COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

1999

AMBIENT AIR QUALITY MONITORING REPORT

DIVISION OF AIR QUALITY MONITORING
400 MARKET STREET
HARRISBURG, PA 17105

For more information, visit us through the Pennsylvania website at www.pa.state.us, or visit DEP directly at www.dep.state.pa.us (directLINK “Air Quality”).

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EXECUTIVE SUMMARY

The Pennsylvania Department of Environmental Protection (DEP) has a constitutional obligation to protect the right to clean air for all Pennsylvanians. DEP's Bureau of Air Quality fulfills this obligation by regulating emissions from thousands of sources, like factories and power plants. Monitoring air quality statewide, assisting companies with compliance, investigating complaints and taking enforcement action against violators are all part of DEP's work.

As DEP implements the federal Clean Air Act Amendments of 1990, the study of past and present air quality data will be a crucial component of program planning and air pollution reduction strategies.

Ambient Air Monitoring

The goals of Pennsylvania's ambient air monitoring program are to evaluate compliance with federal and state air quality standards, provide real-time monitoring of air pollution episodes, develop data for trend analysis, develop and implement air quality regulations, and provide information to the public on daily air quality conditions in their area.

DEP monitors air quality in areas having high population density, high levels of expected contaminants or a combination of the two. The majority of the monitoring takes place in the 13 air basins of the Commonwealth. Air basins are geographic areas, usually valleys, where air tends to stagnate. The air basins were designated by the state legislature and written into the state code.

DEP does not generally monitor air quality in Allegheny and Philadelphia counties. Monitoring in these areas is performed by independent health agencies. An exception exists in Allegheny County, where DEP has an ambient monitoring site as part of an exhibit at the Carnegie Science Center.

Air Quality Index

An Air Quality Index (AQI) is published daily for all sites in Pennsylvania as a means of reporting air quality to the general public. The AQI records levels of five common air contaminants -- carbon monoxide, sulfur dioxide, particulate matter (PM_{10}), ozone and nitrogen dioxide. It was developed by the U.S. Environmental Protection Agency (EPA) to standardize air pollution ratings. Real time monitoring and current AQI information is also available on DEP's website at www.dep.state.pa.us (directLINK "Air Quality Index").

Quality Assurance Program

DEP's Bureau of Air Quality conducts regularly scheduled performance audits and precision checks on the air monitoring equipment. Quarterly performance audits are conducted to assess data accuracy on carbon monoxide, sulfur dioxide, ozone, total suspended particulate matter (TSP), PM_{10} suspended particulate matter, $PM_{2.5}$ suspended particulate matter and lead monitoring systems.

Overview of Air Quality Data

Data collected by DEP can generally be divided into two groups: particulate matter and gaseous pollutants. DEP uses health-based National Ambient Air Quality Standards (NAAQS) as well as several standards of its own, such as the standard for hydrogen sulfide.

Total Suspended Particulate, PM_{10} and $PM_{2.5}$ Suspended Particulate Matter

Particulate matter is the solid or liquid matter formed by smoke, dust, fly ash or condensing vapors that can be suspended in the air for long periods of time. Particulate emissions result primarily from industrial processes and fuel combustion. The smaller of these particles are breathed into the lungs where they can aggravate or cause respiratory ailments or carry other pollutants into the lungs.

The federal ambient air quality standard for particulate matter was revised to reflect the adverse

health effects of particulate matter less than 10 microns in size (PM_{10}). PM_{10} measurements have replaced the total suspended particulate (TSP) standard because many of the larger particles measured in TSP do not penetrate the lungs and have little health effect. PM_{10} measurements appear to represent all of the particulate emissions from transportation sources and most of the emissions in the other traditional categories. Thus there is no federal or state air quality standard for TSP. In July 1997, EPA attempted to revise the standard for particulate matter by adding a standard for fine particulates that are less than 2.5 micrometers in diameter ($PM_{2.5}$). Although legal challenges to the $PM_{2.5}$ standard have left it unenforceable, the first phase of the monitoring network was deployed and started operation in 1999. Since the $PM_{2.5}$ network required increased staff resources, significant cuts were made to the TSP (including sulfates and nitrates) and the PM_{10} networks.

The annual mean composite of all areas of the Commonwealth has demonstrated a 12 percent improvement in TSP levels over the last 10 years. There were no sites in the Commonwealth that exceeded the former annual or 24-hour air quality standard in 1999.

Average PM_{10} levels have improved 15 percent over the last 10 years. The reduction may be due to the cuts in the monitoring network. There were no sites in the Commonwealth that exceeded the ambient air quality standards in 1999.

With only one complete year of $PM_{2.5}$ data collected, no trend information is available. All monitoring sites had annual means less than the proposed standard, and no site exceeded the 24-hour air quality standard in 1999.

Sulfates

The atmosphere contains two types of sulfates: primary and secondary. Primary sulfates are emitted directly into the atmosphere from industrial processes. Secondary sulfates are formed in sunlight.

Studies have shown significant correlation between high sulfate levels and illness. Sulfates also reduce visibility and contribute to acid rain. The high level of sulfates during the summer is due to sulfate formation in sunlight. Sulfates continue to be a problem in Pennsylvania.

All monitoring sites exceeded the 30-day standard in 1999, which the Commonwealth has removed from its regulations because there are currently no federal air quality standards. There are currently no long- or short-term air quality standards for sulfates.

Lead

Lead is a metal that is highly toxic when ingested or inhaled. It is a suspected carcinogen of the lungs and kidneys and has adverse effects on cardio, nervous and renal systems. Lead is emitted into the atmosphere by industrial processes.

Lead levels in the Commonwealth have met the federal standards for the past 10 years. Since lead was removed from gasoline, relatively few improvements now are seen in air basins that have no lead industrial sources.

Nitrates

Nitrates are particulate compounds that form in the atmosphere from the oxidation of nitrogen gases. They represent a significant portion of the finer particulate that can be inhaled into the lungs and which affect visibility.

Levels of nitrates are relatively constant across the Commonwealth. There are no long- or short-term air quality standards for nitrates.

Sulfur Dioxide

Sulfur dioxide is a gaseous pollutant that is emitted primarily by industrial furnaces or power plants burning coal or oil containing sulfur. Health problems caused by high exposures to sulfur dioxide include impairment of breathing and respiratory illnesses. Sulfur dioxide damages trees, plants and agricultural crops and is a precursor to acid rain.

All sites met the air quality standards for sulfur dioxide. Sulfur dioxide levels have improved slightly or remained the same over the last 10-year period. The 1999 averages continue to be below 50 percent of the annual ambient air quality standard.

Ground-Level Ozone

Ozone, or photochemical smog, is not emitted into the atmosphere, but is formed by reactions of other pollutants. The primary pollutants entering into this reaction -- volatile organic compounds (VOC) and oxides of nitrogen (NO_x) -- create ozone in the presence of sunlight. Ozone is a strong irritant to the eyes and upper respiratory system and also damages crops.

Ozone is erratic by nature, and levels fluctuate depending on weather conditions. Ozone levels are consistently higher during the summer months, with the ozone monitoring season being April 1 to October 31. Since 1990, daily maximum 1-hour ozone levels have improved so that the majority of counties in Pennsylvania are meeting the air quality standard. The improvements that are seen in ozone concentrations can be attributed in part to controls on VOCs and gasoline volatility. Ozone concentrations (using all monitors in Pennsylvania) exceeded the 1-hour daily air quality standard on 11 days and exceeded the proposed 8-hour daily maximum level of 84 parts per billion (ppb) on 51 days during 1999.

Oxides of Nitrogen

Oxides of nitrogen (NO_x) are a class of pollutants formed when fuel is burned at a very high temperature. They are predominately emitted from vehicles. Although there is no air quality standard for NO_x, the level of this pollutant is of concern due to its role in the formation of ozone and acid rain.

Nitrogen Dioxide

Nitrogen dioxide is a highly toxic, reddish brown gas that is created primarily from fuel combustion in industrial sources and vehicles. It creates an odorous haze that causes eye and sinus irritation, blocks natural sunlight and reduces visibility. It can severely irritate respiratory illnesses. Nitrogen dioxide contributes to the creation of acid rain and adversely impacts forests and other ecosystems.

No sites in Pennsylvania exceeded the annual air quality standard for nitrogen dioxide in 1999. Nitrogen dioxide levels have improved 11 percent on average over the last 10 years.

Carbon Monoxide

Carbon monoxide is a poisonous gas that, when introduced into the bloodstream, inhibits the delivery of oxygen to body tissue. Exposure creates a severe health risk to individuals with cardiovascular disease. The largest man-made source of carbon monoxide is vehicle emissions. This pollutant is a health concern in areas of high traffic density or near industrial sources.

All DEP sites in the Commonwealth have met the federal air quality standards for carbon monoxide the last 10 years. Carbon monoxide levels have seen a long-term improvement of 40 percent from levels in 1990.

For additional information about Pennsylvania's air quality programs, visit the DEP website www.dep.state.pa.us (directLINK "Air Quality").

INTRODUCTION

The goals of the ambient air monitoring program in Pennsylvania are to judge compliance with federal and state air quality standards, provide real-time monitoring of air pollution episodes, provide data for trend analysis, evaluate regulations and planning, and provide public information daily on air quality.

Three agencies conduct air quality monitoring to judge compliance with air quality standards in Pennsylvania: DEP, the Allegheny County Health Department, and Philadelphia Air Management Services.

This report contains summaries of the air quality data collected by DEP's Bureau of Air Quality in calendar year 1999. Data from Philadelphia or Allegheny counties can be obtained by contacting those agencies directly. Mailing addresses and telephone numbers for all three agencies are given in Appendix B.

The monitoring strategy of DEP is to place monitors in areas having high population density, high levels of contaminants or a combination of the two. The majority of all monitoring efforts take place in the "air basins" of the Commonwealth. These "air basins" have been defined in the Bureau's regulations and consist of the following 13 areas:

- Allegheny County Air Basin
- Allentown - Bethlehem - Easton Air Basin
- Erie Air Basin
- Harrisburg Air Basin
- Johnstown Air Basin
- Lancaster Air Basin
- Lower Beaver Valley Air Basin
- Monongahela Valley Air Basin
- Reading Air Basin
- Scranton - Wilkes-Barre Air Basin
- Southeast Pennsylvania Air Basin
- Upper Beaver Valley Air Basin
- York Air Basin

Air monitoring surveillance is conducted in all 13 air basins. Allegheny County conducts the majority of monitoring with its own monitoring program in the Allegheny County Air Basin. Philadelphia County, which also conducts its own monitoring program, is part of the Southeast Pennsylvania Air Basin. In addition to the 13 air basins in which DEP conducts surveillance, there are three non-air basin areas, which have historically significant monitoring programs: Altoona, Williamsport and the Shenango Valley. DEP performs monitoring in Allegheny County at the Carnegie Science Center in Pittsburgh as part of an air quality exhibit.

DEP operates two air monitoring networks in the Commonwealth: the Pennsylvania Air Quality Surveillance System (PAQSS) for high volume particulate sampling and the Commonwealth of Pennsylvania Air Monitoring System (COPAMS) for continuous pollutant sampling.

In July 1997, EPA attempted to revise the primary standard for particulate matter by adding standards for fine particulates (particulates less than 2.5 micrometers in diameter – $PM_{2.5}$). The increased resources needed to implement and operate the $PM_{2.5}$ monitors resulted in significant cuts to the PAQSS network. The sites left were chosen to support needed lead monitoring sites. The discrete total suspended particulate network consists of eight monitoring sites. Each site sampled total suspended particulate matter (TSP) on a schedule of once every six days. Selected filters are also analyzed for sulfates, nitrates and lead. In addition, discrete sampling is also conducted at four sites for suspended particulate matter of 10 microns or less in size (PM_{10}) in 1999. No additional analysis is performed on the PM_{10} sample filters. In the first installation phase of the $PM_{2.5}$ monitoring network, 18 sites were operating in 1999.

The COPAMS network is a totally automatic, microprocessor-controlled system that consists of 44 remote stations throughout the Commonwealth. Dial-up telephone lines used by a central computer system collect the raw data from these remote stations every hour. Each station measures selected parameters such as sulfur dioxide, hydrogen sulfide, ozone, carbon monoxide, nitrogen dioxide, oxides of nitrogen, continuous PM_{10}, continuous $PM_{2.5}$, wind speed, wind direction (vector averaged and sigma theta), ambient temperature and solar radiation.

The sampling locations for DEP's air monitoring sites and the pollutants monitored at the site are listed in Appendix C.

In addition to the normal air monitoring surveillance conducted by DEP, two additional cooperative monitoring efforts continued this year. DEP has renewed a cooperative agreement with Pennsylvania State University's (PSU) Department of Plant Pathology to conduct ozone monitoring in four remote areas of the state. The collected ozone data will be used to determine possible effects to forests and crops and assess ozone transport in rural Pennsylvania. The sites are located in the Moshannon State Forest, Clearfield County; Tiadaghton State Forest, Lycoming County; near Gleason, Tioga County; and at the Department of Conservation and Natural Resources Penn Nursery, Centre County.

To continue the efforts to understand ozone formation and transport by the North American Research Strategy for Tropospheric Ozone (NARSTO), DEP agreed to take over monitoring at three NARSTO sites: Holbrook, Greene County; Arendtsville, Adams County; and Kunkletown, Monroe County. Each NARSTO site monitors selected parameters, such as ozone, sulfur dioxide, carbon monoxide and nitrogen oxides.

CHAPTER 1
AIR QUALITY STANDARDS

One of the primary goals of the ambient air monitoring program is to obtain data to compare against air quality standards. Pennsylvania has adopted all of the National Ambient Air Quality Standards (NAAQS), as well as several standards of its own. These standards, designed to protect the public health and welfare, are shown in Tables 1-1 and 1-2.

There are two types of NAAQS standards: primary and secondary. Primary standards protect against adverse health effects, while secondary standards protect against welfare effects such as damage to crops, vegetation, buildings and decreased visibility.

Table 1-1. National Ambient Air Quality Standards (NAAQS)

	Primary (Health Related)		Secondary (Welfare Related)	
Pollutant	Type of Average	Standard Level Concentration	Type of Average	Standard Level Concentration
Carbon Monoxide	8-hour Running	9 ppm	No Secondary Standard	
	1-hour	35 ppm	No Secondary Standard	
Lead	Maximum Quarterly Average	1.5 $\mu g/m^3$	Same as Primary Standard	
Nitrogen Dioxide	Annual Arithmetic Mean	0.053 ppm	Same as Primary Standard	
Ozone	Maximum Daily 1-Hour Average	0.12 ppm	Same as Primary Standard	
	Fourth Average Daily Maximum 8-hour Running Mean (based on 3 years)	0.08 ppm	Same as Primary Standard	
Particulate Matter PM_{10}	Annual Arithmetic Mean	50 $\mu g/m^3$	Same as Primary Standard	
	24-hour	150 $\mu g/m^3$	Same as Primary Standard	
Particulate Matter $PM_{2.5}$	Annual Arithmetic Mean	15 $\mu g/m^3$	Same as Primary Standard	
	24-hour	65 $\mu g/m^3$	Same as Primary Standard	
Sulfur Dioxide	Annual Arithmetic Mean	0.03 ppm	3-hour	0.50 ppm
	24-hour	0.14 ppm		

Table 1-2. Pennsylvania Ambient Air Quality Standards

Pollutant	Type of Average	Standard Level Concentration
Beryllium	30-day	0.01 $\mu g/m^3$
Fluorides (total soluble, as HF)	24-hour	5 $\mu g/m^3$
Hydrogen Sulfide	24-hour	0.005 ppm
	1-hour	0.1 ppm
Settled Particulate (Total)	30-day	43 tons/$mile^2$/month
	1-year	23 tons/$mile^2$/month

CHAPTER 2
AIR QUALITY TRENDS AND COMPARISONS

TOTAL SUSPENDED PARTICULATE MATTER

With the monitoring for $PM_{2.5}$ particulate matter being so labor intensive, DEP made a significant cut in the number of sites monitoring for total particulate matter since no air quality standard exists. The sites that remained were chosen for other needs, such as lead monitoring.

Total suspended particulates (TSP) are the solid or liquid matter in air. Particles vary in size and may remain suspended in the air a few seconds to several months. Particulate emissions come from coal-burning power plants, industrial processes, mining operations, municipal waste incinerators and fuel combustion. They also are produced by natural sources such as forest fires and volcanoes. The smaller of these particles are breathed into the lungs, where they can aggravate or cause respiratory ailments. These smaller particles also can carry other pollutants into the lungs.

The federal ambient air quality standard for particulate matter was revised to reflect the adverse health effects of smaller particulate matter less than 10 microns in size (PM_{10}). There is no federal or state air quality standard for TSP.

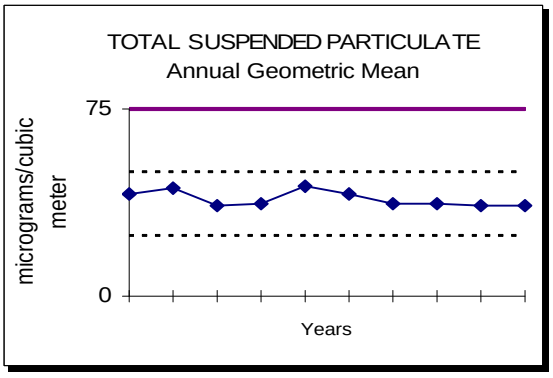


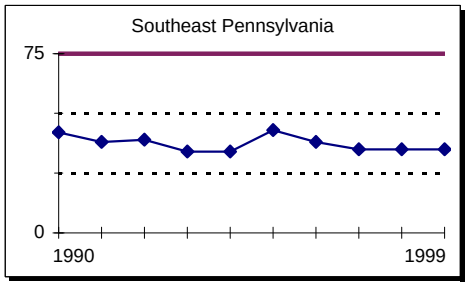
Figure 2-1. Trend in annual geometric mean TSP concentrations, 1990-1999.

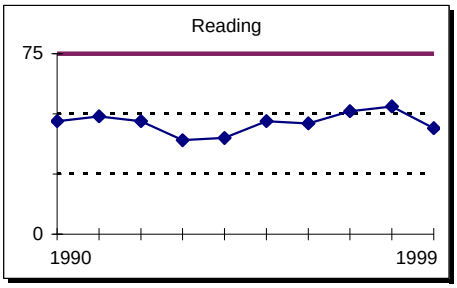
Figure 2-1 shows a 12 percent decrease in annual geometric mean TSP concentrations measured across the Commonwealth between 1990 and 1999. The solid line represents the former annual primary air quality standard of 75 micrograms per cubic meter ($\mu g/m^3$).

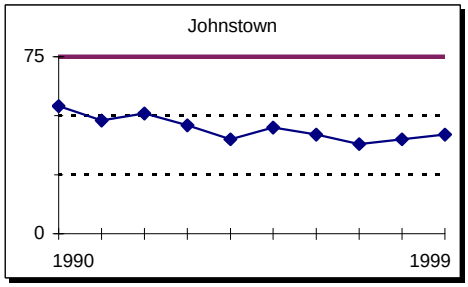
Figure 2-2, located on the following page, shows the TSP trends over the last 10 years in various areas of the Commonwealth where monitoring remains. The air basin and area's annual geometric means plotted consist of all stations that were operated during that year and which had at least 30 samples taken. Thus, stations that were moved or discontinued in the past are still included in the 10-year trend. The solid line represents the former annual primary air quality standard of 75 $\mu g/m^3$. The historical data that went into Figure 2-2 are contained in Table A-2 in Appendix A. This table lists the annual geometric means over the last 10 years for each site that was monitored in 1999. The annual mean is shown if there was at least 30 samples collected that year.

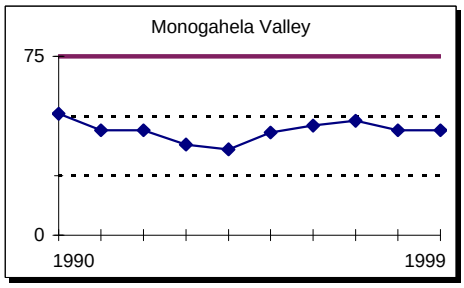
The 1999 TSP summary is contained in Table A-1 in Appendix A. There were no sites in the Commonwealth that exceeded the former annual or 24-hour primary air quality standards in 1999. For comparison to the PM_{10} annual air quality standard, the TSP annual arithmetic mean was calculated by averaging the four quarterly arithmetic means.

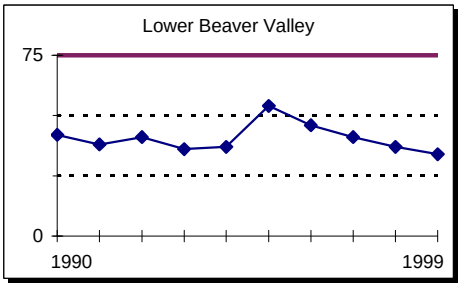
FIGURE 2-2. TSP PARTICULATE TRENDS IN PENNSYLVANIA 1990 to 1999
ANNUAL GEOMETRIC MEANS (micrograms per cubic meter)











Former annual air quality standard was
75 micrograms per cubic meter

SULFATE and NITRATE PARTICULATE MATTER

With the monitoring for $PM_{2.5}$ particulate matter being so labor intensive, DEP made a significant cut in the number of sites monitoring for total particulate matter since no air quality standard exists. As a result, the number of sites with filter analysis for sulfates and nitrates was subsequently reduced.

Sulfate particulate matter in the atmosphere is composed of two types: primary and secondary. Primary sulfates are emitted directly into the atmosphere from industrial processes. Secondary sulfates are formed in the atmosphere from other sulfur-containing compounds under mechanisms that involve photochemical processes.

Studies have shown significant correlation between high sulfate levels and increased absences from work and school because of illness. Sulfates are also of interest due to their effects of reducing visibility and contributing to acid rain.

Sulfate continued to be a problem in 1999 with high 30-day averages at all monitoring sites. The state air quality standard was removed from the regulations since it was considered to be more stringent than federal regulations. There are no short- or long-term air quality standards for sulfates.

The 1999 sulfate summary is contained in Table A-3 in Appendix A. The large number of high sulfate levels during the summer is caused by the relationship between sulfate formation and photochemical processes. The maximum values will occur at the majority of sites from May to September. Table A-4 in Appendix A lists the maximum 30-day (monthly) means and the maximum 24-hour (daily) value over the last 10 years for each site that was monitored in 1999. The historical data is shown if there was at least 30 samples collected that year.

Nitrates are particulate compounds that are usually formed in the atmosphere from the oxidation of oxides of nitrogen gases. They are of interest since they represent a significant portion of the finer particulates which can be inhaled into the lungs and which have a great impact on visibility. Nitrates are also being studied to determine their impact on acid precipitation.

Table A-7 in Appendix A summarizes nitrate data collected during 1999. As seen from the annual means, the levels of nitrates in the Commonwealth are relatively constant from area to area.

There are no long-term or short-term air quality standards for nitrates.

LEAD

Lead is a highly toxic metal when ingested or inhaled. It is a suspected carcinogen of the lungs and kidneys and has adverse effects on the cardio, nervous and renal systems. Lead is emitted to the atmosphere by vehicles burning leaded fuel and from certain industrial processes, primarily battery manufacturers and lead smelters. As a result of the reduction in lead in gasoline, metal processing is the major source of lead emissions.

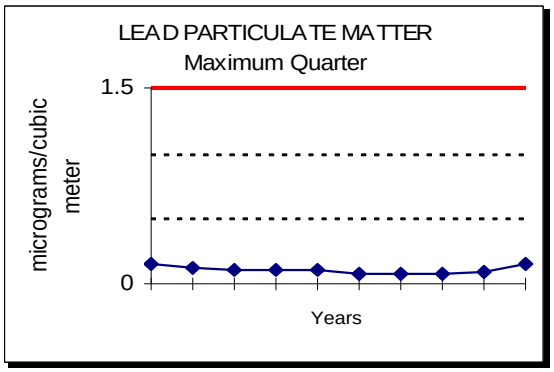


Figure 2-3. Trend in maximum quarterly average lead concentrations (including source-oriented sites), 1990-1999.

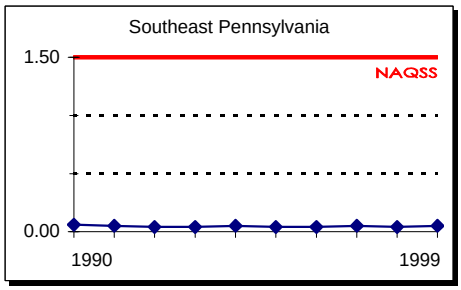
Lead concentrations from 1990 to 1999 are represented in Figure 2-3 by the maximum quarterly mean during the year for all monitors across the state. Lead concentrations have leveled off in the last 10 years after dramatic reductions seen in the late 1970s to early 1980s due to the implementation of lead-free gasoline. Figure 2-3 indicates that the maximum quarterly lead concentrations have remained fairly constant and below the air quality standard over the past 10 years even though source-oriented sites dominate the data. The solid line represents the quarterly mean air quality standard of 1.5 micrograms per cubic meter ($\mu g/m^3$).

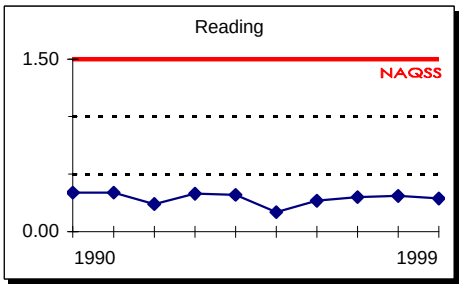
Lead trends for the individual areas in the state are shown in Figure 2-4, located on the following page, for 1990 to 1999. The solid line represents the quarterly mean air quality standard of 1.5 $\mu g/m^3$ on these graphs.

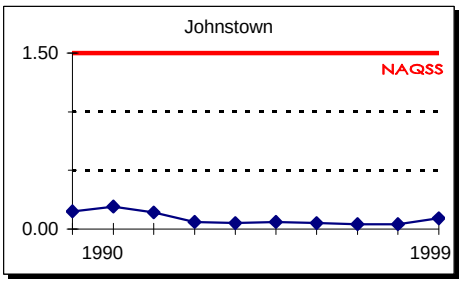
The particulate lead standard was not exceeded at any monitoring site in 1999, including source-oriented sites. Quarterly averages for all stations that monitored lead in 1999 are shown in Table A-5 in Appendix A, along with the number of samples taken in each quarter, the annual arithmetic mean and the total number of samples for the year.

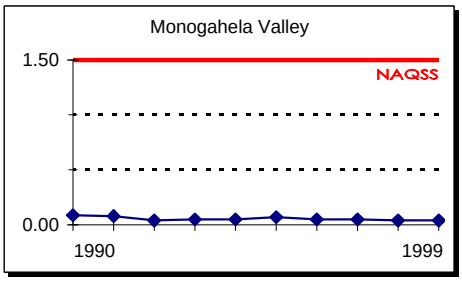
Lead historical trend data is presented in Table A-6 in Appendix A for 1990 to 1999. The table contains the maximum quarterly mean for each year. Trend data is shown for all sites that operated in 1999. The quarterly mean is shown if there were at least 30 samples collected that year. No current monitoring site has exceeded the air quality standard in the last 10 years. Relatively high lead levels experienced at sites located in Laureldale and Lyons are due to the influence of lead point sources close to the monitoring sites, although these sites are well below the air quality standard.

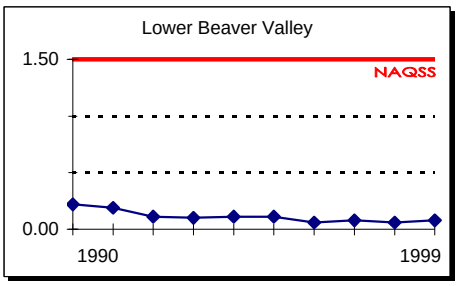
FIGURE 2-4. LEAD PARTICULATE TRENDS IN PENNSYLVANIA 1990 to 1999
MAXIMUM QUARTERLY MEANS (micrograms per cubic meter)



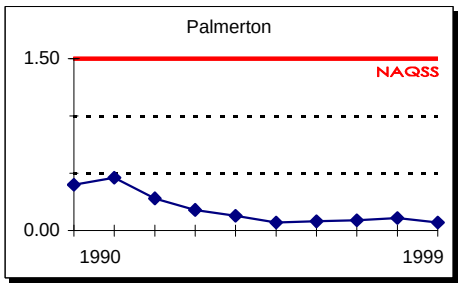


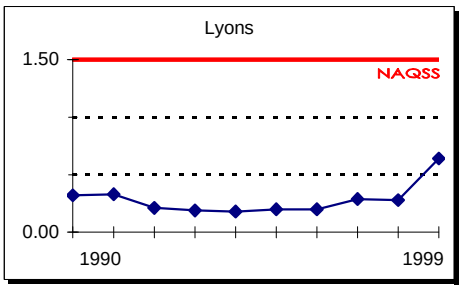






Lead air quality standard is
quarterly average of
1.5 micrograms per cubic meter





PM_{10} SUSPENDED PARTICULATE MATTER

Particulate matter (PM) is solid matter or liquid droplets from smoke, dust, fly ash or condensing vapors that can be suspended in the air for long periods of time. Particulate matter in air with aerodynamic diameters less than 10 micrometers is PM_{10}. PM_{10} has replaced the total suspended particulate (TSP) standards because many of the larger particles included in the TSP measurement (up to 45 micrometers) do not penetrate into the lungs and have very little effect on health. Consequently, the PM_{10} measurement is believed to be a better indicator of actual health risks.

PM_{10} appears to represent essentially all of the particulate emissions from transportation sources and most of the emissions in the other traditional categories. The standard for PM_{10} was adopted in July 1987. On July 18, 1997, EPA revised the particulate matter standards by adding new standards for $PM_{2.5}$ (particles less than or equal to 2.5 micrometers) and by adjusting the form of the PM_{10} 24-hour standard. One of the changes in the PM_{10} standard was the requirement to correct the flow based on local temperature and pressure conditions instead of using standard temperature (25 degrees C) and pressure (760 mm). This correction in flow calculations changes the way data is calculated. All discrete PM_{10} monitors were corrected to local conditions on January 1, 1998, while the continuous PM_{10} tapered element oscillating microbalance (TEOM) monitors were not changed until July 1, 1998. Although legal challenges have delayed implementation and enforcement of the new particulate matter standards, DEP continued to calculate PM_{10} based on local temperature and pressure conditions.

The Commonwealth measures PM_{10} concentrations using discrete (single sample) monitors that collect particulate matter on a filter for 24 hours and with a real-time instrument for measuring the PM_{10} particulate concentration. The TEOM monitor is a gravimetric instrument that draws ambient air through a filter, constantly weighing the filter and calculating real-time PM_{10} concentrations. The analyzer reports 1-hour data, which are then used to calculate daily 24-hour averages (midnight to midnight), for comparison to the ambient air quality standard.

Figure 2-5 graphically represents the historical statewide PM_{10} trend from 1990 to 1999. Historical data is in units corrected to standard conditions while data in 1998-99 is corrected to local conditions. Monitored levels of PM_{10} levels in 1998 have improved 15 percent from levels observed in 1990 across the Commonwealth.

The map in Figure 2-6 on page 17, shows the relationship of PM_{10} annual mean levels in the different counties across the Commonwealth where monitoring is performed. When there are multiple sites in the county the annual mean is an average of the sites. Only sites that have monitored 50 percent of the time during 1999 are included in this figure. All counties monitored by DEP are in attainment of the annual PM_{10} air quality standard. The map in Figure 2-7 on page 18, displays the highest second maximum 24-hour PM_{10} by county in 1999. All counties monitored by DEP are in attainment of the 24-hour PM_{10} air quality standard.

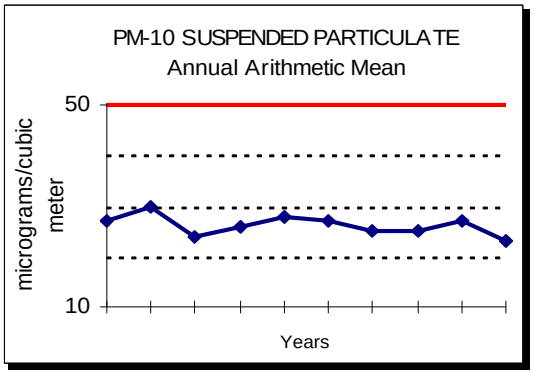


Figure 2-5. Trend in annual mean PM_{10} concentration, 1990-1999.

