOC - Source, Metals - Source
- Columbus - Metals - Urban, VOC - Urban
- Marietta - Metals - Source
- Delta - Metals - Source
- East Liverpool - Metals - Source
- Steubenville - VOC - Urban
- Marion - Metals - Urban
- Bellefontaine - Metals - Urban
- Elmore - Metals - Urban

2.) Throughout 2010 DAPC has worked to expand sampling at semi-permanent sites with an emphasis on smaller urban areas. Future sampling projects will involve additional sampling locations or reallocation of current resources to other locations. Expanded air toxics sampling will involve adding other parameters to existing sites. DAPC's efforts will also include more efficient use of short term sampling.

Past sampling efforts have included:

Cross Media pollution monitoring	Urban air toxics
Great Lakes deposition monitoring	Source monitoring
Post-remediation Monitoring	Complaint investigation
Emergency Episode Monitoring	Emissions verification

During 2010 DAPC was involved in several minor monitoring projects throughout the state. However, due to the limited scope of these short term and grab sampling projects they are not included in the data summaries for this year.

The sampling and analytical methods for VOCs and heavy metals are described below.

VOLATILE ORGANIC COMPOUND SAMPLING AND ANALYSIS

SAMPLING

A major component of the Air Toxics Monitoring Program is ambient sampling for volatile organic compounds (VOCs). These are compounds that are generally found in the vapor state. Some organic compounds can be chlorinated, (contain chlorine) or just hydrocarbons, (contain just hydrogen and carbon atoms). Most of the VOC samples were collected using a whole air sampling system that pumped ambient air into a stainless steel canister. The canister, which is evacuated prior to use, is a storage container which allows an air sample to be maintained virtually unchanged until it is analyzed. In addition to the pumped sampling method, a number of samples were collected using the vacuum of the canister to draw in an air sample. These, vacuum-filled "grab" samples usually take only a few minutes to collect and were useful for collecting transient odors or potentially high concentration samples. DAPC is now capable of collecting specific samples for 1, 3, 8 and 24 hours using this grab sampling method.

Initially samples were collected sporadically, however as semi-permanent sites were established the sampling program has become more routine. With that, an attempt has been made to collect samples at least twice a month, with a sampling frequency consistent with the national air toxics monitoring schedule of once every 12th day, over a 24 hour period. The specific procedures for this type of sampling can be found in the U.S. EPA Compendium of Methods for the Determination of Toxic Organic Compound in Ambient Air in the section TO-14

ANALYSIS

The volatile tendency of VOCs allows them to be vaporized when heated, (if not already in that form) and to be injected into an analytical device called a gas chromatograph (GC). As a sample passes through a GC column, the various compounds separate out of the sample mixture. As the individual compounds exit the column, a detector records a response. That response is illustrated on a chromatogram as a peak. The area of each peak indicates the concentration of the compound. Compound identification is accomplished by comparing the retention times of the peaks on a chromatogram with those from a chromatogram of a known mixture of compounds. Retention time is the time it takes for a particular compound to reach the detector. As long as the analytical conditions remain the same, a compound from one analysis to the next will have the same retention time.

The typical analytical system used for this study utilized a GC with a special detector called a mass spectrometer (MS). The combination, a GC/MS, can be used to analyze a sample by separating it into its individual components which are then broken down into mass fragments which form a fingerprint by which a compound can be identified.

All of DAPC's canister analyses were conducted at the Ohio EPA Division of Environmental Services (DES). The analytical procedures performed by the laboratory targeted an expanded list of 71 VOCs for identification and quantitation. The following list includes the current 71 parameters of the analytical target compounds list. Most of the target compounds have a detection limit of 0.2 ppbv. The Exceptions are Acetone, 2-Butanone, Carbon Disulfide, total m&p-Xylenes, which have limits 0.4 ppbv or higher depending of the sample concentration.

DES VOC Target Compound List for TO-14A Analysis

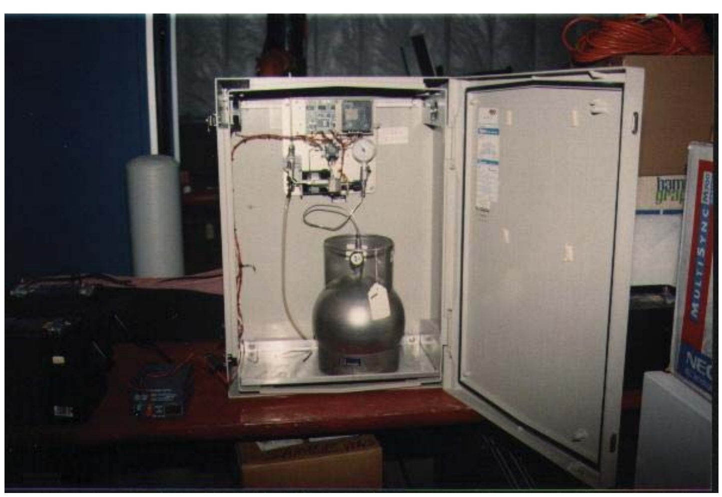
1	Acetone
2	Acetonitrile
3	Acrylonitrile
4	Benzene
5	Benzyl chloride
6	Bromodichloromethane
7	Bromoform
8	Bromomethane
9	1,3-Butadiene
10	n-butane
11	2-Butanone
12	Carbon disulfide
13	Carbon tetrachloride
14	Chlorobenzene
15	Chlorodifluoromethane
16	Chloroethane
17	Chloroform
18	Chloromethane
19	3-Chloropropene
20	Cumene
21	Cyclohexane
22	Decane
23	Dibromochloromethane
24	1,2-ibromoethane
25	Dibromomethane
26	1,2-Dichlorobenzene
27	1,3-Dichlorobenzene
28	1,4-Dichlorobenzene
29	Dichlorodifluoromethane
30	1,1-ichloroethane
31	1,2-ichloroethane
32	1,1-ichloroethene
33	cis-1,2-Dichloroethene
34	trans-1,2-Dichloroethene
35	1,2-Dichloropropane
36	cis-1,3-Dichloropropene
37	trans-1,3-Dichloropropene
38	1,2-Dichloro-1,1,2,2-Tetrafluoroethane
39	Ethylbenzene
40	4-Ethyltoluene
41	n-Heptane
42	Hexachlorobutadiene
43	Hexane
44	Methyl-butyl ether
45	Methylene chloride
46	4-Methyl-2-pentanone
47	a-Methylstyrene
48	Naphthalene
49	n-Nonane
50	n-Octane
51	n-Pentane
52	Propylene
53	n-Propylbenzene
54	Styrene
55	1,1,2,2-Tetrachloroethane
56	Tetrachloroethylene
57	Toluene
58	1,2,4-Trichlorobenzene
59	1,1,1-Trichloroethane
60	1,1,2-Trichloroethane
61	Trichloroethene
62	Trichlorofluoromethane
63	1,1,2-Trichloro-1,2,2-Trifluoroethane
64	1,2,4-Trimethylbenzene
65	1,3,5-Trimethylbenzene
66	n-Undecane
67	Vinyl acetate
68	Vinyl chloride
69	o-Xylene
70	Total m&p-xylenes

Beyond this list of compounds, additional compounds can be detected and tentatively identified during the analysis of VOC samples. If during the analysis, an unidentified compound of significant quantity, (greater than 0.2 ppb) exist in a sample it can be identified during the MS analysis. However, due to the uncertainty involved with the identification of these additional, non-target compounds and the vast number of them detected they are not included in this report.

As the technology and the methods improve and new techniques are developed, it is expected that the target compounds list will be periodically modified. It is also expected that the list will change as U.S. EPA’s emphasis on air toxics compounds changes. The following tables summarize the data from the routine canister samples collected during 2010. Throughout 2010 over 170, 24-hour samples were collected at 6 permanent VOC monitoring sites.

SITE IDENTIFICATION AND LOCATION

AQS # 39-	**CITY**	**COUNTY**	**ADDRESS**	**TABLE**
-017-0003	Middletown	Butler	Verity school 1900 St. John’s Road	A
-035-0038	Cleveland	Cuyahoga	2547 St. Tikhon Ave.	B
-035-0068	Cleveland	Cuyahoga	7629 Broadway Ave.	C
-035-0069	Cleveland	Cuyahoga	7300 Superior Ave.	D
-049-0034	Columbus	Franklin	Korbel Ave.	E
-081-0017	Steubenville	Jefferson	618 Logan Street	F



2010 SUMMARY TABLE

Volatile Organic Compounds Detected			2010	
Summary of Canister data		Concentration ppbv		Frequency
Compound list	Maximum	Average	Minimum	Detected
Acetone	15.00	3.58	1.20	63
Acetonitrile	1.80	0.38	0.20	112
Acrylonitrile	5.60	1.22	0.20	74
Benzene	31.00	1.51	0.20	139
1,3-Butadiene	1.10	0.48	0.20	4
n-Butane	15.00	1.92	0.22	178
2-Butanone	10.00	0.98	0.50	83
Carbon disulfide	3.20	1.36	0.51	35
Chlorobenzene	0.36	0.36	0.36	1
Chlorodifluoromethane	12.00	0.49	0.20	177
Chloroform	0.95	0.73	0.50	2
Chloromethane	0.79	0.58	0.41	180
Decane	9.30	2.92	0.23	8
1,4-Dichlorobenzene	0.90	0.47	0.23	7
Dichlorodifluoromethane	0.97	0.60	0.43	178
Ethylbenzene	0.67	0.39	0.21	13
4-Ethyltoluene	0.64	0.46	0.39	5
n-Heptane	0.75	0.37	0.21	26
Hexane	1.60	0.44	0.20	69
Methylene chloride	2.10	0.45	0.20	42
4-Methyl-2-pentanone	1.40	0.68	0.32	10
Naphthalene	6.20	1.68	0.21	41
n-Nonane	9.20	2.32	0.26	8
n-Octane	0.74	0.52	0.44	5
n-Pentane	3.70	0.80	0.21	173
Propylene	4.30	2.32	0.69	4
n-Propylbenzene	0.57	0.51	0.44	2
Styrene	0.83	0.54	0.23	3
Tetrachloroethylene	0.70	0.52	0.39	3
Toluene	7.70	0.88	0.20	137
1,2,4-Trichlorobenzene	0.33	0.33	0.33	2
Trichloroethene	0.32	0.28	0.21	3
Trichlorofluoromethane	7.90	1.04	0.24	177
1,2,4-Trimethylbenzene	2.50	0.51	0.21	22
1,3,5-Trimethylbenzene	0.82	0.42	0.21	6
n-Undecane	3.10	0.89	0.38	12
Vinyl acetate	3.00	0.59	0.20	107
o-Xylene	0.74	0.35	0.20	21
Total m&p-xylenes	2.20	0.77	0.40	38

Table A.

