COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF AIR QUALITY

2009 AMBIENT AIR QUALITY MONITORING and EMISSION TRENDS REPORT

DIVISION OF AIR QUALITY MONITORING
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HARRISBURG, PA 17101

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List of Acronyms Used in this Report

AEM	Automated Equivalent Method
AES	Annual Emissions Statement
AQI	Air Quality Index
AQS	Air Quality System
ATSDR	Agency for Toxic Substances and Disease Registry
BAM	Beta-Attenuation Mass (type of continuous $PM_{2.5}$ sampler)
Be	Beryllium
CBD	Central Business District
CFR	Code of Federal Regulations
CO	Carbon Monoxide
COPAMS	Commonwealth of Pennsylvania Air Monitoring System
DCNR	Department of Conservation and Natural Resources
DEP	Department of Environmental Protection
EAC	Early Action Compact
EPA	Environmental Protection Agency
FEM	Federal Equivalent Method
FR	Federal Register
FRM	Federal Reference Method
HAPs	Hazardous Air Pollutants
H_2S	Hydrogen Sulfide
HF	Hydrogen Fluoride
IRIS	Integrated Risk Information System
Max	Maximum
MM/DD-HH	Month/Day - Hour
NAAQS	National Ambient Air Quality Standard
NARSTO	North American Research Strategy for Tropospheric Ozone
NO	Nitric Oxide
NO_2	Nitrogen Dioxide
NO_x	Oxides of Nitrogen
NPAP	National Performance Audit Program
O_3	Ozone
PAMS	Photochemical Assessment Monitoring Station
PAQSS	Pennsylvania Air Quality Surveillance System
Pb	Lead
$PM_{2.5}$	Particulate Matter with aerodynamic diameter less than or equal to 2.5 micrometers
PM_{10}	Particulate Matter with aerodynamic diameter less than or equal to 10 micrometers
ppb	parts per billion
ppbC	parts per billion Carbon
ppbv	parts per billion volume
ppm	parts per million
PSI	Pollutant Standards Index
PSU	Pennsylvania State University
SO_2	Sulfur Dioxide
TSP	Total Suspended Particulate
TEOM	Tapered Element Oscillating Microbalance (type of $PM_{2.5}$ and PM_{10} samplers)
$\mu g/m^3$	micrograms per cubic meter (unit of flow)
VOCs	Volatile Organic Compounds

EXECUTIVE SUMMARY

The Department of Environmental Protection (DEP) protects the right to clean air for all Pennsylvanians as provided in Article I Section 27 of the Constitution of the Commonwealth of Pennsylvania. DEP's Bureau of Air Quality fulfills this obligation by regulating emissions from thousands of air contamination sources located at facilities such as factories, refineries, landfills, and power plants. Monitoring air quality statewide, assisting companies with compliance, requiring the installation of monitoring equipment, investigating complaints, and taking enforcement action against violators are all part of DEP's powers and duties.

As DEP continues to implement the federal Clean Air Act as Amended in 1990, the study of past and present air quality data remains a crucial component of program planning and air pollution reduction strategies. This data provides a foundation, allowing the Department to develop comprehensive strategies to prevent or control the emission of certain air contaminants.

The 2009 Ambient Air Quality Monitoring and Emission Trends Report contains summaries of air quality data collected by DEP's Bureau of Air Quality Ambient Air Monitoring Program during the 2009 calendar year. Monitoring results are presented from 155 air quality monitors at 54 sites throughout the Commonwealth of Pennsylvania. Point source emission inventories are summarized from data submitted to DEP from 2000 through 2009. Multi-year trends for both types of air quality data are presented for selected pollutants.

Data collected during 2009 demonstrate that of the six criteria pollutants regulated by the Environmental Protection Agency (EPA), sulfur dioxide (SO_2), nitrogen dioxide (NO_2) and carbon monoxide (CO) continue to remain in concentrations well below the National Ambient Air Quality Standards (NAAQS). Statewide average concentrations for these pollutants have been consistently below one-half the level of their respective NAAQS for the past ten years.

Effective January 12, 2009, the lead (Pb) NAAQS was lowered from 1.5 micrograms per cubic meter to 0.15 micrograms per cubic meter, based on a maximum 3-month concentration average, measured over a period of three years. In addition to lowering the NAAQS, with the promulgation of this rule EPA also required monitoring near sources that emit 1 ton or more per year of lead. Preliminary data show that Beaver and Berks counties may not meet the new lead NAAQS.

Ozone (O_3) and particulate matter (PM) continue to be a challenge in Pennsylvania. Cooler than average temperatures, and greater than average cloud cover, helped to minimize the formation of ozone during the 2009 ozone season. All ozone monitoring sites operated by DEP recorded ozone concentration levels below the level of the ozone NAAQS during 2009. However, ten DEP ozone monitoring sites had calculated 3-year ozone concentration averages exceeding the level of the standard.

Particulate matter concentrations are measured using two criteria – an aggregate average of all particles less than or equal to 10 microns in diameter (PM_{10}), and an average isolating fine particles, or particles with a diameter less than or equal to 2.5 microns ($PM_{2.5}$). Although statewide average PM_{10} concentrations have remained at levels less than half of the PM_{10} annual NAAQS for the past ten years, fine particle concentrations have hovered near the level of the $PM_{2.5}$ annual and 24-hour NAAQS. The highest $PM_{2.5}$ concentrations are predominantly found in southeastern, southcentral and western Pennsylvania, although no DEP $PM_{2.5}$ monitoring sites exceeded the level of the $PM_{2.5}$ NAAQS during 2009. In addition, no DEP $PM_{2.5}$ monitoring sites yielded 3-year concentration averages exceeding the level of the standard.

Air toxics monitoring at the Arendtsville transport study site, which was temporarily suspended in 2008 for equipment upgrades, continued in 2009. Data from the Arendtsville transport study site demonstrate an overall decline in Photochemical Assessment Monitoring Station (PAMS) hydrocarbon compounds over the past ten years.

Emission inventories data also show a decreasing trend for the most common point source pollutants in Pennsylvania. From 2000 through 2009 sulfur dioxide (SO_2) emissions have decreased 17%, nitrogen oxides (NO_x) emissions have decreased 18%, carbon monoxide (CO) emissions have decreased 15% and volatile organic compounds (VOC) emissions have decreased 42%.

CHAPTER 1. INTRODUCTION

Ambient Air Monitoring

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

DEP monitors air quality in areas having high population density, high levels of expected contaminants, or a combination of both factors. Over half 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. Pennsylvania's air basins are defined in the Pennsylvania Code (25 Pa. Code § 121.1).

DEP does not generally monitor air quality in Allegheny and Philadelphia counties (an exception exists in Allegheny County, where DEP has an ambient air monitoring site as part of an exhibit at the Carnegie Science Center in Pittsburgh). Monitoring and air quality standard compliance evaluation in these areas are performed by two independent county health agencies, the Allegheny County Health Department, and the Philadelphia Department of Health Air Management Services, respectively. Data from Philadelphia or Allegheny counties can be obtained by contacting those agencies directly. Mailing addresses and telephone numbers for all three agencies are listed in Appendix A.

Regulated Air Pollutants and Toxics

DEP devotes the bulk of its ambient air monitoring program to monitoring Pennsylvania's air for pollutants for which health-based National Ambient Air Quality Standards (NAAQS) have been established and defined in the Federal Code of Regulations (CFR). These pollutants include ozone, sulfur dioxide, nitrogen dioxide, carbon monoxide, particulate matter ($PM_{2.5}$ and PM_{10}) and lead. Supplemental particulate matter monitoring results presented in this report include those for total suspended particulates (TSP), nitrates, and sulfates. In addition to NAAQS-related monitoring, DEP operates one Photochemical Assessment Monitoring Station (PAMS) air monitoring station in Arendtsville, Pennsylvania. This site utilizes specialized air monitoring instruments to gather air quality information relating to volatile organic compounds (VOCs) - chemical compounds that serve as precursors for ozone formation. DEP also operates a monitor for Mercury, another toxic air pollutant, at a monitoring station in Lancaster, Pennsylvania.

DEP utilizes federally-approved sampling and analytical methods for all NAAQS-regulated pollutants. Appendix E of this document provides a breakdown of monitoring methods used by DEP and their associated EPA-approved designation.

For additional information about Pennsylvania's air quality programs, visit the DEP website at http://www.depweb.state.pa.us/ (Choose "Air" from the left-hand menu.).

Air Quality Index

As a means of reporting air quality to the general public, DEP publishes a daily Air Quality Index (AQI) for all air quality monitoring sites in Pennsylvania. The AQI was developed by the U.S. Environmental Protection Agency (EPA) to standardize air pollution ratings and reports levels of six common air contaminants – ozone, sulfur dioxide, nitrogen dioxide, carbon monoxide, and two categories of particulate matter, $PM_{2.5}$ and PM_{10}. Real time monitoring and current AQI information is available on DEP's website at http://www.dep.state.pa.us/dep/deputate/airwaste/aq/aqm/aqi.htm.

Quality Assurance Program

DEP's Bureau of Air Quality conducts regularly scheduled performance audits and precision checks on air monitoring equipment to assess the data accuracy of each monitoring system. Quality assurance checks for the ambient air monitoring program are scheduled in compliance with requirements outlined in the Federal Code of Regulations (CFR).

Acid Rain and Mercury in Rain

DEP, under cooperative agreement with the Pennsylvania State University, has maintained the Pennsylvania Atmospheric Deposition Monitoring Network (PADMN) since 1981. The purpose of this program is to determine the chemistry of rain falling in Pennsylvania for environmental assessment purposes. Parameters monitored include pH, sulfate, nitrate, ammonium, chloride, calcium, magnesium, potassium, sodium and specific conductance. Starting in 1997, measurements of the amount of mercury in rain were included as part of the National Atmospheric Deposition Program Mercury Deposition Network (NAPD/MDN).

Seventeen acid rain monitoring sites were in operation in Pennsylvania in 2009. Included in this network were eleven acid rain and nine mercury monitoring sites supported by the DEP. The remaining sites were National Atmospheric Deposition Program National Trends Network (NADP/NTN) sites and were supported by various federal agencies.

The Elemental Mercury Vapor Summary is included in Appendix D of this document. Reports on acid rain and mercury in rain can also be found on the web at the following address: http://www.dep.state.pa.us/dep/deputate/airwaste/aq/monitoring.htm.

Emission Inventories

The point source emissions inventory is one means used by the state to assess the level of pollutants released into the air from various sources. Each year, the Bureau of Air Quality (BAQ) processes approximately 1,200 Annual Emission Statement (AES) reports. The AES contains operating schedules, throughputs, and emission estimates to calculate air emissions from industrial sources. This report presents point source emission inventory trends for four types of air pollutants – carbon monoxide, nitrogen oxides, sulfur dioxide and volatile organic compounds.

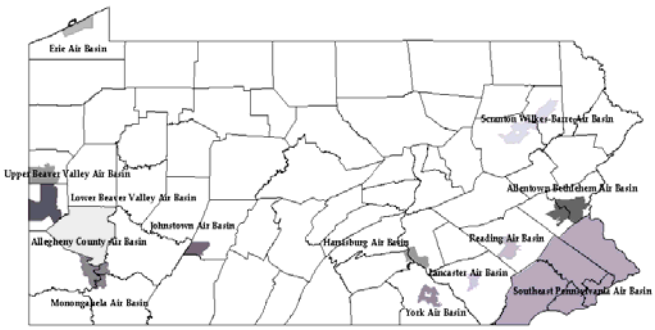
CHAPTER 2. AIR MONITORING PROGRAM

Monitoring Network Overview

The monitoring strategy of DEP places monitors in areas having high population density and/or high levels of contaminants. Over half of DEP air monitoring stations are located in the "air basins" of the Commonwealth. Air basins are defined in 25 Pa. Code § 121.1 and consist of thirteen geographical 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

Figure 2-1. Map of Pennsylvania Air Basins



Air monitoring surveillance is conducted in the 13 air basins. The Allegheny County Health Department conducts the majority of the air quality monitoring in the Allegheny County Air Basin. DEP also performs monitoring in Allegheny County at the Carnegie Science Center in Pittsburgh as part of an air quality exhibit. The Philadelphia Department of Public Health, Air Management Services, which is located in the Southeast Pennsylvania Air Basin, conducts air monitoring only for the Philadelphia County portion of the air basin. In addition to the aforementioned 13 air basins, DEP conducts surveillance in several non-air basin regions. A listing of DEP air quality monitoring site locations is provided in Appendix C of this report.

During 2009, DEP continued a cooperative agreement began in 2000 with Pennsylvania State University's (PSU) Department of Plant Pathology to conduct ozone monitoring in four remote areas of the state - Adams County (near Biglerville), Centre County (near State College), Clearfield County (near Moshannon) and Tioga County (near Gleason). In addition to providing the department with valuable ozone data from the more sparsely populated areas of the state, the university uses ozone data collected from this cooperative monitoring effort to determine the extent of detrimental effects to Pennsylvania's forests and crops, and to assess ozone transport in rural Pennsylvania.

The ambient air monitoring network plan can be found on the Bureau of Air Quality's website at the following address: http://www.dep.state.pa.us/dep/deputate/airwaste/aq/aqm/principal.htm.

COPAMS Network

DEP operates the Commonwealth of Pennsylvania Air Monitoring System (COPAMS) as its air monitoring network. The 2009 COPAMS network consisted of 54 air monitoring sites, encompassing both continuous and discrete methods of pollutant sampling.

The continuous portion of the COPAMS network is a totally automatic, microprocessor-controlled system that consisted of 48 remote stations throughout the Commonwealth in 2009. Continuous methods employ specialized instruments designed to continuously sample and analyze ambient air *in situ*. The output of these devices is hourly pollutant concentrations. These concentrations are the raw data used to calculate the various pollutant averages needed for NAAQS comparisons. A centralized computer system operated by the Bureau of Air Quality collects the raw data on an hourly basis, enabling real-time monitoring. DEP utilizes continuous methods for

the following pollutants: ozone, sulfur dioxide, nitrogen dioxide, oxides of nitrogen, carbon monoxide, hydrogen sulfide, $PM_{2.5}$ and PM_{10}.Various meteorological data from many of the COPAMS stations are measured using continuous methods as well, including wind speed, wind direction (vector averaged and sigma theta), ambient temperature, and solar radiation.

The non-continuous portion of the COPAMS network utilizes discrete sampling methods, with analysis of the sample performed off-site. A discrete method is generally a "manual" method of sampling, most commonly using an air filter to trap air pollutants from ambient air for a defined or "discrete" period of time. The filter is then removed from the collection site and analyzed in a DEP-accredited laboratory. The discrete portion of the COPAMS network consisted of 27 monitoring sites in 2009, and includes analysis methods for particulate matter 2.5 microns or less in size ($PM_{2.5}$), particulate matter 10 microns or less in size (PM_{10}), total suspended particulate (TSP), lead, sulfates and nitrates.

Pollutants and Standards

Data collected by DEP can generally be divided into two groups: gaseous pollutants and particulate matter. An overview for both types follows.

Gaseous Pollutants

Ground-Level Ozone

Ground-level ozone, or photochemical smog, is a secondary pollutant. Ozone is generally not emitted directly into the atmosphere as ozone, but rather is formed by chemical reactions between other air pollutants. The primary pollutants involved in these reactions -- volatile organic compounds (VOCs) and oxides of nitrogen (NO_x) -- form ozone in the presence of sunlight and warm temperatures. Thus, sources that emit these ozone precursors are sources of ozone. Nitrogen oxides result from fossil fuel combustion and sources commonly include power plants, industrial boilers, and motor vehicles. VOCs are emitted from a variety of sources, including motor vehicles, chemical plants, refineries and even natural (biogenic) sources. Ozone and the precursor pollutants that cause ozone also can be transported into an area from pollution sources located hundreds of miles away. Because the formation of ozone is boosted by increasing sunlight and temperatures, changing weather patterns contribute to yearly differences in ozone concentrations, with peak concentrations occurring during the summer months.

Ground-level ozone is a strong irritant to the eyes and upper respiratory system and can hamper breathing. It also damages vegetation, including forest and agricultural crops, and man-made materials such as monuments and statues.

Sulfur Dioxide

Sulfur dioxide is a gaseous pollutant that is emitted primarily by industrial furnaces or power plants burning sulfur-containing coal or oil.

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 vegetation, including forests 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.

Oxides of Nitrogen

Oxides of nitrogen (NO_x), or nitrogen oxides, are a class of pollutants containing compounds of oxidized nitrogen atoms chemically bonded to oxygen atoms. Nitrogen oxides are formed when fuel is burned at a very high temperature (above 1200° F), such as in automobiles and power plants. For air pollution purposes, the nitrogen oxides of concern are primarily nitric oxide (NO) and nitrogen dioxide (NO_2). Although there is no air quality standard for NO_x in general, the level of this pollutant is of concern due to its 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.

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 brown haze that causes eye and sinus irritation, blocks natural sunlight and reduces visibility. It can severely irritate the respiratory system and has been associated with acute effects in individuals diagnosed with respiratory disease. Nitrogen dioxide contributes to the creation of acid rain and plays a key role in nitrogen loading, adversely impacting forests and other ecosystems.

Carbon Monoxide

Carbon monoxide is a byproduct of the incomplete burning of fuels. Industrial processes contribute to carbon monoxide pollution levels, but the largest man-made source of carbon monoxide is motor vehicle emissions. This pollutant is a health concern in areas of high traffic density or near industrial sources. Peak carbon monoxide concentrations typically occur during the colder months of the year when automotive emissions are greater and nighttime inversion (a weather-related phenomenon) conditions are more frequent.

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 or shortness of breath, asphyxia and eventually death. 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.

Particulate Matter

Particulate matter (PM) is 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. PM may be emitted directly by a source or formed in the atmosphere. 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. Particulates less than or equal to 10 micrometers in diameter (PM_{10}) are called "coarse" particles, while particulates less than or equal to 2.5 micrometers in diameter ($PM_{2.5}$) are called "fine" particles. The smaller of these particles are breathed into the lungs, where they can aggravate tissues, cause respiratory ailments, and carry other pollutants into the lungs. Particulate matter also can cause adverse impacts to the environment.

$PM_{2.5}$

Fine particulate emissions result primarily from industrial processes and fuel combustion - including motor vehicles, residential wood burning and forest or agricultural fires.

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. $PM_{2.5}$ 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.

PM_{10}

PM_{10} (including $PM_{2.5}$) appears to represent essentially all of the particulate emissions from transportation sources and most of the emissions in the other traditional categories (coal-burning power plants, steel mills, mining operations, etc). Although $PM_{2.5}$ is technically included in the definition of PM_{10}, the terms "PM_{10}" or "coarse" particles are commonly used to refer to particles greater than $PM_{2.5}$, but less than 10 micrometers in diameter.

Sources of coarse particles any include dust-producing process, such as crushing or grinding operations, as well as dust stirred up by vehicles traveling on roads. While they are not as much of a health concern as are fine particles, they can aggravate respiratory conditions and irritate the linings of the eyes, nose, throat and lungs. In the environment, PM_{10} contributes to reduced visibility and degradation of man-made materials.

Total Suspended Particulate

Total suspended particulates (TSP) refer to particle sizes 45 micrometers or less in diameter. Although $PM_{2.5}$ and PM_{10} are technically included in the definition of TSP, the term "TSP" is commonly used to refer to particles greater than 10 micrometers in diameter. TSP was used historically as the basis for particulate matter NAAQS, however studies have shown that these larger particles do not penetrate into the lungs and have very little effect on health. Over the past 25 years, EPA has emphasized the importance and effects of smaller particles on human health by revising particulate matter pollution standards to apply to smaller and smaller particles, first PM_{10} in 1987, then $PM_{2.5}$ in 1997. Currently, EPA does not regulate TSP levels in ambient air.

Lead

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 now the major source of lead emissions.

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 cardiovascular, nervous, and renal systems.

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 the atmosphere from other sulfur-containing compounds under mechanisms that involve photochemical processes. Sulfate concentrations peak during the summer due to secondary sulfate formation in the presence of sunlight.

Studies have shown significant correlation between high sulfate levels and illness. Sulfates also reduce visibility and contribute to acid rain. There are currently no federal or state air quality standards for sulfates.

Nitrates

Nitrates are secondary compounds that form in the atmosphere from the oxidation of nitrogen gases emitted from fuel combustion sources. They represent a significant portion of the finer particulates that can be inhaled into the lungs and which affect visibility. As with sulfates, nitrates are contributors to acid rain and acid deposition. There are currently no federal or state air quality standards for nitrates.

Air Quality Standards

Pennsylvania has adopted and incorporated by reference all of the National Ambient Air Quality Standards (NAAQS), as well as state ambient air quality standards. These standards, designed to protect the public health and environmental welfare, are shown in Tables 2-1 and 2-2 on the following page.

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

Table 2-1. National Ambient Air Quality Standards (NAAQS).

Pollutant	Primary (Health Related)		Secondary (Environmental Welfare Related)	
	Type of Average	Standard Level Concentration	Type of Average	Standard Level Concentration
Carbon Monoxide	8-hour Running Mean (not to be exceeded more than once per year)	9 ppm	No Secondary Standard	
	1-hour (not to be exceeded more than once per year)	35 ppm	No Secondary Standard	
Lead	Maximum 3-month average (over a 3-year period)	0.15 $\mu g/m^3$	Same as Primary Standard	
Nitrogen Dioxide	Annual Arithmetic Mean	0.053 ppm	Same as Primary Standard	
Ozone	Maximum Daily 1-hour Average[1]	0.12 ppm	Same as Primary Standard	
	Fourth-Highest Daily Maximum 8-hour Running Mean (based on 3- year average)	0.075 ppm	Same as Primary Standard	
Particulate Matter PM_{10}	24-hour (not to be exceeded more than once per year, based on 3- year average)	150 $\mu g/m^3$	Same as Primary Standard	
Particulate Matter $PM_{2.5}$	Annual Arithmetic Mean (based on 3- year average)	15.0 $\mu g/m^3$	Same as Primary Standard	
	24-hour (based on 3 year average of 98th percentile)	35 $\mu g/m^3$	Same as Primary Standard	
Sulfur Dioxide	Annual Arithmetic Mean	0.030 ppm	3-hour Block Average (not to be exceeded more than once per year)	0.5 ppm
	24-hour Block Average (not to be exceeded more than once per year)	0.14 ppm		

[1] The 1-hour ozone NAAQS was generally revoked June 15, 2005, and remains in effect only in limited, Early Action Compact (EAC) areas, designated “non-attainment deferred” by EPA, none of which are located in the Commonwealth of Pennsylvania.

Table 2-2. 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	1.5 mg/cm^2/month
	1-year	0.8 mg/cm^2/month

CHAPTER 3. AIR QUALITY RESULTS AND TRENDS – CONTINUOUS GASEOUS SAMPLING

Ground-Level Ozone

The ozone monitoring season in Pennsylvania begins each year on April 1 and ends October 31. Although ground-level ozone levels can fluctuate depending on meteorological conditions, they are consistently higher during the summer months, when increased sunlight and warm temperatures amplify ozone formation.

Effective May 2008, EPA strengthened the 8-hour primary ozone standard to further protect children and other "at risk" populations, such as outdoor workers and individuals with asthma, lung disease or otherwise compromised respiratory systems, from the adverse health effects related to ozone exposure. The secondary standard (environmental welfare-based) was set identical to the primary (human health-based) standard. The current primary and secondary national ambient air quality standard (NAAQS) for ozone is 0.075 part per million (ppm) based on a maximum daily 8-hour running average. The 8-hour average used for comparison to the NAAQS is a three year average of the fourth highest daily 8-hour maximums per year. The former 1-hour standard was generally revoked by EPA effective June 15, 2005, remaining applicable only in specific areas designated as Early Action Compact (EAC) areas by EPA. No areas in the DEP ozone network currently fall under this special designation.

The 2009 DEP ozone (O_3) monitoring network consisted of 44 sites. Individual site locations, including county and air basin designations, and parameters monitored are listed in Appendix C of this report. In addition to the established NAAQS-related monitoring sites, DEP continued monitoring begun by the North American Research Strategy for Tropospheric Ozone (NARSTO). The Holbrook site (Greene County) is primarily designed to study ozone transport in the Northeast.

As a way of focusing on the secondary standard, DEP continued in 2009 with a cooperative agreement with Pennsylvania State University's Department of Plant Pathology to monitor ozone four rural sites near Biglerville, State College, Moshannon and Gleason, PA. The university uses this data as part of its study of the concerns associated with ozone effects on vegetation.

Ozone data for 2009 for all DEP ozone monitoring sites are summarized in Appendix B, Tables B-1 and B-2. Table B-1 contains 8-hour data, while Table B-2 contains 1-hour data. Ten sites in the DEP ozone monitoring network registered at least one 8-hour daily maximum exceeding the level of the 8-hour standard in 2009. The total number of 8-hour exceedance days was 6. No sites in the DEP ozone monitoring network registered 1-hour averages exceeding the level of the former 1-hour standard in 2009.

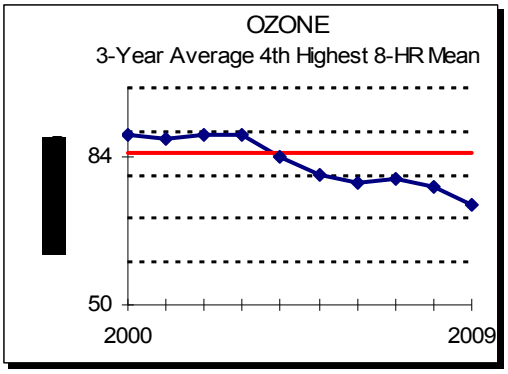
Ozone pollution control measures received a boost from weather conditions this year, which were less favorable for ozone formation during the 2009 ozone season. Cooler than average temperatures, and greater than average cloud cover across Pennsylvania helped to minimize excessive levels of ozone from being generated locally, while those same weather conditions across the Midwestern U.S. helped to prevent high levels of ozone from being transported into the state.

Figure 3-1 (on the 2nd following page) qualifies the fourth highest daily maximum running 8-hour O_3 concentrations and the second highest daily maximum 1-hour O_3 concentration, by county, for all DEP ozone monitoring sites in 2009. In spite of the strengthening of the 8-hour standard in 2008, no county within DEP's jurisdiction had a 4th highest daily maximum that exceeded the standard in 2009, and there were no counties which contained a site that exceeded the former 1-hour NAAQS.

Appendix B, Tables B-3 and B-4 summarize 8-hour and 1-hour ozone data over the last three years. These tables include monitoring sites operated by DEP, the Allegheny County Health Department and Philadelphia Department of Public Health, Air Management Services. Ten DEP sites recorded 3-year averages of fourth highest 8-hour concentrations greater than the level of the 8-hour standard. No DEP sites recorded a 3-year average of second highest 1-hour concentrations greater than the level of the former 1-hour standard.

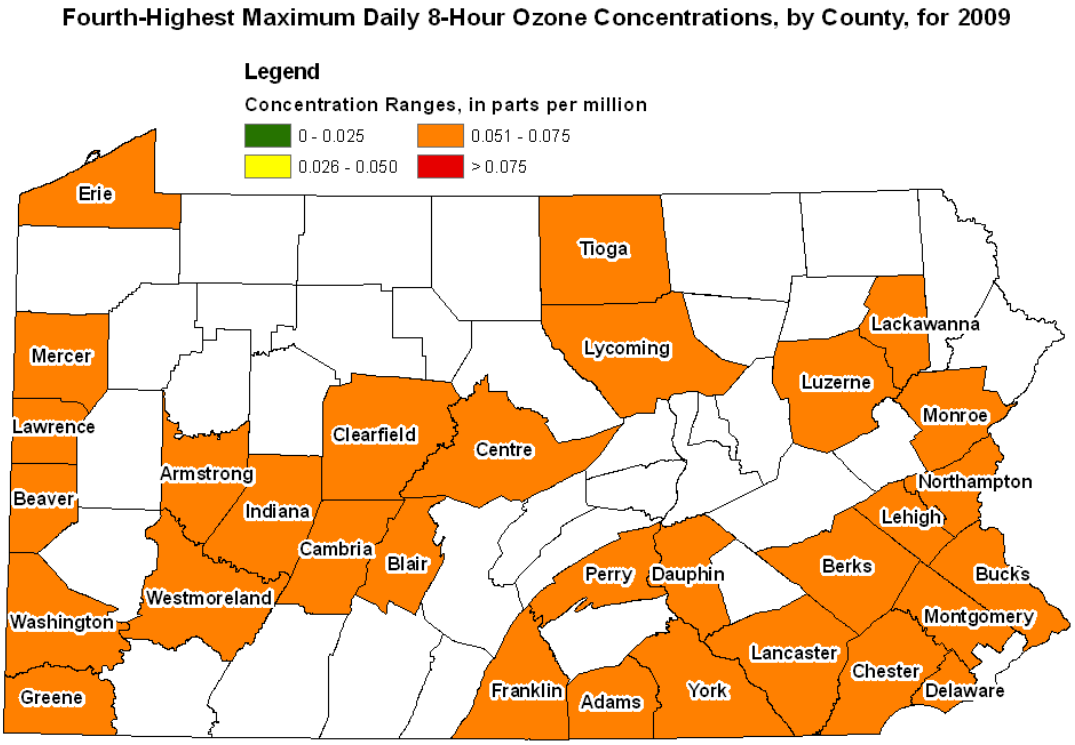
Figure 3-2 displays a 10-year trend of the statewide (DEP sites only) 3-year average of fourth daily maximum 8-hour ozone concentrations. Data points on or above the solid line represent an exceedance of the 8-hour NAAQS standard. As the graph indicates, there has been a continuing reduction overall during this period, about an 18% improvement. The overall improvements that have been seen in ozone concentrations can be attributed in part to controls on VOCs and gasoline volatility.

Figure 3-2. Trend in 3-Year Average of Fourth Daily Maximum 8-Hour Ozone Concentrations, DEP Monitors Statewide, 2000-2009.