PM_{10} trends for the individual areas of the state are shown in Figure 2-8 on page 19 for 1990 to 1999. The air basin or area averages consist of all stations that were operated during that year and had at least 30 discrete samples or 50 percent valid continuous data. PM_{10} levels have remained fairly constant over this period with an average 10 percent decrease in levels over the last five years. The apparent dramatic improvement shown in the Scranton-Wilkes Barre air basin is probably due to the lack of sampling data and should not be viewed as representative of the particulate levels. The Southeast Pennsylvania and Erie air basins have demonstrated the most improvements with a greater than 30 percent decrease over the last 10

years. The solid line represents the annual air quality standard of 50 micrograms per cubic meter ($\mu g/m^3$).

The 1999 PM_{10} data summary for data units corrected to local conditions appears in Table A-8 in Appendix A. There were no sites in the Commonwealth that violated the annual or 24-hour ambient air quality PM_{10} standard in 1999.

Historical trend data for each site that monitored in 1999 is shown in Table A-9 in Appendix A. This table lists the annual arithmetic means and second maximum 24-hour mean over the last 10 years for each site that monitored in 1998 with at least 50 percent data completeness.

Figure 2-6 PM-10 Particulate Matter Concentrations 1999

Annual Means (Average by County)
(Micrograms Per Cubic Meter)

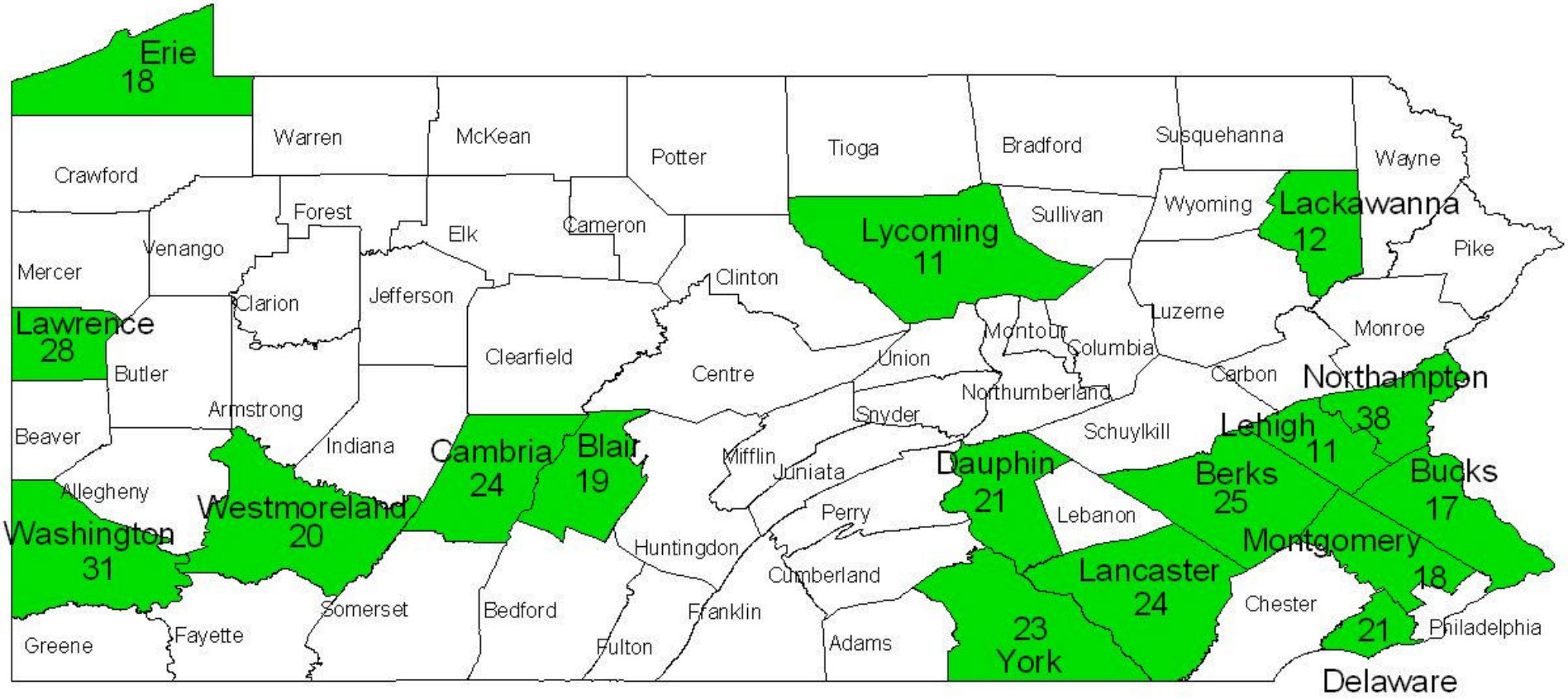


Figure 2-7 PM-10 Particulate Matter Concentrations 1999

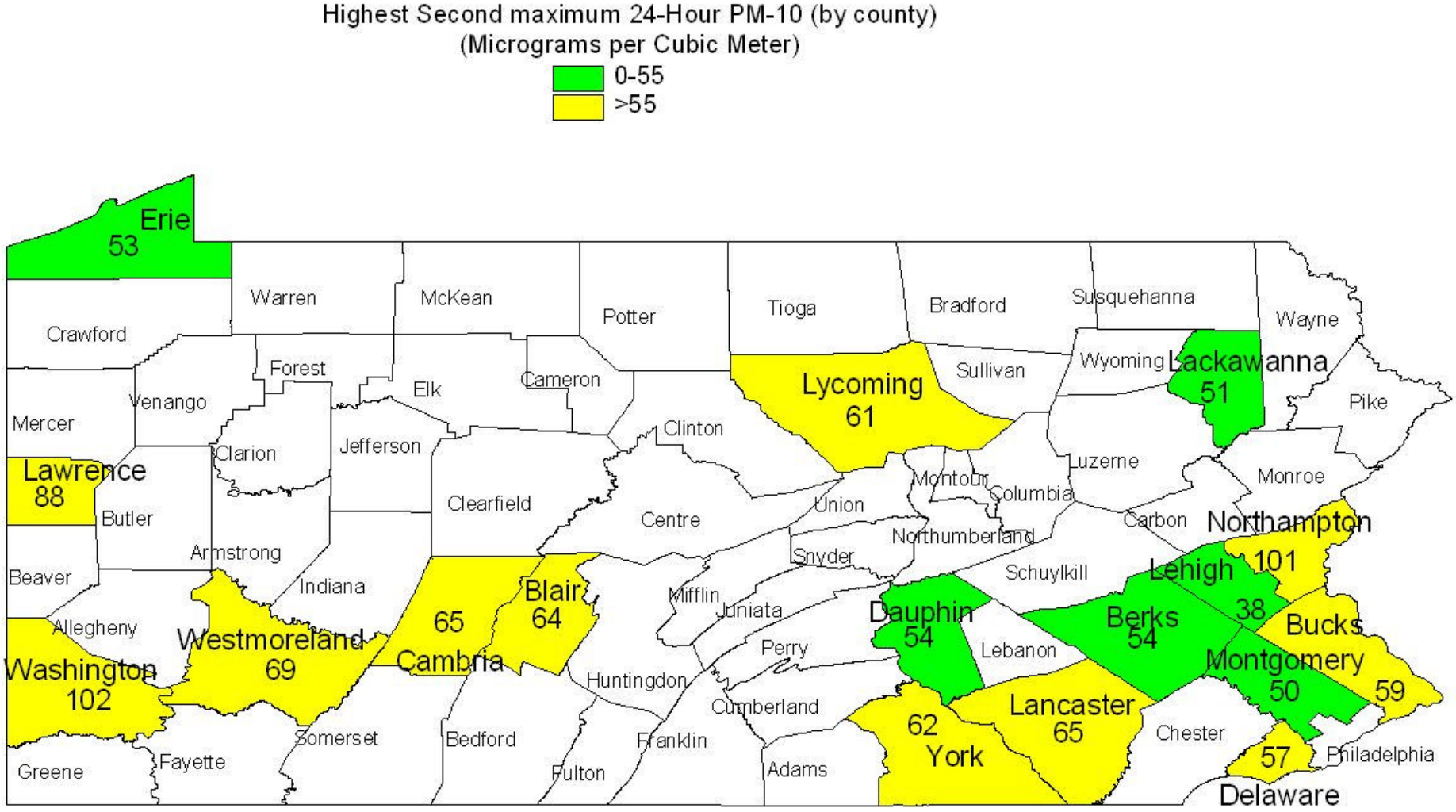
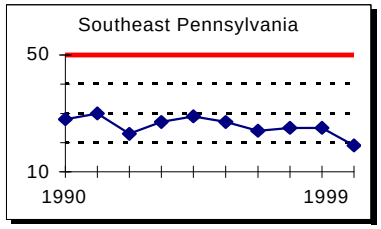
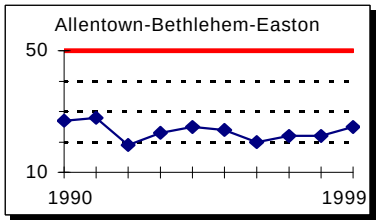
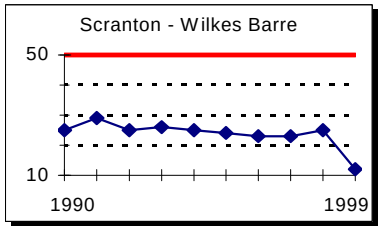
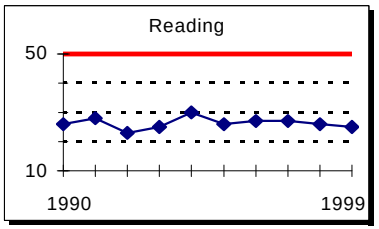


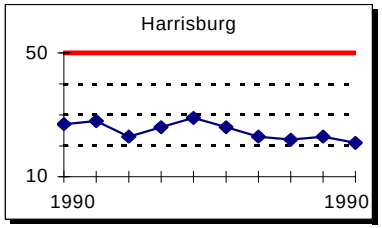
FIGURE 2-8. PM-10 PARTICULATE TRENDS IN PENNSYLVANIA 1990 to 1999
ANNUAL ARITHMETIC MEANS (micrograms per cubic meter)

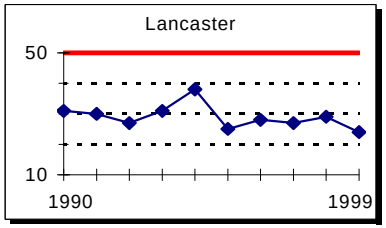


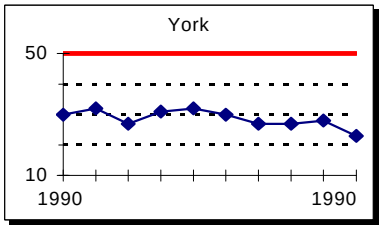


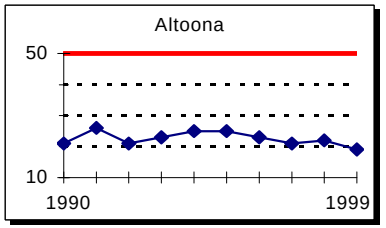


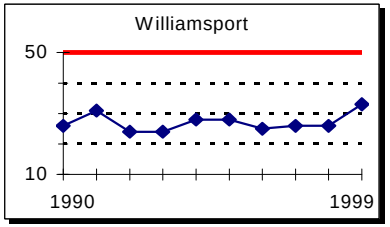


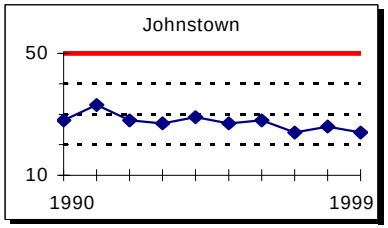


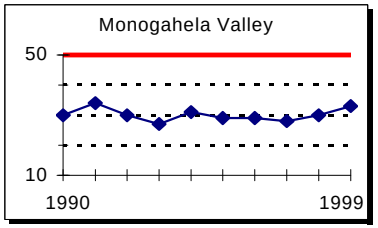


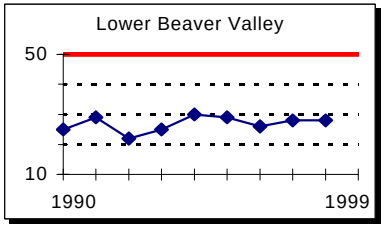


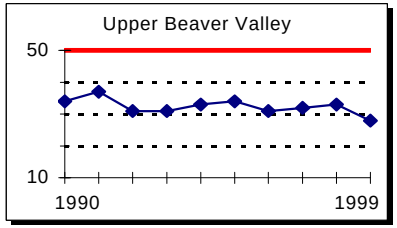


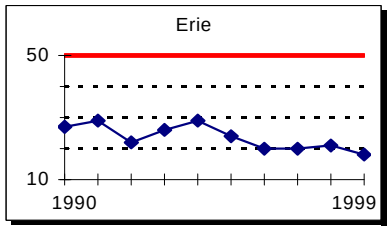












Annual Air Quality Standard
is 50 micrograms per cubic meter

$PM_{2.5}$ SUSPENDED PARTICULATE MATTER

Particulate matter (PM) is the general term used for a mixture of solid particles and liquid droplets found in the air. These particles, which come in a wide range of sizes, may be emitted directly by a source or formed in the atmosphere. Fine particles are those that are less than 2.5 micrometers in diameter ($PM_{2.5}$). Fine particles can accumulate in the respiratory system and are associated with numerous adverse health effects including decreased lung function and increased respiratory symptoms and disease. Sensitive groups that appear to be at greatest risk include the elderly, individuals with cardiopulmonary disease such as asthma, and children. Particulate matter also can cause adverse impacts to the environment. $PM_{2.5}$ is the major cause of reduced visibility in parts of the United States. Other environmental impacts occur when particles deposit onto soil, plants, water, or man-made materials such as monuments or statues.

With only one complete year of data collected, no trend analysis or comparison to the proposed air quality standard can be made. Data collected for 1999 is summarized in Table A-10 in Appendix A for all federal reference method (FRM) monitors and continuous (TEOM) methods.

SULFUR DIOXIDE

Sulfur dioxide is a gaseous pollutant that is emitted primarily by industrial furnaces or power plants burning coal or oil containing sulfur. The major health effects associated with high exposures to sulfur dioxide include effects on breathing and respiratory illness symptoms. The population most sensitive to sulfur dioxide includes asthmatics and individuals with chronic lung disease or cardiovascular disease. Sulfur dioxide damages trees, plants and agricultural crops and acts as a precursor to acid rain. Finally, sulfur dioxide can accelerate the corrosion of natural and man-made materials that are used in buildings and monuments, as well as paper, iron-containing metals, zinc and other protective coatings.

The statewide composite average of sulfur dioxide annual mean concentration from 1990 to 1999 is shown in Figure 2-9. Sulfur dioxide levels have shown only a slight improvement over the last ten years and remain at 50 percent of the air quality standard.

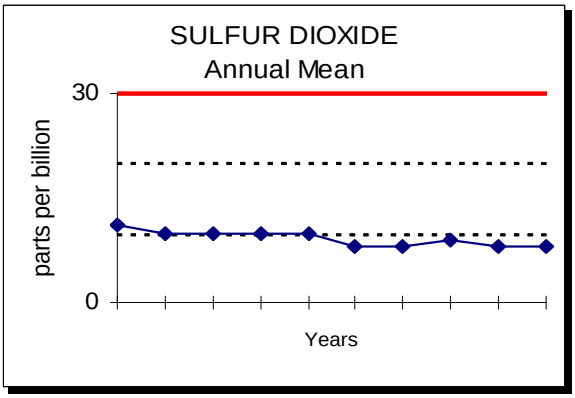


Figure 2-9. Trend in annual mean SO_2 concentrations, 1990-99

The map in Figure 2-10 on the following page displays the average sulfur dioxide annual mean by county in 1999. When there are multiple sites in the county the annual mean is an average of the sites. All counties in which monitoring was conducted met the air quality standard of 30 parts per billion (ppb).

The map in Figure 2-11on page 25 displays the highest second maximum 24-hour (daily) average concentration by county in 1999. All areas of the Commonwealth met the 24-hour air quality standard of 140 ppb.

Figure 2-12 on page 26 displays the last 10-year trend (1990 to 1999) of the annual arithmetic mean in the 12 air basins and the Altoona, Williamsport and Shenango Valley non-air basins. The solid line represents the annual air quality standard of 0.030 parts per million (ppm).

Sulfur dioxide levels correlate significantly with ambient temperatures. As temperatures go down, the space heating requirements increase, resulting in additional burning of coal and oil.

Sulfur dioxide data for all sites that operated in 1999 is summarized in Table A-10 in Appendix A. All sites in the Commonwealth met the annual mean, 3-hour and 24-hour ambient air quality standards.

Sulfur dioxide historical data over the last 10 years is presented in Table A-11 in Appendix A for all stations that operated in 1999 with at least 50 percent valid data. This data was used to produce the trend chart shown in Figure 2-12.

Figure 2-10 Sulfur Dioxide Concentrations 1999

Annual Means (Average by County)
(Parts per Billion)

0 - 30

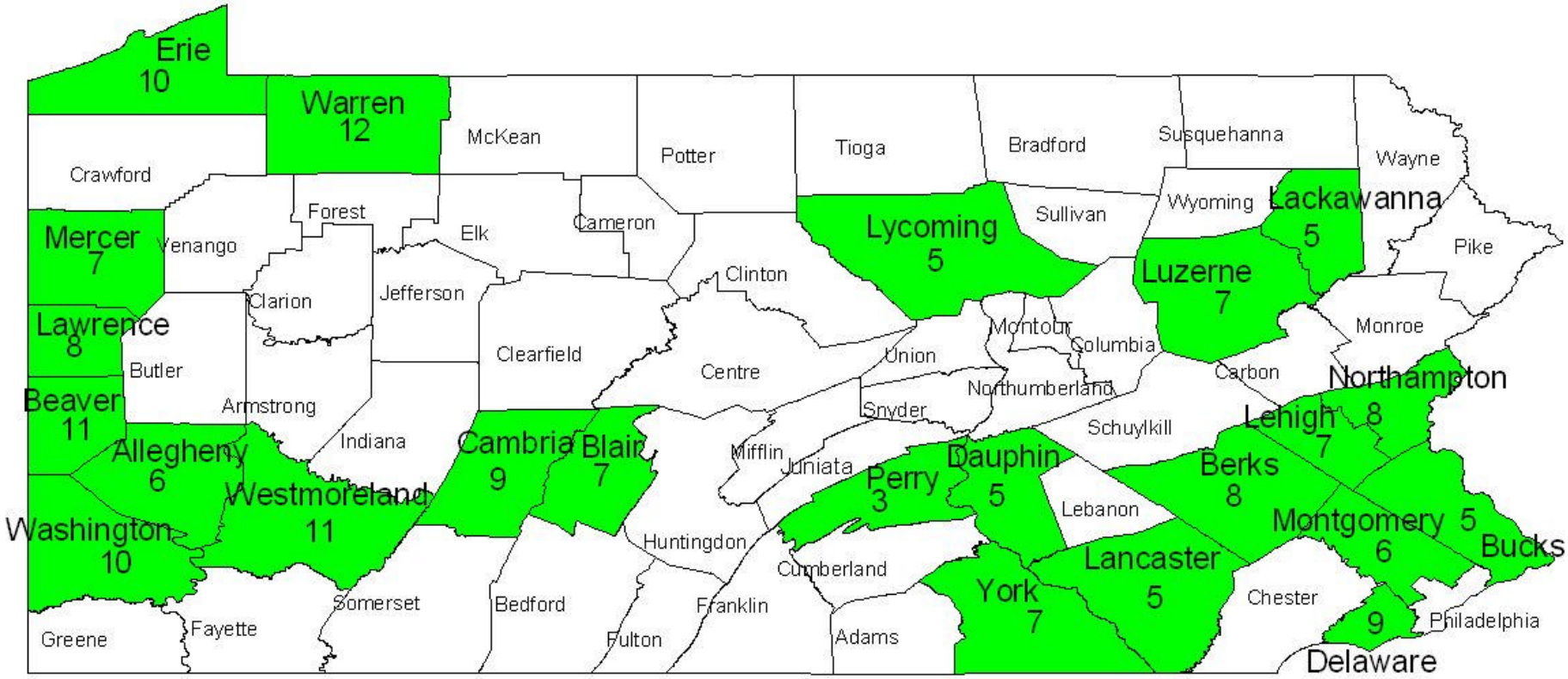


Figure 2-11 Sulfur Dioxide Concentrations 1999

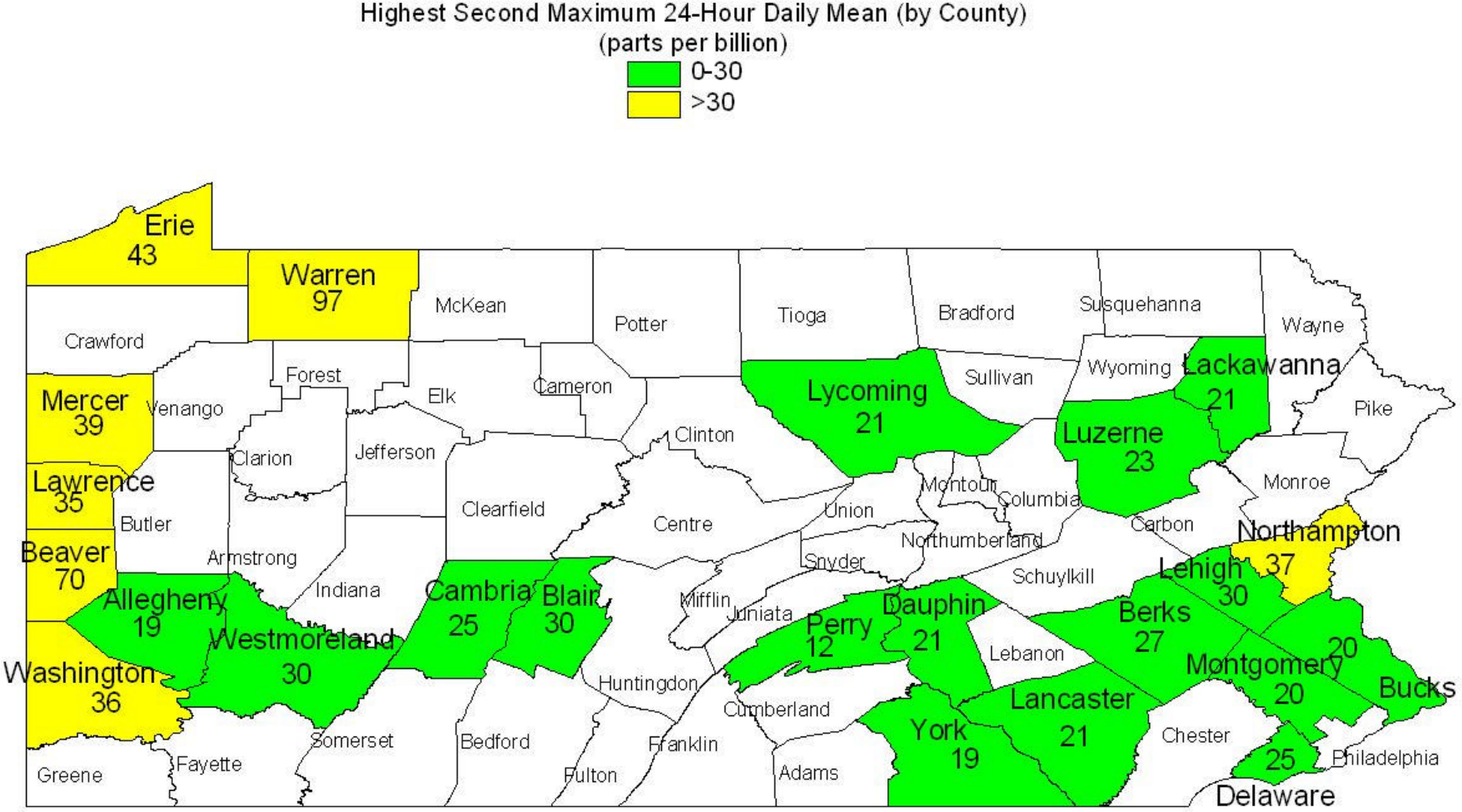
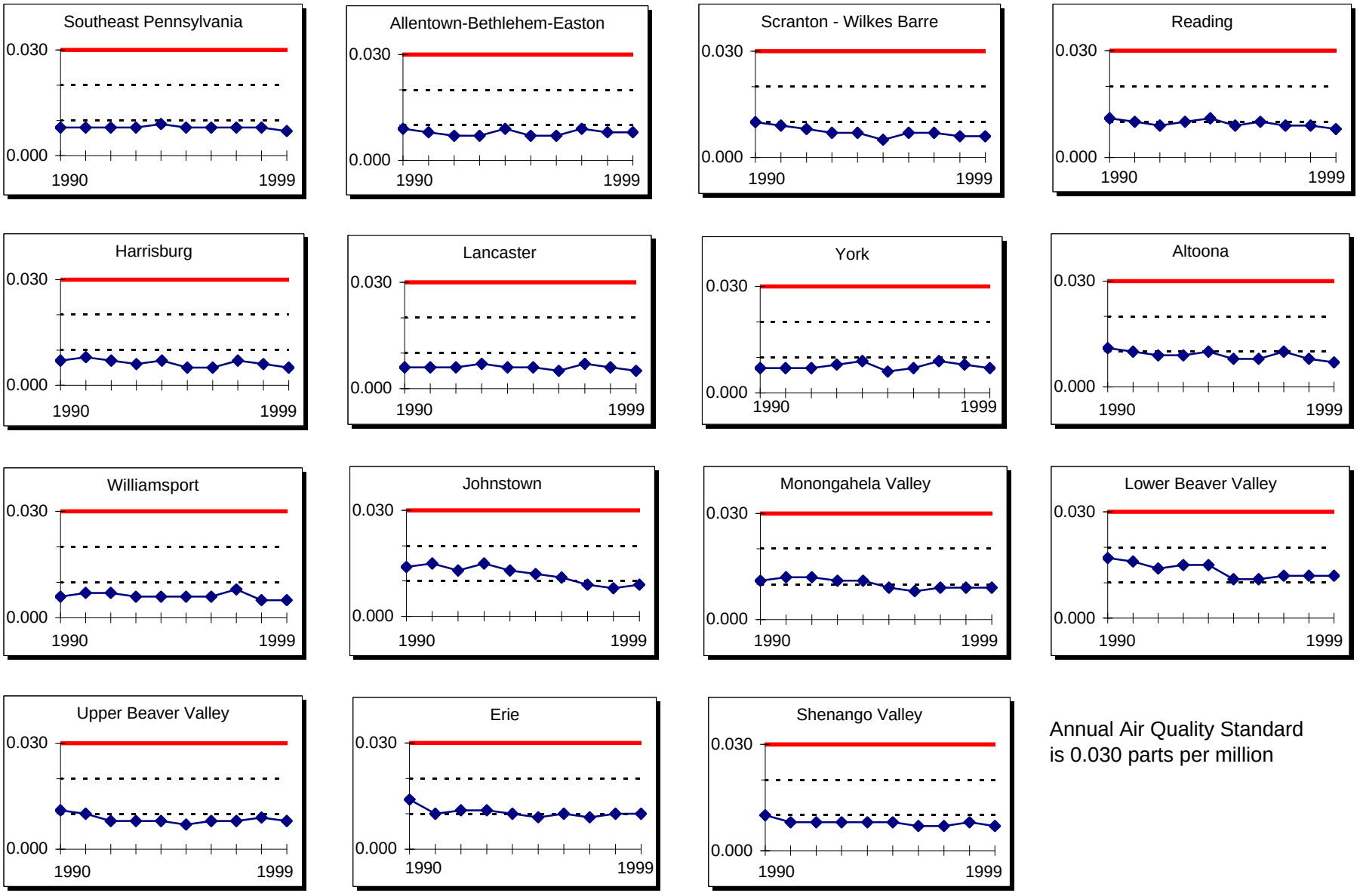


FIGURE 2-12. SULFUR DIOXIDE TRENDS IN PENNSYLVANIA 1990 to 1999
ANNUAL ARITHMETIC MEANS (PARTS PER MILLION)



Annual Air Quality Standard
is 0.030 parts per million

GROUND-LEVEL OZONE

Ground-level ozone, or photochemical smog, is a secondary pollutant. It is not emitted directly to the atmosphere but rather is formed in the atmosphere by the reactions of other pollutants. Ground-level ozone forms during the summer months, when nitrogen oxides (NO_x) and volatile organic compounds (VOC) combine and react in the presence of sunlight and warm temperatures. Nitrogen oxides come from burning fossil fuels at power plants, industrial boilers and motor vehicles. VOCs are emitted from a variety of sources, including motor vehicles, chemical plants, refineries and natural (biogenic) sources. Changing weather patterns contribute to yearly differences in ozone concentrations. Ozone and the precursor pollutants that cause ozone also can be transported into an area from pollution sources located hundreds of miles away. Ozone is a strong irritant to the eyes and upper respiratory system. It hampers breathing and also damages crops and man-made materials such as monuments and statues.

In July 1997, EPA established a new 8-hour primary standard to protect against longer exposure periods that are of concern for both human health and environmental welfare. However, unresolved legal challenges have left the 8-hour ozone standard enforceable, so the 1-hour ozone standard still applies. The proposed secondary standard (welfare-based) was set identical to the 8-hour primary standard. The secondary standard highlights the concerns associated with effects on vegetation. As a way of focusing on this DEP has contracted with Pennsylvania State University's Department of Plant Pathology to monitor at four rural sites: Moshannon State Forest, Clearfield County; Tiadaghton, Lycoming County; the Department of Conservation and Natural Resource Penn Nursery facility, Centre County; and a site between Mansfield and Williamsport, Tioga County.

In addition to the established surveillance monitoring sites, DEP also agreed to continue monitoring begun by the North American Research Strategy for Tropospheric Ozone (NARSTO). These sites are primarily designed to study ozone transport in the Northeast. These sites are located in Holbrook, Greene County and Kunkletown, Monroe County.

Since the 1-hour ozone standard still applies in areas that have not attained compliance with the standard, this report presents both 1- and 8-hour ozone data. The ozone monitoring season in Pennsylvania runs from April 1 to October 31.

Ambient ground-level ozone trends are erratic by nature. Changes in meteorological conditions, population growth and changes in emissions (VOC and NOx) influence ozone concentrations. Figure 2-13 shows that the 1999 statewide (DEP sites only) average second daily maximum 1-hour ozone concentration is 10 percent higher than the 1990 level. Weather conditions were extremely favorable for ozone formation in 1999, with high temperatures and low humidity. The solid line is at the primary 1-hour air quality standard of 125 parts per billion (ppb).

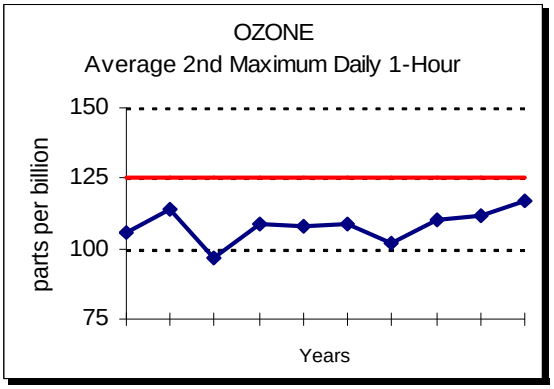


Figure 2-13. Trend in average second daily maximum 1-hour ozone concentrations, 1990-1999.

The map in Figure 2-14 on page 32, presents the highest second daily maximum 1-hour ozone concentration by county in 1999. Bucks, Montgomery, Delaware, Lehigh, Northampton, Berks, Lancaster, Dauphin, Beaver and Westmoreland counties had more than one exceedance of the 1-hour air quality standard in 1999. All ozone monitoring sites are included in the representation, with the exception of those monitors operated by Allegheny and Philadelphia counties.

The map in Figure 2-15 on page 33, presents the fourth highest daily maximum running 8-hour ozone concentration by county in 1999. All ozone monitoring sites are included in the representation, with the exception of those monitors operated by Allegheny and Philadelphia counties.