Butler County – (AQS: 39-017-0003)			2010	
Summary of Canister data		Concentration ppbv		Frequency
Compound list	Maximum	Average	Minimum	Detected
Acetone	5.00	3.07	1.80	10
Acetonitrile	1.20	0.36	0.21	17
Acrylonitrile	0.55	0.33	0.21	5
Benzene	0.69	0.35	0.22	22
1,3-Butadiene	1.10	1.10	1.10	1
n-Butane	3.10	1.24	0.22	30
2-Butanone	2.30	0.92	0.50	11
Carbon disulfide				
Chlorobenzene	0.36	0.36	0.36	1
Chlorodifluoromethane	12.00	0.86	0.22	31
Chloroform	0.50	0.50	0.50	1
Chloromethane	0.72	0.60	0.41	31
Decane				
1,4-Dichlorobenzene	0.62	0.41	0.23	4
Dichlorodifluoromethane	0.67	0.60	0.50	31
Ethylbenzene				
4-Ethyltoluene				
n-Heptane				
Hexane	0.45	0.35	0.30	5
Methylene chloride	0.21	0.21	0.21	1
4-Methyl-2-pentanone				
Naphthalene	0.28	0.28	0.28	1
n-Nonane				
n-Octane	0.47	0.47	0.47	1
n-Pentane	1.40	0.55	0.21	30
Propylene	1.10	1.10	1.10	1
n-Propylbenzene				
Styrene				
Tetrachloroethylene	0.39	0.39	0.39	1
Toluene	1.60	0.54	0.20	24
1,2,4-Trichlorobenzene				
Trichloroethene	0.30	0.30	0.30	1
Trichlorofluoromethane	0.41	0.32	0.24	31
1,2,4-Trimethylbenzene				
1,3,5-Trimethylbenzene				
n-Undecane				
Vinyl acetate	2.60	0.64	0.21	23
o-Xylene				
Total m&p-xylenes	0.73	0.61	0.48	2

Table B.

Cuyahoga County - #1 (AQS: 39-035-0038)			2010	
Summary of Canister data		Concentration ppbv		Frequency
Compound list	Maximum	Average	Minimum	Detected
Acetone	15.00	7.20	3.20	5
Acetonitrile	0.80	0.44	0.24	9
Acrylonitrile	0.30	0.24	0.20	8
Benzene	0.55	0.30	0.20	12
1,3-Butadiene	0.23	0.22	0.20	2
n-Butane	7.50	2.52	0.50	15
2-Butanone	1.40	0.76	0.52	10
Carbon disulfide				
Chlorobenzene				
Chlorodifluoromethane	0.67	0.40	0.26	15
Chloroform				
Chloromethane	0.79	0.60	0.44	15
Decane	9.30	2.92	0.23	8
1,4-Dichlorobenzene				
Dichlorodifluoromethane	0.65	0.56	0.49	15
Ethylbenzene	0.48	0.37	0.26	2
4-Ethyltoluene	0.64	0.54	0.44	2
n-Heptane	0.44	0.34	0.23	2
Hexane	0.74	0.40	0.23	9
Methylene chloride	1.10	0.55	0.26	8
4-Methyl-2-pentanone	1.40	0.77	0.35	8
Naphthalene	0.47	0.47	0.47	1
n-Nonane	9.20	2.61	0.42	7
n-Octane	0.74	0.62	0.49	2
n-Pentane	2.70	0.95	0.25	13
Propylene	3.20	3.20	3.20	1
n-Propylbenzene	0.57	0.51	0.44	2
Styrene				
Tetrachloroethylene				
Toluene	2.40	0.86	0.20	13
1,2,4-Trichlorobenzene				
Trichloroethene	0.21	0.21	0.21	1
Trichlorofluoromethane	0.35	0.29	0.25	14
1,2,4-Trimethylbenzene	2.50	0.82	0.33	7
1,3,5-Trimethylbenzene	0.82	0.48	0.21	3
n-Undecane	3.10	1.24	0.59	7
Vinyl acetate	0.60	0.44	0.35	6
o-Xylene	0.62	0.53	0.43	2
Total m&p-xylenes	1.40	0.89	0.44	3

Table C.

Cuyahoga County - #2 (AQS: 39-035-0068)			2010	
Summary of Canister data		Concentration - ppbv		Frequency
Compound list	Maximum	Average	Minimum	Detected
Acetone	6.00	2.66	1.20	10
Acetonitrile	0.81	0.35	0.21	15
Acrylonitrile				
Benzene	0.82	0.37	0.21	17
1,3-Butadiene				
n-Butane	8.50	2.16	0.35	24
2-Butanone	1.50	0.77	0.52	11
Carbon disulfide				
Chlorobenzene				
Chlorodifluoromethane	0.83	0.40	0.21	24
Chloroform				
Chloromethane	0.76	0.58	0.42	24
Decane				
1,4-Dichlorobenzene				
Dichlorodifluoromethane	0.97	0.62	0.50	24
Ethylbenzene	0.49	0.36	0.22	4
4-Ethyltoluene	0.40	0.40	0.40	1
n-Heptane	0.75	0.40	0.21	7
Hexane	1.10	0.50	0.25	12
Methylene chloride	2.10	0.63	0.20	15
4-Methyl-2-pentanone				
Naphthalene	0.46	0.46	0.46	1
n-Nonane				
n-Octane	0.46	0.46	0.46	1
n-Pentane	3.00	0.94	0.31	23
Propylene				
n-Propylbenzene				
Styrene	0.55	0.55	0.55	1
Tetrachloroethylene	0.70	0.59	0.47	2
Toluene	2.90	0.92	0.22	18
1,2,4-Trichlorobenzene	0.33	0.33	0.33	1
Trichloroethene				
Trichlorofluoromethane	1.20	0.39	0.24	24
1,2,4-Trimethylbenzene	0.45	0.33	0.27	3
1,3,5-Trimethylbenzene	0.35	0.35	0.35	1
n-Undecane	0.39	0.39	0.39	1
Vinyl acetate	0.70	0.46	0.26	10
o-Xylene	0.43	0.33	0.23	5
Total m&p-xylenes	0.97	0.88	0.75	5

Table D.

Cuyahoga County - #3 (AQS: 39-035-0069)			2010	
Summary of Canister data		Concentration - ppbv		Frequency
Compound list	Maximum	Average	Minimum	Detected
Acetone	8.50	4.27	1.80	7
Acetonitrile	0.46	0.30	0.22	12
Acrylonitrile	0.49	0.33	0.22	10
Benzene	1.00	0.42	0.20	22
1,3-Butadiene				
n-Butane	15.00	3.76	0.67	23
2-Butanone	1.10	0.73	0.52	8
Carbon disulfide				
Chlorobenzene				
Chlorodifluoromethane	0.94	0.46	0.20	23
Chloroform				
Chloromethane	0.79	0.57	0.42	23
Decane				
1,4-Dichlorobenzene				
Dichlorodifluoromethane	0.78	0.58	0.43	22
Ethylbenzene	0.47	0.40	0.32	2
4-Ethyltoluene	0.39	0.39	0.39	1
n-Heptane	0.41	0.33	0.26	5
Hexane	1.10	0.51	0.23	17
Methylene chloride	0.33	0.26	0.20	13
4-Methyl-2-pentanone				
Naphthalene	0.46	0.46	0.46	1
n-Nonane				
n-Octane	0.44	0.44	0.44	1
n-Pentane	3.70	1.44	0.25	23
Propylene				
n-Propylbenzene				
Styrene				
Tetrachloroethylene				
Toluene	2.00	0.90	0.27	18
1,2,4-Trichlorobenzene	0.33	0.33	0.33	1
Trichloroethene	0.32	0.32	0.32	1
Trichlorofluoromethane	0.80	0.35	0.24	22
1,2,4-Trimethylbenzene	0.47	0.33	0.21	5
1,3,5-Trimethylbenzene	0.34	0.34	0.34	1
n-Undecane	0.39	0.39	0.39	1
Vinyl acetate	0.80	0.40	0.24	8
o-Xylene	0.48	0.33	0.20	6
Total m&p-xylenes	2.00	0.90	0.53	7

Table E.