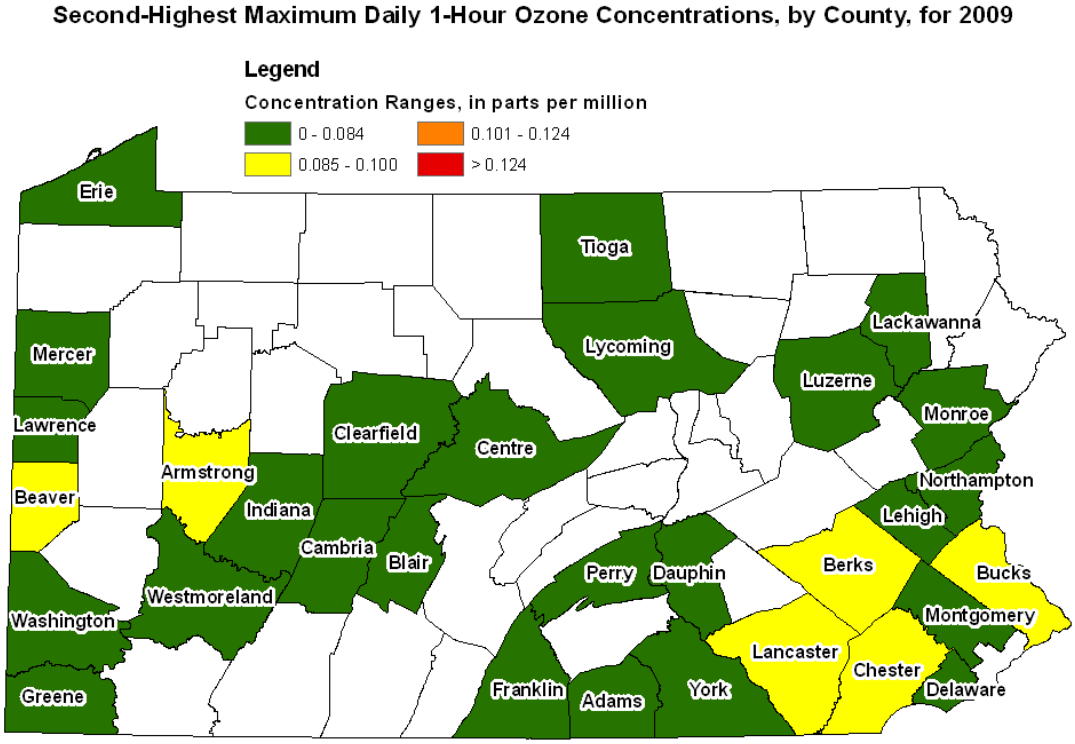


Historical trends for individual air basin and non-air basin regions are shown in Figures 3-3 and 3-4. Figure 3-3 displays 10-year trends of the 3-year average of the fourth daily maximum 8-hour O_3 concentrations, while Figure 3-4 displays 10-year trends of the average second daily maximum 1-hour mean. Data points on or above the solid line represent an exceedance of the current 8-hour and former 1-hour NAAQS concentration level, respectively. All regions have followed the overall statewide trend of declining concentrations over the 10 year period for both types of averages. Four air basins - Allentown-Bethlehem-Easton, Reading, Southeast PA and York - show a current 3-year average exceeding the current 8-hour NAAQS. Two non-air basin regions – the Southwest and Northwest regions - also show a current 3-year average exceeding the current 8-hour NAAQS. Historical 1-hour and 8-hour data for ozone from 2000 to 2009 are given in Appendix B, Table B-5 for DEP sites that operated during the 10-year period.

Figure 3-1. 2009 Ozone Concentration Ranges by County, for DEP-monitored Counties.

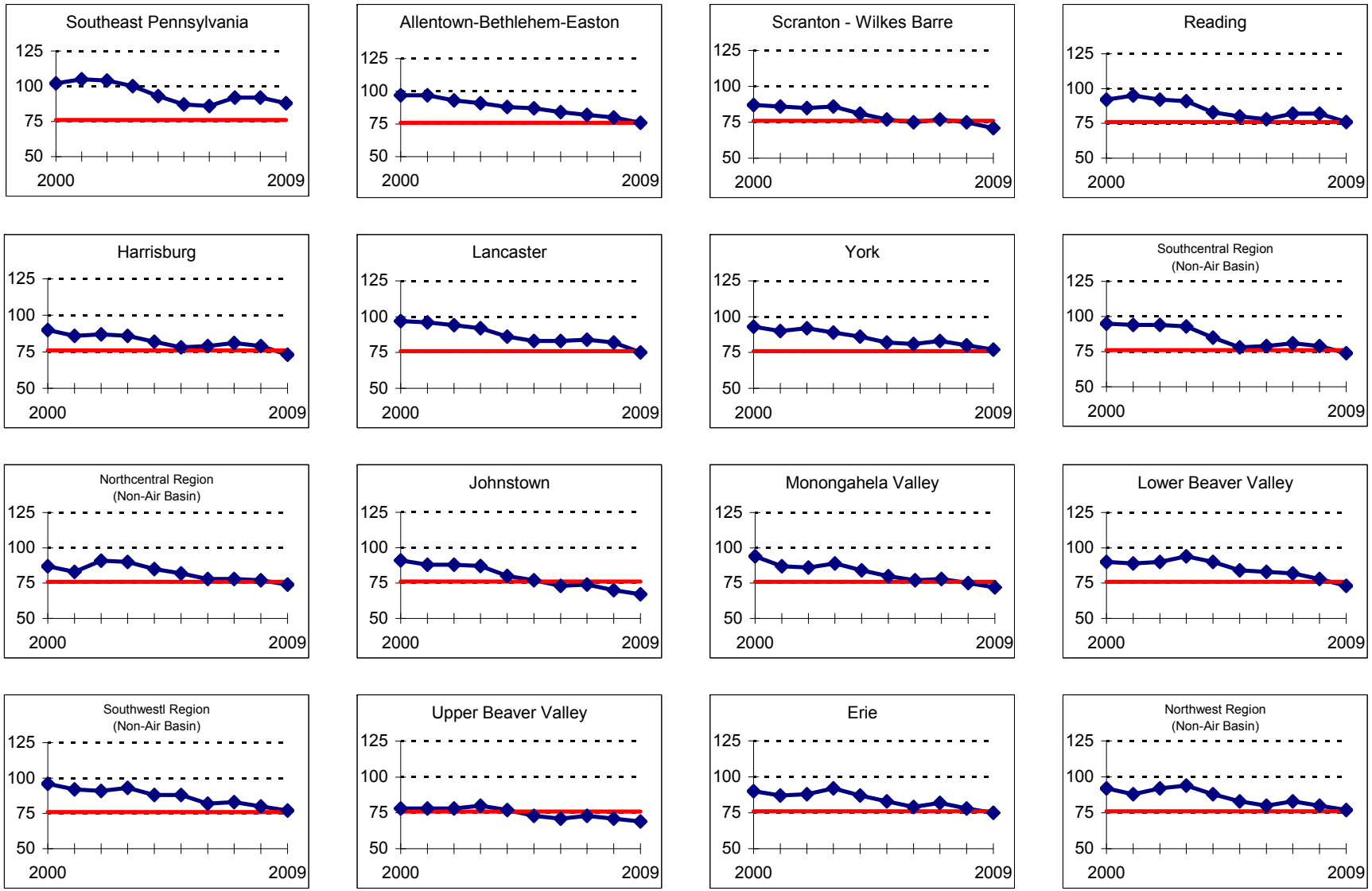


Primary and Secondary National Ambient Air Quality Standard for Ozone
Fourth-Highest Daily Maximum 8-Hour Average = 0.075 parts per million (ppm)
(Data are displayed for a single calendar year, but standard is based on a 3-year average)



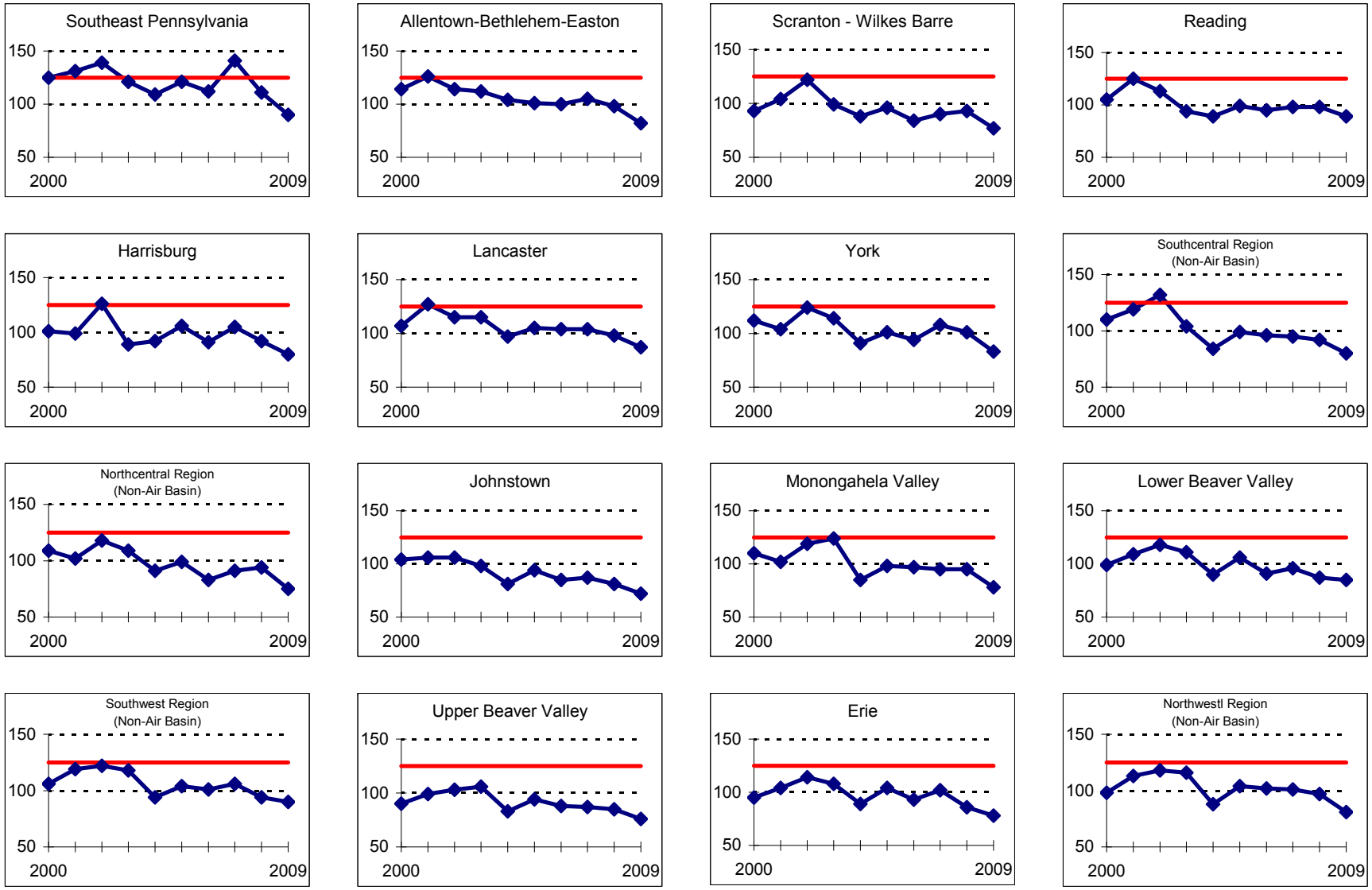
Former Primary and Secondary National Ambient Air Quality Standard for Ozone
Maximum Daily 1-Hour Average = 0.12 parts per million (ppm), not to be exceeded more than once per year

Figure 3-3. Ozone Trends in Pennsylvania, DEP-monitored Regions 2000 to 2009, 3-Year Average of Fourth Daily Maximum 8-Hour Averages, in Parts per Billion.



The 8-hour Ozone National Ambient Air Quality Standard is 0.075 parts per million (or 75 ppb), based on a 3-year average of 4th highest maximum 8-hour running averages.

Figure 3-4. Year Ozone Trends in Pennsylvania, DEP-monitored Regions 2000 to 2009, Second Daily Maximum 1-Hour Average, in Parts per Billion.



The former 1-hour Ozone National Ambient Air Quality Standard is 0.12 parts per million, maximum hourly average.

Sulfur Dioxide

EPA last reviewed the NAAQS for SO_2 in 1996. At that time EPA decided that the levels of the SO_2 standards remained sufficient to protect human health and environmental welfare, and adopted only minor technical changes to the standard. The current national ambient air quality standards (NAAQS) for sulfur dioxide (SO_2) consist of two primary standards (human health-based) and one secondary standard (environmental welfare-based). The primary standards are 0.030 part per million (ppm) for an annual mean, and 0.14 ppm based on a 24-hour block average. The secondary standard is 0.5 ppm based on a 3-hour block average. The 24-hour primary and secondary standards may not be exceeded more than once per year.

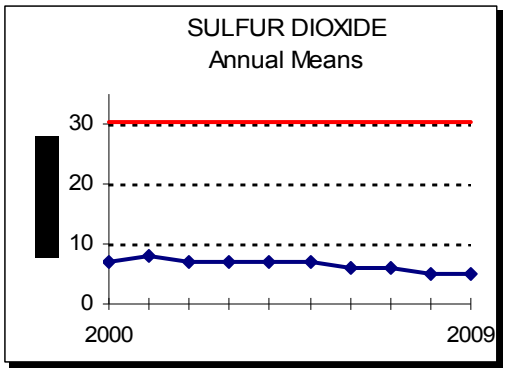
The 2009 DEP sulfur dioxide (SO_2) monitoring network consisted of 21 sites. Individual site locations, including county and air basin designations, and parameters monitored are listed in Appendix C of this report. All sites met the NAAQS for sulfur dioxide in 2009.

Sulfur dioxide data for 2009 for all SO_2 monitoring sites are summarized in Appendix B, Table B-6. No site in exceeded the level of the NAAQS in 2009, rather all sites yielded concentration averages less than one third the level of all three NAAQS for SO_2.

Figures 3-5 (on following page) qualifies the annual mean and second highest daily maximum 24-hour sulfur dioxide concentration, by county, in 2009. No monitored county contained sites exceeding the levels of the current SO_2 air quality standards.

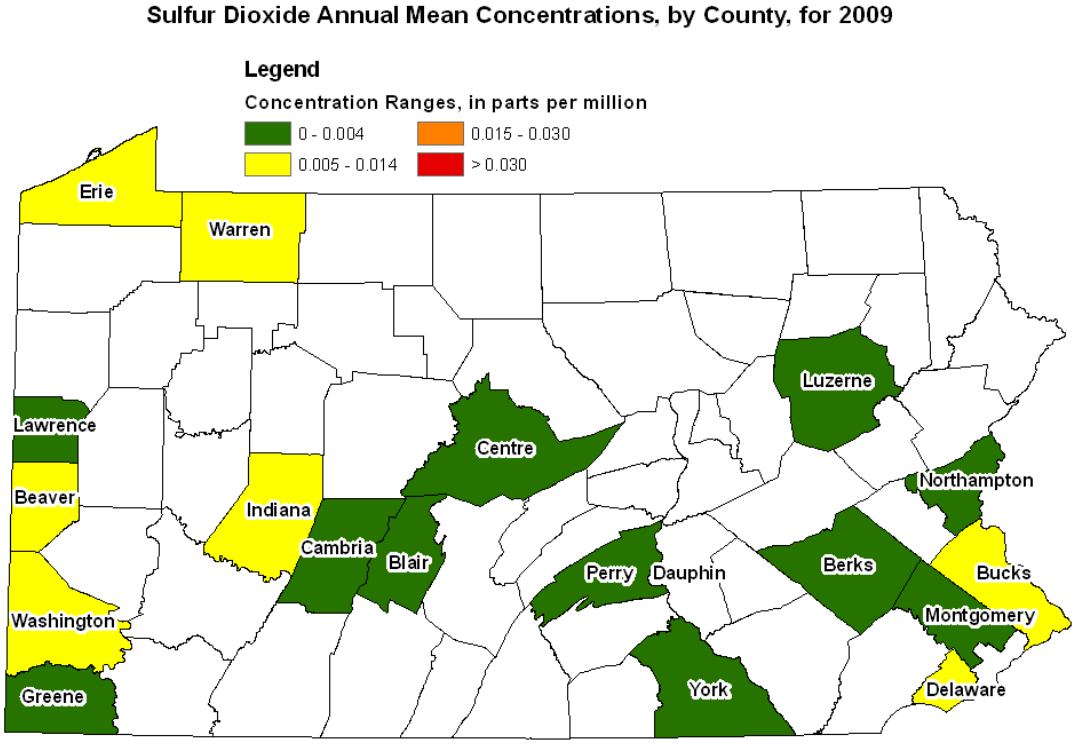
Figure 3-6 displays the statewide composite average of sulfur dioxide annual mean concentration from 2000 to 2009. Data points on or above the solid line represent an exceedance of the annual NAAQS for sulfur dioxide. In general, sulfur dioxide levels have remained relatively steady over the past 10 years, registering a slight improvement during that time

Figure 3-6. Trend in Annual Mean SO_2 Concentrations, DEP Monitors Statewide, 2000-2009.



Annual mean historical trends for individual air basin and non-air basin regions are shown in Figure 3-7. Data points on or above the solid line represent an exceedance of the annual NAAQS for sulfur dioxide. The trend graphs demonstrate that all regions have consistently remained well under the annual mean NAAQS for SO_2. Sulfur dioxide historical data from 2000 to 2009 are given in Appendix B, Table B-7 for DEP sites that operated during the 10-year period.

Figure 3-5. 2009 Sulfur Dioxide Concentration Ranges by County, for DEP-monitored Counties.



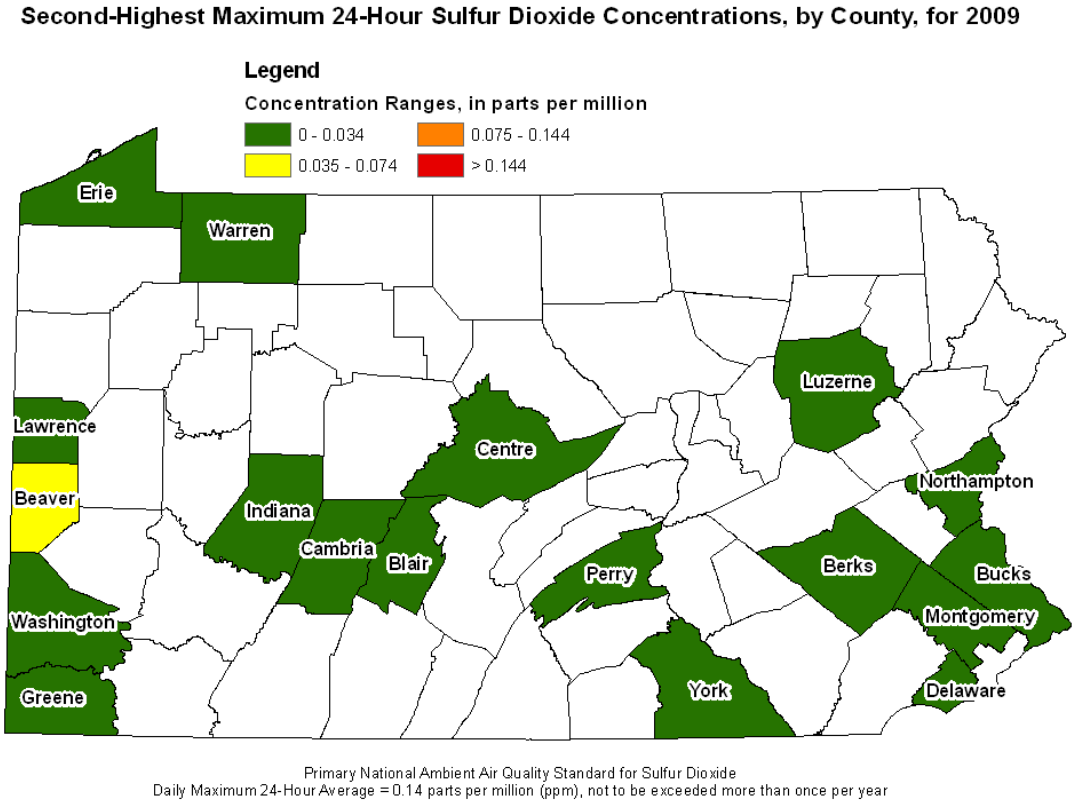
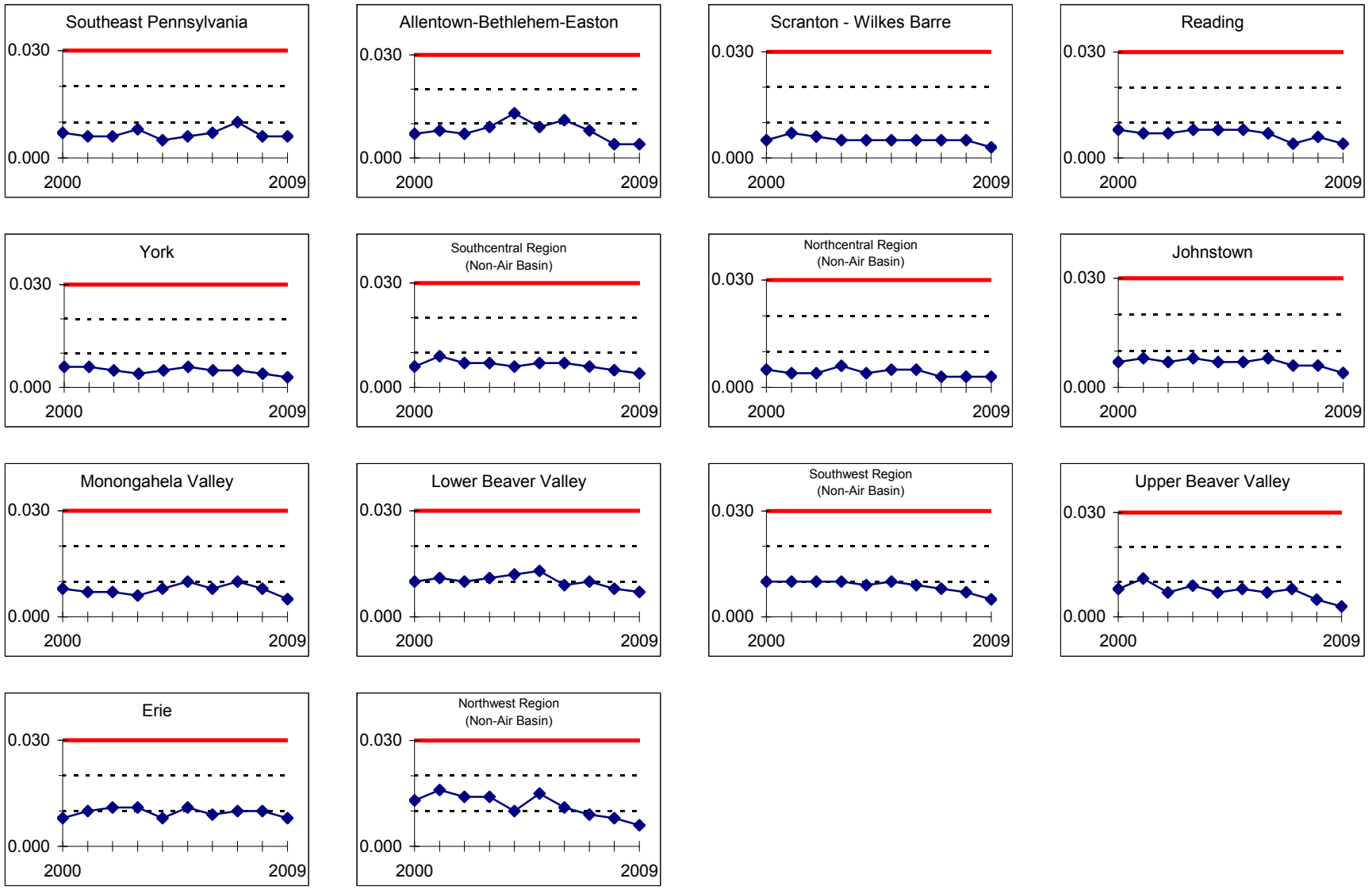


Figure 3-7. Sulfur Dioxide Trends in Pennsylvania, DEP-monitored Regions 2000 to 2009, Annual Arithmetic Means, in Parts per Million.



The SO2 Annual National Ambient Air Quality Standard is 0.030 parts per million.

Nitrogen Dioxide / Oxides of Nitrogen

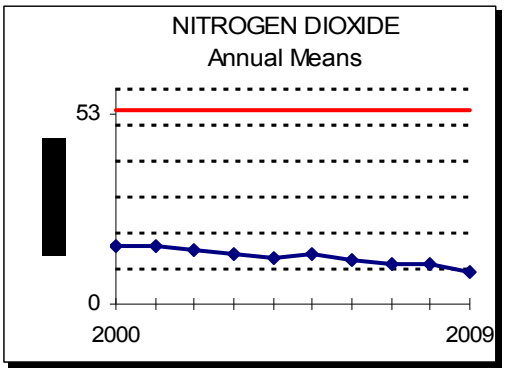
Nitrogen dioxide, a specific nitrogen oxide, is regulated by the EPA. The national ambient air quality standard for nitrogen dioxide (NO2) is set at 0.053 parts per million (ppm) as both a primary (human health-based) and secondary (environmental impact-based) standard. EPA last reviewed this standard in 1985.

The 2009 DEP nitrogen dioxide (NO_2) monitoring network consisted of 16 sites. Individual site locations, including county and air basin designations, and parameters monitored are listed in Appendix C of this report. All sites met the NAAQS for nitrogen dioxide in 2009.

Nitrogen dioxide and nitrogen oxide data for 2009 for all NO_2/NO_x monitoring sites are summarized in Appendix B, Tables B-8 and B-9, respectively. No site in exceeded the level of the NAAQS in 2009, rather all sites yielded concentration averages less than one fourth the level of the NAAQS for NO_2.

Figure 3-8 displays the statewide composite average of nitrogen dioxide annual mean concentration for 2000 to 2009. Data points on or above the solid line represent an exceedance of the annual NAAQS for nitrogen dioxide. The graph demonstrates that concentrations levels have decreased by about 36% and have remained consistently well below the annual NAAQS for nitrogen dioxide during the 10-year period.

Figure 3-8. Annual Mean NO_2 Concentrations, DEP Monitors Statewide, 2000-2009.



Annual mean historical trends for individual air basin and non-air basin regions for nitrogen dioxide are shown in Figure 3-9 (on the following page). Data points on or above the solid line represent an exceedance of the annual NAAQS for nitrogen dioxide. All regions have followed the statewide trend, remaining consistently below the NO_2 NAAQS. Historical data for nitrogen dioxide from 2000 to 2009 are given in Appendix B, Table B-10 for DEP sites that operated during the 10-year period.

Figure 3-10 represents the annual mean statewide trend of oxides of nitrogen (NO_x) over the last 10 years. Measured NO_x concentrations represent the combined total of NO_2 and nitric oxide (NO) concentrations. There is no federal or state air quality standard for NO_x. Since 1998, average NO_x concentrations have declined by about 48 percent.

Figure 3-10. Trend in Annual Mean NO_x Concentrations, DEP Monitors Statewide, 2000-2009.

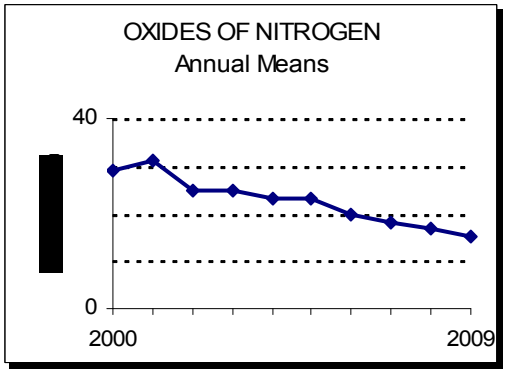
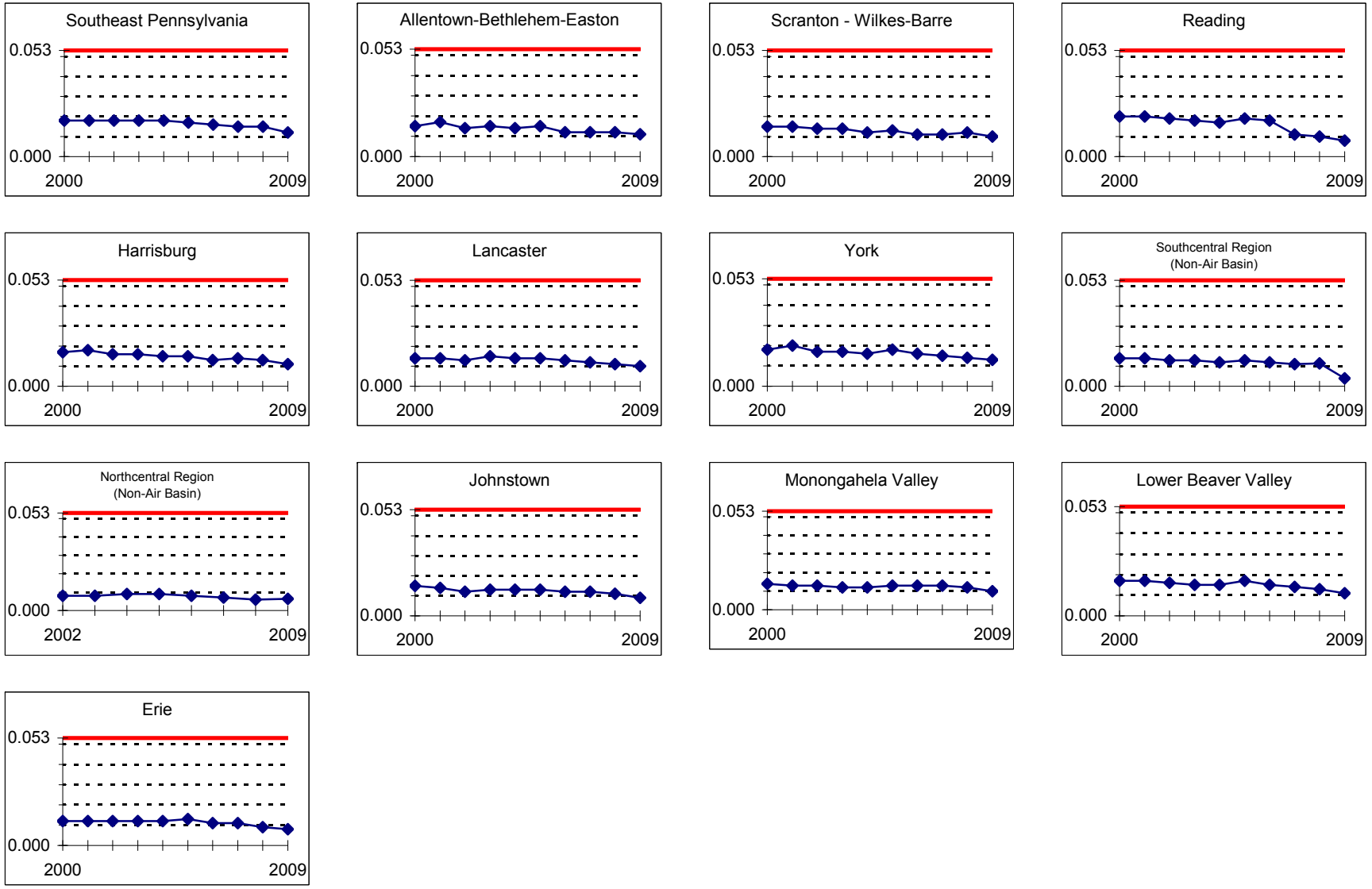


Figure 3-9. Nitrogen Dioxide Trends in Pennsylvania, DEP-monitored Regions 2000 to 2009, Annual Arithmetic Means, in Parts per Million.



The Nitrogen Dioxide Annual National Ambient Air Quality Standard is 0.053 ppm.

Carbon Monoxide

The national ambient air quality standard (NAAQS) for carbon monoxide (CO) consisted of two primary (human health-based) standards. In September 1985, EPA revoked the previous secondary (environmental welfare-based) standards, citing studies that showed no environmental welfare effects could be expected at levels found in ambient air at the time of review. EPA did not revise the primary standard at that time, and they are currently applicable at 9 parts per million (ppm) based on an 8-hour maximum, and 35 ppm based on a 1-hour maximum. To meet the standard, neither criterion may be exceeded more than once per year.

