STATE OF OHIO
AIR QUALITY
CALENDAR YEAR 2007

PREPARED BY

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EXECUTIVE SUMMARY

A. General Review

2007 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 2007 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 17 and in Table 3.

C. Conclusions

1. There are now 42 PM_{10} monitoring sites and 50 $PM_{2.5}$ monitoring sites with 93 monitors 46 of which are a Federal Reference Monitor, continuous, intermittent and 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 2007, 10 TSP sites reported data, down from 217 sites in 1987. Of those 10 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 28.6% in the last ten years. There were no violations of SO_2 air quality standards in 2007.

3. No overall trend is indicated for the past several years for carbon monoxide. Figure 21 shows individual urban area trends.

4. The relatively high lead concentrations sampled in Fulton and Logan Counties are the result of industrial source monitoring. Monitors are located near lead processing sources in those counties to determine compliance with the standard.

5. Twenty-five counties are monitoring attainment of the eight hour ozone standard. There are seven counties with monitored non-attainment based on data for 2005 through 2007. This report uses the ozone standard in effect through 2007.

6. No violations of air quality standards for nitrogen dioxide were recorded in 2007.

7. No air pollution alerts were declared in 2007.

D. The Ohio Network

In 2007 there were a total of 262 monitors at 140 sites reporting data. There were 14 carbon monoxide, 29 sulfur dioxide, 3 nitrogen dioxide, 49 ozone, 43 10 micron particulate (PM_{10}), 46 2.5 micron particulate Federal Reference Monitors ($PM_{2.5}$) and 18 lead sites.

The only states with comparable or more monitors are California with 775, Texas with 304 and Pennsylvania with 282 sites.

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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 ≤10 microns (PM_{10}) and Particulate Matter ≤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 2007.

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, 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 US 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 inhaleable 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 is 0.08 ppm which is 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.

During 2007, more than 250 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.

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, still being developed, 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.

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 $\mu g/m^3$	15 $\mu g/m^3$
	24-Hour concentration	Not to be exceeded Three year average of 98^{th} percentile	35 $\mu g/m^3$	35 $\mu g/m^3$
PM_{10}	24-Hr concentration	Not to be exceeded more than once per year averaged over three years	150 $\mu g/m^3$	150 $\mu g/m^3$
SULFUR DIOXIDE	Annual Mean	Not to be exceeded	0.03 ppm (80 $\mu g/m^3$)	
	24-Hr mean concentration	Not to be exceeded more than once per year	0.14 ppm (365 $\mu g/m^3$)	
	3-Hr mean concentration	Not to be exceeded more than once per year		0.5 ppm (1300 $\mu g/m^3$)
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	0.08 ppm	0.08 ppm
	1-Hr concentration	Not to be exceeded more than three times in three years	0.12 ppm (244 $\mu g/m^3$)	0.12 ppm (244 $\mu g/m^3$)
NITROGEN DIOXIDE	Annual mean	Not to be exceeded	0.053 ppm (100 $\mu g/m^3$)	
LEAD	3-Month mean concentration	Not to be exceeded	1.5 $\mu g/m^3$	

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

$\mu g/m^3$ = micrograms per cubic meter
ppm = parts per million
mg/m^3 = milligrams per cubic meter

Figure 1

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

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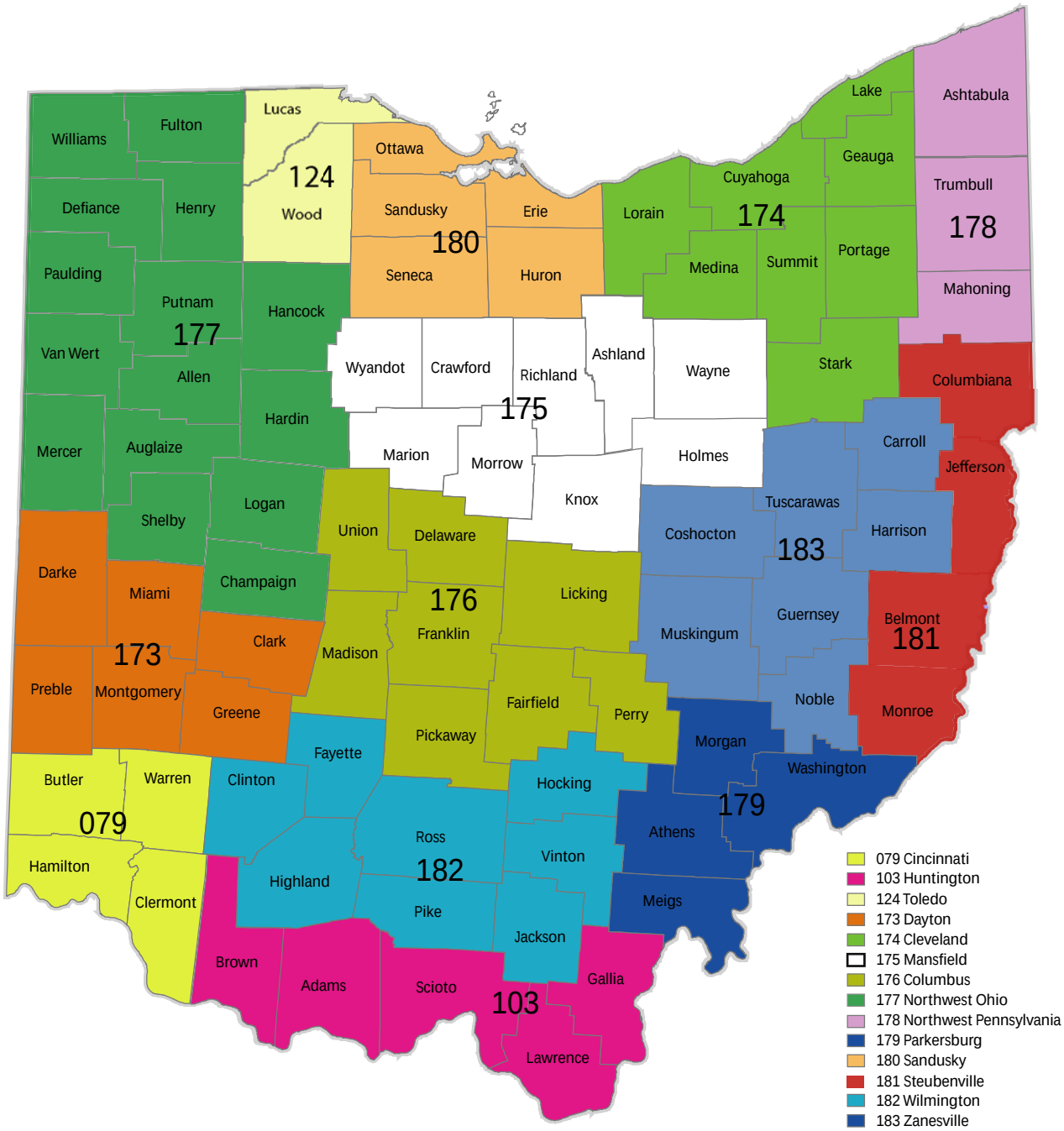

Figure 2

Air Quality Control Regions in Ohio

TABLE 2

AMBIENT AIR MONITORING SITES IN OHIO (2007)

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	4	0	2	3	2	0	0	11
Canton	2	0	0	3	1	0	0	6
Cincinnati (HC-DOES)	12	5	3	7	1	1	1	30
Cleveland	7	6	4	3	4	2	7	33
Lake Co. Health District	1	1	2	3	1	0	0	8
Warren-Youngstown (M-TAPCA)	3	5	1	3	0	0	0	12
Toledo	3	1	2	4	0	0	0	10
Dayton (RAPCA)	4	2	1	6	2	0	0	15
Portsmouth	2	3/3	3/2	2	0	0	0	10/5
CDO	3	2	1	8	2	0	1	17
NEDO	2	3	2	2	0	0	3	12
NWDO	0	0/8	1	2	0	0	1	4/8
SEDO	3	4	5	2	1	0	1	16
SWDO	0	0	0	1	0	0	1/3	2/3
Totals	46	32/11	27/2	49	14	3	15/3	186/16

Sites required by Ohio EPA: Government Operated/Industry Operated

II. Summary of 2007 Air Quality Data

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

Figures 3-13 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 National Aerometric Data Bank (NADB)[1] requirements were marked with asterisks.

Figure 14 indicates the second highest 1-Hour concentration of ozone recorded in each county.

FIGURE 15 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 16 indicates the three year average of the 4^{th} high 8-Hour averages of ozone. The highest reading site was used.

Figure 17 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.

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[1]The NADB 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 NADB 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 (1-Hr standard), the monitor must collect at least seventy-five percent of the hours between 9am and 9pm.

PM_{10}

Figure 3

2007 PM_{10} Highest Annual Mean Concentration
(in counties where data were collected-values in ug/m^3)

PM_{10}

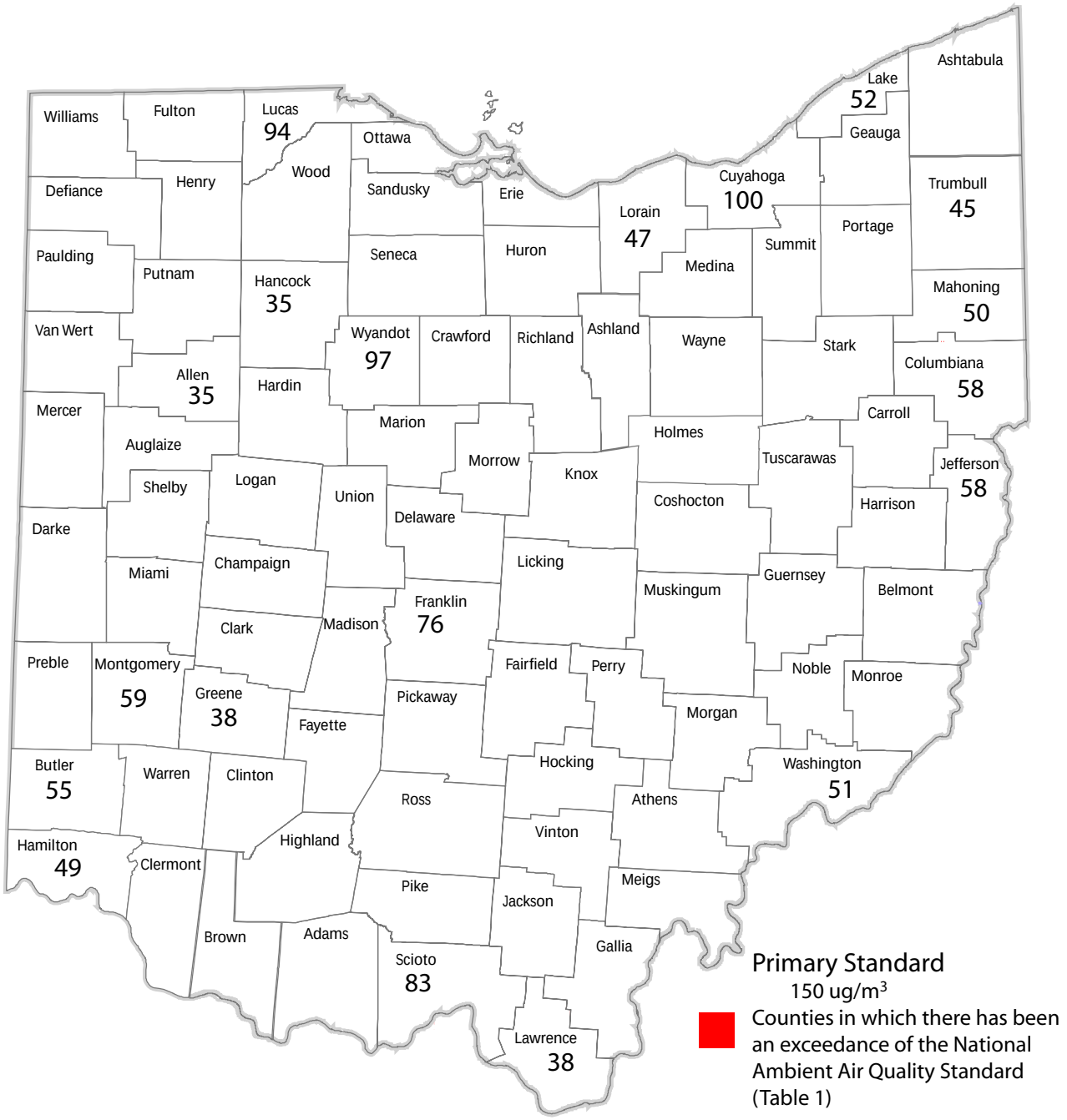


Figure 4

2007 PM_{10} 2nd High 24-Hour Concentration
(In counties where data were collected-values in ug/m3)

$PM_{2.5}$

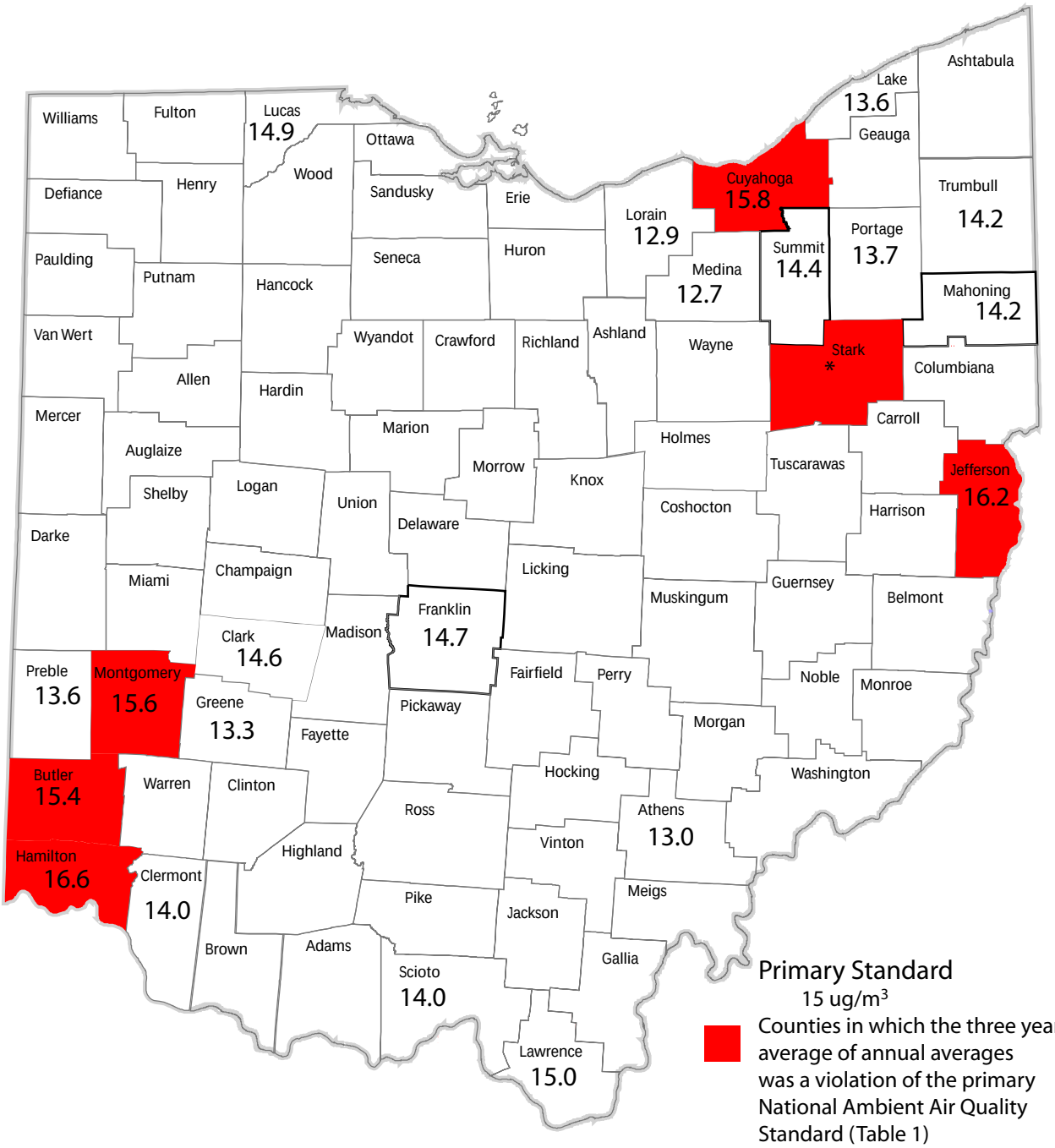


Figure 5

* insufficient data in 2007 for a valid year.

2007 $PM_{2.5}$ Highest Annual Concentration
(In counties where data were collected-values in ug/m3)

$PM_{2.5}$

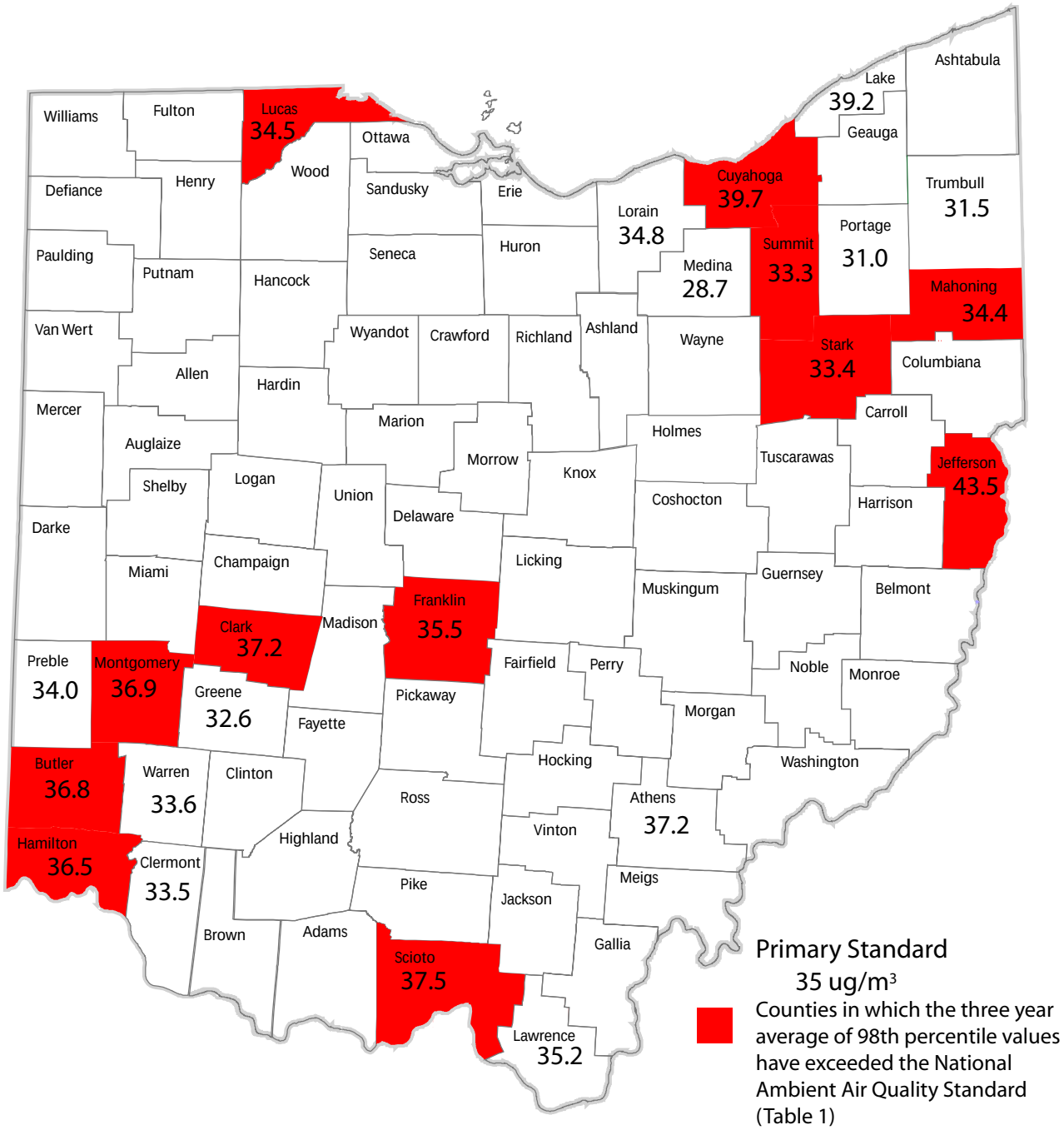


Figure 6

2007 $PM_{2.5}$ 98th Percentile 24-Hour Concentration
(In counties where data were collected-values in ug/m³)