Franklin County - (AQS: 39-049-0034)			2010	
Summary of Canister data		Concentration - ppbv		Frequency
Compound list	Maximum	Average	Minimum	Detected
Acetone	39.00	5.63	1.40	12
Acetonitrile	0.96	0.38	0.21	22
Acrylonitrile	0.22	0.22	0.22	1
Benzene	0.92	0.37	0.20	19
1,3-Butadiene				
n-Butane	6.00	1.45	0.38	31
2-Butanone	7.50	1.65	0.55	11
Carbon disulfide				
Chlorobenzene				
Chlorodifluoromethane	1.10	0.46	0.24	32
Chloroform	0.98	0.97	0.95	2
Chloromethane	0.75	0.58	0.42	33
Decane				
1,4-Dichlorobenzene				
Dichlorodifluoromethane	0.68	0.60	0.51	33
Ethylbenzene	0.29	0.29	0.29	1
4-Ethyltoluene				
n-Heptane	0.30	0.30	0.30	1
Hexane	1.60	0.51	0.24	9
Methylene chloride	0.37	0.27	0.21	5
4-Methyl-2-pentanone	0.53	0.53	0.53	1
Naphthalene				
n-Nonane				
n-Octane				
n-Pentane	2.80	0.64	0.21	30
Propylene	3.80	2.25	0.69	2
n-Propylbenzene				
Styrene				
Tetrachloroethylene				
Toluene	3.20	0.65	0.20	23
1,2,4-Trichlorobenzene				
Trichloroethene				
Trichlorofluoromethane	0.38	0.29	0.24	32
1,2,4-Trimethylbenzene	0.33	0.33	0.33	1
1,3,5-Trimethylbenzene				
n-Undecane				
Vinyl acetate	4.90	0.72	0.20	16
o-Xylene	0.32	0.32	0.32	1
Total m&p-xylenes	1.10	0.74	0.56	4

Table F.

Jefferson County - (AQS: 39-081-0017)			2010	
Summary of Canister data		Concentration - ppbv		Frequency
Compound list	Maximum	Average	Minimum	Detected
Acetone	6.70	3.69	1.90	22
Acetonitrile	1.80	0.40	0.20	41
Acrylonitrile	5.60	1.67	0.21	50
Benzene	31.00	3.54	0.21	50
1,3-Butadiene	0.39	0.39	0.39	1
n-Butane	6.60	1.51	0.31	61
2-Butanone	10.00	1.15	0.51	35
Carbon disulfide	3.20	1.36	0.51	35
Chlorobenzene				
Chlorodifluoromethane	1.60	0.37	0.20	60
Chloroform				
Chloromethane	0.78	0.58	0.41	62
Decane				
1,4-Dichlorobenzene	0.90	0.51	0.35	4
Dichlorodifluoromethane	0.76	0.60	0.49	61
Ethylbenzene	0.67	0.45	0.21	4
4-Ethyltoluene	0.43	0.43	0.43	1
n-Heptane	0.55	0.39	0.25	11
Hexane	0.84	0.34	0.20	18
Methylene chloride				
4-Methyl-2-pentanone	0.36	0.34	0.32	2
Naphthalene	6.20	1.82	0.21	37
n-Nonane	0.26	0.26	0.26	1
n-Octane				
n-Pentane	2.10	0.63	0.23	60
Propylene	4.30	4.30	4.30	1
n-Propylbenzene				
Styrene	0.83	0.53	0.23	2
Tetrachloroethylene				
Toluene	7.70	1.13	0.22	45
1,2,4-Trichlorobenzene				
Trichloroethene				
Trichlorofluoromethane	7.90	2.36	0.28	62
1,2,4-Trimethylbenzene	0.69	0.41	0.24	6
1,3,5-Trimethylbenzene	0.42	0.42	0.42	1
n-Undecane	0.42	0.39	0.38	3
Vinyl acetate	3.00	0.69	0.21	45
o-Xylene	0.74	0.35	0.20	7
Total m&p-xylenes	2.20	0.70	0.40	17

HEAVY METALS SAMPLING AND ANALYSIS

SAMPLING

Ambient air toxic monitoring on a routine basis for heavy metals (other than lead), by Ohio EPA DAPC, was initiated in 1989 and has continued. Since that time all of DAPC’s air filter samples have been analyzed by the Ohio EPA Division of Environmental Services (DES). A summary of the results can be found in the following tables. Sampling for heavy metals is conducted using a high volume total suspended particulate (TSP) sampler. With this sampler, particulate matter in the air is collected on a glass fiber filter. Sampling is done intermittently with 24-hour samples collected once every six days. The operating procedures for lead can be found in the Code of Federal Regulations, 40 CFR, Part 50, Appendix G. These basic procedures are also used for the other metals.

ANALYSIS

For this report filters collected at each site were analyzed as a monthly composite. Typically there are 5 sampling days in which a filter is collected. From these individual filters one strip is cut and combined from strips from all the filters collected that month and analyzed as one sample for the month.

These composite samples are acid extracted and then the resulting solution analyzed by the ICP/MS similar to the method used for the determination of Lead from TSP filters.

SUMMARY OF ICP METHOD: The method measures element - emitted light by optical spectrometry. Samples are nebulized into an aerosol and transported to the plasma by the nebulizer argon flow. The first function of the high temperature plasma is to remove the solvent from, or desoluate, the aerosol, usually leaving the sample as microscopic salt particles. The next steps involve decomposing the salt particles into a gas of individual molecules (vaporization) that are then dissociated into atoms (atomization). The next plasma functions are Excitation and Ionization. The light emitted by the excited atoms and ions in the plasma is measured to obtain information about the sample. For coupling to mass spectrometry, the ions from the plasma are extracted through a series of cones into a mass spectrometer, usually a quadrupole. The ions are separated on the basis of their mass-to-charge ratio and a detector receives an ion signal proportional to the concentration.

HEAVY METALS PARAMETERS

Historically lead was the NAAQS Criteria pollutant released from gasoline into the ambient air. Monitoring for it established the lead filter analysis monitoring program. Over the years DAPC added other metals to the filter analysis program. As lead was phased out of gasoline other metals have risen to greater concern. At one time it was cadmium and from one particular industry it was beryllium. But now Ohio is focused on manganese in several communities. However, trends continue to change and lead has once again become the driving pollutant for filter analysis. As the only metal that is Criteria Pollutant lead is the pollutant that drives the metals monitoring program. With the establishment of a new NAAQS for lead, 0.15 µg/m³ from the previous standard of 1.5 µg/m³ and the requirement to monitor near specific sources, lead has been re-established as a pollutant of concern. Since 2010 DACP has had all TSP sampler filters collected analyzed for lead.

For this particular section the data collected is from the monthly composite samples collected and analyzed. All monthly composite particulate filter samples collected by DAPC are routinely analyzed for eight metals.

arsenic	cadmium	chromium	beryllium
lead[1]	nickel	zinc	manganese

From each sample, most parameters are analyzed using a very sensitive ICPMS analytical system which significantly lowers the detection limit from the standard ICP instrument. The following parameters, which are typically detected in higher concentrations, are still analyzed with the older ICP method.

Iron	potassium	zinc	manganese

Particulate mercury that can be detected from a glass or quartz fiber filter has been added to the parameter list for a number of samples from sites in communities with specific concerns about potential mercury sources. Mercury analysis for each sample is performed separately from the other metals. Total mercury is determined using a cold vapor method developed by DES.

The following locations identify the sites that were used for the routine metals monitoring program.

[1]Lead is the only parameter being monitored in the ATMP that has a National Ambient Air Quality Standard. See Section V, page 89, Lead.

SITE IDENTIFICATION AND LOCATION

AQS #	CITY	COUNTY	ADDRESS	TABLE
39-017-0015	Middletown	Butler	3901 Lefferson Rd.	G
39-029-0019	E. Liverpool	Columbiana	1250 St. George St.	H
39-029-0020	E. Liverpool	Columbiana	2220 Michigan Ave.	I
39-029-0022	E. Liverpool	Columbiana	500 Maryland Ave.	J
39-035-0038	Cleveland	Cuyahoga	2547 Tikhon Ave.	K
39-035-0042	Cleveland	Cuyahoga	3136 Lorain Ave.	L
39-035-0049	Cleveland	Cuyahoga	4150 East 56th St.	M
39-035-0061	Cleveland	Cuyahoga	West 3rd. St.	N
39-035-0072	Cleveland	Cuyahoga	26565 Miles Rd.	O
39-049-0025	Columbus	Franklin	1700 Ann St.	P
39-051-0001	Delta	Fulton	200 Van Buren St.	Q
39-101-0003	Marion	Marion	Hawthorne Ave.	R
NA	Marion	Marion	363 West Fairgrounds	S
39-123-0012	Elmore	Ottawa	14244 W. St.Route 105	T
39-091-0006	Bellefontaine	Logan	320 Richard Ave.	U
39-151-0017	Canton	Stark	1330 Dueber Ave. SW	V
39-155-0012	NE of Hubbard	Trumbull	2600 Elmwood Dr.	W
39-167-0008	Marietta	Washington	Lancaster Rd.	X
39-167-0010	Marietta	Washington	115 Victory Place	Y

Table G.