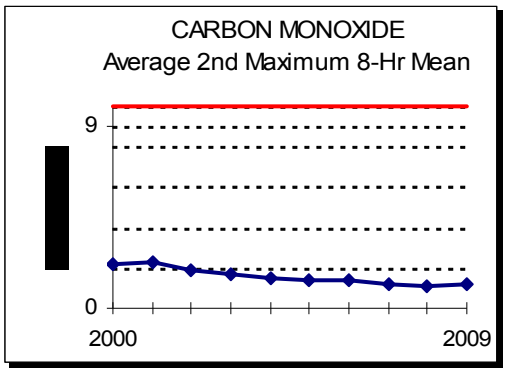
The 2009 DEP carbon monoxide (CO) monitoring network consisted of 12 sites. Individual site locations, including county and air basin designations, and parameters monitored are listed in Appendix C of this report. All sites met the NAAQS for carbon monoxide in 2009.

Carbon monoxide data for 2009 for CO monitoring sites are summarized in Appendix B, Table B-11. No site in exceeded the level of the NAAQS in 2009, rather all sites yielded concentration averages less than one third the level of the NAAQS for CO, for both 8-hour and 1-hour averages.

Figure 3-11 displays a 10-year trend of the statewide second daily maximum 8-hour CO concentration. Data points on or above the solid line represent an exceedance of the NAAQS.

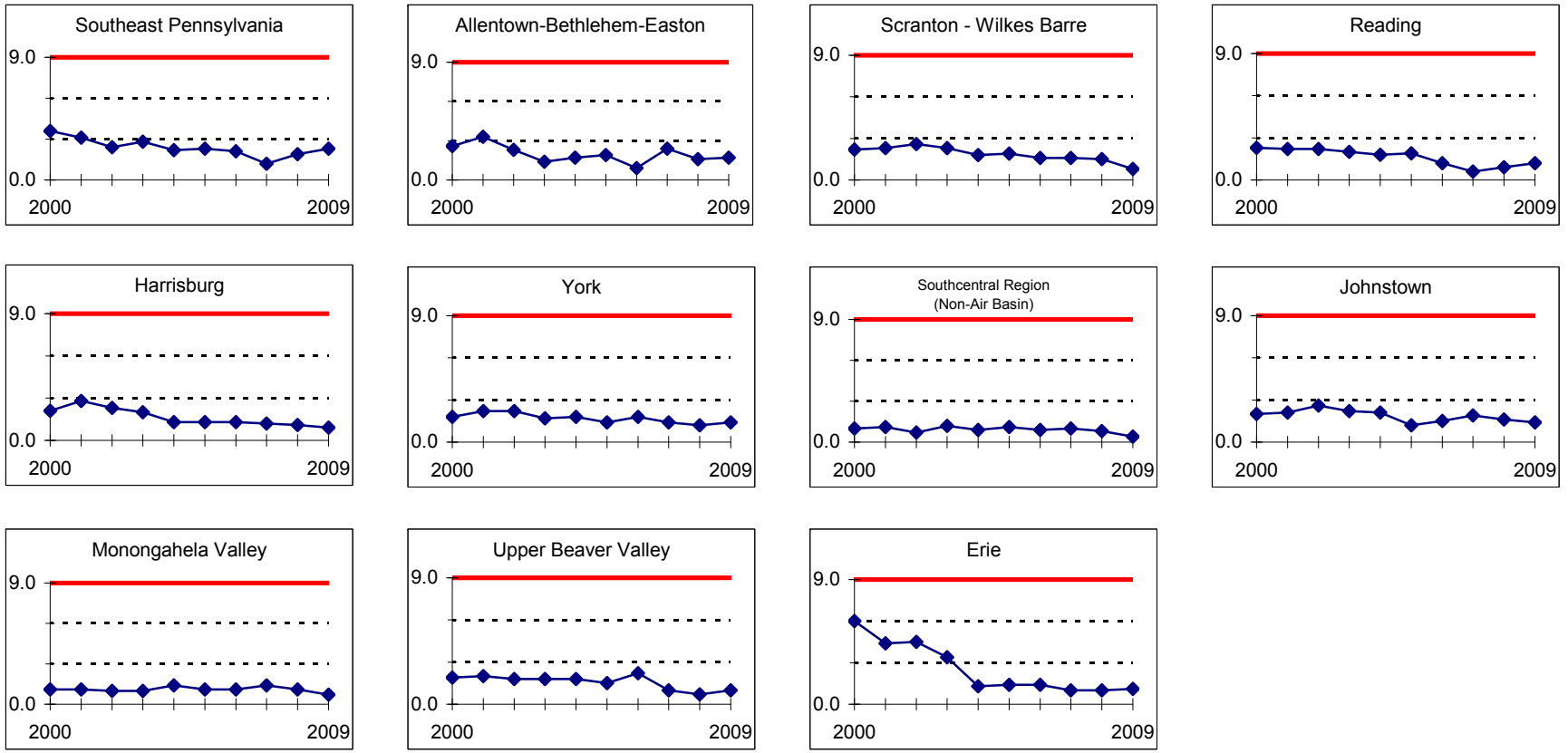
Carbon monoxide levels have seen a long-term improvement of 45% percent from levels in 2000, and have remained well below one third the CO NAAQS during the past 10 years.

Figure 3-11. Trend in Second Maximum 8-hour Average CO Concentrations, DEP Monitors Statewide, 2000-2009.



Annual mean historical trends for individual air basin and non-air basin regions for carbon monoxide are shown in Figure 3-12. Data points on or above the solid line represent an exceedance of the annual NAAQS for carbon monoxide. All regions have followed the statewide trend, remaining consistently below the CO NAAQS. Historical data for carbon monoxide from 2000 to 2009 are given in Appendix B, Table B-12 for DEP sites that operated during the 10-year period.

Figure 3-12. Ten–Year Carbon Monoxide Trend in Pennsylvania, DEP-monitored Regions 2000 to 2009, Second Maximum 8-Hour Running Mean, in Parts per Million.



CHAPTER 4. AIR QUALITY RESULTS AND TRENDS – PARTICULATE SAMPLING

$PM_{2.5}$ Particulate Matter

Citing current scientific evidence pointing strongly to significant adverse effects on human health, EPA tightened the primary (human health-based) $PM_{2.5}$ standard on December 18, 2006. The national ambient air quality standard (NAAQS) for the 24 hour level was lowered from 65 to 35 micrograms per cubic meter. The 24-hour standard is based on the 98th percentile value (the concentration below which 98 percent of 24-hour averages fall) of all 24-hour values over a calendar year. The annual mean standard of 15 micrograms per cubic meter was not adjusted. Secondary (environmental welfare-based) standard levels are identical to the primary standards.

In March 2008, EPA designated a new continuous Federal Equivalent Method (FEM) for $PM_{2.5}$ monitoring, utilizing a MetOne Beta Attenuation Mass (BAM) monitor. During 2009, DEP replaced several existing manual Federal Reference Method (FRM) monitors in the $PM_{2.5}$ monitoring network with continuous FEM monitors. These replacements are noted in Appendix B, Table B-13 of this document.

The 2009 $PM_{2.5}$ monitoring network consisted of 29 monitoring sites. Twenty-four monitoring sites utilized FRM discrete and/or FEM continuous monitoring, while the remaining five sites utilized non-FEM-compliant continuous monitoring. In addition, $PM_{2.5}$ samples were collected for constituent analysis from 13 speciation sites (detailed in next section). Individual site locations, including county and air basin designations, and parameters monitored are listed in Appendix C of this report.

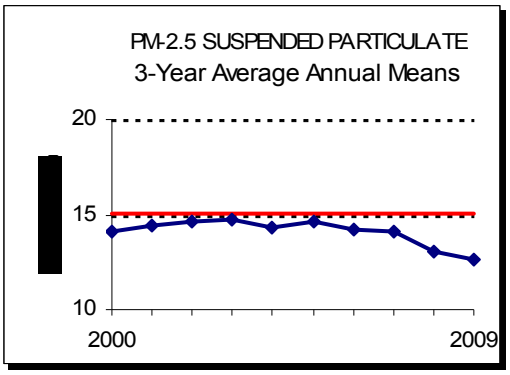
$PM_{2.5}$ data for 2009 for all $PM_{2.5}$ FRM, FEM and non-FEM continuous monitoring sites are summarized in Appendix B, Tables B-13 and B-14. No FRM/FEM sites exceeded the level of the annual mean NAAQS for $PM_{2.5}$, while the majority sites registered at least one 24-hour maximum at or exceeding the level of the 24-hour NAAQS in 2009.

Figure 4-1(on the 2nd following page) qualifies the $PM_{2.5}$ annual mean and 24-hour maximum 98th percentile, by county in 2009. Because only concentration measurements derived from FRM and FEM monitoring methods are eligible for NAAQS comparison, only FRM and FEM sites were considered in the creation of these representations. Although many counties in southeastern and western Pennsylvania contained sites yielding concentration maximums close to national standard levels, no sites yielded an annual mean or 98th percentile 24-hour concentration average exceeding the level of the $PM_{2.5}$ NAAQS in 2009.

Appendix B, Table B-15 summarizes 24-hour and annual mean $PM_{2.5}$ data over the last three years. This table includes monitoring sites operated by DEP, the Allegheny County Health Department and Philadelphia Department of Public Health, Air Management Services. No DEP sites recorded a 3-year average of 24-hour 98th percentile concentrations greater than the level of the 24-hour standard. No DEP sites recorded a 3-year average of annual mean concentrations greater than the level of the annual standard.

Figure 4-2 (on the following page) displays the statewide composite average of $PM_{2.5}$ 3-year average annual mean concentration from 2000 to 2009. Data points on or above the solid line represent an exceedance of the annual NAAQS for $PM_{2.5}$. The graph demonstrates an10-year overall improvement in average concentrations levels of about 11%.

Figure 4-2. Trend in 3-Year Average Annual Mean $PM_{2.5}$ Concentrations, DEP Monitors Statewide, 2000-2009.



Historical trends for individual air basin and non-air basin regions for $PM_{2.5}$ are shown in Figures 4-3 and 4-4. Figure 4-3 displays 10-year trends of the 3-year average annual mean $PM_{2.5}$ concentrations, while Figure 4-4 displays 10-year trends of the 24-hour maximum 98th percentile. Data points on or above the solid line represent an exceedance of the annual mean and 24-hour

.

NAAQS concentration level, respectively. These graphs show that the three-year annual mean averages have hovered around the level of the annual mean NAAQS during this time, with all regions showing a decreasing trend over the past nine years for both the annual and 24-hour averages. The 24-hour data illustrates an overall decrease of about 16 percent from the 1999-2001 average concentration levels. Historical trend data from 2000 to 2009 for $PM_{2.5}$ FRM, FEM and non-FEM continuous methods are given in Appendix B, Tables B-16 and B-17 for DEP sites that operated during the 10-year period

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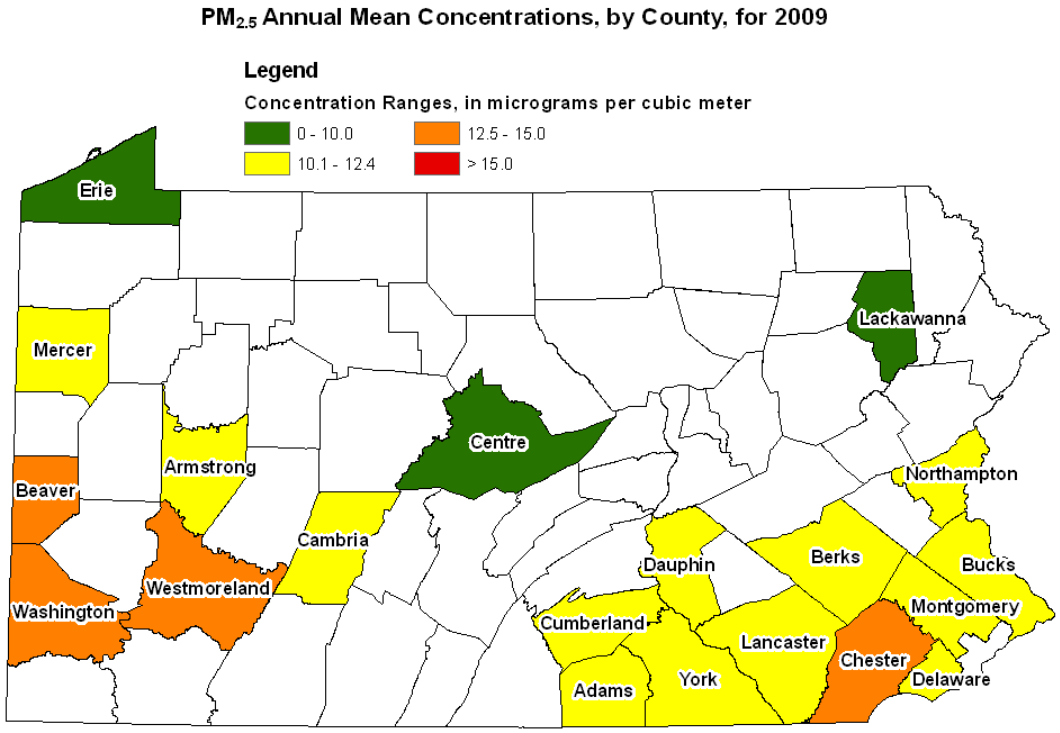
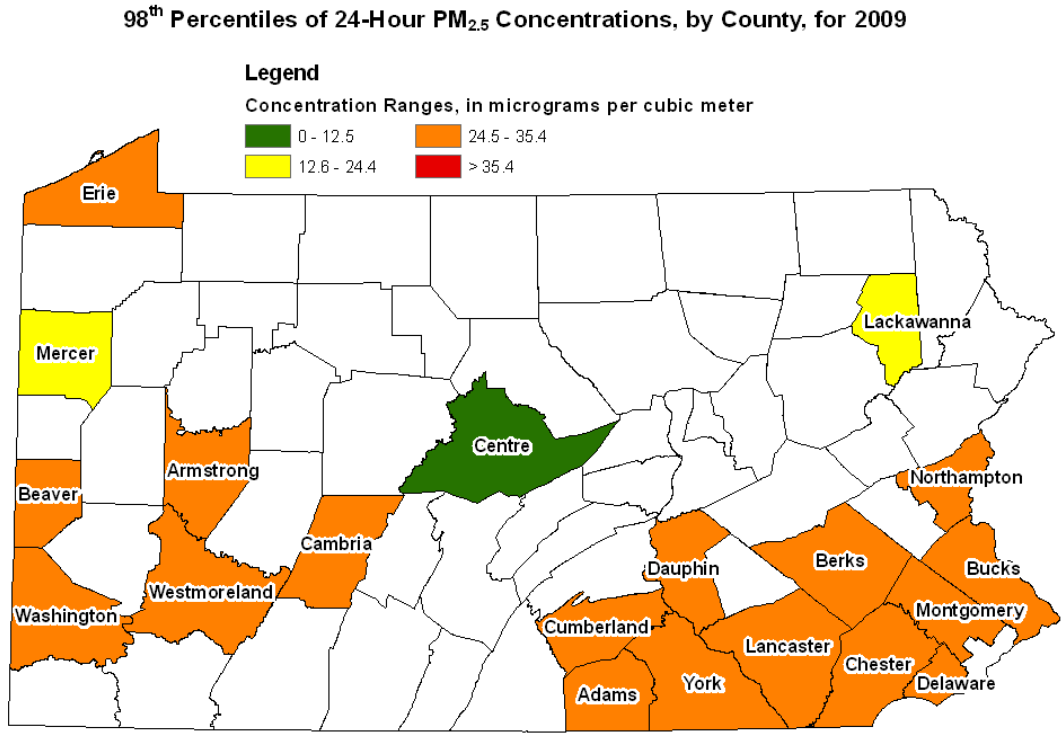
Figure 4-1. 2009 $PM_{2.5}$ Concentration Ranges by County, for DEP-monitored Counties.

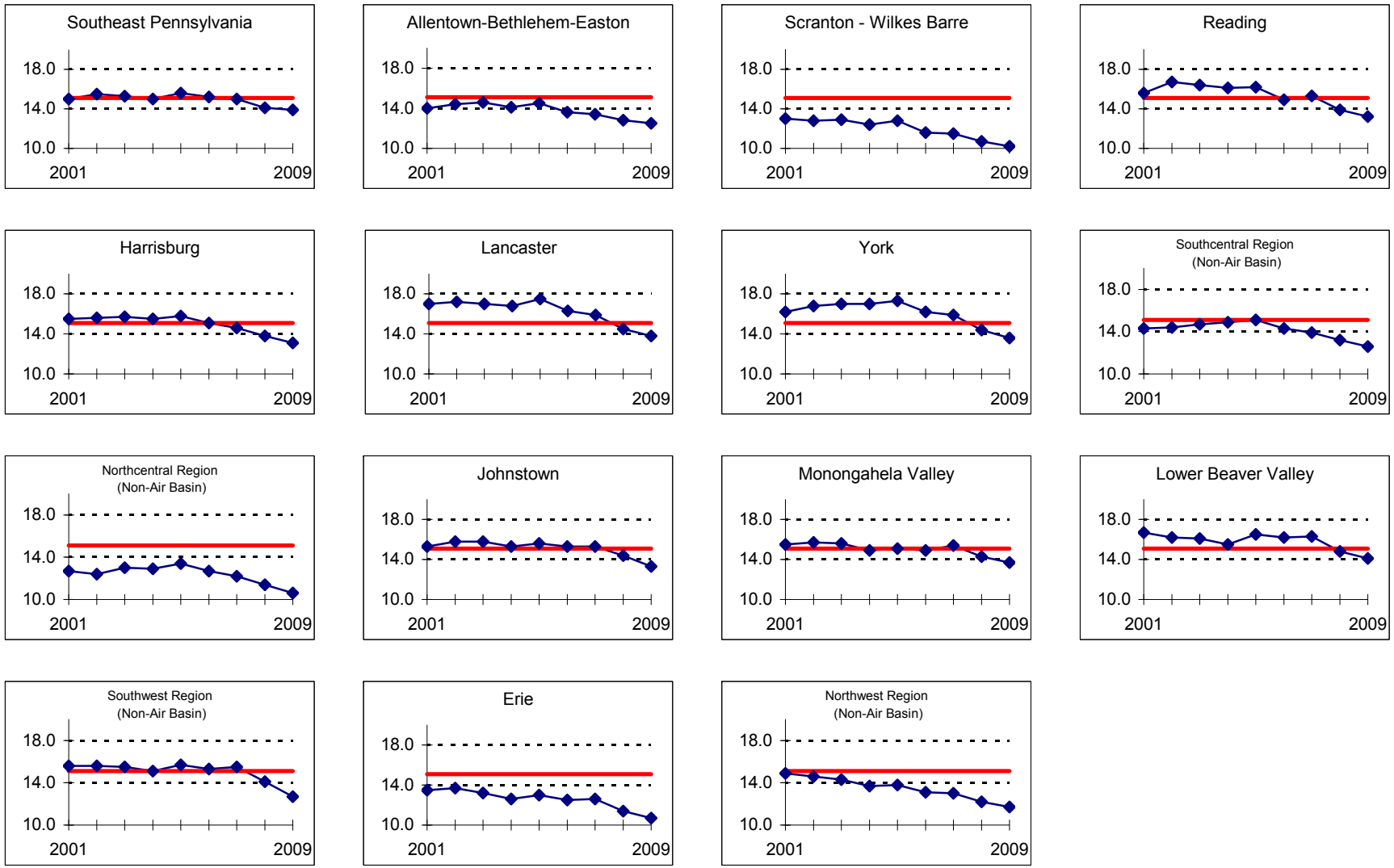


Primary and Secondary National Ambient Air Quality Standard for $PM_{2.5}$
Annual Mean = 0.15 micrograms per cubic meter ($\mu g/m^3$)
(Data are displayed for a single calendar year, but standard is based on a 3-year average)



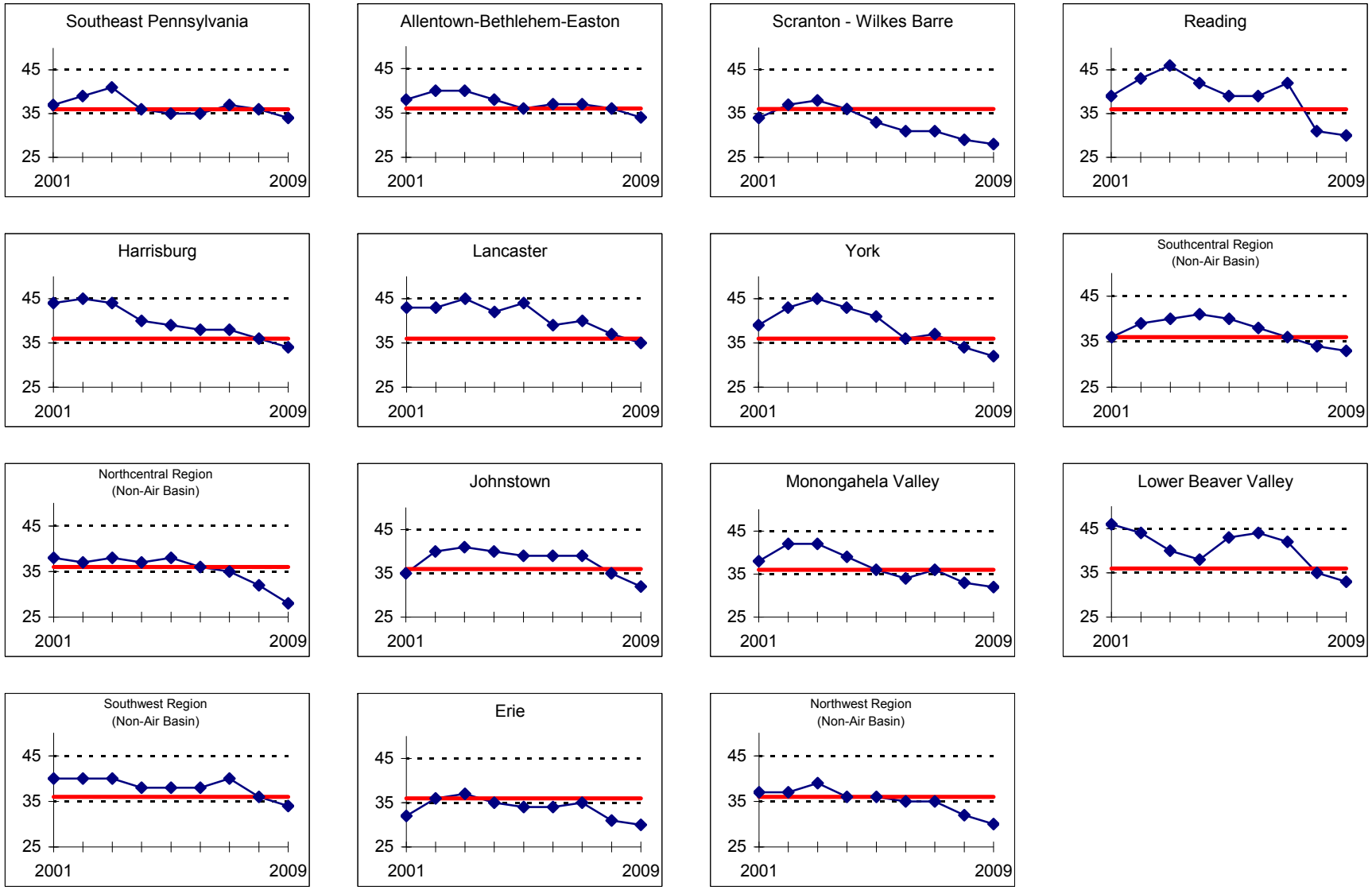
Primary and Secondary National Ambient Air Quality Standard for $PM_{2.5}$
98th Percentile of 24-Hour Average = 0.35 micrograms per cubic meter ($\mu g/m^3$)
(Data are displayed for a single calendar year, but standard is based on a 3-year average)

Figure 4-3. $PM_{-2.5}$ Trends in Pennsylvania, DEP-monitored Regions2001 to 2009, 3-Year Average of Annual Means, in Micrograms per Cubic Meter.



The Annual $PM_{2.5}$ National Ambient Air Quality Standard is 15.0 micrograms/cubic meter, based on a 3-year average.

Figure 4-4. $PM_{-2.5}$ Trends in Pennsylvania, DEP-monitored Regions 2001 to 2009, 3-Year Average of 98th Percentile Concentration Micrograms per Cubic Meter.



The 24-hour $PM_{2.5}$ National Ambient Air Quality Standard is 35 micrograms/cubic meter, based on a 3-year average of 98th percentile 24-hour averages.

Chemical Speciation of $PM_{2.5}$ Particulate Matter

As part of an effort started in 2002, DEP continued in 2009 with constituent analysis (speciation) of $PM_{2.5}$ particulate matter. $PM_{2.5}$ Speciation is a physical or chemical analysis of the captured particles that provide a first order characterization of the metals, ions, and carbon constituents of $PM_{2.5}$.

Physical and chemical speciation data can be used to support several areas of study such as:

- Inputs to air quality modeling analyses used to implement the $PM_{2.5}$ standard;
- Indicators to track the progress of air pollution controls;
- Aids to interpret studies linking health effects to $PM_{2.5}$ constituents;
- Aids to understand the effects of atmospheric constituents on visibility impairment; and
- Aids in designing and siting monitoring networks.

$PM_{2.5}$ is composed of a mixture of primary and secondary particles, both having long lifetimes in the atmosphere (days to weeks), traveling long distances (hundreds to thousands of kilometers) and hence, not easily traced back to their individual sources. Primary particles include soil-related particles such as road dust, construction and agriculture and combustion-related particles. Combustion-related particles come from a variety of sources such as diesel and gasoline vehicles, open burning operations, and utility and commercial boilers. The principle types of secondary aerosols are organics, sulfates and nitrates. Sulfur dioxide, nitrogen oxides and ammonia (ammonium sulfate, ammonium bisulfate, ammonium nitrate) are important precursors to secondary particles.

Knowing the chemical composition of the $PM_{2.5}$ mix is also important for determining sources of pollution. By developing seasonal and annual chemical characterizations of ambient particulates across the nation, this speciation data can be used to perform source attribution analyses, evaluate emission inventories and air quality models, and support health related research studies and regional haze assessments.

The 2009 $PM_{2.5}$ speciation network consisted of 13 sampling sites. Individual site locations, including county and air basin designations, and parameters monitored are listed in Appendix C of this report.

Figure 4-5 provides a percentage-based breakdown, by site, for the major $PM_{2.5}$ constituents -nitrates, sulfates, ammonium, organic carbon, elemental carbon and other trace elements – on average from data collected during 2009.

Figure 4-5. $PM_{2.5}$ Speciation Major Component Distribution, by Mass.

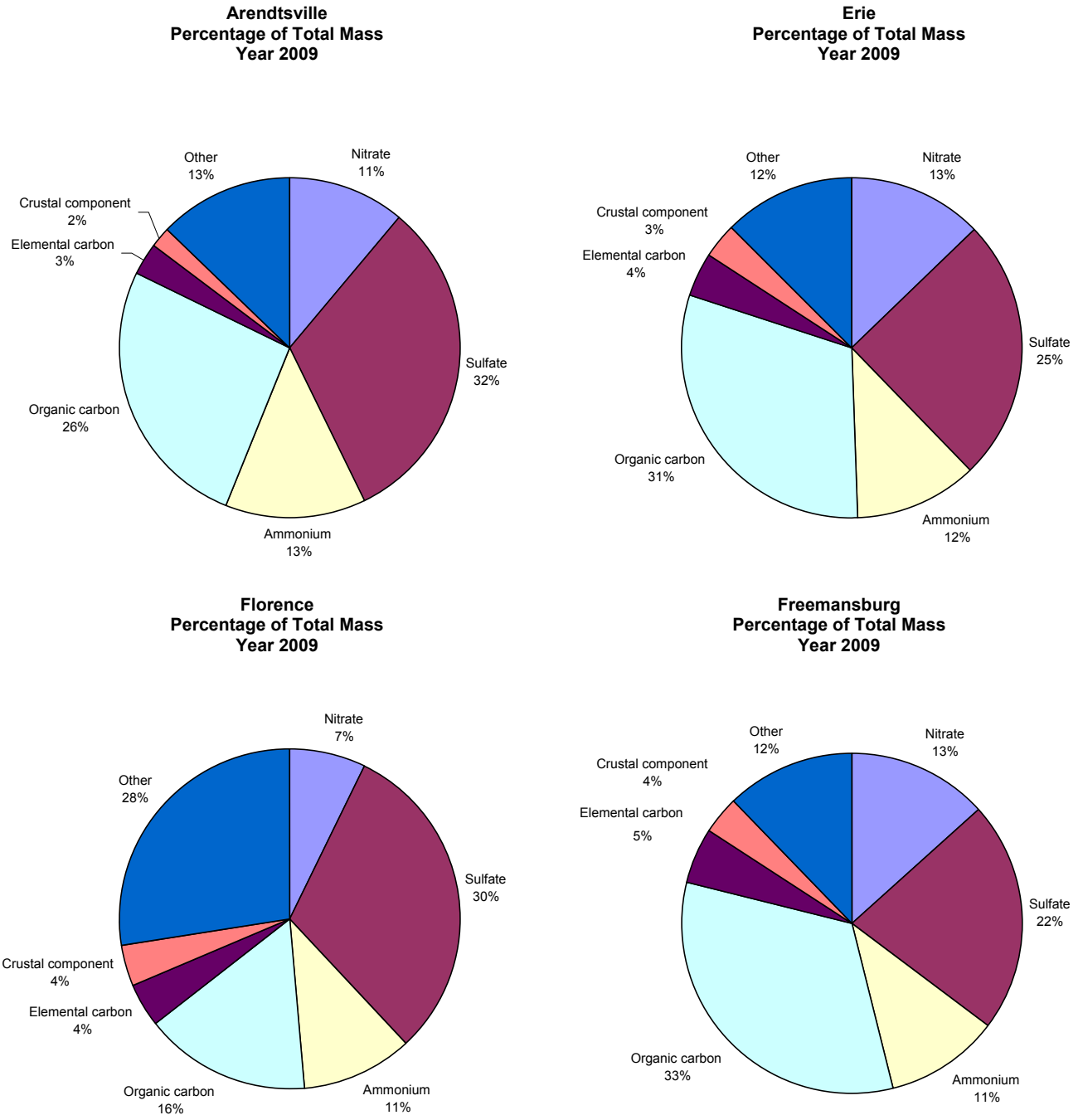
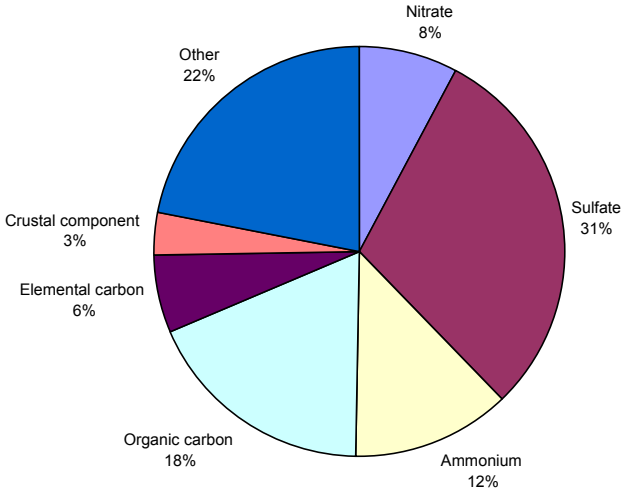
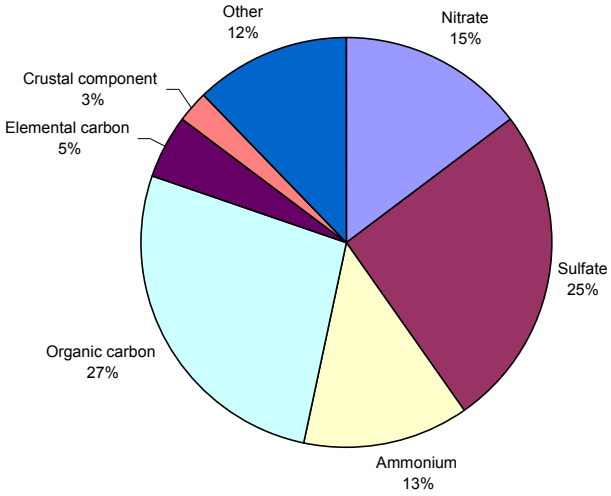


Figure 4-5. $PM_{2.5}$ Speciation Major Component Distribution, by Mass (cont.).