$PM_{2.5}$

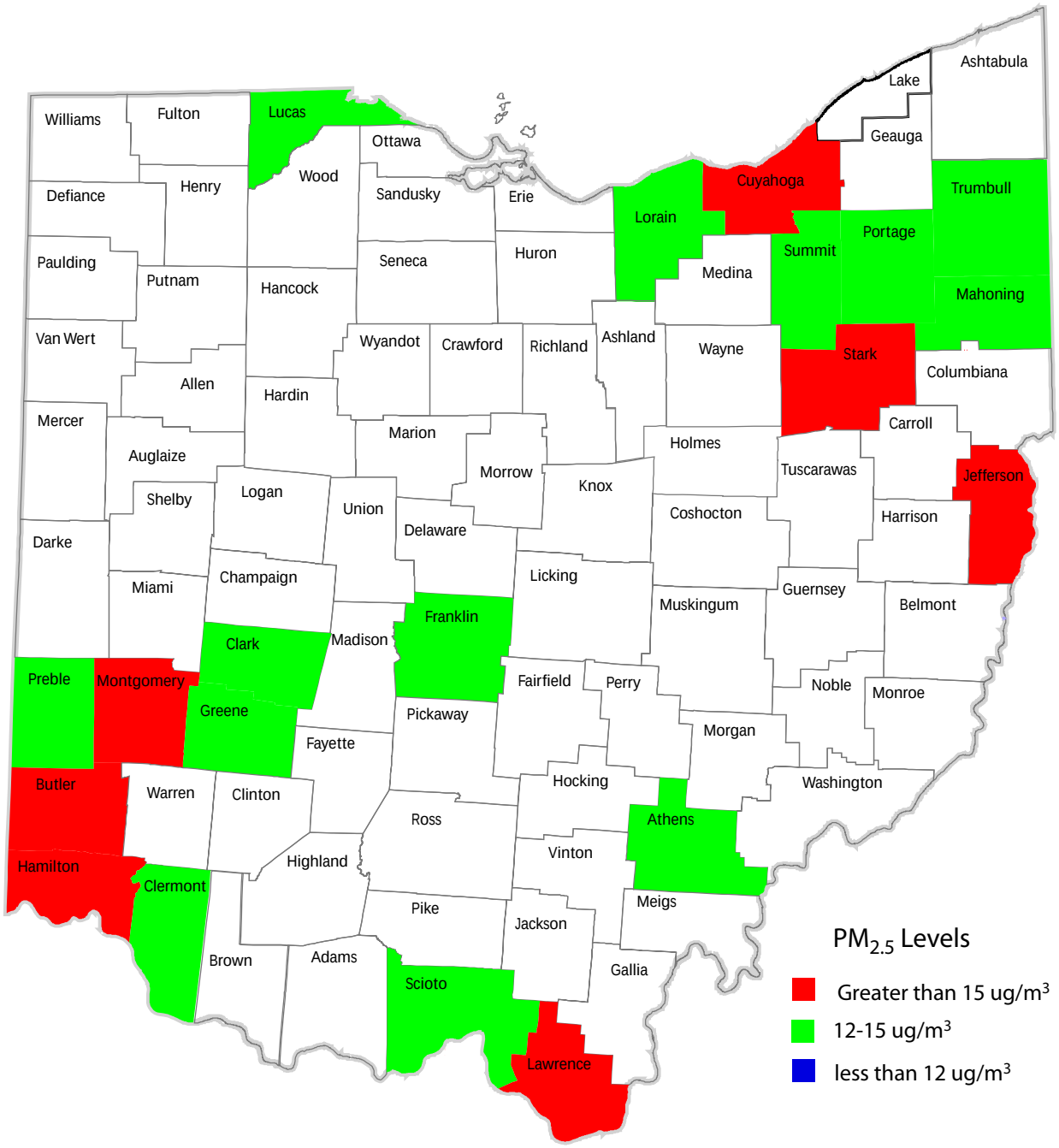


Figure 7

2005-2007 Average of Annual Averages
Highest Site in the County used

Sulfur Dioxide

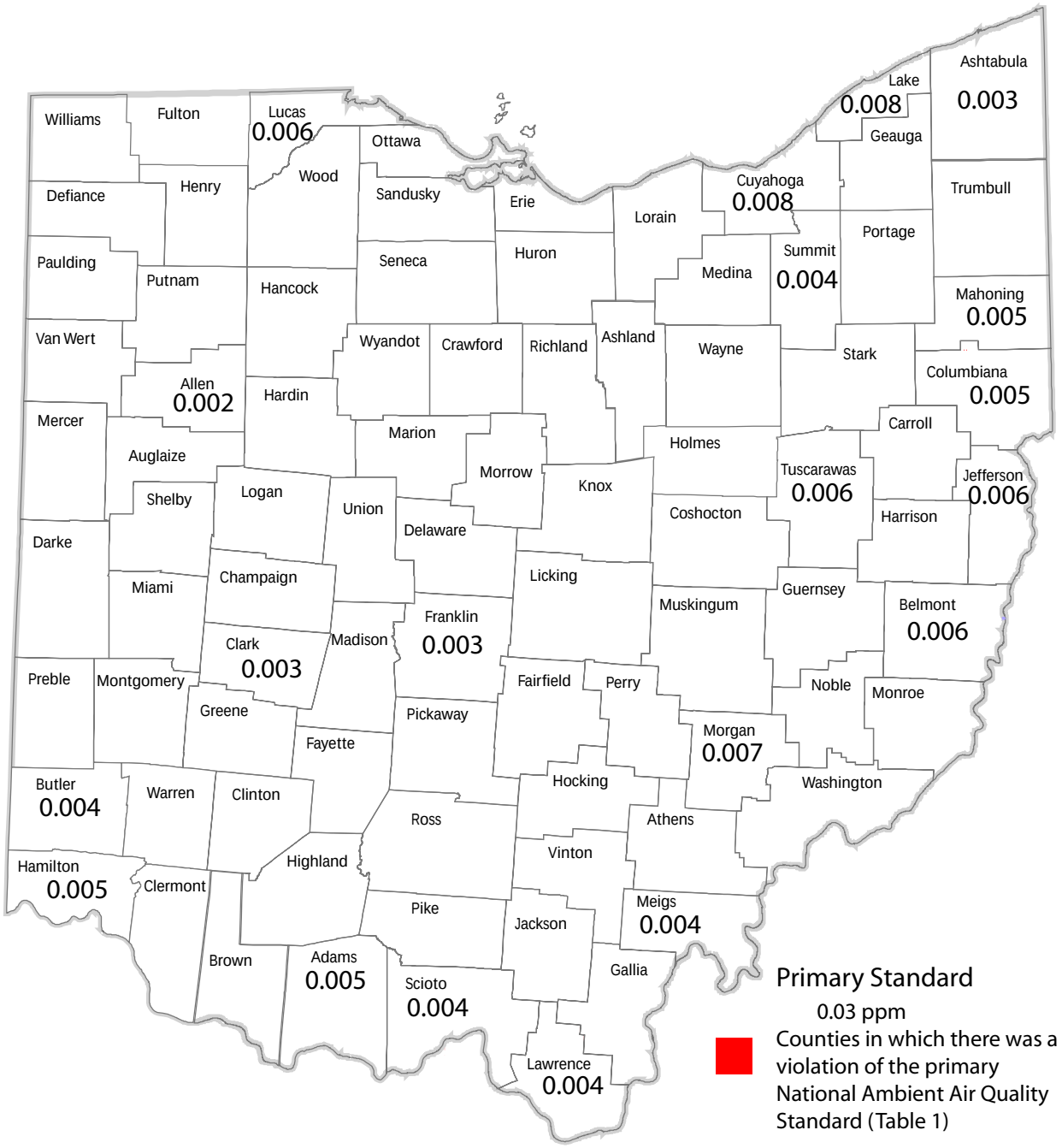


Figure 8

2007 SO_2 Highest Annual Arithmetic Mean Concentration
(In counties were data were collected-values in ppm)

Sulfur Dioxide

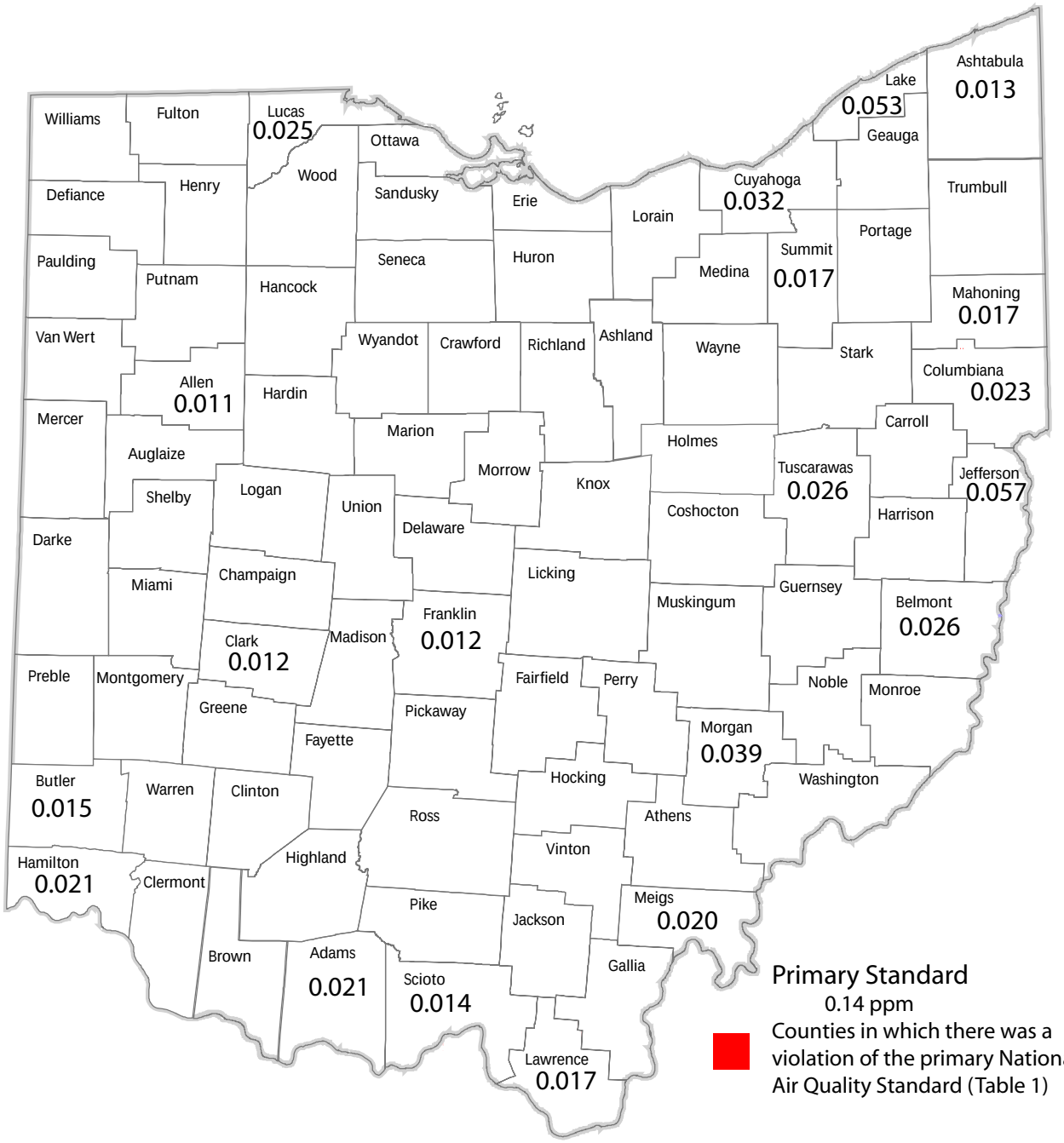


Figure 9

2007 SO_2 2nd Highest 24-Hour Concentration
(In counties where data were collected-values in ppm)

Sulfur Dioxide

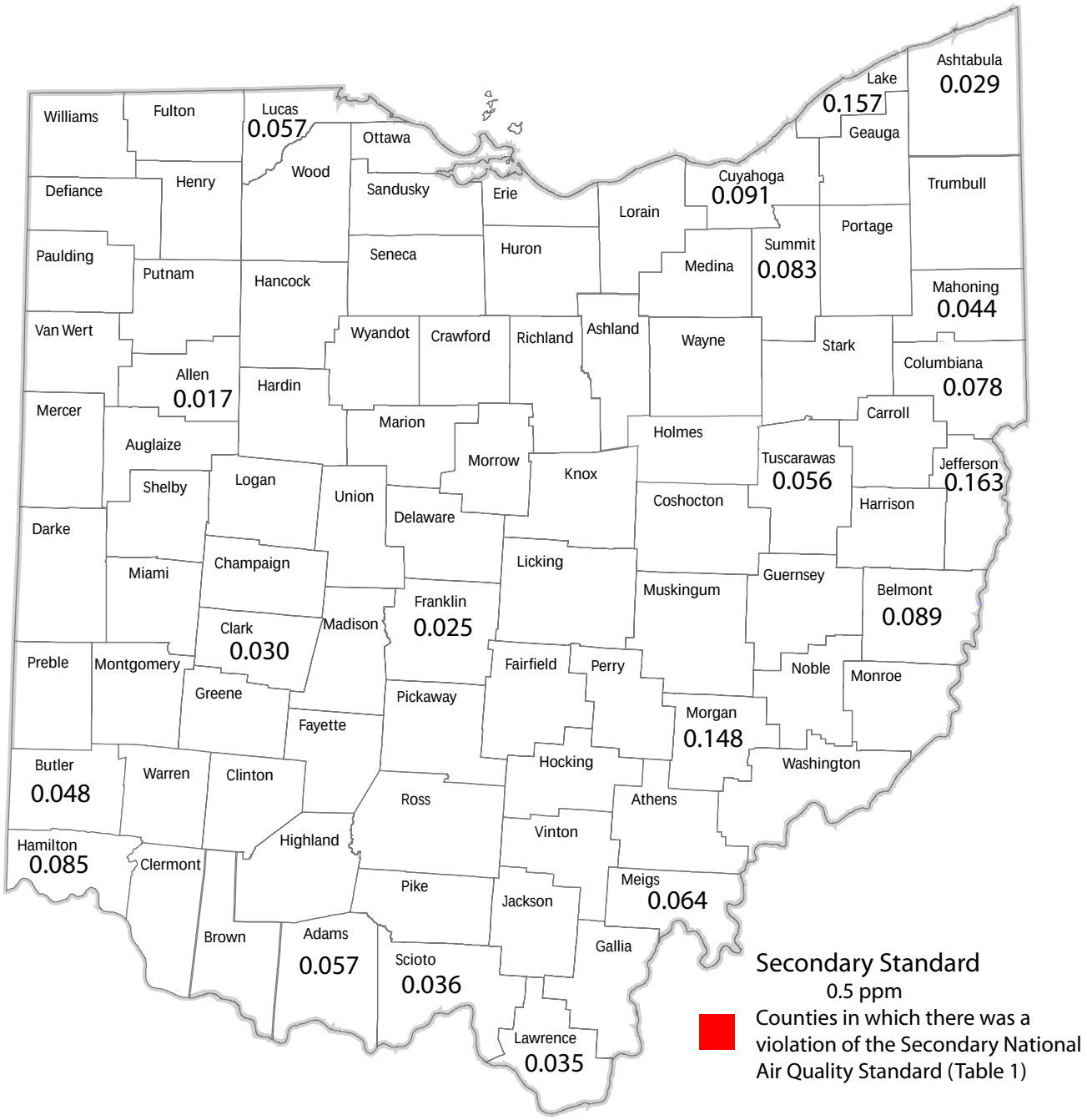


Figure 10

2007 SO_2 2nd Highest 3-Hour Concentration
(In counties where data were collected-values in ppm)

Carbon Monoxide

Figure 11

2007 Carbon Monoxide 2nd Highest 8-Hour Concentration
(In counties where data were collected-values in ppm)

Carbon Monoxide

Figure 12

2007 Carbon Monoxide 2nd Highest 1-Hour Concentraton
(In counties where data were collected-values in ppm)

Nitrogen Dioxide

Figure 13

2007 NO_2 Highest Annual Arithmetic Mean Concentration
(In counties where data were collected-values in ppm)

Ozone

Figure 14

2007 Ozone 2nd Highest 1-Hour Concentration
(In counties where data were collected-values in ppm)

Ozone

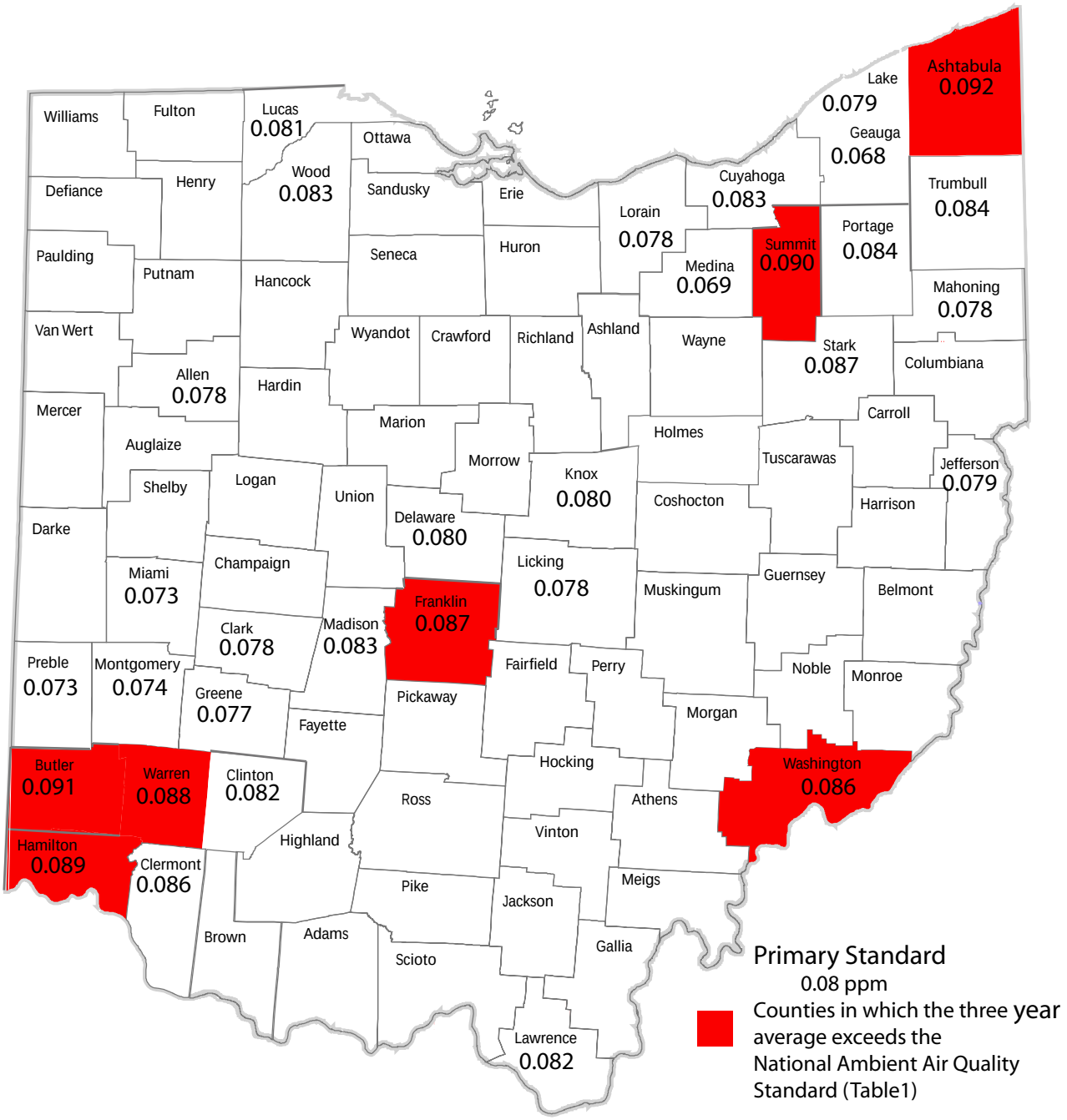


Figure 15

2007 Ozone 4th Highest 8-Hour Concentration
(In counties where data were collected-values in ppm)

Ozone

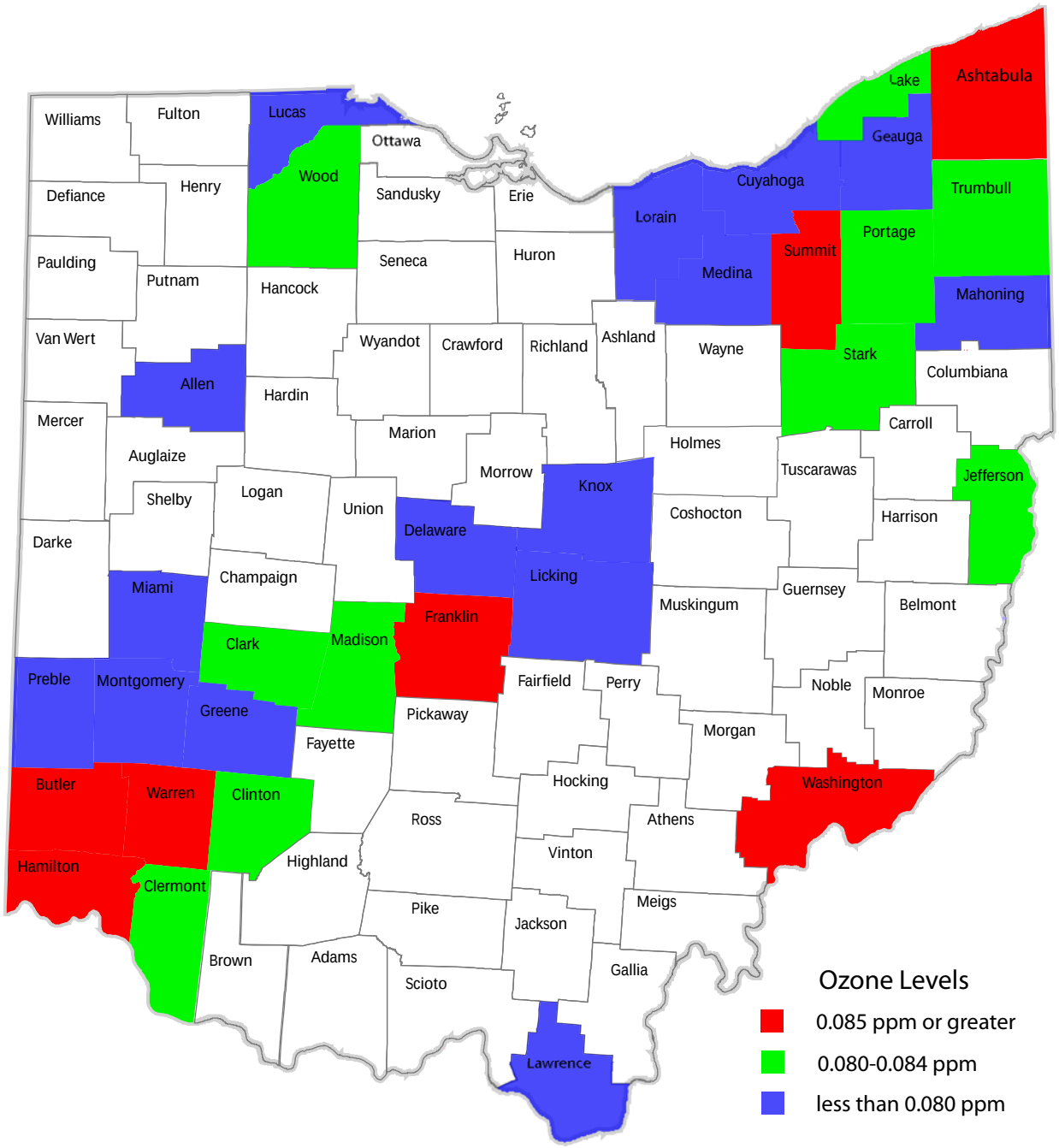


Figure 16

2005-2007 Average of the Fourth High 8-Hour Averages
using the highest reading site in each county

Lead

Figure 17

2007 Lead, Highest Quarterly Mean
(In counties where data were collected-values in ug/m3)

TABLE 3
VIOLATIONS OF AIR QUALITY STANDARDS BY COUNTY
2007

There were no violations of the PM_{10}, NO_2, SO_2, Lead or CO standards

$PM_{2.5}$ 2005-2007 Annual	$PM_{2.5}$ 2005-2007 24-Hour	OZONE (8-Hour) (2005-2007)
Butler	Butler	Ashtabula
Cuyahoga	Clark	Butler
Hamilton	Cuyahoga	Franklin
Jefferson	Franklin	Hamilton
Montgomery	Hamilton	Summit
Stark	Jefferson	Warren
	Mahoning	Washington
	Montgomery	
	Scioto	
	Stark	
	Summit	

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), requires 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 1998 through 2007. 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 1998-2007

SITE CATEGORY	IMPROVEMENT
Urban Area NAMS	28.6%

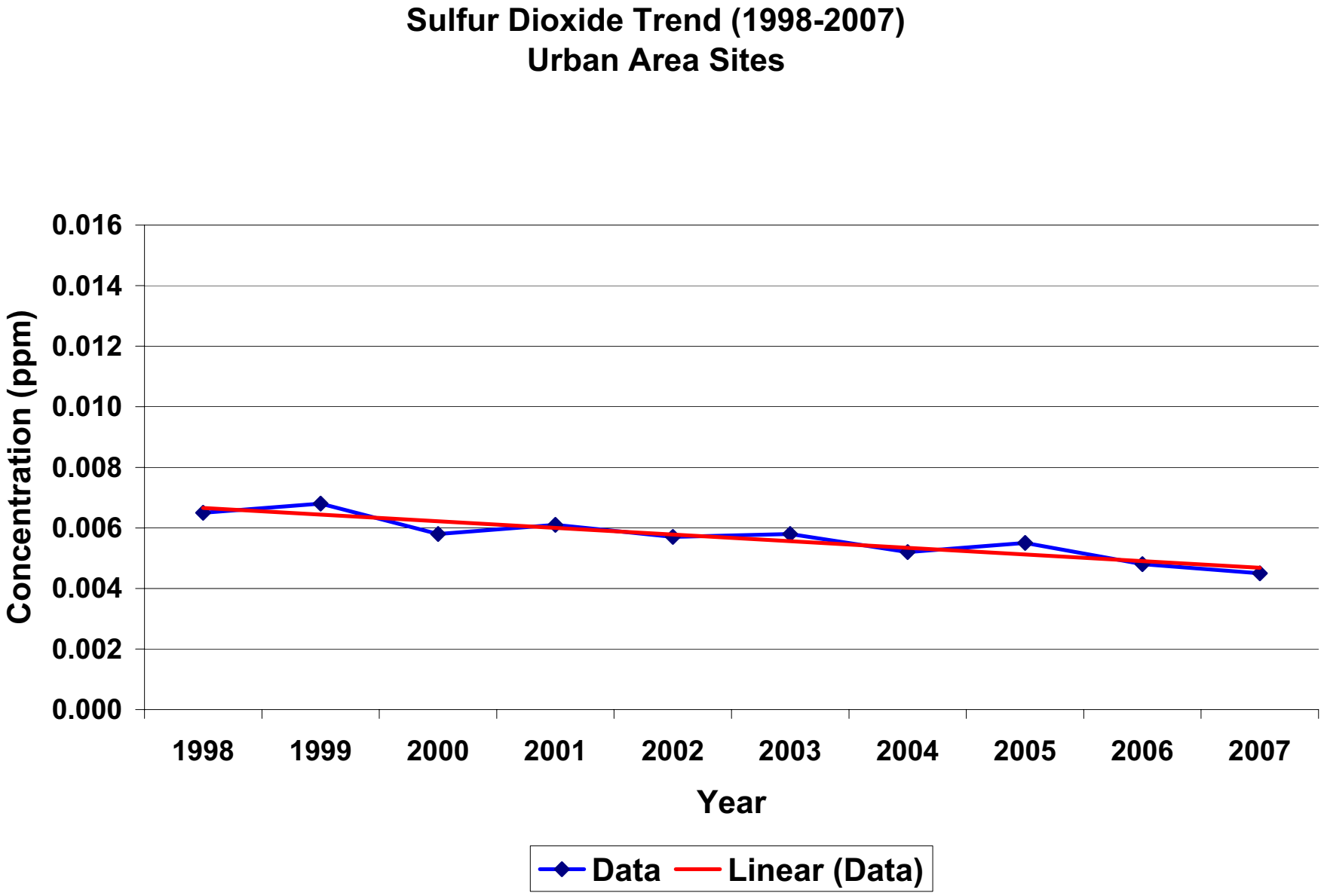

Sulfur Dioxide Trend (1998-2007)
Urban Area Sites
Concentration (ppm)
0.016
0.014
0.012
0.010
0.008
0.006
0.004
0.002
0.000
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
Year
Data
Linear (Data)

Figure 18

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.

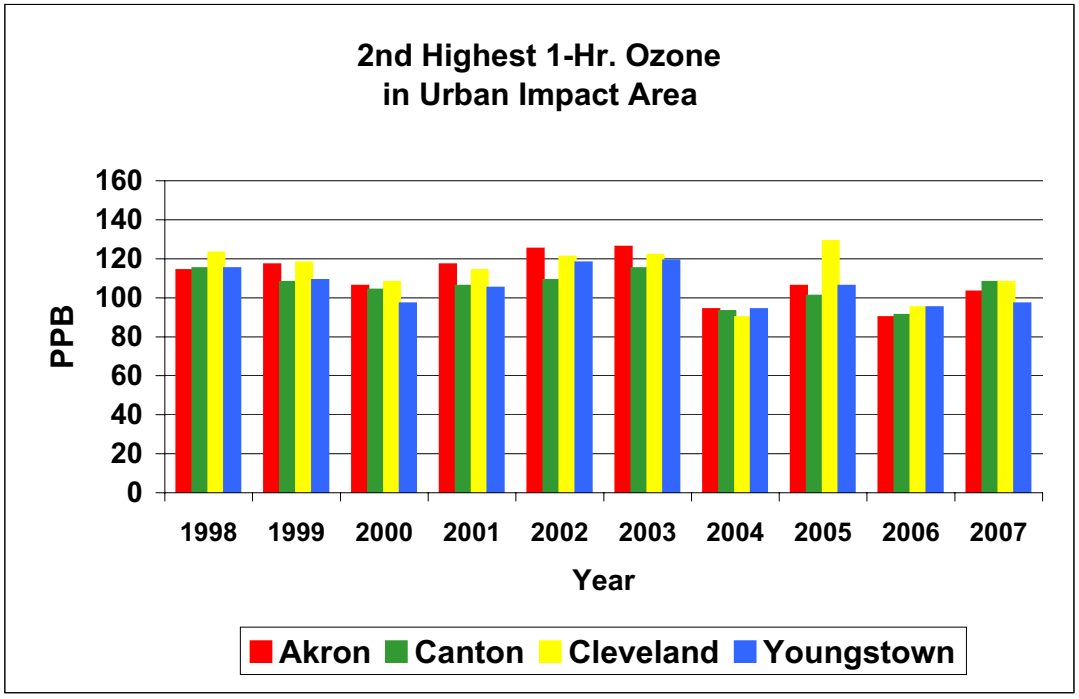
One Hour Data:

Information is presented from eight metropolitan areas in Ohio for the period of 1998 through 2007. Figure 19 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 1998 through 2007. The year listed is the last year of the three year period. Figure 20 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 0.08 parts per million (84 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 2007.