For the 12 air basins and the Altoona, Williamsport and Shenango Valley non-air basins, Figure 2-16 on page 34, shows the 10-year trend (1990 to 1999) of the average second daily maximum 1-hour ozone concentration, during the ozone season for DEP monitoring sites. Figure 2-17 on page 35, shows the 10-year trend (1990 to 1999) of the 3-year average of the fourth highest daily 8-hour running ozone mean. All sites, with the exception of Williamsport, have been close to or exceeded the 8-hour standard of 85 parts per billion (ppb). The solid line in both figures indicates the 1- or 8-hour standard level.

Williamsport has been the only area consistently below the ozone air quality standards. Southeast Pennsylvania (Philadelphia) and Lancaster are the only DEP monitoring areas that are exceeding the 1-hour ozone air quality standard. Sites operated by Allegheny County also are exceeding the 1-hour ozone air quality standard.

Table A-13a in Appendix A summarizes 1-hour ozone data during the ozone season of 1999 for all monitoring sites. Table A-13b in Appendix A summarizes 8-hour ozone data during the ozone season of 1999 for all monitoring sites.

Historical 1-hour data for ozone from 1990 to 1999 is contained in Table A-14 in Appendix A for all DEP sites that operated during the ozone monitoring season in 1999 with at least 50 percent valid data. To attain compliance with the air quality standard, a site can have no more than three exceedances of the 0.12 parts per million (ppm) standard over the last three years. DEP monitoring sites located in Southeast Pennsylvania and Lancaster air basins have more than three exceedances in the last three years as well as sites operated by Allegheny County.

Table 2-1 on the following page lists the days on which the 1-hour ozone air quality standard was exceeded in 1999. Tables 2-2 and 2-3 on pages 30 and 31 summarize the 1-hour and 8-hour data over the last three years (1997-1999). These tables include monitoring sites operated by DEP, the Allegheny County Health Department, Philadelphia Air Management Services and the Pennsylvania State University.

Table 2-1. Ozone 1-Hour Exceedance Days in Pennsylvania – 1999

Date of Occurrence	Monitoring Site	County	Daily 1-Hour Concentration (ppb)
June 10, 1999	Brighton Township	Beaver	135
	Beaver Falls	Beaver	133
	New Castle	Lawrence	139
June 11, 1999	Brighton Township	Beaver	132
	Beaver Falls	Beaver	131
July 9, 1999	Allentown	Lehigh	133
	Freemansburg	Northampton	139
	Easton	Northampton	131
	Kunkletown	Monroe	133
	Reading	Berks	140
	Kutztown	Berks	135
	Lancaster	Lancaster	132
July 16, 1999	Bristol	Bucks	139
	Allentown	Lehigh	125
	Freemansburg	Northampton	126
	Kutztown	Berks	128
	Hershey	Dauphin	128
	Greensburg	Westmoreland	145
	Murrysville	Westmoreland	132
	Pittsburgh	Allegheny	135
	Harrison Township	Allegheny	137
	Lawrenceville	Allegheny	128
	Penn Hills	Allegheny	131
July 17, 1999	Bristol	Bucks	130
	Lancaster	Lancaster	127
	York	York	133
	Greensburg	Westmoreland	125
	Kittanning	Armstrong	134
	Harrison Township	Allegheny	127
	Lawrenceville	Allegheny	126
	Penn Hills	Allegheny	128
July 18, 1999	Bristol	Bucks	145
July 19, 1999	Bristol	Bucks	134
	Chester	Delaware	130
July 23, 1999	Bristol	Bucks	137
July 31, 1999	Bristol	Bucks	151
	Norristown	Montgomery	126
	Chester	Delaware	162
	Southwest (Elmwood)	Philadelphia	155
	Frankford (Lab)	Philadelphia	131
August 12, 1999	Norristown	Montgomery	140
August 17, 1999	Chester	Delaware	130
	Hershey	Dauphin	126

Table 2-2. 1-HOUR OZONE EXCEEDANCES and MAXIMUMS SUMMARY
(Units: parts per billion)

	1997					1998					1999				
		Daily Maximums					Daily Maximums					Daily Maximums			
	Measured	1st	2nd	3rd	4th	Measured	1st	2nd	3rd	4th	Measured	1st	2nd	3rd	4th
Site Name	Exceed	1-Hr	1-Hr	1-Hr	1-Hr	Exceed	1-Hr	1-Hr	1-Hr	1-Hr	Exceed	1-Hr	1-Hr	1-Hr	1-Hr
Bristol	1	144	119	114	112	0	117	115	111	110	6	151	145	139	137
Chester	3	128	127	126	115	2	132	125	120	119	3	162	130	130	120
Norristown	2	135	131	122	121	2	129	126	120	118	2	140	126	117	117
Northwest (Rox)	0	124	111	110	108	0	124	116	110	109	0	114	98	93	92
Northeast (Airport)	2	133	125	121	111	0	116	112	111	110	0	94	90	76	74
Southwest (Elm)	0	97	94	90	83	0	107	105	103	101	1	154	121	116	111
Frankford (Lab)	0	93	90	89	79	0	100	100	93	92	1	130	101	95	92
Allentown	1	127	116	112	110	0	110	106	106	105	2	133	125	118	116
Freemansburg						0	107	104	102	102	2	139	126	119	119
Easton	0	117	116	109	102	0	124	111	110	109	1	131	115	110	109
Kunkletown	0	118	117	111	108	0	116	108	103	99	1	133	123	113	111
Reading	1	131	120	118	108	0	117	106	105	103	1	140	123	118	117
Kutztown	0	116	109	105	105	0	106	104	102	102	2	135	128	114	109
Scranton	0	107	95	91	90	0	117	108	105	99	0	115	107	106	103
Peckville	0	108	106	101	97	0	109	105	102	102	0	122	115	111	106
Nanticoke	0	96	91	90	87	0	113	98	98	94	0	118	102	96	95
Wilkes-Barre	0	114	111	111	110	0	110	102	99	98	0	118	111	107	102
Harrisburg	0	114	112	97	95	0	120	116	109	109	0	115	114	111	110
Hershey	0	119	116	106	103	0	114	111	103	100	2	128	126	120	117
Perry County	0	108	103	101	98	0	124	110	102	101	0	111	106	106	103
Lancaster	3	139	133	128	116	0	121	119	118	115	2	132	127	123	116
York	0	114	109	109	108	0	121	112	108	105	1	133	121	109	107
Methodist Hill	0	120	114	108	100	0	123	120	115	110	0	116	115	106	104
Williamsport	0	95	86	83	83	0	101	97	86	83	0	96	87	87	81
Altoona	0	117	114	113	104	0	117	114	113	111	0	117	111	103	103
Johnstown	1	132	104	102	102	1	131	124	112	111	0	116	107	106	106
Greensburg											2	145	125	111	110
Murrysville	1	128	123	100	98	0	103	101	97	96	1	132	115	108	99
Kittanning						0	113	113	113	110	1	134	121	120	117
Brighton Twp	0	102	96	95	92	0	115	113	101	101	2	135	132	120	117
Beaver Falls	0	105	101	98	94	0	121	116	113	113	2	133	131	102	99
Hookstown	0	105	98	95	95	0	115	113	111	106	0	122	116	111	105
Florence	0	113	111	98	96	0	114	109	109	104	0	113	110	106	106
Charleroi	0	119	118	117	114	3	130	127	126	123	0	118	115	111	107
Washington	0	111	107	104	99	0	115	112	111	107	0	110	106	105	103
Holbrook	0	123	123	103	101	0	111	110	108	107	0	123	116	116	116
Pittsburgh (Carn)						0	112	105	105	103	1	135	120	118	116
Harrison Twp	3	133	129	126	117	0	112	111	108	107	2	137	127	114	113
Lawrenceville	1	125	118	112	103	0	120	118	104	103	2	128	126	106	100
Penn Hills	2	134	129	115	100	0	113	112	110	108	2	131	128	112	108
South Fayette	0	116	113	107	106	1	125	115	113	112	0	123	118	112	110
New Castle	0	110	109	98	96	0	110	96	94	86	1	139	105	98	98
Farrell	0	114	111	105	105	1	129	121	118	117	0	111	108	107	105
Erie	0	117	103	101	101	1	130	122	113	111	0	115	112	107	107
Moshannon	0	124	117	116	109	1	132	116	113	110	0	94	92	92	91
Tiadaghton	0	79	75	67	67	0	102	99	95	93	0	94	91	89	85
Penn Nursery	1	126	124	118	105	0	113	113	103	103	0	109	99	99	99
Tioga											0	97	93	91	89

Table 2-3. 8-HOUR OZONE MAXIMUMS and DAYS GREATER THAN 84 PPB SUMMARY
(Units: parts per billion)

	1997					1998					1999				
		Daily Maximums					Daily Maximums					Daily Maximums			
Site Name	Days > 84	1st 8-Hr	2nd 8-Hr	3rd 8-Hr	4th 8-Hr	Days > 84	1st 8-Hr	2nd 8-Hr	3rd 8-Hr	4th 8-Hr	Days > 84	1st 8-Hr	2nd 8-Hr	3rd 8-Hr	4th 8-Hr
Bristol	14	126	112	102	102	17	100	97	96	96	22	126	117	115	112
Chester	19	117	114	105	101	17	107	104	102	99	19	117	108	105	100
Norristown	19	119	113	107	107	17	109	106	104	103	20	114	106	106	104
Northwest (Rox)	10	103	98	96	96	8	105	102	98	96	2	104	90	84	82
Northeast (Airport)	17	119	116	101	101	17	102	97	93	93	1	89	74	67	57
Southwest (Elm)	0	81	75	75	74	4	93	90	90	88	12	119	107	103	98
Frankford (Lab)	0	81	75	68	67	1	88	83	79	78	2	101	85	79	73
Allentown	12	112	102	101	101	17	98	95	95	95	18	116	116	105	105
Freemansburg						5	96	95	93	87	22	121	120	111	106
Easton	11	102	98	93	92	8	99	92	89	89	12	112	110	104	98
Kunkletown	14	112	105	105	100	14	95	95	94	91	20	122	113	103	100
Reading	10	117	105	103	95	16	101	96	93	92	14	119	115	104	102
Kutztown	6	105	97	92	89	14	93	92	91	90	12	118	115	105	99
Scranton	4	86	86	86	85	6	97	92	92	88	11	96	96	94	93
Peckville	6	99	90	88	88	5	97	90	89	89	11	100	99	97	96
Nanticoke	0	84	81	80	79	2	92	85	84	81	4	99	90	87	86
Wilkes-Barre	8	104	103	103	96	7	93	90	88	88	9	105	94	94	93
Harrisburg	3	103	99	93	84	22	107	105	98	97	15	108	101	99	95
Hershey	9	105	105	92	92	9	98	97	91	88	15	115	106	105	104
Perry County	6	100	94	90	90	8	97	92	92	91	13	101	98	92	90
Lancaster	20	121	117	106	102	27	107	102	101	101	18	117	107	106	102
York	13	102	102	96	94	18	102	98	96	95	10	110	96	94	94
Methodist Hill	7	104	100	97	91	22	108	106	105	104	20	108	103	99	98
Williamsport	0	80	77	76	75	1	86	80	77	73	0	79	76	76	75
Altoona	7	108	99	98	95	17	100	99	98	97	6	102	94	94	91
Johnstown	7	112	97	96	92	13	105	103	101	98	11	108	94	93	90
Greensburg											16	134	107	100	98
Murrysville	4	108	107	92	88	3	89	88	86	82	5	111	99	88	87
Kittanning						21	103	103	102	100	18	107	101	101	100
Brighton Twp	3	92	90	88	82	14	106	99	96	91	11	115	110	104	101
Beaver Falls	5	90	87	86	85	10	106	105	98	98	6	120	110	88	87
Hookstown	4	101	90	88	86	11	110	98	96	95	9	115	107	97	95
Florence	4	97	96	87	85	11	99	98	96	94	9	101	100	98	96
Charleroi	14	107	107	103	99	33	116	112	110	108	11	109	99	98	96
Washington	6	104	102	98	88	14	99	95	95	94	11	98	97	96	90
Holbrook	10	110	99	95	92	16	107	105	105	100	20	107	105	101	100
Pittsburgh (Carn)						6	100	97	92	90	16	121	104	100	99
Harrison Twp	12	117	112	109	109	18	101	101	101	97	14	123	112	99	98
Lawrenceville	7	111	105	96	90	14	107	102	99	95	10	112	99	97	89
Penn Hills	5	114	108	105	87	16	105	104	101	95	11	113	107	95	94
South Fayette	8	100	98	97	97	24	116	108	106	104	16	109	103	100	98
New Castle	4	95	91	89	86	2	94	90	77	77	5	107	98	89	88
Farrell	9	99	98	94	92	24	113	109	109	106	8	95	93	91	91
Erie	6	97	93	88	87	12	115	114	100	98	13	110	102	98	96
Moshannon	12	109	106	99	98	16	117	106	103	101	1	88	84	83	81
Tiadaghton	0	71	61	61	60	3	95	89	87	84	0	82	77	76	76
Penn Nursery	7	117	109	108	94	8	103	93	93	92	4	94	87	85	85
Tioga											2	86	85	84	82

Figure 2-14 Ozone Concentrations 1999

Highest Second Maximum Daily 1-Hour Concentration (by County)
(Parts per Billion)

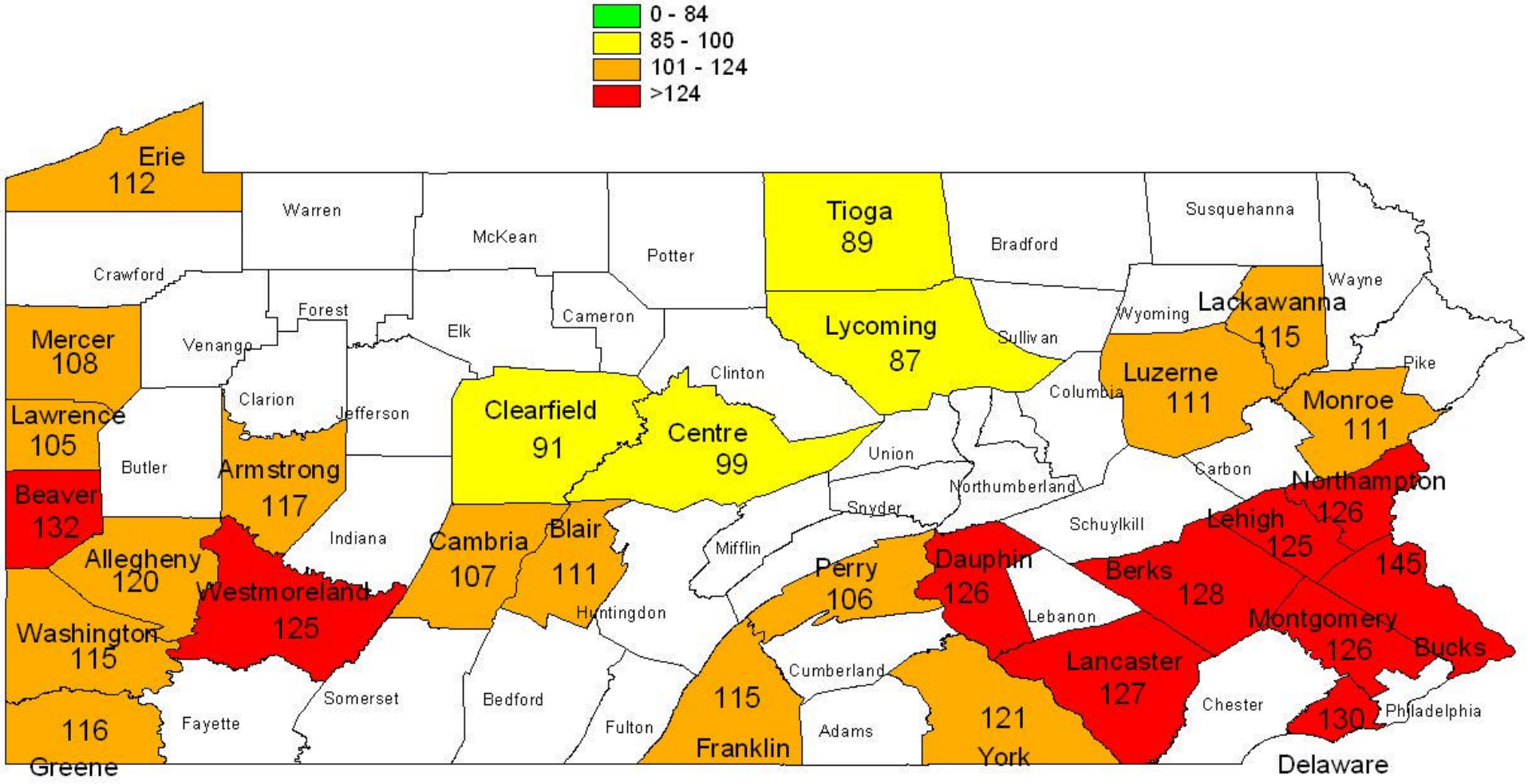


Figure 2-15 Ozone Concentrations 1999

Fourth Maximum Daily 8-Hour Concentration (by county)
(parts per billion)

- 0 - 60
- 61 - 84
- >85

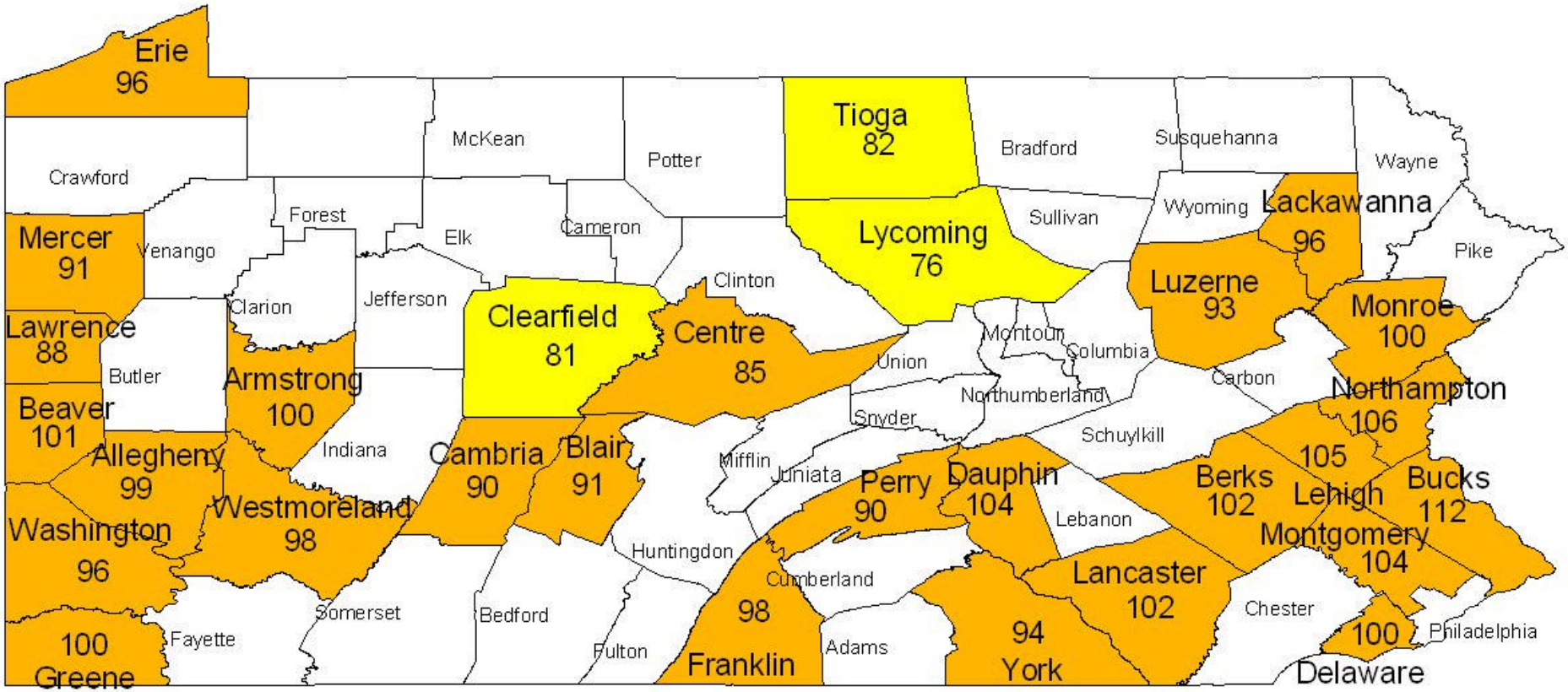
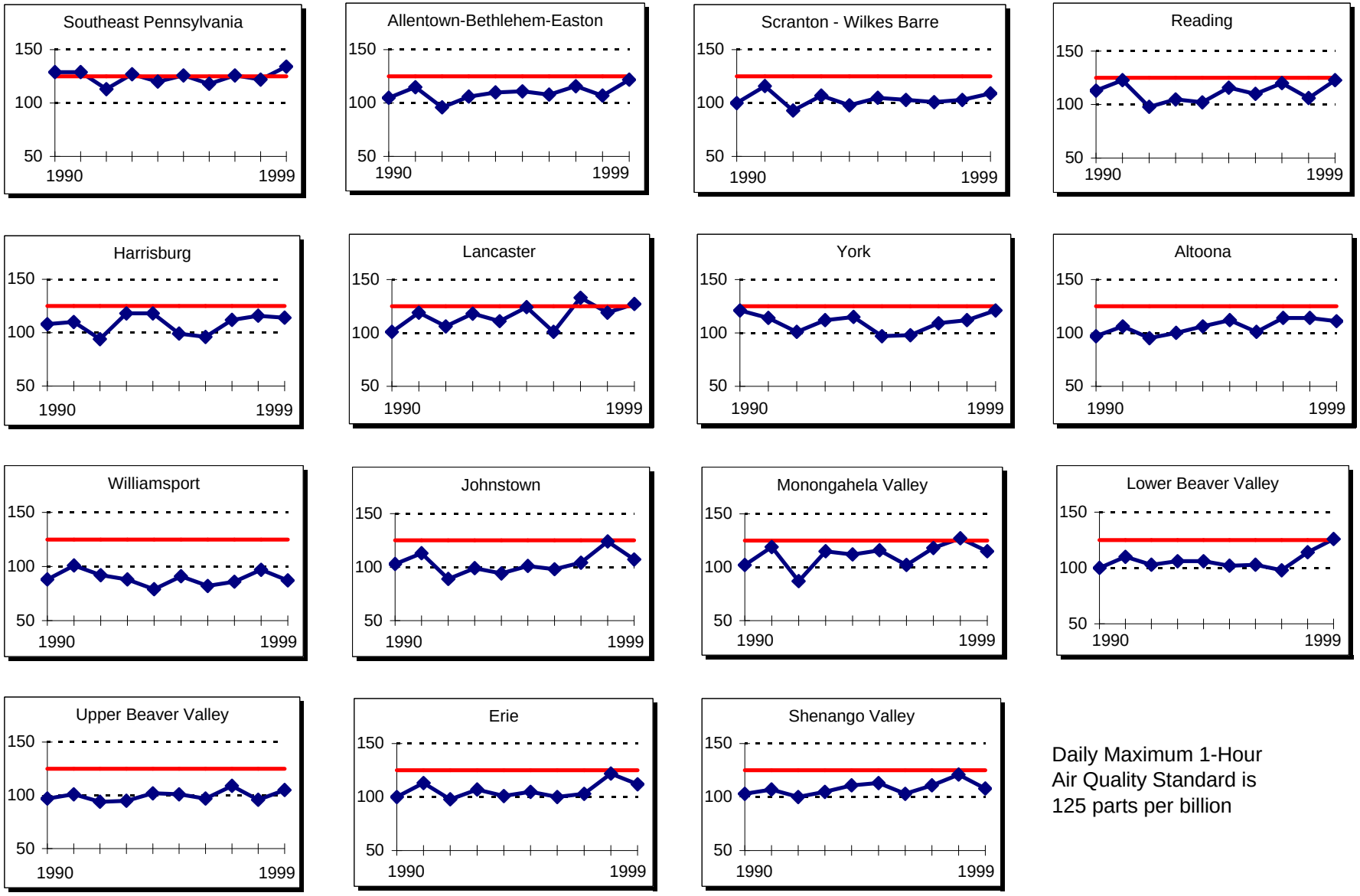
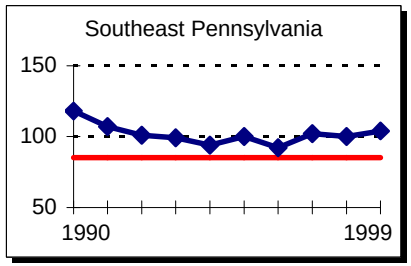


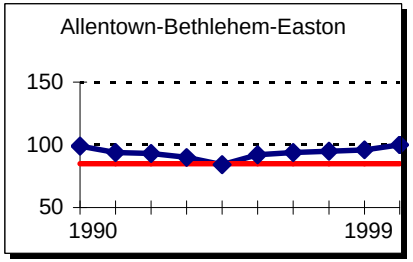
FIGURE 2-16. OZONE TRENDS IN PENNSYLVANIA 1990 to 1999
SECOND DAILY MAXIMUM 1-HOUR (PARTS PER BILLION)

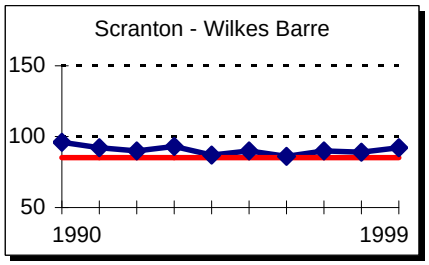


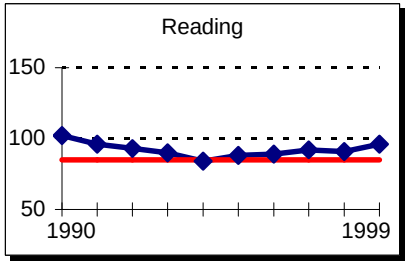
Daily Maximum 1-Hour
Air Quality Standard is
125 parts per billion

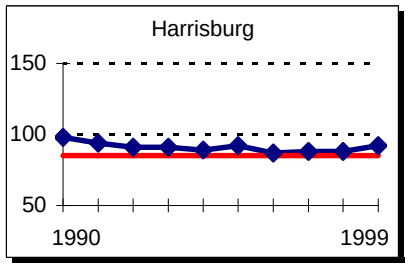
FIGURE 2-17. OZONE TRENDS IN PENNSYLVANIA 1990 to 1999
3-YEAR AVERAGE OF 4th DAILY MAXIMUM 8-HOUR MEAN (PARTS PER BILLION)

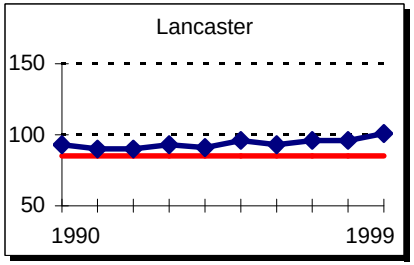


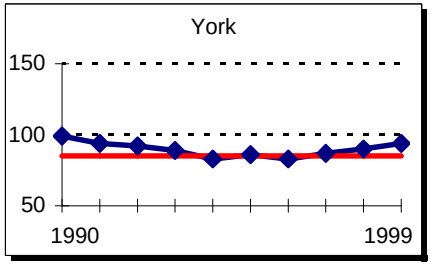


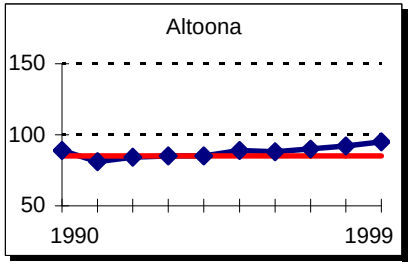


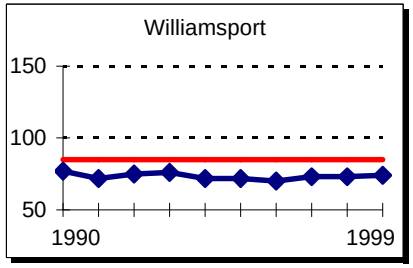


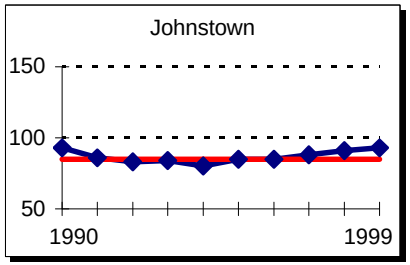


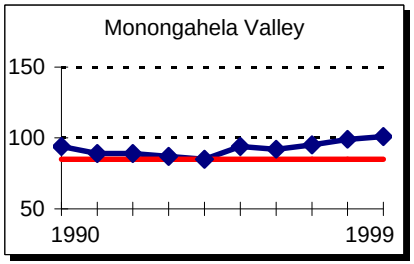


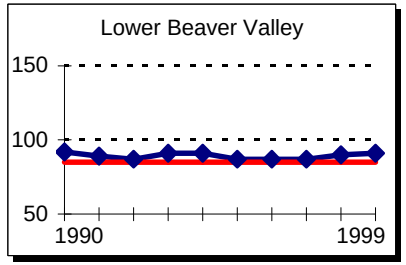


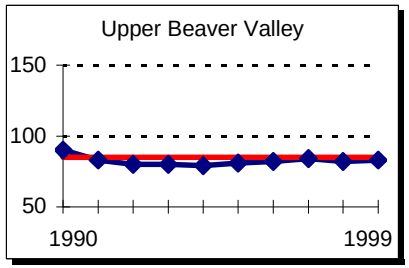


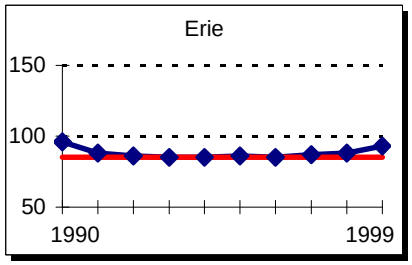


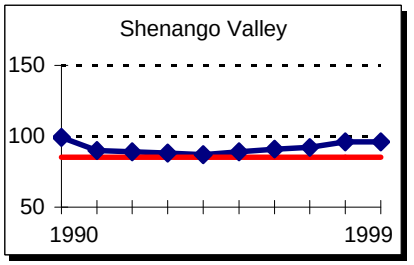












Ozone Air Quality Standard is the average of the yearly 4th daily maximum 8-hour values over 3 years. Standard is exceeded when 3-year average is greater than 80 parts per billion

NITROGEN DIOXIDE / OXIDES OF NITROGEN

Nitrogen dioxide (NO_2) is a highly toxic, reddish brown gas that is formed through the oxidation of nitric oxide (NO) emitted primarily from the combustion of fuels in stationary or transportation sources. It can cause an odorous, brown haze that irritates the eyes and nose, shuts out sunlight and reduces visibility. NO_2 acts as a precursor to acidic precipitation and plays a key role in nitrogen loading of forests and ecosystems. NO_2 has been associated with acute effects in sufferers of respiratory disease.

Oxides of nitrogen (NO_x) are a class of pollutants formed when fuel is burned at a very high temperature (above 1200° F), such as in automobiles and power plants. For air pollution purposes, it is composed primarily of nitric oxide (NO), nitrogen dioxide (NO_2) and other oxides of nitrogen. Although there is no air quality standard for NO_x, it plays a major role in the formation of ground-level ozone in the atmosphere through a complex series of reactions with volatile organic compounds (VOCs). Nitrogen oxides also contribute to deposition of nitrogen in soil and water through acid rain.

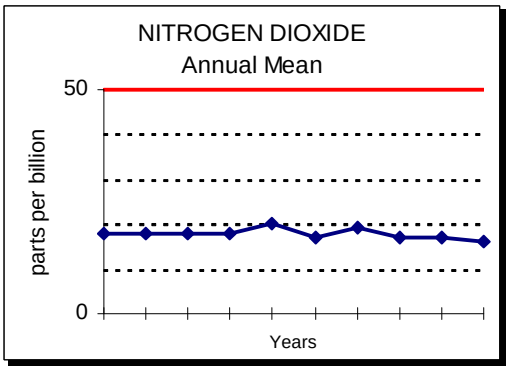


Figure 2-18. Trend in annual NO_2 concentrations, 1990-1999.