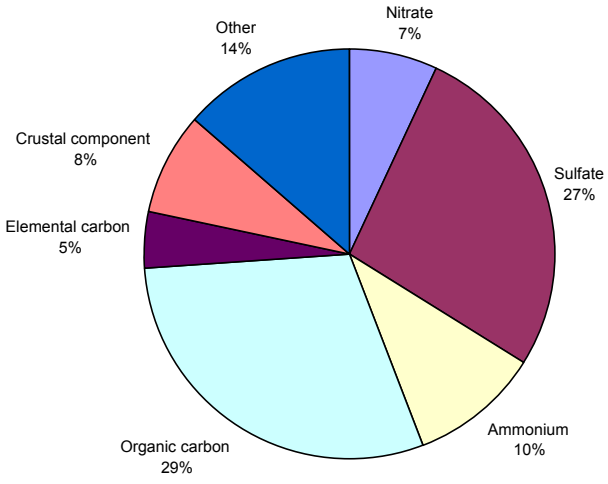
Greensburg
Percentage of Total Mass
Year 2009



Harrisburg
Percentage of Total Mass
Year 2009



Johnstown
Percentage of Total Mass
Year 2009



Lancaster
Percentage of Total Mass
Year 2009

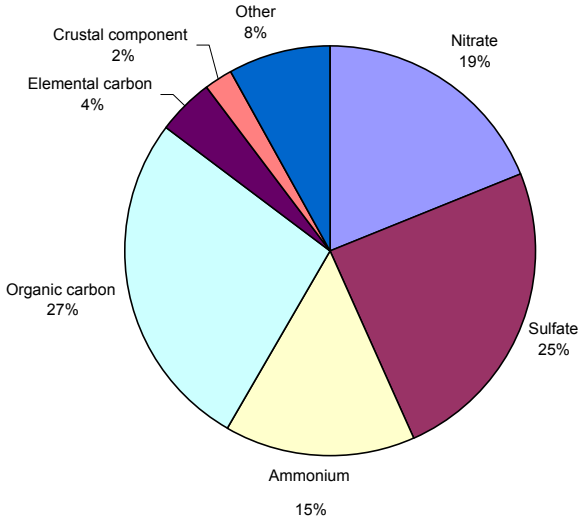


Figure 4-5. $PM_{2.5}$ Speciation Major Component Distribution, by Mass (cont.).

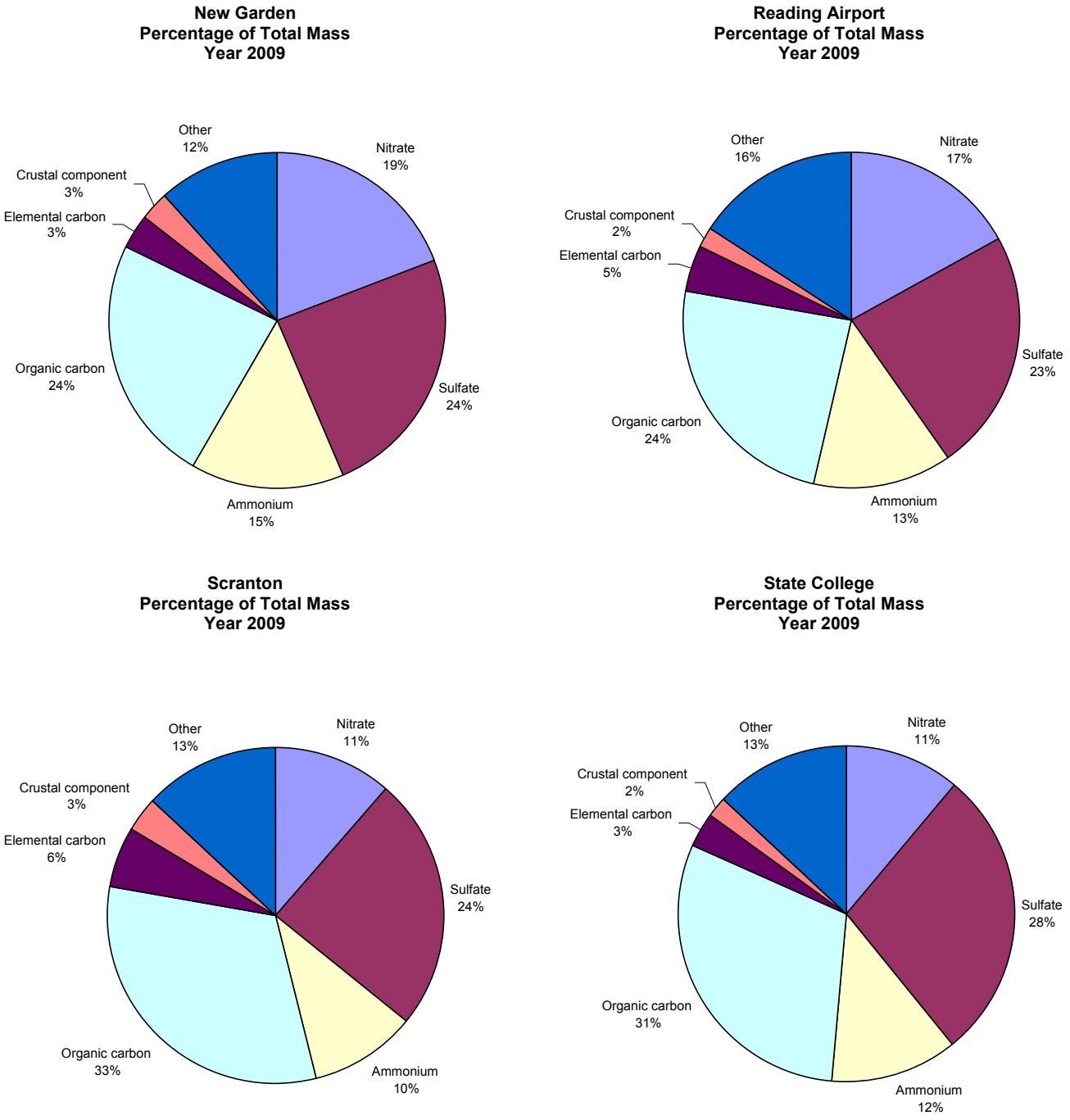
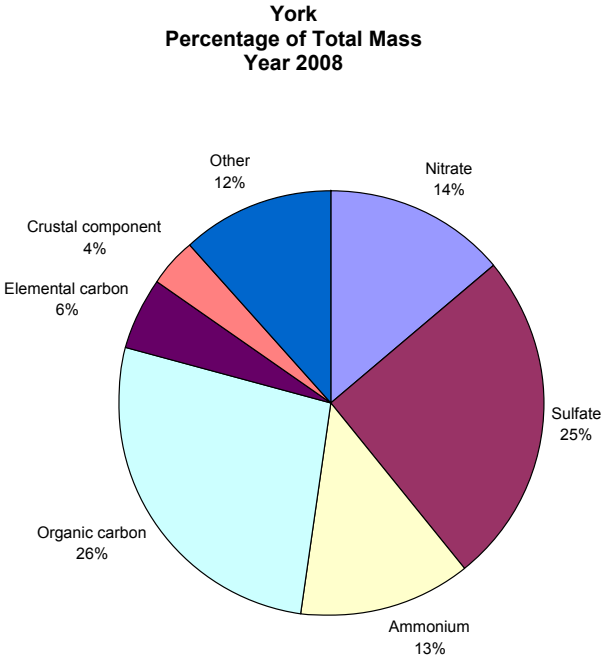


Figure 4-5. $PM_{2.5}$ Speciation Major Component Distribution, by Mass (cont.).



PM_{10} Particulate Matter

On October 17, 2006, EPA revised the national ambient air quality standard (NAAQS) for particulate matter less than or equal to 10 micrometers in diameter (PM_{10}). Citing the lack of evidence linking health problems and long-term exposure to inhalable coarse particle pollution, EPA revoked the annual PM_{10} primary (human health-based) and secondary (environmental welfare-based) standard, while implementing a tightened fine particulate ($PM_{2.5}$) standard. The 24-hour PM_{10} air quality standard was not changed and remains at 150 micrograms per cubic meter, not to be exceeded more than once per year, as both a primary and secondary standard.

The 2009 DEP PM_{10} monitoring network consisted of 15 sites. Individual site locations, including county and air basin designations, and parameters monitored are listed in Appendix C of this report. All sites met the NAAQS for PM_{10} in 2009.

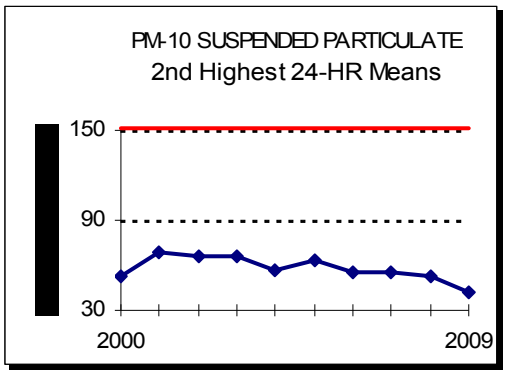
PM_{10} data for 2009 for all DEP monitoring sites are summarized in Appendix B, Table B-18. No site exceeded the level of the current 24-hour PM_{10} air quality standard during 2009, rather all sites yielded concentration averages less than one-half the level of the NAAQS for PM_{10}.

Figures 4-6 (on the following page) qualifies the second highest daily PM_{10} 24-hour maximums and annual means, by county in 2009. No monitored county contained sites exceeding the level of the current or former PM_{10} NAAQS.

Figure 4-7 displays a 10-year trend of the statewide second daily maximum 8-hour PM_{10} concentration. Data points on or above the solid line represent an exceedance of the NAAQS.

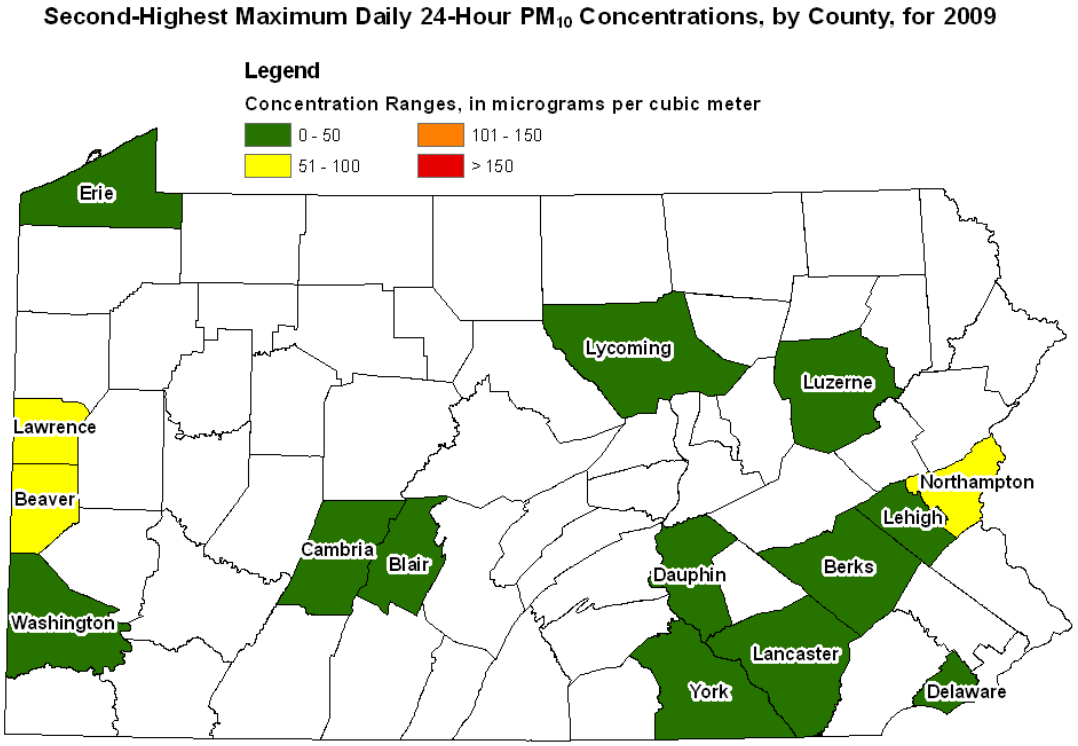
During the past 10 years, PM_{10} levels have consistently remained at or less than one-half the PM_{10} NAAQS, improving approximately 21% overall.

Figure 4-7. Trend in Second Maximum 24-hour Average PM_{10} Concentrations, DEP Monitors Statewide, 2000-2009.

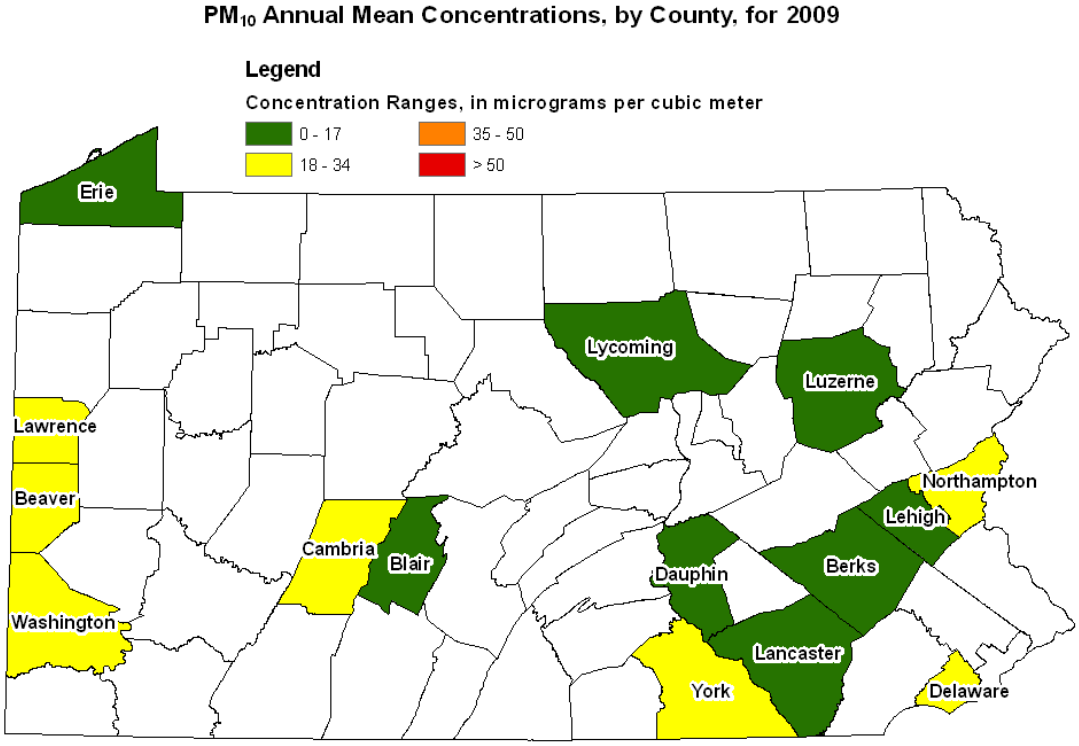


Twenty-four hour average historical trends for individual air basin and non-air basin regions are shown in Figure 4-8. Data points on or above the solid line represent an exceedance of the annual NAAQS for sulfur dioxide. The trend graphs demonstrate that most regions followed the state-wide trend of an improvement over the previous year. All regions remained under the 24-hour NAAQS for PM_{10} in 2009. PM_{10} historical data from 2000 to 2009 are given in Appendix B, Table B-19 for DEP sites that operated during the 10-year period.

Figure 4-6. 2009 PM_{10} Concentration Ranges by County, for DEP-monitored Counties.

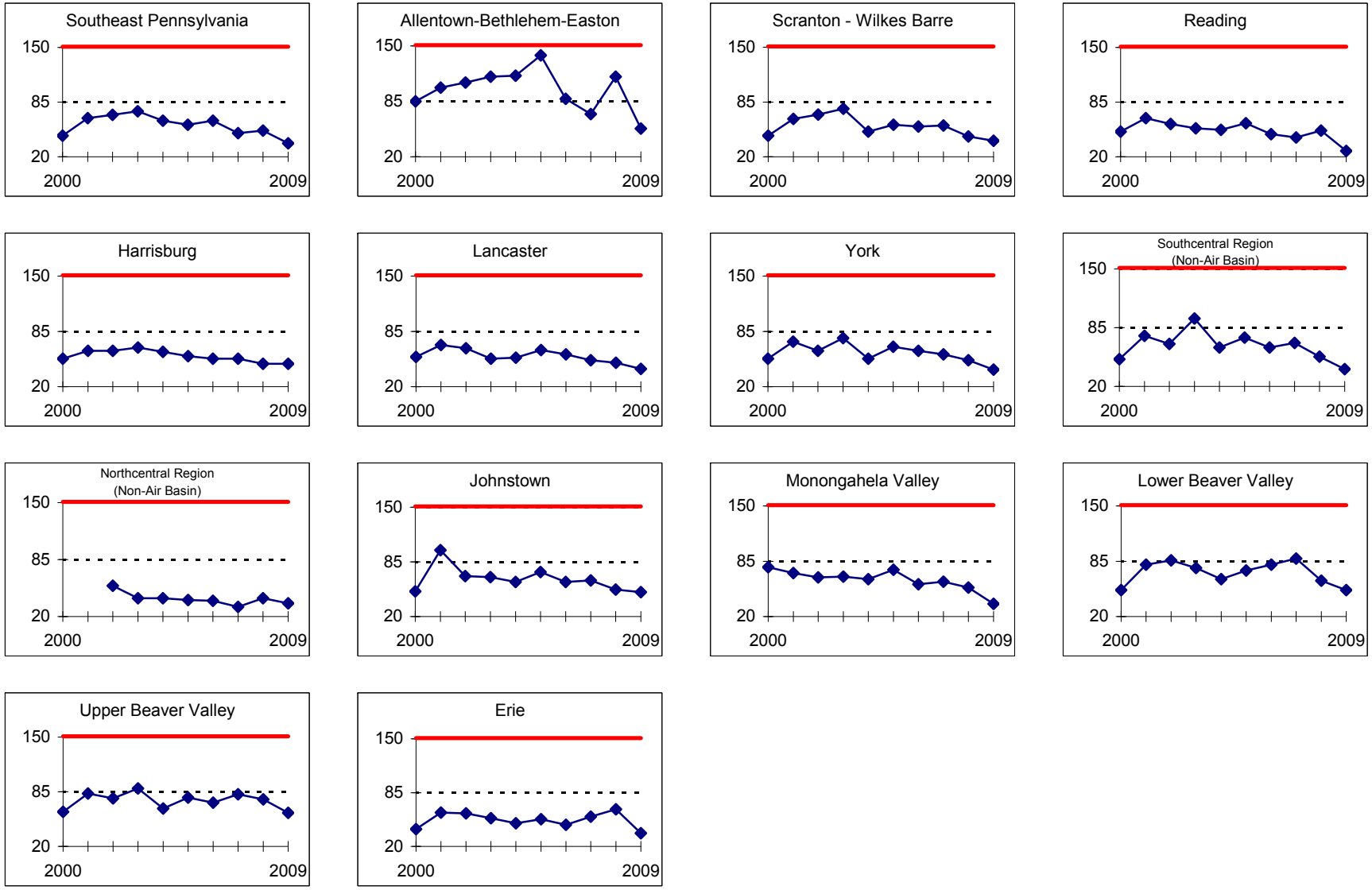


Primary and Secondary National Ambient Air Quality Standard for PM_{10}
Daily Maximum 24-Hour Average = 150 micrograms per cubic meter ($\mu g/m^3$), not to be exceeded more than once per year



Former Primary and Secondary National Ambient Air Quality Standard for PM_{10}
Annual Mean = 50 micrograms per cubic meter ($\mu g/m^3$)
(Data are displayed for a single calendar year, but standard is based on a 3-year average)

Figure 4-8. PM_{10} Trends in Pennsylvania, DEP-monitored Regions 2000 to 2009, Second 24-Hour Maximums, in Micrograms per Cubic Meter.



PM_{10} 24-Hour Mean National Ambient Air Quality Standard is 150 micrograms per cubic meter (not to be exceeded more than once per year), based on a 3-year average.

Lead

Effective January 12, 2009, EPA strengthened the primary lead standard to provide increased protection for children and other at-risk populations against an array of adverse health effects related to lead exposure, most notably including neurological effects in children, including neurocognitive and neurobehavioral effects. The secondary standard (environmental welfare-based) was set identical to the primary (human health-based) standard. The current primary and secondary national ambient air quality standard (NAAQS) for lead is 0.15 micrograms per cubic meter, based on a maximum 3-month concentration average during a 3-year period. This revision represented a ten-fold strengthening of the lead NAAQS over the previous level of 1.5 micrograms per cubic meter, which had remained unchanged since 1978.

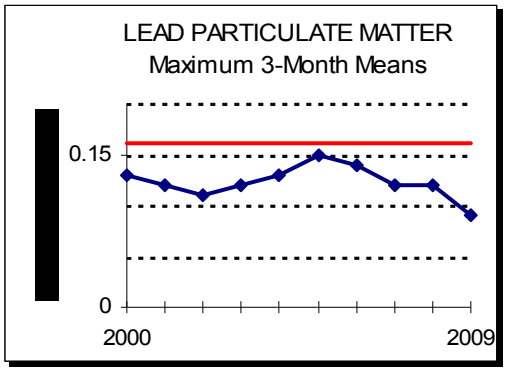
Lead levels in ambient air concentrations improved dramatically once lead was removed from gasoline in the mid-seventies. Ambient air concentrations of lead remain consistently low, although they can be affected by local influences.

The DEP 2009 lead monitoring network consisted of seven discrete monitoring sites. Individual site locations, including county and air basin designations, and parameters monitored are listed in Appendix C of this report. All sites, except the Laureldale site in Berks County, met the NAAQS for lead in 2009.

Lead data for 2009 for all DEP monitoring sites are summarized in Appendix B, Tables B-20. The Laureldale site in Berks County yielded a quarterly mean exceeding the level of the lead air quality standard during 2009. Higher lead levels recorded at sites located in Laureldale (Reading Air Basin), Lyons and Vanport (Lower Beaver Valley Air Basin) are due to the influence of lead point sources close to the monitoring sites.

Figure 4-9 displays the statewide composite average of the maximum 3-month average concentration from 2000 to 2009. Data points on or above the solid line represent an exceedance of the annual NAAQS for lead. In general, lead levels have remained relatively steady or decreased over the past 10 years.

Figure 4-9. Trend in Maximum 3-Month Average Lead Concentrations, DEP Monitors Statewide, 2000-2009.

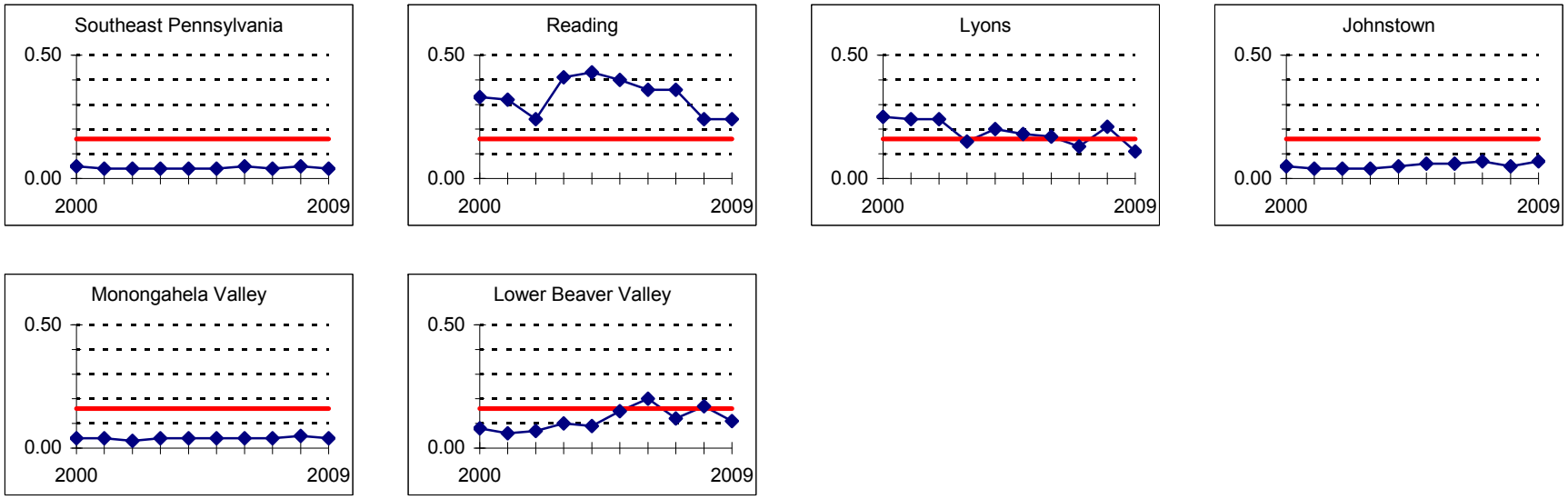


Maximum 3-month average historical trends for individual air basin and non-air basin regions are shown in Figure 4-10. Data points on or above the solid line represent an exceedance of the level of the lead NAAQS. The trend graphs demonstrate that most regions have either remained steady or followed the state-wide trend of a general improvement over the past 10 years.

Lead historical data from 2000 to 2009 are given in Appendix B, Table B-21 for DEP sites that operated during the 10-year period.

Analyses for total suspended particulates (TSP), sulfates and nitrates are also performed on the same sample collection filters that are analyzed for lead. For reference purposes, TSP, sulfate and nitrate data are given in Appendix B, Tables 22-25. Currently, there are no standards for these pollutants.

Figure 4-10. Lead Trends in Pennsylvania, DEP-monitored Regions 2000 to 2009, Highest 3-Month Average, in Micrograms per Cubic Meter.



Air Toxics

Hazardous air pollutants (HAPs), commonly referred to as air toxics, are pollutants known to cause or are 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 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.

For information on PA's Air Toxics monitoring, including site monitoring site locations and measured concentration data, visit us through the Department's website at http://www.dep.state.pa.us/dep/deputate/airwaste/aq/toxics/toxics.htm.

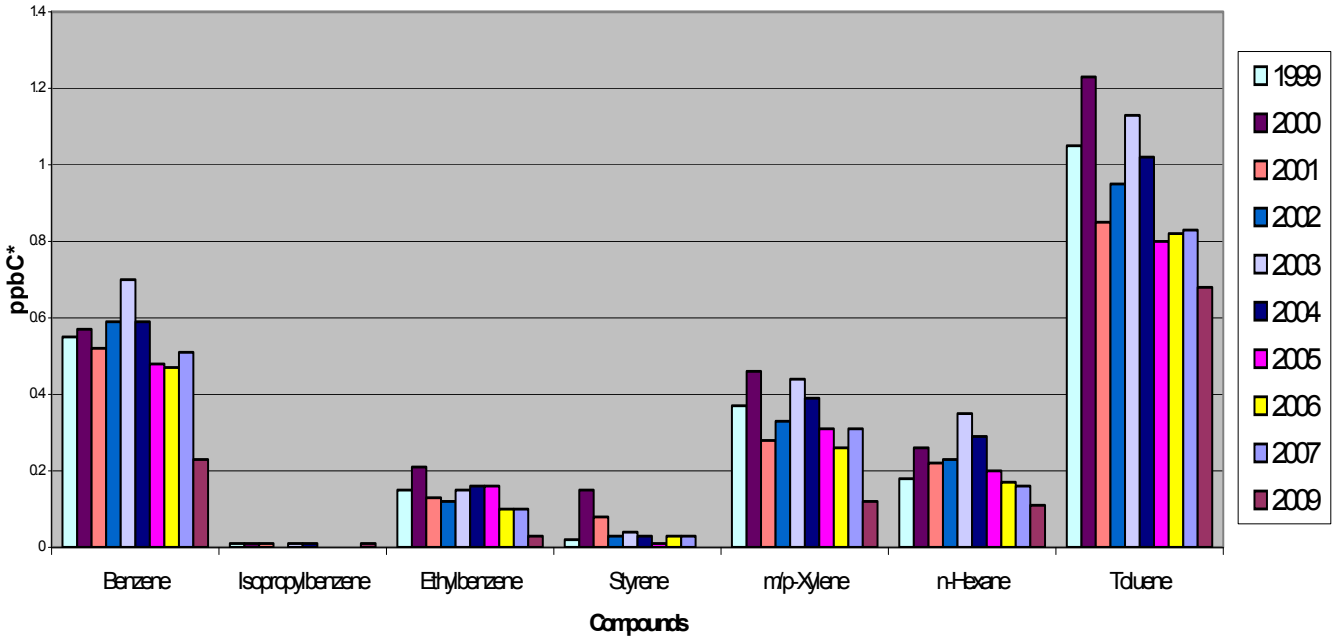
DEP performs ambient air monitoring of several air toxics at a Photochemical Assessment Monitoring Station (PAMS) site in Arendtsville, Adams County. This site studies the transport of ozone precursors from urban to rural areas. The volatile organic compounds (VOCs) routinely measured include several 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. DEP operates the Arendtsville site from May to October.