2nd Highest 1-Hr. Ozone
in Urban Impact Area
PPB
160
140
120
100
80
60
40
20
0
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
Year
Akron
Canton
Cleveland
Youngstown

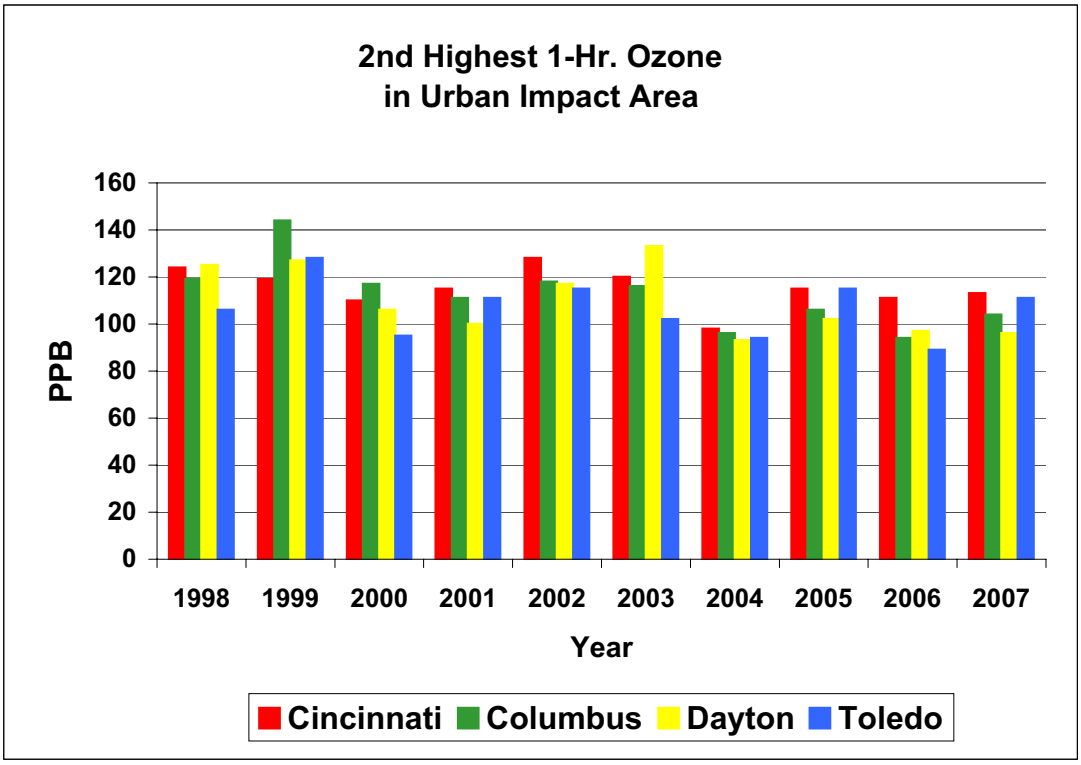
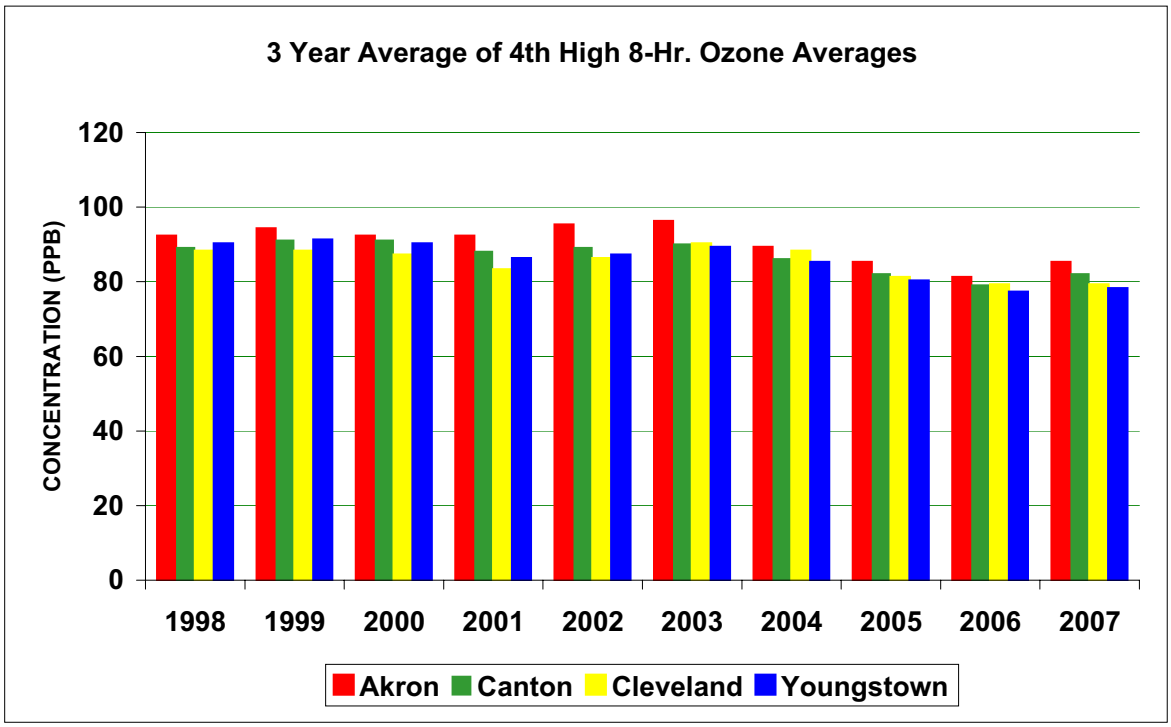

2nd Highest 1-Hr. Ozone
in Urban Impact Area
PPB
160
140
120
100
80
60
40
20
0
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
Year
Cincinnati
Columbus
Dayton
Toledo

Figure 19


3 Year Average of 4th High 8-Hr. Ozone Averages
CONCENTRATION (PPB)
120
100
80
60
40
20
0
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
Akron
Canton
Cleveland
Youngstown

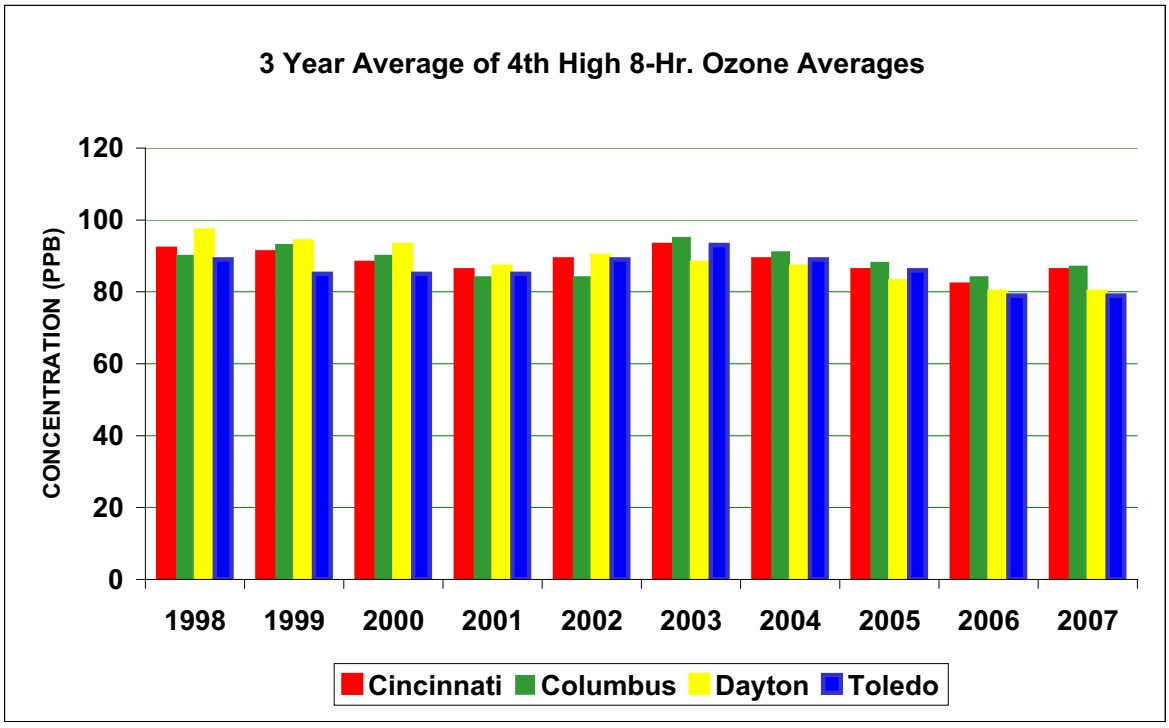
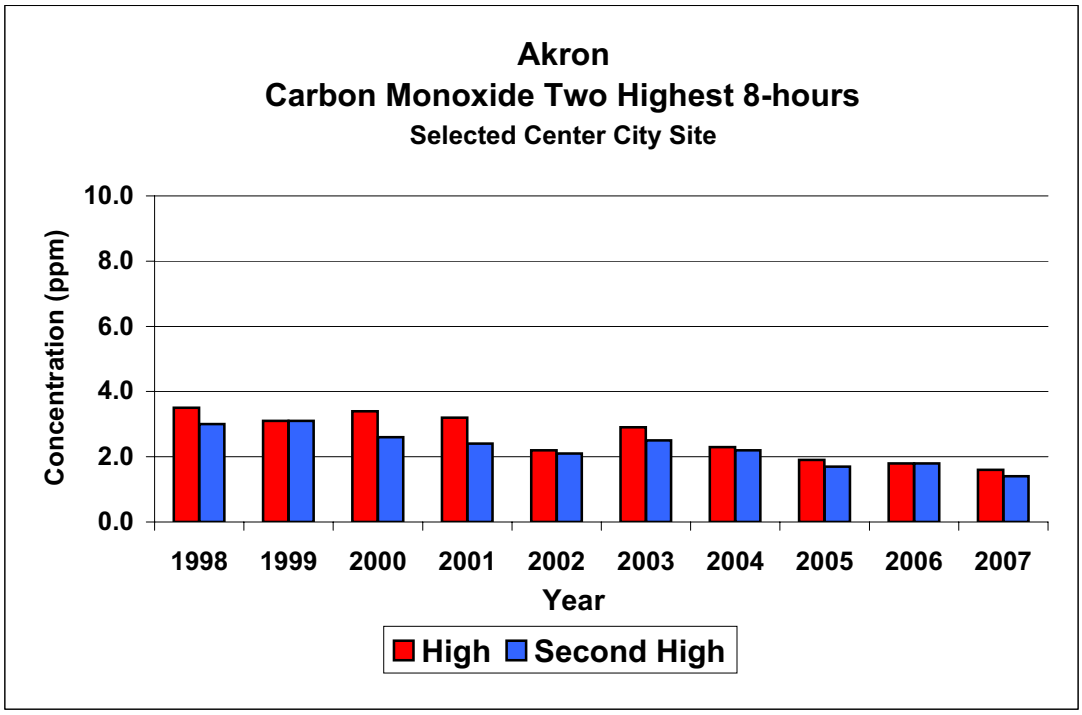

3 Year Average of 4th High 8-Hr. Ozone Averages
CONCENTRATION (PPB)
120
100
80
60
40
20
0
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
Cincinnati
Columbus
Dayton
Toledo

Figure 20

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 1998-2007 are used in the graphs. See Figure 21 for the results of this study.


Akron
Carbon Monoxide Two Highest 8-hours
Selected Center City Site
Concentration (ppm)
10.0
8.0
6.0
4.0
2.0
0.0
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
Year
High
Second High

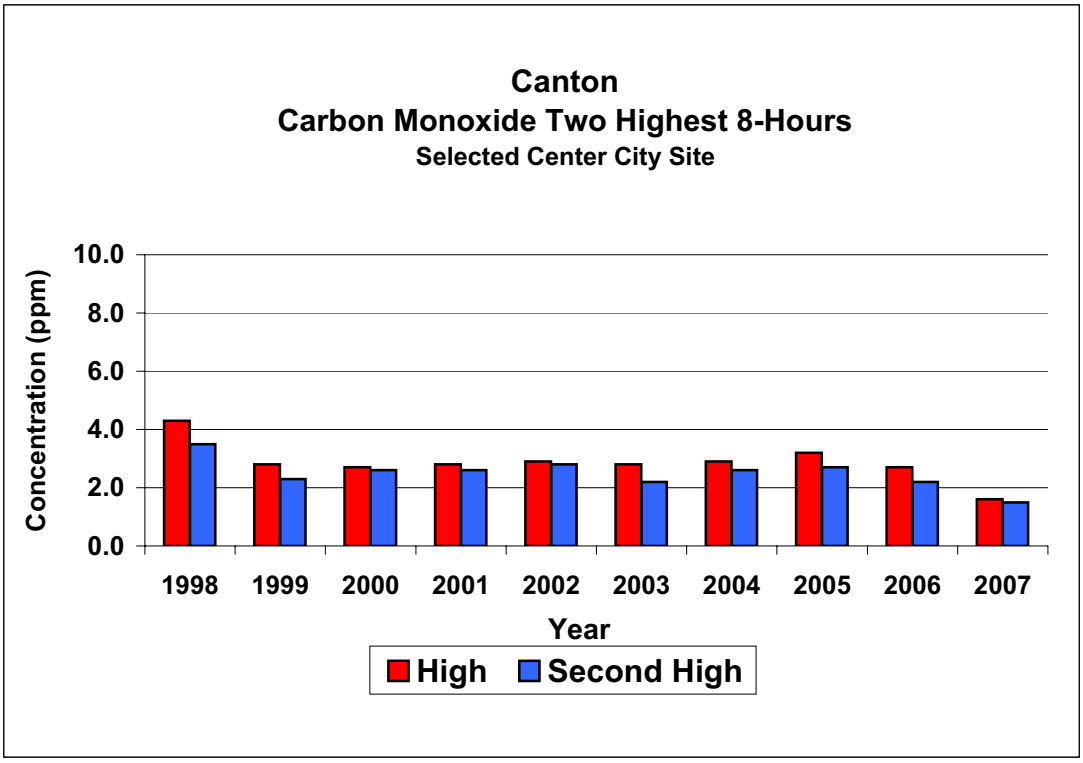
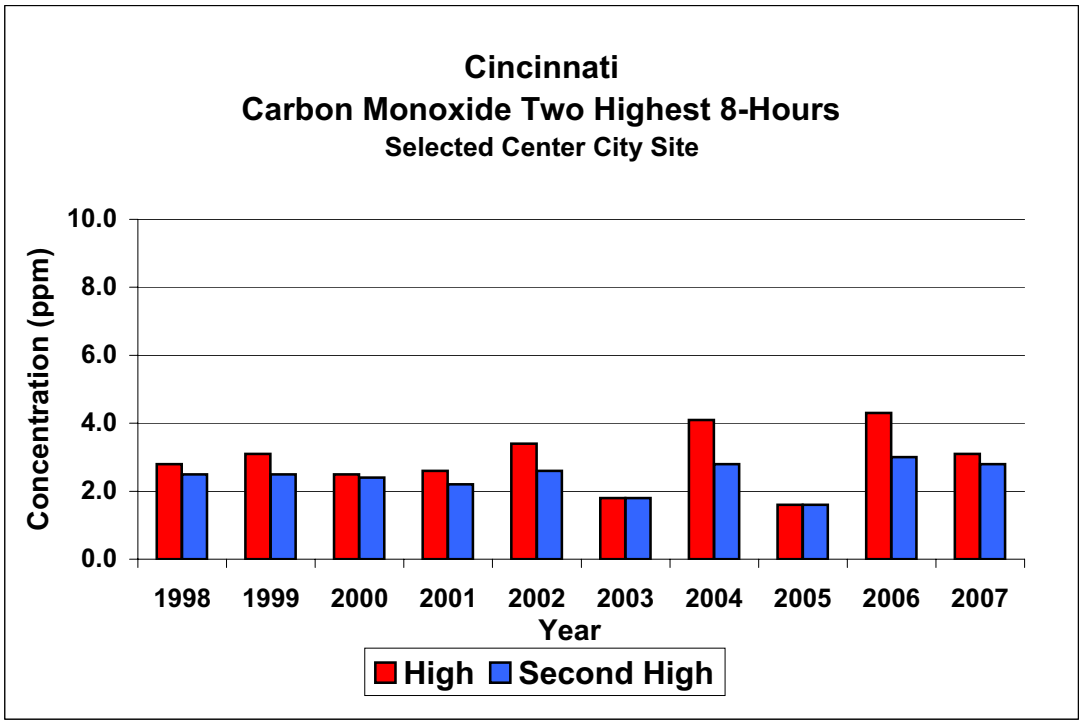

Canton
Carbon Monoxide Two Highest 8-Hours
Selected Center City Site
Concentration (ppm)
10.0
8.0
6.0
4.0
2.0
0.0
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
Year
High
Second High

Figure 21



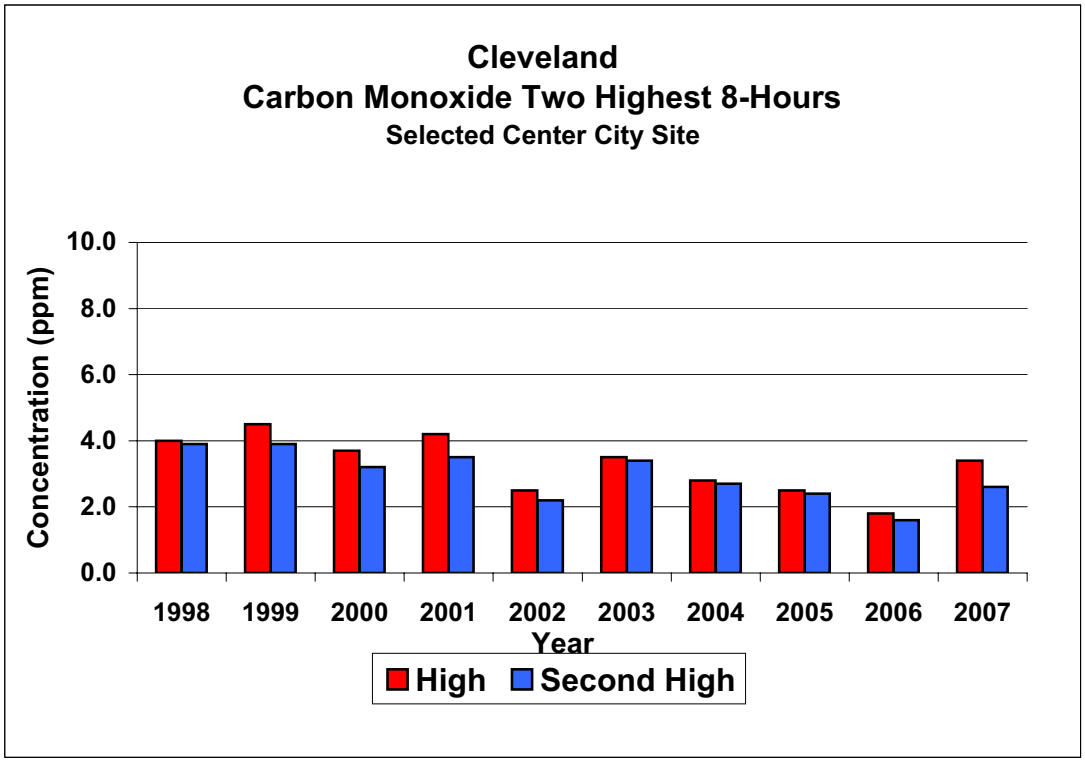
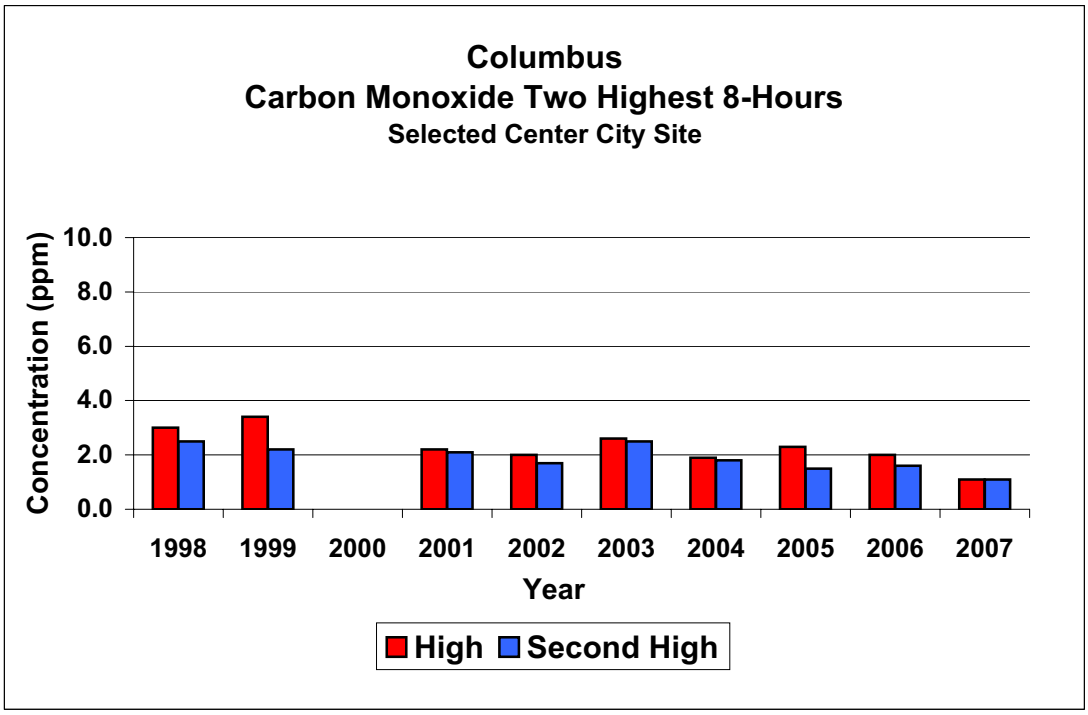


Figure 21 (continued)



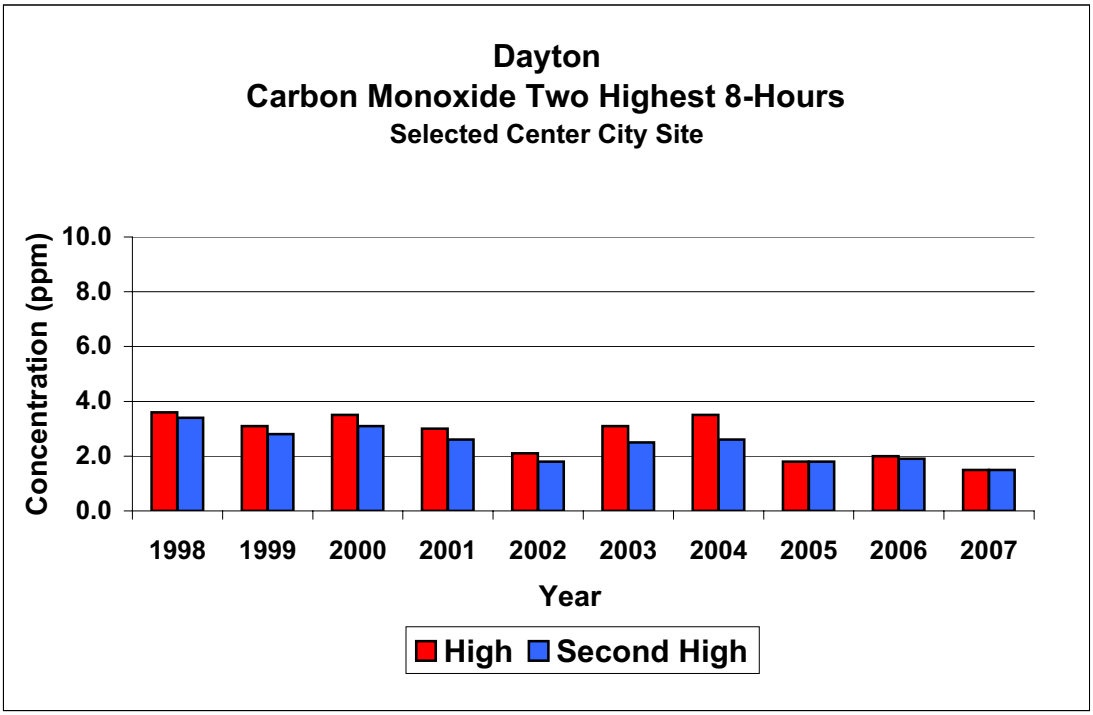
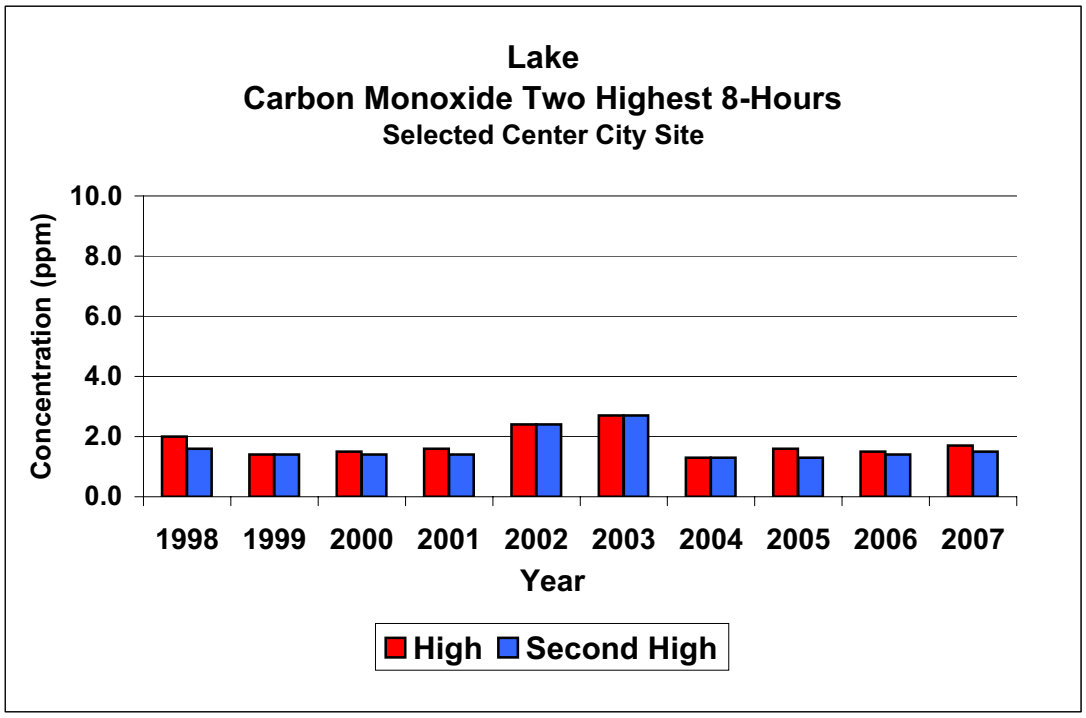


Figure 21 (continued)



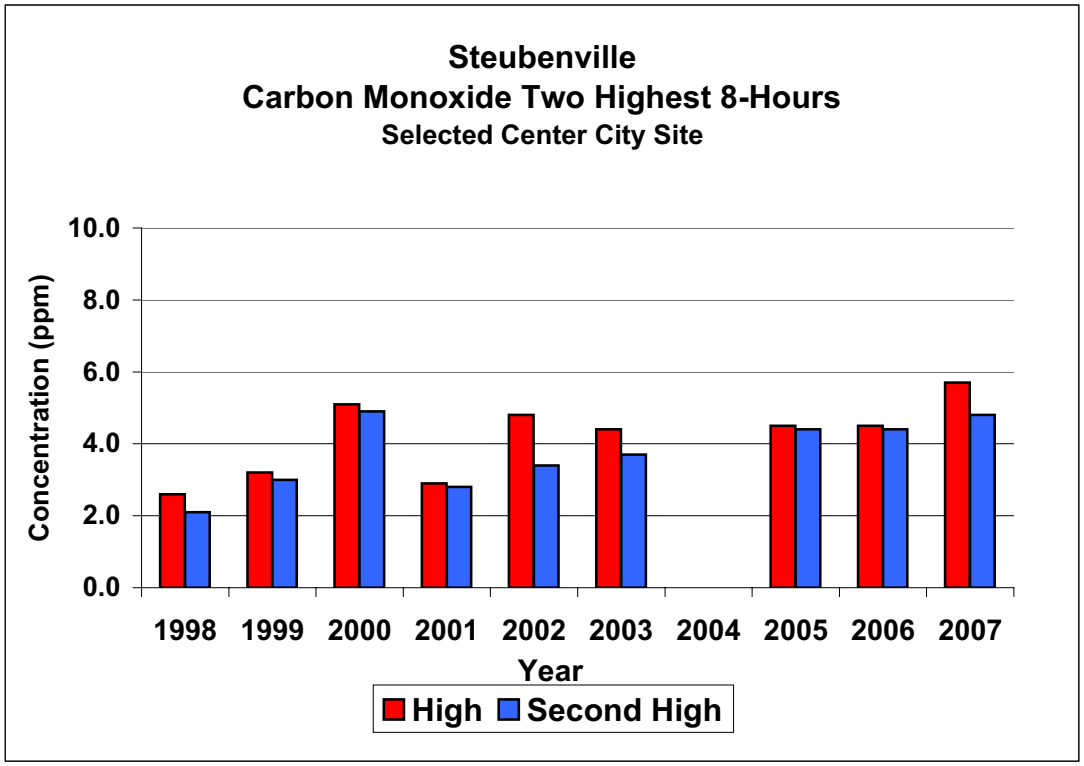


Figure 21 (continued)

IV. QUALITY ASSURANCE PROGRAM

A. GENERAL

In 1981, Ohio established a quality assurance program to detect, evaluate and correct problems in acquiring valid data. This program, which follows the requirements of Appendix A of 40 CFR Part 58, stresses control and assessment of errors in the monitoring process.