Middletown Heavy Metals Data - 2010

Ohio Bell — Lat: N 39.4899 — Elv. : 204 m

3901 Lefferson Rd. — Long: W -84.364067

AQS: 39-017-0015

Butler - designated

MONTH	arsenic	beryllium	cadmium	chromium	lead	nickel	manganese	zinc
			Parameters units - - ng/m^3					
JANUARY	0.90	<0.054	0.206	1.82	6.65	0.81	26	77
FEBRUARY	0.75	<0.054	0.223	4.44	5.46	1.34	44	48
MARCH	0.99	0.066	0.184	1.98	4.98	0.77	31	36
APRIL	1.17	0.070	0.210	3.70	5.59	0.84	50	36
MAY	1.05	0.060	0.167	3.69	4.41	1.48	39	48
JUNE	1.09	<0.058	0.185	2.69	3.72	0.80	34	32
JULY	1.52	0.076	0.241	3.54	5.99	1.00	57	51
AUGUST	1.01	<0.057	0.227	3.79	5.74	1.00	48	62
SEPTEMBER	2.06	0.067	0.232	5.39	5.65	0.94	59	50
OCTOBER	2.34	0.121	0.270	4.58	7.72	1.09	90	90
NOVEMBER	1.75	<0.088	0.223	1.81	4.10	0.90	33	33
DECEMBER	1.06	0.062	0.249	4.20	4.74	1.05	52	43

Table H.

East Liverpool Heavy Metals Data - 2010

Port Authority — Lat: N 40.631111 — Elv. : 209 m

1250 St. George St. — Long: W -80.546944

AQS: 39-029-0019

Columbiana - designated

MONTH	arsenic	beryllium	cadmium	chromium	lead	nickel	manganese	zinc	mercury
			Parameters units - - ng/m^3						
JANUARY	1.35	<0.052	0.537	2.65	7.77	2.00	110	49	0.065
FEBRUARY	2.27	<0.041	0.312	2.23	6.76	0.93	66	41	0.09
MARCH	2.08	0.075	0.606	4.35	12.40	2.11	200	120	0.047
APRIL	3.39	0.261	1.300	7.05	27.40	3.61	400	140	0.1
MAY	2.80	0.252	0.990	5.43	12.40	2.81	220	58	0.13
JUNE	2.11	0.140	0.449	3.38	6.53	1.83	120	36	0.093
JULY	0.79	<0.036	0.166	0.67	3.52	0.49	210	93	0.066
AUGUST	2.83	0.402	1.070	7.53	19.60	3.79	510	130	0.069
SEPTEMBER	2.14	0.150	1.020	3.96	15.40	1.97	190	98	0.056
OCTOBER	2.17	0.111	0.569	3.83	17.30	1.95	100	51	0.055
NOVEMBER	2.81	0.104	2.520	5.52	114.00	3.35	300	230	0.08
DECEMBER	1.73	<0.052	0.918	2.36	6.95	1.78	94	42	0.051

Table I.

East Liverpool Heavy Metals Data - 2010 Waterplant 2220 Michigan Ave. AQS: 39-029-0020 Columbiana - designated			Lat: N 40.639722 Elv. : 212 m Long: W -80.523889 Parameters units - - ng/m³						
MONTH	arsenic	beryllium	cadmium	chromium	lead	nickel	manganese	zinc	mercury
JANUARY	3.56	<0.041	0.497	9.23	7.46	41.80	980	37	0.060
FEBRUARY	2.16	<0.054	0.520	8.00	6.86	5.09	2000	40	0.099
MARCH	3.42	<0.054	0.728	9.89	13.40	14.60	1900	140	0.078
APRIL	4.98	<0.057	0.928	19.90	18.00	10.20	4200	160	0.080
MAY	3.92	<0.057	0.596	3.66	5.82	9.32	710	42	0.047
JUNE	2.07	<0.044	0.527	3.79	5.65	2.06	370	33	0.065
JULY	2.17	<0.036	0.638	3.05	14.00	2.47	810	72	0.050
AUGUST	2.42	<0.042	0.620	8.22	16.10	7.51	2100	140	0.045
SEPTEMBER	1.74	<0.04	0.919	5.77	12.90	4.04	1000	100	0.035
OCTOBER	3.08	<0.04	1.270	5.62	10.40	3.44	460	51	0.032
NOVEMBER	4.45	0.056	1.490	12.60	21.70	13.50	3700	170	0.098
DECEMBER	1.94	<0.042	0.480	6.66	8.13	12.60	730	48	0.044

Table J.

East Liverpool Heavy Metals Data - 2010 500 Maryland Ave. AQS: 39-029-0022 Columbiana - designated			Lat: N 40.635 Elv. : 229 m Long: W -80.546667 Parameters units - - ng/m³						
MONTH	arsenic	beryllium	cadmium	chromium	lead	nickel	manganese	zinc	mercury
JANUARY	1.23	<0.054	0.372	2.33	7.38	1.16	35	40	0.044
FEBRUARY	1.02	<0.056	0.286	2.83	8.31	1.14	62	40	0.087
MARCH	1.62	0.060	0.680	5.83	13.10	2.53	220	140	0.050
APRIL	3.18	0.077	0.779	7.20	32.10	2.51	270	140	0.054
MAY	2.19	<0.057	0.582	3.96	8.67	1.66	80	50	0.035
JUNE	1.68	<0.056	0.368	3.09	5.89	1.34	65	36	0.033
JULY	1.77	<0.047	0.797	4.04	15.10	1.75	86	84	0.039
AUGUST	2.24	0.059	0.970	6.18	16.70	2.55	270	130	0.032
SEPTEMBER	1.77	<0.054	0.898	4.01	16.40	1.60	110	100	0.029
OCTOBER	2.24	<0.069	0.509	4.38	19.70	1.64	81	59	0.022
NOVEMBER	1.75	<0.054	1.790	4.41	36.00	2.52	200	210	0.053
DECEMBER	1.55	<0.053	0.626	2.21	61.90	1.24	65	56	0.047

Table K.

Cleveland Heavy Metals Data - 2010								
St. Theodosius Church				Lat: N 41.476944		Elv. : 202 m		
2547 St. Tikhon Ave.				Long: W -81.681944				
AQS: 39-035-0038			Parameters					
Cuyahoga - designated			units - - ng/m³					
MONTH	arsenic	beryllium	cadmium	chromium	lead	nickel	manganese	zinc
JANUARY	0.91	<0.054	0.351	4.13	7.73	1.98	24	63
FEBRUARY	0.99	<0.066	0.491	1.93	12.50	2.90	18	69
MARCH	1.00	0.067	0.438	6.89	12.70	3.49	60	71
APRIL	1.74	0.074	0.678	6.25	22.60	6.05	72	97
MAY	1.43	<0.054	0.413	3.25	11.70	3.09	39	69
JUNE	1.25	<0.051	0.315	3.06	9.43	3.27	27	66
JULY	1.38	0.044	0.503	3.70	14.20	3.07	41	82
AUGUST	1.16	0.062	0.419	3.24	13.90	2.88	62	92
SEPTEMBER	1.80	<0.064	0.422	4.32	12.50	2.95	35	63
OCTOBER	2.81	<0.051	0.504	3.22	17.30	2.63	48	73
NOVEMBER	1.92	0.054	0.752	7.72	24.00	4.72	97	120
DECEMBER	1.02	<0.066	0.507	3.15	11.40	3.03	29	50

Table L.

Cleveland Heavy Metals Data - 2010								
FIRE "4A"				Lat: N 41.482222		Elv. : 208 m		
3136 Lorain Ave.				Long: W -81.708889				
AQS: 39-035-0042			Parameters					
Cuyahoga - designated			units - - ng/m³					
MONTH	arsenic	beryllium	cadmium	chromium	lead	nickel	manganese	zinc
JANUARY	1.22	<0.057	0.285	1.25	7.28	1.30	11	55
FEBRUARY	1.06	<0.057	0.346	2.48	9.66	3.29	19	63
MARCH	1.11	<0.056	0.341	2.56	10.30	2.68	26	60
APRIL	1.77	<0.055	0.368	3.04	14.90	2.45	26	56
MAY	1.56	<0.055	0.457	2.27	15.30	2.71	21	67
JUNE	1.21	<0.055	0.281	1.42	8.46	1.99	15	45
JULY	2.05	<0.045	0.345	1.66	24.80	2.80	15	69
AUGUST	1.19	<0.055	0.349	2.15	14.90	1.65	27	65
SEPTEMBER	1.21	<0.092	0.486	2.69	15.80	2.65	22	66
OCTOBER	3.06	<0.056	0.645	1.95	19.40	1.37	24	70
NOVEMBER	1.36	<0.056	0.496	4.11	15.30	3.01	48	110
DECEMBER	0.92	<0.057	0.364	1.38	7.93	1.30	11	36

Table M.

Cleveland Heavy Metals Data - 2010 FERRO "A" 4150 EAST 56th STR. AQS: 39-035-0049 Cuyahoga - designated			Lat: N 41.446667 Elv. : 213 m Long: W -81.651111 Parameters units - - ng/m³					
MONTH	arsenic	beryllium	cadmium	chromium	lead	nickel	manganese	zinc
JANUARY	1.27	<0.057	1.33	6.18	575	65.20	150	360
FEBRUARY	1.31	<0.095	1.61	14.70	30	138.00	95	95
MARCH	1.40	<0.056	0.53	3.81	251	8.41	60	85
APRIL	1.99	0.079	1.00	10.80	310	16.50	160	180
MAY	1.51	0.082	1.08	8.37	122	46.80	170	150
JUNE	1.67	<0.069	0.57	5.36	49.6	25.10	140	100
JULY	1.84	0.049	0.84	5.45	111	39.40	150	110
AUGUST	2.29	<0.055	1.05	7.46	192	27.20	160	140
SEPTEMBER	2.14	<0.055	0.75	4.58	338	38.10	110	100
OCTOBER	2.35	<0.056	1.22	5.83	349	58.90	110	110
NOVEMBER	1.72	<0.056	1.00	4.50	689	35.20	91	190
DECEMBER	1.56	<0.057	4.54	4.99	347	81.60	150	190

Table N.