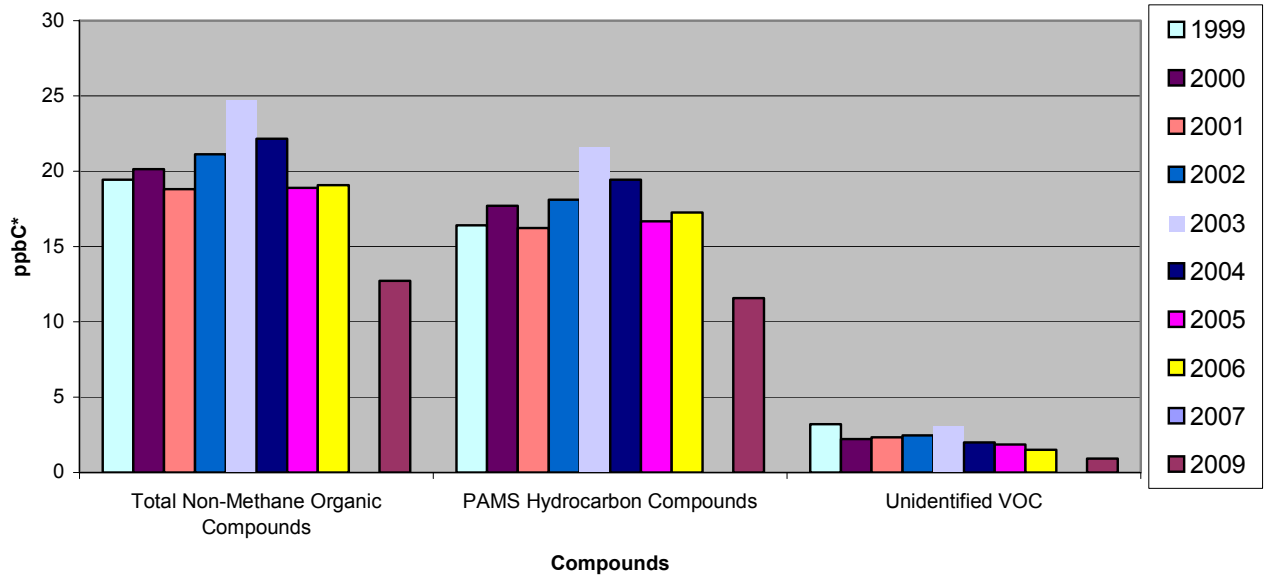
Data for PAMS compounds measured at the Arendtsville site are summarized in Appendix B, Table B-26. There are no federal or state air quality standards for the monitored compounds. Figure 4-11 on the following page displays the trend of average concentrations of selected air toxics at the Arendtsville site from 1999 until 2009.

DEP performs air toxics monitoring for mercury at a site near Lancaster. This site is designed to comply with EPA's expanded national toxic monitoring program. Data supplied from this monitoring site, and the expanded national network, assists in rulemaking and model validation. EPA uses these computer models to estimate lifetime chemical exposures and subsequent health-effect risks. The risk to human health from direct exposure by inhalation to elemental mercury vapor in ambient air is believed to be well below any level of concern. However, mercury deposited to surface waters is concentrated in the food chain and may reach levels in fish that are unsafe for consumption. There are no federal or state ambient air quality standards for mercury.

Data from the Lancaster site for 2009, as well as multi-year trend data, are summarized in the 2009 Elemental Mercury Vapor Summary, Appendix D of this document.

Figure 4-11. Air Toxics Trends at the Arendtsville Monitoring Site (1999-2009), Annual Means, in Parts per Billion Carbon (ppbC). .





CHAPTER 5. AIR QUALITY INDEX

The Air Quality Index (AQI) is the primary tool used by numerous state and local agencies, including DEP, for measuring and reporting health effects of six primary air pollutants – ozone (O_3), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), suspended particulate matter 10 microns or less in size (PM_{10}) and 2.5 microns or less ($PM_{2.5}$). The AQI is also used widely for public air quality forecasting purposes.

The AQI has been in use since October 1999, when EPA established the index to replace the former Pollutant Standards Index (PSI). The AQI reflected updated health information considered in the 1997 EPA revisions of the air quality standards for ground-level ozone (smog) and fine particulate matter. The revised index ensures 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 AQI added an additional air quality category to the former PSI categories just above the level of the standard, for each pollutant. The AQI index established a category from 101 -150 characterized as "unhealthy for sensitive groups" and a category of 151 - 200 as "unhealthy". The AQI also included modifications to the ozone sub-index (an 8-hour sub-index) and a sub-index for fine particulate matter.

In 2008, the AQI breakpoints for ozone were revised to reflect the new 8-hour National Ambient Air Quality Standard (NAAQS) for ozone.

The AQI is used extensively by DEP and is published on DEP's web site with hourly updates at http://www.dep.state.pa.us/dep/deputate/airwaste/aq/aqm/aqi.htm. The breakpoints for the AQI in terms of pollutant concentrations are shown in Table 3.

Table 5-1. Breakpoints for the Air Quality Index (AQI).

O_3 (ppm) 8 - hour	O_3 (ppm) 1 – hour([1])	$PM_{2.5}$ ($\mu g/m^3$)	PM_{10} ($\mu g/m^3$)	CO (ppm)	SO_2 (ppm) 1-hour	NO_2 (ppm)	AQI	Category
0.000 – 0.059	-	0.0 – 15.4	0 – 54	0.0 – 4.4	0.000 – 0.034	([2])	0 - 50	Good
0.060 – 0.075	-	15.5 – 40.4	55 – 154	4.5 – 9.4	0.035 – 0.144	([2])	51 - 100	Moderate
0.076 – 0.095	0.125 – 0.164	40.5 – 65.4	155 - 254	9.5 – 12.4	0.145 – 0.224	([2])	101 - 150	Unhealthy for sensitive groups
0.096 – 0.115	1.65 – 0.204	65.5 – 150.4	255 – 354	12.5 – 15.4	0.225 – 0.304	([2])	151 - 200	Unhealthy
0.116 – 0.374	0.205 – 0.404	150.5 – 250.4	355 – 424	15.5 – 30.4	0.305 – 0.604	0.65 – 1.24	201 - 300	Very unhealthy
([3])	0.405 – 0.504	250.5 – 350.4	425 – 504	30.5 – 40.4	0.605 – 0.804	1.25 – 1.64	301 - 400	Hazardous
([3])	0.505 – 0.604	350.5 – 500.4	505 - 604	40.5 – 50.4	0.805 – 1.004	1.65 – 2.04	401 - 500	Hazardous

[1] Agencies are generally required to report the AQI based on 8-hour ozone values. However, there are a small number of areas where an AQI based on 1-hour ozone values would be more precautionary. In these cases, in addition to calculating the 8-hour ozone index value, the 1-hour ozone index value may be calculated and the maximum of the two values is reported.
[2] NO_2 has no short-term NAAQS and can generate an AQI only above an AQI value of 200.
[3] When 8-hour Ozone concentrations exceed 0.374 ppm, AQI values of 301 or higher must be calculated with 1-hour concentrations.

CHAPTER 6. PRECISION AND ACCURACY

DEP conducts regularly scheduled precision checks and performance audits for accuracy on all air monitoring equipment. Precision checks are performed every two weeks for continuous gaseous pollutants - carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), and ozone (O_3). Precision checks are performed every sampling day (once every sixth day) for discrete method pollutants – total suspended particulates (TSP), particulate matter 10 microns or less in size (PM_{10}), particulate matter 2.5 microns or less in size ($PM_{2.5}$) and lead (Pb). Performance audits are conducted by PA DEP quality assurance personnel on all monitoring equipment annually for the purpose of assessing data accuracy.

Precision checks for continuous gaseous pollutant monitors are achieved by challenging the monitor with a low-level gas of known pollutant concentration, and assessing the instrument's response. For discrete method pollutants, precision is assessed by comparing same-day pollutant concentration data between primary monitors and monitors collocated at selected sites for quality assurance purposes.

Accuracy for continuous gaseous pollutant monitors is achieved by challenging the equipment with three known concentration levels of audit gas, and assessing the instrument's response. The specific pollutant concentration ranges for five audit levels for each pollutant are set forth in the Code of Federal Regulations (40CFR Part 58, Appendix A), and are shown in Table 6-1 below. For each pollutant network, three consecutive audit levels from these five are utilized in the annual performance audit. For discrete particulate parameters, an annual audit of the monitor's flow rate determines accuracy. For lead, there is an additional analytical accuracy check. As part of the EPA sponsored National Performance Audit Program (NPAP), air filters with known concentrations of lead are sent to PA DEP's Bureau of Laboratories to verify laboratory analysis accuracy.

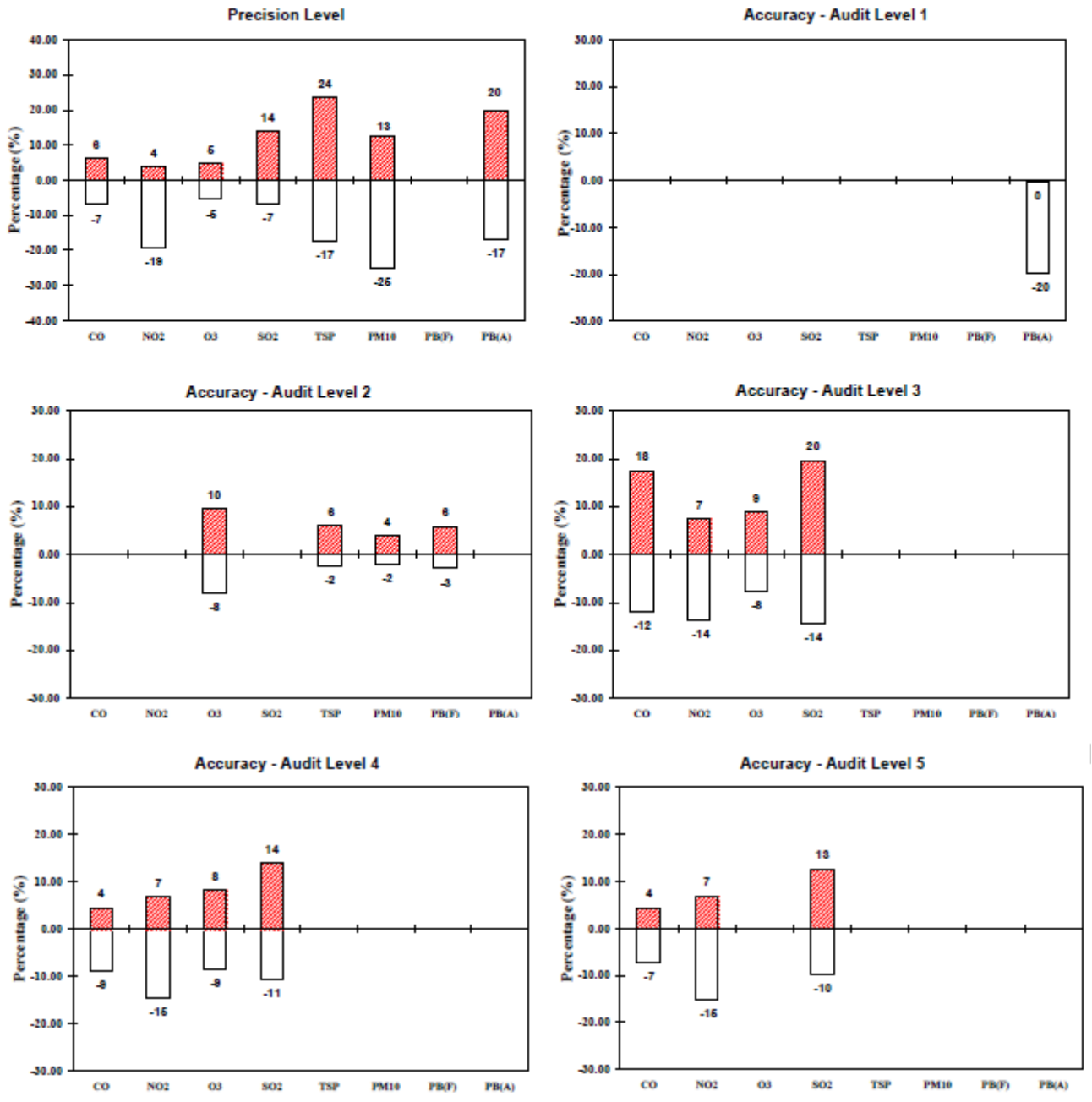
Data obtained from the precision checks, performance audits and NPAP audits are converted to 95 percent upper and lower probability limits using standard statistical methods. Figure 6-1 on the following page summarizes the 95 percent probability limits from all four quarterly reporting periods within the calendar year, for each of PA DEP's criteria pollutant networks. The values presented are calculated from weighted arithmetic averages for each quarter's probability limits. Note that there are two values for the lead network accuracy assessment; PB(F) refers to the flow rate audit performed by PA DEP quality assurance personnel, while PB(A) refers to the NPAP analytical audit.

For precision, acceptable 95 percent probability limits for precision are met when the instrument response is within 15 percent for all parameters. For accuracy, acceptable 95 percent probability limits are met when the instrument response is within 20 percent for continuous gaseous parameters, and within 15 percent for discrete particulate parameters.

Table 6-1. Audit Levels for Annual Performance Evaluations.

	Concentration Range, parts per million (ppm)			
Audit Level	**O_3**	**SO_2**	**NO_2**	**CO**
1 …….	0.02–0.05	0.0003–0.005	0.0002–0.002	0.08–0.10
2 …….	0.06–0.10	0.006–0.01	0.003–0.005	0.50–1.00
3 …….	0.11–0.20	0.02–0.10	0.006–0.10	1.50–4.00
4 …….	0.21–0.30	0.11–0.40	0.11–0.30	5–15
5 …….	0.31–0.90	0.41–0.90	0.31–0.60	20–50

Figure 6-1. 2009 Annual Precision and Accuracy Probability Limits, 95% Lower/Upper Limits.



CHAPTER 7. EMISSION INVENTORIES

Point Sources

An emission inventory is a compilation of data describing emissions from different sources of air pollution. The source may be a utility, refinery, automobile, train, etc. Each type of source can be placed into a point, area or mobile source category. A point source is a stationary source that can best be described as a manufacturing plant or a similar entity having one or more emissions units discharging air emissions into the atmosphere, and located at one specific geographic area.

Emissions from point sources are reported for 65 of the Commonwealth's 67 counties. Point source emissions from sources located in Allegheny County are reported directly to EPA by the Allegheny County Health Department. Point source emissions from sources located in Philadelphia Counties are reported directly by the Philadelphia County Health Department, Air Management Services.

There are many other purposes and uses of an emission inventory but in general it is the primary tool to identify where the State currently stands in terms of air pollution and what needs to be done in the future to reduce emissions. An inventory serves as a starting point, or a baseline, which allows the Commonwealth to develop goals and how best to meet them.

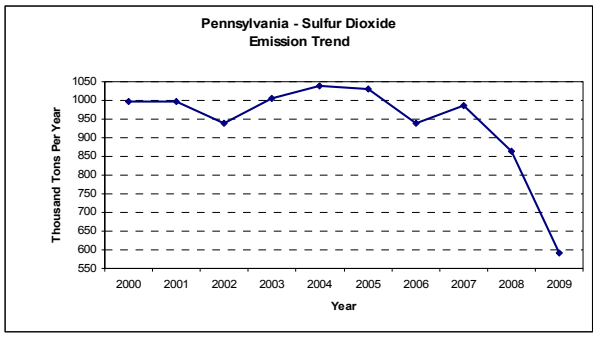
Applications for the use of emission inventory data are numerous. In addition to use as a building block in developing air quality control strategies and maintenance strategies, other specific uses of this data include:

- State oversight of point sources
- Public requests and web sites
- Use in the EPA National Annual Trends Report
- Emission trading
- Compliance demonstrations
- Emission fee programs
- To develop new methodologies and techniques to estimate emissions (emission factors)
- Document regulatory impact assessments
- Permitting
- Air Quality assessments
- Human exposure modeling

Statewide trends for the most common point source pollutants are shown below. These trends do not include data from Allegheny or Philadelphia County.

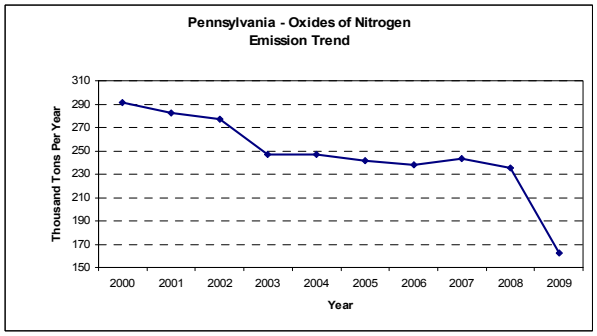
The statewide trend for point source sulfur dioxide emissions for 2000 to 2009 is shown in Figure 7-1, representing a 41% decrease over the last ten years.

Figure 7-1. Trend in Sulfur Dioxide Point Source Emissions, 2000-2009.



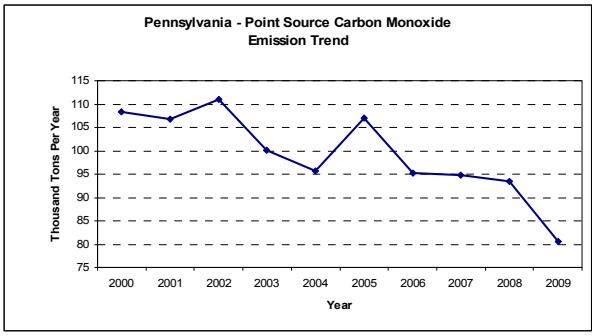
The statewide trend for point source nitrogen oxide emissions for 2000 to 2009 is shown in Figure 7-2, representing a 44% decrease over the last ten years.

Figure 7-2. Trend in Nitrogen Oxide Point Source Emissions, 2000-2009.



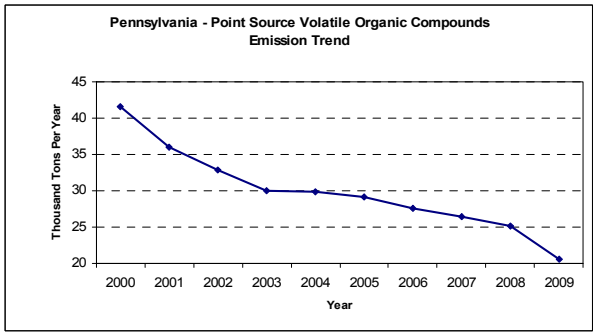
The statewide trend for point source carbon monoxide emissions for 2000 to 2009 is shown in Figure 7-3, representing a 26% decrease over the last ten years.

Figure 7-3. Trend in Carbon Monoxide Point Source Emissions, 2000-2009.



The statewide trend for point source volatile organic compounds (VOCs) emissions for 2000 to 2009 is shown in Figure 7-4, representing a 51% decrease over the last ten years.

Figure 7-4. Trend in Volatile Organic Compound Point Source Emissions, 2000-2009.



Historical data for each of these pollutants is listed by county in Appendix B, Tables B-26-29.

APPENDIX A. AIR POLLUTION CONTROL AGENCIES IN PENNSYLVANIA

Allegheny County Health Department
39th Street and Penn Avenue
Pittsburgh, PA 15201
(412) 578-8104
Website: http://www.achd.net/
(Choose “Environmental Health” under the “Divisions” tab, then “Air Quality”

City of Philadelphia
Department of Public Health
Air Management Services
321 University Avenue
Philadelphia, PA 19104
(215) 685-7584
Website: http://www.phila.gov/health/airmanagement/

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
Website: http://www.depweb.state.pa.us/
(Choose “Air” from the left-hand menu)

APPENDIX B. DATA TABLES

Table B-1. Ozone Summary (8-Hour).

Year: 2009 (April – October)

Units: parts per million

Site Name	PA Site Code	Number of Valid Days	Percent Valid Data	1st Daily Max 8-hour Mean	1st Daily Max Date MM/DD	2nd Daily Max 8-hour Mean	2nd Daily Max Date MM/DD	3rd Daily Max 8-hour Mean	3rd Daily Max Date MM/DD	4th Daily Max 8-hour Mean	4th Daily Max Date MM/DD
Southeast Pennsylvania Air Basin											
Bristol	P01	213	100	0.077	07/15	0.076	06/26	0.074	07/16	0.074	08/16
Chester	P11	210	98	0.072	06/26	0.070	07/15	0.070	08/15	0.065	08/08
Norristown	P21	214	100	0.075	07/15	0.071	06/26	0.071	08/17	0.070	04/27
New Garden Airport	P30	210	98	0.078	06/26	0.069	07/15	0.068	04/27	0.067	04/25
Allentown-Bethlehem-Easton Air Basin											
Allentown	A19	211	99	0.073	05/22	0.071	05/23	0.069	04/27	0.069	08/17
Easton	A20	213	100	0.073	05/22	0.072	05/23	0.066	04/27	0.066	08/17
Freemansburg	A25	208	97	0.073	05/23	0.072	05/22	0.069	08/17	0.068	04/27
Scranton-Wilkes-Barre Air Basin											
Scranton	S01	213	100	0.067	05/22	0.065	05/21	0.064	05/20	0.061	04/27
Nanticoke	S26	213	100	0.067	05/21	0.066	05/22	0.064	05/20	0.063	05/13
Wilkes-Barre	S28	213	100	0.064	05/22	0.060	05/21	0.058	05/20	0.055	04/27
Peckville	S29	214	100	0.074	05/22	0.072	05/21	0.070	05/20	0.068	04/27
Northeast Region Non-Air Basin											
Swiftwater	230	166	78	0.065	04/18	0.058	04/09	0.058	04/17	0.057	07/25
Reading Air Basin											
Reading Airport	R03	213	100	0.079	05/22	0.075	07/15	0.073	04/27	0.072	08/17
Harrisburg Air Basin											
Harrisburg	H11	212	99	0.070	05/21	0.070	06/08	0.066	05/22	0.063	04/18
Lancaster Air Basin											
Lancaster	L01	209	98	0.076	07/15	0.074	06/08	0.071	06/25	0.069	05/22
York Air Basin											
York	Y01	212	99	0.076	06/08	0.073	05/22	0.068	05/21	0.068	07/15
Southcentral Region Non-Air Basin											
Perry County	305	208	97	0.071	05/21	0.068	04/18	0.066	04/19	0.063	05/13
Hershey	306	213	100	0.073	05/21	0.072	05/22	0.071	06/08	0.066	04/18
Altoona	308	213	100	0.069	05/22	0.066	05/21	0.066	08/26	0.065	04/19
Kutztown	311	213	100	0.069	05/22	0.069	06/08	0.067	04/27	0.063	05/23
Methodist Hill	313	202	94	0.065	05/22	0.064	05/21	0.059	04/19	0.059	05/20
Biglerville	D14	214	100	0.075	05/21	0.069	05/22	0.065	05/20	0.064	06/08
Lancaster Downwind	L12	194	91	0.069	06/08	0.068	05/22	0.068	06/26	0.066	04/27
York Downwind	Y11	212	99	0.078	07/15	0.067	04/25	0.067	07/20	0.066	05/22

Primary and Secondary 8-hour National Ambient Air Quality Standard

0.075 parts per million for 4th daily maximum 8-hour mean, averaged over 3 years

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-1. Ozone Summary (8-Hour) (cont.).

Year: 2009 (April – October)

Units: parts per million

Site Name	PA Site Code	Number of Valid Days	Percent Valid Data	1st Daily Max 8-hour Mean	1st Daily Max Date MM/DD	2nd Daily Max 8-hour Mean	2nd Daily Max Date MM/DD	3rd Daily Max 8-hour Mean	3rd Daily Max Date MM/DD	4th Daily Max 8-hour Mean	4th Daily Max Date MM/DD
Northcentral Region Non-Air Basin											
State College	409	211	99	0.069	05/22	0.068	04/18	0.067	05/21	0.064	04/27
Montoursville	410	206	96	0.069	05/21	0.067	05/22	0.066	05/20	0.064	04/27
Moshannon	D09	204	95	0.072	04/18	0.071	05/21	0.071	05/22	0.066	04/27
Tioga County	D13	197	92	0.067	05/21	0.065	04/18	0.065	05/20	0.064	05/22
Johnstown Air Basin											
Johnstown	J01	209	98	0.068	05/23	0.065	05/22	0.064	04/18	0.064	04/19
Monongahela Valley Air Basin											
Charleroi	M01	213	100	0.069	05/23	0.068	04/18	0.068	06/15	0.068	09/05
Lower Beaver Valley Air Basin											
Beaver Falls	B11	213	100	0.070	08/14	0.068	05/15	0.068	05/22	0.068	06/15
Hookstown	B23	208	97	0.068	05/21	0.067	05/23	0.066	04/18	0.066	05/20
Brighton Township	B27	208	97	0.069	05/21	0.069	05/22	0.069	06/15	0.068	04/18
Allegheny County Air Basin											
Pittsburgh	D12	211	99	0.071	05/22	0.068	06/25	0.067	05/21	0.067	06/06
Southwest Region Non-Air Basin											
Florence	504	207	97	0.071	05/21	0.068	05/22	0.067	04/18	0.065	05/15
Washington	508	211	99	0.068	05/22	0.065	06/15	0.064	06/25	0.063	04/18
Murrysville	510	213	100	0.068	05/22	0.068	05/23	0.068	08/16	0.064	05/15
Kittanning	512	213	100	0.080	05/21	0.072	05/22	0.072	06/25	0.071	07/15
Greensburg	513	208	97	0.070	05/23	0.067	05/22	0.066	05/21	0.065	06/25
Holbrook	514	214	100	0.074	04/18	0.070	09/04	0.069	05/23	0.066	04/17
Strongstown	515	210	98	0.078	05/22	0.073	05/21	0.069	05/23	0.066	04/27
Upper Beaver Valley Air Basin											
New Castle	B21	214	100	0.071	08/16	0.064	05/15	0.064	06/06	0.063	04/18
Erie Air Basin											
Erie	E10	210	98	0.082	05/21	0.074	04/18	0.073	05/20	0.069	06/06
Northwest Region Non-Air Basin											
Farrell	606	207	97	0.076	06/06	0.071	05/20	0.071	06/25	0.070	04/18

Primary and Secondary 8-hour National Ambient Air Quality Standard

0.075 parts per million for 4th daily maximum 8-hour mean, averaged over 3 years

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-2. Ozone Summary (1-Hour).

Year: 2009 (April – October)

Units: parts per million

Site Name	PA Site Code	Number of Valid Days	Percent Valid Data	1st Daily Max 1-hour Mean	1st Daily Max Date MM/DD	2nd Daily Max 1-hour Mean	2nd Daily Max Date MM/DD	3rd Daily Max 1-hour Mean	3rd Daily Max Date MM/DD	4th Daily Max 1-hour Mean	4th Daily Max Date MM/DD
Southeast Pennsylvania Air Basin											
Bristol	P01	213	99	0.095	06/26	0.090	08/17	0.087	07/15	0.086	04/28
Chester	P11	210	98	0.093	07/15	0.081	08/08	0.078	06/26	0.078	07/10
Norristown	P21	214	100	0.090	07/15	0.082	08/17	0.081	06/08	0.080	06/26
New Garden Airport	P30	213	99	0.092	06/26	0.089	07/15	0.084	04/27	0.083	06/10
Allentown-Bethlehem-Easton Air Basin											
Allentown	A19	211	98	0.082	04/27	0.082	05/22	0.081	05/23	0.075	06/26
Easton	A20	213	99	0.086	05/23	0.079	05/22	0.077	04/27	0.075	07/20
Freemansburg	A25	208	98	0.084	05/23	0.079	05/22	0.076	04/27	0.075	06/26
Scranton-Wilkes-Barre Air Basin											
Scranton	S01	213	99	0.073	05/21	0.072	05/22	0.070	05/20	0.067	08/17
Nanticoke	S26	213	100	0.076	05/21	0.070	05/22	0.068	05/20	0.067	05/13
Wilkes-Barre	S28	213	99	0.068	05/21	0.066	05/22	0.063	05/20	0.061	08/04
Peckville	S29	214	100	0.079	05/22	0.077	05/20	0.077	05/21	0.075	08/17
Northeast Region Non-Air Basin											
Swiftwater	230	168	78	0.067	04/18	0.064	08/17	0.063	08/01	0.062	04/09
Reading Air Basin											
Reading Airport	R03	214	99	0.093	07/15	0.089	05/22	0.084	04/27	0.080	08/16
Harrisburg Air Basin											
Harrisburg	H11	214	99	0.084	06/08	0.080	05/22	0.076	05/21	0.070	05/23
Lancaster Air Basin											
Lancaster	L01	211	98	0.097	07/15	0.087	06/08	0.084	06/25	0.081	08/17
York Air Basin											
York	Y01	212	99	0.084	06/08	0.083	05/22	0.077	07/25	0.074	04/25
Southcentral Region Non-Air Basin											
Perry County	305	209	98	0.077	05/21	0.072	05/23	0.071	04/18	0.071	04/19
Hershey	306	213	99	0.085	05/22	0.080	05/21	0.077	06/08	0.072	07/25
Altoona	308	214	99	0.074	05/22	0.073	08/26	0.070	08/16	0.069	05/21
Kutztown	311	214	100	0.078	05/22	0.077	04/27	0.077	06/08	0.072	05/21
Methodist Hill	313	206	96	0.071	05/21	0.067	05/22	0.067	08/17	0.066	05/20
Biglerville	D14	214	100	0.081	05/21	0.077	05/22	0.071	05/20	0.069	09/03
Lancaster Downwind	L12	194	91	0.082	06/26	0.081	06/08	0.081	08/17	0.079	04/27
York Downwind	Y11	212	99	0.095	07/15	0.079	07/20	0.077	04/25	0.077	05/22

Former Primary and Secondary Daily 1-hour National Ambient Air Quality Standard is 0.12 parts per million

(not to be exceeded more than once per year).

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-2. Ozone Summary (1-Hour) (cont.).

Year: 2009 (April – October)

Units: parts per million

Site Name	PA Site Code	Number of Valid Days	Percent Valid Data	1st Daily Max 1-hour Mean	1st Daily Max Date MM/DD	2nd Daily Max 1-hour Mean	2nd Daily Max Date MM/DD	3rd Daily Max 1-hour Mean	3rd Daily Max Date MM/DD	4th Daily Max 1-hour Mean	4th Daily Max Date MM/DD
Northcentral Region Non-Air Basin											
State College	409	213	99	0.073	05/21	0.072	05/22	0.071	04/18	0.068	04/27
Montoursville	410	209	98	0.076	05/21	0.075	05/22	0.068	04/27	0.067	05/20
Moshannon	D09	206	96	0.075	04/18	0.074	05/22	0.074	07/15	0.073	05/21
Tioga County	D13	199	97	0.071	05/21	0.070	05/20	0.069	04/18	0.066	05/22
Johnstown Air Basin											
Johnstown	J01	212	99	0.074	05/23	0.072	04/19	0.072	05/22	0.067	04/18
Monongahela Valley Air Basin											
Charleroi	M01	213	100	0.080	06/15	0.078	08/16	0.075	09/05	0.074	05/22
Lower Beaver Valley Air Basin											
Beaver Falls	B11	213	100	0.088	06/25	0.085	08/14	0.079	05/15	0.077	05/24
Hookstown	B23	210	98	0.079	06/25	0.074	06/24	0.074	07/15	0.073	05/21
Brighton Township	B27	210	98	0.079	06/25	0.078	08/14	0.077	06/16	0.076	05/15
Allegheny County Air Basin											
Pittsburgh	D12	214	99	0.081	05/22	0.075	05/23	0.075	06/25	0.073	06/15
Southwest Region Non-Air Basin											
Florence	504	209	99	0.073	05/21	0.073	05/22	0.071	04/18	0.071	09/03
Washington	508	211	99	0.070	06/15	0.069	05/22	0.069	06/25	0.069	09/03
Murrysville	510	214	100	0.083	05/22	0.080	08/16	0.079	06/25	0.077	05/23
Kittanning	512	214	100	0.098	06/25	0.090	05/21	0.085	06/07	0.084	08/25
Greensburg	513	208	98	0.074	05/22	0.073	05/23	0.073	06/25	0.071	05/21
Holbrook	514	214	100	0.080	04/18	0.076	09/04	0.073	09/03	0.072	05/23
Strongstown	515	211	98	0.082	05/22	0.079	05/21	0.075	08/16	0.073	05/23
Upper Beaver Valley Air Basin											
New Castle	B21	214	100	0.085	08/16	0.076	05/15	0.073	08/14	0.071	06/16
Erie Air Basin											
Erie	E10	212	99	0.087	05/21	0.078	04/18	0.077	05/20	0.074	06/06
Northwest Region Non-Air Basin											
Farrell	606	208	97	0.081	06/25	0.081	07/15	0.078	06/06	0.078	08/14

Former Primary and Secondary Daily 1-hour National Ambient Air Quality Standard is 0.12 parts per million

(not to be exceeded more than once per year).