Control requirements are met by implementing quality control policies, procedures, and corrective actions. Assessment requirements are met by measuring, calculating and reporting the accuracy and precision of the data.

Quality control starts with the instruments in the network and the organizations which run them. A determination of the precision and accuracy of the instruments is the means by which this is done.

Precision and accuracy measurements are made on all NAMS and SLAMS instruments operated by a local air agency (LAA) or district office (DO). Individual precision and accuracy values are then determined for each LAA or DO and for each pollutant being monitored.

B. Discussion of Accuracy and Precision Procedures

Accuracy requirements for TSP, PM_{10} and Lead samplers include quarterly audits of the flow rate of 25% of the monitoring sites against a known flow rate. Each sampler is audited at least once per year. For SO_2, NO_2, O_3, and CO, quarterly audits of at least 25% of the analyzers are done. During the audits the analyzers are tested with a gas in three specific concentration ranges. Accuracy for $PM_{2.5}$ is determined by collocating samplers at 25% of the sites each calendar quarter.

Precision requirements for TSP, PM_{10}, $PM_{2.5}$ and Lead are met by selecting two sites in an area of expected highest concentration for side-by-side (collocation) sampling. The determination for SO_2, NO_2, O_3, and CO includes a one point precision check against a gas of known concentration at least once every two weeks for each automated analyzer. The analyzers are operated in the normal sampling mode during this check.

A series of calculations is performed to determine the precision and accuracy of each analyzer and reporting organization. Precision values are calculated from the results of individual precision checks, and accuracy estimates are calculated from the results of individual audits. Both precision results and

accuracy results are reported at the end of the calendar quarter.

The precision of the reporting organization is determined from the average of the percentage differences between monitors, the pooled standard deviation and the 95% probability limits. The accuracy of the reporting organization is determined from the average of percentage differences, the standard deviation and the 95% probability limits.

C. The Statistics of Accuracy and Precision

Precision is a determination of the repeatability of a measurement. For intermittent samplers this is measured with replicate monitors. For continuous monitors it is measured by challenging the monitor with a known concentration of gas. This concentration is in the range of 0.08-0.10ppm for all monitored pollutants except carbon monoxide (CO), which has a precision concentration range of 8-10ppm. Precision is reported as a percent error in the data reported from the monitor. The precision is reported as a range with a lower (LO) and upper (UP) probability limit. The probability limits have a 95% confidence interval, i.e., the true value of the data will be in the stated probability limit range 95% of the time.

Accuracy is the amount of variation that can be determined between the normal operator with his monitor and an independent auditor using completely independent instrumentation. Accuracy for continuous monitors measured at three different levels or concentration ranges:

Level 1	0.030 to 0.080ppm Carbon Monoxide 3 to 8ppm
Level 2	0.150 to 0.200ppm Carbon Monoxide 15 to 20ppm
Level 3	0.350 to 0.450ppm Carbon Monoxide 35 to 45ppm

Accuracy is reported as a percent error in the data reported from the monitor in each of the calibration ranges. The probability limits have a 95% confidence interval. The interpretation of the confidence intervals is the same as that for precision as stated above.

Tables 5-10 give the probability limits for accuracy and precision for each reporting organization in the state, for each criteria pollutant being measured except lead.

TABLE 5
Continuous Sulfur Dioxide
2007 Precision and Accuracy Data
95% Confidence Limits

Map No.*	LAA/DO	Precision(%)		Accuracy(%) Level 1		Level 2		Level 3	
		LO	UP	LO	UP	LO	UP	LO	UP
CDO	Central District	-04	04	-09	07	-03	03	-03	03
NEDO	Northeast District	-14	13	-01	03	02	04	03	03
NWDO	Northwest District	-06	02	-14	11	-08	07	-06	06
SEDO	Southeast District	-11	11	-11	-01	-13	04	-14	07
1.	Akron	-04	06	-09	02	-07	02	-04	00
3.	HCDOES	-06	07	-10	10	-07	08	-07	07
4.	Cleveland	-09	04	-07	09	-03	11	-04	12
5.	RAPCA	-06	04	-07	-01	-06	04	-05	07
6.	Lake County	-11	11	-04	06	-02	09	-01	09
7.	Portsmouth	-07	07	-10	16	-04	12	-02	14
8.	Toledo	-05	06	-20	05	-15	12	-15	15
9.	Mahoning-Trumbull	-01	03	-07	04	-05	06	-05	06
Estimated Ohio Average		-09	07	-10	08	-07	09	-07	09

*Map No. refers to listing of Air Pollution Control Agencies in Fig.1.

TABLE 6
Continuous Nitrogen Dioxide
2007 Precision and Accuracy Data
95% Confidence Limits

Map No.*	LAA/DO	Precision(%)		Accuracy(%)					
				Level 1		Level 2		Level 3	
		LO	UP	LO	UP	LO	UP	LO	UP
3.	HCDOES	-11	10	-20	17	-15	21	-07	14
4.	Cleveland	-08	09	-12	09	-07	08	-07	11
Estimated Ohio Average		-10	10	-13	11	-09	13	-05	11

*Map No. refers to listing of Air Pollution Control Agencies in Fig. 1.

TABLE 7
Continuous Carbon Monoxide
2007 Precision and Accuracy Data
95% Confidence Limit

Map No.*	LAA/DO	Precision(%)		Accuracy(%) Level 1		Level 2		Level 3	
		LO	UP	LO	UP	LO	UP	LO	UP
CDO	Central District	-02	02	-13	03	-10	03	-06	03
SEDO	Southeast District	-05	02	-01	02	-02	03	-03	02
1.	Akron	-02	08	-09	02	-06	00	-08	-01
2.	Canton	NA		-23	23	02	12	03	08
3.	HCDOES			03	05	(1 audit)			
4.	Cleveland	-08	00	-03	08	-05	06	-02	04
5.	RAPCA	-02	07	-06	03	-02	-01	-13	07
6.	Lake County	-08	-01	-07	12	-03	03	-03	05
Estimated Ohio Average		-07	06	-12	10	-07	07	-07	07

*Map No. refers to listing of Air Pollution Control Agencies in Fig.1.

TABLE 8
Continuous Ozone
2007 Precision and Accuracy Data
95% Confidence Limits

Map No.*	LAA/DO	Precision(%)		Accuracy(%) Level 1		Level 2		Level 3	
		LO	UP	LO	UP	LO	UP	LO	UP
CDO	Central District	-05	04	-05	04	-02	02	-02	01
NEDO	Northeast District	-03	04	-01	04	-01	03	-01	03
NWDO	Northwest District	-03	06	-06	04	-03	01	-02	01
SEDO	Southeast District	-08	09	-07	08	-04	02	-04	02
SWDO	Southwest District	-02	07	-12	04	-04	02	-03	01
1.	Akron	-04	05	-08	06	-06	05	-05	05
2.	Canton	-05	15	-30	24	-21	13	-20	11
3.	HCDOES	-09	12	-05	02	-02	04	-02	04
4.	Cleveland	-03	05	00	06	00	06	01	04
5.	RAPCA	-03	03	-04	00	-03	01	-02	00
6.	Lake County	-05	04	-07	07	-05	04	-05	04
7.	Portsmouth	-09	09	-09	04	-09	05	-09	05
8.	Toledo	-22	18	-08	03	-10	03	-09	02
9.	Mahoning-Trumbull	-01	01	-01	04	00	02	01	02
Estimated Ohio Average		-07	07	-07	05	-07	05	-07	05

*Map No. refers to listing of Air Pollution Control Agencies in Fig.1.

TABLE 9
PM-2.5
2007 Precision and Accuracy Data
95% Confidence Limits

Map No.*	LAA/DO	Precision(%) Coefficient of Variation			Accuracy	
		LO	UP	CV	LO	UP
CDO	Central District	-23	23	8.39	-02	03
NEDO	Northeast District	-13	14	4.06	00	04
SEDO	Southeast District	-39	19	11.98	-01	00
1.	Akron	-11	09	3.42	-02	02
2.	Canton	-18	09	3.87	-03	02
3.	HCDOES	-14	14	3.19	-03	03
4.	Cleveland	-12	12	4.6	00	06
5.	RAPCA	-20	30	9.55	-04	04
6.	Lake County	-18	20	6.95	-02	01
7.	Portsmouth	-13	23	6.66	00	04
8.	Toledo	-11	18	5.28	-08	06
9.	Mahoning-Trumbull	-11	12	3.43	-03	03
Estimated Ohio Average		-19	18		-03	05

*Map No. refers to listing of Air Pollution Control Agencies in Fig.1.

PM-10
2007 Precision and Accuracy Data
95% Confidence Limits

Map No.*	LAA/DO	Precision(%)		Accuracy	
		LO	UP	LO	UP
CDO	Central District	-10	11	-03	03
NEDO	Northeast District	-10	18	-04	08
NWDO	Northwest District	-36	39	-13	10
SEDO	Southeast District	-26	21	-05	05
3.	HCDOES	-11	07	-01	05
4.	Cleveland	-35	35	-06	11
5.	RAPCA	-08	09	-04	02
6.	Lake County	-13	09	-07	03
7.	Portsmouth	-13	12	-09	04
9.	Mahoning-Trumbull	-11	12	-03	03
Estimated Ohio Average		-26	32	-07	08

*Map No. refers to listing of Air Pollution Control Agencies in Fig.1.

V. AIR QUALITY DATA 2007

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}.

Since 1987 TSP sampling has been gradually replaced by ten micron particulate sampling (PM_{10}). There were over 200 TSP monitors in 1987. In 2007 there were 10 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	2007	091	60	110	95	93	90	50.6	46.1	1.6		0
39-029-0020	1	0807	East Liverpool	Columbiana	2220 MICHIGAN	2007	091	54	140	133	123	115	53.2	44.9	1.8		0
39-035-0038	1	0229	Cleveland	Cuyahoga	2547 ST TIKHON	2007	091	53	168	129	116	115	59.7*	53.7	1.6		0
39-035-0042	1	0229	Cleveland	Cuyahoga	3136 LORAIN AVE., F.S. 4	2007	091	57	153	131	129	107	50.9	41.3	2.0		0
39-035-0049	1	0229	Cleveland	Cuyahoga	E. 56TH ST.	2007	091	59	210	165	133	132	73.1	66.3	1.6		0
39-035-0050	1	0229	Cleveland	Cuyahoga	GRANT RD.	2007	091	60	163	150	135	134	62.1	54.0	1.7		0
39-035-0061	1	0229	Cleveland	Cuyahoga	W. SIDE OF WEST 3RD.	2007	091	58	152	109	103	102	57.5	50.2	1.9		0
39-035-0068	1	0229	Cleveland	Cuyahoga	7629 BROADWAY	2007	091	4	51	42	33	17	35.8*	33.1	1.6		0
39-035-0069	1	0229	Cleveland	Cuyahoga	7300 SUPERIOR	2007	091	5	39	31	31	26	29.0*	28.1	1.3		0
39-061-0001	2	1259	Cincinnati	Hamilton	800 VINE ST.	2007	091	57	76	71	70	70	42.2	39.7	1.4		0

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

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 $\mu g/m^3$ annual arithmetic mean (average over three years' data). The 24-hour standard, not to be exceeded more than once, was 150 $\mu g/m^3$. The standard is that the 24-hour level of 150 $\mu g/m^3$ 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 2007 monitors were operated at 42 sites.

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

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 >150	EST DAYS >150	WTD ARITH MEAN	CERT	EDT
39-003-0006	1	0743	Lima	Allen	1314 FINDLAY RD.	2007	062	55	60	55	92	37	35	29	29	0	0	22.7		0
39-003-0007	1	0743	Lima	Allen	ROUSCH RD.	2007	062	53	60	53	88	31	27	25	23	0	0	17.3		0
39-003-0008	1	0743	Lima	Allen	NORTH STREET	2007	062	55	60	55	92	36	30	29	26	0	0	19.4		0
39-017-0003	1	1259	Middletown	Butler	BONITA & ST JOHN	2007	063	60	60	60	100	48	44	42	40	0	0	23.3		0
39-017-0015	1	1259	Middletown	Butler	3901 LEFFERSON	2007	063	59	60	59	98	57	55	51	46	0	0	26.5		0
39-029-0020	1	0807	East Liverpool	Columbiana	2220 MICHIGAN	2007	062	58	60	58	97	52	52	50	48	0	0	27.8		0
39-029-0022	1	0807	East Liverpool	Columbiana	500 MARYLAND	2007	062	56	60	56	93	62	58	55	49	0	0	27.6		0
39-035-0027	1	0229	Cleveland	Cuyahoga	2200 W 28TH ST.	2007	063	58	60	58	97	70	53	47	47	0	0	24.2		0
39-035-0038	1	0229	Cleveland	Cuyahoga	2547 ST TIKHON	2007	063	316	182	166	91	84	79	78	76	0	0	29.4*		0
39-035-0045	1	0229	Cleveland	Cuyahoga	4950 BROADWAY AVE.	2007	063	57	60	57	95	48	47	46	45	0	0	27.4		0
39-035-0060	1	0229	Cleveland	Cuyahoga	E. 14TH & ORANGE	2007	063	55	60	55	92	84	63	56	56	0	0	30.7		0
39-035-0060	3	0229	Cleveland	Cuyahoga	E. 14TH & ORANGE	2007	079	8425	365	351	96	101	100	85	84	0	0	30.0		0
39-035-0065	1	0229	Newburgh Heights	Cuyahoga	4600 HARVARD AVE.	2007	063	58	60	58	97	91	73	67	66	0	0	34.1		0
39-035-1002	1	0229	Brook Park	Cuyahoga	16900 HOLLAND RD.	2007	063	57	60	57	95	49	44	35	33	0	0	19.8		0
39-049-0024	1	0805	Columbus	Franklin	STATE FAIRGROUNDS	2007	063	59	60	59	98	123	76	72	70	0	0	36.2		0
39-049-0034	1	0805	Columbus	Franklin	KORBEL AVE.	2007	079	3834	163	161	99	59	56	56	56	0	0	21.1*		0
39-057-0005	1	0287	Yellow Springs	Greene	100 DAYTON ST.	2007	062	56	60	56	93	48	38	30	30	0	0	17.7		0
39-061-0014	1	1259	Cincinnati	Hamilton	SEYMOUR &	2007	063	59	60	59	98	51	49	49	46	0	0	26.3		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 >150	EST DAYS >150	WTD ARITH MEAN	CERT	EDT
39-061-0040	1	1259	Cincinnati	Hamilton	VINE ST. 250 WM. HOWARD TAFT	2007	063	56	60	56	93	46	45	43	42	0	0	24.6		0
39-061-5001	1	1259	Lockland	Hamilton	101 COOPER AVE.	2007	063	52	60	52	87	47	46	45	41	0	0	25.2*		0
39-063-0002	1	0743	Findlay	Hancock	9860 C.R. 313	2007	062	48	60	48	80	30	27	27	26	0	0	17.5*		0
39-063-0003	1	0743	Findlay	Hancock	9860 CR 313	2007	062	53	60	53	88	36	35	35	33	0	0	22.3		0
39-063-0004	1	0743	Findlay	Hancock	C.R. 144	2007	062	53	60	53	88	35	34	31	31	0	0	21.4		0
39-081-0001	1	0809	Not in a city	Jefferson	1004 THIRD ST. BRILLIANT	2007	063	60	60	60	100	53	48	47	46	0	0	25.8		0
39-081-0017	1	0809	Steubenville	Jefferson	618 LOGAN ST.	2007	063	59	60	59	98	61	58	53	52	0	0	28.9		0
39-081-1001	1	0809	Mingo Junction	Jefferson	501 COMMERICAL	2007	063	29	30	29	97	47	44	42	41	0	0	24.6*		0
39-085-1001	1	0595	Not in a city	Lake	325 VINE ST.	2007	062	58	60	58	97	61	52	43	41	0	0	19.4		0
39-087-0010	1	0880	Ironton	Lawrence	2128 S. 9TH	2007	062	58	60	58	97	39	38	37	35	0	0	21.1		0
39-093-3002	1	0807	Sheffield	Lorain	2180 LAKE BREEZE	2007	062	53	57	53	93	48	47	45	40	0	0	20.3		0
39-095-1003	2	0220	Toledo	Lucas	LEE & FRONT	2007	079	8672	365	359	98	114	94	88	77	0	0	23.5		0
39-099-0005	1	0634	Youngstown	Mahoning	145 MADISON AVE. F.S. #7	2007	063	59	60	59	98	54	48	40	37	0	0	21.2		0
39-099-0006	1	0634	Youngstown	Mahoning	1524 OAKLAND AVE. F.S. #5	2007	063	58	60	58	97	53	50	43	42	0	0	21.9		0
39-113-7001	1	0287	Moraine	Montgomery	2728 VIKING LANE	2007	000	59	60	59	98	61	58	51	45	0	0	26.4		0
39-113-7001	2	0287	Moraine	Montgomery	2728 VIKING LANE	2007	000	59	60	59	98	60	59	52	45	0	0	26.5		0
39-145-0013	1	0880	New Boston	Scioto	4862 GALLIA	2007	062	60	60	60	100	44	41	37	34	0	0	20.7		0
39-145-0019	1	0880	Portsmouth	Scioto	605 WASHINGTON	2007	062	59	60	59	98	38	38	32	28	0	0	19.8		0
39-145-0020	1	1299	Franklin Furnace	Scioto	2840 BACK RD.	2007	150	8729	365	365	100	56	53	50	48	0	0	19.9		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 >150	EST DAYS >150	WTD ARITH MEAN	CERT	EDT
39-145-0021	1	1299	Franklin Furnace	Scioto	2446 GALLIA PIKE	2007	150	8712	365	363	99	99	83	74	72	0	0	26.0		0
39-145-0022	1	1299	Franklin Furnace	Scioto	1740 GALLIA PIKE	2007	150	8664	365	361	99	66	52	51	50	0	0	20.4		0
39-155-0005	1	0634	Warren	Trumbull	540 LAIRD AVE.	2007	062	60	60	60	100	55	44	40	37	0	0	20.3		0
39-155-0006	1	0634	Warren	Trumbull	2323 MAIN AVE.	2007	062	60	60	60	100	46	39	38	36	0	0	20.2		0
39-155-0007	1	0634	Warren	Trumbull	2609 DRAPER ST. S.E.	2007	062	59	60	59	98	56	45	41	37	0	0	19.3		0
39-167-0006	1	0809	Belpre	Washington	S.R. 7, ELKEM METALS	2007	063	34	35	34	97	59	51	40	39	0	0	24.9*		0
39-175-0008	1	0808	Carey	Wyandot	EAST NORTH ST.	2007	063	48	60	48	80	167	97	76	74	1	4.3	36.9*		0
39-175-0009	1	0808	Carey	Wyandot	GREER RD	2007	063	51	60	51	85	66	65	60	59	0	0	28.5		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 98th percentile concentration averaged over three consecutive years, is less than or equal to 35µg/m^3.

The 24-Hour 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 50 $PM_{2.5}$ sites in 2007. Those 50 sites have a total of 93 monitors reporting data. There are 23 continuous monitors and 15 speciation monitors in addition to the 46 Federal Reference monitors.

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

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
39-009-0003	1	0809	Not in a city	Athens	S.R. 377 GIFFORD STATE FOREST	2007	120	56	41.6	37.2	31.9	26.9	37.2	12.99		0
39-017-0003	1	1259	Middletown	Butler	BONITA & ST JOHN	2007	120	118	37.8	37.1	36.8	35.3	36.8	15.41		0
39-017-0016	1	1259	Fairfield	Butler	400 NILLES RD.	2007	120	115	38.0	36.8	34.5	34.0	34.5	14.94		0
39-017-1004	1	1259	Middletown	Butler	HOOK FIELD AIRPORT	2007	120	112	37.6	36.9	36.4	35.5	36.4	14.63		0
39-023-0005	1	0287	Springfield	Clark	350 N. FOUNTAIN AVE.	2007	120	121	42.9	38.6	37.2	33.1	37.2	14.61		0
39-025-0022	1	1259	Batavia	Clermont	2400 CLERMONT CENTER DR.	2007	120	114	40.8	34.1	33.5	33.1	33.5	14.01		0
39-035-0027	1	0229	Cleveland	Cuyahoga	2200 W 28TH ST.	2007	120	100	39.0	39.0	34.4	30.0	39.0	14.49		0
39-035-0034	1	0229	Cleveland	Cuyahoga	891 E. 152 ST.	2007	120	104	37.8	37.5	36.7	31.4	36.7	13.58		0
39-035-0038	1	0229	Cleveland	Cuyahoga	2547 ST TIKHON	2007	120	96	42.0	39.7	38.8	35.3	39.7	16.25*		0
39-035-0045	1	0229	Cleveland	Cuyahoga	4950 BROADWAY AVE.	2007	120	103	37.8	37.0	35.2	31.8	35.2	15.27		0
39-035-0060	1	0229	Cleveland	Cuyahoga	E. 14TH & ORANGE	2007	120	108	39.9	39.8	38.7	36.8	38.7	15.76*		0
39-035-0060	2	0229	Cleveland	Cuyahoga	E. 14TH & ORANGE	2007	120	3	23.0	17.5	11.2		23.0	17.23*		0
39-035-0065	1	0229	Newburgh Heights	Cuyahoga	4600 HARVARD AVE.	2007	120	106	41.5	39.1	37.5	33.8	37.5	15.80		0
39-035-1002	1	0229	Brook Park	Cuyahoga	16900 HOLLAND RD.	2007	120	100	35.4	35.2	31.8	28.5	35.2	13.43		0
39-049-0024	1	0805	Columbus	Franklin	STATE FAIRGROUNDS	2007	120	114	40.5	34.2	34.2	31.2	34.2	14.64		0
39-049-0025	1	0805	Columbus	Franklin	1700 ANN ST.	2007	120	109	40.0	35.6	35.5	31.6	35.5	14.67		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.	2007	120	2	13.9	12.9			13.9	13.40*		0
39-049-0081	1	0805	Columbus	Franklin	5750 MAPLE CANYON	2007	120	106	45.1	38.5	33.5	30.9	33.5	13.11		0
39-057-0005	1	0287	Yellow Springs	Greene	100 DAYTON ST.	2007	120	116	38.7	34.6	32.6	32.2	32.6	13.28		0
39-061-0006	1	1259	Cincinnati	Hamilton	11590 GROOMS RD	2007	120	296	40.8	39.2	38.1	37.2	34.7	14.63		0
39-061-0014	1	1259	Cincinnati	Hamilton	SEYMOUR & VINE ST.	2007	120	109	41.5	38.1	36.5	36.2	36.5	16.59		0
39-061-0040	1	1259	Cincinnati	Hamilton	250 WM. HOWARD TAFT	2007	120	107	41.9	35.3	34.7	33.1	34.7	15.09		0
39-061-0042	1	1259	Cincinnati	Hamilton	2101 W. 8TH ST.	2007	120	110	39.2	36.3	35.9	33.6	35.9	15.90		0
39-061-0043	1	1259	Sharonville	Hamilton	3254 E. KEMPER RD.	2007	120	116	37.2	34.0	34.0	32.6	34.0	14.85		0
39-061-7001	1	1259	Norwood	Hamilton	2059 SHERMAN AVE.	2007	120	111	40.9	35.0	33.7	32.0	33.7	15.09		0
39-061-8001	1	1259	St. Bernard	Hamilton	300 MURRAY RD.	2007	120	110	37.4	36.3	35.4	32.8	35.4	16.07		0
39-081-0017	1	0809	Steubenville	Jefferson	618 LOGAN ST.	2007	120	111	49.6	44.0	43.5	39.5	43.5	16.19		0
39-081-1001	1	0809	Mingo Junction	Jefferson	501 COMMERICAL	2007	120	59	36.6	35.4	34.3	32.6	35.4	15.62		0
39-081-1001	2	0809	Mingo Junction	Jefferson	501 COMMERICAL	2007	120	46	38.4	35.5	35.2	33.0	38.4	16.18*		0
39-085-3002	1	0595	Painesville	Lake	71 E HIGH	2007	120	111	42.6	40.5	32.8	25.5	32.8	13.59		0
39-085-3002	2	0595	Painesville	Lake	71 E HIGH	2007	120	15	39.2	27.3	22.7	14.4	39.2	13.11*		0
39-087-0010	1	0880	Ironton	Lawrence	2128 S. 9TH	2007	120	118	44.8	40.0	35.2	34.8	35.2	14.97		0
39-093-0016	1	0807	Lorain	Lorain	214 E. 34TH ST.	2007	120	20	21.2	17.3	16.0	15.6	21.2	10.14*		0
39-093-3002	1	0807	Sheffield	Lorain	2180 LAKE BREEZE	2007	120	98	34.8	34.8	34.0	27.3	34.8	12.69*		0

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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
39-093-3002	2	0807	Sheffield	Lorain	2180 LAKE BREEZE	2007	120	49	34.3	32.3	30.6	26.5	34.3	12.95*		0
39-095-0024	1	0220	Toledo	Lucas	348 S. ERIE	2007	120	113	39.3	35.2	34.4	32.9	34.4	14.85		0
39-095-0024	2	0220	Toledo	Lucas	348 S. ERIE	2007	120	29	33.1	31.6	30.3	29.6	33.1	16.30*		0
39-095-0025	1	0220	Toledo	Lucas	600 COLLINS PARK	2007	120	117	35.7	34.5	34.5	33.8	34.5	14.24		0
39-095-0026	1	0220	Toledo	Lucas	4208 AIRPORT HIGHWAY	2007	120	116	37.6	34.5	33.3	32.9	33.3	14.26		0
39-099-0005	1	0634	Youngstown	Mahoning	145 MADISON AVE. F.S. #7	2007	120	59	35.9	34.4	25.1	24.4	34.4	14.23		0
39-099-0014	1	0634	Youngstown	Mahoning	345 OAKHILL AVE.	2007	120	116	37.5	34.9	33.5	30.4	33.5	14.09		0
39-103-0003	1	0012	Not in a city	Medina	6364 DEERVIEW	2007	120	110	32.9	32.0	28.7	27.7	28.7	12.69		0
39-113-0032	1	0287	Dayton	Montgomery	215 EAST THIRD ST.	2007	120	120	40.9	38.6	36.9	36.4	36.9	15.63		0
39-113-0032	2	0287	Dayton	Montgomery	215 EAST THIRD ST.	2007	120	15	33.3	28.6	20.2	17.7	33.3	14.98*		0
39-133-0002	1	0012	Ravenna	Portage	531 WASHINGTON	2007	120	113	37.4	34.6	31.0	28.7	31.0	13.67		0
39-135-1001	1	0287	Not in a city	Preble	NATIONAL TRAILS	2007	120	120	37.3	36.4	34.0	34.0	34.0	13.56		0
39-145-0013	1	0880	New Boston	Scioto	4862 GALLIA	2007	120	120	41.8	38.8	37.5	33.8	37.5	13.99		0
39-151-0017	1	0151	Canton	Stark	1330 DUEBER	2007	120	85	33.7	33.4	31.6	30.5	33.4	16.24*		0
39-151-0017	2	0151	Canton	Stark	1330 DUEBER	2007	120	4	20.5	12.7	8.4	6.7	20.5	10.28*		0
39-151-0020	1	0151	Canton	Stark	420 MARKET	2007	120	83	33.6	32.8	31.8	28.6	32.8	14.39*		0
39-153-0017	1	0012	Akron	Summit	80 BRITTAIN	2007	120	111	40.2	33.8	33.3	29.8	33.3	14.37		0
39-153-0023	1	0012	Akron	Summit	660 W. EXCHANGE ST.	2007	120	118	33.8	33.1	27.9	27.6	27.9	13.74		0
39-155-0007	1	0634	Warren	Trumbull	2609 DRAPER ST. S.E.	2007	120	119	38.3	36.2	31.5	29.6	31.5	14.17		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
39-165-0007	1	1259	Lebanon	Warren	416 SOUTHEAST ST.	2007	120	114	40.8	36.6	33.6	33.3	33.6	13.98		0