The trend in annual mean NO_2 concentrations statewide between 1990 and 1999 is shown in Figure 2-18. The trend shows an 11 percent decrease in the composite statewide mean over the last 10 years. All areas of the state continue to be well below the air quality annual standard of 53 parts per billion (ppb), which is indicated, by the solid line in Figure 2-18.

Figure 2-19 on the following page, indicates the 10-year trend of nitrogen dioxide annual mean levels from 1990 to 1999 in 12 air basins and the Altoona non-air basin. Nitrogen dioxide levels have remained relatively constant over the last 10 years. The solid line represents the air quality standard for an annual mean of 0.053 parts per million (ppm). All areas are at or below 50 percent of the annual air quality standard.

Nitrogen dioxide levels correlate significantly with ambient temperature levels, although not as high a statistical significance as ozone and sulfur dioxide.

Table A-15 in Appendix A summarizes nitrogen dioxide data for 1999. No site exceeded the annual primary air quality standard for nitrogen dioxide in Pennsylvania in 1999.

Historical trend data for those sites that monitored nitrogen dioxide in 1999 is presented in Table A-16 in Appendix A for 1990 to 1999. Data is shown for those sites with at least 50 percent valid data. The annual arithmetic mean is shown so that a comparison to the air quality standard can be made for the individual sites.

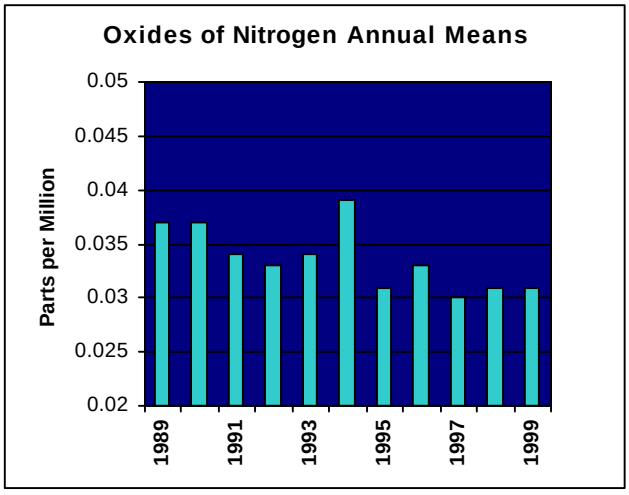
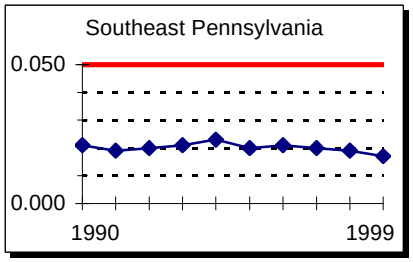
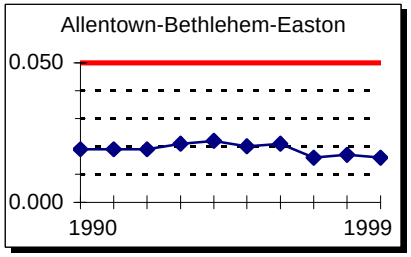


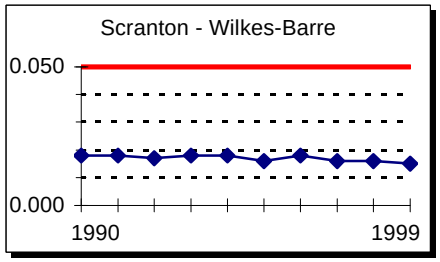
Figure 2-20. Trend of nitrogen oxides annual means, 1989-1999

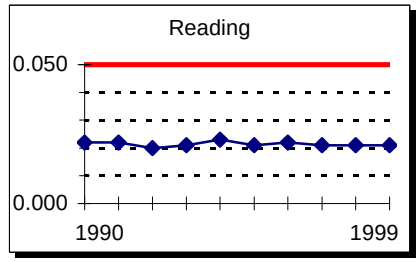
Table A-17 in Appendix A summarizes data for oxides of nitrogen in 1999. Figure 2-20 represents the statewide trend of oxides of nitrogen by using the arithmetic mean from all monitoring sites over the last 10 years with at least 50 percent data capture.

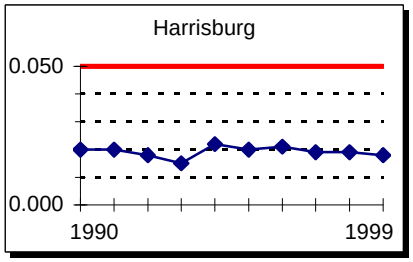
FIGURE 2-19. NITROGEN DIOXIDE TRENDS IN PENNSYLVANIA 1990 to 1999
ANNUAL ARITHMETIC MEANS (PARTS PER MILLION)

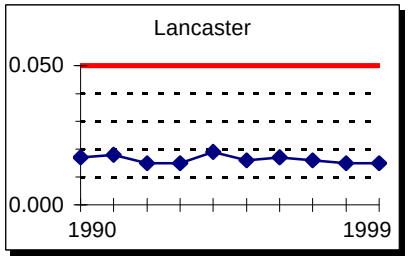


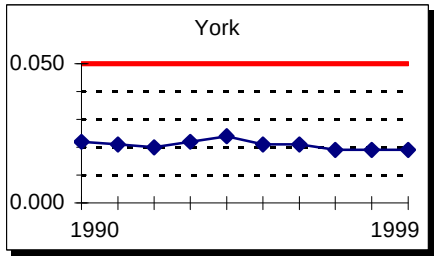


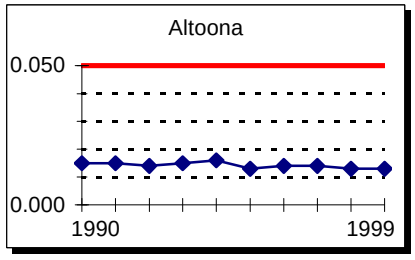


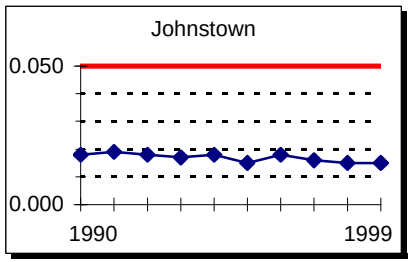


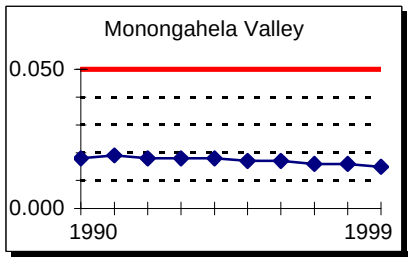


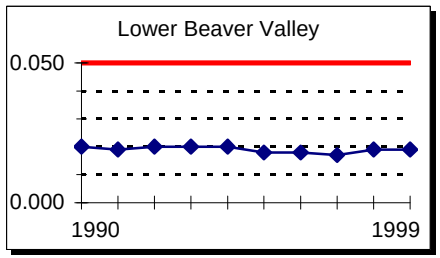


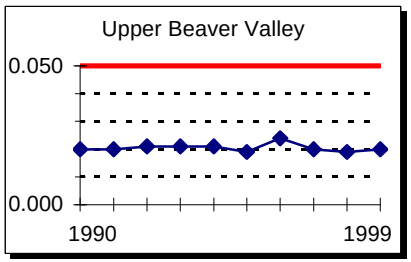


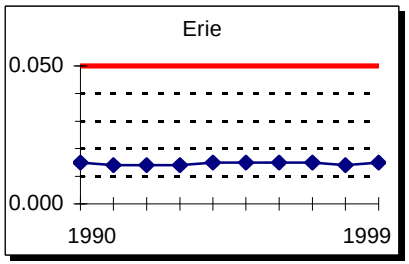












Annual Air Quality Standard is 0.053 parts per million

CARBON MONOXIDE

Carbon monoxide (CO) is a colorless, odorless, poisonous gas that has an affinity for hemoglobin, 210 times that of oxygen. By combining with the hemoglobin in the blood, it inhibits the delivery of oxygen to the body's tissue, thereby causing asphyxia or shortness of breath. The health threat from carbon monoxide is most serious for those who suffer from cardiovascular disease. At much higher levels of exposure, healthy individuals are also affected.

Carbon monoxide is a byproduct of the incomplete burning of fuels. Industrial processes contribute to carbon monoxide pollution levels, but the principal source of carbon monoxide in most large urban areas is vehicle emissions. Peak carbon monoxide concentrations typically occur during the colder months of the year when automotive emissions are greater and nighttime inversion conditions are more frequent.

The downward trend in carbon monoxide levels continues between 1990 and 1999. Figure 2-21 shows that statewide average second maximum 8-hour carbon monoxide concentrations

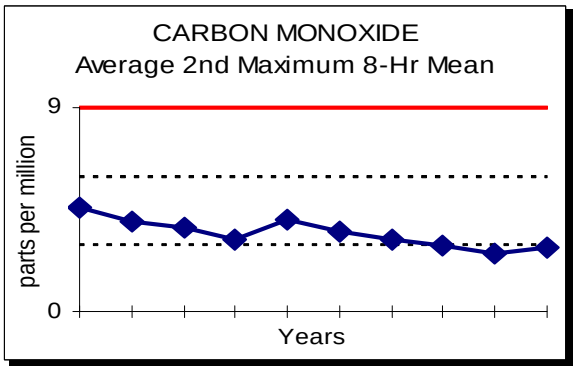


Figure 2-21. Trend in second maximum 8-hour average CO concentrations, 1990-1999.

decreased 40 percent over the 10-year period. The carbon monoxide improvement occurred across all monitoring environments – downtown central business district (CBD), rural and suburban (classified as other). As expected, Figure 2-22 shows that CBD sites recorded higher carbon

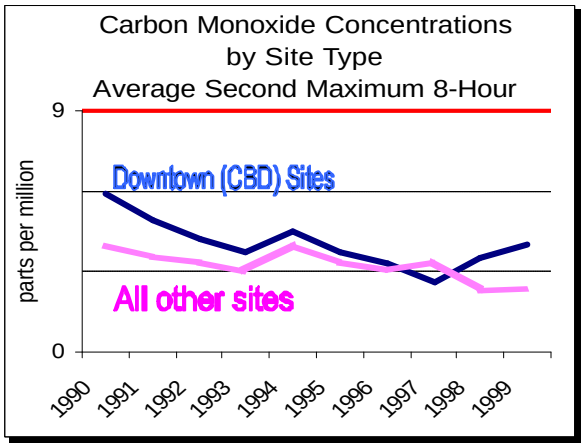


Figure 2-22. Trend in second maximum 8-hour average CO concentrations by location, 1990-1999

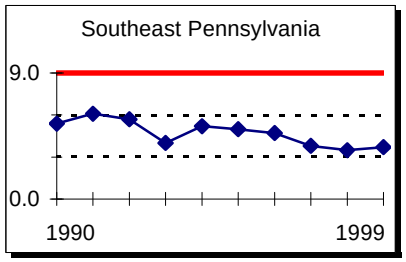
monoxide concentrations on average than other monitoring site locations. The solid line at 9.0 parts per million in Figures 2-21 and 2-22 indicates the 8-hour running mean air quality standard.

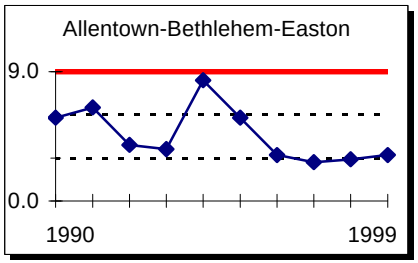
The carbon monoxide 10-year historical trend for different areas of the state are shown in Figure 2-23 on the following page, using the highest second maximum 8-hour non-overlapping running average. The largest improvements are seen in the Reading, Allentown-Bethlehem-Easton and York air basins. The solid lines on the graphs represent the 8-hour ambient air quality standard.

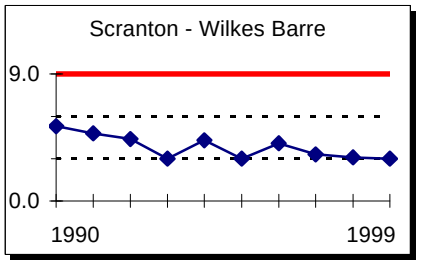
Carbon monoxide data for 1999 has been summarized in Table A-18 in Appendix A. There were no exceedances of the 1- or 8-hour air quality standards observed in 1999.

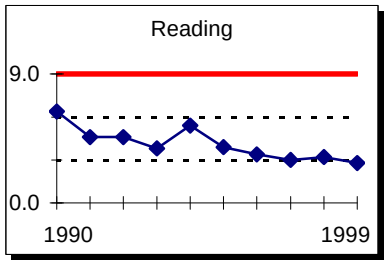
Historical trend data for carbon monoxide is shown in Table A-19 in Appendix A for 1990 to 1999 for all air monitoring sites that operated in 1999 with at least 50 percent valid data. The second maximum value is presented to indicate whether the site is attaining the air quality standard. The 1994 levels were abnormally elevated due to two significant air stagnation events that occurred during morning rush hours that trapped vehicle emissions.

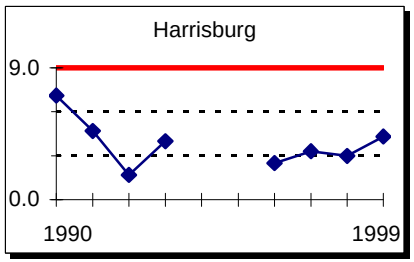
FIGURE 2-23. CARBON MONOXIDE TRENDS IN PENNSYLVANIA 1990 to 1999
SECOND MAXIMUM 8-HOUR RUNNING MEAN (PARTS PER MILLION)

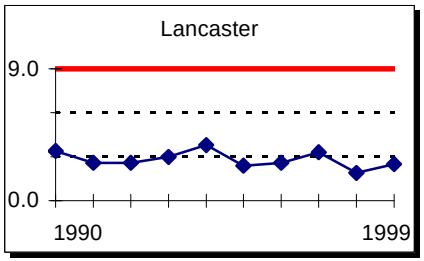


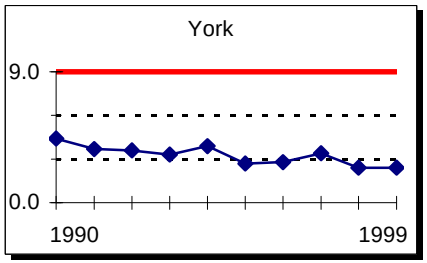


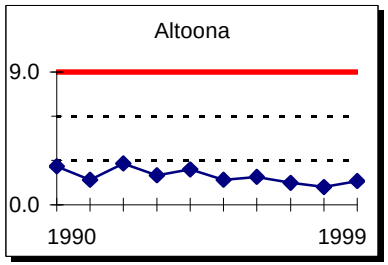


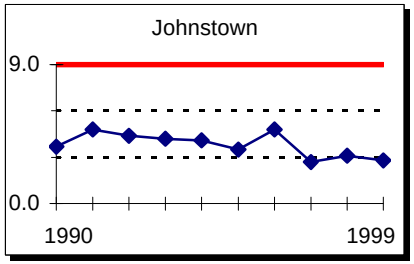


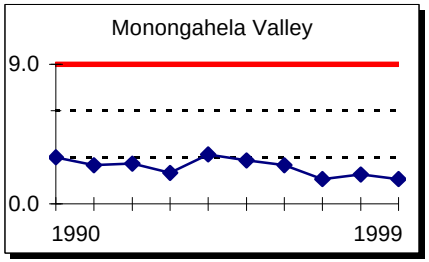


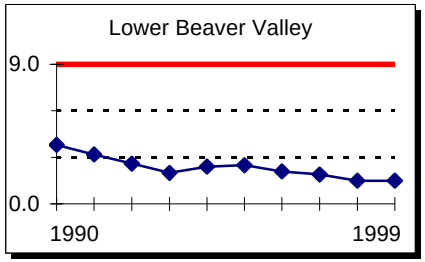


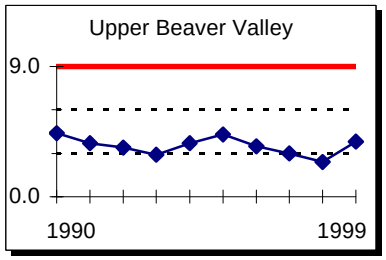


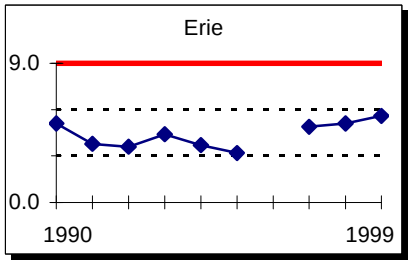












Air Quality Standard is 9.0 parts per million

AIR TOXICS

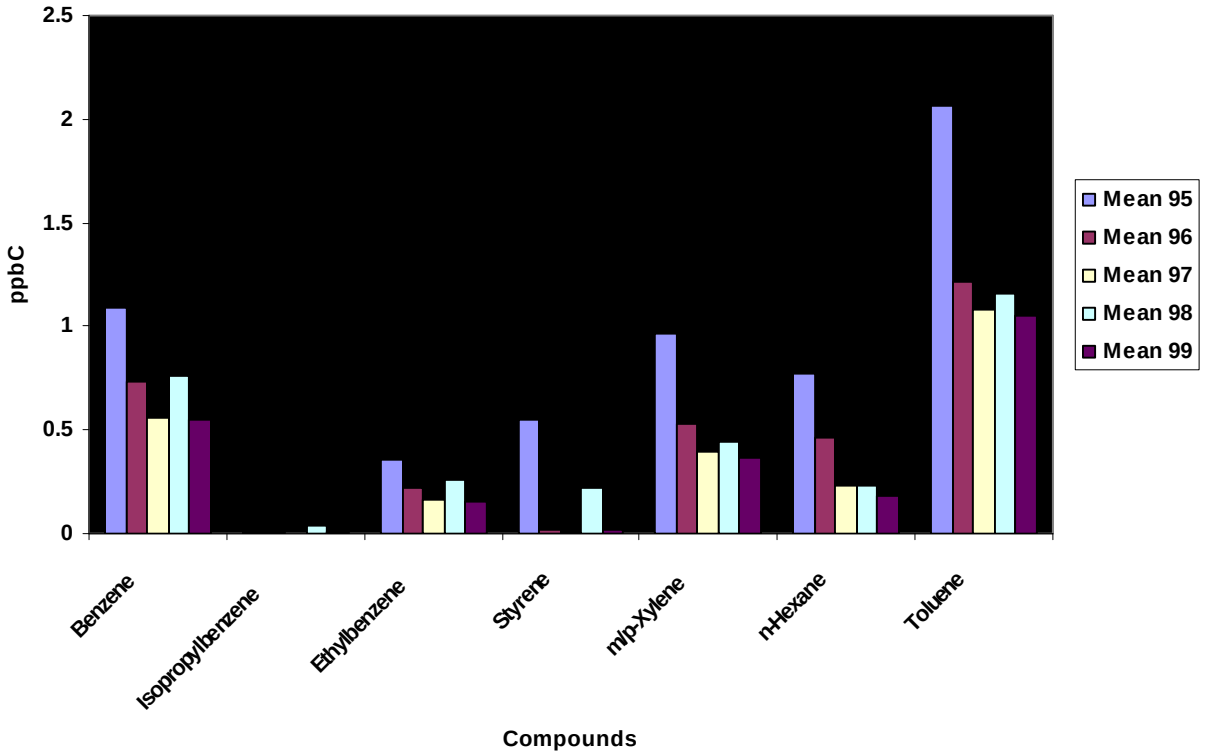
Hazardous air pollutants (HAPs), commonly referred to as air toxics, are pollutants known to cause or suspected of causing cancer or other serious human health effects or ecosystem damage. Some air toxics are released from natural sources such as volcanic eruptions and forest fires. Most air toxics originate from literally thousands of mobile sources (cars, trucks, buses) and stationary sources (factories, refineries, power plants). Examples of some of the 188 toxic air pollutants include heavy metals such as mercury and chromium; benzene, found in gasoline; perchloroethylene, emitted from some dry cleaning facilities; and methylene chloride, used as a solvent and paint stripper by a number of industries.

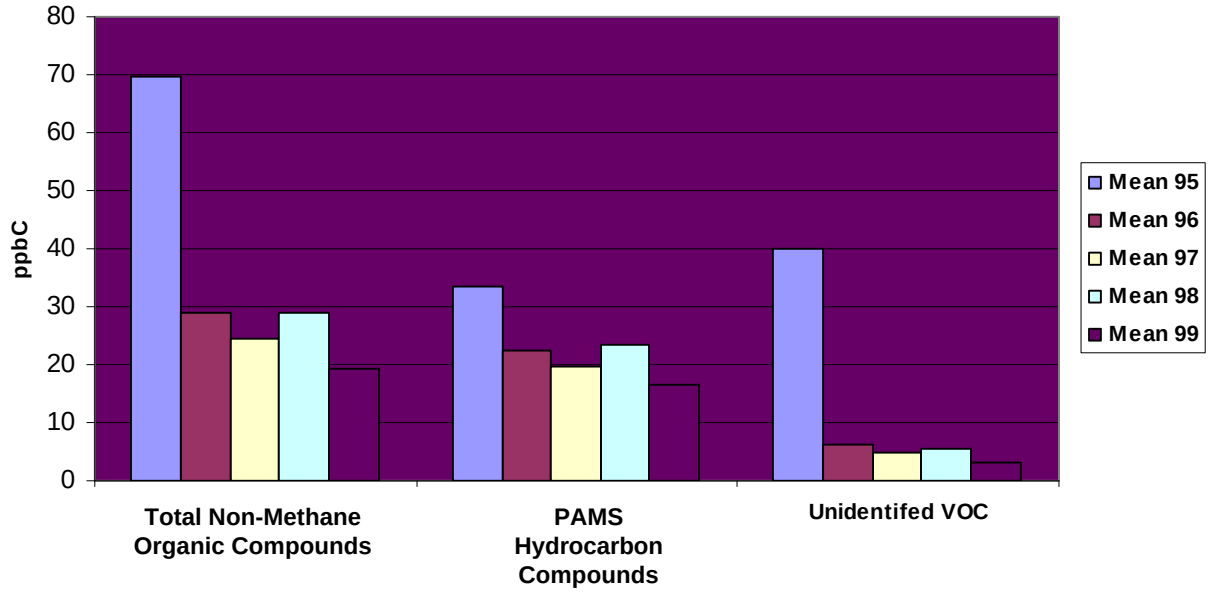
DEP performs ambient air monitoring of several air toxics at a Photochemical Assessment Monitoring Station (PAMS) site in Arendtsville, Adams County. This site studies the transport of ozone precursors from urban to rural areas. As part of the volatile organic compounds (VOCs) routinely measured, there are several VOC species considered to be air toxics, such as benzene, hexane, toluene and styrene. This station was not sited to represent the highest concentrations over a wide area, but it can be useful to study trends in ambient air toxics transported over long distances. The Arendtsville site operates from June to October.

Figure 2-24 on the following page displays the average concentration trend of selected air toxics from 1995 until 1999.

Data from the Arendtsville site for 1999 has been summarized in Table A-20 in Appendix A. There are no federal or state air quality standards for the monitored compounds.

Figure 2-24. Air Toxics Trends at Arendtsville Monitoring Site – 1995 to 1999





CHAPTER 3
POLLUTANT STANDARDS INDEX
(now the Air Quality Index)

A Pollutant Standards Index (PSI) is published daily for monitoring sites in Pennsylvania. The PSI is a nationally uniform method for reporting air quality that incorporates recorded levels of five common air contaminants: carbon monoxide (CO), sulfur dioxide (SO_2), suspended particulate matter 10 microns or less in size (PM_{10}), ozone and nitrogen dioxide (NO_2).

The PSI uses a segmented linear function to convert concentration levels of these pollutants into normalized numbers based on the National Ambient Air Quality Standards (NAAQS), the various episode levels and the significant harm levels for each pollutant. The actual breakpoints for the PSI values in terms of pollutant concentrations are shown in Table 3-1. The highest index number calculated from the five subindices is published along with the pollutant responsible and a descriptor term of good (0-50), moderate (51-100), unhealthful (101-199), very unhealthful (200-299) or hazardous (300-500).

Table 3-2 on the following page shows the number of days the index was reported in each descriptor category, as well as showing the number of times the pollutant (sub-index) was worse than moderate. Ozone readings were used only during the ozone monitoring season of April 1 to Oct. 31.

On Oct. 4, 1999, EPA revised the PSI to update health messages for carbon monoxide, sulfur dioxide and nitrogen dioxide. It reflects updated health information considered in the EPA proposal to revise the air quality standards for ground-level ozone (smog) and particulate matter. The revised index will ensure consistency between current science on the health effects of all of these air pollutants and the reporting of this air quality and health information to the public. The new index is called the Air Quality Index (AQI).

The AQI adds an additional air quality category just above the level of the standard. Previously, AQI values from 101 - 200 were characterized "unhealthful." The revised index establishes a category from 101 -150 characterized as "unhealthy for sensitive groups" and a category of 151 - 200 as "unhealthy." The AQI includes modifications to the ozone sub-index (an 8-hour sub-index) and a new sub-index for fine particulate matter. These changes to the AQI are based on health effects information from the review of the ozone and particulate matter standards. The AQI has been adopted by DEP and is published on DEP's site with hourly updates.

TABLE 3-1. BREAKPOINTS FOR THE POLLUTANT STANDARDS INDEX (PSI)

Breakpoints	PSI Value	PM_{10} ($\mu g/m^3$) 24-Hour	SO_2 (ppm) 24-Hour	CO (ppm) 8-Hour	Ozone (ppm) 1-Hour	NO_2 (ppm) 1-Hour
50% of Primary Short-Term NAAQS	50	50[a]	0.03[a]	4.5	0.06	---[b]
Primary Short-Term NAAQS	100	150	0.14	9.0	0.12	---[b]
Alert Level	200	350	0.30	15.0	0.20	0.6
Warning Level	300	420	0.60	30.0	0.40	1.2
Emergency Level	400	500	0.80	40.0	0.50	1.6
Significant Harm Level	500	600	1.00	50.0	0.60	2.0

[a] Annual primary NAAQS
[b] No index value reported at concentration levels below those specified by the Alert Level Criteria

TABLE 3-2. POLLUTANT STANDARDS INDEX SUMMARY BY CATEGORY

JANUARY 1999 to DECEMBER 1999

	Number of Days Index Reported in Category					No. Days	Number of days Subindex Worse than Moderate				
County	Good	Moderate	Unhealthful	Very Unhealthful	Hazardous	Index Reported	PM-10	Sulfur Dioxide	Ozone	Carbon Monoxide	Nitrogen Dioxide
Bucks	278	75	10	0	0	363	1	0	9	0	0
Delaware	278	84	3	0	0	365	0	0	3	0	0
Montgomery	279	84	2	0	0	365	0	0	2	0	0
Lehigh	261	102	2	0	0	365	0	0	2	0	0
Northampton	256	107	2	0	0	365	0	0	2	0	0
Lackawanna	269	95	1	0	0	365	0	0	1	0	0
Luzerne	278	87	0	0	0	365	0	0	0	0	0
Berks	263	100	2	0	0	365	0	0	2	0	0
Dauphin	261	102	2	0	0	365	0	0	2	0	0
Lancaster	270	92	3	0	0	365	0	0	3	0	0
York	273	90	2	0	0	365	0	0	2	0	0
Perry	263	97	0	0	0	360	0	0	0	0	0
Blair	276	87	0	0	0	363	0	0	0	0	0
Lycoming	323	27	0	0	0	350	0	0	0	0	0
Cambria	251	114	0	0	0	365	0	0	0	0	0
Washington	211	154	0	0	0	365	0	0	0	0	0
Beaver	230	133	2	0	0	365	0	0	2	0	0
Westmoreland	247	116	2	0	0	365	0	0	2	0	0
Allegheny (1)	270	94	1	0	0	365	0	0	1	0	0
Armstrong (2)	102	108	2	0	0	212	0	0	2	0	0
Lawrence	257	107	1	0	0	365	0	0	1	0	0
Mercer	191	96	0	0	0	287	0	0	0	0	0
Warren (3)	315	47	0	0	0	362	0	0	0	0	0
Erie	234	121	2	0	0	357	2	0	0	0	0

(1) DEP site at Carneige Science Center
(2) Ozone monitoring only - operated from April 1-October 31
(3) Sulfur dioxide monitoring only

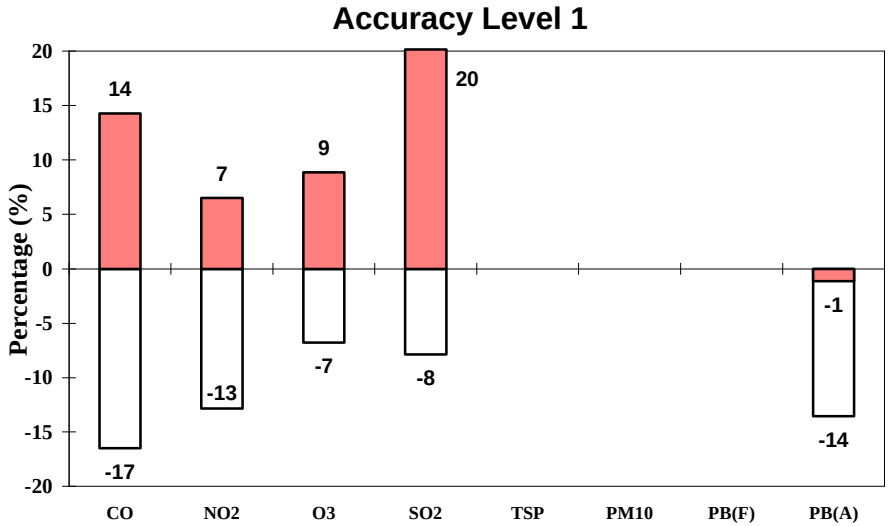
CHAPTER 4
PRECISION AND ACCURACY

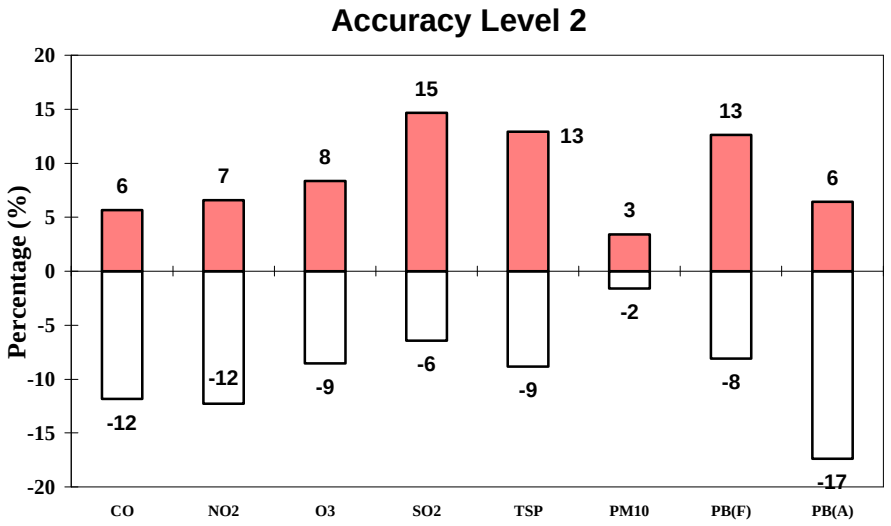
DEP conducts regularly scheduled performance audits and precision checks on all air monitoring equipment. Performance audits are conducted for the purpose of assessing data accuracy on carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone (O_3), total suspended particulate (TSP), suspended particulate matter 10 microns or less in size (PM_{10}) and lead (Pb) monitoring equipment. Precision checks are performed biweekly on CO, SO_2, NO_2 and O_3 and every sampling day (once every sixth day) for selected TSP, PM_{10} and lead.