Cleveland Heavy Metals Data - 2010 Asphalt Plant "A" West 3rd St. AQS: 39-035-0061 Cuyahoga - designated			Lat: N 41.475064 Elv. : 181 m Long: W -81.675962 Parameters units - - ng/m³					
MONTH	arsenic	beryllium	cadmium	chromium	lead	nickel	manganese	zinc
JANUARY	0.81	<0.053	0.223	2.07	9.5	1.65	35	71
FEBRUARY	1.01	<0.053	0.258	1.88	10.0	1.54	24	59
MARCH	0.95	0.069	0.296	5.28	11.2	5.14	67	70
APRIL	2.10	0.114	0.657	6.86	26.4	7.02	100	89
MAY	1.33	0.069	0.329	2.37	12.7	2.47	57	68
JUNE	1.30	<0.052	0.273	3.74	15.1	4.02	55	83
JULY	1.63	<0.064	0.425	4.74	17.0	5.13	69	99
AUGUST	1.35	<0.085	0.528	6.44	27.2	5.36	100	110
SEPTEMBER	2.07	<0.051	0.355	3.21	18.1	3.80	61	78
OCTOBER	3.05	0.059	0.424	4.20	17.2	3.76	81	84
NOVEMBER	1.57	<0.053	0.623	5.68	22.0	3.94	87	120
DECEMBER	0.95	0.059	0.209	2.02	10.4	2.20	30	66

Table O.

Cleveland Heavy Metals Data - 2010 Century 26565 Miles Rd. AQS: 39-035-0072 Cuyahoga - designated			Lat: N 41.42585 Elv. : 332 m Long: W -81.49078 Parameters units - - ng/m³					
MONTH	arsenic	beryllium	cadmium	chromium	lead	nickel	manganese	zinc
JANUARY	0.34	<0.07	0.158	1.96	8.44	7.91	94	55
FEBRUARY	10.90	<0.056	0.223	4.13	8.61	31.90	420	42
MARCH	0.73	<0.055	0.489	1.36	10.4	1.69	11	80
APRIL	0.98	<0.055	0.168	1.72	11.4	2.95	22	53
MAY	0.73	<0.054	0.265	1.40	8.36	1.97	16	61
JUNE	0.81	<0.054	0.162	1.11	11.6	1.90	11	36
JULY	0.76	<0.045	0.136	1.15	5.54	2.65	12	45
AUGUST	0.97	<0.068	0.229	1.87	10.1	2.38	18	67
SEPTEMBER	1.16	<0.055	0.158	1.35	13.5	2.41	10	62
OCTOBER	1.63	<0.055	0.312	1.75	11.4	4.66	17	77
NOVEMBER	3.81	<0.055	0.306	2.63	29.7	9.22	110	68
DECEMBER	12.80	<0.056	0.206	4.85	17.5	27.20	430	60

Table P.

Columbus Heavy Metals Data - 2010 Woodrow 1700 Ann St. AQS: 39-049-0025 Franklin - designated			Lat: N 39.928056 Elv. : 234 m Long: W -82.981111 Parameters units - - ng/m³					
MONTH	arsenic	beryllium	cadmium	chromium	lead	nickel	manganese	zinc
JANUARY	0.82	<0.058	0.245	1.05	8.2	0.63	8.6	49
FEBRUARY	0.81	<0.057	0.269	1.36	7.32	0.83	7.8	66
MARCH	1.20	<0.058	0.298	1.34	9.36	0.81	10	43
APRIL	1.40	<0.058	0.245	2.30	9.43	1.91	20	45
MAY	1.20	<0.059	0.462	1.66	8.63	1.51	13	69
JUNE	1.11	<0.06	0.184	1.38	7.16	0.86	9.1	39
JULY	1.39	<0.051	0.249	1.59	9.03	0.96	11	57
AUGUST	1.13	<0.061	0.187	1.68	8.87	1.25	16	63
SEPTEMBER	2.20	<0.059	0.360	2.03	9.33	1.27	18	66
OCTOBER	2.86	<0.058	0.352	1.98	11.9	1.82	21	78
NOVEMBER	1.75	<0.058	0.450	2.33	11.4	1.89	20	76
DECEMBER	0.84	<0.058	0.242	1.31	7.05	1.34	8.5	73

Table Q.

NWDO Heavy Metals Data - 2010 Delta 200 Van Buren St. AQS: 39-051-0001 Fulton - Designated			Lat: N 41.575278 Elv. : 220 m Long: W -83.996389 Parameters units - - ng/m³					
MONTH	arsenic	beryllium	cadmium	chromium	lead	nickel	manganese	zinc
JANUARY	0.57	<0.043	0.349	0.95	75.6	0.70	6.5	330
FEBRUARY	0.56	<0.043	0.651	1.11	52.5	0.62	9.5	260
MARCH	0.68	<0.048	0.166	1.01	8.2	0.57	7.1	36
APRIL	1.02	<0.05	0.551	1.36	92.4	0.79	13	610
MAY	0.63	<0.046	0.558	1.22	63.3	0.70	11	390
JUNE	0.75	<0.048	0.268	1.02	55.4	0.70	8.8	200
JULY	0.78	<0.04	0.240	0.95	34.1	0.74	11	250
AUGUST	0.88	<0.049	0.520	1.44	151.0	1.04	13	500
SEPTEMBER	2.25	<0.047	0.764	8.33	38.5	4.99	140	160
OCTOBER	0.82	<0.046	0.477	1.23	75.1	1.05	19	380
NOVEMBER	0.98	<0.078	0.388	1.10	50.7	1.16	8.8	270
DECEMBER	0.70	<0.061	0.277	1.07	36.2	<0.61	6.4	200

Table R.

NWDO Heavy Metals Data - 2010 Prospect Hawthorne Ave. AQS: 39-101-0003 Marion - designated			Lat: N 40.571405 Elv. : 247 m Long: W -83.135557 Parameters units - - ng/m³						
MONTH	arsenic	beryllium	cadmium	chromium	lead	nickel	manganese	zinc	mercury
JANUARY									
FEBRUARY									
MARCH	1.75	<0.08	0.218	2.48	8.5	1.65	31	80	
APRIL	1.54	<0.05	0.400	5.84	23.7	3.36	91	140	0.079
MAY	0.78	<0.05	0.534	1.31	62.8	0.93	12	380	0.17
JUNE	1.23	<0.054	0.320	6.11	20.3	3.34	90	100	0.051
JULY	1.71	<0.041	0.488	7.66	33.5	3.50	110	150	0.14
AUGUST	1.26	<0.05	0.441	5.56	30.5	3.46	99	190	0.1
SEPTEMBER	1.91	<0.05	0.204	1.28	23.7	0.89	11	110	0.11
OCTOBER	1.79	<0.047	0.808	9.86	54.8	6.41	170	210	0.31
NOVEMBER	1.37	<0.049	0.522	9.56	17.2	2.82	160	140	0.058
DECEMBER	1.36	<0.049	0.539	8.76	24.7	4.03	200	130	0.099

Table S.

NWDO Heavy Metals Data - 2010 Fairgrounds 363 West Fairgrounds Marion, Ohio AQS: 39- Left Marion - Designated			Parameters units - - ng/m³					
MONTH	arsenic	beryllium	cadmium	chromium	lead	nickel	manganese	zinc
JANUARY	0.74	<0.051	0.397	1.99	12.0	0.66	16	430
FEBRUARY	1.22	<0.052	0.674	3.20	27.6	0.92	18	990
MARCH	0.70	<0.055	0.223	1.62	8.6	0.68	12	150
APRIL	1.01	<0.057	0.350	2.76	13.4	0.95	21	430
MAY	2.28	<0.055	0.323	4.24	20.3	1.07	19	800
JUNE	1.62	<0.069	0.589	8.00	31.7	1.46	28	2000
JULY	2.40	<0.041	0.496	4.91	30.4	2.98	32	800
AUGUST	1.07	<0.05	0.311	3.32	23.0	1.26	30	830
SEPTEMBER	1.31	<0.041	0.584	7.97	40.4	2.74	50	2000
OCTOBER	1.86	<0.051	0.502	9.52	29.9	1.64	29	1700
NOVEMBER	1.48	<0.04	0.473	3.87	20.2	1.03	27	600
DECEMBER	0.57	<0.034	0.218	2.10	10.4	0.88	18	300

Table T.

NWDO Heavy Metals Data - 2010 Brush Wellman 32 14244 W. St. Route 105 AQS: 39-123-0012 Ottawa - Designated			Lat: N 41.495833 Elv. : 177 m Long: W -83.206944 Parameters units - - ng/m³					
MONTH	arsenic	beryllium	cadmium	chromium	lead	nickel	manganese	zinc
JANUARY	0.40	0.088	0.078	0.25	2.7	0.20	2.1	16
FEBRUARY	0.40	0.130	0.090	0.35	3.0	0.42	2.2	15
MARCH	0.55	0.067	0.120	0.38	4.1	0.77	5.9	19
APRIL	0.55	0.099	0.096	0.45	4.2	0.79	15	14
MAY	0.66	0.084	0.110	0.38	3.1	0.87	14	18
JUNE	0.71	0.166	0.105	0.50	3.0	1.27	12	21
JULY	0.59	0.179	0.076	0.32	2.7	0.57	5.3	10
AUGUST	0.70	0.035	0.079	0.34	3.7	0.33	3.9	12
SEPTEMBER	0.65	0.073	0.073	0.35	2.2	0.39	3.9	10
OCTOBER	0.61	0.048	0.094	0.36	3.2	0.55	6.6	16
NOVEMBER	0.60	0.049	0.112	0.32	3.3	0.31	3	14
DECEMBER	0.32	0.136	0.075	0.31	2.1	0.26	2	13

Table U.