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

PM-2.5 Averages of Annual Averages

Site	County	2005	2006	2007	Average
39-009-0003	Athens	13.3	11.8	13.0	12.70
39-017-0003	Butler	19.0	14.1	15.4	16.17
39-017-0016		17.9	14.0	14.9	15.60
39-017-0017		17.2			
39-017-1004		16.9	13.4	14.6	14.97
39-023-0005	Clark	16.7	13.1	14.3	14.70
39-025-0022	Clermont	15.7	12.7	14.0	14.13
39-035-0027	Cuyahoga	17.3	13.0	14.5	14.93
39-035-0034		16.3	11.5	13.6	13.80
39-035-0038		19.2	14.9	16.3	16.80
39-035-0045		19.3	14.1	15.3	16.23
39-035-0060		19.4	15.0	15.9	16.77
39-035-0065		18.6	13.1	15.8	15.83
39-035-1002		16.8	11.6	14.6	14.33
39-049-0024	Franklin	16.4	13.6	14.5	14.83
39-049-0025		16.4	13.6	14.7	14.90
39-049-0081		14.6	12.9	13.1	13.53
39-057-0005	Greene	15.5	11.9	13.3	13.57
39-061-0006	Hamilton	16.6	13.3	14.6	14.83
39-061-0014		19.8	15.5	16.5	17.27
39-061-0040		17.5	13.6	15.1	15.40
39-061-0041		15.8			
39-061-0042		19.1	14.9	15.9	16.63
39-061-0043		16.9	14.5	14.9	15.43
39-061-7001		18.4	14.4	15.1	15.97
39-061-8001		20.0	15.9	16.1	17.33
39-081-0017	Jefferson	16.4	13.8	16.2	15.47
39-081-1001		18.1	14.6	15.6	16.10
39-085-1001	Lake	15.0			
39-085-3002			11.8	13.9	
39-087-0010	Lawrence	17.0	14.4	15.0	15.47
39-093-0016	Lorain	16.4	11.5	10.1	12.67
39-093-3002		14.7	11.4	12.9	13.00
39-095-0024	Lucas	15.8	12.7	14.8	14.43
39-095-0025		15.5	11.9	14.2	13.87
39-095-0026		15.7	12.6	14.3	14.20
39-099-0005	Mahoning	16.4	13.0	14.2	14.53
39-099-0014		16.9	13.5	14.1	14.83
39-103-0003	Medina	15.2	11.9	12.7	13.27
39-113-0031	Montgomery	16.8	13.1		
39-113-0032		17.4	13.6	15.6	15.53
39-133-0002	Portage	15.0	12.0	13.7	13.57
39-135-1001	Preble	15.6	12.5	13.6	13.90
39-145-0013	Scioto	16.2	14.3	14.0	14.83
39-151-0017	Stark	17.8	14.6	16.2	16.20
39-151-0020		16.4	11.9	14.4	14.23
39-153-0017	Summit	16.4	13.5	14.5	14.80
39-153-0023		15.7	12.8	13.7	14.07
39-155-0007	Trumbull	16.4	12.9	14.2	14.50
39-165-0007	Warren			14.0	

Sites with less than 75% capture

PM-2.5 98th Percentile Averages

Site	County	2005	2006	2007	Average
39-009-0003	Athens	33.1	29.5	37.2	33.27
39-017-0003	Butler	47.6	30.2	37.1	38.30
39-017-0016		43.4	35.2	34.5	37.70
39-017-0017		44.9			
39-017-1004		45.4	32.7	36.4	38.17
39-023-0005	Clark	41.6	30.5	37.2	36.43
39-025-0022	Clermont	38.3	31.6	33.5	34.47
39-035-0027	Cuyahoga	35.7	31.5	39.0	35.40
39-035-0034		43.8	29.1	37.5	36.80
39-035-0038		51.2	36.1	39.7	42.33
39-035-0045		46.2	29.5	37.0	37.57
39-035-0060		49.5	31.0	38.7	39.73
39-035-0065		47.9	27.8	39.1	38.27
39-035-1002		41.6	27.7	35.2	34.83
39-049-0024	Franklin	45.0	34.0	34.2	37.73
39-049-0025		44.9	34.0	35.5	38.13
39-049-0081		34.7	31.2	33.5	33.13
39-057-0005	Greene	40.0	26.5	32.6	33.03
39-061-0006	Hamilton	45.0	33.3	34.7	37.67
39-061-0014		38.5	35.2	38.1	37.27
39-061-0040		45.8	32.8	34.7	37.77
39-061-0041		37.4			
39-061-0042		44.4	34.5	35.9	38.27
39-061-0043		39.9	34.9	34.0	36.27
39-061-7001		47.1	34.0	33.7	38.27
39-061-8001		51.4	36.1	35.4	40.97
39-081-0017	Jefferson	43.8	32.1	43.5	39.80
39-081-1001		44.2	32.9	35.4	37.50
39-085-1001	Lake	43.5			
39-085-3002			32.9	39.2	36.05
39-087-0010	Lawrence	38.5	30.8	35.2	34.83
39-093-0016	Lorain	39.7	24.9	21.2	28.60
39-093-3002		33.9	27.4	34.0	31.77
39-095-0024	Lucas	45.3	25.9	34.4	35.20
39-095-0025		44.6	25.2	34.5	34.77
39-095-0026		42.9	27.1	33.3	34.43
39-099-0005	Mahoning	41.6	28.6	34.4	34.87
39-099-0014		42.6	31.1	33.5	35.73
39-103-0003	Medina	38.8	28.5	28.7	32.00
39-113-0031	Montgomery	42.9	28.9		
39-113-0032		45.0	30.3	36.9	37.40
39-133-0002	Portage	42.2	30.5	31.0	34.57
39-135-1001	Preble	39.0	28.7	34.0	33.90
39-145-0013	Scioto	40.3	30.5	37.5	36.10
39-151-0017	Stark	47.6	33.1	33.4	38.03
39-151-0020		39.3	26.1	32.8	32.73
39-153-0017	Summit	45.2	31.5	33.3	36.67
39-153-0023		42.3	30.4	27.9	33.53
39-155-0007	Trumbull	45.1	28.7	31.5	35.10
39-165-0007	Warren			33.6	

Sites with less than 75% capture

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.	2007	750	8754	110.8	107.9	105.5	104.8	17.75
39-017-1004	3	1259	Middletown	Butler	Hook Field Airport	2007	731	8275	76.6	72.7	70.7	64.8	15.09
39-023-0005	3	0287	Springfield	Clark	350 N. Fountain Ave.	2007	750	8730	75.0	63.8	63.3	62.8	14.89
39-025-0022	3	1259	Batavia	Clermont	2400 Clermont Center Dr.	2007	760	8631	64.4	63.3	62.5	62.0	14.18
39-035-0060	3	0229	Cleveland	Cuyahoga	E. 14th & Orange	2007	760	8176	299.4	193.1	186.4	168.1	15.70
39-049-0028	3	0805	Columbus	Franklin	2521 Fairwood	2007	711	8633	147.0	127.9	78.7	73.4	11.75
39-049-0029	3	0805	New Albany	Franklin	7600 Fodor Rd.	2007	760	8344	53.2	52.7	52.6	52.0	13.65
39-049-0034	3	805	Columbus	Franklin	Korbel Ave.	2007	760	3830	66.7	63.7	62.7	62.4	17.77
39-057-0005	3	0287	Yellow Springs	Greene	314 Dayton St.	2007	750	8714	83.8	77.3	75.5	71.0	14.06
39-061-0006	3	1259	Cincinnati	Hamilton	11590 Grooms Rd.	2007	731	8278	96.4	86.9	76.0	65.9	18.44
39-061-0040	3	1259	Cincinnati	Hamilton	250 Wm Howard Taft	2007	760	8510	99.6	78.0	73.3	71.7	20.64
39-081-0017	3	0809	Steubenville	Jefferson	618 Logan St.	2007	760	8415	245.8	241.5	236.7	209.2	165.37
39-085-3002	3	0595	Painesville	Lake	71 E High	2007	760	8730	72.0	65.0	56.0	55.0	13.20
39-093-3002	3	0807	Sheffield	Lorain	2180 Lake Breeze	2007	760	8703	141.9	123.3	113.3	97.9	13.30
39-095-0024	3	0220	Toledo	Lucas	348 S. Erie	2007	701	8540	225.9	204.6	142.8	94.0	12.71
39-099-0014	3	0634	Youngstown	Mahoning	345 Oakhill Ave.	2007	701	8721	91.5	82.0	80.9	76.2	13.78
39-103-0003	3	0012		Medina	6364 Deerview	2007	760	8732	72.0	71.9	70.1	69.9	15.88
39-113-0032	3	0287	Dayton	Montgomery	215 East Third St.	2007	750	8697	82.7	81.0	79.3	77.5	16.20
39-135-1001	3	0287		Preble	National Trails	2007	750	8505	70.3	66.4	64.5	62.6	13.08
39-151-0020	3	0151	Canton	Stark	420 Market	2007	711	8590	56.0	55.9	55.6	55.3	9.41
39-153-0017	3	0012	Akron	Summit	80 Brittain	2007	760	8049	76.0	71.2	69.0	67.4	14.92
39-155-0007	3	0634	Warren	Trumbull	2609 Draper St. S.E.	2007	701	8716	86.5	85.7	79.0	77.3	13.81
39-165-0007	3	1259	Lebanon	Warren	416 Southeast S.	2007	731	7650	57.8	57.0	55.6	55.4	14.75

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	2007	810	60	37.9	37.9	34.3	32.9	16.33
39-035-0038	6	1217	Cleveland	Cuyahoga	2547 St. Tikhon	2007	810	52	46.3	43.3	37.7	34.8	17.36
39-035-0060	5	1217	Cleveland	Cuyahoga	E. 14th & Orange	2007	810	103	45.3	41.4	40.9	36.3	17.00
39-035-0060	6	1217	Cleveland	Cuyahoga	E. 14th & Orange	2007	810	53	52.6	45.0	44.8	41.3	18.87
39-049-0081	6	1217	Columbus	Franklin	5750 Maple Canyon	2007	810	59	42.1	37.9	30.8	29.3	15.71
39-061-0040	5	1217	Cincinnati	Hamilton	250 Wm Howard Taft	2007	810	60	35.5	34.5	31.4	30.7	16.47
39-061-8001	5	1217	St. Bernard	Hamilton	300 Murray Rd.	2007	810	23	35.8	30.7	28.0	27.1	17.85
39-081-0017	5	1217	Steubenville	Jefferson	617 Logan St.	2007	810	15	49.8	30.4	26.0	23.5	19.53
39-081-1001	5	1217	Mingo Junction	Jefferson	501 Commercial	2007	810	33	37.5	36.3	35.5	33.2	20.07
39-087-0010	5	1217	Ironton	Lawrence	2128 S 9th	2007	810	57	47.1	39.3	39.0	37.7	18.33
39-093-3002	5	1217	Sheffield	Lorain	2180 Lake Breeze	2007	810	56	78.7	44.5	39.1	31.8	16.38
39-095-0026	5	1217	Toledo	Lucas	4208 Airport Highway	2007	810	59	36.3	35.6	35.5	34.4	15.54
39-099-0014	5	1217	Youngstown	Mahoning	345 Oakhill Ave.	2007	810	59	80.0	39.5	38.6	29.7	16.93
39-113-0032	5	1217	Dayton	Montgomery	215 East Third St.	2007	810	59	59.9	42.9	38.6	35.7	17.51
39-151-0017	5	1217	Canton	Stark	1330 Dueber	2007	810	48	66.2	36.7	33.0	32.4	17.25
39-153-0023	5	1217	Akron	Summit	660 W. Exchange St.	2007	810	52	34.3	34.2	30.7	26.0	15.10

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. 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 flame photometric detectors or pulsed fluorescent techniques.

Flame photometric analyzers draw ambient air through selective scrubbers that remove all sulfur compounds except SO_2. The sample is then burned in a hydrogen flame, and a photodetector senses the number of sulfur atoms present.

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.

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

Sulfur dioxide (42401) Ohio Parts per million (007)

SITE ID	POC	PQAO	CITY	COUNTY	ADDRESS	YEAR	METH	# OBS	1ST MAX 24-HR	2ND MAX 24-HR	#OBS >0.14	1ST MAX 3-HR	2ND MAX 3-HR	#OBS >0.5	1ST MAX 1-HR	2ND MAX 1-HR	ARITH MEAN	CERT	EDT
39-001-0001	1	0880	West Union	Adams	210 N. WILSON DR.	2007	061	8332	.022	.021	0	.062	.057	0	.140	.079	.0045		0
39-003-0002	1	0808	Not in a city	Allen	2650 BIBLE RD.	2007	061	8374	.012	.011	0	.022	.017	0	.027	.025	.0024		0
39-007-1001	1	0807	Conneaut	Ashtabula	770 LAKE RD.	2007	000	8257	.015	.013	0	.034	.029	0	.042	.041	.0032		0
39-013-3002	2	0809	Shadyside	Belmont	EAST 40 ST.	2007	000	7510	.032	.026	0	.095	.089	0	.141	.129	.0063		0
39-017-0004	1	1259	Hamilton	Butler	SCHULER AND BENDER	2007	060	8608	.015	.015	0	.054	.048	0	.082	.082	.0040		0
39-017-1004	1	1259	Middletown	Butler	HOOK FIELD AIRPORT	2007	060	8692	.017	.013	0	.035	.032	0	.060	.046	.0037		0
39-023-0003	1	0287	Not in a city	Clark	5400 SPANGLER	2007	000	8703	.013	.012	0	.036	.030	0	.048	.046	.0026		0
39-029-0022	1	0807	East Liverpool	Columbiana	500 MARYLAND	2007	000	8366	.025	.023	0	.092	.078	0	.210	.144	.0045		0
39-035-0038	2	0229	Cleveland	Cuyahoga	2547 ST TIKHON	2007	060	7682	.032	.032	0	.103	.091	0	.195	.122	.0074		0
39-035-0045	1	0229	Cleveland	Cuyahoga	4950 BROADWAY AVE.	2007	060	8559	.018	.014	0	.057	.050	0	.107	.083	.0031		0
39-035-0060	1	0229	Cleveland	Cuyahoga	E. 14TH & ORANGE	2007	000	8460	.034	.029	0	.071	.071	0	.160	.115	.0079		0
39-035-0065	1	0229	Newburgh Heights	Cuyahoga	4600 HARVARD AVE.	2007	000	8654	.025	.022	0	.065	.064	0	.114	.099	.0036		0
39-049-0034	1	0805	Columbus	Franklin	KORBEL AVE.	2007	060	8250	.014	.012	0	.031	.025	0	.058	.056	.0029		0
39-061-0010	2	1259	Cleves	Hamilton	6950 RIPPLE RD.	2007	060	8713	.022	.021	0	.089	.085	0	.118	.118	.0050		0
39-081-0017	1	0809	Steubenville	Jefferson	618 LOGAN ST.	2007	000	8133	.064	.057	0	.175	.163	0	.245	.211	.0060		0
39-085-0003	1	0595	Eastlake	Lake	36010 LAKESHORE	2007	061	8651	.015	.015	0	.050	.044	0	.097	.094	.0046		0
39-085-3002	1	0595	Painesville	Lake	71 E HIGH	2007	061	8376	.091	.053	0	.166	.157	0	.213	.200	.0084		0

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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QUICK LOOK REPORT (AMP450)

Sulfur dioxide (42401) Ohio Parts per million (007)

SITE ID	POC	PQAO	CITY	COUNTY	ADDRESS	YEAR	METH	# OBS	1ST MAX 24-HR	2ND MAX 24-HR	#OBS >0.14	1ST MAX 3-HR	2ND MAX 3-HR	#OBS >0.5	1ST MAX 1-HR	2ND MAX 1-HR	ARITH MEANCERT	EDT
39-087-0006	2	0880	Ironton	Lawrence	2120 S. 8TH	2007	061	8347	.022	.017	0	.038	.035	0	.065	.063	.0035	0
39-095-0008	2	0220	Toledo	Lucas	600 COLLINS PARK	2007	061	8746	.028	.025	0	.058	.057	0	.088	.087	.0058	0
39-095-0024	1	0220	Toledo	Lucas	348 S. ERIE	2007	061	8750	.016	.012	0	.045	.040	0	.067	.056	.0023	0
39-099-0013	1	0634	Youngstown	Mahoning	345 OAKHILL	2007	061	8347	.017	.017	0	.048	.044	0	.078	.077	.0047	0
39-105-1001	1	0809	Pomeroy	Meigs	MULBERRY AVE.	2007	000	8224	.023	.020	0	.087	.064	0	.123	.106	.0038	0
39-115-0004	1	0809	Not in a city	Morgan	S.R. 83	2007	000	8356	.048	.039	0	.179	.148	0	.236	.233	.0065	0
39-145-0013	1	0880	New Boston	Scioto	4862 GALLIA	2007	061	8327	.014	.012	0	.039	.036	0	.052	.049	.0019	0
39-145-0020	1	1299	Franklin Furnace	Scioto	2840 BACK RD.	2007	060	8706	.015	.014	0	.039	.033	0	.061	.054	.0039	0
39-145-0022	1	1299	Franklin Furnace	Scioto	1740 GALLIA PIKE	2007	060	7117	.018	.013	0	.037	.036	0	.051	.043	.0028	0
39-153-0017	1	0012	Akron	Summit	80 BRITTAIN	2007	060	8363	.031	.017	0	.095	.083	0	.098	.096	.0039	0
39-153-0022	1	0012	Akron	Summit	177 S. BROADWAY	2007	100	8379	.011	.010	0	.027	.026	0	.064	.059	.0033	0
39-157-0006	1	0809	Sugarcreek	Tuscarawas	527 CRESCENT DR.	2007	100	8266	.041	.026	0	.058	.056	0	.083	.082	.0060	0

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 million (ppm).

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

Nitrogen dioxide (42602) Ohio Parts per million (007)

SITE ID	POC	PQAO	CITY	COUNTY	ADDRESS	YEAR	METH	# OBS	1ST MAX 1-HR	2ND MAX 1-HR	ARITH MEAN	CERT	EDT
39-035-0060	1	0229	Cleveland	Cuyahoga	E. 14TH & ORANGE	2007	099	8390	.073	.070	.0204		0
39-035-0070	1	0229	Cleveland	Cuyahoga	13013 CORLETT AVE.	2007	099	8508	.098	.075	.0158		0
39-061-0040	1	1259	Cincinnati	Hamilton	250 WM. HOWARD TAFT	2007	074	8726	.081	.072	.0171		0

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.

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

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 >35	1ST MAX 8-HR	2ND MAX 8-HR	OBS >9	CERT	EDT
39-035-0048	1	0229	Cleveland	Cuyahoga	2026 EAST 9TH ST.	2007	093	8581	6.0	5.0	0	3.4	2.6	0		0
39-035-0051	1	0229	Cleveland	Cuyahoga	1301 E. 9TH ST.	2007	067	8282	7.0	6.7	0	3.1	2.9	0		0
39-035-0053	1	0229	Cleveland	Cuyahoga	4169 PEARL RD.	2007	093	8642	2.5	2.5	0	2.5	2.3	0		0
39-035-0070	1	0229	Cleveland	Cuyahoga	13013 CORLETT AVE.	2007	093	8576	3.8	3.0	0	2.0	1.5	0		0
39-049-0005	1	0805	Columbus	Franklin	1585 MORSE RD.	2007	000	8590	2.4	2.3	0	1.6	1.6	0		0
39-049-0036	1	0805	Columbus	Franklin	122 S. FRONT ST.	2007	000	6722	1.7	1.6	0	1.1	1.1	0		0
39-061-0021	1	1259	Cincinnati	Hamilton	100 E. 5TH ST.	2007	093	8706	4.9	4.1	0	3.1	2.8	0		0
39-081-1001	1	0809	Mingo Junction	Jefferson	501 COMMERICAL	2007	067	8687	10.5	9.7	0	5.7	4.8	0		0
39-085-0006	1	0595	Mentor	Lake	8443 MENTOR AVE.	2007	051	8702	1.9	1.8	0	1.7	1.5	0		0
39-113-0028	1	0287	Dayton	Montgomery	901 WEST FAIRVIEW AVE.	2007	000	8680	4.7	4.2	0	2.5	1.6	0		0
39-113-0034	1	0287	Dayton	Montgomery	117 SOUTH MAIN ST.	2007	054	8719	4.4	3.0	0	1.5	1.5	0		0
39-151-0020	1	0151	Canton	Stark	420 MARKET	2007	054	8311	2.1	2.1	0	1.8	1.7	0		0
39-153-0020	1	0012	Akron	Summit	800 PATTERSON AVE.	2007	054	8382	2.3	1.7	0	1.6	1.4	0		0
39-153-0022	1	0012	Akron	Summit	177 S. BROADWAY	2007	093	8363	2.7	2.5	0	1.2	1.1	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.

The National Ambient Air Quality Standard for ozone was changed on July 18, 1997. The standard was a one hour average of 0.12 ppm (see Table 1) with the number of exceedances of that standard totaled. More than three exceedances at a single site in a three year period was a violation of the standard. The one hour standard was revoked in 2006.

The current (until May 27, 2008) 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 0.08 ppm (85 ppb or greater) a violation of the standard has occurred. The first three year period to be covered by the standard was 1997 through 1999.

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.

On March 27, 2008 the U.S. EPA promulgated a new NAAQS for ozone. The new standard is 0.075 ppm as a three year average of fourth high eight hour averages. A three year average of 0.076 ppm is a violation of the standard. The new standard becomes effective on May 27, 2008. The standard in effect during 2007 is used in this report.