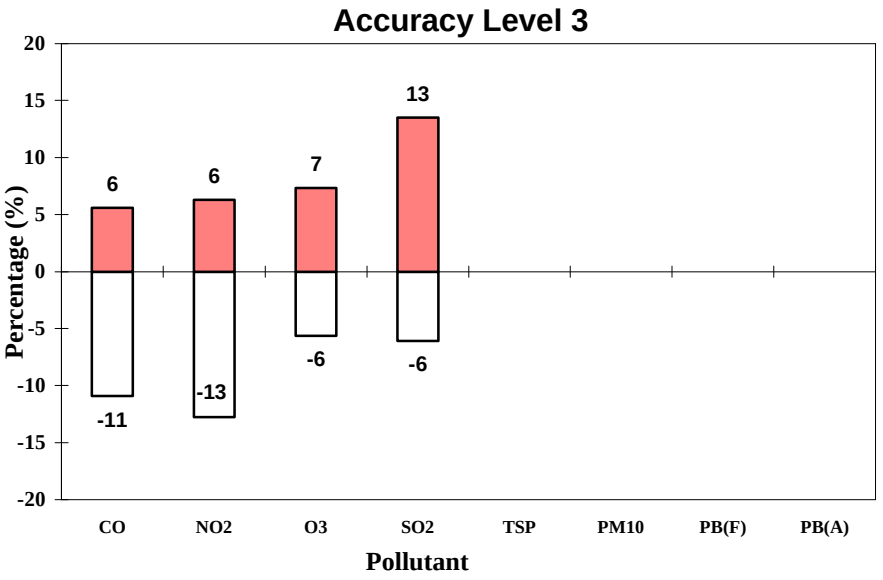
Data obtained from the performance audits and precision checks are converted to 95 percent upper and lower probability limits using standard statistical methods. For precision, only one probability level is calculated for each parameter. However, accuracy is determined at up to three points. Acceptable 95 percent probability limits for accuracy are $\pm$ 20 percent for continuous gaseous parameters and $\pm$ 15 percent for discrete particulate parameters (TSP, PM_{10} and lead). Acceptable 95 percent probability limits for precision are $\pm$ 15 percent for all parameters.

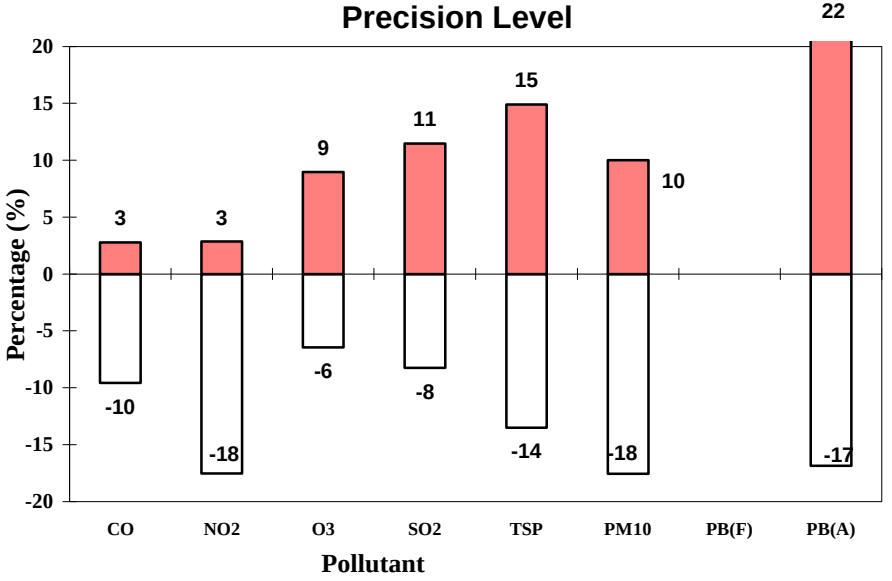
Figure 4-1 on the following page summarizes the 95 percent probability limits from all four quarterly reporting periods within the calendar year. The values presented were calculated from weighted arithmetic averages for each quarter's probability limits. Two different types of lead checks are performed: flow, which is indicated by PB(F) and analytical, which is indicated by PB(A) on the legends of each graph.

FIGURE 4-1 1999 ANNUAL ACCURACY AND PRECISION PROBABILITY LIMITS
95% LOWER/UPPER LIMITS









APPENDIX A

DATA TABLES

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

TOTAL SUSPENDED PARTICULATE MATTER SUMMARY

(Units: micrograms per cubic meter)

YEAR: 1999

Site Name	PA Site Code	Geometric Annual Mean	Geometric Standard Deviation	Arithmetic Annual Mean	Number Obs.	Daily Averages 1st Max 24HR Mean	1st Max Date MM/DD	2nd Max 24HR Mean	2nd Max Date MM/DD	3nd Max 24HR Mean	3nd Max Date MM/DD	Number Obs. >260	Number Obs. >150	Minimum 24 Hour Mean	Number of 24 Hour Values In Ranges 0 to 65	66 to 130	131 to 195	196 to 260	261 to 325	326 to 390	391 to 455	> 455
Southeast Pennsylvania Air Basin																						
Chester	P11	35	1.49	38	54	76	02/17	76	05/12	63	07/05	0	0	14	52	2	0	0	0	0	0	0
DEP Region 2 Non-Air Basin																						
Palmerton	205	27	1.66	30	59	60	07/17	56	02/11	53	05/06	0	0	8	59	0	0	0	0	0	0	0
Reading Air Basin																						
Laureldale	R10	44	1.80	51	60	153	03/31	118	05/12	112	08/04	0	1	12	43	16	1	0	0	0	0	0
DEP Region 3 Non-Air Basin																						
Lyons	301	22	1.54	**	14	47	01/12	36	01/06	36	02/17	0	0	12	14	0	0	0	0	0	0	0
Lyons	370	28	1.63	32	58	86	09/03	66	11/14	65	07/05	0	0	11	56	2	0	0	0	0	0	0
Johnstown Air Basin																						
East Conemaugh	J08	42	1.60	46	58	94	02/11	94	03/31	88	07/17	0	0	14	51	7	0	0	0	0	0	0
Monongahela Valley Air Basin																						
Monessen	M16	44	1.69	48	53	93	03/25	90	06/11	87	07/17	0	0	9	41	12	0	0	0	0	0	0
Lower Beaver Valley Air Basin																						
Vanport	B05	34	1.57	37	44	80	07/17	79	02/11	69	06/11	0	0	13	41	3	0	0	0	0	0	0

**** No Long-Term or Short-Term Air Quality Standards *****

TOTAL SUSPENDED PARTICULATE MATTER
HISTORICAL TREND
ANNUAL GEOMETRIC MEANS
(Units: micrograms/cubic meter)

STATION & SITE CODE		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Southeast Pennsylvania Air Basin											
CHESTER	(P11)	39	40	34	36	44	43	43	55	40	35
DEP Region 2 Non-Air Basin											
PALMERTON	(205)	40	37	32	29	34	29	32	31	29	27
Reading Air Basin											
LAURELDALE	(R10)	47	48	41	41	48	50	51	53	51	44
DEP Region 3 Non-Air Basin											
LYONS	(301)	33	32	28	27	37	36	34	32	30	**
LYONS	(370)	**	**	29	28	35	31	29	30	30	28
Johnstown Air Basin											
EAST CONEMAUGH	(J08	**	**	**	**	**	**	37	40	41	42
Monongahela Valley Air Basin											
MONESSEN	(M16)	**	**	**	**	**	**	**	44	44	44
Lower Beaver Valley Air Basin											
VANPORT	(B05)	38	40	31	32	50	**	35	35	33	34

** Indicates less than 30 samples collected during year

COMMWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

SULFATE SUSPENDED PARTICULATE MATTER SUMMARY

(UNITS: micrograms per cubic meter)

YEAR: 1999

Site Name	PA Site Code	Annual Mean	Number Obs.	Number 30 Day > 10	1st Max 30 Day Mean	1st Max 30 Day MM	2nd Max 30 Day Mean	2nd Max 30 Day MM	Number 24 Hour > 30	1st Max 24 Hour Mean	1st Max 24 Hour MM/DD	2nd Max 24 Hour Mean	2nd Max 24 Hour MM/DD
DEP Region 2 Non-Air Basin													
Palmerton	205	8.3	59	2	13.5	7	10.4	9	0	24.3	07/17	19.4	09/09
Reading Air Basin													
Laureldale	R10	8.4	60	2	12.9	7	11.9	9	0	19.8	09/09	18.1	07/17
Johnstown Air Basin													
East Conemaugh	J08	11.1	58	6	17.7	7	14.6	8	1	35.2	07/17	23.2	08/28
Monongahela Valley Air Basin													
Monessen	M16	12.9	53	8	18.3	7	17.5	10	1	35.2	07/17	21.6	06/11

**** No Long-Term or Short-Term AIr Quality Standards ****

SULFATE PARTICULATE MATTER HISTORICAL TREND
(Units: micrograms/cubic meter)

STATION & SITE CODE		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	
DEP Region 2 Non-Air Basin												
PALMERTON	(205)	14.7	16.1	12.0	16.3	20.1	13.8	11.2	20.0	13.9	13.5	Max 30-Day Mean
		22.6	33.1	18.9	23.4	26.7	18.7	25.9	28.4	22.9	24.3	Max 24-Hour Mean
Reading Air Basin												
LAURELDALE	(R10)	18.6	18.4	14.6	13.0	22.4	19.1	13.4	24.2	16.2	12.9	Max 30-Day Mean
		31.3	36.7	21.5	28.5	35.1	22.6	25.8	35.1	30.3	19.8	Max 24-Hour Mean
Johnstown Air Basin												
EAST CONEMAUGH	(J08)	**	**	**	**	**	**	12.7	17.9	17.5	17.7	Max 30-Day Mean
		**	**	**	**	**	**	19.5	26.3	25.0	35.2	Max 24-Hour Mean
Monongahela Valley Air Basin												
MONESSEN	(M16)	**	**	**	**	**	**	**	18.0	18.1	18.3	Max 30-Day Mean
		**	**	**	**	**	**	**	25.0	24.3	35.2	Max 24-Hour Mean

** Indicates less than 30 samples collected during year

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

LEAD SUSPENDED PARTICULATE MATTER SUMMARY

(Units: micrograms per cubic meter)

YEAR: 1999

Site Name	PA Site Code	1st Quarter Arithmetic Mean	1st Quarter Num. Obs.	2nd Quarter Arithmetic Mean	2nd Quarter Num. Obs.	3rd Quarter Arithmetic Mean	3rd Quarter Num. Obs.	4th Quarter Arithmetic Mean	4th Quarter Num. Obs.	Number Quarters > 1.5
Southeast Pennsylvania Air Basin										
Chester	P11	0.04	15	0.04	14	0.05	12	0.05	13	0
DEP Region 2 Non-Air Basin										
Palmerton	205	0.06	14	0.05	15	0.07	15	0.07	15	0
Reading Air Basin										
Laureldale	R10	0.29	15	0.24	15	0.21	14	0.24	15	0
DEP Region 3 Non-Air Basin										
Lyons	301	0.11	13	****	**	****	**	****	**	0
Lyons	370	0.64	15	0.35	13	0.16	15	0.14	15	0
Johnstown Air Basin										
East Conemaugh	J08	0.04	15	0.05	15	0.09	14	0.06	14	0
Monongahela Valley Air Basin										
Monessen	M16	0.03	14	0.03	15	0.04	15	0.04	9	0
Lower Beaver Valley Air Basin										
Vanport	B05	0.05	10	0.03	9	0.08	15	0.06	10	0

***** Primary Quarterly Standard = 1.5 micrograms per cubic meter *****

LEAD PARTICULATE MATTER HISTORICAL TREND
MAXIMUM QUARTERLY MEANS
(Units: micrograms/cubic meter)

STATION & SITE CODE		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Southeast Pennsylvania Air Basin											
CHESTER	(P11)	**	**	**	**	0.05	0.05	0.04	0.05	0.04	0.05
DEP Region 2 Non-Air Basin											
PALMERTON	(205)	0.40	0.46	0.28	0.18	0.13	0.07	0.08	0.09	0.11	0.07
Reading Air Basin											
LAURELDALE	(R10)	0.59	0.60	0.43	0.59	0.56	0.29	0.27	0.30	0.31	0.29
DEP Region 3 Non-Air Basin											
LYONS	(301)	0.32	0.33	0.17	0.14	0.12	0.17	0.17	0.29	0.22	**
LYONS	(370)	**	**	0.21	0.19	0.18	0.20	0.20	0.16	0.28	0.64
Johnstown Air Basin											
EAST CONEMAUGH	(J08)	**	**	**	**	**	**	0.04	0.04	0.04	0.09
Monongahela Valley Air Basin											
MONESSEN	(M16)	**	**	**	**	**	**	0.05	0.05	0.04	0.04
Lower Beaver Valley Air Basin											
VANPORT	(B05)	0.22	0.19	0.15	0.13	0.17	0.15	0.06	0.08	0.06	0.08

** Indicates less than 30 samples collected during year

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

NITRATE SUSPENDED PARTICULATE MATTER SUMMARY

(Units: micrograms per cubic meter)

YEAR: 1999

Site Name	PA Site Code	Arithmetic Annual Mean	Num. Obs.	1st Max 24 Hour Mean	1st Max 24 Hour MM/DD	2nd Max 24 Hour Mean	2nd Max 24 Hour MM/DD	3nd Max 24 Hour Mean	3nd Max 24 Hour MM/DD	Minimum 24 Hour Mean
DEP Region 2 Non-Air Basin										
Palmerton	205	3.90	54	10.11	05/06	8.73	06/11	8.36	11/20	0.98
Reading Air Basin										
Laureldale	R10	4.74	60	10.71	11/14	10.69	02/17	9.54	05/06	0.96
Johnstown Air Basin										
East Conemaugh	J08	2.99	58	7.19	05/06	5.29	01/30	5.13	06/11	0.79
Monongahela Valley Air Basin										
Monessen	M16	3.60	53	5.66	03/13	5.36	10/03	5.24	08/04	1.21

***** No Long-Term or Short-Term Air Quality Standards *****

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

PM-10 SUSPENDED PARTICULATE MATTER SUMMARY

(Units: micrograms per cubic meter / local conditions)

YEAR: 1999

				Daily Means										Number of 24 Hour Values In Ranges								
	PA	Arithmetic		1st Max		2nd Max		3rd Max		4th Max		Number	Minimum	0	26	51	76	101	126	151	176	
	Site	Annual	Number	24HR	Date	24HR	Date	24HR	Date	24HR	Date	Obs.	24 Hour	to	to	to	to	to	to	to	to	>
Site Name	Code	Mean	Obs.	Mean	MM/DD	Mean	MM/DD	Mean	MM/DD	Mean	MM/DD	>150	Mean	25	50	75	100	125	150	175	200	200
Southeast Pennsylvania Air Basin																						
Bristol (TEOM)	P01	17	329	64	07/24	59	07/19	56	07/31	51	06/07	0	5	253	72	4	0	0	0	0	0	0
Chester (TEOM)	P11	21	353	57	07/19	57	07/31	55	07/24	55	12/19	0	5	229	116	8	0	0	0	0	0	0
Norristown (TEOM)	P21	18	341	56	07/19	50	07/31	50	07/24	49	06/01	0	3	257	82	2	0	0	0	0	0	0
Allentown-Bethlehem-Easton Air Basin																						
Allentown (TEOM)	A19	11	328	38	11/10	38	11/19	37	11/09	36	10/30	0	3	316	12	0	0	0	0	0	0	0
Freemansburg (TEOM)	A25	38	330	114	07/04	101	08/13	99	06/07	97	09/09	0	8	75	164	64	25	2	0	0	0	0
Scranton-Wilkes-Barre Air Basin																						
Scranton (TEOM)	S01	12	183	53	06/01	51	06/07	40	03/31	36	05/31	0	6	160	21	2	0	0	0	0	0	0
Wilkes-Barre (TEOM)	S28	12	156	51	06/01	46	06/07	45	01/27	42	02/27	0	6	123	32	1	0	0	0	0	0	0
Reading Air Basin																						
Reading (TEOM)	R01	21	364	56	07/19	54	07/04	50	08/13	49	07/05	0	4	252	110	2	0	0	0	0	0	0
Reading	R15	29	58	53	02/17	51	01/12	51	07/05	50	09/09	0	9	25	30	3	0	0	0	0	0	0
Harrisburg Air Basin																						
Harrisburg (TEOM)	H11	21	353	60	07/18	54	07/19	53	07/17	53	05/11	0	4	231	109	13	0	0	0	0	0	0
Lancaster Air Basin																						
Lancaster (TEOM)	L01	24	308	68	07/18	65	07/17	64	05/31	63	07/09	0	2	123	157	28	0	0	0	0	0	0
York Air Basin																						
York (TEOM)	Y01	23	350	66	01/28	62	07/19	61	03/31	56	06/07	0	4	201	141	8	0	0	0	0	0	0

**** Primary and Secondary Air Quality Standards ****
**** Annual Mean = 50 micrograms per cubic meter ****
**** 24 Hour Mean = 150 micrograms per cubic meter ****

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

PM-10 SUSPENDED PARTICULATE MATTER SUMMARY

(Units: micrograms per cubic meter / local conditions)

YEAR: 1999

				Daily Means										Number of 24 Hour Values In Ranges								
	PA	Arithmetic		1st Max		2nd Max		3rd Max		4th Max		Number	Minimum	0	26	51	76	101	126	151	176	
	Site	Annual	Number	24HR	Date	24HR	Date	24HR	Date	24HR	Date	Obs.	24 Hour	to	to	to	to	to	to	to	to	>
Site Name	Code	Mean	Obs.	Mean	MM/DD	Mean	MM/DD	Mean	MM/DD	Mean	MM/DD	>150	Mean	25	50	75	100	125	150	175	200	200
Altoona Non-Air Basin																						
Altoona (TEOM)	308	19	349	67	07/17	64	07/16	59	06/07	57	02/16	0	4	250	93	6	0	0	0	0	0	0
Williamsport Non-Air Basin																						
Williamsport	407	33	42	81	07/17	61	03/25	51	02/11	47	07/23	0	9	16	23	2	1	0	0	0	0	0
Johnstown Air Basin																						
Johnstown (TEOM)	J01	24	358	67	07/16	65	07/17	62	06/07	61	12/03	0	5	199	148	11	0	0	0	0	0	0
Monongahela Valley Air Basin																						
Charleroi (TEOM)	M01	27	325	102	10/29	102	11/01	98	11/19	95	10/30	0	6	164	125	27	7	2	0	0	0	0
Monessen	M16	38	52	79	07/17	71	06/11	59	05/12	57	05/06	0	10	10	30	11	1	0	0	0	0	0
Lower Beaver Valley Air Basin																						
Beaver Falls (TEOM)	B11	22	178	80	05/05	77	05/06	76	05/04	76	03/31	0	6	104	59	11	4	0	0	0	0	0
DEP Region 5 Non-Air Basin																						
Florence	504	27	45	72	07/17	60	06/11	54	05/12	52	09/09	0	11	21	20	4	0	0	0	0	0	0
Greensburg (TEOM)	513	20	331	79	07/16	69	07/17	56	03/31	52	06/07	0	6	227	98	5	1	0	0	0	0	0
Upper Beaver Valley Air Basin																						
New Castle (TEOM)	B21	28	338	111	06/07	88	03/31	82	07/30	78	02/11	0	4	167	125	41	4	1	0	0	0	0
Erie Air Basin																						
Erie (TEOM)	E10	18	339	62	07/16	53	07/04	51	05/06	51	11/19	0	2	253	81	5	0	0	0	0	0	0

**** Primary and Secondary Air Quality Standards ****
**** Annual Mean = 50 micrograms per cubic meter ****
**** 24 Hour Mean = 150 micrograms per cubic meter ****

PM-10 PARTICULATE MATTER HISTORICAL TREND
(Units: micrograms per cubic meter)
(Standard Conditions: 1989-97)
(Local Conditions: 1998-99)

STATION & SITE CODE		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	
Southeast Pennsylvania Air Basin												
BRISTOL (TEOM)	(P01)	**	**	**	**	**	21	21	20	23	17	Annual Mean
		**	**	**	**	**	75	58	61	60	59	2nd Max 24-Hour Mean
CHESTER (TEOM)	(P11)	**	**	**	**	**	25	24	24	25	21	Annual Mean
		**	**	**	**	**	105	69	76	72	57	2nd Max 24-Hour Mean
NORRISTOWN (TEOM)	(P21)	**	**	**	**	**	**	22	21	21	18	Annual Mean
		**	**	**	**	**	**	64	79	62	50	2nd Max 24-Hour Mean
Allentown-Bethlehem-Easton Air Basin												
ALLENTOWN (TEOM)	(A19)	**	**	**	**	**	**	20	19	17	11	Annual Mean
		**	**	**	**	**	**	54	59	50	38	2nd Max 24-Hour Mean
FREEMANSBURG (TEOM)	(A25)	**	**	**	**	**	**	**	**	26	38	Annual Mean
		**	**	**	**	**	**	**	**	65	101	2nd Max 24-Hour Mean
Scranton-Wilkes Barre Air Basin												
SCRANTON (TEOM)	(S01)	**	**	**	**	**	23	21	20	21	12	Annual Mean
		**	**	**	**	**	76	61	69	60	51	2nd Max 24-Hour Mean
WILKES-BARRE (TEOM)	(S28)	**	**	**	**	**	21	21	21	24	**	Annual Mean
		**	**	**	**	**	60	60	67	67	**	2nd Max 24-Hour Mean
Reading Air Basin												
READING (TEOM)	(R01)	**	**	**	**	**	**	22	21	21	21	Annual Mean
		**	**	**	**	**	**	52	61	57	54	2nd Max 24-Hour Mean
READING	(R15)	**	**	**	**	**	**	29	29	27	29	Annual Mean
		**	**	**	**	**	**	66	67	63	51	2nd Max 24-Hour Mean
Harrisburg Air Basin												
HARRISBURG (TEOM)	(H11)	**	**	**	25	24	22	23	22	23	21	Annual Mean
		**	**	**	64	72	67	63	67	66	54	2nd Max 24-Hour Mean
Lancaster Air Basin												
LANCASTER (TEOM)	(L01)	**	**	**	**	**	27	24	23	24	24	Annual Mean
		**	**	**	**	**	72	69	76	63	65	2nd Max 24-Hour Mean
York Air Basin												
YORK (TEOM)	(Y01)	**	**	**	**	**	**	**	23	26	23	Annual Mean
		**	**	**	**	**	**	**	75	63	62	2nd Max 24-Hour Mean

** Indicates less than 30 discrete samples collected or less than 50 percent continuous data (TEOM)

PM-10 PARTICULATE MATTER HISTORICAL TREND
(Units: micrograms per cubic meter)
(Standard Conditions: 1989-97)
(Local Conditions: 1998-99)

STATION & SITE CODE		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	
Altoona Non-Air Basin												
ALTOONA (TEOM)	(308)	**	**	**	**	**	25	23	21	22	19	Annual Mean
		**	**	**	**	**	70	60	67	59	64	2nd Max 24-Hour Mean
Williamsport Non-Air Basin												
WILLIAMSPORT	(407)	**	**	**	**	**	**	**	**	26	33	Annual Mean
		**	**	**	**	**	**	**	**	57	61	2nd Max 24-Hour Mean
Johnstown Air Basin												
JOHNSTOWN (TEOM)	(J01)	**	**	**	**	**	**	28	24	26	24	Annual Mean
		**	**	**	**	**	**	63	67	66	65	2nd Max 24-Hour Mean
Monongahela Valley Air Basin												
CHARLEROI (TEOM)	(M01)	**	**	**	**	**	26	26	24	26	27	Annual Mean
		**	**	**	**	**	74	72	60	70	102	2nd Max 24-Hour Mean
MONESSEN	(M16)	**	**	**	**	**	**	**	32	34	38	Annual Mean
		**	**	**	**	**	**	**	62	63	71	2nd Max 24-Hour Mean
Lower Beaver Valley Air Basin												
BEAVER FALLS (TEOM)	(B11)	**	**	**	**	**	**	26	27	28	**	Annual Mean
		**	**	**	**	**	**	76	87	87	**	2nd Max 24-Hour Mean
DEP Region 5 Non-Air Basin												
FLORENCE	(504)	**	**	**	**	**	**	**	**	**	27	Annual Mean
		**	**	**	**	**	**	**	**	**	60	2nd Max 24-Hour Mean
GREENSBURG (TEOM)	(513)	**	**	**	**	**	**	**	**	22	20	Annual Mean
		**	**	**	**	**	**	**	**	71	69	2nd Max 24-Hour Mean
Upper Beaver Valley Air Basin												
NEW CASTLE (TEOM)	(B21)	**	**	**	**	**	**	33	33	33	28	Annual Mean
		**	**	**	**	**	**	91	94	93	88	2nd Max 24-Hour Mean
Erie Air Basin												
ERIE (TEOM)	(E10)	**	**	**	**	**	**	20	20	21	18	Annual Mean
		**	**	**	**	**	**	61	68	67	53	2nd Max 24-Hour Mean

** Indicates less than 30 discrete samples collected or less than 50 percent continuous data (TEOM)

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

PM-2.5 SUSPENDED PARTICULATE MATTER SUMMARY

(Units: micrograms per cubic meter / local conditions)

YEAR: 1999

				Daily Means										Number of 24 Hour Values In Ranges						
	PA			1st Max		2nd Max		3rd Max		4th Max		Number	Minimum	0	16	31	51	71	91	
	Site	Annual	Number	24HR	Date	24HR	Date	24HR	Date	24HR	Date	Obs.	24 Hour	to	to	to	to	to	to	>
Site Name	Code	Mean	Obs.	Mean	MM/DD	Mean	MM/DD	Mean	MM/DD	Mean	MM/DD	>65	Mean	15	30	50	70	90	110	110
Southeast Pennsylvania Air Basin																				
Bristol	P01	11.9	67	33.3	10/30	32.8	7/5	30.2	7/17	28.0	6/8	0	3.1	50	15	2	0	0	0	0
Chester	P11	13.1	94	37.2	6/8	35.9	7/5	31.6	7/23	29.3	8/28	0	3.3	62	29	3	0	0	0	0
Norristown	P21	13.0	78	35.3	2/17	31.3	7/5	30.2	9/9	29.8	11/14	0	2.9	55	21	2	0	0	0	0
Allentown-Bethlehem-Easton Air Basin																				
Allentown	A19	11.8	185	35.0	9/9	34.6	9/8	32.0	11/14	31.5	11/19	0	1.8	138	43	4	0	0	0	0
Easton (TEOM)	A20	12.0	72	32.0	11/10	30.0	10/30	27.0	10/31	25.0	10/29	0	2.0	56	15	1	0	0	0	0
Freemansburg	A25	12.8	180	36.0	9/8	34.7	9/9	32.5	8/17	31.3	2/27	0	1.7	125	50	5	0	0	0	0
Scranton-Wilkes-Barre Air Basin																				
Scranton	S01	11.0	259	58.0	7/17	39.8	7/16	37.4	7/4	31.2	8/13	0	1.6	194	61	3	1	0	0	0
Wilkes-Barre	S28	12.5	252	50.6	7/17	50.4	7/18	40.0	7/16	37.8	7/4	0	2.0	174	71	7	0	0	0	0
Reading Air Basin																				
Reading	R01	13.5	91	36.3	8/13	35.7	11/14	32.5	7/5	30.4	7/17	0	3.4	62	26	3	0	0	0	0
Harrisburg Air Basin																				
Harrisburg	H11	14.3	244	49.7	7/18	43.5	2/28	40.7	2/27	40.4	2/17	0	2.0	154	75	15	0	0	0	0
Lancaster Air Basin																				
Lancaster	L01	15.6	89	46.1	2/17	38.2	10/30	34.5	8/13	33.6	5/6	0	3.2	55	28	6	0	0	0	0
York Air Basin																				
York	Y01	15.4	96	51.6	2/17	34.9	1/27	34.3	5/6	33.1	7/17	0	2.2	58	33	4	1	0	0	0

**** Primary and Secondary Air Quality Standards ****
**** Annual Mean = 15 micrograms per cubic meter ****
**** 24 Hour Mean = 65 micrograms per cubic meter ****

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

PM-2.5 SUSPENDED PARTICULATE MATTER SUMMARY

(Units: micrograms per cubic meter / local conditions)

YEAR: 1999

				Daily Means										Number of 24 Hour Values In Ranges						
	PA			1st Max		2nd Max		3rd Max		4th Max		Number	Minimum	0	16	31	51	71	91	
	Site	Annual	Number	24HR	Date	24HR	Date	24HR	Date	24HR	Date	Obs.	24 Hour	to	to	to	to	to	to	>
Site Name	Code	Mean	Obs.	Mean	MM/DD	Mean	MM/DD	Mean	MM/DD	Mean	MM/DD	>65	Mean	15	30	50	70	90	110	110
DEP Region 3 Non-Air Basin																				
Arendtsville	314	13.1	268	44.9	7/18	41.1	9/9	36.5	2/17	35.2	4/23	0	1.8	190	68	10	0	0	0	0
Johnstown Air Basin																				
Johnstown	J01	14.7	81	52.6	7/17	31.0	8/28	30.7	7/5	29.3	6/8	0	4.6	48	31	1	1	0	0	0
Monongahela Valley Air Basin																				
Charleroi	M01	15.4	73	35.5	6/26	33.2	6/11	33.1	5/6	28.7	1/30	0	4.1	40	30	3	0	0	0	0
DEP Region 5 Non-Air Basin																				
Florence	504	12.9	261	42.5	7/16	42.2	6/11	41.9	7/17	40.0	6/6	0	2.7	185	65	11	0	0	0	0
Washington	508	14.5	77	49.2	7/17	42.4	6/11	39.2	6/26	29.2	10/30	0	4.2	50	24	3	0	0	0	0
Kittanning (TEOM)	512	10.5	52	28.0	11/10	28.0	11/13	25.0	11/19	22.0	11/21	0	2.0	42	10	0	0	0	0	0
Greensburg	513	14.8	69	60.5	7/17	37.5	6/26	31.0	9/9	30.7	7/5	0	4.2	43	23	2	1	0	0	0
Erie Air Basin																				
Erie	E10	12.6	38	30.5	2/26	27.6	6/11	24.6	9/27	23.6	10/12	0	3.6	31	7	0	0	0	0	0

**** Primary and Secondary Air Quality Standards ****
**** Annual Mean = 15 micrograms per cubic meter ****
**** 24 Hour Mean = 65 micrograms per cubic meter ****

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

SULFUR DIOXIDE SUMMARY

(Units: parts per million)

YEAR: 1999

				Block Averages					Daily Averages				Number of 24 Hour Values In Ranges							
	PA	Percent		Number	1st Max		2nd Max		Number	1st Max		2nd Max		.00	.05	.09	.13	.17	.21	.25	
	Site	Valid	Annual	3 HR	3 HR		3 HR		24 HR	24 HR		24 HR		to	to	to	to	to	to	to	>
Site Name	Code	Data	Mean	> 0.50	Mean	Date-Hour	Mean	Date-Hour	> 0.14	Mean	Date	Mean	Date	.04	.08	.12	.16	.20	.24	.28	.28
Southeast Pennsylvania Air Basin																					
Bristol	P01	96.3	0.005	0	0.036	07/23-02	0.035	03/18-08	0	0.025	12/03	0.020	03/17	346	0	0	0	0	0	0	0
Chester	P11	97.7	0.009	0	0.064	12/09-14	0.057	09/02-08	0	0.028	12/09	0.025	03/09	357	0	0	0	0	0	0	0
Norristown	P21	98.9	0.006	0	0.049	12/09-07	0.042	12/09-20	0	0.023	12/09	0.020	11/19	360	0	0	0	0	0	0	0
Allentown-Bethlehem-Easton Air Basin																					
Allentown	A19	99.1	0.007	0	0.059	01/14-20	0.058	01/14-23	0	0.049	01/14	0.030	12/09	360	1	0	0	0	0	0	0
Freemansburg	A25	97.5	0.009	0	0.064	08/26-17	0.047	08/26-20	0	0.023	02/15	0.021	01/16	356	0	0	0	0	0	0	0
Easton	A41	76.6	0.007	0	0.065	08/26-17	0.045	04/06-08	0	0.038	04/05	0.037	04/04	276	0	0	0	0	0	0	0
Easton	A20	19.7	0.007	0	0.053	11/11-08	0.046	12/20-11	0	0.027	12/20	0.025	12/09	72	0	0	0	0	0	0	0
Scranton-Wilkes-Barre Air Basin																					
Scranton	S01	99.2	0.005	0	0.035	12/03-14	0.033	01/06-08	0	0.027	12/03	0.021	12/09	363	0	0	0	0	0	0	0
Wilkes-Barre	S28	98.8	0.007	0	0.046	10/29-11	0.039	12/09-14	0	0.024	10/29	0.023	12/03	361	0	0	0	0	0	0	0
Reading Air Basin																					
Reading	R01	98.7	0.008	0	0.108	10/17-11	0.094	02/11-11	0	0.028	10/17	0.027	12/02	362	0	0	0	0	0	0	0
Harrisburg Air Basin																					
Harrisburg	H11	96.7	0.005	0	0.084	02/23-17	0.048	07/14-14	0	0.021	02/23	0.021	02/27	352	0	0	0	0	0	0	0
Lancaster Air Basin																					
Lancaster	L01	99.2	0.005	0	0.053	07/24-11	0.045	07/24-14	0	0.022	12/02	0.021	07/24	364	0	0	0	0	0	0	0