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-4. One-hour Ozone Days Greater than 124 ppb and Maximums Summary (2007 – 2009).

Units: parts per billion

Station	Design Value	2007 Days > 75	2007 1st 8-Hr	2007 2nd 8-Hr	2007 3rd 8-Hr	2007 4th 8-Hr	2008 Days > 75	2008 1st 8-Hr	2008 2nd 8-Hr	2008 3rd 8-Hr	2008 4th 8-Hr	2009 Days > 75	2009 1st 8-Hr	2009 2nd 8-Hr	2009 3rd 8-Hr	2009 4th 8-Hr
		Daily Maximums					Daily Maximums					Daily Maximums				
Frankford (Lab)	64	3	94	82	79	73	0	74	64	63	62	0	72	63	59	59
Northwest (Rox)	**81**	11	87	84	81	81	***	***	***	***	***	***	***	***	***	***
Northeast (Airport)	**84**	21	106	104	97	95	15	99	88	87	87	1	84	75	73	72
Southwest (Elm)	**82**	6	110	95	89	82	***	***	***	***	***	***	***	***	***	***
Bristol	**88**	24	121	119	109	102	12	102	92	91	89	2	77	76	74	74
Chester	**77**	13	107	89	86	86	8	92	86	83	81	0	72	70	70	65
Norristown	**79**	15	91	88	86	84	13	96	90	84	84	0	75	71	71	70
New Garden (Airport)	**77**	13	116	87	85	81	7	94	88	86	84	1	78	69	68	67
Allentown	**76**	12	91	87	82	81	9	91	85	83	80	0	73	71	69	69
Easton	73	7	88	82	82	78	5	91	79	78	76	0	73	72	66	66
Freemansburg	75	11	93	89	84	83	3	94	82	80	75	0	73	72	69	68
Scranton	71	5	81	80	78	78	4	94	86	79	76	0	67	65	64	61
Nanticoke	66	1	79	69	66	63	2	91	84	74	74	0	67	66	64	63
Wilkes-Barre	69	5	80	79	78	77	3	91	80	78	75	0	64	60	58	55
Peckville	71	0	72	72	72	71	3	99	84	76	75	0	74	72	70	68
Swiftwater	69	2	86	78	75	75	4	93	92	76	76	0	65	58	58	57
Reading Airport	**79**	10	90	85	83	82	13	88	84	83	83	1	79	75	73	72
Harrisburg	74	15	86	83	82	82	4	91	83	82	79	0	70	70	66	63
Lancaster	**77**	17	92	85	83	83	8	83	82	81	80	1	76	74	71	69
York	**77**	17	91	88	86	84	7	96	81	81	81	1	76	73	68	68
Perry County	72	2	77	76	73	73	6	89	86	82	81	0	71	68	66	63
Hershey	74	11	80	80	79	79	7	95	82	79	78	0	73	72	71	66
Altoona	70	1	77	74	73	71	2	82	78	75	75	0	69	66	66	65
Kutztown	70	***	***	***	***	***	7	86	82	81	77	0	69	69	67	63
Methodist Hill	69	6	79	77	77	77	0	75	74	74	73	0	65	64	59	59
Biglerville (PSU)	73	10	83	83	81	81	4	85	78	77	76	0	75	69	65	64
Lancaster DW	71	***	***	***	***	***	5	83	82	79	77	0	69	68	68	66
York DW	72	***	***	***	***	***	6	89	85	79	78	1	78	67	67	66
State College (PSU)	70	3	82	79	77	74	2	81	77	74	74	0	69	68	67	64
Montoursville	74	4	83	78	78	77	6	89	87	84	82	0	69	67	66	64
Moshannon (PSU)	71	2	78	76	74	72	4	78	78	78	77	0	72	71	71	66
Tioga County (PSU)	70	2	78	77	75	74	2	85	81	75	73	0	67	65	65	64
Johnstown	67	2	79	77	75	72	0	72	70	69	67	0	68	65	64	64
Charleroi	72	4	84	83	83	77	2	80	78	73	71	0	69	68	68	68
Beaver Falls	73	4	79	79	79	77	2	79	76	75	74	0	70	68	68	68
Hookstown	73	8	93	87	80	80	3	79	78	77	73	0	68	67	66	66
Brighton Twp	71	3	84	79	77	72	3	79	77	76	75	0	69	69	69	68
Florence	72	3	77	76	76	75	4	81	78	77	77	0	71	68	67	65
Washington	68	3	78	77	76	73	0	72	72	71	69	0	68	65	64	63

Primary and Secondary 8-hour National Ambient Air Quality Standard

0.075 parts per million for 4th daily maximum averaged over 3 years

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-3. Eight-Hour Ozone Days Greater than 75 ppb and Maximums Summary (2007 – 2009) (cont.).

Units: parts per billion

Station	Design Value	2007 Days > 75	2007 Daily Maximums 1st 8-Hr	2nd 8-Hr	3rd 8-Hr	4th 8-Hr	2008 Days > 75	2008 Daily Maximums 1st 8-Hr	2nd 8-Hr	3rd 8-Hr	4th 8-Hr	2009 Days > 75	2009 Daily Maximums 1st 8-Hr	2nd 8-Hr	3rd 8-Hr	4th 8-Hr
Murrysville	71	4	88	82	81	79	2	83	79	72	72	0	68	68	68	64
Kittanning	**77**	19	100	91	90	83	9	87	79	79	78	1	80	72	72	71
Greensburg	72	4	85	82	78	77	2	82	80	75	75	0	70	67	66	65
Holbrook	72	8	80	79	79	78	1	84	75	73	73	0	74	70	69	66
Strongstown	73	9	82	81	81	79	4	83	78	77	76	1	78	73	69	66
Pittsburgh (Carnegie SC)	74	11	86	83	82	81	1	80	75	75	74	0	71	68	67	67
Harrison Twp	**82**	13	99	89	87	86	10	91	88	86	85	6	84	80	79	77
Lawrenceville	**77**	12	92	91	85	83	7	84	79	79	79	1	77	72	71	69
South Fayette	73	9	87	78	78	77	3	79	78	78	75	0	71	71	69	69
New Castle	69	3	76	76	76	75	2	83	77	72	69	0	71	64	64	63
Erie	75	13	98	87	84	84	2	79	77	75	74	1	82	74	73	69
Farrell	**77**	14	86	85	84	83	7	85	84	81	78	1	76	71	71	70

Primary and Secondary 8-hour National Ambient Air Quality Standard

0.075 parts per million for 4th daily maximum averaged over 3 years

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-4. One-hour Ozone Days Greater than 124 ppb and Maximums Summary (2007 – 2009).

Units: parts per billion

Station	Design Value	2007 Days > 124	2007 Daily Maximums 1st 1-Hr	2nd 1-Hr	3rd 1-Hr	4th 1-Hr	2008 Days > 124	2008 Daily Maximums 1st 1-Hr	2nd 1-Hr	3rd 1-Hr	4th 1-Hr	2009 Days > 124	2009 Daily Maximums 1st 1-Hr	2nd 1-Hr	3rd 1-Hr	4th 1-Hr
Frankford (Lab)	94	0	107	104	100	94	0	93	78	77	73	0	85	75	75	72
Northwest (Rox)	94	0	98	96	95	94	***	***	***	***	***	***	***	***	***	***
Northeast (Airport)	118	2	135	126	118	115	0	120	110	109	106	0	114	97	96	84
Southwest (Elm)	96	1	136	113	104	96	***	***	***	***	***	***	***	***	***	***
Bristol	123	3	142	141	140	123	0	119	109	108	105	0	95	90	87	86
Chester	102	1	128	102	101	101	0	116	111	96	93	0	93	81	78	78
Norristown	101	0	107	103	101	100	0	113	99	94	93	0	90	82	81	80
New Garden (Airport)	101	1	141	102	94	94	0	114	101	99	96	0	92	89	84	83
Allentown	98	0	104	102	90	90	0	100	98	91	88	0	82	82	81	75
Easton	94	0	105	95	94	88	0	106	93	85	84	0	86	79	77	75
Freemansburg	95	0	105	105	93	91	0	107	95	88	86	0	84	79	76	75
Scranton	90	0	92	90	89	87	0	102	93	88	84	0	73	72	70	67
Nanticoke	87	0	88	87	79	77	0	102	89	86	83	0	76	70	68	67
Wilkes-Barre	88	0	89	89	88	85	0	103	87	85	83	0	68	66	63	61
Peckville	87	0	92	85	83	83	0	108	89	87	80	0	79	77	77	75
Swiftwater	90	0	92	90	86	85	0	108	102	87	81	0	67	64	63	62
Reading Airport	98	0	102	98	94	92	0	98	98	95	95	0	93	89	84	80
Harrisburg	97	0	105	105	97	96	0	105	92	91	88	0	84	80	76	70
Lancaster	101	0	107	104	102	99	0	101	97	96	89	0	97	87	84	81
York	105	0	121	108	105	100	0	114	99	91	91	0	84	83	77	74
Perry County	89	0	89	88	83	82	0	93	92	91	89	0	77	72	71	71
Hershey	92	0	102	95	92	92	0	112	90	89	86	0	85	80	77	72
Altoona	84	0	85	81	80	80	0	90	88	84	80	0	74	73	70	69
Kutztown	91	***	***	***	***	***	0	95	92	92	91	0	78	77	77	72
Methodist Hill	86	0	90	89	89	86	0	85	81	81	80	0	71	67	67	66
Biglerville (PSU)	90	0	101	91	90	88	0	93	84	83	80	0	81	77	71	69
Lancaster DW	89	***	***	***	***	***	0	103	98	90	89	0	82	81	81	79
York DW	95	***	***	***	***	***	0	108	101	99	91	0	95	79	77	77
State College (PSU)	84	0	90	87	86	82	0	84	82	80	78	0	73	72	71	68
Montoursville	92	0	91	91	87	85	0	96	94	94	92	0	76	75	68	67
Moshannon (PSU)	85	0	88	83	81	80	0	91	85	84	83	0	75	74	74	73
Tioga County (PSU)	84	0	85	84	81	80	0	91	87	81	78	0	71	70	69	66
Johnstown	86	0	96	87	86	85	0	89	81	79	78	0	74	72	72	67
Charleroi	95	0	99	95	89	87	0	95	95	84	82	0	80	78	75	74
Beaver Falls	89	0	97	92	89	88	0	98	87	85	84	0	88	85	79	77
Hookstown	91	0	99	96	92	91	0	86	85	83	83	0	79	74	74	73
Brighton Twp	85	0	96	87	84	84	0	91	85	84	83	0	79	78	77	76
Florence	91	0	96	94	87	86	0	88	88	84	83	0	93	91	87	86
Washington	81	0	90	84	81	81	0	84	79	78	78	0	70	69	69	69

Former Primary and Secondary Daily 1-hour National Ambient Air Quality Standard is 0.12 parts per million

(not to be exceeded more than once per year)

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-4. One-hour Ozone Days Greater than 124 ppb and Maximums Summary (2007 – 2009) (cont.).

Units: parts per billion

Station	Design Value	2007 Daily Maximums					2008 Daily Maximums					2009 Daily Maximums				
		Days > 124	1st 1-Hr	2nd 1-Hr	3rd 1-Hr	4th 1-Hr	Days > 124	1st 1-Hr	2nd 1-Hr	3rd 1-Hr	4th 1-Hr	Days > 124	1st 1-Hr	2nd 1-Hr	3rd 1-Hr	4th 1-Hr
Murrysville	94	0	98	98	92	91	0	98	94	87	83	0	83	80	79	77
Kittanning	98	0	117	106	102	98	0	95	94	94	91	0	98	90	85	84
Greensburg	88	0	93	88	88	87	0	94	89	81	81	0	74	73	73	71
Holbrook	87	0	90	90	87	85	0	97	87	81	80	0	80	76	73	72
Strongstown	88	0	89	88	86	86	0	97	90	83	82	0	82	79	75	73
Pittsburgh (Carnegie SC)	95	0	113	104	97	92	0	95	92	89	84	0	81	75	75	73
Harrison Twp	100	0	111	106	103	99	0	100	99	98	97	0	105	90	89	88
Lawrenceville	97	0	118	114	97	94	0	99	95	94	92	0	86	83	77	77
South Fayette	87	0	97	89	87	85	0	91	86	85	82	0	76	75	74	73
New Castle	87	0	87	87	87	86	0	100	85	79	78	0	85	76	73	71
Erie	100	0	107	102	100	100	0	90	86	82	82	0	87	78	77	74
Farrell	97	0	103	101	95	94	0	98	97	95	85	0	81	81	78	78

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(not to be exceeded more than once per year)

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Table B-5. Ozone Historical Trend.

Units: parts per million

Site Name/PA Site Code	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
Southeast Pennsylvania Air Basin											
Bristol	0.121	0.131	0.135	0.121	0.098	0.121	0.112	0.141	0.109	0.090	2nd Max Daily 1-hour Average
P01	1	2	4	0	0	1	0	3	0	0	Number Days 1-hour ≥ 0.125 ppm
	0.099	0.104	0.111	0.087	0.082	0.089	0.087	0.102	0.089	0.074	4th Max Daily 8-hour Average
	21	28	28	16	7	15	14	24	12	2	Number Days 8-hour ≥ 0.075 ppm
Chester	0.117	0.108	0.125	0.118	0.109	0.119	0.102	0.102	0.111	0.081	2nd Max Daily 1-hour Average
P11	0	1	2	0	0	1	0	1	0	0	Number Days 1-hour ≥ 0.125 ppm
	0.091	0.093	0.103	0.080	0.081	0.087	0.082	0.086	0.081	0.065	4th Max Daily 8-hour Average
	13	20	33	12	6	10	12	13	8	0	Number Days 8-hour ≥ 0.075 ppm
Norristown	0.125	0.120	0.122	0.111	0.094	0.107	0.096	0.103	0.099	0.082	2nd Max Daily 1-hour Average
P21	2	1	1	0	0	0	0	0	0	0	Number Days 1-hour ≥ 0.125 ppm
	0.100	0.096	0.096	0.085	0.083	0.090	0.084	0.084	0.084	0.070	4th Max Daily 8-hour Average
	20	24	27	8	8	20	14	15	13	0	Number Days 8-hour ≥ 0.075 ppm
New Garden Airport	0.095	0.122	0.139	0.115	0.102	0.109	0.107	0.102	0.101	0.089	2nd Max Daily 1-hour Average
P30	0	0	2	0	0	1	0	1	0	0	Number Days 1-hour ≥ 0.125 ppm
	0.077	0.105	0.104	0.085	0.085	0.092	0.083	0.081	0.084	0.067	4th Max Daily 8-hour Average
	5	32	46	10	16	23	12	13	7	1	Number Days 8-hour ≥ 0.075 ppm
West Chester	***	0.117	0.113	0.110	***	***	***	***	***	***	2nd Max Daily 1-hour Average
P32	***	0	1	0	***	***	***	***	***	***	Number Days 1-hour ≥ 0.125 ppm
	***	0.103	0.097	0.085	***	***	***	***	***	***	4th Max Daily 8-hour Average
	***	35	35	10	***	***	***	***	***	***	Number Days 8-hour ≥ 0.075 ppm
Allentown-Bethlehem-Easton Air Basin											
Allentown	0.112	0.126	0.114	0.109	0.101	0.101	0.100	0.102	0.098	0.082	2nd Max Daily 1-hour Average
A19	0	2	0	0	0	0	0	0	0	0	Number Days 1-hour ≥ 0.125 ppm
	0.091	0.094	0.094	0.087	0.083	0.086	0.080	0.081	0.080	0.069	4th Max Daily 8-hour Average
	13	26	31	9	11	12	9	12	9	0	Number Days 8-hour ≥ 0.075 ppm
Easton	0.100	0.113	0.113	0.107	0.104	0.096	0.095	0.095	0.093	0.079	2nd Max Daily 1-hour Average
A20	0	0	0	0	0	0	0	0	0	0	Number Days 1-hour ≥ 0.125 ppm
	0.083	0.092	0.092	0.083	0.083	0.080	0.078	0.078	0.076	0.066	4th Max Daily 8-hour Average
	6	20	24	7	9	10	5	7	5	0	Number Days 8-hour ≥ 0.075 ppm
Freemansburg	0.114	0.113	0.112	0.112	0.104	0.100	0.100	0.105	0.095	0.079	2nd Max Daily 1-hour Average
A25	1	0	0	0	0	0	0	0	0	0	Number Days 1-hour ≥ 0.125 ppm
	0.092	0.094	0.090	0.087	0.088	0.086	0.078	0.083	0.075	0.068	4th Max Daily 8-hour Average
	15	28	25	10	15	11	7	11	3	0	Number Days 8-hour ≥ 0.075 ppm
Scranton-Wilkes-Barre Air Basin											
Scranton	0.082	0.097	0.122	0.099	0.088	0.096	0.082	0.090	0.093	0.072	2nd Max Daily 1-hour Average
S01	0	0	1	0	0	0	0	0	0	0	Number Days 1-hour ≥ 0.125 ppm
	0.073	0.088	0.089	0.075	0.073	0.080	0.070	0.078	0.076	0.061	4th Max Daily 8-hour Average
	1	18	20	3	3	8	1	5	4	0	Number Days 8-hour ≥ 0.075 ppm

Primary and Secondary 8-hour National Ambient Air Quality Standards

8-Hour Mean = 0.075 parts per million for 4th daily maximum 8-hour mean, averaged over 3 years

Former 1-hour = 0.12 parts per million, not to be exceeded more than once per year

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-5. Ozone Historical Trend (cont.).

Units: parts per million

Site Name/PA Site Code	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
Nanticoke	0.093	0.104	0.112	0.097	0.079	0.090	0.073	0.087	0.089	0.070	2nd Max Daily 1-hour Average
S26	0	0	0	0	0	0	0	0	0	0	Number Days 1-hour ≥ 0.125 ppm
	0.076	0.086	0.089	0.077	0.068	0.074	0.064	0.063	0.074	0.063	4th Max Daily 8-hour Average
	6	11	21	4	0	2	0	1	2	0	Number Days 8-hour ≥ 0.075 ppm
Wilkes-Barre	0.086	0.100	0.119	0.098	0.088	0.095	0.084	0.089	0.087	0.066	2nd Max Daily 1-hour Average
S28	0	0	0	0	0	0	0	0	0	0	Number Days 1-hour ≥ 0.125 ppm
	0.073	0.088	0.092	0.078	0.073	0.081	0.073	0.077	0.075	0.055	4th Max Daily 8-hour Average
	3	17	22	5	2	9	2	5	3	0	Number Days 8-hour ≥ 0.075 ppm
Peckville	0.090	0.099	0.122	0.097	0.085	0.093	0.081	0.085	0.089	0.077	2nd Max Daily 1-hour Average
S29	0	0	1	0	0	0	0	0	0	0	Number Days 1-hour ≥ 0.125 ppm
	0.077	0.086	0.094	0.075	0.071	0.080	0.071	0.071	0.075	0.068	4th Max Daily 8-hour Average
	6	16	25	3	3	11	2	0	3	0	Number Days 8-hour ≥ 0.075 ppm
Northeast Region Non-Air Basin											
Swiftwater	***	***	***	***	***	***	0.088	0.090	0.102	0.064	2nd Max Daily 1-hour Average
230	***	***	***	***	***	***	0	0	0	0	Number Days 1-hour ≥ 0.125 ppm
	***	***	***	***	***	***	0.077	0.075	0.076	0.057	4th Max Daily 8-hour Average
	***	***	***	***	***	***	5	2	4	0	Number Days 8-hour ≥ 0.075 ppm
Reading Air Basin											
Reading	0.105	0.125	0.113	0.094	0.089	0.099	***	***	***	***	2nd Max Daily 1-hour Average
R01	0	2	0	1	0	0	***	***	***	***	Number Days 1-hour ≥ 0.125 ppm
	0.084	0.099	0.095	0.080	0.076	0.085	***	***	***	***	4th Max Daily 8-hour Average
	7	20	27	5	5	15	***	***	***	***	Number Days 8-hour ≥ 0.075 ppm
Reading (Temporary)	***	***	***	***	***	***	0.095	0.077	***	***	2nd Max Daily 1-hour Average
R02	***	***	***	***	***	***	0	0	***	***	Number Days 1-hour ≥ 0.125 ppm
	***	***	***	***	***	***	0.078	0.063	***	***	4th Max Daily 8-hour Average
	***	***	***	***	***	***	6	1	***	***	Number Days 8-hour ≥ 0.075 ppm
Reading Airport	***	***	***	***	***	***	***	0.098	0.098	0.089	2nd Max Daily 1-hour Average
R03	***	***	***	***	***	***	***	0	0	0	Number Days 1-hour ≥ 0.125 ppm
	***	***	***	***	***	***	***	0.082	0.083	0.072	4th Max Daily 8-hour Average
	***	***	***	***	***	***	***	10	13	1	Number Days 8-hour ≥ 0.075 ppm
Harrisburg Air Basin											
Harrisburg	0.101	0.099	0.126	0.089	0.092	0.106	0.091	0.105	0.092	0.080	2nd Max Daily 1-hour Average
H11	0	0	2	0	0	0	0	0	0	0	Number Days 1-hour ≥ 0.125 ppm
	0.079	0.086	0.098	0.074	0.076	0.084	0.077	0.082	0.079	0.063	4th Max Daily 8-hour Average
	6	22	24	3	4	10	6	15	4	0	Number Days 8-hour ≥ 0.075 ppm
Lancaster Air Basin											
Lancaster	0.107	0.127	0.115	0.115	0.097	0.105	0.104	0.104	0.097	0.087	2nd Max Daily 1-hour Average
L01	0	2	0	1	0	0	0	0	0	0	Number Days 1-hour ≥ 0.125 ppm
	0.090	0.097	0.096	0.083	0.081	0.085	0.085	0.083	0.080	0.069	4th Max Daily 8-hour Average
	9	30	27	6	8	18	11	17	8	1	Number Days 8-hour ≥ 0.075 ppm

Primary and Secondary 8-hour National Ambient Air Quality Standards

8-Hour Mean = 0.075 parts per million for 4th daily maximum 8-hour mean, averaged over 3 years

Former 1-hour = 0.12 parts per million, not to be exceeded more than once per year

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-5. Ozone Historical Trend (cont.).

Units: parts per million

Site Name/PA Site Code	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
York Air Basin											
York	0.112	0.104	0.124	0.114	0.091	0.101	0.094	0.108	0.099	0.083	2nd Max Daily 1-hour Average
Y01	0	0	1	0	0	0	0	0	0	0	Number Days 1-hour ≥ 0.125 ppm
	0.090	0.087	0.101	0.081	0.077	0.089	0.077	0.084	0.081	0.068	4th Max Daily 8-hour Average
	11	24	25	6	5	16	5	17	7	0	Number Days 8-hour ≥ 0.075 ppm
Southcentral Region Non-Air Basin											
Perry County	0.099	0.102	0.110	0.095	0.081	0.099	0.094	0.088	0.092	0.072	2nd Max Daily 1-hour Average
305	0	0	0	0	0	0	0	0	0	0	Number Days 1-hour ≥ 0.125 ppm
	0.073	0.089	0.088	0.084	0.069	0.082	0.077	0.073	0.081	0.063	4th Max Daily 8-hour Average
	3	21	23	6	0	12	4	2	6	0	Number Days 8-hour ≥ 0.075 ppm
Hershey	0.110	0.105	0.132	0.099	0.084	0.099	0.096	0.095	0.090	0.080	2nd Max Daily 1-hour Average
306	0	0	2	0	0	0	0	0	0	0	Number Days 1-hour ≥ 0.125 ppm
	0.088	0.091	0.094	0.079	0.072	0.085	0.081	0.079	0.078	0.066	4th Max Daily 8-hour Average
	5	33	26	8	1	8	7	11	7	0	Number Days 8-hour ≥ 0.075 ppm
Altoona	0.104	0.107	0.102	0.104	0.083	0.090	0.082	0.081	0.088	0.073	2nd Max Daily 1-hour Average
308	0	0	0	1	0	0	0	0	0	0	Number Days 1-hour ≥ 0.125 ppm
	0.080	0.083	0.089	0.083	0.073	0.077	0.071	0.071	0.075	0.065	4th Max Daily 8-hour Average
	8	16	24	4	0	4	2	1	2	0	Number Days 8-hour ≥ 0.075 ppm
Kutztown	0.101	0.119	0.106	0.084	***	***	***	***	***	***	2nd Max Daily 1-hour Average
(Grim Sci Bldg)	0	0	0	0	***	***	***	***	***	***	Number Days 1-hour ≥ 0.125 ppm
310	0.080	0.091	0.091	0.072	***	***	***	***	***	***	4th Max Daily 8-hour Average
	4	23	24	3	***	***	***	***	***	***	Number Days 8-hour ≥ 0.075 ppm
Kutztown	***	***	***	***	***	***	***	***	0.092	0.077	2nd Max Daily 1-hour Average
311	***	***	***	***	***	***	***	***	0	0	Number Days 1-hour ≥ 0.125 ppm
	***	***	***	***	***	***	***	***	0.077	0.063	4th Max Daily 8-hour Average
	***	***	***	***	***	***	***	***	7	0	Number Days 8-hour ≥ 0.075 ppm
Methodist Hill	0.100	0.104	0.115	0.085	0.078	0.082	0.078	0.089	0.081	0.067	2nd Max Daily 1-hour Average
313	0	0	0	0	0	0	0	0	0	0	Number Days 1-hour ≥ 0.125 ppm
	0.085	0.095	0.104	0.080	0.071	0.074	0.066	0.077	0.073	0.059	4th Max Daily 8-hour Average
	15	42	42	5	1	1	0	6	0	0	Number Days 8-hour ≥ 0.075 ppm
Biglerville	***	0.096	0.104	0.102	0.079	0.091	0.084	0.091	0.084	0.077	2nd Max Daily 1-hour Average
D14	***	0	0	0	0	0	0	0	0	0	Number Days 1-hour ≥ 0.125 ppm
	***	0.088	0.093	0.076	0.072	0.080	0.074	0.081	0.076	0.064	4th Max Daily 8-hour Average
	***	0	22	4	0	13	3	10	4	0	Number Days 8-hour ≥ 0.075 ppm
Lancaster Downwind	***	***	***	***	***	***	***	***	0.098	0.081	2nd Max Daily 1-hour Average
L12	***	***	***	***	***	***	***	***	0	0	Number Days 1-hour ≥ 0.125 ppm
	***	***	***	***	***	***	***	***	0.077	0.066	4th Max Daily 8-hour Average
	***	***	***	***	***	***	***	***	5	0	Number Days 8-hour ≥ 0.075 ppm

Primary and Secondary 8-hour National Ambient Air Quality Standards

8-Hour Mean = 0.075 parts per million for 4th daily maximum 8-hour mean, averaged over 3 years

Former 1-hour = 0.12 parts per million, not to be exceeded more than once per year

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-5. Ozone Historical Trend (cont.).

Units: parts per million

Site Name/PA Site Code	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
York Downwind	***	***	***	***	***	***	***	***	0.101	0.079	2nd Max Daily 1-hour Average
Y11	***	***	***	***	***	***	***	***	0	0	Number Days 1-hour ≥ 0.125 ppm
	***	***	***	***	***	***	***	***	0.078	0.066	4th Max Daily 8-hour Average
	***	***	***	***	***	***	***	***	6	1	Number Days 8-hour ≥ 0.075 ppm
Northcentral Region Non-Air Basin											
State College	0.101	0.097	0.108	0.100	0.081	0.091	0.083	0.087	0.082	0.072	2nd Max Daily 1-hour Average
409	0	0	0	0	0	0	0	0	0	0	Number Days 1-hour ≥ 0.125 ppm
	0.079	0.086	0.090	0.082	0.074	0.083	0.078	0.074	0.074	0.064	4th Max Daily 8-hour Average
	6	17	21	8	2	8	4	3	2	0	Number Days 8-hour ≥ 0.075 ppm
Montoursville	***	***	0.112	0.102	0.091	0.099	0.083	0.091	0.094	0.075	2nd Max Daily 1-hour Average
410	***	***	0	0	0	0	0	0	0	0	Number Days 1-hour ≥ 0.125 ppm
	***	***	0.091	0.083	0.074	0.082	0.073	0.077	0.082	0.064	4th Max Daily 8-hour Average
	***	***	25	7	3	9	2	4	6	0	Number Days 8-hour ≥ 0.075 ppm
Moshannon	0.105	0.102	0.106	0.103	0.082	0.096	0.079	0.083	0.085	0.074	2nd Max Daily 1-hour Average
D09	0	0	0	0	0	0	0	0	0	0	Number Days 1-hour ≥ 0.125 ppm
	0.079	0.089	0.095	0.087	0.074	0.086	0.072	0.072	0.077	0.066	4th Max Daily 8-hour Average
	10	18	25	7	1	12	1	2	4	0	Number Days 8-hour ≥ 0.075 ppm
Tiadaghton	0.092	0.089	0.101	0.094	0.080	***	***	***	***	***	2nd Max Daily 1-hour Average
D10	0	0	0	0	0	***	***	***	***	***	Number Days 1-hour ≥ 0.125 ppm
	0.073	0.080	0.084	0.076	0.073	***	***	***	***	***	4th Max Daily 8-hour Average
	3	7	13	4	2	***	***	***	***	***	Number Days 8-hour ≥ 0.075 ppm
Penn Nursery	0.109	0.091	0.113	0.109	0.078	***	***	***	***	***	2nd Max Daily 1-hour Average
D11	0	0	0	0	0	***	***	***	***	***	Number Days 1-hour ≥ 0.125 ppm
	0.075	0.082	0.091	0.093	0.069	***	***	***	***	***	4th Max Daily 8-hour Average
	3	16	33	9	0	***	***	***	***	***	Number Days 8-hour ≥ 0.075 ppm
Tioga County	0.103	0.094	0.118	0.102	0.085	0.086	0.080	0.084	0.087	0.070	2nd Max Daily 1-hour Average
D13	0	0	0	0	0	0	0	0	0	0	Number Days 1-hour ≥ 0.125 ppm
	0.078	0.083	0.093	0.084	0.079	0.080	0.073	0.074	0.073	0.064	4th Max Daily 8-hour Average
	5	18	23	4	5	8	0	2	2	0	Number Days 8-hour ≥ 0.075 ppm
Johnstown Air Basin											
Johnstown	0.104	0.106	0.106	0.098	0.081	0.094	0.085	0.087	0.081	0.072	2nd Max Daily 1-hour Average
J01	0	0	0	0	0	0	0	0	0	0	Number Days 1-hour ≥ 0.125 ppm
	0.086	0.090	0.088	0.083	0.071	0.077	0.073	0.072	0.067	0.064	4th Max Daily 8-hour Average
	10	18	21	5	1	6	0	2	0	0	Number Days 8-hour ≥ 0.075 ppm
Monongahela Valley Air Basin											
Charleroi	0.110	0.102	0.119	0.124	0.085	0.098	0.097	0.095	0.095	0.078	2nd Max Daily 1-hour Average
M01	0	0	1	1	0	0	0	0	0	0	Number Days 1-hour ≥ 0.125 ppm
	0.080	0.087	0.093	0.088	0.072	0.080	0.079	0.077	0.071	0.068	4th Max Daily 8-hour Average
	9	19	29	7	2	9	4	4	2	0	Number Days 8-hour ≥ 0.075 ppm

Primary and Secondary 8-hour National Ambient Air Quality Standards

8-Hour Mean = 0.075 parts per million for 4th daily maximum 8-hour mean, averaged over 3 years

Former 1-hour = 0.12 parts per million, not to be exceeded more than once per year

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-5. Ozone Historical Trend (cont.).