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 2005 through 2007 and the four highest eight hour averages during 2007. 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>/= 0.125	EST DAYS>/= .125	MISS DAYS< 0.125	CERT	EDT
39-003-0002	1	0808	Not in a city	Allen	2650 BIBLE RD.	2007	047	214	214	.095	.091	.086	.084	0	0.0	0		0
39-007-1001	1	0807	Conneaut	Ashtabula	770 LAKE RD.	2007	047	214	214	.113	.112	.111	.103	0	0.0	0		0
39-017-0004	1	1259	Hamilton	Butler	SCHULER AND BENDER	2007	087	214	214	.111	.109	.109	.106	0	0.0	0		0
39-017-1004	3	1259	Middletown	Butler	HOOK FIELD AIRPORT	2007	087	214	214	.114	.113	.110	.107	0	0.0	0		0
39-023-0001	1	0287	Springfield	Clark	5171 URBANA	2007	000	214	214	.100	.096	.095	.093	0	0.0	0		0
39-023-0003	1	0287	Not in a city	Clark	5400 SPANGLER	2007	000	213	214	.097	.095	.093	.090	0	0.0	1		0
39-025-0022	1	1259	Batavia	Clermont	2400 CLERMONT CENTER DR.	2007	000	210	214	.104	.104	.104	.101	0	0.0	1		0
39-027-1002	1	0810	Wilmington	Clinton	62 LAUREL DR.	2007	047	214	214	.109	.101	.101	.099	0	0.0	0		0
39-035-0034	1	0229	Cleveland	Cuyahoga	891 E. 152 ST.	2007	087	211	214	.093	.093	.088	.088	0	0.0	0		0
39-035-0064	1	0229	Berea	Cuyahoga	390 FAIR ST.	2007	000	210	214	.113	.108	.104	.103	0	0.0	2		0
39-035-5002	1	0229	Mayfield	Cuyahoga	6116 WILSON MILLS	2007	087	213	214	.098	.091	.090	.089	0	0.0	1		0
39-041-0002	1	0805	Delaware	Delaware	359 MAIN RD.	2007	047	213	214	.098	.097	.093	.091	0	0.0	1		0
39-049-0028	1	0805	Columbus	Franklin	2521 FAIRWOOD	2007	047	214	214	.099	.099	.097	.090	0	0.0	0		0
39-049-0029	1	0805	New Albany	Franklin	7600 FODOR RD.	2007	047	214	214	.111	.104	.102	.100	0	0.0	0		0
39-049-0037	1	0805	Columbus	Franklin	1777 E. BROAD	2007	087	213	214	.105	.098	.091	.091	0	0.0	1		0
39-049-0081	1	0805	Columbus	Franklin	5750 MAPLE CANYON	2007	047	214	214	.101	.095	.094	.092	0	0.0	0		0
39-055-0004	1	0595	Not in a city	Geauga	13000 AUBURN	2007	019	214	214	.080	.078	.075	.074	0	0.0	0		0
39-057-0006	1	0287	Xenia	Greene	541 LEDBETTER RD.,	2007	000	213	214	.101	.092	.091	.090	0	0.0	1		0
39-061-0006	1	1259	Cincinnati	Hamilton	11590 GROOMS RD	2007	087	206	214	.112	.111	.109	.106	0	0.0	6		0
39-061-0010	1	1259	Cleves	Hamilton	6950 RIPPLE RD.	2007	087	213	214	.109	.104	.102	.102	0	0.0	1		0
39-061-0040	1	1259	Cincinnati	Hamilton	250 WM. HOWARD TAFT	2007	000	212	214	.118	.104	.103	.101	0	0.0	1		0
39-081-0017	1	0809	Steubenville	Jefferson	618 LOGAN ST.	2007	047	207	214	.095	.093	.089	.089	0	0.0	0		0
39-083-0002	1	0805	Centerburg	Knox	WATER PLT, SR.	2007	087	214	214	.100	.092	.092	.087	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>/= 0.125	EST DAYS>/= .125	MISS DAYS< 0.125	CERT	EDT
					314													
39-085-0003	1	0595	Eastlake	Lake	36010 LAKESHORE	2007	019	211	214	.089	.086	.084	.083	0	0.0	0		0
39-085-3002	1	0595	Painesville	Lake	71 E HIGH	2007	019	214	214	.107	.091	.087	.086	0	0.0	0		0
39-087-0006	1	0880	Ironton	Lawrence	2120 S. 8TH	2007	019	212	214	.109	.106	.100	.095	0	0.0	2		0
39-087-0011	1	0880	Not in a city	Lawrence	S.R. 141, WILGUS	2007	019	209	214	.099	.097	.096	.096	0	0.0	1		0
39-089-0005	1	0805	Heath (Fourmile Lock)	Licking	300 LICKING VIEW DR.	2007	047	214	214	.097	.095	.091	.088	0	0.0	0		0
39-093-0018	1	0807	Sheffield	Lorain	4706 DETROIT RD.	2007	047	214	214	.092	.091	.086	.085	0	0.0	0		0
39-095-0024	1	0220	Toledo	Lucas	348 S. ERIE	2007	056	212	214	.121	.111	.100	.093	0	0.0	2		0
39-095-0027	1	0220	Waterville	Lucas	200 SOUTH RIVER RD.	2007	019	213	214	.092	.086	.085	.084	0	0.0	1		0
39-095-0034	1	0220	Not in a city	Lucas	306 N. YANDOTA	2007	056	214	214	.097	.096	.091	.091	0	0.0	0		0
39-095-0081	1	0220	Toledo	Lucas	2930 131ST ST.	2007	056	214	214	.107	.092	.092	.092	0	0.0	0		0
39-097-0007	1	0805	Not in a city	Madison	940 SR 38 SW	2007	047	212	214	.099	.098	.098	.095	0	0.0	0		0
39-099-0013	1	0634	Youngstown	Mahoning	345 OAKHILL	2007	087	214	214	.098	.096	.096	.087	0	0.0	0		0
39-103-0003	1	0012	Not in a city	Medina	6364 DEERVIEW	2007	000	214	214	.088	.081	.080	.076	0	0.0	0		0
39-109-0005	1	0287	Not in a city	Miami	3825 NORTH S. R. 589	2007	000	214	214	.091	.089	.084	.084	0	0.0	0		0
39-113-0033	1	0287	Dayton	Montgomery	1404 WEBSTER ST.	2007	000	214	214	.103	.093	.091	.087	0	0.0	0		0
39-133-1001	1	0012	Not in a city	Portage	1570 RAVENNA RD.	2007	047	208	214	.109	.095	.092	.088	0	0.0	0		0
39-135-1001	1	0287	Not in a city	Preble	NATIONAL TRAILS	2007	000	214	214	.089	.087	.083	.083	0	0.0	0		0
39-151-0016	1	0151	Canton	Stark	515 25TH. ST.	2007	047	205	214	.099	.096	.095	.095	0	0.0	3		0
39-151-0021	1	0151	Brewster	Stark	245 W. 5TH ST.	2007	047	75	90	.096	.095	.091	.091	0	0.0	0		0
39-151-0022	1	0151	Brewster	Stark	45 S. WABASH AVENUE, S.R 93	2007	047	109	125	.100	.099	.096	.096	0	0.0	2		0
39-151-4005	1	0151	Alliance	Stark	1175 WEST VINE	2007	047	210	214	.109	.108	.098	.095	0	0.0	1		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>/= 0.125	EST DAYS>/= .125	MISS DAYS< 0.125	CERT	EDT
39-153-0020	1	0012	Akron	Summit	800 PATTERSON AVE.	2007	087	214	214	.107	.103	.102	.101	0	0.0	0		0
39-155-0009	1	0634	Not in a city	Trumbull	6346 KINSMAN-BLOOMFIELD RD.	2007	056	214	214	.100	.095	.095	.094	0	0.0	0		0
39-155-0011	1	0634	Not in a city	Trumbull	842 YOUNGSTOWN-KINGSVILLE RD.	2007	087	214	214	.099	.097	.096	.095	0	0.0	0		0
39-165-0007	1	1259	Lebanon	Warren	416 SOUTHEAST ST.	2007	087	214	214	.115	.106	.100	.095	0	0.0	0		0
39-167-0004	1	0809	Marietta	Washington	2000 4TH STREET	2007	047	214	214	.098	.098	.097	.097	0	0.0	0		0
39-173-0003	1	0808	Bowling Green	Wood	347 N DUNBRIDGE	2007	047	212	214	.102	.095	.093	.091	0	0.0	0		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>/= 0.085	CERT	EDT
39-003-0002	1	0808	Not in a city	Allen	2650 BIBLE RD.	2007	047	100	214	214	.088	.080	.079	.078	1		0
39-007-1001	1	0807	Conneaut	Ashtabula	770 LAKE RD.	2007	047	99	212	214	.098	.095	.092	.092	6		0
39-017-0004	1	1259	Hamilton	Butler	SCHULER AND BENDER	2007	087	100	214	214	.097	.096	.091	.091	6		0
39-017-1004	3	1259	Middletown	Butler	HOOK FIELD AIRPORT	2007	087	100	214	214	.104	.097	.095	.091	6		0
39-023-0001	1	0287	Springfield	Clark	5171 URBANA	2007	000	100	214	214	.096	.086	.081	.078	2		0
39-023-0003	1	0287	Not in a city	Clark	5400 SPANGLER	2007	000	99	212	214	.089	.084	.080	.078	1		0
39-025-0022	1	1259	Batavia	Clermont	2400 CLERMONT CENTER DR.	2007	000	98	209	214	.093	.092	.090	.086	5		0
39-027-1002	1	0810	Wilmington	Clinton	62 LAUREL DR.	2007	047	99	212	214	.091	.089	.085	.082	3		0
39-035-0034	1	0229	Cleveland	Cuyahoga	891 E. 152 ST.	2007	087	98	209	214	.084	.084	.083	.080	0		0
39-035-0064	1	0229	Berea	Cuyahoga	390 FAIR ST.	2007	000	97	208	214	.103	.095	.087	.083	3		0
39-035-5002	1	0229	Mayfield	Cuyahoga	6116 WILSON MILLS	2007	087	98	209	214	.086	.084	.082	.080	1		0
39-041-0002	1	0805	Delaware	Delaware	359 MAIN RD.	2007	047	100	213	214	.087	.083	.081	.080	1		0
39-049-0028	1	0805	Columbus	Franklin	2521 FAIRWOOD	2007	047	100	214	214	.085	.082	.081	.078	1		0
39-049-0029	1	0805	New Albany	Franklin	7600 FODOR RD.	2007	047	100	213	214	.094	.088	.088	.087	5		0
39-049-0037	1	0805	Columbus	Franklin	1777 E. BROAD	2007	087	98	210	214	.089	.081	.081	.079	1		0
39-049-0081	1	0805	Columbus	Franklin	5750 MAPLE CANYON	2007	047	100	213	214	.086	.083	.080	.079	1		0
39-055-0004	1	0595	Not in a city	Geauga	13000 AUBURN	2007	019	100	214	214	.071	.069	.068	.068	0		0
39-057-0006	1	0287	Xenia	Greene	541 LEDBETTER RD.,	2007	000	100	213	214	.092	.085	.081	.077	2		0
39-061-0006	1	1259	Cincinnati	Hamilton	11590 GROOMS RD	2007	087	96	206	214	.100	.092	.091	.089	6		0
39-061-0010	1	1259	Cleves	Hamilton	6950 RIPPLE RD.	2007	087	99	211	214	.093	.091	.088	.086	4		0
39-061-0040	1	1259	Cincinnati	Hamilton	250 WM. HOWARD TAFT	2007	000	99	212	214	.097	.093	.088	.086	5		0
39-081-0017	1	0809	Steubenville	Jefferson	618 LOGAN ST.	2007	047	97	207	214	.082	.080	.080	.079	0		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>/= 0.085	CERT	EDT
39-083-0002	1	0805	Centerburg	Knox	WATER PLT, SR. 314	2007	087	100	214	214	.088	.082	.082	.080	1		0
39-085-0003	1	0595	Eastlake	Lake	36010 LAKESHORE	2007	019	98	210	214	.079	.076	.075	.074	0		0
39-085-3002	1	0595	Painesville	Lake	71 E HIGH	2007	019	100	213	214	.093	.084	.082	.079	1		0
39-087-0006	1	0880	Ironton	Lawrence	2120 S. 8TH	2007	019	98	210	214	.089	.078	.077	.076	1		0
39-087-0011	1	0880	Not in a city	Lawrence	S.R. 141, WILGUS	2007	019	97	208	214	.089	.087	.084	.082	2		0
39-089-0005	1	0805	Heath (Fourmile Lock)	Licking	300 LICKING VIEW DR.	2007	047	100	214	214	.083	.082	.080	.078	0		0
39-093-0018	1	0807	Sheffield	Lorain	4706 DETROIT RD.	2007	047	99	212	214	.084	.082	.079	.078	0		0
39-095-0024	1	0220	Toledo	Lucas	348 S. ERIE	2007	056	99	211	214	.099	.093	.093	.081	3		0
39-095-0027	1	0220	Waterville	Lucas	200 SOUTH RIVER RD.	2007	019	99	211	214	.082	.082	.078	.075	0		0
39-095-0034	1	0220	Not in a city	Lucas	306 N. YANDOTA	2007	056	100	213	214	.084	.081	.079	.078	0		0
39-095-0081	1	0220	Toledo	Lucas	2930 131ST ST.	2007	056	100	214	214	.088	.080	.077	.077	1		0
39-097-0007	1	0805	Not in a city	Madison	940 SR 38 SW	2007	047	99	211	214	.091	.086	.084	.083	2		0
39-099-0013	1	0634	Youngstown	Mahoning	345 OAKHILL	2007	087	100	214	214	.085	.082	.081	.078	1		0
39-103-0003	1	0012	Not in a city	Medina	6364 DEERVIEW	2007	000	100	214	214	.073	.071	.070	.069	0		0
39-109-0005	1	0287	Not in a city	Miami	3825 NORTH S. R. 589	2007	000	100	214	214	.083	.079	.078	.073	0		0
39-113-0033	1	0287	Dayton	Montgomery	1404 WEBSTER ST.	2007	000	100	214	214	.084	.084	.084	.074	0		0
39-133-1001	1	0012	Not in a city	Portage	1570 RAVENNA RD.	2007	047	96	206	214	.090	.085	.085	.084	3		0
39-135-1001	1	0287	Not in a city	Preble	NATIONAL TRAILS	2007	000	100	214	214	.079	.079	.078	.073	0		0
39-151-0016	1	0151	Canton	Stark	515 25TH. ST.	2007	047	95	204	214	.089	.087	.086	.084	3		0
39-151-0021	1	0151	Brewster	Stark	245 W. 5TH ST.	2007	047	83	75	90	.087	.086	.083	.082	2		0
39-151-0022	1	0151	Brewster	Stark	45 S. WABASH AVENUE, S.R 93	2007	047	86	107	125	.091	.085	.083	.083	2		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>/= 0.085	CERT	EDT
39-151-4005	1	0151	Alliance	Stark	1175 WEST VINE	2007	047	98	209	214	.098	.094	.088	.087	5		0
39-153-0020	1	0012	Akron	Summit	800 PATTERSON AVE.	2007	087	100	214	214	.097	.092	.090	.090	9		0
39-155-0009	1	0634	Not in a city	Trumbull	6346 KINSMAN-BLOOMFIELD RD.	2007	056	100	214	214	.084	.083	.083	.080	0		0
39-155-0011	1	0634	Not in a city	Trumbull	842 YOUNGSTOWN-KINGSVILLE RD.	2007	087	100	214	214	.092	.086	.084	.084	2		0
39-165-0007	1	1259	Lebanon	Warren	416 SOUTHEAST ST.	2007	087	100	214	214	.103	.089	.088	.088	6		0
39-167-0004	1	0809	Marietta	Washington	2000 4TH STREET	2007	047	100	214	214	.091	.090	.086	.086	4		0
39-173-0003	1	0808	Bowling Green	Wood	347 N DUNBRIDGE	2007	047	99	212	214	.089	.088	.088	.083	3		0

Site ID	City	County	Address	4th high in Year			3 Year
				2005	2006	2007	Average
39-003-0002		Allen	2650 Bible Rd.	0.081	0.075	0.078	0.078
39-007-1001	Conneaut	Ashtabula	JQ Conneaut Water Plant	0.093	0.086	0.092	0.090
39-017-0004	Hamilton	Butler	Schuler & Bender Rds.	0.086	0.079	0.091	0.085
39-017-1004	Middletown	Butler	Hook Field Municipal Airport	0.088	0.076	0.091	0.085
39-023-0001		Clark	5171 Urbana Rd.	0.086	0.076	0.078	0.080
39-023-0003		Clark	5400 Spangler Rd.	0.081	0.074	0.078	0.077
39-025-0022		Clermont	2400 Claremont Center Dr.	0.083	0.077	0.086	0.082
39-027-1002		Clinton	62 Laurel Rd.	0.083	0.081	0.082	0.082
39-035-0034	Cleveland	Cuyahoga	891 E. 152nd St.	0.075	0.074	0.080	0.076
39-035-0064	Berea	Cuyahoga	390 Fair St.	0.079	0.068	0.083	0.076
39-035-5002	Mayfield	Cuyahoga	6116 Wilson Mill Rd.	0.078	0.081	0.080	0.079
39-041-0002		Delaware	359 Main Rd.	0.080	0.075	0.080	0.078
39-049-0028	Columbus	Franklin	2521 Fairwood Ave.	0.086	0.076	0.078	0.080
39-049-0029	New Albany	Franklin	7600 Fodor Rd.	0.092	0.082	0.087	0.087
39-049-0037	Columbus	Franklin	1777 E. Broad St.	0.086	0.079	0.079	0.081
39-049-0081	Columbus	Franklin	5750 Maple Canyon	0.086	0.077	0.079	0.080
39-055-0004		Geauga	13000 Auburn Rd.	0.088	0.070	0.068	0.075
39-057-0006	Xenia	Greene	541 Ledbetter Rd.	0.083	0.079	0.077	0.079
39-061-0006		Hamilton	11590 Grooms Rd.	0.089	0.081	0.089	0.086
39-061-0010		Hamilton	6950 Ripple Rd.	0.085	0.081	0.086	0.084
39-061-0040	Cincinnati	Hamilton	250 Wm. Howard Taft	0.087	0.078	0.086	0.083
39-081-0017	Steubenville	Jefferson	618 Logan	0.083	0.080	0.079	0.080
39-083-0002		Knox	Water Plant SR 3	0.081	0.075	0.080	0.078
39-085-0003	Eastlake	Lake	Jefferson Elementary	0.097	0.083	0.074	0.084
39-085-3002	Painesville	Lake	71 E. High St.	0.089	0.075	0.079	0.081
39-087-0006	Ironton	Lawrence	2120 S. 8th St.	0.073	0.072	0.076	0.073
39-087-0011		Lawrence	SR 775 & SR	0.060	0.067	0.082	0.069
39-089-0005	Heath	Licking	300 Licking View	0.082	0.072	0.078	0.077
39-093-0018	Lorain	Lorain	4706 Detroit Rd.	0.081	0.069	0.078	0.076
39-095-0024	Toledo	Lucas	348 S. Erie St.	0.080	0.075	0.081	0.078
39-095-0027	Waterville	Lucas	200 S. Byrne	0.084	0.069	0.075	0.076
39-095-0034	Toledo	Lucas	306 N. Yondota	0.087	0.074	0.078	0.079
39-095-0081	Toledo	Lucas	Friendship Park	0.087	0.074	0.077	0.079
39-097-0007		Madison	9940 SR 38 SW	0.081	0.076	0.083	0.080

Site ID	City	County	Address	4th high in Year			3 Year
				2005	2006	2007	Average
39-099-0013	Youngstown	Mahoning	345 Oakhill Ave.	0.083	0.076	0.079	0.079
39-103-0003		Medina	6364 Deerview	0.090	0.073	0.069	0.077
39-109-0005		Miami	3825 North State	0.079	0.073	0.073	0.075
39-113-0033	Dayton	Montgomery	1404 Webster	0.082	0.071	0.074	0.075
39-133-1001		Portage	1570 Ravenna Rd.	0.092	0.070	0.084	0.082
39-135-1001		Preble	National Trails	0.080	0.072	0.073	0.075
39-151-0016	Canton	Stark	Malone College	0.076	0.078	0.084	0.079
39-151-0021		Stark	245 W. 5th St.	0.076	0.079	0.085	0.080
39-151-4005	Alliance	Stark	1175 West Vine St.	0.086	0.075	0.087	0.082
39-153-0020	Akron	Summit	800 Patterson Av.	0.089	0.077	0.090	0.085
39-155-0009		Trumbull	Community Hall	0.083	0.074	0.081	0.079
39-155-0011		Trumbull	Trumbull Co. Sanitary Engineers	0.087	0.082	0.080	0.083
39-165-0007	Lebanon	Warren	416 Southeast St.	0.092	0.086	0.088	0.088
39-167-0004	Marietta	Washington	2000 Fourth St.	0.088	0.081	0.086	0.085
39-173-0003	Bowling Green	Wood	347 N. Dunbridge	0.084	0.073	0.083	0.080

Count of Ozone Exceedances in Each Year
And the Date Upon Which the First Occurred
The exceedance value used is 0.08 ppm

Year	1-Hr Data		8-Hr Data	
	Date	Exceedances/Sites	Date	Exceedances/Sites
1992	30 June	4/43	11 May	115/43
1993	17 June	9/44	1 May	220/44
1994	16 June	13/45	22 May	272/45
1995	19 June	15/45	6 June	381/45
1996	28 June	5/45	1 June	331/45
1997	24 June	5/50	24 May	222/50
1998	13 May	15/49	13 May	478/49
1999	30 May	14/50	4 May	461/50
2000	9 June	1/48	31 May	135/48
2001	14 June	2/50	3 May	250/50
2002	20 June	22/50	8 June	801/50
2003	23 June	22/50	16 April	204/50
2004	None	0/50	12 May	25/50
2005	8 June	5/49	19 April	192/49
2006	None	0/49	29 May	39/49
2007	None	0/49	15 May	110/49

Last Ozone Exceedance Dates
1983-2007
One Hour Standard

Year	Date	Sites	Maximum Value
1983	9/09	1	170 ppb
1984	9/21	1	135
1985	9/22	1	127
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

Last Ozone Exceedance Dates
1983-2007
Eight Hour Standard (0.08 ppm)

Year	Date	Sites	Maximum Value
1983	10/03	1	88 ppb
1984	9/22	5	92
1985	9/22	2	108
1986	9/14	1	87
1987	9/29	1	87
1988	8/18	8	127
1989	9/13	1	93
1990	9/07	1	87
1991	9/08	5	91
1992	9/17	2	89
1993	8/30	8	100
1994	9/14	2	88
1995	9/06	1	86
1996	9/02	2	89
1997	9/02	3	92
1998	9/26	1	89
1999	9/26	17	97
2000	8/15	3	92
2001	9/13	1	85
2002	9/13	1	87
2003	8/26	5	96
2004	9/23	2	90
2005	9/13	2	97
2006	8/25	2	92
2007	9/24	1	86

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 of 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.

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 Method

Lead concentrations in ambient air are determined by the reference method promulgated by U.S. EPA. The lead sample is collected on a filter using a high-volume air sampler and the TSP method. In this method, two ¾"×8" portions of the TSP filter are washed with hot, dilute nitric acid. The lead compounds are dissolved into the acid solution. The solution is then analyzed by the atomic absorption technique to determine the amount of lead.

Normally a month's collection of filters is analyzed as a composite sample. Most sites collect so little lead that individual sampling days would have lead levels below the detection limit of available methods.

Concentrations are reported in micrograms per cubic meter of air ($\mu g/m^3$).

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

Lead (TSP) (12128) Ohio Micrograms/cubic meter (25 C) (001)

24-HOUR

SITE ID	POC	PQAO	CITY	COUNTY	ADDRESS	YEAR	METH	# OBS	QTR1 ARITH MEAN	QTR2 ARITH MEAN	QTR3 ARITH MEAN	QTR4 ARITH MEAN	# MEANS > 1.5	1ST MAX	2ND MAX	CERT	EDT
39-017-0015	2	1259	Middletown	Butler	3901 LEFFERSON	2007	045	12	.01	.00	.10	.05	0	.14	.14		0
39-029-0019	1	0807	East Liverpool	Columbiana	1250 GEORGE, COLUMBIANA PORT AUTHORITY	2007	045	12	.02	.02	.02	.02	0	.04	.04		0
39-029-0020	1	0807	East Liverpool	Columbiana	2220 MICHIGAN	2007	045	12	.01	.01	.02	.02	0	.03	.03		0
39-029-0022	1	0807	East Liverpool	Columbiana	500 MARYLAND	2007	045	12	.02	.02	.02	.01	0	.05	.03		0
39-035-0038	1	0229	Cleveland	Cuyahoga	2547 ST TIKHON	2007	045	11	.01	.02	.02	.02	0	.02	.02		0
39-035-0042	1	0229	Cleveland	Cuyahoga	3136 LORAIN AVE., F.S. 4	2007	045	12	.01	.02	.02	.02	0	.04	.03		0
39-035-0049	1	0229	Cleveland	Cuyahoga	E. 56TH ST.	2007	045	12	.07	.06	.11	.16	0	.22	.15		0
39-035-0050	1	0229	Cleveland	Cuyahoga	GRANT RD.	2007	045	12	.01	.05	.04	.02	0	.07	.04		0
39-035-0061	2	0229	Cleveland	Cuyahoga	W. SIDE OF WEST 3RD.	2007	045	12	.01	.02	.03	.02	0	.04	.03		0
39-035-0068	1	0229	Cleveland	Cuyahoga	7629 BROADWAY	2007	803	1	.01*				0	.01			0
39-035-0069	1	0229	Cleveland	Cuyahoga	7300 SUPERIOR	2007	090	1	.008*				0	.008			0
39-049-0025	1	0805	Columbus	Franklin	1700 ANN ST.	2007	045	12	.01	.01	.01	.01	0	.01	.01		0
39-051-0001	1	0808	Delta	Fulton	200 VAN BUREN	2007	045	12	.36	.20	.21	.52	0	.69	.62		0
39-091-0003	1	0810	Bellefontaine	Logan	1222 SUPERIOR	2007	045	12	.04	.06	.06	.10	0	.19	.09		0
39-091-0006	1	0443	Bellefontaine	Logan	320 RICHARD	2007	045	12	.26	.13	.08	.07	0	.29	.26		0
39-091-0007	1	0443	Bellefontaine	Logan	1205 SUPERIOR	2007	045	12	.14	.13	.09	.06	0	.19	.19		0
39-091-0008	1	0443	Bellefontaine	Logan	1215 GREENWOOD ST.	2007	045	12	.11	.05	.05	.05	0	.12	.11		0
39-167-0008	1	0809	Marietta	Washington	S.R. 676 WASHINGTON CAREER CENTER	2007	045	12	.01	.00	.00	.00	0	.01	.01		0

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

VI. Air Toxics Monitoring 2007

AIR TOXICS MONITORING

INTRODUCTION

Over the last several years, Ohio EPA, Division of Air Pollution Control (DAPC) has made a substantial effort to develop and implement a State-wide Air Toxics Monitoring Program (ATMP). These efforts were 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 4 month period. Projects at these types of sites have been dedicated to VOCs and heavy metals. 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
Cincinnati - VOC - Urban,
Middletown - VOC - Source, Metals - Source
New Boston - VOC-Source, Metals - Urban
Columbus - Metals - Urban, VOC - Urban
Marietta - VOC - Urban, Metals - Source
Delta - Metals - Source
East Liverpool - Metals - Source
Steubenville - VOC - Urban
Marion - Metals - Urban
Bellefontaine - Metals - Urban
Elmore - Metals - Urban

2.) Throughout 2007 DAPC has worked to expand sampling at semi-permanent sites with an emphasis on smaller urban areas. Future sampling projects will involving 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.

In the past sampling efforts have included:

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

During 2007 DAPC was involved in several minor monitoring projects throughout the state, however due to the emphasis on the expansion of the semi-permanent effort these short term and grab sampling projects were limited in scope and 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 12^{th} 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 time 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.

DES VOC Target Compound List for TO-14A Analysis

1	acetone	37	trans-1,3-dichloropropene
2	acetonitrile	38	1,2-dichloro-1,1,2,2-tetrafluoroethane
3	acrylonitrile	39	n-dodecane
4	benzene	40	ethylbenzene
5	benzyl chloride	41	4-ethyltoluene
6	bromodichloromethane	42	n-heptane
7	bromoform	43	hexachlorobutadiene
8	bromomethane	44	hexane
9	1,3-butadiene	45	methyl-butyl ether
10	n-butane	46	methylene chloride
11	2-butanone	47	4-methyl-2-pentanone
12	carbon disulfide	48	a-methylstyrene
13	carbon tetrachloride	49	napthalene
14	chlorobenzene	50	n-nonane
15	chlorodifluoromethane	51	n-octane
16	chloroethane	52	n-pentane
17	chloroform	53	propylene
18	chloromethane	54	n-propyl benzene
19	3-chloropropene	55	styrene
20	cumene	56	1,1,2,2-tetrachloroethane
21	cyclohexane	57	tetrachloroethylene
22	decane	58	toluene
23	dibromochloromethane	59	1,2,4-trichlorobenzene
24	1,2-dibromoethane	60	1,1,1-trichloroethane
25	dibromomethane	61	1,1,2-trichloroethane
26	1,2-dichlorobenzene (ortho)	62	trichloroethene
27	1,3-dichlorobenzene (meta)	63	trichlorofluoromethane
28	1,4-dichlorobenzene (para)	64	1,1,2-trichloro-1,2,2-trifluoroethane
29	dichlorodifluoromethane	65	1,2,4-trimethylbenzene
30	1,1-dichloroethane	66	1,3,5-trimethylbenzene
31	1,2-dichloroethane	67	n-undecane
32	1,1-dichloroethene	68	vinyl acetate
33	cis-1,2-dichloroethene	69	vinyl chloride
34	trans-1,2-dichloroethene	70	o-xylene
35	1,2-dichloropropane	71	total m+p-xylene
36	cis-1,3-dichloropropene		

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 method improves 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 all of the canister samples collected during 2007. Throughout 2007 over 200, 24-hour samples were collected. During 2007 there were 9 permanent VOC monitoring sites operating.

SITE IDENTIFICATION AND LOCATION

AQS #	CITY	COUNTY	ADDRESS	TABLE
39-017-0003	Middletown	Butler	Verity school 1900 St. John's Road	A
	Cincinnati	Hamilton	10100 Reading Rd.	B
39-035-0038	Cleveland	Cuyahoga	2547 St. Tikhon Ave.	C
39-035-0068	Cleveland	Cuyahoga	7629 Broadway Ave.	D
39-035-0069	Cleveland	Cuyahoga	7300 Superior Ave.	E
39-035-0071	Cleveland	Cuyahoga		F
39-049-0034	Columbus	Franklin	Korbel Ave.	G
39-081-0017	Steubenville	Jefferson	618 Logan Street	H
39-167-0008	Marietta	Washington	Washington County Career Center	I

VOLATILE ORGANIC COMPOUNDS DETECTED IN 2007				
Summary Data of 216 Canister Samples				Frequency
COMPOUND LIST	Maximum	Average	Minimum	Detected
acetone	340.00	9.26	1.00	210
acetonitrile	0.96	0.38	0.20	65
acrylonitrile	3.80	0.91	0.20	55
benzene	4.20	0.46	0.10	181
bromomethane	0.22	0.22	0.22	1
1,3-butadiene	0.37	0.17	0.10	18
n-butane	14.00	1.68	0.10	213
2-butanone	13.00	1.27	0.50	125
carbon disulfide	4.70	1.48	0.53	41
carbon tetrachloride	0.14	0.11	0.10	32
chlorobenzene	0.98	0.31	0.12	11
chlorodifluoromethane	2.20	0.42	0.16	138
chloroethane	0.13	0.13	0.13	1
chloroform	0.12	0.12	0.12	1
chloromethane	1.60	0.54	0.30	215
cyclohexane	0.52	0.23	0.10	13
decane	0.80	0.25	0.10	20
1,4-dichlorobenzene (para)	0.19	0.15	0.11	7
dichlorodifluoromethane	0.91	0.51	0.28	216
trans-1,2-dichloroethene	0.26	0.26	0.26	1
ethylbenzene	0.87	0.18	0.10	30
4-ethyltoluene	0.21	0.15	0.11	4
n-heptane	0.47	0.18	0.10	60
hexane	3.30	0.41	0.20	76
methylene chloride	1.60	0.26	0.10	77
4-methyl-2-pentanone	1.50	0.32	0.10	26
naphthalene	6.10	0.84	0.10	27
n-nonane	0.51	0.21	0.11	10
n-octane	0.20	0.15	0.12	5
n-pentane	4.60	0.74	0.11	213
propylene	14.00	1.41	0.30	110
n-propyl benzene	0.11	0.11	0.11	1
styrene	0.20	0.16	0.11	5
tetrachloroethylene	0.27	0.15	0.10	5
toluene	8.50	0.56	0.10	189
1,1,1-trichloroethane	13.00	4.28	0.10	23
trichloroethene	0.21	0.14	0.11	6
trichlorofluoromethane	15.00	0.81	0.10	215
1,1,2-trichloro-1,2,2-trifluoroethane	0.14	0.11	0.10	37
1,2,4-trimethylbenzene	0.59	0.21	0.11	29
1,3,5-trimethylbenzene	0.16	0.13	0.10	4
n-undecane	0.38	0.18	0.10	11
vinyl acetate	3.90	0.76	0.20	104
o-xylene	0.60	0.18	0.11	28
total m+p-xylene	3.30	0.45	0.20	55

Table A.