**** Primary Annual Mean = 0.03 parts per million ****
**** Primary 24 Hour Mean = 0.14 parts per million ****
**** Seconday 3 Hour Mean = 0.50 parts per million ****

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

SULFUR DIOXIDE SUMMARY

(Units: parts per million)

YEAR: 1999

					Block Averages					Daily Averages				Number of 24 Hour Values In Ranges							
	PA	Percent		Number	1st Max		2nd Max		Number	1st Max		2nd Max		.00	.05	.09	.13	.17	.21	.25	
	Site	Valid	Annual	3 HR	3 HR		3 HR		24 HR	24 HR		24 HR		to	to	to	to	to	to	to	>
Site Name	Code	Data	Mean	> 0.50	Mean	Date-Hour	Mean	Date-Hour	> 0.14	Mean	Date	Mean	Date	.04	.08	.12	.16	.20	.24	.28	.28
York Air Basin																					
York	Y01	98.4	0.007	0	0.067	02/21-23	0.059	02/19-14	0	0.024	02/27	0.019	02/19	358	0	0	0	0	0	0	0
DEP Region 3 Non-Air Basin																					
Perry County	305	98.1	0.003	0	0.034	02/23-20	0.034	12/02-14	0	0.012	01/25	0.012	02/23	358	0	0	0	0	0	0	0
Altoona Non-Air Basin																					
Altoona	308	96.2	0.007	0	0.069	01/04-23	0.058	12/22-05	0	0.030	01/05	0.030	01/04	348	0	0	0	0	0	0	0
Williamsport Non-Air Basin																					
Williamsport	407	94.7	0.005	0	0.048	02/23-17	0.038	07/13-20	0	0.024	01/05	0.021	12/02	345	0	0	0	0	0	0	0
Johnstown Air Basin																					
Johnstown	J01	99.7	0.009	0	0.080	11/24-23	0.070	11/28-08	0	0.026	01/15	0.025	11/28	364	0	0	0	0	0	0	0
Monongahela Valley Air Basin																					
Charleroi	M01	98.7	0.009	0	0.061	08/10-14	0.059	01/15-17	0	0.033	01/15	0.023	10/15	360	0	0	0	0	0	0	0
Lower Beaver Valley Air Basin																					
Beaver Falls	B11	98.6	0.009	0	0.077	05/21-14	0.070	05/21-17	0	0.030	05/21	0.028	09/09	362	0	0	0	0	0	0	0
Hookstown	B23	99.3	0.011	0	0.170	03/24-11	0.145	07/15-11	0	0.048	07/15	0.044	03/24	362	1	0	0	0	0	0	0
Brighton Township	B27	97.7	0.015	0	0.218	05/30-23	0.215	05/31-02	0	0.090	10/29	0.070	10/30	338	16	1	0	0	0	0	0

**** Primary Annual Mean = 0.03 parts per million ****
**** Primary 24 Hour Mean = 0.14 parts per million ****
**** Seconday 3 Hour Mean = 0.50 parts per million ****

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

SULFUR DIOXIDE SUMMARY

(Units: parts per million)

YEAR: 1999

				Block Averages					Daily Averages				Number of 24 Hour Values In Ranges							
	PA	Percent		Number	1st Max		2nd Max		Number	1st Max		2nd Max		.00	.05	.09	.13	.17	.21	.25	
	Site	Valid	Annual	3 HR	3 HR		3 HR		24 HR	24 HR		24 HR		to	to	to	to	to	to	to	>
Site Name	Code	Data	Mean	> 0.50	Mean	Date-Hour	Mean	Date-Hour	> 0.14	Mean	Date	Mean	Date	.04	.08	.12	.16	.20	.24	.28	.28
Allegheny County Air Basin																					
Pittsburgh	D12	98.9	0.006	0	0.062	05/12-08	0.043	10/07-11	0	0.025	05/12	0.019	12/09	360	0	0	0	0	0	0	0
DEP Region 5 Non-Air Basin																					
Florence	504	98.8	0.010	0	0.102	02/10-17	0.100	02/05-14	0	0.040	02/15	0.036	12/03	361	0	0	0	0	0	0	0
Washington	508	98.7	0.009	0	0.064	03/16-11	0.062	01/05-14	0	0.034	03/16	0.030	03/17	358	0	0	0	0	0	0	0
Greensburg	513	98.9	0.011	0	0.107	12/08-17	0.101	12/08-14	0	0.045	12/08	0.037	09/20	360	1	0	0	0	0	0	0
Upper Beaver Valley Air Basin																					
New Castle	B21	98.0	0.008	0	0.097	12/09-14	0.086	10/28-14	0	0.040	12/09	0.035	12/02	358	0	0	0	0	0	0	0
Erie Air Basin																					
Erie	E10	98.8	0.010	0	0.153	02/07-20	0.153	04/28-20	0	0.070	01/13	0.043	01/14	359	1	0	0	0	0	0	0
Shenango Valley Non-Air Basin																					
Farrell	606	52.8	0.007	0	0.060	12/08-20	0.060	08/13-11	0	0.040	12/09	0.039	12/02	196	0	0	0	0	0	0	0
DEP Region 6 Non-Air Basin																					
Warren	611	96.2	0.008	0	0.085	07/23-08	0.072	07/07-23	0	0.036	12/03	0.031	01/06	351	0	0	0	0	0	0	0
Warren	612	97.9	0.015	0	0.255	10/29-23	0.227	10/30-05	0	0.116	10/29	0.097	10/30	340	14	3	0	0	0	0	0
Special Purpose Monitoring Sites																					
Kunkletown	212	41.4	0.003	0	0.015	04/22-05	0.014	07/19-14	0	0.009	04/22	0.006	08/17	151	0	0	0	0	0	0	0
Holbrook	514	56.3	0.009	0	0.054	10/07-17	0.050	10/20-11	0	0.026	07/16	0.022	10/07	203	0	0	0	0	0	0	0

**** Primary Annual Mean = 0.03 parts per million ****
**** Primary 24 Hour Mean = 0.14 parts per million ****
**** Seconday 3 Hour Mean = 0.50 parts per million ****

SULFUR DIOXIDE
HISTORICAL TREND
(Units: parts per million)

STATION & CODE	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	
Southeast Pennsylvania Air Basin											
BRISTOL	0.008	0.008	0.008	0.008	0.008	0.006	0.007	0.007	0.008	0.005	Annual Mean
P01	0.038	0.031	0.030	0.027	0.040	0.023	0.028	0.029	0.024	0.020	2nd Max 24-Hour Mean
	0.062	0.053	0.061	0.047	0.076	0.048	0.043	0.043	0.043	0.035	2nd Max 3-Hour Mean
CHESTER	0.009	0.008	0.008	0.009	0.010	0.008	0.008	0.008	0.009	0.009	Annual Mean
P11	0.029	0.027	0.031	0.026	0.035	0.028	0.025	0.026	0.027	0.025	2nd Max 24-Hour Mean
	0.067	0.065	0.057	0.046	0.074	0.054	0.048	0.063	0.048	0.057	2nd Max 3-Hour Mean
NORRISTOWN	0.008	0.008	0.008	0.008	0.010	0.009	0.008	0.008	0.006	0.006	Annual Mean
P21	0.032	0.031	0.026	0.029	0.045	0.025	0.028	0.025	0.022	0.020	2nd Max 24-Hour Mean
	0.066	0.058	0.051	0.049	0.066	0.037	0.043	0.048	0.029	0.042	2nd Max 3-Hour Mean
Allentown-Bethlehem-Easton Air Basin											
ALLENTOWN	0.008	0.007	0.006	0.007	0.008	0.006	0.006	0.008	0.008	0.007	Annual Mean
A19	0.037	0.041	0.028	0.034	0.053	0.028	0.035	0.030	0.030	0.030	2nd Max 24-Hour Mean
	0.064	0.082	0.042	0.050	0.079	0.050	0.052	0.058	0.047	0.058	2nd Max 3-Hour Mean
FREEMANSBURG	***	***	***	***	***	***	***	***	0.006	0.009	Annual Mean
A25	***	***	***	***	***	***	***	***	0.027	0.021	2nd Max 24-Hour Mean
	***	***	***	***	***	***	***	***	0.041	0.047	2nd Max 3-Hour Mean
EASTON	0.008	0.009	0.008	0.006	0.008	0.006	0.006	0.010	0.011	0.007	Annual Mean
A41	0.037	0.033	0.029	0.024	0.041	0.026	0.021	0.027	0.033	0.037	2nd Max 24-Hour Mean
	0.073	0.052	0.046	0.052	0.060	0.048	0.046	0.045	0.076	0.045	2nd Max 3-Hour Mean
Scranton-Wilkes Barre Air Basin											
SCRANTON	0.010	0.011	0.009	0.008	0.007	0.005	0.007	0.006	0.005	0.005	Annual Mean
S01	0.045	0.045	0.031	0.025	0.034	0.023	0.033	0.031	0.026	0.021	2nd Max 24-Hour Mean
	0.064	0.114	0.081	0.044	0.087	0.068	0.043	0.050	0.039	0.033	2nd Max 3-Hour Mean
WILKES-BARRE	0.010	0.006	0.006	0.006	0.007	0.005	0.006	0.007	0.006	0.007	Annual Mean
S28	0.052	0.032	0.031	0.026	0.034	0.027	0.023	0.026	0.021	0.023	2nd Max 24-Hour Mean
	0.071	0.047	0.072	0.047	0.058	0.056	0.043	0.047	0.040	0.039	2nd Max 3-Hour Mean
Reading Air Basin											
READING	0.009	0.008	0.008	0.009	0.010	0.009	0.009	0.008	0.009	0.008	Annual Mean
R01	0.031	0.028	0.023	0.027	0.036	0.032	0.037	0.028	0.022	0.027	2nd Max 24-Hour Mean
	0.077	0.073	0.069	0.092	0.084	0.072	0.094	0.067	0.096	0.094	2nd Max 3-Hour Mean

*** Indicates less than 50 percent valid data for the year

SULFUR DIOXIDE
HISTORICAL TREND
(Units: parts per million)

STATION & CODE	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	
Harrisburg Air Basin											
HARRISBURG	0.007	0.008	0.007	0.006	0.007	0.005	0.005	0.007	0.006	0.005	Annual Mean
H11	0.024	0.025	0.023	0.025	0.040	0.020	0.022	0.022	0.021	0.021	2nd Max 24-Hour Mean
	0.050	0.065	0.058	0.043	0.055	0.065	0.047	0.049	0.043	0.048	2nd Max 3-Hour Mean
Lancaster Air Basin											
LANCASTER	0.006	0.006	0.006	0.007	0.006	0.006	0.005	0.007	0.006	0.005	Annual Mean
L01	0.028	0.023	0.018	0.026	0.030	0.018	0.021	0.023	0.020	0.021	2nd Max 24-Hour Mean
	0.070	0.047	0.052	0.058	0.045	0.037	0.036	0.051	0.047	0.045	2nd Max 3-Hour Mean
York Air Basin											
YORK	0.007	0.007	0.007	0.008	0.009	0.006	0.007	0.009	0.008	0.007	Annual Mean
Y01	0.023	0.020	0.034	0.032	0.041	0.020	0.022	0.026	0.023	0.019	2nd Max 24-Hour Mean
	0.072	0.069	0.084	0.069	0.071	0.062	0.055	0.073	0.064	0.059	2nd Max 3-Hour Mean
DEP Region 3 Non-Air Basin											
PERRY COUNTY	0.004	0.004	0.004	0.005	0.007	0.004	0.005	0.004	0.003	0.003	Annual Mean
305	0.016	0.016	0.014	0.017	0.023	0.014	0.020	0.021	0.012	0.012	2nd Max 24-Hour Mean
	0.032	0.033	0.034	0.035	0.040	0.050	0.038	0.033	0.027	0.034	2nd Max 3-Hour Mean
Altoona Non-Air Basin											
ALTOONA	0.011	0.010	0.009	0.009	0.010	0.008	0.008	0.010	0.008	0.007	Annual Mean
308	0.062	0.044	0.046	0.052	0.057	0.037	0.033	0.046	0.032	0.030	2nd Max 24-Hour Mean
	0.117	0.082	0.093	0.073	0.108	0.067	0.071	0.070	0.061	0.058	2nd Max 3-Hour Mean
Williamsport Non-Air Basin											
WILLIAMSPORT	0.006	0.007	0.007	0.006	0.006	0.006	0.006	0.008	0.005	0.005	Annual Mean
407	0.025	0.025	0.026	0.025	0.042	0.021	0.028	0.028	0.021	0.021	2nd Max 24-Hour Mean
	0.049	0.047	0.072	0.045	0.063	0.046	0.052	0.050	0.040	0.038	2nd Max 3-Hour Mean
Johnstown Air Basin											
JOHNSTOWN	0.014	0.015	0.013	0.015	0.013	0.012	0.011	0.009	0.008	0.009	Annual Mean
J01	0.046	0.043	0.052	0.049	0.054	0.042	0.034	0.030	0.027	0.025	2nd Max 24-Hour Mean
	0.132	0.134	0.106	0.153	0.112	0.128	0.068	0.069	0.080	0.070	2nd Max 3-Hour Mean
Monongahela Valley Air Basin											
CHARLEROI	0.011	0.012	0.012	0.011	0.011	0.009	0.008	0.009	0.009	0.009	Annual Mean
M01	0.038	0.037	0.038	0.036	0.063	0.030	0.033	0.035	0.025	0.023	2nd Max 24-Hour Mean
	0.101	0.093	0.140	0.084	0.129	0.097	0.084	0.074	0.056	0.059	2nd Max 3-Hour Mean

*** Indicates less than 50 percent valid data for the year

SULFUR DIOXIDE
HISTORICAL TREND
(Units: parts per million)

STATION & CODE	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	
Lower Beaver Valley Air Basin											
BEAVER FALLS	0.013	0.013	0.012	0.012	0.012	0.009	0.007	0.009	0.007	0.009	Annual Mean
B11	0.046	0.048	0.068	0.040	0.059	0.030	0.038	0.034	0.034	0.028	2nd Max 24-Hour Mean
	0.116	0.117	0.125	0.095	0.127	0.075	0.078	0.082	0.079	0.070	2nd Max 3-Hour Mean
HOOKSTOWN	0.020	0.020	0.012	0.017	0.018	0.012	0.011	0.011	0.013	0.011	Annual Mean
B23	0.088	0.068	0.088	0.075	0.072	0.046	0.038	0.049	0.046	0.044	2nd Max 24-Hour Mean
	0.240	0.172	0.181	0.178	0.166	0.127	0.105	0.163	0.129	0.145	2nd Max 3-Hour Mean
BRIGHTON TWP	***	***	***	***	0.015	0.015	0.015	0.015	0.016	0.015	Annual Mean
B27	***	***	***	***	0.092	0.080	0.058	0.078	0.094	0.070	2nd Max 24-Hour Mean
	***	***	***	***	0.199	0.216	0.207	0.251	0.208	0.215	2nd Max 3-Hour Mean
Allegheny County Air Basin											
PITTSBURGH	***	***	***	***	***	***	***	***	0.005	0.006	Annual Mean
D12	***	***	***	***	***	***	***	***	0.014	0.019	2nd Max 24-Hour Mean
	***	***	***	***	***	***	***	***	0.047	0.043	2nd Max 3-Hour Mean
DEP Region 5 Non-Air Basin											
FLORENCE	0.014	0.013	0.015	0.013	0.012	0.009	0.010	0.012	0.013	0.010	Annual Mean
504	0.057	0.047	0.059	0.058	0.086	0.034	0.035	0.050	0.043	0.036	2nd Max 24-Hour Mean
	0.152	0.116	0.131	0.156	0.152	0.095	0.084	0.127	0.102	0.100	2nd Max 3-Hour Mean
WASHINGTON	0.012	0.012	0.012	0.012	0.012	0.009	0.008	0.010	0.010	0.009	Annual Mean
508	0.044	0.044	0.050	0.054	0.043	0.045	0.030	0.047	0.040	0.030	2nd Max 24-Hour Mean
	0.104	0.106	0.109	0.134	0.122	0.093	0.094	0.086	0.073	0.062	2nd Max 3-Hour Mean
GREENSBURG	***	***	***	***	***	***	***	***	0.009	0.011	Annual Mean
513	***	***	***	***	***	***	***	***	0.033	0.037	2nd Max 24-Hour Mean
	***	***	***	***	***	***	***	***	0.066	0.101	2nd Max 3-Hour Mean
Upper Beaver Valley Air Basin											
NEW CASTLE	0.011	0.010	0.008	0.008	0.008	0.007	0.008	0.008	0.009	0.008	Annual Mean
B21	0.045	0.042	0.048	0.036	0.037	0.032	0.035	0.033	0.032	0.035	2nd Max 24-Hour Mean
	0.129	0.110	0.099	0.103	0.077	0.070	0.064	0.114	0.117	0.086	2nd Max 3-Hour Mean

*** Indicates less than 50 percent valid data for the year

SULFUR DIOXIDE
HISTORICAL TREND
(Units: parts per million)

STATION & CODE	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	
Erie Air Basin											
ERIE	0.014	0.010	0.011	0.011	0.010	0.009	0.010	0.009	0.010	0.010	Annual Mean
E10	0.057	0.044	0.056	0.072	0.076	0.050	0.066	0.035	0.068	0.043	2nd Max 24-Hour Mean
	0.161	0.114	0.137	0.190	0.155	0.112	0.173	0.097	0.138	0.153	2nd Max 3-Hour Mean
Shenango Valley Non-Air Basin											
FARRELL	0.010	0.008	0.008	0.008	0.008	0.008	0.007	0.007	0.008	0.007	Annual Mean
606	0.036	0.032	0.030	0.029	0.047	0.032	0.029	0.032	0.029	0.039	2nd Max 24-Hour Mean
	0.120	0.082	0.074	0.085	0.086	0.064	0.060	0.074	0.063	0.060	2nd Max 3-Hour Mean
DEP Region 6 Non-Air Basin											
WARREN	***	***	***	***	***	***	0.008	0.009	0.008	0.008	Annual Mean
611	***	***	***	***	***	***	0.028	0.038	0.028	0.031	2nd Max 24-Hour Mean
	***	***	***	***	***	***	0.096	0.083	0.103	0.072	2nd Max 3-Hour Mean
WARREN	***	***	***	***	***	***	***	0.015	0.016	0.015	Annual Mean
612	***	***	***	***	***	***	***	0.069	0.098	0.097	2nd Max 24-Hour Mean
	***	***	***	***	***	***	***	0.291	0.248	0.227	2nd Max 3-Hour Mean

*** Indicates less than 50 percent valid data for the year

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

OZONE SUMMARY

(Units: parts per million)

YEAR: 1999 (APRIL-OCTOBER)

												Number of 1 Hour Values In Ranges							
	PA	Percent	Number	1st Daily Max		2nd Daily Max		3nd Daily Max		4th Daily Max		.00	.05	.09	.13	.17	.21	.25	
	Site	Valid	Daily 1 HR	1 HR	Date	1 HR	Date	1 HR	Date	1 HR	Date	to	to	to	to	to	to	to	>
Site Name	Code	Data	>= 0.125	Mean	MM/DD-HH	Mean	MM/DD-HH	Mean	MM/DD-HH	Mean	MM/DD-HH	.04	.08	.12	.16	.20	.24	.28	.28
Southeast Pennsylvania Air Basin																			
Bristol	P01	95.6	6	0.151	07/31-14	0.145	07/18-15	0.139	07/16-14	0.137	07/23-15	64	105	28	6	0	0	0	0
Chester	P11	97.1	3	0.162	07/31-13	0.130	07/19-12	0.130	08/17-17	0.120	08/12-15	56	116	30	3	0	0	0	0
Norristown	P21	97.7	2	0.140	08/12-16	0.126	07/31-16	0.117	07/09-16	0.117	07/19-11	66	112	29	2	0	0	0	0
Allentown-Bethlehem-Easton Air Basin																			
Allentown	A19	96.5	2	0.133	07/09-18	0.125	07/16-17	0.118	08/17-16	0.116	07/17-14	43	133	30	2	0	0	0	0
Freemansburg	A25	99.3	2	0.139	07/09-17	0.126	07/16-16	0.119	07/19-11	0.119	08/17-16	45	135	31	2	0	0	0	0
Easton	A41	89.3	1	0.131	07/09-18	0.115	07/16-15	0.110	07/17-12	0.109	08/17-17	43	125	20	1	0	0	0	0
Easton	A20	5.3	0	0.054	10/31-13	0.041	10/22-12	0.033	10/30-14	0.030	10/21-13	10	1	0	0	0	0	0	0
Scranton-Wilkes-Barre Air Basin																			
Scranton	S01	99.1	0	0.115	07/30-14	0.107	07/17-11	0.106	07/09-15	0.103	08/17-17	57	135	21	0	0	0	0	0
Nanticoke	S26	98.9	0	0.118	07/17-13	0.102	07/09-15	0.096	07/18-15	0.095	07/16-15	74	129	10	0	0	0	0	0
Wilkes-Barre	S28	98.5	0	0.118	07/17-13	0.111	07/09-15	0.107	07/18-11	0.102	07/15-15	57	136	18	0	0	0	0	0
Peckville	S29	97.6	0	0.122	07/30-14	0.115	07/17-10	0.111	07/16-14	0.106	07/09-16	53	133	24	0	0	0	0	0
Reading Air Basin																			
Reading	R01	98.8	1	0.140	07/09-16	0.123	07/16-15	0.118	08/17-16	0.117	05/31-17	66	120	25	1	0	0	0	0
Harrisburg Air Basin																			
Harrisburg	H11	97.8	0	0.115	07/16-13	0.114	07/30-15	0.111	05/22-14	0.110	08/17-16	63	122	24	0	0	0	0	0
Lancaster Air Basin																			
Lancaster	L01	99.3	2	0.132	07/09-16	0.127	07/17-15	0.123	07/16-16	0.116	05/31-16	59	124	28	2	0	0	0	0

**** Primary Daily 1 Hour Air Quality Standard of 0.12 parts per million ****

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

OZONE SUMMARY

(Units: parts per million)

YEAR: 1999 (APRIL-OCTOBER)

												Number of 1 Hour Values In Ranges							
	PA	Percent	Number	1st Daily Max		2nd Daily Max		3nd Daily Max		4th Daily Max		.00	.05	.09	.13	.17	.21	.25	
	Site	Valid	Daily 1 HR	1 HR	Date	1 HR	Date	1 HR	Date	1 HR	Date	to	to	to	to	to	to	to	>
Site Name	Code	Data	>= 0.125	Mean	MM/DD-HH	Mean	MM/DD-HH	Mean	MM/DD-HH	Mean	MM/DD-HH	.04	.08	.12	.16	.20	.24	.28	.28
York Air Basin																			
York	Y01	98.4	1	0.133	07/17-16	0.121	07/31-19	0.109	08/04-18	0.107	07/16-17	62	124	22	1	0	0	0	0
DEP Region 3 Non-Air Basin																			
Perry County	305	96.6	0	0.111	08/13-14	0.106	07/09-13	0.106	07/17-12	0.103	05/22-14	54	125	25	0	0	0	0	0
Hershey	306	96.7	2	0.128	07/16-14	0.126	08/17-14	0.120	07/30-15	0.117	07/17-17	55	124	27	2	0	0	0	0
Kutztown	310	98.5	2	0.135	07/09-17	0.128	07/16-17	0.114	08/17-16	0.109	07/17-12	51	136	24	2	0	0	0	0
Methodist Hill	313	98.1	0	0.116	08/17-14	0.115	07/16-14	0.106	07/09-15	0.104	05/30-21	24	158	28	0	0	0	0	0
Altoona Non-Air Basin																			
Altoona East	308	96.8	0	0.117	07/17-13	0.111	07/16-15	0.103	07/18-15	0.103	08/17-14	52	138	17	0	0	0	0	0
Williamsport Non-Air Basin																			
Williamsport	407	95.2	0	0.096	07/17-12	0.087	07/15-18	0.087	08/17-16	0.081	0718-11	96	105	3	0	0	0	0	0
Johnstown Air Basin																			
Johnstown	J01	99.3	0	0.116	07/16-15	0.107	08/17-17	0.106	07/17-11	0.106	07/31-14	44	142	26	0	0	0	0	0
Monongahela Valley Air Basin																			
Charleroi	M01	98.1	0	0.118	07/16-14	0.115	07/17-13	0.111	07/31-17	0.107	08/17-15	43	146	21	0	0	0	0	0
Lower Beaver Valley Air Basin																			
Beaver Falls	B11	97.8	2	0.133	06/10-16	0.131	06/11-14	0.102	07/27-18	0.099	06/26-16	59	129	17	2	0	0	0	0
Hookstown	B23	99.2	0	0.122	06/10-14	0.116	06/11-17	0.111	06/12-15	0.105	05/30-14	38	151	23	0	0	0	0	0
Brighton Township	B27	99.2	2	0.135	06/10-15	0.132	06/11-15	0.120	06/26-16	0.117	07/27-19	45	144	20	2	0	0	0	0

**** Primary Daily 1 Hour Air Quality Standard of 0.12 parts per million ****

Appendix A: Table A-13a

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

OZONE SUMMARY

(Units: parts per million)

YEAR: 1999 (APRIL-OCTOBER)

												Number of 1 Hour Values In Ranges							
	PA	Percent	Number	1st Daily Max		2nd Daily Max		3nd Daily Max		4th Daily Max		.00	.05	.09	.13	.17	.21	.25	
	Site	Valid	Daily 1 HR	1 HR	Date	1 HR	Date	1 HR	Date	1 HR	Date	to	to	to	to	to	to	to	>
Site Name	Code	Data	>= 0.125	Mean	MM/DD-HH	Mean	MM/DD-HH	Mean	MM/DD-HH	Mean	MM/DD-HH	.04	.08	.12	.16	.20	.24	.28	.28
Allegheny County Air Basin																			
Pittsburgh	D12	98.2	1	0.135	07/16-15	0.120	06/26-14	0.118	07/17-14	0.116	06/10-13	63	120	25	1	0	0	0	0
DEP Region 5 Non-Air Basin																			
Florence	504	99.0	0	0.113	06/11-17	0.110	06/10-13	0.106	07/16-12	0.106	08/17-18	30	161	21	0	0	0	0	0
Washington	508	98.7	0	0.110	06/11-14	0.106	07/17-13	0.105	07/15-16	0.103	07/16-16	35	156	20	0	0	0	0	0
Murrysville	510	99.2	1	0.132	07/16-15	0.115	07/17-17	0.108	06/25-16	0.099	07/23-13	78	122	13	1	0	0	0	0
Kittanning	512	97.5	1	0.134	07/17-15	0.121	07/18-14	0.120	05/30-17	0.117	07/15-16	36	142	31	1	0	0	0	0
Greensburg	513	99.4	2	0.145	07/16-15	0.125	07/17-15	0.111	07/31-12	0.110	05/30-17	46	134	31	2	0	0	0	0
Upper Beaver Valley Air Basin																			
New Castle	B21	99.1	1	0.139	06/10-16	0.105	06/11-15	0.098	06/12-16	0.098	09/12-16	59	136	15	1	0	0	0	0
Erie Air Basin																			
Erie	E10	97.4	0	0.115	05/30-15	0.112	07/31-14	0.107	05/29-13	0.107	07/14-15	45	125	38	0	0	0	0	0
Shenango Valley Non-Air Basin																			
Farrell	606	97.0	0	0.111	06/10-13	0.108	09/12-15	0.107	07/15-16	0.105	07/16-14	62	129	18	0	0	0	0	0
Special Purpose Monitoring Sites																			
Kunkletown	212	70.2	1	0.133	07/09-18	0.123	08/17-17	0.113	07/17-12	0.111	05/31-15	14	105	30	1	0	0	0	0
Holbrook	514	96.6	0	0.123	06/11-16	0.116	07/09-18	0.116	07/16-17	0.116	08/17-15	25	150	31	0	0	0	0	0
Moshannon	D09	99.9	0	0.094	07/31-17	0.092	06/25-14	0.092	07/09-13	0.091	08/17-13	52	152	10	0	0	0	0	0
Tiadaghton	D10	99.0	0	0.094	08/17-15	0.091	07/31-17	0.089	08/13-17	0.085	07/09-15	75	132	4	0	0	0	0	0
Penn Nursery	D11	99.7	0	0.109	08/17-17	0.099	07/17-13	0.099	07/23-05	0.099	08/13-15	52	152	10	0	0	0	0	0
Tioga County	D13	67.9	0	0.097	08/13-17	0.093	07/17-14	0.091	06/05-21	0.089	06/24-18	36	99	9	0	0	0	0	0

**** Primary Daily 1 Hour Air Quality Standard of 0.12 parts per million ****

Appendix A: Table A-13a

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

OZONE SUMMARY

(Units: parts per million)

YEAR: 1999 (APRIL-OCTOBER)

Site Name	PA Site Code	Percent Data Complete	Number Daily 8 HR >= 0.085	1st Daily Max 8 HR Mean	1st Daily Max Date MM/DD-HH	2nd Daily Max 8 HR Mean	2nd Daily Max Date MM/DD-HH	3nd Daily Max 8 HR Mean	3nd Daily Max Date MM/DD-HH	4th Daily Max 8 HR Mean	4th Daily Max Date MM/DD-HH
Southeast Pennsylvania Air Basin											
Bristol	P01	95	24	0.126	07/18-10	0.117	07/16-11	0.116	05/31-10	0.112	07/17-11
Chester	P11	96	19	0.117	07/31-11	0.108	07/19-10	0.105	08/17-13	0.100	05/31-11
Norristown	P21	97	20	0.115	08/12-11	0.106	07/19-10	0.106	07/31-10	0.104	07/18-10
Allentown-Bethlehem-Easton Air Basin											
Allentown	A19	97	19	0.117	07/16-11	0.116	07/09-13	0.105	07/18-10	0.105	08/17-12
Freemansburg	A25	100	22	0.121	07/16-11	0.120	07/09-13	0.111	07/18-10	0.107	07/17-10
Easton	A41	88	12	0.112	07/09-13	0.110	07/16-11	0.104	07/18-10	0.098	07/17-10
Scranton-Wilkes-Barre Air Basin											
Scranton	S01	100	11	0.096	07/17-09	0.096	08/17-11	0.094	05/31-11	0.093	05/22-12
Nanticoke	S26	100	4	0.099	07/17-10	0.090	07/16-10	0.087	07/18-10	0.086	08/17-11
Wilkes-Barre	S28	97	9	0.106	07/17-10	0.094	07/09-13	0.094	07/16-10	0.093	08/17-11
Peckville	S29	99	11	0.100	07/16-10	0.099	07/17-09	0.097	08/17-11	0.096	05/31-10
Reading Air Basin											
Reading	R01	98	14	0.119	07/09-13	0.116	07/16-11	0.104	07/17-10	0.102	08/17-11
Harrisburg Air Basin											
Harrisburg	H11	97	15	0.108	07/16-12	0.101	07/18-11	0.099	07/17-10	0.095	07/09-11
Lancaster Air Basin											
Lancaster	L01	100	18	0.117	07/09-12	0.107	07/18-11	0.106	07/17-11	0.102	07/16-11

**** Primary 8 Hour Air Quality Standard of 0.08 parts per million for 4th daily maximum averaged over 3 years ****

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

OZONE SUMMARY

(Units: parts per million)

YEAR: 1999 (APRIL-OCTOBER)