SWDO Heavy Metals Data - 2010									
Bellefontaine				Lat: N 40.341111	Elv. : 377 m				
320 Richard Ave.				Long: W -83.757778					
AQS: 39-091-0006			Parameters units - - ng/m³						
Logan	- designated								
MONTH	arsenic	beryllium	cadmium	chromium	lead	nickel	manganese	zinc	iron
JANUARY	0.53	<0.045	0.130	1.03	4.9	0.91	3.6	41	73
FEBRUARY	<0.44	<0.044	0.112	0.82	4.5	0.83	3.0	31	66
MARCH	0.77	<0.043	0.175	1.11	7.2	1.55	5.2	22	100
APRIL	0.79	<0.044	0.192	1.09	5.0	1.32	8.3	34	
MAY	0.63	<0.058	0.118	1.02	3.5	0.92	5.9	25	
JUNE	0.54	<0.048	0.119	1.16	3.2	0.83	4.3	16	
JULY	0.71	<0.043	0.100	1.00	3.8	1.33	5.0	17	
AUGUST	0.62	<0.046	0.083	1.52	3.5	0.68	5.7	15	
SEPTEMBER	1.16	<0.048	0.133	1.57	4.4	1.41	6.1	17	
OCTOBER	0.84	<0.047	0.146	2.12	3.6	0.73	11.0	27	
NOVEMBER	0.96	<0.048	0.217	3.61	5.0	1.65	7.4	26	
DECEMBER	0.45	<0.041	0.122	1.87	2.8	0.65	2.5	16	

Table V.

Canton APC Div.	Data - 2010							
Firestation #8				Lat: N 40.786667	Elv. : 319 m			
1330 Dueber Avenue SW				Long: W -81.394444				
AQS: 39-151-0017			Parameters units - - ng/m³					
Stark	- designated							
MONTH	arsenic	beryllium	cadmium	chromium	lead	nickel	manganese	zinc
JANUARY	<1.18	<0.118	0.144	2.64	8.6	1.38	19	74
FEBRUARY	0.98	<0.051	0.262	3.85	7.2	2.41	24	99
MARCH	1.44	<0.056	0.415	5.10	27.8	2.49	60	250
APRIL	2.21	<0.057	0.474	6.66	19.7	5.78	88	180
MAY	4.12	<0.063	0.330	4.00	18.6	2.67	40	160
JUNE	2.52	<0.05	0.283	3.59	7.9	1.88	38	140
JULY	3.89	<0.041	0.623	4.91	14.7	3.60	47	240
AUGUST	1.58	<0.082	0.367	4.57	21.2	3.01	48	600
SEPTEMBER	4.21	<0.047	0.593	4.39	14.1	3.77	47	320
OCTOBER	3.80	<0.047	0.412	7.22	15.2	4.44	93	360
NOVEMBER	3.39	<0.049	0.713	8.40	24.7	5.44	130	200
DECEMBER	2.45	<0.047	0.456	4.41	9.3	3.98	54	180

Table W.

Mahoning Trumbull APC Agency Data - 2010								
Hubbard Twp. Admin. Bldg.				Lat: N 41.1728010694 Elv. : 288 m				
2600 Elmwood Drive				Long: W -80.555498175				
AQS: 39-155-0012			Parameters					
Trumbull - designated			units - - ng/m^3					
MONTH	arsenic	beryllium	cadmium	chromium	lead	nickel	manganese	zinc
JANUARY								
FEBRUARY								
MARCH								
APRIL								
MAY	0.76	<0.055	0.217	2.20	3.78	1.45	31	63
JUNE	1.23	<0.055	0.136	2.23	4.12	0.94	32	42
JULY	1.40	<0.046	0.180	2.62	5.23	1.01	36	41
AUGUST	1.31	<0.055	0.267	2.44	6.52	0.84	31	52
SEPTEMBER	3.09	<0.055	0.193	1.88	5.82	0.72	22	46
OCTOBER	2.36	<0.056	0.506	2.00	15.8	1.23	38	55
NOVEMBER	1.37	<0.056	0.374	1.58	7.2	0.91	19	48
DECEMBER	1.06	<0.057	0.392	1.49	7.46	0.79	8.9	39

Table X.

SEDO Heavy Metals Data - 2010									
Washington Co. Career Center				Lat: N 39.433611 Elv. : 300 m					
Lancaster Rd.				Long: W -81.5025					
AQS: 39-167-0008			Parameters						
Washington - designated			units - - ng/m^3						
MONTH	arsenic	beryllium	cadmium	chromium	lead	nickel	manganese	zinc	mercury
JANUARY	<1.22	<0.122	1.070	<1.22	26.2	<1.22	1500	130	0.027
FEBRUARY	<0.48	<0.048	0.107	0.71	3.67	<0.48	49	20	0.023
MARCH	0.98	<0.05	0.300	0.87	5.7	0.50	25	24	0.03
APRIL	1.08	<0.05	0.339	1.03	5.29	0.78	310	24	0.022
MAY	0.73	<0.048	0.196	0.68	3.59	<0.48	32	19	0.027
JUNE	0.74	<0.047	0.199	0.77	3.97	<0.47	110	18	0.02
JULY	0.68	<0.051	0.666	0.77	4.49	<0.51	78	25	0.025
AUGUST	1.14	<0.047	0.186	0.97	4.55	1.32	35	52	0.042
SEPTEMBER	1.08	<0.057	0.749	0.93	7.41	0.58	210	37	0.027
OCTOBER	0.77	<0.071	0.472	1.13	6.34	<0.71	390	45	0.013
NOVEMBER	1.01	<0.049	0.613	0.94	7.54	0.65	200	40	0.017
DECEMBER	<0.86	<0.086	0.722	<0.86	5.82	<0.86	150	30	0.018

Table Y.

SEDO Heavy Metals Data - 2010 Washington County Educational Service Center 115 Victory Place - Harmar Site Marietta, Ohio			Lat: N 39.4137294803 Elv. : 252 m Long: W -81.470405310					
AQS: 39-167-0010 Washington - designated			Parameters units - - ng/m³					
MONTH	arsenic	beryllium	cadmium	chromium	lead	nickel	manganese	zinc
JANUARY	0.89	<0.044	0.213	0.94	4.42	0.98	64	31
FEBRUARY	0.61	<0.044	0.119	0.79	3.56	0.44	68	24
MARCH	1.39	<0.046	0.294	0.86	5.63	0.53	28	24
APRIL	2.08	<0.048	0.356	1.15	5.76	1.03	140	24
MAY	1.20	<0.048	0.356	0.84	3.72	0.55	89	21
JUNE	1.19	<0.048	0.270	0.79	4.79	<0.48	80	19
JULY	0.65	<0.036	0.380	0.78	4.46	0.51	100	25
AUGUST	1.09	<0.044	0.213	0.88	4.46	0.57	68	23
SEPTEMBER	1.57	<0.073	0.179	0.79	5.92	<0.73	39	17
OCTOBER	1.27	<0.042	3.280	1.01	10.4	0.66	380	52
NOVEMBER	1.01	<0.04	0.344	0.74	5.96	0.48	52	25
DECEMBER	1.07	<0.051	0.800	0.75	5.13	<0.51	170	27

FUTURE

The long term air toxics monitoring goals of DAPC will focus on the requirements of the Clean Air Act (CAA), particularly Section 112, and will support the development of EPA's Integrated Urban Air Toxics Strategy. In addition the air toxics monitoring efforts will incorporate relative elements of the mission and goals of DAPC to protect the environment for the benefit of all and to develop improved air toxics information.

The current strategy of urban based monitoring has evolved over the years and the number of sites and locations have changed depending on resources and priorities. The major emphasis of existing sampling projects is to develop and establish cost effective, routine sampling and analysis procedures. U.S. EPA has provided the Compendium of Recommended Methods for the Determination of Toxic Organic Compounds in Ambient Air. Methods have been updated to allow for more uniform approaches for sampling and analyzing various groups of compounds. New methods have been developed and added for compounds not previously targeted. There is even a Compendium of Methods for the Determination of Air Pollutants In Indoor Air. Ohio EPA's own air toxics monitoring capacity has been enhanced with the expansion of the air canister sample analysis capability by the Division of Environmental Services (DES).

Future Goals of the division will be modified to be compatible with the National Air Toxics Assessment Network activities. The intent of this network is to provide measurements of ambient concentrations of air toxics at monitoring sites throughout the nation for the estimation of human and environmental exposure to air toxics, and the assessment of risk due to air toxics.

As part of the current grant commitment to U.S. EPA, DAPC will continue its effort to submit future Air Toxics Data to the AQS Database. As part of that effort DAPC will compile all air toxics data collected in previous years so that it may eventually be submitted to AQS. DAPC has already made an effort to have all metals data submitted to AQS.