Butler County (AQS - 39-017-0003)				
Summary Data of Canister Samples				**Frequency**
COMPOUND LIST	**Maximum**	**Average**	**Minimum**	**Detected**
acetone	17.00	4.11	1.40	28
acetonitrile	0.60	0.41	0.21	10
acrylonitrile	0.47	0.38	0.23	3
benzene	0.87	0.26	0.11	24
bromomethane				
1,3-butadiene	0.23	0.20	0.16	3
n-butane	3.90	1.19	0.10	28
2-butanone	2.70	0.90	0.50	17
carbon disulfide				
carbon tetrachloride	0.13	0.11	0.10	6
chlorobenzene				
chlorodifluoromethane	1.60	0.49	0.22	22
chloroethane				
chloroform	0.12	0.12	0.12	1
chloromethane	0.73	0.53	0.30	28
cyclohexane				
decane				
1,4-dichlorobenzene (para)	0.15	0.13	0.11	4
dichlorodifluoromethane	0.69	0.53	0.32	28
trans-1,2-dichloroethene	0.26	0.26	0.26	1
ethylbenzene	0.16	0.15	0.13	2
4-ethyltoluene				
n-heptane	0.22	0.16	0.10	3
hexane	0.53	0.39	0.21	4
methylene chloride	0.52	0.24	0.10	6
4-methyl-2-pentanone				
naphthalene	0.13	0.13	0.13	1
n-nonane				
n-octane				
n-pentane	1.60	0.54	0.17	27
propylene	1.60	0.74	0.46	14
n-propyl benzene				
styrene				
tetrachloroethylene				
toluene	1.60	0.36	0.11	26
1,1,1-trichloroethane	0.21	0.15	0.10	10
trichloroethene				
trichlorofluoromethane	2.90	0.52	0.26	28
1,1,2-trichloro-1,2,2-trifluoroethane	0.13	0.11	0.10	8
1,2,4-trimethylbenzene	0.21	0.20	0.18	2
1,3,5-trimethylbenzene				
n-undecane				
vinyl acetate	1.40	0.70	0.20	17
o-xylene	0.17	0.17	0.16	2
total m+p-xylene	0.50	0.46	0.41	2

Table B.

Hamilton County				
Summary Data of Canister Samples				Frequency
COMPOUND LIST	Maximum	Average	Minimum	Detected
acetone	9.20	4.52	2.20	10
acetonitrile	0.43	0.39	0.34	2
acrylonitrile	0.24	0.24	0.24	1
benzene	3.10	1.16	0.17	10
bromomethane				
1,3-butadiene	0.12	0.12	0.12	1
n-butane	2.00	1.04	0.30	10
2-butanone	1.10	0.83	0.53	7
carbon disulfide				
carbon tetrachloride	0.12	0.11	0.10	5
chlorobenzene	0.24	0.18	0.12	6
chlorodifluoromethane	0.66	0.46	0.32	5
chloroethane				
chloroform				
chloromethane	0.92	0.62	0.40	10
cyclohexane				
decane	0.80	0.34	0.12	8
1,4-dichlorobenzene (para)				
dichlorodifluoromethane	0.74	0.53	0.32	10
trans-1,2-dichloroethene				
ethylbenzene				
4-ethyltoluene				
n-heptane	0.10	0.10	0.10	1
hexane	0.25	0.23	0.21	2
methylene chloride	0.26	0.16	0.10	5
4-methyl-2-pentanone				
naphthalene				
n-nonane	0.51	0.28	0.18	5
n-octane				
n-pentane	0.73	0.38	0.23	10
propylene	1.30	0.88	0.38	6
n-propyl benzene				
styrene				
tetrachloroethylene				
toluene	0.55	0.30	0.14	10
1,1,1-trichloroethane	13.00	9.65	5.80	10
trichloroethene				
trichlorofluoromethane	0.47	0.35	0.23	10
1,1,2-trichloro-1,2,2-trifluoroethane	0.12	0.12	0.10	5
1,2,4-trimethylbenzene	0.33	0.20	0.13	7
1,3,5-trimethylbenzene	0.12	0.12	0.12	1
n-undecane	0.38	0.22	0.10	6
vinyl acetate	0.72	0.65	0.49	6
o-xylene				
total m+p-xylene	0.22	0.22	0.22	1

Table C.

Cuyahoga #1 (AQS - 39-035-0038)				
Summary Data of Canister Samples				**Frequency**
COMPOUND LIST	**Maximum**	**Average**	**Minimum**	**Detected**
acetone	11.00	3.77	1.00	22
acetonitrile	0.96	0.48	0.21	6
acrylonitrile	0.20	0.20	0.20	1
benzene	0.51	0.27	0.13	20
bromomethane				
1,3-butadiene	0.14	0.14	0.14	1
n-butane	9.90	2.10	0.18	24
2-butanone	2.10	0.77	0.50	13
carbon disulfide				
carbon tetrachloride	0.11	0.11	0.11	2
chlorobenzene				
chlorodifluoromethane	0.45	0.33	0.24	10
chloroethane				
chloroform				
chloromethane	0.77	0.53	0.30	24
cyclohexane				
decane	0.46	0.28	0.10	2
1,4-dichlorobenzene (para)				
dichlorodifluoromethane	0.71	0.49	0.32	24
trans-1,2-dichloroethene				
ethylbenzene	0.87	0.38	0.12	3
4-ethyltoluene				
n-heptane	0.23	0.14	0.10	10
hexane	0.90	0.37	0.20	14
methylene chloride	0.41	0.22	0.12	15
4-methyl-2-pentanone				
naphthalene				
n-nonane	0.13	0.13	0.13	1
n-octane				
n-pentane	3.40	0.96	0.16	24
propylene	1.70	0.90	0.30	13
n-propyl benzene				
styrene				
tetrachloroethylene				
toluene	1.30	0.50	0.13	22
1,1,1-trichloroethane	0.12	0.12	0.11	2
trichloroethene	0.15	0.14	0.13	2
trichlorofluoromethane	11.00	0.77	0.10	24
1,1,2-trichloro-1,2,2-trifluoroethane	0.13	0.12	0.11	4
1,2,4-trimethylbenzene	0.15	0.14	0.13	2
1,3,5-trimethylbenzene				
n-undecane	0.18	0.18	0.18	1
vinyl acetate	1.30	0.57	0.24	7
o-xylene	0.52	0.27	0.13	3
total m+p-xylene	3.30	0.74	0.20	7

Table D.

Cuyahoga #2 (AQS - 39-035-0068)				
Summary Data of Canister Samples				**Frequency**
COMPOUND LIST	**Maximum**	**Average**	**Minimum**	**Detected**
acetone	8.60	3.14	1.10	25
acetonitrile	0.82	0.45	0.20	7
acrylonitrile				
benzene	0.69	0.29	0.12	21
bromomethane				
1,3-butadiene	0.24	0.24	0.24	1
n-butane	7.00	1.79	0.23	25
2-butanone	1.30	0.81	0.55	13
carbon disulfide				
carbon tetrachloride	0.14	0.13	0.11	2
chlorobenzene				
chlorodifluoromethane	0.65	0.42	0.16	17
chloroethane				
chloroform				
chloromethane	0.68	0.51	0.32	25
cyclohexane	0.52	0.32	0.12	2
decane	0.18	0.16	0.14	2
1,4-dichlorobenzene (para)				
dichlorodifluoromethane	0.91	0.54	0.33	26
trans-1,2-dichloroethene				
ethylbenzene	0.27	0.16	0.10	6
4-ethyltoluene	0.14	0.13	0.11	2
n-heptane	0.33	0.18	0.11	10
hexane	0.68	0.42	0.24	11
methylene chloride	1.60	0.42	0.11	20
4-methyl-2-pentanone	0.17	0.13	0.10	6
naphthalene	0.12	0.12	0.12	1
n-nonane	0.11	0.11	0.11	1
n-octane	0.12	0.12	0.12	1
n-pentane	3.60	0.90	0.16	26
propylene	1.80	1.09	0.49	13
n-propyl benzene				
styrene				
tetrachloroethylene	0.10	0.10	0.10	1
toluene	2.30	0.67	0.11	25
1,1,1-trichloroethane				
trichloroethene	0.11	0.11	0.11	1
trichlorofluoromethane	0.76	0.33	0.12	26
1,1,2-trichloro-1,2,2-trifluoroethane	0.13	0.11	0.11	5
1,2,4-trimethylbenzene	0.33	0.24	0.12	4
1,3,5-trimethylbenzene	0.10	0.10	0.10	1
n-undecane				
vinyl acetate	0.91	0.45	0.24	11
o-xylene	0.30	0.16	0.11	6
total m+p-xylene	1.00	0.42	0.21	10

Table E.

Cuyahoga #3 (AQS - 39-035-0069)				
Summary Data of Canister Samples				**Frequency**
COMPOUND LIST	**Maximum**	**Average**	**Minimum**	**Detected**
acetone	8.60	4.35	1.50	21
acetonitrile	0.69	0.30	0.20	7
acrylonitrile				
benzene	1.40	0.41	0.10	21
bromomethane				
1,3-butadiene	0.37	0.23	0.12	4
n-butane	14.00	3.09	0.47	23
2-butanone	1.50	0.85	0.53	15
carbon disulfide				
carbon tetrachloride	0.12	0.11	0.11	4
chlorobenzene				0
chlorodifluoromethane	1.10	0.49	0.19	16
chloroethane				
chloroform				
chloromethane	0.75	0.53	0.33	23
cyclohexane	0.41	0.31	0.20	2
decane	0.20	0.17	0.13	2
1,4-dichlorobenzene (para)	0.13	0.13	0.13	1
dichlorodifluoromethane	0.73	0.54	0.33	23
trans-1,2-dichloroethene				
ethylbenzene	0.49	0.17	0.11	9
4-ethyltoluene	0.21	0.21	0.21	1
n-heptane	0.47	0.19	0.11	12
hexane	3.30	0.70	0.20	15
methylene chloride	0.35	0.17	0.11	13
4-methyl-2-pentanone	0.17	0.16	0.14	2
naphthalene	0.19	0.15	0.10	2
n-nonane	0.16	0.16	0.16	1
n-octane	0.17	0.17	0.17	1
n-pentane	4.60	1.24	0.36	23
propylene	2.40	1.32	0.39	11
n-propyl benzene	0.11	0.11	0.11	1
styrene				
tetrachloroethylene	0.27	0.17	0.11	3
toluene	8.50	1.18	0.11	23
1,1,1-trichloroethane				
trichloroethene	0.21	0.21	0.21	1
trichlorofluoromethane	0.60	0.30	0.21	23
1,1,2-trichloro-1,2,2-trifluoroethane	0.10	0.10	0.10	1
1,2,4-trimethylbenzene	0.59	0.25	0.11	5
1,3,5-trimethylbenzene	0.16	0.16	0.16	1
n-undecane				
vinyl acetate	1.80	1.18	0.40	7
o-xylene	0.60	0.21	0.11	7
total m+p-xylene	1.70	0.58	0.23	9

Table F.

Cuyahoga #4 (AQS - 39-035-0071)				
Summary Data of Canister Samples				**Frequency**
COMPOUND LIST	**Maximum**	**Average**	**Minimum**	**Detected**
acetone	340.00	81.18	1.70	15
acetonitrile	0.33	0.33	0.32	2
acrylonitrile				
benzene	0.69	0.36	0.13	14
bromomethane				
1,3-butadiene	0.10	0.10	0.10	1
n-butane	3.00	1.85	0.29	14
2-butanone	13.00	4.69	0.69	13
carbon disulfide				
carbon tetrachloride	0.12	0.11	0.10	4
chlorobenzene				
chlorodifluoromethane	0.90	0.59	0.39	7
chloroethane	0.13	0.13	0.13	1
chloroform				
chloromethane	0.89	0.59	0.43	15
cyclohexane	0.13	0.12	0.10	2
decane	0.28	0.20	0.13	6
1,4-dichlorobenzene (para)	0.19	0.18	0.17	2
dichlorodifluoromethane	0.76	0.52	0.35	15
trans-1,2-dichloroethene				
ethylbenzene	0.18	0.14	0.11	3
4-ethyltoluene	0.15	0.15	0.15	1
n-heptane	0.41	0.20	0.11	9
hexane	0.49	0.36	0.20	9
methylene chloride	0.79	0.23	0.11	10
4-methyl-2-pentanone	1.50	0.64	0.12	8
naphthalene	0.12	0.12	0.12	1
n-nonane	0.17	0.16	0.15	2
n-octane	0.20	0.17	0.14	2
n-pentane	3.50	1.30	0.44	15
propylene	14.00	5.32	0.63	11
n-propyl benzene				
styrene				
tetrachloroethylene	0.15	0.15	0.15	1
toluene	1.70	0.70	0.13	15
1,1,1-trichloroethane				
trichloroethene	0.13	0.13	0.12	2
trichlorofluoromethane	0.57	0.31	0.11	15
1,1,2-trichloro-1,2,2-trifluoroethane	0.14	0.12	0.11	3
1,2,4-trimethylbenzene	0.55	0.28	0.15	4
1,3,5-trimethylbenzene	0.14	0.14	0.14	1
n-undecane	0.15	0.13	0.10	4
vinyl acetate	3.90	1.47	0.35	8
o-xylene	0.21	0.15	0.12	3
total m+p-xylene	0.59	0.33	0.20	8

Table G.

Franklin County (AQS - 39-049-0034)				
Summary Data of Canister Samples				**Frequency**
COMPOUND LIST	**Maximum**	**Average**	**Minimum**	**Detected**
acetone	9.60	4.12	1.60	29
acetonitrile	0.75	0.36	0.21	10
acrylonitrile	0.48	0.36	0.23	2
benzene	0.40	0.21	0.11	27
bromomethane				
1,3-butadiene	0.12	0.12	0.12	1
n-butane	3.20	1.22	0.44	29
2-butanone	2.10	1.08	0.51	20
carbon disulfide	1.60	1.26	0.92	2
carbon tetrachloride	0.12	0.11	0.11	3
chlorobenzene				
chlorodifluoromethane	0.81	0.44	0.22	20
chloroethane				
chloroform				
chloromethane	0.79	0.49	0.32	30
cyclohexane				
decane				
1,4-dichlorobenzene (para)				
dichlorodifluoromethane	0.64	0.48	0.28	30
trans-1,2-dichloroethene				
ethylbenzene	0.18	0.16	0.11	3
4-ethyltoluene				
n-heptane	0.11	0.11	0.11	1
hexane	0.47	0.29	0.22	6
methylene chloride	0.43	0.22	0.11	3
4-methyl-2-pentanone				
naphthalene	0.13	0.12	0.11	2
n-nonane				
n-octane				
n-pentane	1.40	0.50	0.24	29
propylene	1.40	0.73	0.47	16
n-propyl benzene				
styrene				
tetrachloroethylene				
toluene	1.00	0.39	0.15	28
1,1,1-trichloroethane	0.17	0.17	0.17	1
trichloroethene				
trichlorofluoromethane	0.39	0.27	0.20	29
1,1,2-trichloro-1,2,2-trifluoroethane	0.12	0.12	0.11	2
1,2,4-trimethylbenzene	0.13	0.13	0.13	1
1,3,5-trimethylbenzene				
n-undecane				
vinyl acetate	1.50	0.80	0.22	15
o-xylene	0.18	0.15	0.13	3
total m+p-xylene	0.66	0.40	0.24	6

Table H.

Jefferson County (AQS - 39-081-0017)				
Summary Data of Canister Samples				**Frequency**
COMPOUND LIST	**Maximum**	**Average**	**Minimum**	**Detected**
acetone	9.10	3.21	1.20	30
acetonitrile	0.89	0.35	0.21	12
acrylonitrile	2.10	0.86	0.23	20
benzene	4.20	1.17	0.12	27
bromomethane				
1,3-butadiene	0.20	0.13	0.11	5
n-butane	3.70	1.23	0.15	30
2-butanone	1.30	0.73	0.54	13
carbon disulfide	3.60	1.40	0.53	17
carbon tetrachloride	0.11	0.10	0.10	3
chlorobenzene				
chlorodifluoromethane	0.68	0.30	0.16	19
chloroethane				
chloroform				
chloromethane	0.69	0.50	0.31	30
cyclohexane				
decane				
1,4-dichlorobenzene (para)				
dichlorodifluoromethane	0.66	0.50	0.31	30
trans-1,2-dichloroethene				
ethylbenzene	0.15	0.13	0.11	4
4-ethyltoluene				
n-heptane	0.34	0.18	0.11	10
hexane	0.37	0.27	0.20	8
methylene chloride	0.13	0.12	0.10	2
4-methyl-2-pentanone	0.54	0.21	0.10	9
naphthalene	6.10	1.14	0.12	19
n-nonane				
n-octane				
n-pentane	1.50	0.51	0.11	30
propylene	1.90	0.88	0.33	13
n-propyl benzene				
styrene	0.17	0.14	0.11	2
tetrachloroethylene				
toluene	1.40	0.58	0.11	24
1,1,1-trichloroethane				
trichloroethene				
trichlorofluoromethane	2.50	0.75	0.25	30
1,1,2-trichloro-1,2,2-trifluoroethane	0.12	0.11	0.11	4
1,2,4-trimethylbenzene	0.18	0.16	0.13	4
1,3,5-trimethylbenzene				
n-undecane				
vinyl acetate	1.50	0.61	0.23	17
o-xylene	0.17	0.14	0.12	4
total m+p-xylene	0.48	0.32	0.20	12

Table I.

Washington County (AQS - 39-167-0008)				
Summary Data of Canister Samples				**Frequency**
COMPOUND LIST	**Maximum**	**Average**	**Minimum**	**Detected**
acetone	7.50	3.29	1.20	30
acetonitrile	0.74	0.35	0.20	9
acrylonitrile	3.80	1.09	0.20	28
benzene	0.34	0.16	0.11	17
bromomethane	0.22	0.22	0.22	1
1,3-butadiene	0.13	0.13	0.13	1
n-butane	3.60	1.68	0.15	30
2-butanone	2.00	0.89	0.53	14
carbon disulfide	4.70	1.57	0.53	22
carbon tetrachloride	0.10	0.10	0.10	3
chlorobenzene	0.98	0.48	0.26	5
chlorodifluoromethane	2.20	0.35	0.16	22
chloroethane				
chloroform				
chloromethane	1.60	0.63	0.32	30
cyclohexane	0.43	0.21	0.11	7
decane				
1,4-dichlorobenzene (para)				
dichlorodifluoromethane	0.67	0.51	0.32	30
trans-1,2-dichloroethene				
ethylbenzene				
4-ethyltoluene				
n-heptane	0.19	0.15	0.12	4
hexane	0.35	0.27	0.21	7
methylene chloride	0.14	0.13	0.13	3
4-methyl-2-pentanone	0.13	0.13	0.13	1
naphthalene	0.11	0.11	0.11	1
n-nonane				
n-octane	0.13	0.13	0.13	1
n-pentane	1.70	0.54	0.17	29
propylene	2.80	1.37	0.43	13
n-propyl benzene				
styrene	0.20	0.18	0.15	3
tetrachloroethylene				0
toluene	0.95	0.27	0.10	16
1,1,1-trichloroethane				
trichloroethene				
trichlorofluoromethane	15.00	2.88	0.24	30
1,1,2-trichloro-1,2,2-trifluoroethane	0.12	0.11	0.11	5
1,2,4-trimethylbenzene				
1,3,5-trimethylbenzene				
n-undecane				
vinyl acetate	2.00	0.75	0.20	16
o-xylene				
total m+p-xylene				

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 pre-weighed 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

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 two strips are cut and combined from strips from all the filters collected that month and analyzed as one sample for the month. The acid extracted samples are analyzed by atomic absorption (AA) spectroscopy. When an element is heated in the flame of this instrument it absorbs light at a characteristic wavelength. By measuring the amount of light absorbed at a particular wavelength the concentration of the element being analyzed can be determined. Most routine analysis are conducted by ICP (Inductively Coupled Plasma Emission Spectroscopy).

SUMMARY OF ICP METHOD: The method measures element - emitted light by optical spectrometry. Sample 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. The aqueous sample is digested for one hour at 248°F and 15 psi and allowed to cool. Samples may be run manually or automatically via the autosampler.

HEAVY METALS PARAMETERS

All 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 ICP. For air fit;

chromium lead nickel zinc manganese

[1]Lead is the only parameter being monitored in the ATMP that has a National Ambient Air Quality Standard. See Section V, page 68, Lead.

the rest are analyzed using a more sensitive Graphite Furnace Atomic Absorption Method.

arsenic cadmium beryllium

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.

SITE IDENTIFICATION AND LOCATION

AQS #	CITY	COUNTY	ADDRESS	TABLE
39-017-0015	Middletown	Butler	3901 Lefferson Rd.	J
39-029-0019	E. Liverpool	Columbiana	1250 St. George St.	K
39-029-0020	E. Liverpool	Columbiana	2220 Michigan Ave.	L
39-029-0022	E. Liverpool	Columbiana	500 Maryland Ave.	M
39-035-0038	Cleveland	Cuyahoga	2547 Tikhon Ave.	N
39-035-0042	Cleveland	Cuyahoga	3136 Lorain Ave.	O
39-035-0049	Cleveland	Cuyahoga	4150 East 56th St.	P
39-035-0050	Cleveland	Cuyahoga	5777 Grant Ave.	Q
39-035-0061	Cleveland	Cuyahoga	West 3rd. St.	R
39-049-0025	Columbus	Franklin	1700 Ann St.	S
39-051-0001	Delta	Fulton	200 Van Buren St.	T
39-091-0003	Bellefontaine	Logan	1222 Superior Ave.	U
39-167-0008	Marietta	Washington	Lancaster Rd.	V
39-123-0012	Elmore	Ottawa		W
	Marion	Marion	635 Bellfontaine Ave.	X
	Marion	Marion	441 Whitmore St.	Y

Table J.

Middletown Heavy Metals Data - 2007 Ohio Bell 3901 Lefferson Rd.									
AQS: 39-017-0015		units -- ng/m³							
Butler County		Parameters							
MONTH	beryllium	chromium	iron	manganese	nickel	zinc	lead	arsenic	cadmium
JANUARY	0.076	<4.0	400	55	<5.4	59	<5.4	0.95	0.23
FEBRUARY	0.067	<4.9	470	62	<6.6	39	<6.6	1.00	0.20
MARCH	0.076	<3.4	390	59	<4.6	40	5.2	0.94	0.18
APRIL	0.047	6.3	590	84	<5.4	56	6.8	0.84	0.19
MAY	0.048	<4.0	320	47	<5.3	50	4.6	2.00	0.26
JUNE	0.033	4.2	390	46	<5.3	66	5.2	1.40	0.19
JULY	<0.027	<4.1	390	44	<5.4	67	6.4	1.40	0.30
AUGUST	0.039	5	410	56	<5.6	52	6.2	0.84	0.20
SEPTEMBER	0.053	5.5	400	60	<5.2	38	6.5	1.70	0.19
OCTOBER	0.079	8.5	710	95	<5.1	60	7.4	1.10	0.27
NOVEMBER	0.059	5.9	490	65	<5.3	69	7.5	1.20	0.32
DECEMBER	<0.026	3.9	230	25	<5.2	36	4.8	0.80	0.17

Table K.

East Liverpool Hetal Metals Data - 2007 Port Authority 1250 St. Geoge St.											
AQS: 39-029-0019		units -- ng/m³									
Columbiana County		Parameters									
MONTH	beryllium	chromium	iron	manganese	nickel	potassium	zinc	lead	mercury	arsenic	cadmium
JANUARY	0.020	<2.8	130	65	<3.7	<190	29	3.9	0.031	1.0	0.23
FEBRUARY	<0.032	<4.8	150	36	<6.4	<320	56	<5.6	0.047	1.2	0.49
MARCH	0.058	4.8	420	270	<3.3	220	360	35	0.088	2.0	2.70
APRIL	0.080	3.6	380	180	<4.1	260	47	6.6	0.042	1.1	0.52
MAY	0.300	12.0	820	510	5.7	410	300	36	0.033	3.2	2.70
JUNE	0.100	3.5	320	160	<4.1	290	38	13	0.066	2.3	0.66
JULY	0.160	5.8	460	690	<6.9	<350	50	13	0.058	2.5	0.59
AUGUST	0.100	3.5	380	500	<4.1	240	190	34	0.030	2.4	0.82
SEPTEMBER	0.140	4.6	510	590	<4.0	260	65	27	0.086	2.9	1.80
OCTOBER	0.190	6.0	540	380	<3.9	290	150	15	0.073	2.2	1.10
NOVEMBER	0.047	6.2	490	960	<3.9	240	75	11	0.032	2.6	1.10
DECEMBER	0.027	3.2	370	850	<3.8	240	280	20	0.037	3.9	3.40

Table L.

East Liverpool Hetal Metals Data - 2007 Waterplant 2220 Michigan Ave.											
AQS: 39-029-0020		units -- ng/m³									
Columbiana County		Parameters									
MONTH	beryllium	chromium	iron	manganese	nickel	potassium	zinc	lead	mercury	arsenic	cadmium
JANUARY	<0.022	5.8	240	480	<4.4	<220	28	5.8	0.053	1.1	0.38
FEBRUARY	<0.024	15	240	280	<4.9	<240	30	<4.9	0.035	1.1	0.29
MARCH	0.043	23	1000	1600	7.9	<300	300	34	0.094	2.9	3.60
APRIL	<0.04	25	710	730	<7.9	<400	67	14	0.072	2.9	0.54
MAY	0.040	24	620	1200	7.0	260	240	22	0.062	2.1	2.00
JUNE	<0.024	19	500	720	<4.8	280	40	10	0.064	2.1	0.51
JULY	0.025	20	1600	6800	40.0	340	120	19	0.063	9.0	3.10
AUGUST	0.039	11	700	1300	9.7	<320	180	16	0.034	2.8	0.94
SEPTEMBER	<0.025	9.3	570	1300	4.9	260	63	32	0.082	3.8	1.20
OCTOBER	0.044	21	1000	2600	14.0	280	350	23	0.130	4.3	1.60
NOVEMBER	<0.023	23	1100	2800	10.0	240	87	11	0.044	4.9	0.96
DECEMBER	<0.03	8.1	680	2800	<6.0	<300	220	18	0.059	4.4	3.20

Table M.