Site Name	PA Site Code	Percent Data Complete	Number Daily 8 HR >= 0.085	1st Daily Max 8 HR Mean	1st Daily Max Date MM/DD-HH	2nd Daily Max 8 HR Mean	2nd Daily Max Date MM/DD-HH	3nd Daily Max 8 HR Mean	3nd Daily Max Date MM/DD-HH	4th Daily Max 8 HR Mean	4th Daily Max Date MM/DD-HH
York Air Basin											
York	Y01	97	10	0.110	07/17-12	0.096	07/09-11	0.095	07/16-11	0.094	08/17-11
DEP Region 3 Non-Air Basin											
Perry County	305	95	13	0.101	08/13-11	0.098	07/09-11	0.092	07/17-10	0.090	08/17-10
Hershey	306	97	15	0.115	07/16-11	0.106	07/17-10	0.105	08/17-11	0.104	07/18-11
Kutztown	310	99	12	0.118	07/09-13	0.115	07/16-12	0.105	07/17-11	0.099	08/17-11
Methodist Hill	313	99	20	0.108	07/16-13	0.103	08/17-11	0.099	07/09-11	0.098	05/12-10
Altoona Non-Air Basin											
Altoona East	308	96	6	0.102	07/16-10	0.094	07/18-10	0.094	08/17-11	0.091	05/30-10
Williamsport Non-Air Basin											
Williamsport	407	95	0	0.079	08/17-11	0.076	07/15-11	0.076	07/18-10	0.075	06/05-14
Johnstown Air Basin											
Johnstown	J01	99	11	0.108	07/16-11	0.094	07/18-10	0.094	08/17-10	0.090	05/30-11
Monongahela Valley Air Basin											
Charleroi	M01	99	11	0.109	07/16-09	0.099	07/31-11	0.098	07/17-10	0.096	08/17-10
Lower Beaver Valley Air Basin											
Beaver Falls	B11	95	6	0.120	06/10-11	0.110	06/11-11	0.088	06/26-11	0.087	05/30-10
Hookstown	B23	98	9	0.115	06/10-11	0.107	06/11-11	0.097	06/12-11	0.095	06/26-14
Brighton Township	B27	99	11	0.115	06/10-11	0.110	06/11-11	0.104	06/26-13	0.101	07/27-14

**** Primary 8 Hour Air Quality Standard of 0.08 parts per million for 4th daily maximum averaged over 3 years ****

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

OZONE SUMMARY

(Units: parts per million)

YEAR: 1999 (APRIL-OCTOBER)

Site Name	PA Site Code	Percent Data Complete	Number Daily 8 HR >= 0.085	1st Daily Max 8 HR Mean	1st Daily Max Date MM/DD-HH	2nd Daily Max 8 HR Mean	2nd Daily Max Date MM/DD-HH	3nd Daily Max 8 HR Mean	3nd Daily Max Date MM/DD-HH	4th Daily Max 8 HR Mean	4th Daily Max Date MM/DD-HH
Allegheny County Air Basin											
Pittsburgh	D12	97	16	0.121	07/16-11	0.104	06/26-10	0.100	06/11-11	0.099	07/15-11
DEP Region 5 Non-Air Basin											
Florence	504	99	9	0.101	06/11-11	0.100	06/10-11	0.098	07/16-10	0.096	08/17-13
Washington	508	98	11	0.099	07/16-11	0.098	06/11-11	0.097	07/15-11	0.090	06/10-10
Murrysville	510	100	5	0.111	07/16-11	0.099	07/17-11	0.088	06/26-10	0.087	06/25-11
Kittanning	512	98	18	0.107	07/17-11	0.101	07/15-11	0.101	07/31-11	0.100	05/30-11
Greensburg	513	99	16	0.134	07/16-11	0.107	07/17-11	0.100	05/30-11	0.099	07/18-11
Upper Beaver Valley Air Basin											
New Castle	B21	99	5	0.107	06/10-10	0.098	06/11-12	0.089	06/12-11	0.088	05/30-11
Erie Air Basin											
Erie	E10	97	13	0.110	05/30-11	0.102	07/14-11	0.098	05/29-11	0.096	07/15-11
Shenango Valley Non-Air Basin											
Farrell	606	98	8	0.095	07/15-11	0.093	07/16-10	0.091	05/30-10	0.091	06/11-11
Special Purpose Monitoring Sites											
Kunkletown	212	70	20	0.120	07/09-11	0.113	08/17-10	0.103	05/31-11	0.100	07/16-11
Holbrook	514	96	21	0.107	07/16-14	0.105	08/17-12	0.102	07/09-13	0.101	06/11-11
Moshannon	D09	100	1	0.088	07/09-12	0.084	07/31-13	0.083	07/16-11	0.081	05/31-10
Tiadaghton	D10	99	0	0.082	08/17-11	0.077	05/22-12	0.076	05/31-12	0.076	08/13-11
Penn Nursery	D11	100	4	0.094	08/17-12	0.087	07/16-11	0.085	07/17-10	0.085	07/18-12
Tioga County	D13	66	2	0.086	06/05-16	0.085	07/17-09	0.084	08/13-12	0.082	06/24-13

**** Primary 8 Hour Air Quality Standard of 0.08 parts per million for 4th daily maximum averaged over 3 years ****

OZONE HISTORICAL TREND
(Units: parts per million)

STATION	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	
Southeast Pennsylvania Air Basin											
BRISTOL	0.132	0.138	0.117	0.129	0.128	0.137	0.120	0.119	0.115	0.145	2nd Max Daily 1 Hour Average
P01	4	9	0	2	2	5	1	1	0	6	Number Standard Exceedances
CHESTER	0.138	0.125	0.109	0.123	0.118	0.126	0.117	0.127	0.125	0.130	2nd Max Daily 1 Hour Average
P11	2	3	0	1	1	2	0	3	2	3	Number Standard Exceedances
NORRISTOWN	0.116	0.125	0.114	0.130	0.115	0.114	0.118	0.131	0.126	0.126	2nd Max Daily 1 Hour Average
P21	1	2	1	3	0	1	0	2	2	2	Number Standard Exceedances
Allentown-Bethlehem-Easton Air Basin											
ALLENTOWN	0.109	0.118	0.095	0.104	0.105	0.109	0.114	0.116	0.106	0.125	2nd Max Daily 1 Hour Average
A19	0	1	0	0	0	0	0	1	0	2	Number Standard Exceedances
FREEMANSBURG	***	***	***	***	***	***	***	***	0.104	0.126	2nd Max Daily 1 Hour Average
A25	***	***	***	***	***	***	***	***	0	2	Number Standard Exceedances
EASTON	0.111	0.120	0.096	0.110	0.105	0.108	0.099	0.116	0.111	0.115	2nd Max Daily 1 Hour Average
A41	0	0	0	0	0	0	0	0	0	1	Number Standard Exceedances
Scranton-Wilkes Barre Air Basin											
SCRANTON	0.100	0.126	0.096	0.111	0.106	0.105	0.108	0.095	0.108	0.107	2nd Max Daily 1 Hour Average
S01	0	2	0	0	0	0	0	0	0	0	Number Standard Exceedances
NANTICOKE	0.088	0.108	0.094	0.105	0.083	0.100	0.087	0.091	0.098	0.102	2nd Max Daily 1 Hour Average
S26	0	0	0	0	0	0	0	0	0	0	Number Standard Exceedances
WILKES-BARRE	0.114	0.114	0.097	0.112	0.100	0.105	0.105	0.111	0.102	0.111	2nd Max Daily 1 Hour Average
S28	0	0	0	0	0	0	0	0	0	0	Number Standard Exceedances
PECKVILLE	***	0.123	0.093	0.111	0.102	0.110	0.113	0.106	0.105	0.115	2nd Max Daily 1 Hour Average
S29	***	1	0	0	0	0	0	0	0	0	Number Standard Exceedances
Reading Air Basin											
READING	0.113	0.123	0.098	0.105	0.102	0.116	0.110	0.120	0.106	0.123	2nd Max Daily 1 Hour Average
R01	0	1	0	0	1	0	0	1	0	1	Number Standard Exceedances

*** Indicates less than 50 percent valid data for year

OZONE HISTORICAL TREND
(Units: parts per million)

STATION	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	
Harrisburg Air Basin											
HARRISBURG	0.108	0.110	0.094	0.118	0.118	0.099	0.096	0.112	0.116	0.114	2nd Max Daily 1 Hour Average
H11	1	0	0	0	0	0	0	0	0	0	Number Standard Exceedances
Lancaster Air Basin											
LANCASTER	0.101	0.119	0.106	0.118	0.111	0.124	0.101	0.133	0.119	0.127	2nd Max Daily 1 Hour Average
L01	0	0	0	1	0	1	0	3	0	2	Number Standard Exceedances
York Air Basin											
YORK	0.121	0.114	0.101	0.112	0.115	0.097	0.098	0.109	0.112	0.121	2nd Max Daily 1 Hour Average
Y01	1	0	0	0	0	0	0	0	0	1	Number Standard Exceedances
DEP Region 3 Non-Air Basin											
PERRY COUNTY	0.100	0.103	0.088	0.110	0.106	0.103	0.090	0.103	0.110	0.106	2nd Max Daily 1 Hour Average
305	0	0	0	0	0	0	0	0	0	0	Number Standard Exceedances
HERSHEY	0.122	0.113	0.097	0.110	0.122	0.113	0.104	0.116	0.111	0.126	2nd Max Daily 1 Hour Average
306	1	0	0	0	0	0	0	0	0	2	Number Standard Exceedances
KUTZTOWN	0.108	0.119	0.100	0.110	0.106	0.107	0.100	0.109	0.104	0.128	2nd Max Daily 1 Hour Average
310	0	1	0	0	1	0	0	0	0	2	Number Standard Exceedances
METHODIST HILL	***	***	***	***	***	***	0.096	0.114	0.120	0.115	2nd Max Daily 1 Hour Average
313	***	***	***	***	***	***	0	0	0	0	Number Standard Exceedances
Altoona Non-Air Basin											
ALTOONA	0.097	0.106	0.095	0.100	0.106	0.112	0.101	0.114	0.114	0.111	2nd Max Daily 1 Hour Average
308	0	0	0	0	0	0	0	0	0	0	Number Standard Exceedances
Williamsport Non-Air Basin											
WILLIAMSPORT	0.088	0.101	0.092	0.088	0.079	0.091	0.082	0.086	0.097	0.087	2nd Max Daily 1 Hour Average
407	0	0	0	0	0	0	0	0	0	0	Number Standard Exceedances

*** Indicates less than 50 percent valid data for year

OZONE HISTORICAL TREND
(Units: parts per million)

STATION	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	
Johnstown Air Basin											
JOHNSTOWN	0.103	0.113	0.089	0.099	0.094	0.101	0.098	0.104	0.124	0.107	2nd Max Daily 1 Hour Average
J01	0	0	0	0	0	0	0	1	1	0	Number Standard Exceedances
Monongahela Valley Air Basin											
CHARLEROI	0.102	0.119	0.085	0.115	0.112	0.116	0.102	0.118	0.127	0.115	2nd Max Daily 1 Hour Average
M01	0	0	0	0	0	0	0	0	3	0	Number Standard Exceedances
Lower Beaver Valley Air Basin											
BEAVER FALLS	0.104	0.108	0.101	0.099	0.107	0.106	0.105	0.101	0.116	0.131	2nd Max Daily 1 Hour Average
B11	0	0	0	0	0	0	0	0	0	2	Number Standard Exceedances
HOOKSTOWN	***	***	***	***	***	0.102	0.104	0.098	0.113	0.116	2nd Max Daily 1 Hour Average
B23	***	***	***	***	***	0	0	0	0	0	Number Standard Exceedances
BRIGHTON TWP	***	***	***	***	0.104	0.098	0.099	0.096	0.113	0.132	2nd Max Daily 1 Hour Average
B27	***	***	***	***	0	0	0	0	0	2	Number Standard Exceedances
Allegheny County Air Basin											
PITTSBURGH	***	***	***	***	***	***	***	***	0.105	0.120	2nd Max Daily 1 Hour Average
D12	***	***	***	***	***	***	***	***	0	1	Number Standard Exceedances
DEP Region 5 Non-Air Basin											
FLORENCE	***	***	***	***	***	0.104	0.092	0.111	0.109	0.110	2nd Max Daily 1 Hour Average
504	***	***	***	***	***	0	0	0	0	0	Number Standard Exceedances
WASHINGTON	0.104	0.106	0.092	0.104	0.115	0.111	0.103	0.107	0.112	0.106	2nd Max Daily 1 Hour Average
508	0	0	0	0	0	0	0	0	0	0	Number Standard Exceedances
MURRYSVILLE	0.103	0.105	0.073	0.120	0.118	0.127	0.104	0.123	0.101	0.115	2nd Max Daily 1 Hour Average
510	0	0	0	0	0	3	0	1	0	1	Number Standard Exceedances
KITTANNING	***	***	***	***	***	***	***	***	0.113	0.121	2nd Max Daily 1 Hour Average
512	***	***	***	***	***	***	***	***	0	1	Number Standard Exceedances
GREENSBURG	***	***	***	***	***	***	***	***	***	0.125	2nd Max Daily 1 Hour Average
513	***	***	***	***	***	***	***	***	***	2	Number Standard Exceedances

*** Indicates less than 50 percent valid data for year

OZONE HISTORICAL TREND
(Units: parts per million)

STATION	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	
Upper Beaver Valley Air Basin											
NEW CASTLE	0.097	0.101	0.094	0.095	0.102	0.101	0.097	0.109	0.096	0.105	2nd Max Daily 1 Hour Average
B21	0	0	0	0	0	0	0	0	0	1	Number Standard Exceedances
Erie Air Basin											
ERIE	0.100	0.113	0.098	0.107	0.101	0.105	0.100	0.103	0.122	0.112	2nd Max Daily 1 Hour Average
E10	0	0	0	0	0	0	0	0	1	0	Number Standard Exceedances
Shenango Valley Non-Air Basin											
FARRELL	0.103	0.107	0.100	0.105	0.111	0.113	0.103	0.111	0.121	0.108	2nd Max Daily 1 Hour Average
606	0	0	0	0	0	0	0	0	1	0	Number Standard Exceedances

*** Indicates less than 50 percent valid data for year

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

NITROGEN DIOXIDE SUMMARY

(Units: parts per million)

YEAR: 1999

								Number of 1 Hour Values In Ranges							
	PA	Percent		1st Max		2nd Max		0.00	0.05	0.09	0.13	0.17	0.21	0.25	
	Site	Valid	Annual	1 HR	Date	1 HR	Date	to	to	to	to	to	to	to	>
Site Name	Code	Data	Mean	Mean	MM/DD-HH	Mean	MM/DD-HH	0.04	0.08	0.12	0.16	0.20	0.24	0.28	0.28
Southeast Pennsylvania Air Basin															
Bristol	P01	96.1	0.018	0.086	11/18-07	0.081	03/17-19	8274	169	1	0	0	0	0	0
Chester	P11	96.9	0.017	0.065	02/16-11	0.064	05/28-20	8382	134	0	0	0	0	0	0
Norristown	P21	97.6	0.016	0.071	01/27-09	0.064	12/03-07	8462	107	0	0	0	0	0	0
Allentown-Bethlehem-Easton Air Basin															
Allentown	A19	97.8	0.015	0.079	09/02-22	0.073	09/03-00	8483	111	0	0	0	0	0	0
Freemansburg	A25	98.7	0.017	0.074	01/13-11	0.064	01/13-10	8550	118	0	0	0	0	0	0
Scranton-Wilkes-Barre Air Basin															
Scranton	S01	98.8	0.014	0.063	07/15-22	0.058	09/24-19	8619	58	0	0	0	0	0	0
Wilkes-Barre	S28	98.4	0.015	0.059	01/21-15	0.057	01/13-08	8595	47	0	0	0	0	0	0
Reading Air Basin															
Reading	R01	98.5	0.021	0.071	09/02-18	0.068	03/17-08	8422	229	0	0	0	0	0	0
Harrisburg Air Basin															
Harrisburg	H11	97.8	0.018	0.072	11/05-03	0.070	12/03-21	8418	176	0	0	0	0	0	0
Lancaster Air Basin															
Lancaster	L01	97.6	0.015	0.067	11/19-18	0.063	02/16-11	8521	54	0	0	0	0	0	0
York Air Basin															
York	Y01	97.7	0.019	0.092	03/17-06	0.088	12/30-06	8322	254	3	0	0	0	0	0
DEP Region 3 Non-Air Basin															
Perry County	305	93.4	0.006	0.037	04/01-17	0.036	04/01-09	8206	0	0	0	0	0	0	0
Altoona Non-Air Basin															
Altoona East	308	97.1	0.013	0.072	01/13-11	0.067	10/29-19	8485	42	0	0	0	0	0	0

Appendix A: Table A-15 **** Primary Annual Air Quality Standard of 0.053 parts per million ****

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

NITROGEN DIOXIDE SUMMARY

(Units: parts per million)

YEAR: 1999

								Number of 1 Hour Values In Ranges							
	PA	Percent		1st Max		2nd Max		0.00	0.05	0.09	0.13	0.17	0.21	0.25	
	Site	Valid	Annual	1 HR	Date	1 HR	Date	to	to	to	to	to	to	to	>
Site Name	Code	Data	Mean	Mean	MM/DD-HH	Mean	MM/DD-HH	0.04	0.08	0.12	0.16	0.20	0.24	0.28	0.28
Johnstown Air Basin															
Johnstown	J01	99.3	0.015	0.082	11/03-15	0.077	11/05-10	8675	46	0	0	0	0	0	0
Monongahela Valley Air Basin															
Charleroi	M01	98.2	0.015	0.052	07/23-22	0.051	07/17-00	8604	24	0	0	0	0	0	0
Lower Beaver Valley Air Basin															
Beaver Falls	B11	98.3	0.019	0.087	09/09-01	0.069	10/30-10	8477	153	1	0	0	0	0	0
Allegheny County Air Basin															
Pittsburgh	D12	98.5	0.023	0.090	11/23-12	0.087	10/29-10	8064	583	2	0	0	0	0	0
DEP Region 5 Non-Air Basin															
Florence	504	98.3	0.008	0.042	07/27-11	0.040	02/10-07	8639	0	0	0	0	0	0	0
Washington	508	99.0	0.016	0.070	10/29-18	0.069	05/03-20	8554	145	0	0	0	0	0	0
Greensburg	513	98.6	0.018	0.081	09/20-05	0.073	11/19-07	8521	136	0	0	0	0	0	0
Upper Beaver Valley Air Basin															
New Castle	B21	85.6	0.020	0.075	10/29-17	0.073	10/29-18	7405	110	0	0	0	0	0	0
Erie Air Basin															
Erie	E10	96.9	0.015	0.082	09/03-20	0.076	09/03-21	8378	131	0	0	0	0	0	0
Special Purpose Monitoring Sites															
Arendtsville	314	38.9	0.005	0.038	04/23-06	0.038	04/23-07	3417	0	0	0	0	0	0	0

**** Primary Annual Air Quality Standard of 0.053 parts per million ****

NITROGEN DIOXIDE HISTORICAL TREND
ANNUAL MEANS
(Units: parts per million)

STATION & SITE CODE		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Southeast Pennsylvania Air Basin											
BRISTOL	(P01)	0.022	0.022	0.021	0.019	0.023	0.020	0.021	0.020	0.018	0.018
CHESTER	(P11)	0.021	0.021	0.021	0.021	0.022	0.020	0.021	0.020	0.019	0.017
NORRISTOWN	(P21)	0.018	0.015	0.017	0.022	0.023	0.020	0.021	0.019	0.019	0.016
Allentown-Bethlehem-Easton Air Basin											
ALLENTOWN	(A19)	0.017	0.018	0.018	0.020	0.021	0.018	0.018	0.016	0.016	0.015
FREEMANSBURG	(A25)	***	***	***	***	***	***	***	***	0.017	0.017
Scranton-Wilkes Barre Air Basin											
SCRANTON	(S01)	0.020	0.018	0.017	0.018	0.020	0.018	0.018	0.018	0.016	0.014
WILKES-BARRE	(S28)	0.016	0.017	0.016	0.018	0.016	0.014	0.018	0.015	0.015	0.015
Reading Air Basin											
READING	(R01)	0.022	0.022	0.020	0.021	0.023	0.021	0.022	0.021	0.021	0.021
Harrisburg Air Basin											
HARRISBURG	(H11)	0.020	0.020	0.018	0.015	0.022	0.020	0.021	0.019	0.019	0.018
Lancaster Air Basin											
LANCASTER	(L01)	0.017	0.018	0.015	0.015	0.019	0.016	0.017	0.016	0.015	0.015
York Air Basin											
YORK	(Y01)	0.022	0.021	0.020	0.022	0.024	0.021	0.021	0.019	0.019	0.019
DEP Region 3 Non-Air Basin											
PERRY COUNTY	(305)	0.007	0.008	0.007	0.008	0.008	0.007	0.009	0.007	0.006	0.006
Altoona Non-Air Basin											
ALTOONA	(308)	0.015	0.015	0.014	0.015	0.016	0.013	0.014	0.014	0.013	0.013
Johnstown Air Basin											
JOHNSTOWN	(J01)	0.018	0.019	0.018	0.017	0.018	0.015	0.018	0.016	0.015	0.015
Monongahela Valley Air Basin											
CHARLEROI	(M01)	0.018	0.019	0.018	0.018	0.018	0.017	0.017	0.016	0.016	0.015
Lower Beaver Valley Air Basin											
BEAVER FALLS	(B11)	0.020	0.019	0.020	0.020	0.020	0.018	0.018	0.017	0.019	0.019

*** Indicates less than 50 percent valid data for year

NITROGEN DIOXIDE HISTORICAL TREND
ANNUAL MEANS
(Units: parts per million)

STATION & SITE CODE		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Allegheny County Air Basin											
PITTSBURGH	(D12)	***	***	***	***	***	***	***	***	0.021	0.023
DEP Region 5 Non-Air Basin											
FLORENCE	(504)	***	***	***	***	***	***	***	***	***	0.008
WASHINGTON	(508)	0.018	0.019	0.019	0.019	0.019	0.016	0.015	0.018	0.017	0.016
GREENSBURG	(513)	***	***	***	***	***	***	***	***	0.018	0.018
Upper Beaver Valley Air Basin											
NEW CASTLE	(B21)	0.020	0.020	0.021	0.021	0.021	0.019	0.024	0.020	0.019	0.020
Erie Air Basin											
ERIE	(E10)	0.015	0.014	0.014	0.014	0.015	0.015	0.015	0.015	0.014	0.015

*** Indicates less than 50 percent valid data for year

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

OXIDES OF NITROGEN SUMMARY

(Units: parts per million)

YEAR: 1999

Site Name	PA Site Code	Percent Valid Data	Annual Mean	1st Max 1 HR Mean	1st Max Date MM/DD-HH	2nd Max 1 HR Mean	2nd Max Date MM/DD-HH	3rd Max 1 HR Mean	3rd Max Date MM/DD-HH	4th Max 1 HR Mean	4th Max Date MM/DD-HH	5th Max 1 HR Mean	5th Max Date MM/DD-HH
Southeast Pennsylvania Air Basin													
Bristol	P01	96.4	0.041	0.840	12/09-08	0.803	11/18-07	0.783	12/09-07	0.740	12/09-22	0.733	12/09-20
Chester	P11	97.2	0.035	0.522	12/03-07	0.453	11/19-07	0.417	11/18-06	0.415	02/11-08	0.395	12/13-08
Norristown	P21	95.6	0.029	0.525	01/27-09	0.489	01/27-07	0.414	01/28-07	0.376	12/31-01	0.375	03/17-06
Allentown-Bethlehem-Easton Air Basin													
Allentown	A19	98.1	0.028	0.436	06/11-11	0.335	02/11-08	0.325	11/19-08	0.318	12/31-05	0.312	12/31-04
Freemansburg	A25	99.3	0.032	0.394	01/13-08	0.389	01/13-10	0.388	01/13-07	0.381	01/13-09	0.354	01/13-06
Scranton-Wilkes-Barre Air Basin													
Scranton	S01	99.1	0.026	0.343	12/03-18	0.319	12/03-17	0.312	12/09-17	0.305	12/18-18	0.304	12/09-18
Wilkes-Barre	S28	98.7	0.032	0.344	01/13-08	0.332	12/10-07	0.332	12/10-08	0.326	01/21-17	0.311	01/21-15
Reading Air Basin													
Reading	R01	98.8	0.044	0.705	01/13-08	0.580	12/03-08	0.567	01/13-09	0.529	01/13-07	0.518	03/31-06
Harrisburg Air Basin													
Harrisburg	H11	98.0	0.035	0.472	01/27-07	0.472	01/27-08	0.455	01/13-07	0.447	11/05-03	0.426	01/27-03
Lancaster Air Basin													
Lancaster	L01	97.9	0.029	0.396	12/03-21	0.375	11/19-07	0.369	03/17-07	0.366	12/03-09	0.357	12/09-08
York Air Basin													
York	Y01	97.9	0.040	0.643	12/03-08	0.573	01/28-08	0.536	01/28-09	0.524	11/05-07	0.472	01/28-07
DEP Region 3 Non-Air Basin													
Perry County	305	93.7	0.008	0.129	01/13-09	0.094	01/13-08	0.091	01/28-10	0.091	04/01-09	0.085	01/28-09

**** No Long- or Short-Term Air Quality Standards ****

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

OXIDES OF NITROGEN SUMMARY

(Units: parts per million)

YEAR: 1999

Site Name	PA Site Code	Percent Valid Data	Annual Mean	1st Max 1 HR Mean	1st Max Date MM/DD-HH	2nd Max 1 HR Mean	2nd Max Date MM/DD-HH	3rd Max 1 HR Mean	3rd Max Date MM/DD-HH	4th Max 1 HR Mean	4th Max Date MM/DD-HH	5th Max 1 HR Mean	5th Max Date MM/DD-HH
Altoona Non-Air Basin													
Altoona	308	97.3	0.022	0.450	01/13-11	0.348	11/19-08	0.254	01/13-12	0.234	01/13-10	0.233	12/03-20
Johnstown Air Basin													
Johnstown	J01	99.6	0.024	0.264	12/09-17	0.262	02/17-08	0.259	12/09-16	0.253	10/26-07	0.248	12/09-18
Monongahela Valley Air Basin													
Charleroi	M01	97.4	0.030	0.310	12/10-08	0.297	12/12-23	0.287	11/23-10	0.283	12/10-07	0.280	10/27-08
Lower Beaver Valley Air Basin													
Beaver Falls	B11	98.5	0.038	0.356	02/11-09	0.335	11/09-09	0.327	11/09-08	0.320	02/11-10	0.313	11/19-09
Allegheny County Air Basin													
Pittsburgh	D12	96.4	0.049	0.482	11/19-09	0.462	11/19-08	0.461	10/29-10	0.459	11/09-08	0.451	12/09-08
DEP Region 5 Non-Air Basin													
Florence	504	98.6	0.011	0.086	01/29-15	0.082	01/21-12	0.082	02/05-13	0.079	02/05-11	0.078	02/05-12
Washington	508	99.3	0.029	0.376	11/23-09	0.289	11/23-07	0.284	12/09-01	0.284	12/30-18	0.280	11/23-08
Greenburg	513	98.9	0.033	0.402	11/19-07	0.344	11/18-08	0.337	09/20-05	0.328	11/18-22	0.320	10/27-07
Upper Beaver Valley Air Basin													
New Castle	B21	85.7	0.039	0.527	11/18-20	0.370	01/23-12	0.363	11/19-08	0.348	01/18-08	0.340	11/22-08
Erie Air Basin													
Erie	E10	97.1	0.021	0.225	01/20-08	0.216	09/04-20	0.206	01/20-19	0.205	01/21-21	0.190	01/20-07
Special Purpose Monitoring Sites													
Arendtsville	314	38.7	0.005	0.145	07/09-09	0.051	04/23-06	0.047	04/23-07	0.042	04/23-05	0.042	04/23-08

**** No Long- or Short-Term Air Quality Standards ****

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

CARBON MONOXIDE SUMMARY

(Units: parts per million)

YEAR: 1999

										Running Averages			Number of 8 Hour Values In Ranges							
	PA	Percent	Number	1st Max		2nd Max		Number	1st Max		2nd Max		0	5	9	13	17	21	25	
	Site	Valid	1 HR	1 HR	Date	1 HR	Date	8 HR	8 HR	Date	8 HR	Date	to	to	to	to	to	to	to	>
Site Name	Code	Data	> 35	Mean	MM/DD-HH	Mean	MM/DD-HH	> 9	Mean	MM/DD-HH	Mean	MM/DD-HH	4	8	12	16	20	24	28	28
Southeast Pennsylvania Air Basin																				
Bristol	P01	91.0	0	7.0	01/28-15	6.6	12/09-08	0	4.2	12/10-00	3.7	12/09-09	7956	0	0	0	0	0	0	0
Norristown	P21	97.2	0	3.3	01/27-08	3.1	01/27-09	0	2.2	01/27-11	1.9	02/04-01	8507	0	0	0	0	0	0	0
Allentown-Bethlehem-Easton Air Basin																				
Freemansburg	A25	97.9	0	4.4	01/12-18	4.4	01/21-07	0	3.2	01/13-11	3.0	01/21-10	8577	0	0	0	0	0	0	0
Allentown CBD	A51	94.6	0	6.1	01/12-20	5.5	01/27-07	0	3.6	01/13-02	3.2	12/10-01	8355	0	0	0	0	0	0	0
Scranton-Wilkes-Barre Air Basin																				
Scranton	S01	99.3	0	3.5	02/12-08	3.5	12/03-15	0	2.4	12/03-22	1.7	01/13-00	8706	0	0	0	0	0	0	0
Wilkes-Barre CBD	S27	97.6	0	4.5	12/09-18	4.2	05/05-17	0	3.0	12/09-23	2.6	01/21-18	8561	0	0	0	0	0	0	0
Reading Air Basin																				
Reading	R01	99.1	0	5.5	01/13-08	4.6	01/13-09	0	3.5	01/13-10	2.8	01/13-04	8700	0	0	0	0	0	0	0
Harrisburg Air Basin																				
Harrisburg CBD	H16	97.4	0	5.4	01/13-10	4.9	01/12-22	0	4.4	01/12-23	4.3	01/13-13	8595	0	0	0	0	0	0	0
Lancaster Air Basin																				
Lancaster	L01	99.3	0	3.6	01/28-07	3.1	12/04-08	0	2.5	12/04-00	2.1	12/04-08	8712	0	0	0	0	0	0	0
York Air Basin																				
York	Y01	98.7	0	5.3	01/28-09	5.3	12/03-08	0	3.5	01/28-11	2.4	12/03-11	8665	0	0	0	0	0	0	0
Altoona Non-Air Basin																				
Altoona	308	97.7	0	3.2	01/13-11	2.6	01/12-18	0	1.7	01/12-22	1.6	12/03-23	8558	0	0	0	0	0	0	0

**** Primary Air Quality Standards ****
**** 1 Hour Mean = 35 parts per million ****
**** 8 Hour Running Mean = 9 parts per million ****

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

CARBON MONOXIDE SUMMARY

(Units: parts per million)

YEAR: 1999

									Running Averages				Number of 8 Hour Values In Ranges							
	PA	Percent	Number	1st Max		2nd Max		Number	1st Max		2nd Max		0	5	9	13	17	21	25	
	Site	Valid	1 HR	1 HR	Date	1 HR	Date	8 HR	8 HR	Date	8 HR	Date	to	to	to	to	to	to	to	>
Site Name	Code	Data	> 35	Mean	MM/DD-HH	Mean	MM/DD-HH	> 9	Mean	MM/DD-HH	Mean	MM/DD-HH	4	8	12	16	20	24	28	28
Johnstown Air Basin																				
Johnstown	J01	96.5	0	4.6	01/12-18	4.4	01/12-19	0	3.6	01/13-00	2.8	01/21-20	8446	0	0	0	0	0	0	0
Monongahela Valley Air Basin																				
Charleroi	M01	98.8	0	2.1	12/03-01	2.0	11/19-00	0	1.7	11/19-03	1.6	12/03-04	8659	0	0	0	0	0	0	0
Lower Beaver Valley Air Basin																				
Beaver Falls	B11	99.0	0	3.3	01/12-15	2.5	01/12-16	0	1.7	01/12-22	1.5	01/23-15	8685	0	0	0	0	0	0	0
Allegheny County Air Basin																				
Pittsburgh	D12	98.9	0	4.1	11/23-12	3.3	10/29-08	0	2.7	10/30-01	2.5	10/29-11	8655	0	0	0	0	0	0	0
DEP Region 5 Non-Air Basin																				
Greensburg	513	94.6	0	3.5	02/10-20	3.2	12/30-18	0	2.4	11/19-00	2.4	12/31-01	8235	0	0	0	0	0	0	0
Upper Beaver Valley Air Basin																				
New Castle	B21	99.0	0	6.0	01/08-08	5.5	01/23-12	0	3.8	01/12-22	2.5	01/23-16	8675	0	0	0	0	0	0	0
Erie Air Basin																				
Erie CBD	E12	82.1	0	12.5	07/05-22	10.6	07/05-21	0	6.9	07/06-03	5.6	03/17-01	7150	20	0	0	0	0	0	0
Special Purpose Monitoring Sites																				
Kunkletown	212	41.3	0	0.3	04/01-00	0.3	04/01-01	0	0.3	04/01-05	0.3	04/01-13	3634	0	0	0	0	0	0	0
Arendtsville	314	47.6	0	1.2	10/30-08	1.2	10/30-09	0	1.1	10/30-11	1.1	10/31-08	4168	0	0	0	0	0	0	0
Holbrook	514	53.2	0	1.8	10/21-22	1.7	10/21-16	0	1.7	10/22-01	1.5	10/21-17	4609	0	0	0	0	0	0	0