An intermediate effort of DAPC will be to conduct follow-up sampling efforts for the U.S. EPA School Air Toxics Program. Some of these areas were a high priority before the EPA study and will continue to be until the situation is mitigated. One development of this program was the expanded role of district and local air agencies into air toxics sampling.

Modernization:

DAPC will pursue information on new technology such as:

- Continuous gas chromatography, mass spectrometry
- DES has developed an ICP/MS method for lead to be equivalent to Manual Equivalent Method: EQL-0710-192 and it is used to analyze all standard metals parameters, (except manganese, mercury and zinc), from single filters.
- Updates of the Compendium of Recommended Methods are available at the following: http://www.epa.gov/ttn/amtic/airtox.html and http://www.epa.gov/ttn/amtic/inorg.html and
- Modernizing the Stainless Steel Canister inventory
- Evaluate future training needs for Air Toxics Monitoring:
- sampling methods,
- analytical procedures,
- equipment

VII. AIR QUALITY INDEX (AQI)

There has been a daily reporting of ambient air quality in Ohio's major metropolitan areas in some form since 1971. A national Pollution Standards Index (PSI) was established in 1977 to report air quality. This index was adopted by Ohio EPA's District Offices and the local air agencies (LAA's) to inform the public of daily air quality.

In the summer of 1999 the PSI scale was revised and renamed the Air Quality Index (AQI). It was modified to add 2.5 micron particulate matter ($PM_{2.5}$) and to accommodate the 8-Hour ozone standard.

The U.S. EPA has started the regulatory process of changing the AQI for $PM_{2.5}$ because of the change in the 24-Hour standard which took place in late 2006. Since a new Particulate standard is due to be proposed in 2011 the AQI is not expected to be changed before very late 2011 or 2012.

The AQI (see Table 12) is a uniform "scaling" of five pollutants: particulate (PM_{10} and $PM_{2.5}$), sulfur dioxide, ozone, nitrogen dioxide, and carbon monoxide. The concentration level of each of these is calculated every day to determine the AQI. The pollutant with the highest AQI is reported to the media.

When the AQI exceeds, or is expected to exceed, 100 in a major city, the agency concerned issues a "health advisory". When pollution levels exceed an AQI of 200 and are projected to persist, an "air pollution episode" exists and the Governor declares an "alert". This initiates mandatory cutbacks of emissions from specified facilities to alleviate the situation. If the AQI were to surpass 300, 400 or 500, progressively greater cutbacks would be implemented to reduce pollutants to an acceptable level.

The AQI trend shows that Ohio's air quality has improved significantly. Although alerts were commonplace in the early 1970's, none have happened in over twenty years, and the number of health advisories has been greatly reduced.

TABLE 13

Comparison Of AQI Values With Pollutant Concentrations, Descriptor Words And Associated Colors

INDEX VALUE	PM_{10} µg/m[3]	$PM_{2.5}$ µg/m[3]	CO ppm	SO_2 ppm	Ozone ppm[1]		NO_2 ppm	Color	Category
	24-Hour	24-Hour	8-Hour	24-Hour	8-Hour	1-Hour	1-Hour		
0-50	0-54	0.0-15.4	0.0-4.4	0-0.035	0.000-0.059		0-0.053	Green	Good
51-100	55-154	15.5-40.4	4.5-9.4	0.036-0.075	0.060-0.075		0.054-0.100	Yellow	Moderate
101-150	155-254	40.5-65.4	9.5-12.4	0.076-0.185	0.076-0.095	0.125-0.164	0.101-0.360	Orange	Unhealthy for Sensitive Groups
151-200	255-354	65.5-150.4[2]	12.5-15.4	0.186-0.304	0.096-0.115	0.165-0.204	0.361-0.64	Red	Unhealthy
201-300	355-424	150.5-250.4[2]	15.5-30.4	0.305-0.604	0.116-0.374	0.205-0.404	0.65-1.24	Purple	Very Unhealthy
301-	425-	250.5[2]-	30.5-	0.605	(3)	0.405-	1.25-	Maroon	Hazardous

[1] Areas are generally required to report the AQI based on 8-Hr ozone values. The maximum of the 8-Hr or 1-Hr is used.

[2] If a different Significant Harm Level for $PM_{2.5}$ is promulgated, these numbers will be changed.

[3] 8-Hr Ozone values do not define higher AQI values (≥301). AQI values of 301 or higher are calculated with 1-Hr ozone concentrations.

AQI Chart

The accompanying table shows the AQI values for selected counties. It should be noted that the daily AQI values that are calculated and reported on a daily basis for cities in these counties may differ from those in the table. The daily AQI is based on a limited number of monitors (particularly PM_{10} and $PM_{2.5}$). This table uses data from all Federal Reference Monitors in the county. From those data the highest AQI value is chosen for each day.

The data in TABLE 14 is for the AQI in effect during 2010.

The table gives a general representation of the relative air quality in these counties. There were no readings in the "very unhealthy" or "hazardous" categories.

TABLE 14

County	Highest AQI Value	Days in each category:			
		Good	Moderate	Unhealthy for Sensitive Groups	Unhealthy
Butler	127	220	91	14	0
Clark	114	283	78	4	0
Cuyahoga	127	217	135	13	0
Franklin	132	252	108	5	0
Hamilton	147	181	167	17	0
Jefferson	137	275	76	14	0
Lake	152	217	83	64	1
Lawrence	109	279	83	3	0
Lucas	140	286	70	4	0
Mahoning	116	299	62	4	0
Montgomery	116	281	73	11	0
Stark	132	218	136	11	0
Summit	116	183	177	5	0
Trumbull	135	199	62	4	0

VIII. MONITORING SITES 2010

Explanation of AQS codes:

The first column is the AQS number which consists of:

39-the state code
NNN-the county code, alphabetical, odd numbers only
NNNN-the site code

The second column is the county in which the monitoring site is located

The third column is a street address or city name

The fourth column lists the pollutants monitored at the site.

The main parameters monitored at sites are:

PB	Lead
PM10	Ten Micron Particulate Matter (PM_{10})
LC25	2.5 Micron Particulate Matter ($PM_{2.5}$)
PM25C	2.5 Micron Particulate Matter ($PM_{2.5}$) Continuous
PMSP	2.5 Micron Particulate Matter ($PM_{2.5}$) Speciation
PT	Total Suspended Particulate (TSP)
O3	Ozone (O_3)
SO2	Sulfur Dioxide
CO	Carbon Monoxide
NO2	Nitrogen Dioxide

Monitoring Network in 2010

AQS Number	County	Site Location	Parameter(s)
39-001-0001	Adams	210 N. Wilson	SO2, PM25C
39-003-0006	Allen	1314 Findlay Rd.	PM10
39-003-0007	Allen	Rousch Rd.	PM10
39-003-0008	Allen	North St.	PM10
39-003-0009	Allen	2850 Bible Rd.	SO2, O3, PM25C, LC25
39-007-1001	Ashtabula	Conneaut	O3, SO2
39-009-0003	Athens	Gifford State Forest	LC25
39-009-0004	Athens	7760 Blackburn Rd.	SO2, NO2, O3, PM25C
39-013-3002	Belmont	E 40 St., Shadyside	SO2
39-017-0003	Butler	Bonita & St. John	PM10, LC25
39-017-0004	Butler	Schuler & Bender	O3
39-017-0015	Butler	3901 Lefferson	PM10, PB, PT
39-017-0016	Butler	400 Nilles Rd.	LC25
39-017-0018	Butler	1701 Runway Dr.	O3
39-017-1004	Butler	Hook Field	SO2, PM25C, PMSP
39-023-0001	Clark	5171 Urbana Rd.	O3
39-023-0003	Clark	5400 Spangler Rd.	O3, SO2
39-023-0005	Clark	350 N. Fountain Ave.	LC25, PM25C
39-025-0022	Clermont	2400 Clermont Center Dr.	O3, LC25, PM25C
39-027-1002	Clinton	62 Laurel Dr., Career Cntr	O3
39-029-0019	Columbiana	1250 George St.	PB
39-029-0020	Columbiana	2220 Michigan Ave.	PM10, PB, PT
39-029-0022	Columbiana	500 Maryland Ave.	SO2, PM10, PB
39-035-0034	Cuyahoga	891 E 152 St.	O3, LC25
39-035-0038	Cuyahoga	2547 St. Tikhon Ave.	PB, SO2, PM10, LC25, PMSP, PM25C, PT
39-035-0042	Cuyahoga	3136 Lorain	PB, PT
39-035-0045	Cuyahoga	45950 Broadway Ave.	SO2, PM10, LC25
39-035-0049	Cuyahoga	E. 56th St.	PB, PT
39-035-0051	Cuyahoga	E. 9th & St. Clair	CO
39-035-0053	Cuyahoga	4160 Pearl Rd.	CO
39-035-0060	Cuyahoga	E. 14th & Orange	O3, NO2, SO2, PM10, LC25, PM25C, PMSP
39-035-0061	Cuyahoga	West 3rd St.	PB, PT
39-035-0064	Cuyahoga	Berea	O3
39-035-0065	Cuyahoga	4600 Harvard Ave.	SO2, PM10, LC25
39-035-0070	Cuyahoga	13013 Cortlett Ave.	CO
39-035-0072	Cuyahoga	26565 Miles Rd.	PB, PT
39-035-1002	Cuyahoga	16900 Holland Rd.	PM10, LC25
39-035-5002	Cuyahoga	6116 Wilson Mills Rd.	O3