Units: parts per million

Site Name/PA Site Code	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
Lower Beaver Valley Air Basin											
Beaver Falls	0.099	0.109	0.112	0.107	0.085	0.099	0.090	0.092	0.087	0.085	2nd Max Daily 1-hour Average
B11	0	0	0	1	0	0	0	0	0	0	Number Days 1-hour ≥ 0.125 ppm
	0.084	0.086	0.096	0.078	0.069	0.080	0.069	0.077	0.074	0.068	4th Max Daily 8-hour Average
	8	17	23	7	0	7	2	4	2	0	Number Days 8-hour ≥ 0.075 ppm
Hookstown	0.095	0.101	0.115	0.111	0.090	0.106	0.091	0.096	0.085	0.074	2nd Max Daily 1-hour Average
B23	0	0	0	1	0	0	0	0	0	0	Number Days 1-hour ≥ 0.125 ppm
	0.077	0.092	0.103	0.087	0.081	0.086	0.082	0.080	0.073	0.066	4th Max Daily 8-hour Average
	6	20	32	9	7	16	8	8	3	0	Number Days 8-hour ≥ 0.075 ppm
Brighton Township	0.096	0.103	0.118	0.107	0.085	0.095	0.090	0.087	0.085	0.078	2nd Max Daily 1-hour Average
B27	0	0	0	1	0	0	0	0	0	0	Number Days 1-hour ≥ 0.125 ppm
	0.077	0.089	0.104	0.083	0.074	0.086	0.077	0.072	0.075	0.068	4th Max Daily 8-hour Average
	4	19	32	8	3	10	4	3	3	0	Number Days 8-hour ≥ 0.075 ppm
Allegheny County Air Basin											
Pittsburgh	0.111	0.112	0.119	0.110	0.094	0.105	0.092	0.104	0.092	0.075	2nd Max Daily 1-hour Average
D12	0	0	0	1	0	0	0	0	0	0	Number Days 1-hour ≥ 0.125 ppm
	0.086	0.093	0.100	0.088	0.072	0.092	0.078	0.081	0.074	0.067	4th Max Daily 8-hour Average
	15	20	34	13	2	15	7	11	1	0	Number Days 8-hour ≥ 0.075 ppm
Southwest Region Non-Air Basin											
Florence	0.098	0.106	0.114	0.107	0.083	0.101	0.091	0.094	0.088	0.073	2nd Max Daily 1-hour Average
504	0	0	0	1	0	0	0	0	0	0	Number Days 1-hour ≥ 0.125 ppm
	0.080	0.089	0.096	0.078	0.073	0.085	0.076	0.075	0.077	0.065	4th Max Daily 8-hour Average
	5	21	28	7	2	11	4	3	4	0	Number Days 8-hour ≥ 0.075 ppm
Washington	0.105	0.109	0.112	0.118	0.086	0.096	0.089	0.084	0.079	0.069	2nd Max Daily 1-hour Average
508	0	0	1	0	0	0	0	0	0	0	Number Days 1-hour ≥ 0.125 ppm
	0.080	0.090	0.088	0.088	0.071	0.085	0.070	0.073	0.069	0.063	4th Max Daily 8-hour Average
	7	17	23	7	4	12	1	3	0	0	Number Days 8-hour ≥ 0.075 ppm
Murrysville	0.103	0.097	0.110	0.100	0.092	0.102	0.081	0.098	0.094	0.080	2nd Max Daily 1-hour Average
510	0	0	0	1	0	0	0	0	0	0	Number Days 1-hour ≥ 0.125 ppm
	0.076	0.078	0.091	0.083	0.070	0.087	0.071	0.079	0.072	0.064	4th Max Daily 8-hour Average
	4	5	20	5	0	10	1	4	2	0	Number Days 8-hour ≥ 0.075 ppm
Kittanning	0.103	0.119	0.122	0.109	0.093	0.104	0.101	0.106	0.094	0.090	2nd Max Daily 1-hour Average
512	0	1	0	0	0	0	0	0	0	0	Number Days 1-hour ≥ 0.125 ppm
	0.079	0.098	0.097	0.086	0.082	0.086	0.080	0.083	0.078	0.071	4th Max Daily 8-hour Average
	7	28	27	10	10	16	11	19	9	1	Number Days 8-hour ≥ 0.075 ppm
Greensburg	0.097	0.100	0.119	0.115	0.094	0.098	0.095	0.088	0.089	0.073	2nd Max Daily 1-hour Average
513	0	0	0	1	0	0	0	0	0	0	Number Days 1-hour ≥ 0.125 ppm
	0.076	0.084	0.098	0.091	0.073	0.083	0.076	0.077	0.075	0.065	4th Max Daily 8-hour Average
	6	14	23	6	3	10	4	4	2	0	Number Days 8-hour ≥ 0.075 ppm

Primary and Secondary 8-hour National Ambient Air Quality Standards

8-Hour Mean = 0.075 parts per million for 4th daily maximum 8-hour mean, averaged over 3 years

Former 1-hour = 0.12 parts per million, not to be exceeded more than once per year

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-5. Ozone Historical Trend (cont.).

Units: parts per million

Site Name/PA Site Code	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
Holbrook	0.106	0.099	0.113	0.106	0.082	0.103	0.092	0.090	0.087	0.076	2nd Max Daily 1-hour Average
514	0	0	0	0	0	0	0	0	0	0	Number Days 1-hour ≥ 0.125 ppm
	0.087	0.090	0.094	0.083	0.075	0.085	0.077	0.078	0.073	0.066	4th Max Daily 8-hour Average
	18	31	21	6	2	19	5	8	1	0	Number Days 8-hour ≥ 0.075 ppm
Strongstown	***	***	***	***	***	0.097	0.093	0.088	0.090	0.079	2nd Max Daily 1-hour Average
515	***	***	***	***	***	0	0	0	0	0	Number Days 1-hour ≥ 0.125 ppm
	***	***	***	***	***	0.088	0.073	0.079	0.076	0.066	4th Max Daily 8-hour Average
	***	***	***	***	***	17	3	9	4	1	Number Days 8-hour ≥ 0.075 ppm
Upper Beaver Valley Air Basin											
New Castle	0.090	0.099	0.103	0.106	0.083	0.094	0.088	0.087	0.085	0.076	2nd Max Daily 1-hour Average
B21	0	0	0	1	0	0	0	0	0	0	Number Days 1-hour ≥ 0.125 ppm
	0.069	0.078	0.087	0.077	0.068	0.075	0.070	0.075	0.069	0.063	4th Max Daily 8-hour Average
	0	5	21	4	1	3	2	3	2	0	Number Days 8-hour ≥ 0.075 ppm
Erie Air Basin											
Erie	0.095	0.104	0.114	0.108	0.089	0.104	0.093	0.102	0.086	0.078	2nd Max Daily 1-hour Average
E10	0	0	0	0	0	0	0	0	0	0	Number Days 1-hour ≥ 0.125 ppm
	0.078	0.089	0.098	0.091	0.074	0.086	0.077	0.084	0.074	0.069	4th Max Daily 8-hour Average
	7	14	25	7	3	16	4	13	2	1	Number Days 8-hour ≥ 0.075 ppm
Northwest Region Non-Air Basin											
Farrell	0.098	0.113	0.118	0.116	0.088	0.104	0.102	0.101	0.097	0.081	2nd Max Daily 1-hour Average
606	0	0	0	0	0	0	0	0	0	0	Number Days 1-hour ≥ 0.125 ppm
	0.081	0.094	0.103	0.087	0.076	0.087	0.079	0.083	0.078	0.070	4th Max Daily 8-hour Average
	7	38	30	9	4	19	8	14	7	1	Number Days 8-hour ≥ 0.075 ppm

Primary and Secondary 8-hour National Ambient Air Quality Standards

8-Hour Mean = 0.075 parts per million for 4th daily maximum 8-hour mean, averaged over 3 years

Former 1-hour = 0.12 parts per million, not to be exceeded more than once per year

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-6. Sulfur Dioxide Summary.

Year: 2009

Units: parts per million

Site Name	PA Site Code	Percent Valid Data	Annual Mean	Maximum Daily (Block) Averages 1st Maximum 24HR Mean	Date MM/DD	2nd Maximum 24HR Mean	Date MM/DD	3-Hour Block Averages 1st Maximum 3HR Mean	Date MM/DD	2nd Maximum 3HR Mean	Date MM/DD	1-Hour Average Maximum 1HR Mean	Date MM/DD
Southeast Pennsylvania Air Basin													
Bristol	P01	94	0.006	0.018	01/30	0.018	02/06	0.037	01/27	0.033	01/27	0.039	01/27
Chester	P11	92	0.006	0.018	01/23	0.015	01/22	0.035	01/23	0.027	03/05	0.051	01/23
Norristown	P21	98	0.004	0.017	01/27	0.015	01/23	0.047	01/27	0.045	01/26	0.050	01/26
Allentown-Bethlehem-Easton Air Basin													
Easton	A20	97	0.004	0.016	01/22	0.015	01/23	0.031	02/03	0.026	03/07	0.054	03/07
Scranton-Wilkes-Barre Air Basin													
Wilkes-Barre	S28	98	0.003	0.018	01/22	0.015	02/07	0.032	01/22	0.026	02/06	0.035	01/22
Reading Air Basin													
Reading Airport	R03	99	0.004	0.012	01/13	0.012	02/26	0.044	01/13	0.041	07/28	0.058	06/30
York Air Basin													
York	Y01	99	0.003	0.021	01/26	0.014	03/27	0.054	03/27	0.054	07/17	0.111	06/24
Southcentral Region Non-Air Basin													
Perry County	305	96	0.002	0.014	01/26	0.011	03/15	0.045	03/15	0.030	01/26	0.054	03/15
Altoona	308	100	0.004	0.032	01/26	0.021	01/19	0.064	01/26	0.049	01/25	0.071	01/26
Northcentral Region Non-Air Basin													
State College	409	99	0.003	0.016	01/17	0.016	01/22	0.026	01/21	0.025	01/21	0.040	05/19
Johnstown Air Basin													
Johnstown	J01	98	0.004	0.026	08/24	0.018	08/23	0.081	08/23	0.080	08/24	0.093	08/24
Monongahela Valley Air Basin													
Charleroi	M01	99	0.005	0.026	02/17	0.022	11/10	0.082	01/17	0.082	02/17	0.164	02/17
Lower Beaver Valley Air Basin													
Hookstown	B23	98	0.007	0.039	01/08	0.027	07/24	0.108	02/24	0.080	07/24	0.141	02/24
Brighton Township	B27	99	0.007	0.048	05/20	0.041	04/27	0.211	04/27	0.120	05/20	0.431	04/27
Allegheny County Air Basin													
Pittsburgh	D12	94	0.004	0.020	12/24	0.018	03/15	0.057	03/15	0.053	01/01	0.087	02/17

Primary National Ambient Air Quality Standards: Annual Mean = 0.030 parts per million;

24-hour Mean (Daily Block Average) = 0.14 parts per million, not to be exceeded more than once per year

Secondary National Ambient Air Quality Standard: 3-hour Mean (Block Average) = 0.5 parts per million, not to be exceeded more than once per year

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-6. Sulfur Dioxide Summary (cont.).

Year: 2009

Units: parts per million

				Maximum Daily (Block) Averages				3-Hour Block Averages				1-Hour Average	
				1st Maximum		2nd Maximum		1st Maximum		2nd Maximum		Maximum	
Site Name	PA Site Code	Percent Valid Data	Annual Mean	24HR Mean	Date MM/DD	24HR Mean	Date MM/DD	3HR Mean	Date MM/DD	3HR Mean	Date MM/DD	1HR Mean	Date MM/DD
Southwest Region Non-Air Basin													
Florence	504	99	0.004	0.017	05/29	0.017	11/29	0.068	01/26	0.051	08/05	0.147	08/05
Holbrook	514	58	0.003*	0.010	04/29	0.010	07/20	0.039	04/14	0.034	07/20	0.068	04/05
Strongstown	515	96	0.005	0.024	01/26	0.021	01/22	0.073	01/26	0.069	01/25	0.088	08/25
Upper Beaver Valley Air Basin													
New Castle	B21	99	0.003	0.022	08/04	0.018	02/06	0.078	08/04	0.053	08/04	0.097	08/25
Erie Air Basin													
Erie	E10	93	0.008	0.022	02/25	0.020	02/26	0.037	02/25	0.031	01/01	0.043	01/29
Northwest Region Non-Air Basin													
Warren Overlook	612	91	0.006	0.042	02/25	0.032	11/14	0.091	05/20	0.082	03/17	0.137	07/10

Primary National Ambient Air Quality Standards: Annual Mean = 0.030 parts per million;

24-hour Mean (Daily Block Average) = 0.14 parts per million, not to be exceeded more than once per year

Secondary National Ambient Air Quality Standard: 3-hour Mean (Block Average) = 0.5 parts per million, not to be exceeded more than once per year

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-7. Sulfur Dioxide Historical Trend.

Units: parts per million

Site Name/PA Site Code	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
Southeast Pennsylvania Air Basin											
Bristol	0.007	0.006	0.008	0.008	0.004	0.006	0.005	0.006	0.004	0.006	Annual Mean
P01	0.027	0.029	0.028	0.029	0.023	0.023	0.022	0.021	0.016	0.018	2nd Max 24-hour Mean
	0.044	0.041	0.041	0.042	0.035	0.034	0.033	0.032	0.021	0.033	2nd Max 3-hour Mean
Chester	0.008	0.007	0.006	0.006	0.005	0.006	0.005	0.010	0.006	0.006	Annual Mean
P11	0.026	0.023	0.022	0.028	0.019	0.016	0.017	0.022	0.017	0.015	2nd Max 24-hour Mean
	0.048	0.045	0.044	0.049	0.038	0.043	0.043	0.042	0.037	0.027	2nd Max 3-hour Mean
Norristown	0.004	0.004	0.005	0.005	0.004	0.006	0.007	0.005	0.004	0.004	Annual Mean
P21	0.022	0.019	0.019	0.023	0.018	0.018	0.019	0.014	0.012	0.015	2nd Max 24-hour Mean
	0.032	0.041	0.031	0.036	0.027	0.031	0.033	0.023	0.024	0.045	2nd Max 3-hour Mean
Allentown-Bethlehem-Easton Air Basin											
Allentown	0.007	0.007	0.008	0.009	0.007	0.008	0.006	0.005	0.004	***	Annual Mean
A19	0.027	0.028	0.028	0.038	0.045	0.032	0.032	0.019	0.024	***	2nd Max 24-hour Mean
	0.053	0.044	0.041	0.058	0.068	0.072	0.042	0.043	0.041	***	2nd Max 3-hour Mean
Easton	0.008	0.014	0.006	0.008	0.013	0.009	0.011	0.008	0.004	0.004	Annual Mean
A20	0.023	0.030	0.024	0.037	0.044	0.034	0.147	0.063	0.017	0.015	2nd Max 24-hour Mean
	0.069	0.055	0.046	0.054	0.096	0.080	0.256	0.140	0.034	0.026	2nd Max 3-hour Mean
Freemansburg	0.006	0.004	0.006	0.004	0.005	0.007	0.005	0.004	0.004	***	Annual Mean
A25	0.020	0.019	0.020	0.018	0.023	0.021	0.019	0.015	0.013	***	2nd Max 24-hour Mean
	0.034	0.028	0.046	0.036	0.036	0.058	0.038	0.037	0.026	***	2nd Max 3-hour Mean
Scranton-Wilkes-Barre Air Basin											
Scranton	0.004	0.005	0.004	0.005	0.005	0.005	0.004	0.005	0.003	***	Annual Mean
S01	0.021	0.026	0.023	0.020	0.016	0.025	0.016	0.018	0.015	***	2nd Max 24-hour Mean
	0.038	0.044	0.036	0.034	0.030	0.035	0.040	0.031	0.024	***	2nd Max 3-hour Mean
Wilkes-Barre	0.006	0.008	0.008	0.005	0.005	0.005	0.005	0.005	0.005	0.003	Annual Mean
S28	0.026	0.031	0.024	0.021	0.019	0.019	0.017	0.016	0.017	0.015	2nd Max 24-hour Mean
	0.052	0.048	0.044	0.035	0.035	0.034	0.039	0.032	0.044	0.026	2nd Max 3-hour Mean
Northeast Region Non-Air Basin											
Shenandoah	0.006	0.007	0.006	0.006	0.007	0.006	0.005	0.006	***	***	Annual Mean
211	0.025	0.035	0.026	0.023	0.027	0.027	0.021	0.020	***	***	2nd Max 24-hour Mean
	0.053	0.052	0.140	0.045	0.058	0.044	0.067	0.036	***	***	2nd Max 3-hour Mean
Reading Air Basin											
Reading	0.008	0.007	0.007	0.008	0.008	0.008	0.007*	***	***	***	Annual Mean
R01	0.028	0.025	0.019	0.023	0.020	0.023	0.016	***	***	***	2nd Max 24-hour Mean
	0.075	0.091	0.083	0.087	0.068	0.075	0.041	***	***	***	2nd Max 3-hour Mean
Reading Airport	***	***	***	***	***	***	***	0.004*	0.006	0.004	Annual Mean
R03	***	***	***	***	***	***	***	0.014	0.017	0.012	2nd Max 24-hour Mean
	***	***	***	***	***	***	***	0.034	0.040	0.041	2nd Max 3-hour Mean

Primary National Ambient Air Quality Standards: Annual Mean = 0.030 parts per million;

24-hour Mean (Daily Block Average) = 0.14 parts per million, not to be exceeded more than once per year

Secondary National Ambient Air Quality Standard: 3-hour Mean (Block Average) = 0.5 parts per million, not to be exceeded more than once per year

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-7. Sulfur Dioxide Historical Trend (cont.).

Units: parts per million

Site Name/PA Site Code	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
Harrisburg Air Basin											
Harrisburg	0.005	0.005	0.005	0.005	0.004	0.005	0.005	0.005	0.003	***	Annual Mean
H11	0.015	0.013	0.017	0.017	0.018	0.020	0.014	0.015	0.016	***	2nd Max 24-hour Mean
	0.026	0.056	0.048	0.048	0.061	0.054	0.045	0.042	0.048	***	2nd Max 3-hour Mean
Lancaster Air Basin											
Lancaster	0.005	0.004	0.005	0.005	0.005	0.006	0.005	0.005	0.005	***	Annual Mean
L01	0.024	0.018	0.014	0.018	0.017	0.022	0.018	0.018	0.016	***	2nd Max 24-hour Mean
	0.048	0.036	0.034	0.032	0.049	0.050	0.044	0.051	0.049	***	2nd Max 3-hour Mean
York Air Basin											
York	0.006	0.006	0.005	0.004	0.005	0.006	0.005	0.005	0.004	0.003	Annual Mean
Y01	0.020	0.019	0.014	0.012	0.020	0.030	0.021	0.023	0.015	0.014	2nd Max 24-hour Mean
	0.059	0.043	0.036	0.039	0.070	0.099	0.075	0.122	0.065	0.054	2nd Max 3-hour Mean
Southcentral Region Non-Air Basin											
Perry County	0.003	0.002	0.003	0.005	0.003	0.003	0.002	0.003	0.003	0.002	Annual Mean
305	0.015	0.010	0.008	0.017	0.013	0.010	0.014	0.011	0.014	0.011	2nd Max 24-hour Mean
	0.034	0.036	0.026	0.033	0.030	0.028	0.030	0.022	0.034	0.030	2nd Max 3-hour Mean
Altoona	0.006	0.009	0.007	0.007	0.006	0.007	0.007	0.006	0.005	0.004	Annual Mean
308	0.045	0.042	0.032	0.030	0.030	0.036	0.024	0.022	0.019	0.021	2nd Max 24-hour Mean
	0.071	0.066	0.051	0.060	0.065	0.066	0.049	0.044	0.042	0.049	2nd Max 3-hour Mean
Northcentral Region Non-Air Basin											
State College	***	***	0.004	0.006	0.004	0.005	0.002	0.002	0.003	0.003	Annual Mean
409	***	***	0.023	0.019	0.019	0.018	0.011	0.011	0.011	0.016	2nd Max 24-hour Mean
	***	***	0.044	0.031	0.028	0.036	0.024	0.023	0.032	0.025	2nd Max 3-hour Mean
Montoursville	***	***	0.003	0.005	0.003	0.005	0.005	0.003	0.003	***	Annual Mean
410	***	***	0.015	0.017	0.015	0.018	0.027	0.015	0.016	***	2nd Max 24-hour Mean
	***	***	0.027	0.070	0.032	0.044	0.047	0.052	0.030	***	2nd Max 3-hour Mean
Johnstown Air Basin											
Johnstown	0.007	0.008	0.007	0.008	0.007	0.007	0.008	0.006	0.006	0.004	Annual Mean
J01	0.026	0.031	0.025	0.028	0.037	0.037	0.024	0.026	0.026	0.018	2nd Max 24-hour Mean
	0.065	0.078	0.074	0.074	0.115	0.097	0.072	0.049	0.056	0.080	2nd Max 3-hour Mean
Monongahela Valley Air Basin											
Charleroi	0.008	0.007	0.007	0.006	0.008	0.010	0.008	0.010	0.008	0.005	Annual Mean
M01	0.031	0.022	0.023	0.029	0.021	0.030	0.021	0.025	0.018	0.022	2nd Max 24-hour Mean
	0.059	0.107	0.070	0.079	0.051	0.064	0.063	0.099	0.073	0.082	2nd Max 3-hour Mean
Lower Beaver Valley Air Basin											
Beaver Falls	0.007	0.008	0.007	0.007	0.007	0.007	0.007	0.008	0.005	***	Annual Mean
B11	0.036	0.032	0.030	0.031	0.026	0.032	0.023	0.023	0.019	***	2nd Max 24-hour Mean
	0.070	0.076	0.064	0.082	0.064	0.065	0.053	0.053	0.041	***	2nd Max 3-hour Mean

Primary National Ambient Air Quality Standards: Annual Mean = 0.030 parts per million;

24-hour Mean (Daily Block Average) = 0.14 parts per million, not to be exceeded more than once per year

Secondary National Ambient Air Quality Standard: 3-hour Mean (Block Average) = 0.5 parts per million, not to be exceeded more than once per year

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-7. Sulfur Dioxide Historical Trend (cont.).

Units: parts per million

Site Name/PA Site Code	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
Hookstown	0.011	0.011	0.010	0.010	0.009	0.009	0.009	0.009	0.008	0.007	Annual Mean
B23	0.039	0.037	0.038	0.045	0.048	0.034	0.036	0.036	0.038	0.027	2nd Max 24-hour Mean
	0.126	0.108	0.115	0.118	0.126	0.096	0.084	0.124	0.096	0.080	2nd Max 3-hour Mean
Brighton Township	0.012	0.014	0.014	0.011	0.012	0.013	0.009	0.010	0.008	0.007	Annual Mean
B27	0.086	0.072	0.075	0.083	0.046	0.050	0.054	0.044	0.037	0.041	2nd Max 24-hour Mean
	0.247	0.249	0.319	0.174	0.150	0.202	0.231	0.128	0.125	0.120	2nd Max 3-hour Mean
Allegheny County Air Basin											
Pittsburgh	0.010	0.009	0.010	0.010	0.007	0.008	0.007	0.006	0.005	0.004	Annual Mean
D12	0.037	0.033	0.024	0.028	0.024	0.022	0.020	0.021	0.019	0.018	2nd Max 24-hour Mean
	0.078	0.077	0.075	0.066	0.057	0.061	0.068	0.054	0.057	0.053	2nd Max 3-hour Mean
Southwest Region Non-Air Basin											
Florence	0.009	0.009	0.010	0.010	0.009	0.010	0.006	0.006	0.004	0.004	Annual Mean
504	0.031	0.039	0.037	0.033	0.034	0.047	0.029	0.025	0.016	0.017	2nd Max 24-hour Mean
	0.100	0.102	0.092	0.100	0.081	0.080	0.062	0.113	0.043	0.051	2nd Max 3-hour Mean
Washington	0.009	0.010	0.009	0.009	0.009	0.009	0.009	0.008	0.007	***	Annual Mean
508	0.027	0.038	0.032	0.028	0.026	0.027	0.024	0.020	0.019	***	2nd Max 24-hour Mean
	0.059	0.069	0.080	0.078	0.067	0.078	0.063	0.053	0.067	***	2nd Max 3-hour Mean
Greensburg	0.010	0.009	0.006	0.008	0.006	0.006	0.005	0.005	0.005	***	Annual Mean
513	0.029	0.027	0.024	0.029	0.023	0.030	0.021	0.023	0.021	***	2nd Max 24-hour Mean
	0.071	0.053	0.048	0.070	0.058	0.083	0.068	0.049	0.053	***	2nd Max 3-hour Mean
Holbrook	0.007*	0.006*	0.007*	0.006*	0.006*	0.006*	0.006*	0.006*	0.006*	0.003*	Annual Mean
514	0.022	0.023	0.022	0.029	0.028	0.021	0.017	0.018	0.017	0.010	2nd Max 24-hour Mean
	0.062	0.070	0.055	0.077	0.062	0.059	0.046	0.064	0.053	0.034	2nd Max 3-hour Mean
Strongstown	***	***	***	***	***	0.008	0.008	0.007	0.007	0.005	Annual Mean
515	***	***	***	***	***	0.032	0.028	0.029	0.024	0.021	2nd Max 24-hour Mean
	***	***	***	***	***	0.112	0.108	0.081	0.071	0.069	2nd Max 3-hour Mean
Upper Beaver Valley Air Basin											
New Castle	0.008	0.011	0.007	0.009	0.007	0.008	0.007	0.008	0.005	0.003	Annual Mean
B21	0.031	0.041	0.033	0.028	0.035	0.037	0.024	0.027	0.021	0.018	2nd Max 24-hour Mean
	0.079	0.120	0.082	0.076	0.072	0.089	0.065	0.083	0.049	0.053	2nd Max 3-hour Mean
Erie Air Basin											
Erie	0.008	0.010	0.011	0.011	0.008	0.011	0.009	0.010	0.010	0.008	Annual Mean
E10	0.041	0.043	0.037	0.038	0.029	0.041	0.023	0.021	0.019	0.020	2nd Max 24-hour Mean
	0.076	0.098	0.070	0.078	0.077	0.071	0.040	0.034	0.036	0.031	2nd Max 3-hour Mean
Northwest Region Non-Air Basin											
Farrell	0.007	0.007	0.006	0.006	0.006	0.005	0.005	0.005	0.005	***	Annual Mean
606	0.024	0.033	0.024	0.025	0.019	0.022	0.019	0.015	0.019	***	2nd Max 24-hour Mean
	0.052	0.071	0.067	0.067	0.044	0.045	0.035	0.040	0.032	***	2nd Max 3-hour Mean

Primary National Ambient Air Quality Standards: Annual Mean = 0.030 parts per million;

24-hour Mean (Daily Block Average) = 0.14 parts per million, not to be exceeded more than once per year

Secondary National Ambient Air Quality Standard: 3-hour Mean (Block Average) = 0.5 parts per million, not to be exceeded more than once per year

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-7. Sulfur Dioxide Historical Trend (cont.).

Units: parts per million

Site Name/PA Site Code	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
Warren (High School)	0.006	0.007	0.006	0.006	0.004	0.004	0.004	0.004	0.003	***	Annual Mean
611	0.024	0.027	0.023	0.028	0.019	0.018	0.017	0.037	0.018	***	2nd Max 24-hour Mean
	0.070	0.075	0.066	0.067	0.037	0.050	0.047	0.063	0.029	***	2nd Max 3-hour Mean
Warren (Overlook)	0.013	0.016	0.014	0.014	0.010	0.015	0.011	0.009	0.008	0.006	Annual Mean
612	0.092	0.087	0.100	0.103	0.061	0.075	0.086	0.049	0.036	0.032	2nd Max 24-hour Mean
	0.214	0.209	0.273	0.249	0.212	0.235	0.200	0.129	0.125	0.082	2nd Max 3-hour Mean

Primary National Ambient Air Quality Standards: Annual Mean = 0.030 parts per million;

24-hour Mean (Daily Block Average) = 0.14 parts per million, not to be exceeded more than once per year

Secondary National Ambient Air Quality Standard: 3-hour Mean (Block Average) = 0.5 parts per million, not to be exceeded more than once per year

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-8. Nitrogen Dioxide Summary.

Year: 2009

Units: parts per million

Site Name	PA Site Code	Percent Valid Data	Annual Mean	1st Maximum 1-HR Mean	1st Maximum Date MM/DD	2nd Maximum 1-HR Mean	2nd Maximum Date MM/DD	3rd Maximum 1-HR Mean	3rd Maximum Date MM/DD	4th Maximum 1-HR Mean	4th Maximum Date MM/DD
Southeast Pennsylvania Air Basin											
Bristol	P01	92	0.011	0.061	03/05	0.060	02/02	0.055	02/02	0.055	03/05
Chester	P11	99	0.012	0.130	01/22	0.104	01/23	0.103	01/22	0.099	01/22
Allentown-Bethlehem-Easton Air Basin											
Freemansburg	A25	98	0.011	0.056	03/16	0.048	02/07	0.047	02/02	0.047	03/16
Scranton-Wilkes-Barre Air Basin											
Scranton	S01	98	0.010	0.049	01/22	0.048	01/12	0.048	02/01	0.048	02/01
Reading Air Basin											
Reading Airport	R03	97	0.008	0.043	04/14	0.039	01/19	0.039	03/04	0.039	04/08
Harrisburg Air Basin											
Harrisburg	H11	98	0.011	0.051	01/23	0.050	01/23	0.049	01/24	0.049	02/02
Lancaster Air Basin											
Lancaster	L01	97	0.010	0.046	10/21	0.043	11/08	0.042	02/02	0.042	11/08
York Air Basin											
York	Y01	99	0.013	0.059	02/02	0.057	02/02	0.055	01/23	0.055	04/09
Southcentral Region Non-Air Basin											
Perry County	305	92	0.004	0.031	02/26	0.029	02/06	0.028	02/06	0.028	02/26
Arendtsville	314	56	0.003*	0.021	10/28	0.020	10/28	0.020	10/28	0.019	04/14
Northcentral Region Non-Air Basin											
State College	409	98	0.006	0.041	01/23	0.040	02/01	0.040	02/06	0.039	10/21
Johnstown Air Basin											
Johnstown	J01	99	0.009	0.048	01/23	0.048	01/23	0.047	11/09	0.046	11/09
Monongahela Valley Air Basin											
Charleroi	M01	98	0.010	0.041	11/09	0.041	11/10	0.041	11/10	0.041	11/10
Lower Beaver Valley Air Basin											
Beaver Falls	B11	95	0.011	0.053	11/09	0.052	02/10	0.051	01/23	0.050	02/10
Allegheny County Air Basin											
Pittsburgh	D12	96	0.013	0.059	11/09	0.058	02/10	0.052	01/23	0.052	11/08

Primary and Secondary National Ambient Air Quality Standard

Annual Mean 0.053 parts per million

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-8. Nitrogen Dioxide Summary (cont.).