**** Primary Air Quality Standards ****
**** 1 Hour Mean = 35 parts per million ****
**** 8 Hour Running Mean = 9 parts per million ****

CARBON MONOXIDE HISTORICAL TREND
(Units: parts per million)

STATION	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	
Southeast Pennsylvania Air Basin											
BRISTOL	12.6	9.6	8.6	6.2	7.9	9.2	6.3	6.8	5.2	6.6	2nd Maximum 1 Hour Average
P01	5.4	6.1	5.7	4.0	5.2	5.0	4.7	3.8	3.5	3.7	2nd Maximum 8 Hour Average
NORRISTOWN	6.7	6.1	4.5	3.9	5.0	4.8	3.5	3.2	2.9	3.1	2nd Maximum 1 Hour Average
P21	4.7	3.8	3.1	2.8	3.9	4.1	2.9	2.2	1.8	1.9	2nd Maximum 8 Hour Average
Allentown-Bethlehem-Easton Air Basin											
FREEMANSBURG	***	***	***	***	***	***	***	***	3.4	4.4	2nd Maximum 1 Hour Average
A25	***	***	***	***	***	***	***	***	2.4	3.0	2nd Maximum 8 Hour Average
ALLENTOWN CBD	8.3	13.4	6.1	5.6	7.5	7.3	5.3	4.8	5.0	5.5	2nd Maximum 1 Hour Average
A51	5.8	6.5	3.9	3.5	4.7	4.8	3.2	2.7	2.9	3.2	2nd Maximum 8 Hour Average
Scranton-Wilkes Barre Air Basin											
SCRANTON	6.2	5.3	5.5	4.3	4.6	5.2	7.0	4.7	3.4	3.5	2nd Maximum 1 Hour Average
S01	3.7	3.5	3.1	2.8	2.8	2.6	3.5	2.8	1.9	1.7	2nd Maximum 8 Hour Average
WILKES-BARRE CBD	8.0	13.7	7.0	3.7	6.9	5.7	7.4	4.6	7.0	4.2	2nd Maximum 1 Hour Average
S27	5.3	4.8	4.4	3.0	4.3	3.0	4.1	3.3	3.1	3.0	2nd Maximum 8 Hour Average
Reading Air Basin											
READING	***	***	***	***	***	***	***	***	4.7	4.6	2nd Maximum 1 Hour Average
R01	***	***	***	***	***	***	***	***	3.2	2.8	2nd Maximum 8 Hour Average
Harrisburg Air Basin											
HARRISBURG CBD	***	***	***	***	***	***	4.2	5.2	4.1	4.9	2nd Maximum 1 Hour Average
H16	***	***	***	***	***	***	2.5	3.3	3.0	4.3	2nd Maximum 8 Hour Average
Lancaster Air Basin											
LANCASTER	5.0	4.2	3.9	4.7	5.2	4.4	3.6	5.1	3.4	3.1	2nd Maximum 1 Hour Average
L01	3.4	2.6	2.6	3.0	3.8	2.4	2.6	3.3	1.9	2.5	2nd Maximum 8 Hour Average
York Air Basin											
YORK	9.6	7.2	6.8	5.4	6.3	5.5	5.0	5.7	5.0	5.3	2nd Maximum 1 Hour Average
Y01	4.4	3.7	3.6	3.3	3.9	2.7	2.8	3.4	2.4	2.4	2nd Maximum 8 Hour Average

*** Indicates less than 50 percent valid data for year

CARBON MONOXIDE HISTORICAL TREND
(Units: parts per million)

STATION	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	
Altoona Non-Air Basin											
ALTOONA	3.7	3.5	4.7	3.2	3.5	3.1	2.7	2.7	2.0	2.6	2nd Maximum 1 Hour Average
308	2.6	1.7	2.8	2.0	2.4	1.7	1.9	1.5	1.2	1.6	2nd Maximum 8 Hour Average
Johnstown Air Basin											
JOHNSTOWN	5.9	8.4	8.5	5.8	5.4	5.4	7.0	4.7	4.2	4.4	2nd Maximum 1 Hour Average
J01	3.7	4.8	4.4	4.2	4.1	3.5	4.8	2.7	3.1	2.8	2nd Maximum 8 Hour Average
Monongahela Valley Air Basin											
CHARLEROI	3.9	4.0	3.1	2.4	3.5	3.5	2.8	1.8	3.0	2.0	2nd Maximum 1 Hour Average
M01	3.0	2.5	2.6	2.0	3.2	2.8	2.5	1.6	1.9	1.6	2nd Maximum 8 Hour Average
Lower Beaver Valley Air Basin											
BEAVER FALLS	5.0	4.8	3.4	2.7	3.4	3.2	3.2	2.6	2.2	2.5	2nd Maximum 1 Hour Average
B11	3.8	3.2	2.6	2.0	2.4	2.5	2.1	1.9	1.5	1.5	2nd Maximum 8 Hour Average
Allegheny County Air Basin											
PITTSBURGH	***	***	***	***	***	***	***	***	3.5	3.3	2nd Maximum 1 Hour Average
D12	***	***	***	***	***	***	***	***	2.7	2.5	2nd Maximum 8 Hour Average
DEP Region 5 Non-Air Basin											
GREENSBURG	***	***	***	***	***	***	***	***	3.3	3.2	2nd Maximum 1 Hour Average
513	***	***	***	***	***	***	***	***	2.3	2.4	2nd Maximum 8 Hour Average
Upper Beaver Valley Air Basin											
NEW CASTLE	7.0	8.2	7.6	5.9	6.7	6.1	6.5	4.6	7.2	5.5	2nd Maximum 1 Hour Average
B21	4.4	3.7	3.4	2.9	3.7	4.3	3.5	3.0	2.4	3.8	2nd Maximum 8 Hour Average
Erie Air Basin											
ERIE CBD	***	***	***	***	***	***	***	9.3	9.5	10.6	2nd Maximum 1 Hour Average
E12	***	***	***	***	***	***	***	4.9	5.1	5.6	2nd Maximum 8 Hour Average

*** Indicates less than 50 percent valid data for year

Arendtsville (PAMS)
Units: parts per billion carbon (ppbC)
(The concentration in ppbC for a compound can be divided by the number of carbon atoms for that target compound to estimate the concentration in parts per billion volume (ppbv).)

YEAR: 1999 (June-October)

Compound	1 Hour Max	Date/Time of Max	Mean
Acetylene	2.31	9/27/1999 8:00	0.44
Ethylene	4.14	10/2/1999 9:00	0.67
Ethane	24.17	9/10/1999 10:00	3.29
Propylene	2.49	9/26/1999 9:00	0.43
Propane	11.54	6/29/1999 14:00	2.3
Isobutane	2.64	6/17/1999 14:00	0.5
Butene-1	0.65	9/24/1999 9:00	0.15
n-Butane	8.06	9/24/1999 8:00	1.08
t-Butene-2	0.72	9/13/1999 9:00	0.2
c-Butene-2	0.63	8/23/1999 11:00	0.11
Isopentane	8.7	9/24/1999 8:00	1.25
Pentene-1	0.35	6/13/1999 6:00	0.02
n-Pentane	3.12	9/24/1999 8:00	0.62
Isoprene	26.02	8/1/1999 19:00	0.75
trans-2-Pentene	0.67	8/12/1999 22:00	0.01
c-2-Pentene	5.74	8/23/1999 13:00	0.01
2,2-Dimethylbutane	1.53	9/23/1999 9:00	0.11
cyclopentane	2.33	7/20/1999 21:00	0.14
2,3-Dimethylbutane	1.33	6/13/1999 4:00	0.14
2-Methylpentane	1.98	7/14/1999 5:00	0.35
3-Methylpentane	1.22	7/14/1999 5:00	0.26
2-Methyl-1-Pentene	4.81	9/8/1999 3:00	0.18
n-Hexane	2.01	9/30/1999 23:00	0.18
Methylcyclopentane	0.75	7/14/1999 5:00	0.04
2,4-Dimethylpentane	0.46	9/24/1999 8:00	0
Benzene	2.3	10/2/1999 9:00	0.55
Cyclohexane	4.18	9/16/1999 4:00	0.01
2-Methylhexane	4.27	8/28/1999 20:00	0.03
2,3-Dimethylpentane	1.01	6/22/1999 8:00	0.01
3-Methylhexane	7.18	7/9/1999 8:00	0.09
2,2,4-Trimethylpentane	2.2	6/16/1999 20:00	0.2
n-Heptane	2.02	9/14/1999 9:00	0.07
Methylcyclohexane	2.72	9/23/1999 22:00	0.03
2,3,4-Trimethylpentane	1.43	9/10/1999 1:00	0.03
Toluene	14.62	6/22/1999 8:00	1.05

Compound	1 Hour Max	Date/Time of Max	Mean
2-Methylheptane	0.82	8/27/1999 5:00	0.01
3-Methylheptane	9.82	9/16/1999 5:00	0.01
n-Octane	1.6	9/14/1999 9:00	0.03
Ethylbenzene	2.57	8/25/1999 7:00	0.15
m/p-Xylene	6.12	8/25/1999 7:00	0.37
Styrene	1.27	9/21/1999 13:00	0.02
o-Xylene	2.14	8/25/1999 7:00	0.15
n-Nonane	1.63	9/9/1999 10:00	0.02
Isopropylbenzene	3.8	7/21/1999 16:00	0.01
n-Propylbenzene	0.59	9/7/1999 5:00	0.01
1,3,5-Trimethylbenzene	5.76	8/1/1999 2:00	0.02
1,2,4-Trimethylbenzene	1.89	9/27/1999 9:00	0.11
o-Ethyltoluene	1.58	9/13/1999 3:00	0.01
m-Ethyltoluene	2.19	8/31/1999 13:00	0.1
p-Ethyltoluene	4.84	8/3/1999 5:00	0.01
m-Diethylbenzene	0.56	9/21/1999 13:00	0
p-Diethylbenzene	0.59	9/14/1999 18:00	0
1,2,3-Trimethylbenzene	1.31	6/15/1999 3:00	0.1
n-Decane	2.37	9/9/1999 10:00	0.04
Undecane	3.18	9/21/1999 13:00	0.05
tnmoc*	75.99	9/24/1999 8:00	19.44
pamshc**	69.09	9/24/1999 8:00	16.45
Unidentified	33.9	7/20/1999 11:00	3.18

*Total Nonmethane Organic Compounds

**PAMS Hydrocarbons

VOCs refer to gaseous aliphatic and aromatic nonmethane organic compounds that have a vapor pressure greater than 0.14 mmHg at 25C, and generally have a carbon number in the range of C2-C12.

APPENDIX B

Air Pollution Control Agencies in Pennsylvania

Allegheny County Health Department
39th Street and Penn Avenue
Pittsburgh, PA 15201
(412) 578-8140

City of Philadelphia
Air Management Services
1501 East Lycoming Street
Philadelphia, PA 19124
(215) 685-1225

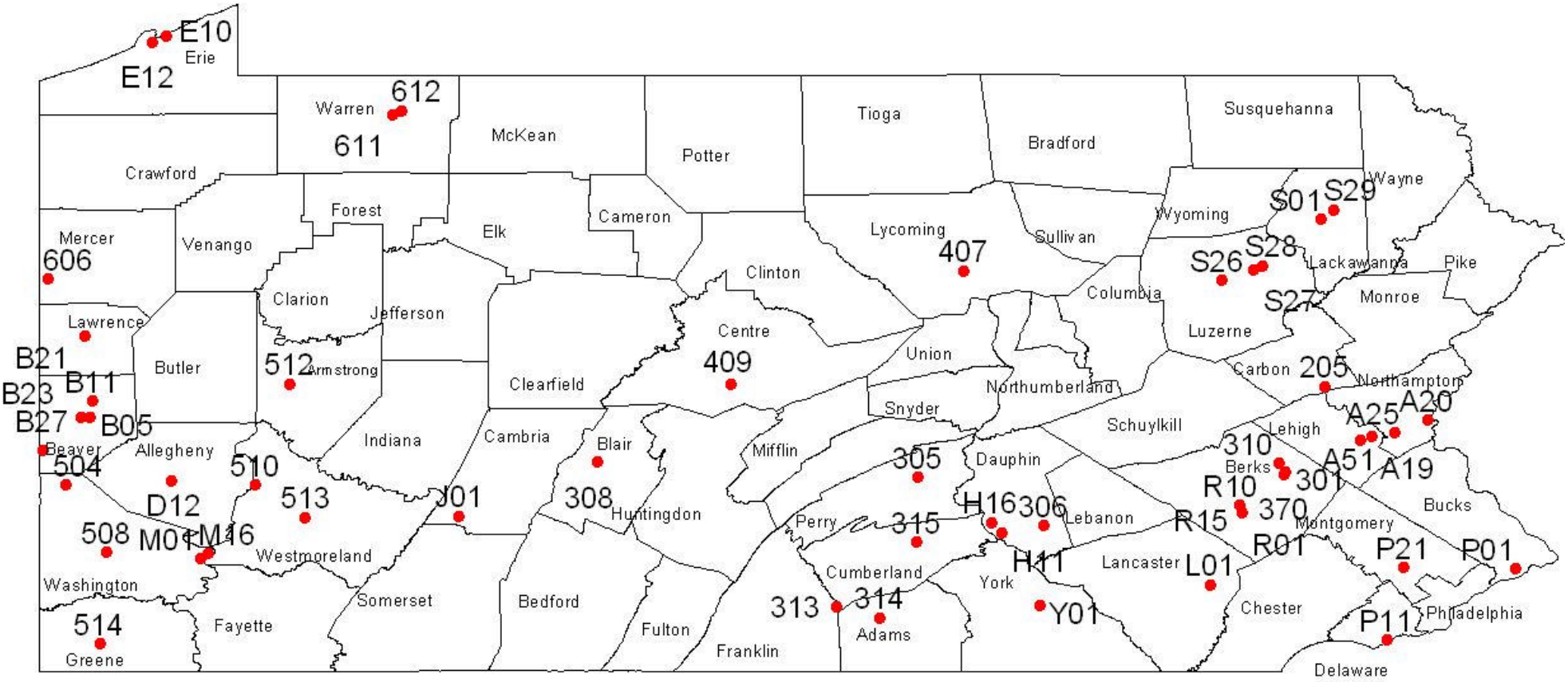
Commonwealth of Pennsylvania
Department of Environmental Protection
Bureau of Air Quality
Division of Air Quality Monitoring
Rachel Carson State Office Building 12th Floor
400 Market Street
P.O. Box 8468
Harrisburg, PA 17105-8468
(717) 787-6548

Related environmental information is available electronically via the Internet. Access the DEP website at www.dep.state.pa.us (directLINK “Air Quality”).

APPENDIX C

Monitoring Sites and Addresses

Commonwealth of Pennsylvania
1999Air Monitoring Sites



Numbers Indicate Station Identifiers

SOUTHEAST PENNSYLVANIA AIR BASIN SITES

SITE LOCATIONS

PA SITE CODE	SITE NAME	EPA-AIRS SITE CODE	COUNTY	STREET ADDRESS	LATITUDE LONGITUDE
P01	BRISTOL	42-017-0012	BUCKS	Roosevelt Junior High School Rockview Lane	40 06 27 74 52 57
P11	CHESTER	42-045-0002	DELAWARE	Front & Norris Streets	39 50 08 75 22 22
P21	NORRISTOWN	42-091-0013	MONTGOMERY	State Armory 1046 Belvoir Road	40 06 45 75 18 34

PARAMETERS MONITORED

COUNTY	PA SITE CODE	PM-10	PM-2.5	TSP	SULFATES	LEAD	NITRATES	SULFUR DIOXIDE	NITROGEN DIOXIDE	OZONE	CARBON MONOXIDE
BUCKS	P01	X	X					X	X	X	X
DELAWARE	P11	X	X	X		X		X	X	X	
CHESTER											
MONTGOMERY	P21	X	X					X	X	X	X

ALLENTOWN - BETHLEHEM - EASTON AIR BASIN SITES

SITE LOCATIONS

PA SITE CODE	SITE NAME	EPA-AIRS SITE CODE	COUNTY	STREET ADDRESS	LATITUDE LONGITUDE
A19	ALLENTOWN	42-077-0004	LEHIGH	Allentown State Hospital Rear 1600 Hanover Avenue	40 36 43 75 25 58
A20	EASTON	42-095-8000	NORTHAMPTON	Spring Garden	40 41 32 75 14 14
A25	FREEMANSBURG	42-095-0025	NORTHAMPTON	Washington & Cambria Streets	40 37 41 75 20 28
A41	EASTON	42-095-0100	NORTHAMPTON	School District Warehouse Coal & Milton Streets	40 40 36 75 13 00
A51	ALLENTOWN	42-077-0100	LEHIGH	2 North Ninth Street Hamilton Street Side	40 35 57 75 28 28

PARAMETERS MONITORED

COUNTY	PA SITE CODE	PM-10	PM-2.5	TSP	SULFATES	LEAD	NITRATES	SULFUR DIOXIDE	NITROGEN DIOXIDE	OZONE	CARBON MONOXIDE
NORTHAMPTON	A20		X					X		X	
	A25	X	X					X	X	X	X
	A41							X		X	
LEHIGH	A19	X	X					X	X	X	
	A51										X

SCRANTON - WILKES-BARRE AIR BASIN SITES

SITE LOCATIONS

PA SITE CODE	SITE NAME	EPA-AIRS SITE CODE	COUNTY	STREET ADDRESS	LATITUDE LONGITUDE
S01	SCRANTON	42-069-2006	LACKAWANNA	Behind Penn State Campus George Street	41 26 34 75 37 23
S26	NANTICOKE	42-079-1100	LUZERNE	255 Lower Broadway	41 12 33 76 00 13
S27	WILKES-BARRE	42-079-2100	LUZERNE	North River Street	41 15 01 75 52 49
S28	WILKES-BARRE	42-079-1101	LUZERNE	Chilwick & Washington Streets	41 15 58 75 50 47
S29	PECKVILLE	42-069-0101	LACKAWANNA	Pleasant Avenue & Erie Street Wilson Fire Company No. 1	41 28 45 75 34 41

PARAMETERS MONITORED

COUNTY	PA SITE CODE	PM-10	PM-2.5	TSP	SULFATES	LEAD	NITRATES	SULFUR DIOXIDE	NITROGEN DIOXIDE	OZONE	CARBON MONOXIDE
LACKAWANNA	S01	X	X					X	X	X	X
	S29									X	
LUZERNE	S26									X	
	S27										X
	S28	X	X					X	X	X	

REGION II NON - AIR BASIN SITES

SITE LOCATIONS

PA SITE CODE	SITE NAME	EPA-AIRS SITE CODE	COUNTY	STREET ADDRESS	LATITUDE LONGITUDE
205	PALMERTON	42-025-0105	CARBON	New Jersey Zinc Research Bldg. Fourth Street & Franklin Avenue	40 48 12 75 36 31
212	KUNKLETOWN	42-089-0001	MONROE		40.8600 75.4300

PARAMETERS MONITORED

COUNTY	PA SITE CODE	PM-10	PM-2.5	TSP	SULFATES	LEAD	NITRATES	SULFUR DIOXIDE	NITROGEN DIOXIDE	OZONE	CARBON MONOXIDE
CARBON	205			X	X	X	X				
MONROE	212									X	

READING AIR BASIN SITES

SITE LOCATIONS

PA SITE CODE	SITE NAME	EPA-AIRS SITE CODE	COUNTY	STREET ADDRESS	LATITUDE LONGITUDE
R01	READING	42-011-0009	BERKS	UGI Property 234 Morgantown Road	40 19 14 75 55 37
R10	LAURELDALE	42-011-1717	BERKS	Muhlenberg Township Authority Spring Valley Road Substation	40 22 38 75 54 53
R15	READING	42-011-0015	BERKS	Northwest Junior High School North Front & West Spring Streets	40 21 04 75 56 08

PARAMETERS MONITORED

COUNTY	PA SITE CODE	PM-10	PM-2.5	TSP	SULFATES	LEAD	NITRATES	SULFUR DIOXIDE	NITROGEN DIOXIDE	OZONE	CARBON MONOXIDE
BERKS	R01	X	X					X	X	X	X
	R10			X	X	X	X				
	R15	X									

LANCASTER AIR BASIN SITES

SITE LOCATIONS

PA SITE CODE	SITE NAME	EPA-AIRS SITE CODE	COUNTY	STREET ADDRESS	LATITUDE LONGITUDE
L01	LANCASTER	42-071-0007	LANCASTER	Lincoln Junior High School	40 02 49 76 17 00

PARAMETERS MONITORED

COUNTY	PA SITE CODE	PM-10	PM-2.5	TSP	SULFATES	LEAD	NITRATES	SULFUR DIOXIDE	NITROGEN DIOXIDE	OZONE	CARBON MONOXIDE
LANCASTER	L01	X	X					X	X	X	X

HARRISBURG AIR BASIN SITES

SITE LOCATIONS

PA SITE CODE	SITE NAME	EPA-AIRS SITE CODE	COUNTY	STREET ADDRESS	LATITUDE LONGITUDE
H11	HARRISBURG	42-043-0401	DAUPHIN	1833 UPS Drive	40 14 42 76 50 41
H16	HARRISBURG CBD	42-043-0102	DAUPHIN	PA Dept. of Agriculture Parking Lot 2301 North Cameron Street	40 17 09 76 52 53

PARAMETERS MONITORED

COUNTY	PA SITE CODE	PM-10	PM-2.5	TSP	SULFATES	LEAD	NITRATES	SULFUR DIOXIDE	NITROGEN DIOXIDE	OZONE	CARBON MONOXIDE
CUMBERLAND											
DAUPHIN	H11	X	X					X	X	X	
	H16										X

YORK AIR BASIN SITES

SITE LOCATIONS

PA SITE CODE	SITE NAME	EPA-AIRS SITE CODE	COUNTY	STREET ADDRESS	LATITUDE LONGITUDE
Y01	YORK	42-133-0008	YORK	Davis Junior High School Hill Street	39 57 56 76 41 59

PARAMETERS MONITORED

COUNTY	PA SITE CODE	PM-10	PM-2.5	TSP	SULFATES	LEAD	NITRATES	SULFUR DIOXIDE	NITROGEN DIOXIDE	OZONE	CARBON MONOXIDE
YORK	Y01	X	X					X	X	X	X

REGION III NON - AIR BASIN SITES

SITE LOCATIONS

PA SITE CODE	SITE NAME	EPA-AIRS SITE CODE	COUNTY	STREET ADDRESS	LATITUDE LONGITUDE
301	LYONS EAST	42-011-0717	BERKS	Near State & Kemp Streets	40 28 36 75 45 33
305	PERRY COUNTY	42-099-0301	PERRY	Little Buffalo State Park	40 27 26 77 09 57
306	HERSHEY	42-043-1100	DAUPHIN	Hershey Foods Technical Center Sipe Avenue & Mae Street	40 16 21 76 40 53
308	ALTOONA	42-013-0801	BLAIR	Ward Trucking Corporation Second Avenue & Seventh Street	40 32 07 78 22 15
310	KUTZTOWN	42-011-0001	BERKS	Kutztown State College Grim Science Building	40 30 40 75 47 11
313	METHODIST HILL	42-055-0001	FRANKLIN	Forest Road (High Elevation Site)	39 57 40 77 28 31
314	ARENDTSVILLE	42-001-0001	ADAMS	Penn State Research Orchard	39 55 25 77 18 29
370	LYONS SOUTH	42-011-0003	BERKS	Heffner & Deka Roads	40 28 06 75 45 51

PARAMETERS MONITORED

COUNTY	PA SITE CODE	PM-10	PM-2.5	TSP	SULFATES	LEAD	NITRATES	SULFUR DIOXIDE	NITROGEN DIOXIDE	OZONE	CARBON MONOXIDE
BERKS	301			X		X					
	310									X	
	370			X		X					
PERRY	305							X	X	X	
DAUPHIN	306									X	
FRANKLIN	313									X	
ADAMS	314		X						X		X
BLAIR	308	X						X	X	X	X

REGION IV NON - AIR BASIN SITES

SITE LOCATIONS

PA SITE CODE	SITE NAME	EPA-AIRS SITE CODE	COUNTY	STREET ADDRESS	LATITUDE LONGITUDE
407	WILLIAMSPORT	42-081-0403	LYCOMING	East Third & Railway Streets	41 14 46 76 59 24

PARAMETERS MONITORED

COUNTY	PA SITE CODE	PM-10	PM-2.5	TSP	SULFATES	LEAD	NITRATES	SULFUR DIOXIDE	NITROGEN DIOXIDE	OZONE	CARBON MONOXIDE
LYCOMING	407	X						X		X	

JOHNSTOWN AIR BASIN SITES

SITE LOCATIONS

PA SITE CODE	SITE NAME	EPA-AIRS SITE CODE	COUNTY	STREET ADDRESS	LATITUDE LONGITUDE
J01	JOHNSTOWN	42-021-0011	CAMBRIA	Miller Auto Body Crafts Shop One Messenger Street	40 18 35 78 54 54
J08	EAST CONEMAUGH	42-021-0808	CAMBRIA	Recreation Field Citron Alley & First Street	40 20 53 78 52 58

PARAMETERS MONITORED

COUNTY	PA SITE CODE	PM-10	PM-2.5	TSP	SULFATES	LEAD	NITRATES	SULFUR DIOXIDE	NITROGEN DIOXIDE	OZONE	CARBON MONOXIDE
CAMBRIA	J01	X	X					X	X	X	X
	J08			X	X	X	X				

MONONGAHELA VALLEY AIR BASIN SITES

SITE LOCATIONS

PA SITE CODE	SITE NAME	EPA-AIRS SITE CODE	COUNTY	STREET ADDRESS	LATITUDE LONGITUDE
M01	CHARLEROI	42-125-0005	WASHINGTON	Borough Waste Treatment Plant Front Street	40 08 48 79 54 08
M16	MONESSEN	42-129-0007	WESTMORELAND	Monessen Community Center 435 Donner Avenue	40 10 00 79 52 30

PARAMETERS MONITORED

COUNTY	PA SITE CODE	PM-10	PM-2.5	TSP	SULFATES	LEAD	NITRATES	SULFUR DIOXIDE	NITROGEN DIOXIDE	OZONE	CARBON MONOXIDE
WASHINGTON	M01	X	X					X	X	X	X
WESTMORELAND	M16	X		X	X	X	X				

LOWER BEAVER VALLEY AIR BASIN SITES

SITE LOCATIONS

PA SITE CODE	SITE NAME	EPA-AIRS SITE CODE	COUNTY	STREET ADDRESS	LATITUDE LONGITUDE
B05	VANPORT	42-007-0505	BEAVER	Vanport Water Works Tamaqui Drive	40 41 05 80 19 30
B11	BEAVER FALLS	42-007-0014	BEAVER	Eighth Street & River Alley	40 44 52 80 19 00
B23	HOOKSTOWN	42-007-0002	BEAVER	FAA Microwave Relay Tower	40 33 47 80 30 16
B27	BRIGHTON TOWNSHIP	42-007-0005	BEAVER	1015 Sebring Road	40 41 05 80 21 35

PARAMETERS MONITORED

COUNTY	PA SITE CODE	PM-10	PM-2.5	TSP	SULFATES	LEAD	NITRATES	SULFUR DIOXIDE	NITROGEN DIOXIDE	OZONE	CARBON MONOXIDE
BEAVER	B05			X		X					
	B11	X						X	X	X	X
	B23							X		X	
	B27							X		X	

REGION V NON - AIR BASIN SITES

SITE LOCATIONS

PA SITE CODE	SITE NAME	EPA-AIRS SITE CODE	COUNTY	STREET ADDRESS	LATITUDE LONGITUDE
504	FLORENCE	42-125-5001	WASHINGTON	Hillman State Park	40 26 44 80 25 16
508	WASHINGTON	42-125-0200	WASHINGTON	McCarrell & Fayette Streets	40 10 14 80 15 42
510	MURRYSVILLE	42-129-0006	WESTMORELAND	Murrysville Volunteer Fire Co. Old William Penn Hwy & Sardis Ave.	40 25 41 79 41 35
512	KITTANNING	42-005-0001	ARMSTRONG	Glade Drive & Nolte Road PA State Police Barracks	40 48 51 79 33 54
513	GREENSBURG	42-129-0008	WESTMORELAND	Donohue Road PA Dept. of Transportation Bldg.	40 18 17 79 30 20
514	HOLBROOK	42-059-0002	GREENE		39 48 58 80 17 06
D12	PITTSBURGH	42-003-0010	ALLEGHENY	Carnegie Science Center	40 26 44 80 00 59

PARAMETERS MONITORED

COUNTY	PA SITE CODE	PM-10	PM-2.5	TSP	SULFATES	LEAD	NITRATES	SULFUR DIOXIDE	NITROGEN DIOXIDE	OZONE	CARBON MONOXIDE
WASHINGTON	504	X	X					X	X	X	
	508		X					X	X	X	
WESTMORELAND	510									X	
	513	X	X					X	X	X	X
ARMSTRONG	512		X							X	
GREENE	514							X		X	X
ALLEGHENY	D12							X	X	X	X

UPPER BEAVER VALLEY AIR BASIN SITES

SITE LOCATIONS

PA SITE CODE	SITE NAME	EPA-AIRS SITE CODE	COUNTY	STREET ADDRESS	LATITUDE LONGITUDE
B21	NEW CASTLE	42-073-0015	LAWRENCE	Croton Avenue & Jefferson Street	40 59 45 80 20 48

PARAMETERS MONITORED

COUNTY	PA SITE CODE	PM-10	PM-2.5	TSP	SULFATES	LEAD	NITRATES	SULFUR DIOXIDE	NITROGEN DIOXIDE	OZONE	CARBON MONOXIDE
LAWRENCE	B21	X						X	X	X	X

ERIE AIR BASIN SITES

SITE LOCATIONS

PA SITE CODE	SITE NAME	EPA-AIRS SITE CODE	COUNTY	STREET ADDRESS	LATITUDE LONGITUDE
E10	ERIE	42-049-0003	ERIE	East 10th & Marne Streets	42 08 30 80 02 19
E12	ERIE	42-049-0101	ERIE	West 12th & Myrtle Streets	42 07 14 80 05 21

PARAMETERS MONITORED

COUNTY	PA SITE CODE	PM-10	PM-2.5	TSP	SULFATES	LEAD	NITRATES	SULFUR DIOXIDE	NITROGEN DIOXIDE	OZONE	CARBON MONOXIDE
ERIE	E10	X	X					X	X	X	
	E12										X

REGION VI NON - AIR BASIN SITES

SITE LOCATIONS

PA SITE CODE	SITE NAME	EPA-AIRS SITE CODE	COUNTY	STREET ADDRESS	LATITUDE LONGITUDE
606	FARRELL	42-085-0100	MERCER	Farrell High School Field New Castle Road & Mercer Avenue	41 12 52 80 28 59
611	WARREN	42-123-0003	WARREN	School District Building 345 East 5th Avenue	41 51 26 79 08 15
612	WARREN	42-123-0004	WARREN	Overlook Site near Stone Hill Road	41 50 41 79 10 11

PARAMETERS MONITORED

COUNTY	PA SITE CODE	PM-10	PM-2.5	TSP	SULFATES	LEAD	NITRATES	SULFUR DIOXIDE	NITROGEN DIOXIDE	OZONE	CARBON MONOXIDE
MERCER	606							X		X	
WARREN	611							X			
	612							X			