AQS Number	County	Site Location	Parameter(s)
39-041-0002	Delaware	359 Main St.	O3
39-049-0005	Franklin	Morse & Karl Rds	CO
39-049-0024	Franklin	Ohio State Fairgrounds	PM10, LC25
39-049-0025	Franklin	580 Woodrow Ave.	PB, LC25
39-049-0029	Franklin	7600 Fodor Rd., New Albany	O3, PM25C
39-049-0034	Franklin	Korbel Ave.	PM25C
39-049-0037	Franklin	1777 E. Broad St.	O3
39-049-0081	Franklin	5750 Maple Canyon Dr.	O3, LC25, PMSP
39-051-0001	Fulton	200 Van Buren St.	PB
39-055-0004	Geauga	13000 Auburn Rd.	O3
39-057-0005	Greene	100 Dayton St.	PM10, LC25, PM25C
39-057-0006	Greene	541 Ledbetter Rd.	O3
39-061-0001	Hamilton	800 Vine St.	PT
39-061-0006	Hamilton	11590 Grooms Rd.	O3, LC25, PM25C
39-061-0010	Hamilton	6950 Ripple Rd.	O3, SO2
39-061-0014	Hamilton	18 E. Seymour	PM10, LC25
39-061-0021	Hamilton	100 E. Fifth Ave.	CO
39-061-0040	Hamilton	250 Wm. Howard Taft Rd.	O3, NO2, PM10, LC25, PM25C, PMSP
39-061-0042	Hamilton	2101 W. Eighth St.	LC25
39-061-5001	Hamilton	101 Cooper Ave.	PM10
39-061-7001	Hamilton	2059 Sherman Ave.	LC25
39-061-8001	Hamilton	300 Murray Rd.	LC25
39-063-0002	Hancock	9860 CR 313	PM10
39-063-0003	Hancock	9860 CR 313	PM10
39-063-0004	Hancock	CR 144	PM10
39-081-0001	Jefferson	1004 3rd St., Brilliant	PM10
39-081-0017	Jefferson	618 Logan	O3, SO2, PM10, LC25, PM25C
39-081-1001	Jefferson	Mingo Junction City Hall	LC25, PMSP
39-083-0002	Knox	Water Plant, SR 314	O3
39-085-0003	Lake	Jefferson Elementary School	O3, SO2
39-085-0006	Lake	8443 Mentor Ave.	CO
39-085-0007	Lake	177 Main	SO2, O3, LC25, PM25C
39-085-1001	Lake	325 Vine St.	PM10
39-087-0006	Lawrence	2120 S. 8th St.	SO2
39-087-0011	Lawrence	SR 775 & SR 141	O3
39-087-0012	Lawrence	450 Commerce Dr.	O3, SO2, PM25C, PM10, LC25, PMSP
39-089-0005	Licking	300 Licking View Dr., Heath	O3
39-091-0006	Logan	320 Richard Ave.	PB

AQS Number	County	Site Location	Parameter(s)
39-093-0018	Lorain	4706 Detroit Rd.	O3
39-093-3002	Lorain	2180 Lake Breeze	PM10, LC25, PM25C, PMSP
39-095-0024	Lucas	348 S. Erie St.	O3, LC25, PM25C
39-095-0026	Lucas	4208 Airport Highway	LC25, PMSP
39-095-0027	Lucas	200 S. Byrne Rd., Waterville	O3
39-095-0028	Lucas	600 Collins Park	LC25
39-095-0034	Lucas	306 Yondota	O3
39-095-1003	Lucas	Lee & Front	PM10
39-097-0007	Madison	9940 SR 38 SW	O3
39-099-0005	Mahoning	Fire Station 7	PM10, LC25
39-099-0006	Mahoning	Fire Station 5	PM10
39-099-0013	Mahoning	345 Oakhill Ave.	O3, SO2
39-099-0014	Mahoning	Oakhill	LC25, PM25C, PMSP
39-101-0003	Marion	Hawthorne Ave.	PB
39-103-0003	Medina	6364 Deerview	O3, LC25, PM25C
39-103-0004	Medina	Ballash Rd.	CO, SO2, NO2, O3, LC25
39-105-1001	Meigs	Mulberry Ave., Pomeroy	SO2
39-109-0005	Miami	3825 N. SR 589	O3
39-113-0028	Montgomery	901 W. Fairview Ave.	CO
39-113-0032	Montgomery	215 E. Third St.	LC25, PM25C, PMSP
39-113-0034	Montgomery	117 South Main St.	CO
39-113-0037	Montgomery	1401 Harshman Rd.	O3
39-113-7001	Montgomery	2728 Viking Lane	PM10
39-115-0004	Morgan	SR 83	SO2
39-133-0002	Portage	531 Washington Ave.	LC25
39-133-1001	Portage	1570 Ravenna Rd.	O3
39-135-1001	Preble	National Trails School	O3, LC25, PM25C
39-145-0013	Scioto	4862 Gallia St.,	SO2, PM10, LC25
39-145-0019	Scioto	605 Washington St.	PM10
39-145-0020	Scioto	2840 Back Rd.	SO2, PM10
39-145-0021	Scioto	2446 Gallia Pike	PM10
39-145-0022	Scioto	1740 Gallia Pike	SO2, PM10
39-151-0016	Stark	Malone College	O3
39-151-0017	Stark	1330 Dueber Ave.	LC25, PMSP, PB
39-151-0020	Stark	420 Market Ave.	CO, LC25, PM25C
39-151-0022	Stark	45 S. Wabash	O3
39-151-4005	Stark	1175 W. Vine St., Alliance	O3

AQS Number	County	Site Location	Parameter(s)
39-153-0017	Summit	80 Brittain Rd.	SO2, LC25, PM25SP
39-153-0020	Summit	800 Patterson Ave.	O3, CO
39-153-0022	Summit	177 S. Broadway	CO, SO2
39-153-0023	Summit	660 W. Exchange St.	LC25, PM25SP
39-155-0005	Trumbull	540 Laird Ave. SE Warren	PM10, LC25, PM25C
39-155-0006	Trumbull	2323 Main Ave.	PM10
39-155-0009	Trumbull	Community Hall, Kinsman	O3
39-155-0011	Trumbull	Vienna	O3
39-155-0012	Trumbull	2600 Elmore Dr.	PB
39-157-0006	Tuscarawas	527 Crescent St.	SO2
39-165-0007	Warren	416 Southeast St.	O3, LC25, PM25C
39-167-0004	Washington	2000 Fourth St., Marietta	O3
39-167-0008	Washington	Washington Career Center	PB
39-167-0010	Washington	115 Victory Place	PB
39-173-0003	Wood	347 Dunbridge Rd.	O3

Acronyms and Abbreviations

AA	Atomic Absorption
AIRS-AQS	Aerometric Information Retrieval System-Air Quality Subsystem (no longer used)
AQCR	Air Quality Control Region
AQI	Air Quality Index (replaced Pollutant Standard Index, PSI)
AQS	Air Quality System (replaced AIRS-AQS)
ATMP	Air Toxics Monitoring Program
CBSA	Core Based Statistical Area
CFR	Code of Federal Regulations
CO	Carbon Monoxide
DAPC	Division of Air Pollution Control
DES	Division of Environmental Services
DO	District Office
EDT	Exceptional Data Type
FR	Federal Register
GC	Gas Chromatograph or Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LAA	Local Air Agency
NAAQS	National Ambient Air Quality Standards
NADB	National Aerometric Databank
NAMS	National Ambient Monitoring Stations
NCore	National Core Monitoring Network
NO	Nitric Oxide
NO_2	Nitrogen Dioxide
O_3	Ozone
OAQPS	Office of Air Quality Planning and Standards
OASN	Ohio Air Sampling Network
Org Type	Organization Type
Pb	Lead
POC	Parameter Occurrence Code
ppb	parts per billion
ppm	parts per million
PQAO	Primary Quality Assurance Organization
PM_{10} also PM-10	ten micron particulate matter
$PM_{2.5}$ also PM-2.5	2.5 micron particulate matter
PSI	Pollutant Standard Index (replaced by Air Quality Index, AQI)
RADS	Remote Ambient-Air Data System
SLAMS	State/Local Ambient Monitoring Stations
SO_2	Sulfur Dioxide
TO-14A	Toxics analysis methods descriptions
TSP	Total Suspended Particulate
VOC	Volatile Organic Carbon
$\mu g/m^3$ also ug/m^3	micrograms per cubic meter
mg/m^3	milligrams per cubic meter
ng/m^3	nanograms per cubic meter
# Obs	Number of observations/samples

Reporting Organizations

Reporting Organization Code	Agency Description
0012	Akron Regional Air Pollution Control Agency
0151	Canton City Health Department Air Pollution Control
0220	City of Toledo, Environmental Services Division
0229	Cleveland Air Pollution Control Agency
0287	Dayton Regional Air Pollution Control Agency
0443	Glacier Daido America
0595	Lake County Health Department Division Air Pollution
0634	Mahoning-Trumbull Air Pollution Control Agency
0743	National Lime and Stone Company
0805	Ohio EPA, Central District Office
0807	Ohio EPA, Northeast District Office
0808	Ohio EPA, Northwest District Office
0809	Ohio EPA, Southeast District Office
0810	Ohio EPA, Southwest District Office
0880	Portsmouth City Health Department Division of Air Pollution Control
1108	US EPA/OAQPS
1217	Research Triangle Institute RTP, NC
1259	Hamilton County Department of Environmental Services
1299	URS Corp, TX
1335	Ohio University, Athens, Ohio