East Liverpool Hetal Metals Data - 2007 Waterplant 500 Maryland Ave.											
AQS: 39-029-0022		units -- ng/m³									
Columbiana County		Parameters									
MONTH	beryllium	chromium	iron	manganese	nickel	potassium	zinc	lead	mercury	arsenic	cadmium
JANUARY	<0.031	<4.6	110	32	<6.1	<310	31	7.8	0.034	1.0	0.25
FEBRUARY	0.030	<4.3	140	33	<5.8	<290	41	5.8	0.054	1.6	0.72
MARCH	0.056	5.6	460	240	<5.2	290	490	45	0.095	2.3	3.70
APRIL	<0.028	<4.2	270	77	<5.6	300	44	5.4	0.038	0.9	0.35
MAY	0.095	12.0	600	300	<5.7	360	290	31	0.042	2.3	2.60
JUNE	0.038	4.6	300	150	<5.6	340	40	11	0.028	1.8	0.58
JULY	0.034	5.5	340	570	<5.9	320	110	23	0.045	2.2	3.70
AUGUST	<0.029	4.9	420	1000	<5.8	300	200	24	0.025	3.0	0.89
SEPTEMBER	<0.035	<5.2	350	530	<7.0	<350	69	19	0.760	3.0	2.30
OCTOBER	0.041	6.0	370	310	<6.7	<330	160	13	0.043	2.0	0.93
NOVEMBER	0.027	5.2	320	440	<5.2	280	72	9.6	0.040	1.8	1.20
DECEMBER	<0.025	<3.8	280	620	<5.0	270	250	19	0.045	2.5	3.30

Table N.

Cleveland Heavy Metals Data - 2007 St. Theodosius Church 2547 St. Tikhon Ave.								
AQS: 39-035-0038	units -- ng/m³							
Cuyahoga County	Parameters							
MONTH	beryllium	chromium	manganese	nickel	zinc	lead	arsenic	cadmium
JANUARY	<0.025	<3.7	18	<5.0	45	9.2	1.2	0.32
FEBRUARY	<0.03	<4.5	12	<6.0	32	9.1	1.4	0.58
MARCH	<0.025	<3.7	38	5.2	62	14	1	0.49
APRIL	<0.025	<3.8	20	<5.0	34	9	0.48	0.25
MAY	0.082	4.5	92	6.7	120	24	2.1	0.5
JUNE	0.036	<3.8	45	<5.1	64	20	2.3	0.53
JULY	0.042	<3.9	41	<5.2	72	19	1.8	0.36
AUGUST	0.043	7.2	46	7.3	100	21	1.8	0.47
SEPTEMBER	0.029	4.4	35	<5.2	54	14	2.2	0.33
OCTOBER	no sample							
NOVEMBER	<0.043	<6.4	21	<8.6	75	15	1.4	0.38
DECEMBER	0.046	<3.7	34	<5.0	64	16	1.1	0.52

Table O.

Cleveland Heavy Metals Data - 2007 FIRE "4A" 3136 Lorain Ave.								
AQS: 39-035-0042	units -- ng/m³							
Cuyahoga County	Parameters							
MONTH	beryllium	chromium	manganese	nickel	zinc	lead	arsenic	cadmium
JANUARY	<0.033	<5.0	7.4	<6.6	42	8.5	0.80	0.24
FEBRUARY	<0.032	<4.8	6.5	<6.4	24	6.8	0.70	0.28
MARCH	<0.022	<3.3	21.0	<4.4	54	13	1.00	0.39
APRIL	0.035	<4.0	29.0	<5.3	50	13	0.62	0.16
MAY	0.052	<4.1	38.0	<5.4	100	26	2.30	0.43
JUNE	<0.034	<5.1	31.0	<6.8	61	17	1.20	0.35
JULY	0.054	<4.1	30.0	<5.5	87	28	2.00	0.29
AUGUST	0.031	<4.2	24.0	6.0	130	19	1.60	0.48
SEPTEMBER	<0.034	<5.2	15.0	<6.9	48	16	2.60	0.31
OCTOBER	<0.027	<4.1	18.0	6.7	58	36	1.20	0.57
NOVEMBER	<0.027	<4.0	9.1	<5.4	35	16	0.86	0.31
DECEMBER	<0.026	<4.0	19.0	<5.3	40	10	0.80	0.47

Table P.

Cleveland Heavy Metals Data - 2007 FERRO "A" 4150 EAST 56th STR.								
AQS: 39-035-0049	units -- ng/m³							
Cuyahoga County	Parameters							
MONTH	beryllium	chromium	manganese	nickel	zinc	lead	arsenic	cadmium
JANUARY	0.033	6.0	170	370	120	76	1.6	0.41
FEBRUARY	<0.032	<4.8	71	110	60	80	1.2	0.21
MARCH	0.029	5.1	130	88	100	41	1.7	0.46
APRIL	<0.027	4.6	89	63	70	26	0.67	0.33
MAY	0.068	6.3	160	110	120	120	1.9	0.48
JUNE	0.054	5.4	110	54	88	37	1.7	0.42
JULY	0.07	6.7	140	18	96	92	1.7	0.52
AUGUST	0.053	7.6	120	35	110	130	1.8	0.43
SEPTEMBER	0.037	4.6	100	63	75	120	3.0	0.44
OCTOBER	0.043	7.8	130	110	99	150	1.6	0.58
NOVEMBER	<0.027	5.3	180	79	150	220	1.7	0.53
DECEMBER	0.027	5.3	85	110	82	96	1.2	0.33

Table Q.

Cleveland Heavy Metals Data - 2007 Fortran Printing Inc. 5777 GRANT AVE.								
AQS: 39-035-0050	units -- ng/m³							
Cuyahoga County	Parameters							
MONTH	beryllium	chromium	manganese	nickel	zinc	lead	arsenic	cadmium
JANUARY	<0.026	<3.9	23	24	38	6.9	1.4	0.45
FEBRUARY	<0.032	<4.8	44	53	59	14	1.4	0.29
MARCH	0.029	<3.3	37	15	47	14	1.0	0.4
APRIL	<0.027	5.0	88	78	81	73	1.2	1.1
MAY	0.079	8.8	180	52	110	34	2.2	1.4
JUNE	0.067	6.8	150	56	110	38	2.5	0.56
JULY	0.110	7.6	180	13	95	37	2.6	0.63
AUGUST	0.074	7.4	120	22	93	44	2.9	0.44
SEPTEMBER	<0.027	4.2	74	51	53	27	4.2	0.46
OCTOBER	0.032	5.4	55	25	62	13	1.6	0.44
NOVEMBER	<0.026	<4.0	39	12	56	19	1.2	0.39
DECEMBER	<0.026	<3.9	27	9.1	51	23	1.1	0.24

Table R.

Cleveland Heavy Metals Data - 2007 Asphalt Plant "A" West 3rd St.								
AQS: 39-035-0061	units -- ng/m³							
Cuyahoga County	Parameters							
MONTH	beryllium	chromium	manganese	nickel	zinc	lead	arsenic	cadmium
JANUARY	<0.025	<3.7	15	<5.0	42	8.1	1.1	0.20
FEBRUARY	0.030	<4.6	12	<6.1	36	8	1.2	0.18
MARCH	0.024	<3.1	28	<4.2	42	10	0.85	0.27
APRIL	<0.025	<3.8	58	<5.1	51	13	0.46	0.17
MAY	0.110	6.4	150	<8.5	130	23	2.1	0.36
JUNE	0.053	<3.9	56	<5.2	61	26	1.8	0.45
JULY	0.063	4.5	76	<5.2	96	36	1.4	0.38
AUGUST	0.058	6.4	65	8.7	100	21	1.5	0.38
SEPTEMBER	0.055	<3.9	53	<5.2	70	22	2.1	0.34
OCTOBER	0.066	6.8	94	9.4	99	25	1.3	0.54
NOVEMBER	0.026	4.4	70	6.7	100	19	1.3	0.50
DECEMBER	0.040	<3.8	33	<5.0	52	12	0.97	0.33

Table S.

Columbus Heavy Metals Data - 2007 Woodrow 1700 Ann St.									
AQS: 39-049-0025		units -- ng/m³							
Franklin County		Parameters							
MONTH	beryllium	chromium	iron	manganese	nickel	zinc	lead	arsenic	cadmium
JANUARY	<0.027	<4.0	270	21	<5.4	84	8.0	0.89	0.34
FEBRUARY	<0.032	<4.8	130	7.2	<6.5	35	6.8	0.76	0.30
MARCH	<0.023	<3.5	160	14	<4.7	52	6.6	0.96	0.24
APRIL	<0.028	<4.3	170	13	<5.7	35	6.0	0.70	0.21
MAY	<0.029	<4.4	240	17	<5.8	72	10.0	1.10	0.43
JUNE	<0.03	<4.5	170	10	<6.0	35	7.2	1.20	0.28
JULY	<0.03	<4.5	220	19	<6.0	90	10.0	1.10	0.36
AUGUST	<0.03	<4.6	260	18	<6.1	76	14.0	1.10	0.61
SEPTEMBER	<0.029	<4.4	260	12	<5.8	52	8.4	1.80	0.42
OCTOBER	<0.029	<4.3	240	17	<5.8	64	8.3	0.86	0.33
NOVEMBER	<0.035	<5.2	300	18	<7.0	81	11.0	1.20	0.48
DECEMBER	<0.027	<4.0	85	5.4	<5.4	47	4.0	0.71	0.18

Table T.

NWDO Heavy Metals Data - 2007 Delta 200 Van Buren St.								
AQS: 39-051-0001		units -- ng/m³						
Fulton County		Parameters						
MONTH	beryllium	chromium	manganese	nickel	zinc	lead	arsenic	cadmium
JANUARY	<0.034	<5.1	9.6	<6.8	3700	690	0.81	5.6
FEBRUARY	<0.033	<5.0	18.0	<6.7	2700	240	0.52	3.4
MARCH	<0.1	<16	5.3	<21	1200	140	<1.0	3.2
APRIL	<0.028	<4.2	6.8	<5.6	3200	320	0.42	6.4
MAY	<0.029	<4.3	11.0	<5.8	680	99	0.98	1.2
JUNE	<0.024	<3.6	6.6	<4.8	1400	190	1.20	3.8
JULY	<0.025	<3.7	9.4	<5.0	1500	250	1.00	3.6
AUGUST	<0.025	<3.7	7.0	<4.9	2200	300	0.81	4.7
SEPTEMBER	<0.022	<3.4	8.3	<4.5	450	66	1.80	0.9
OCTOBER	<0.024	<3.6	8.7	<4.8	2800	360	0.81	5.0
NOVEMBER	<0.041	<6.1	16.0	<8.2	6100	590	1.30	8.2
DECEMBER	<0.038	<5.6	5.9	<7.5	5600	620	0.54	7.2

Table U.

SWDO Heavy Metals Data - 2007 Bellefontaine 1222 Superior Ave.									
AQS: 39-091-0003		units -- ng/m³							
Logan County		Parameters							
MONTH	beryllium	chromium	iron	manganese	nickel	zinc	lead	arsenic	cadmium
JANUARY	<0.022	<3.3	140	3.8	<4.4	23	48	0.64	0.12
FEBRUARY	<0.027	<4.0	98	3.9	<5.4	18	14	0.49	0.12
MARCH	<0.02	<3.0	110	4.8	<4.0	18	74	0.75	0.17
APRIL	<0.023	<3.5	NA	4.7	<4.7	18	30	0.47	0.09
MAY	<0.028	<4.2	140	9.0	<5.7	28	47	0.85	0.14
JUNE	<0.026	<3.9	74	4.5	<5.2	23	90	0.90	0.13
JULY	<0.027	<4.0	58	3.7	<5.3	20	24	0.90	0.12
AUGUST	<0.027	<4.0	NA	7.3	<5.4	21	92	1.30	0.12
SEPTEMBER	<0.025	<3.7	500	7.0	<4.9	18	77	0.74	0.10
OCTOBER	<0.024	<3.6	460	9.1	<4.8	18	81	0.87	0.12
NOVEMBER	<0.024	<3.6	120	8.0	<4.8	20	190	0.59	0.13
DECEMBER	<0.023	<3.4	54	2.4	<4.6	17	21	0.69	0.11

Table V.

SEDO Heavy Metals Data - 2007 Washington Co. Career Center Lancaster Rd.									
AQS: 39-167-0008		units -- ng/m³							
Washington County		Parameters							
MONTH	beryllium	chromium	manganese	nickel	zinc	lead	mercury	arsenic	cadmium
JANUARY	<0.02	<3.1	180	<4.1	22	6.0	0.026	1.00	0.32
FEBRUARY	<0.025	<3.7	320	<4.9	26	7.1	0.050	0.78	0.49
MARCH	<0.021	<3.1	170	<4.2	37	4.9	0.014	1.70	0.48
APRIL	<0.021	<3.1	32	<4.1	15	2.8	0.015	0.42	0.14
MAY	<0.026	<3.8	44	<5.1	29	4.0	0.016	0.74	0.14
JUNE	<0.022	<3.3	31	<4.4	18	3.3	0.016	0.66	0.19
JULY	<0.024	<3.5	60	<4.7	38	4.1	0.013	0.85	0.23
AUGUST	<0.029	<4.3	79	<5.8	23	3.8	0.014	0.77	0.17
SEPTEMBER	<0.02	<3.1	55	<4.1	15	4.3	0.010	0.76	0.11
OCTOBER	<0.02	<2.9	170	<3.9	28	5.8	0.011	0.75	0.40
NOVEMBER	<0.024	<3.6	100	<4.8	19	3.8	0.014	0.66	0.20
DECEMBER	<0.025	<3.7	34	<5.0	16	3.4	0.015	0.51	0.14

Table W.

NWDO Heavy Metals Data - 2007 Brush Wellman 32 Route 105								
AQS: 39-123-0012		units - ng/m³						
Ottawa County		Parameters						
MONTH	beryllium	chromium	manganese	nickel	zinc	lead	arsenic	cadmium
JANUARY	0.055	<0.8	1.5	<1.0	10	2.2	0.49	0.10
FEBRUARY	0.086	<0.8	3.8	<1.0	18	3.4	0.35	0.10
MARCH	0.038	<0.6	2.8	<0.8	13	3.8	0.49	0.10
APRIL	0.036	<0.8	4.1	<1.1	12	3.7	0.45	0.08
MAY	0.053	<0.8	5.8	<1.0	15	4.4	0.73	0.16
JUNE	0.061	<1.0	5.1	<1.3	16	3.8	0.78	0.11
JULY	0.100	<1.0	4.3	<1.3	13	4.6	0.61	0.11
AUGUST	0.092	<0.6	4.1	<0.8	17	4.0	0.73	0.19
SEPTEMBER	0.076	<0.7	6.6	<1.0	17	5.1	0.93	0.18
OCTOBER	0.091	<0.6	3.9	<0.8	14	3.6	0.67	0.09
NOVEMBER	0.290	<0.7	4.4	<0.9	16	3.4	0.54	0.12
DECEMBER	0.190	<0.7	1.9	<0.9	14	2.9	0.43	0.12

Table X.

NWDO Heavy Metals Composite Monthly Data - 2007 Marion Steel 635 Bellfontaine / Gill Ave.									
AQS:		units -- ng/m³							
Marion County		Parameters							
MONTH	beryllium	chromium	manganese	nickel	zinc	lead	mercury	arsenic	cadmium
JANUARY	<0.026	4.1	54	<5.2	61	13	0.12	0.97	0.33
FEBRUARY	<0.062	9.8	160	<12.0	3200	430	0.2	1.4	9.7
MARCH	<0.022	5.5	92	<4.5	420	81	0.21	1.4	1.9
APRIL	<0.027	<4.0	27	<5.4	58	9.7	0.15	0.68	0.24
MAY	<0.028	5.6	87	<5.5	220	36	0.097	1.1	0.89
JUNE	<0.029	<4.3	50	<5.8	120	21	0.067	1.7	0.65
JULY	<0.036	<5.4	45	<7.2	110	26	0.079	1.7	0.56
AUGUST	<0.024	<3.6	28	<4.8	130	13	0.039	0.92	0.28
SEPTEMBER	<0.029	8.8	120	<5.8	140	28	0.067	1.2	0.8
OCTOBER	<0.028	12	190	<5.7	480	96	0.71	1.2	1.7
NOVEMBER	0.029	5.6	120	<5.5	140	26	0.16	1.0	0.65
DECEMBER	<0.036	<5.4	46	<7.1	200	32	0.098	0.76	1.6

Table Y.

NWDO Heavy Metals Composite Monthly Data - 2007 Marion Steel 441 Whitmore St.									
AQS:		units -- ng/m³							
Marion County		Parameters							
MONTH	beryllium	chromium	manganese	nickel	zinc	lead	mercury	arsenic	cadmium
JANUARY	0.04	14	390	7.3	960	200	3.3	4.4	4.0
FEBRUARY	<0.035	5.9	130	<7.1	1500	210	0.13	1.8	4.8
MARCH	<0.019	6.9	150	<3.7	540	84	0.53	1.5	3.1
APRIL	<0.022	4	60	<4.4	150	23	0.32	1.0	0.61
MAY	0.023	7.4	160	<4.6	480	77	0.22	1.6	1.9
JUNE	<0.024	3.5	61	<4.7	91	14	0.056	1.1	0.38
JULY	<0.029	9.4	160	5.8	280	56	0.23	1.6	1.2
AUGUST	<0.02	2.9	46	<3.9	180	31	0.098	1.1	0.69
SEPTEMBER	0.032	12	210	5.5	380	70	0.12	1.6	2.2
OCTOBER	0.034	16	380	<5.2	1100	210	0.44	2.3	3.8
NOVEMBER	<0.025	9.4	230	<4.9	480	100	0.31	1.3	1.9
DECEMBER	<0.023	7	140	<4.7	380	69	0.41	1.5	3.3

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 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 USEPA, 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.

Modernization:

DAPC will pursue information on new technology such as:

- Continuous gas chromatography, mass spectrometry
- ICP/MS - to be utilized at DES for metals analysis – online for 2008
- FTIR long-path monitoring
- Updates of the Compendium of Recommended Methods are available at the following
- Evaluate future training needs for Air Toxics Monitoring:
- sampling methods,
- analytical procedures,
- equipment.

AVAILABLE REPORTS:

New Boston Coke

Columbus Dioxin Study

Columbus Dioxin Study 1995

Marion Air Quality Study

Cleveland Air Toxics Study

Future Report: A Compilation of Air Toxics Monitoring 1990 - 2006, summary data currently available by year.

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. The new AQI is expected to be promulgated in mid-2008.

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 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 12

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

INDEX VALUE	PM_{10} $\mu g/m^3$	$PM_{2.5}$ $\mu g/m^3$	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	0.000-0.034	0.000-0.064		(4)	Green	Good
51-100	55-154	15.5-40.4	4.5-9.4	0.035-0.144	0.065-0.084		(4)	Yellow	Moderate
101-150	155-254	40.5-65.4	9.5-12.4	0.145-0.224	0.085-0.104	0.125-0.164	(4)	Orange	Unhealthy for Sensitive Groups
151-200	255-354	65.5-150.4[2]	12.5-15.4	0.225-0.304	0.105-0.124	0.165-0.204	(4)	Red	Unhealthy
201-300	355-424	150.5-250.4[2]	15.5-30.4	0.305-.604	0.125-0.374	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.

[4]NO_2 has no short-term NAAQS and can generate an AQI only above an AQI value of 200.

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 13 is for the AQI in effect during 2007, before the ozone National Ambient Air Quality Standard was changed.

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 13

County	Highest AQI Value	Days in each category:			
		Good	Moderate	Unhealthy for Sensitive Groups	Unhealthy
Butler	150	256	103	6	0
Clark	129	296	66	3	0
Cuyahoga	147	256	101	8	0
Franklin	124	266	91	8	0
Hamilton	140	203	153	9	0
Jefferson	119	281	80	4	0
Lake	122	296	60	3	0
Lawrence	114	275	86	4	0
Lucas	137	276	85	4	0
Mahoning	159	288	75	1	3
Montgomery	106	299	64	2	0
Stark	151	256	88	7	1
Summit	132	281	75	9	0
Trumbull	119	183	77	2	0

VIII. MONITORING SITES 2007

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 for 2007

AQS Number	County	Site Location	Parameter(s)
39-001-0001	Adams	210 N. Wilson	SO2, PM25C
39-003-0002	Allen	2650 Bible Rd.	O3, SO2
39-003-0006	Allen	1314 Findlay Rd	PM10
39-003-0007	Allen	Rousch Rd.	PM10
39-003-0008	Allen	North St.	PM10
39-007-1001	Ashtabula	Conneaut	O3, SO2
39-009-0003	Athens	Gifford State Forest	LC25
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, SO2
39-017-0015	Butler	3901 Lefferson	PM10, PB
39-017-0016	Butler	400 Nilles Rd.	LC25
39-017-1004	Butler	Hook Field	O3, SO2, LC25, 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
39-029-0022	Columbiana	500 Maryland Ave.	SO2, PM10, PB
39-035-0027	Cuyahoga	2200 W 28th St.	PM10, LC25
39-035-0034	Cuyahoga	891 E 152 St.	O3, LC25
39-035-0038	Cuyahoga	2547 St. Tikhon Ave.	PB, SO2, PM10, LC25, PMSP
39-035-0042	Cuyahoga	3136 Lorain	PB
39-035-0045	Cuyahoga	45950 Broadway Ave.	SO2, PM10, LC25
39-035-0048	Cuyahoga	2026 E 9th St.	CO
39-035-0049	Cuyahoga	E 56th St.	PB
39-035-0050	Cuyahoga	Grant Rd.	PB
39-035-0051	Cuyahoga	E 9th & St. Clair	CO
39-035-0053	Cuyahoga	4160 Pearl Rd.	CO
39-035-0060	Cuyahoga	E 14th & Orange	NO2, SO2, PM10, LC25, PM25C, PMSP
39-035-0061	Cuyahoga	W 3rd St.	PB
39-035-0064	Cuyahoga	Berea	O3
39-035-0065	Cuyahoga	4600 Harvard Ave.	SO2, PM10, LC25
39-035-0068	Cuyahoga	7629 Broadway	PB
39-035-0069	Cuyahoga	7300 Superior Ave	PB

AQS Number	County	Site Location	Parameter(s)
39-035-0070	Cuyahoga	13013 Cortlett Ave.	CO, NO2
39-035-1002	Cuyahoga	16900 Holland Rd.	PM10, LC25
39-035-5002	Cuyahoga	6116 Wilson Mills Rd.	O3
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
39-049-0028	Franklin	2521 Fairwood Ave.	O3, PM25C
39-049-0029	Franklin	7600 Fodor Rd., New Albany	O3, PM25C
39-049-0034	Franklin	Korbel Ave.	SO2, PM10, PM25C
39-049-0036	Franklin	122 S. Front St.	CO
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
39-061-0006	Hamilton	11590 Grooms Rd.	O3, LC25, PM25C
39-061-0010	Hamilton	6950 Ribble 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
39-061-0043	Hamilton	3254 Kemper Rd.	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, PMSP
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, PMSP
39-081-1001	Jefferson	Mingo Junction City Hall	CO, PM10, 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
39-085-1001	Lake	IQ 325 Vine St.	PM10
39-085-3002	Lake	71 E. High St.	O3, SO2, LC25, PM25C
39-087-0006	Lawrence	2120 S. 8th St.	O3, SO2
39-087-0010	Lawrence	2128 S. 9th St.	PM10, LC25, PMSP

AQS Number	County	Site Location	Parameter(s)
39-087-0011	Lawrence	St Rt 775 & St Rt 141	O3
39-089-0005	Licking	300 Licking View Dr., Heath	O3
39-091-0003	Logan	1222 Superior Ave.	PB
39-091-0006	Logan	320 Richard Ave.	PB
39-091-0007	Logan	1205 Superior Ave.	PB
39-091-0008	Logan	1215 Greenwood St.	PB
39-093-0016	Lorain	214 E 34th St.	LC25
39-093-0018	Lorain	4706 Detroit Rd.	O3
39-093-3002	Lorain	2180 Lake Breeze	PM10, LC25, PM25C, PMSP
39-095-0008	Lucas	600 Collins Ave,	SO2
39-095-0024	Lucas	348 S Erie St.	O3, SO2, LC25, PM25C
39-095-0025	Lucas	600 Collins Park	LC25
39-095-0026	Lucas	4208 Airport Highway	LC25, PMSP
39-095-0027	Lucas	200 S Byrne Rd., Waterville	O3
39-095-0034	Lucas	306 Yondota	O3
39-095-0081	Lucas	Friendship Park	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
39-103-0003	Medina	6364 Deerview	O3, LC25, PM25C
39-105-1001	Meigs	Mulberry Ave., Pomeroy	SO2
39-109-0005	Miami	3825 N SR 589, Castown	O3
39-113-0028	Montgomery	901 W Fairview Ave.	CO
39-113-0032	Montgomery	215 E. Third St.	LC25, PM25C, PMSP
39-113-0033	Montgomery	1404 Webster St.	O3
39-113-0034	Montgomery	117 South Main St.	CO
39-113-7001	Montgomery	2728 Vicking 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

AQS Number	County	Site Location	Parameter(s)
39-151-0016	Stark	Malone College	O3
39-151-0017	Stark	1330 Dueber Ave	LC25, PMSP
39-151-0020	Stark	420 Market Ave.	CO, LC25, PM25C
39-151-0021	Stark	245 W 5th St., Brewster	O3
39-151-0022	Stark	45 S. Wabash	O3
39-151-4005	Stark	1175 W Vine St., Alliance	O3
39-153-0017	Summit	80 Brittain Rd.	SO2, LC25, PM25C
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, PMSP
39-155-0005	Trumbull	540 Laird Ave. SE Warren	PM10
39-155-0006	Trumbull	2323 Main Ave. SW	PM10
39-155-0007	Trumbull	2609 Draper St. SE	PM10, LC25, PM25C
39-155-0009	Trumbull	Community Hall, Kinsman	O3
39-155-0011	Trumbull	Vienna	O3
39-157-0006	Tuscarawas	527 Cresent St.	SO2
39-165-0007	Warren	416 Southeast St.	O3, LC25, PM25C
39-167-0004	Washington	2000 Fourth St., Marietta	O3
39-167-0006	Washington	Everready Battery Rd.	PB, PM10
39-167-0008	Washington	Washington Career Center	PB
39-167-0009	Washington	2543 Blue Knob Rd.	PB
39-173-0003	Wood	347 Dunbridge Rd.	O3
39-175-0008	Wyandot	East North St.	PM10
39-175-0009	Wyandot	Greer Rd.	PM10

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
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 Standard
NADB	National Aerometric Databank
NAMS	National Ambient Monitoring Station
NO	Nitric Oxide
NO_2	Nitrogen Dioxide
O_3	Ozone
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 Station
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
1217	Research Triangle Institute RTP, NC
1259	Hamilton County Department of Environmental Services
1299	URS Corp, TX