Year: 2009

Units: parts per million

Site Name	PA Site Code	Percent Valid Data	Annual Mean	1st Maximum 1-HR Mean	1st Maximum Date MM/DD	2nd Maximum 1-HR Mean	2nd Maximum Date MM/DD	3rd Maximum 1-HR Mean	3rd Maximum Date MM/DD	4th Maximum 1-HR Mean	4th Maximum Date MM/DD
Erie Air Basin											
Erie	E10	97	0.008	0.044	02/02	0.043	02/02	0.042	02/02	0.041	04/17

Primary and Secondary National Ambient Air Quality Standard

Annual Mean 0.053 parts per million

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-9. Oxides of Nitrogen Summary.

Year: 2009

Units: parts per million

Site Name	PA Site Code	Percent Valid Data	Annual Mean	1st Maximum 1-HR Mean	1st Maximum Date MM/DD	2nd Maximum 1-HR Mean	2nd Maximum Date MM/DD	3rd Maximum 1-HR Mean	3rd Maximum Date MM/DD	4th Maximum 1-HR Mean	4th Maximum Date MM/DD
Southeast Pennsylvania Air Basin											
Bristol	P01	92	0.020	0.454	02/02	0.413	02/02	0.398	01/30	0.377	02/02
Chester	P11	99	0.019	0.315	01/22	0.270	01/30	0.265	01/30	0.247	01/22
Allentown-Bethlehem-Easton Air Basin											
Freemansburg	A25	98	0.016	0.231	01/23	0.227	01/23	0.206	01/23	0.203	02/02
Scranton-Wilkes-Barre Air Basin											
Scranton	S01	98	0.015	0.200	01/22	0.186	01/12	0.178	01/22	0.166	01/12
Reading Air Basin											
Reading Airport	R03	98	0.012	0.177	01/20	0.151	01/20	0.139	03/04	0.130	01/19
Harrisburg Air Basin											
Harrisburg	H11	98	0.017	0.341	01/23	0.314	01/23	0.264	02/25	0.260	01/23
Lancaster Air Basin											
Lancaster	L01	96	0.015	0.254	02/02	0.238	01/23	0.203	01/23	0.200	02/02
York Air Basin											
York	Y01	99	0.021	0.395	01/23	0.337	02/02	0.306	02/02	0.305	01/23
Southcentral Region Non-Air Basin											
Perry County	305	92	0.005	0.039	02/06	0.039	02/07	0.036	02/06	0.034	12/02
Arendtsville	314	56	0.004*	0.028	10/28	0.027	10/28	0.026	10/28	0.026	10/28
Northcentral Region Non-Air Basin											
State College	409	98	0.007	0.154	01/23	0.129	02/10	0.118	01/23	0.118	02/10
Johnstown Air Basin											
Johnstown	J01	99	0.013	0.208	02/10	0.198	02/10	0.197	02/10	0.196	01/23
Monongahela Valley Air Basin											
Charleroi	M01	99	0.016	0.218	02/10	0.191	02/10	0.171	11/09	0.170	02/10
Lower Beaver Valley Air Basin											
Beaver Falls	B11	98	0.018	0.278	02/10	0.259	01/23	0.258	02/10	0.247	01/23
Allegheny County Air Basin											
Pittsburgh	D12	96	0.022	0.342	02/10	0.258	02/10	0.246	11/09	0.225	02/10
Erie Air Basin											
Erie	E10	97	0.012	0.253	02/23	0.163	04/16	0.160	11/13	0.151	11/12

No Primary or Secondary Air Quality Standards

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-10. Nitrogen Dioxide Historical Trend.

Annual Means

Units: parts per million

Site Name	PA Site Code	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Southeast Pennsylvania Air Basin											
Bristol	P01	0.017	0.018	0.016	0.016	0.016	0.017	0.015	0.013	0.013	0.011
Chester	P11	0.019	0.019	0.018	0.018	0.018	0.017	0.016	0.015	0.015	0.012
Norristown	P21	0.018	0.017	0.015	0.017	0.014	0.016	0.014	0.014	0.013	***
Allentown-Bethlehem-Easton Air Basin											
Allentown	A19	0.013	0.017	0.014	0.015	0.013	0.014	0.012	0.012	0.011	***
Freemansburg	A25	0.017	0.016	0.013	0.013	0.014	0.015	0.012	0.012	0.012	0.011
Scranton-Wilkes-Barre Air Basin											
Scranton	S01	0.015	0.015	0.014	0.014	0.012	0.013	0.011	0.011	0.012	0.010
Wilkes-Barre	S28	0.014	0.014	0.013	0.013	0.012	0.013	0.011	0.011	0.011	***
Reading Air Basin											
Reading	R01	0.020	0.020	0.019	0.018	0.017	0.019	0.018*	***	***	***
Reading Airport	R03	***	***	***	***	***	***	***	0.011*	0.010	0.008
Harrisburg Air Basin											
Harrisburg	H11	0.017	0.018	0.016	0.016	0.015	0.015	0.013	0.014	0.013	0.011
Lancaster Air Basin											
Lancaster	L01	0.014	0.014	0.013	0.015	0.014	0.014	0.013	0.012	0.011	0.010
York Air Basin											
York	Y01	0.018	0.020	0.017	0.017	0.016	0.018	0.016	0.015	0.014	0.013
Southcentral Region Non-Air Basin											
Perry County	305	0.007	0.006	0.006	0.006	0.005	0.005	0.004	0.004	0.005	0.004
Altoona	308	0.014	0.014	0.013	0.013	0.012	0.013	0.012	0.011	0.011	***
Arendtsville	314	0.004*	0.004*	0.004*	0.004*	0.004*	0.004*	0.004*	0.004*	0.003*	0.003
Northcentral Region Non-Air Basin											
State College	409	***	***	0.008	0.008	0.009	0.009	0.008	0.007	0.006	0.006
Johnstown Air Basin											
Johnstown	J01	0.015	0.014	0.012	0.013	0.013	0.013	0.012	0.012	0.011	0.009
Monongahela Valley Air Basin											
Charleroi	M01	0.014	0.013	0.013	0.012	0.012	0.013	0.013	0.013	0.012	0.010
Lower Beaver Valley Air Basin											
Beaver Falls	B11	0.017	0.017	0.016	0.015	0.015	0.017	0.015	0.014	0.013	0.011
Allegheny County Air Basin											
Pittsburgh	D12	0.022	0.021	0.020	0.021	0.021	0.022	0.018	0.019	0.018	0.013
Southwest Region Non-Air Basin											
Florence	504	0.008	0.008	0.006	0.013	0.006	0.007	0.005	0.006	0.005	***
Washington	508	0.015	0.015	0.012	0.012	0.013	0.014	0.012	0. 013	0.011	***

Primary and Secondary National Ambient Air Quality Standard

Annual Mean 0.053 parts per million

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-10. Nitrogen Dioxide Historical Trend (cont.).

Annual Means

Units: parts per million

Site Name	PA Site Code	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Greensburg	513	0.017	0.017	0.016	0.015	0.013	0.013	0.011	0.011	0.009	***
Strongstown	515	***	***	***	***	***	0.006	0.006	0.006	0.006	***
Upper Beaver Valley Air Basin											
New Castle	B21	0.019	0.017	0.016	0.016	0.016	0.017	0.016	0.015	0.012	***
Erie Air Basin											
Erie	E10	0.012	0.012	0.012	0.012	0.012	0.013	0.011	0.011	0.009	0.008

Primary and Secondary National Ambient Air Quality Standard

Annual Mean 0.053 parts per million

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-11. Carbon Monoxide Summary.

Year: 2009

Units: parts per million

Site Name	PA Site Code	Percent Valid Data	1st Maximum 1-HR Mean	1st Maximum Date MM/DD	2nd Maximum 1-HR Mean	2nd Maximum Date MM/DD	1st Maximum 8-HR Mean	1st Maximum Date MM/DD	2nd Maximum 8-HR Mean	2nd Maximum Date MM/DD
Southeast Pennsylvania Air Basin										
Bristol	P01	96	2.4	09/18	2.4	09/18	2.3	09/18	2.3	09/20
Allentown-Bethlehem-Easton Air Basin										
Freemansburg	A25	98	2.4	01/23	2.2	01/23	2.0	01/23	1.7	01/13
Scranton-Wilkes-Barre Air Basin										
Scranton	S01	99	1.7	01/12	1.7	01/12	0.8	01/12	0.8	01/22
Reading Air Basin										
Reading Airport	R03	98	3.7	06/06	3.2	06/06	1.2	01/30	1.2	02/07
Harrisburg Air Basin										
Harrisburg	H11	99	1.1	01/23	1.1	02/11	0.9	02/25	0.9	03/05
York Air Basin										
York	Y01	99	2.5	01/23	2.4	01/23	1.7	02/02	1.4	01/23
Southcentral Region Non-Air Basin										
Arendtsville	314	55	1.1	07/01	1.0	08/19	0.5	08/19	0.4	07/01
Johnstown Air Basin										
Johnstown	J01	100	2.3	02/10	2.3	02/10	1.9	02/10	1.4	02/11
Monongahela Valley Air Basin										
Charleroi	M01	99	1.3	03/11	1.2	01/23	0.7	02/10	0.7	03/05
Allegheny County Air Basin										
Pittsburgh	D12	88	2.0	07/04	1.8	02/10	1.2	02/07	1.2	11/10
Upper Beaver Valley Air Basin										
New Castle	B21	96	1.7	02/10	1.2	02/10	1.2	12/27	1.0	12/23
Erie Air Basin										
Erie	E10	98	2.5	11/12	1.8	11/13	1.2	12/26	1.1	02/02

Primary National Ambient Air Quality Standards

1-hour Mean = 35 parts per million

8-hour Running Mean = 9 parts per million, not to be exceeded more than once per year

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-12. Carbon Monoxide Historical Trend.

Units: parts per million

Site Name/PA Site Code	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
Southeast Pennsylvania Air Basin											
Bristol	4.3	4.0	4.3	4.5	3.2	3.8	2.8	2.1	2.9	2.4	2nd Max 1-hour Mean
P01	3.6	3.1	2.4	2.8	2.2	2.3	2.1	1.2	1.9	2.3	2nd Max 8-hour Mean
Norristown	2.8	2.5	2.7	2.4	1.9	1.7	2.0	1.4	1.2	***	2nd Max 1-hour Mean
P21	1.7	1.7	2.3	1.8	1.4	1.2	1.4	1.1	0.9	***	2nd Max 8-hour Mean
Allentown-Bethlehem-Easton Air Basin											
Freemansburg	5.5	3.1	2.3	2.3	2.4	2.5	1.3	4.0	2.0	2.2	2nd Max 1-hour Mean
A25	2.4	2.4	1.8	1.4	1.7	1.9	0.9	2.4	1.6	1.7	2nd Max 8-hour Mean
Allentown (CBD)	4.1	4.0	4.4	***	***	***	***	***	***	***	2nd Max 1-hour Mean
A51	2.6	3.3	2.3	***	***	***	***	***	***	***	2nd Max 8-hour Mean
Scranton-Wilkes-Barre Air Basin											
Scranton	4.4	2.9	2.7	2.4	2.9	2.6	2.3	2.2	1.4	1.7	2nd Max 1-hour Mean
S01	2.1	1.8	1.6	1.5	1.8	1.5	1.4	1.5	1.0	0.8	2nd Max 8-hour Mean
Wilkes-Barre (CBD)	3.8	2.8	5.1	3.2	2.4	2.4	2.3	***	***	***	2nd Max 1-hour Mean
S27	2.2	2.3	2.6	2.3	1.8	1.9	1.6	***	***	***	2nd Max 8-hour Mean
Wilkes-Barre	***	***	***	***	***	***	2.5	2.4	2.6	***	2nd Max 1-hour Mean
S28	***	***	***	***	***	***	1.6	1.6	1.5	***	2nd Max 8-hour Mean
Northeast Region Non-Air Basin											
Shenandoah	2.6	2.0	2.3	2.8	1.5	2.6	2.1	1.9	***	***	2nd Max 1-hour Mean
211	1.3	0.9	1.2	1.4	0.8	1.4	1.3	1.4	***	***	2nd Max 8-hour Mean
Reading Air Basin											
Reading	3.8	3.8	4.1	3.2	2.5	2.4	1.8	***	***	***	2nd Max 1-hour Mean
R01	2.3	2.2	2.2	2.0	1.8	1.9	1.2	***	***	***	2nd Max 8-hour Mean
Reading Airport	***	***	***	***	***	***	***	0.8	1.3	3.2	2nd Max 1-hour Mean
R03	***	***	***	***	***	***	***	0.6	0.9	1.2	2nd Max 8-hour Mean
Harrisburg Air Basin											
Harrisburg	***	***	***	***	***	***	1.7	1.6	1.4	1.1	2nd Max 1-hour Mean
H11	***	***	***	***	***	***	1.3	1.2	1.1	0.9	2nd Max 8-hour Mean
Harrisburg (CBD)	3.5	4.4	3.6	3.0	2.3	2.0	1.8	***	***	***	2nd Max 1-hour Mean
H16	2.1	2.8	2.3	2.0	1.3	1.3	1.2	***	***	***	2nd Max 8-hour Mean
Lancaster Air Basin											
Lancaster	3.0	2.9	3.0	2.7	3.2	2.5	2.2	1.7	2.1	***	2nd Max 1-hour Mean
L01	1.9	2.2	2.2	1.7	1.6	1.5	1.3	1.3	1.5	***	2nd Max 8-hour Mean
York Air Basin											
York	3.7	3.8	4.3	2.6	2.8	2.5	3.3	2.5	2.0	2.4	2nd Max 1-hour Mean
Y01	1.8	2.2	2.2	1.7	1.8	1.4	1.8	1.4	1.2	1.4	2nd Max 8-hour Mean

Primary National Ambient Air Quality Standards

1-hour Mean = 35 parts per million

8-hour Running Mean = 9 parts per million, not to be exceeded more than once per year

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-12. Carbon Monoxide Historical Trend (cont.).

Units: parts per million

Site Name/PA Site Code	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
Southcentral Region Non-Air Basin											
Altoona	1.7	2.4	1.5	1.6	2.3	1.9	1.9	1.6	2.0	***	2nd Max 1-hour Mean
308	1.0	1.1	0.7	1.2	0.9	1.1	0.9	1.0	0.8	***	2nd Max 8-hour Mean
Arendtsville	1.4	1.4	1.0	0.7	1.7	0.3	1.3	0.9	0.8	1.0	2nd Max 1-hour Mean
314	1.2	1.2	0.6	0.4	1.6	0.3	1.2	0.6	0.4	0.4	2nd Max 8-hour Mean
Johnstown Air Basin											
Johnstown	2.8	2.8	3.9	3.0	2.0	1.7	2.1	3.1	2.2	2.3	2nd Max 1-hour Mean
J01	2.0	2.1	2.6	2.2	2.1	1.2	1.5	1.9	1.6	1.4	2nd Max 8-hour Mean
Monongahela Valley Air Basin											
Charleroi	1.8	1.4	1.7	1.6	1.8	1.6	3.2	1.6	1.4	1.2	2nd Max 1-hour Mean
M01	1.1	1.1	1.0	1.0	1.4	1.1	1.1	1.4	1.1	0.7	2nd Max 8-hour Mean
Lower Beaver Valley Air Basin											
Beaver Falls	1.7	2.4	2.1	1.6	1.7	1.6	2.0	1.8	2.0	***	2nd Max 1-hour Mean
B11	1.2	1.5	1.6	1.1	1.2	1.4	1.5	0.9	1.3	***	2nd Max 8-hour Mean
Allegheny County Air Basin											
Pittsburgh	3.2	3.0	2.5	2.4	2.0	1.9	1.5	2.0	1.8	1.8	2nd Max 1-hour Mean
D12	2.4	2.5	2.0	2.0	1.7	1.5	1.4	1.3	1.5	1.2	2nd Max 8-hour Mean
Southwest Region Non-Air Basin											
Greensburg	2.6	3.0	2.1	3.1	2.1	1.3	1.6	1.5	1.0	***	2nd Max 1-hour Mean
513	1.8	1.8	1.2	2.1	1.4	0.9	0.9	0.9	0.5	***	2nd Max 8-hour Mean
Holbrook	0.6	1.3	0.3	0.6	0.6	0.7	1.9	1.0	0.5	***	2nd Max 1-hour Mean
514	0.3	1.1	0.3	0.3	0.3	0.7	1.3	0.6	0.3	***	2nd Max 8-hour Mean
Upper Beaver Valley Air Basin											
New Castle	3.5	3.0	4.1	3.3	2.8	2.4	2.7	1.6	1.2	1.2	2nd Max 1-hour Mean
B21	1.9	2.0	1.8	1.8	1.8	1.5	2.2	1.0	0.7	1.0	2nd Max 8-hour Mean
Erie Air Basin											
Erie	***	***	***	***	***	3.1	2.3	1.4	1.6	1.8	2nd Max 1-hour Mean
E10	***	***	***	***	***	1.4	1.4	1.0	1.0	1.1	2nd Max 8-hour Mean
Erie (CBD)	11.9	7.2	7.5	7.6	1.8	***	***	***	***	***	2nd Max 1-hour Mean
E12	6.0	4.4	4.5	3.4	1.3	***	***	***	***	***	2nd Max 8-hour Mean

Primary National Ambient Air Quality Standards

1-hour Mean = 35 parts per million

8-hour Running Mean = 9 parts per million, not to be exceeded more than once per year

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-13. $PM_{2.5}$ Particulate Matter Summary,

Federal Reference Method (FRM) and Federal Equivalent Method (FEM) Monitors

Year: 2009

Units: micrograms per cubic meter / local conditions

				Maximum 24-hour Means								
				1st Maximum		2nd Maximum		3rd Maximum		4th Maximum		98th PCTL
Site Name	PA Site Code	Arithmetic Annual Mean	Number 24HR Means	24HR Mean	Date MM/DD	24HR Mean	Date MM/DD	24HR Mean	Date MM/DD	24HR Mean	Date MM/DD	24HR Mean
Southeast Pennsylvania Air Basin												
Bristol	P01	10.84	319	35.5	01/31	35.2	01/19	31.6	11/09	27.2	04/24	25.8
Chester[2]	P11	12.38	347	37.6	03/15	37.6	11/10	35.5	11/09	35.2	01/19	27.9
Norristown	P21	10.38	330	34.9	03/15	32.0	01/19	28.6	02/07	28.5	08/26	27.2
New Garden Airport[3]	P30	14.06	332	44.7	11/09	43.5	01/19	40.1	11/10	34.3	08/04	31.1
Allentown-Bethlehem-Easton Air Basin												
Freemansburg[3]	A25	11.90	342	42.0	01/24	31.7	01/19	31.7	12/07	30.8	08/17	30.1
Scranton-Wilkes-Barre Air Basin												
Scranton[3]	S01	9.32	338	26.4	01/28	25.1	06/09	24.5	01/23	23.8	08/04	23.4
Reading Air Basin												
Reading Airport	R03	10.92	331	38.1	06/08	35.6	03/15	33.3	02/07	32.5	01/19	28.8
Harrisburg Air Basin												
Harrisburg[1]	H11	12.15	340	42.5	11/09	41.5	03/15	40.8	02/07	36.5	03/16	33.0
Lancaster Air Basin												
Lancaster	L01	12.19	336	35.3	03/15	33.6	02/07	33.3	11/09	32.8	11/10	29.4
York Air Basin												
York	Y01	11.67	346	45.1	01/19	35.6	03/16	33.0	03/15	28.9	11/09	26.6
Southcentral Region Non-Air Basin												
Arendtsville[3]	314	11.03	338	33.5	03/16	30.2	11/09	28.8	08/09	28.3	06/11	26.5
Carlisle	316	10.95	347	39.9	03/15	39.4	03/16	34.7	02/07	34.4	11/09	30.2
Carlisle (BAM)	316	13.67	349	41.8	03/16	40.1	03/15	39.8	11/09	37.8	02/07	35.2
Northcentral Region Non-Air Basin												
State College	409	9.36	333	24.9	02/10	24.0	06/08	23.9	01/18	23.8	08/09	22.6
Johnstown Air Basin												
Johnstown	J01	11.92	337	33.4	12/31	32.8	02/26	31.4	08/16	30.0	08/24	28.7
Johnstown (BAM)	J01	12.42*	263	35.6	08/24	34.4	12/31	33.6	08/16	31.7	09/05	30.0
Monongahela Valley Air Basin												
Charleroi[2]	M01	12.56	350	35.5	02/09	32.8	11/10	30.7	05/25	30.7	08/13	29.0

Primary and Secondary National Ambient Air Quality Standards

Annual Mean (3-year average) = 15 micrograms per cubic meter

24-hour Mean (3-year average of 98th Percentile) = 35 micrograms per cubic meter

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-13. $PM_{2.5}$ Particulate Matter Summary,

Federal Reference Method (FRM) and Federal Equivalent Method (FEM) Monitors (cont).

Year: 2009

Units: micrograms per cubic meter / local conditions

Lower Beaver Valley Air Basin												
Beaver Falls												
	B11	13.00	336	33.2	08/16	31.9	05/24	31.0	02/10	30.1	01/20	28.7
Southwest Region Non-Air Basin												
Florence[3]												
Washington	504	12.15	340	32.5	08/16	31.6	08/15	30.8	08/09	27.7	07/11	25.8
Kittanning	508	11.11	344	30.9	03/22	30.8	03/21	27.2	02/09	26.5	08/09	25.3
Greensburg[3]	512	11.02*	182	32.9	08/09	30.7	08/16	27.5	08/17	26.9	11/09	26.9
	513	13.51*	337	38.2	01/27	36.8	08/27	36.7	08/16	34.5	08/09	33.3
Erie Air Basin												
Erie [3]												
Bristol	E10	9.56*	310	37.5	08/16	31.1	02/26	31.1	08/17	29.1	08/15	27.5
Northwest Region Non-Air Basin												
Farrell	606	10.39	353	42.4	01/15	31.9	08/15	29.0	08/17	28.2	08/09	24.2

[1] Manual FRM monitor replaced with continuous FEM monitor January 2009 at the Harrisburg site
[2] Manual FRM monitor replaced with continuous FEM monitor April 2009 at the Chester and Charleroi sites
[3] Manual FRM monitor replaced with continuous FEM monitor July 2009 at the New Garden, Freemansburg, Scranton, Arendtsville, Florence, Greensburg and Erie sites

Primary and Secondary National Ambient Air Quality Standards

Annual Mean (3-year average) = 15 micrograms per cubic meter

24-hour Mean (3-year average of 98th Percentile) = 35 micrograms per cubic meter

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-14. $PM_{2.5}$ Particulate Matter Summary, Non-FEM Continuous Method Monitors.

Year: 2009

Units: micrograms per cubic meter / local conditions

Site Name	PA Site Code	Arithmetic Annual Mean	Number 24HR Means	Maximum 24-hour Means: 1st Maximum 24HR Mean	1st Maximum Date MM/DD	2nd Maximum 24HR Mean	2nd Maximum Date MM/DD	3rd Maximum 24HR Mean	3rd Maximum Date MM/DD	4th Maximum 24HR Mean	4th Maximum Date MM/DD	98th PCTL 24HR Mean
Southeast Pennsylvania Air Basin												
Norristown (TEOM)	P21	11.33	239	35.0	11/09	31.2	11/10	29.1	08/26	27.3	12/07	26.7
Reading Air Basin												
Reading Airport (TEOM)	R03	12.89	300	38.9	11/09	36.2	03/15	35.6	07/29	34.8	03/16	33.9
Lancaster Air Basin												
Lancaster (TEOM)	L01	14.80	354	39.5	02/07	38.8	03/15	38.5	06/08	36.9	03/07	33.3
York Air Basin												
York (TEOM)	Y01	16.14	291	41.7	03/16	38.1	03/15	37.6	11/09	37.1	11/10	34.3
Lower Beaver Valley Air Basin												
Beaver Falls (TEOM)	B11	14.43	360	37.7	02/10	37.6	08/16	35.5	02/09	34.4	01/23	32.2

The $PM_{2.5}$ Primary and Secondary National Ambient Air Quality Standards are not applicable to these methods, but are provided below for reference purposes only

Annual Mean (3-year average) = 15 micrograms per cubic meter

24-hour Mean (3-year average of 98th Percentile) = 35 micrograms per cubic meter

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-15. $PM_{2.5}$ Particulate Matter 24- Hour Maximums Days Greater than 35 µg/m^3, 24-Hour 98th Percentiles and Annual Means Summary (2007 – 2009), Federal Reference Method (FRM) and Federal Equivalent (FEM) Monitors.

Units: micrograms per cubic meter / local conditions

Station	24-Hour Design Value	Annual Design Value	2007		2008			2009		
			24-Hr 98th Percentile	Wtd. Annual Mean	24-Hr Days > 35	24-Hr 98th Percentile	Wtd. Annual Mean	24-Hr Days > 35	24-Hr 98th Percentile	Wtd. Annual Mean
Frankford (Lab)	32	12.5	35.4	13.74	5	34.5	13.01	2	25.9	10.80
Northeast (Airport)	30	11.6*	33.5	12.85	3	30.5	11.99	0	25.5	9.91
Broad St	32	13.0*	35.2	14.37	8	32.8	13.50	6	27.2	11.07
Ritner St	32	12.4			5	34.5	13.49	3	28.6	11.29
Spring Garden St	31	12.1*	33.1	12.04	7	32.8	13.29	2	28.3	11.09
Southwest (Elmwood)	32	13.3*	31.7	13.33						
Bristol	31	12.2*	35.0	13.02	2	30.9	12.66	1	25.8	10.84
Chester	30	13.6	34.5	14.45	2	28.6	13.84	3	27.9	12.38
Norristown	27	11.7	30.1	13.09	1	23.7	11.66	0	27.2	10.38
New Garden	34	13.9*	38.1	14.07	2	32.0	13.68	3	31.1	14.06
Freemansburg	34	12.5	37.9	13.31	5	33.1	12.26	1	30.1	11.90
Scranton	28	10.2	32.0	11.28	1	27.7	10.06	0	23.4	9.32
Reading Airport	30	12.9	33.9	15.28	1	28.4	12.48	2	28.8	10.92
Harrisburg	34	13.2	35.6	14.28	4	34.3	13.18	4	33.0	12.15
Lancaster	35	13.8	39.6	15.40	2	35.0	13.93	0	29.4	12.19
York	32	13.7	37.0	15.68	1	32.3	13.64	3	26.6	11.67
Arendtsville	29	11.6	30.7	12.31	3	30.5	11.45	0	26.5	11.03
Carlisle	33	12.6	35.3	13.70	4	33.7	13.03	8	29.9	11.06
State College	28	10.7	33.1	11.93	2	29.7	10.79	0	22.6	9.36
Johnstown	32	13.4*	34.6	14.42	1	32.2	13.86	1	28.7	11.87
Charleroi	32	13.7	40.9	15.51	2	27.2	13.03	1	29.0	12.56
Beaver Falls	33	14.1*	38.2	15.72	2	31.2	13.69	0	28.7	13.00
Florence	31	12.4*	41.2	13.79	1	26.4	11.30	0	25.8	12.15
Washington	30	12.7	37.9	14.83	0	25.6	12.27	0	25.3	11.11
Kittanning	27	11.0						0	26.9	11.02
Greensburg	34	13.8*	38.2	15.26	0	29.2	12.67	3	33.3	13.51
Lawrenceville	32	13.1	39.8	14.89	3	30.3	12.87	0	24.7	11.62
Liberty	**50**	**17.0**	54.7	18.88	38	50.0	17.00	15	45.3	15.02
South Fayette	30	11.7*	42.4	13.47	0	25.5	10.77	0	22.5	10.76
North Park	28	11.3*	32.9	13.02				0	23.1	9.61
Coraopolis	26	11.5*	32.8	13.64				0	19.6	9.43
Natrona	33	13.7*	39.9	15.06	2	32.1	13.39	1	25.9	12.67
North Braddock	**37**	14.2	43.7	16.38	7	36.3	14.15	0	30.7	12.11
Clairton	32	13.2	35.0	15.11	1	34.6	13.32	0	25.9	11.26
Erie	30	10.8*	35.1	12.06	1	28.8	10.72	1	27.5	9.56
Farrell	30	11.7	34.9	13.16	1	30.3	11.61	1	24.2	10.39

Primary and Secondary National Ambient Air Quality Standards

Annual Mean (3-year average) = 15 micrograms per cubic meter

24-hour Mean (3-year average of 98th Percentile) = 35 micrograms per cubic meter

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-16. $PM_{2.5}$ Particulate Matter Historical Trend,

Federal Reference Method (FRM) and Federal Equivalent Method (FEM) Monitors.

Units: micrograms per cubic meter / local conditions

Site Name/PA Site Code	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
Southeast Pennsylvania Air Basin											
Bristol	13.8*	14.6	14.2	14.4	13.0*	14.3	12.2*	13.02*	12.66*	10.84	Annual Mean
P01	38.4	38.5	37.2	39.6	29.9	35.4	34.2	35.0	30.9	25.8	98th Percentile 24-hour Mean
Chester	15.9	16.0	14.6	15.3	15.0	16.5	14.0*	14.45	13.84	12.38	Annual Mean
P11	36.2	39.5	31.9	37.8	30.5	37.0	36.7	34.5	28.6	27.9	98th Percentile 24-hour Mean
Norristown	13.6*	15.1*	13.7	13.9	12.0*	12.5*	12.1	13.09	11.66	10.38	Annual Mean
P21	37.5	47.6	36.8	37.5	28.8	32.8	36.4	30.1	23.7	27.2	98th Percentile 24-hour Mean
New Garden Airport	***	***	14.7	15.6	14.3*	15.9*	12.6*	14.07*	13.68*	14.06	Annual Mean
P30	***	***	33.7	38.5	32.7	33.7	38.3	38.1	32.0	31.1	98th Percentile 24-hour Mean
Allentown-Bethlehem-Easton Air Basin											
Allentown	14.3	15.3*	13.1*	15.0*	14.0	14.5	***	***	***	***	Annual Mean
A19	38.2	44.5	38.9	36.6	35.9	36.7	***	***	***	***	98th Percentile 24-hour Mean
Freemansburg	13.6*	15.5	14.1	14.3	13.7	14.2	12.8	13.31	12.26	11.90	Annual Mean
A25	37.3	42.9	40.9	37.8	35.2	39.1	38.3	37.9	33.1	30.1	98th Percentile 24-hour Mean
Scranton-Wilkes-Barre Air Basin											
Scranton	11.7	12.9	12.4	12.5	11.6	12.5	10.6	11.28	10.06	9.32	Annual Mean
S01	31.5	36.7	42.7	33.8	31.2	32.8	28.7	32	27.7	23.4	98th Percentile 24-hour Mean
Wilkes-Barre	12.7	13.8	12.0*	13.1	12.2	13.0	***	***	***	***	Annual Mean
S28	32.9	37.4	28.2	35.1	30.8	31.5	***	***	***	***	98th Percentile 24-hour Mean
Reading Air Basin											
Reading	16.9	16.5	16.7*	16.1	15.6	16.8	12.2*	***	***	***	Annual Mean
R01	37.5	43	48.5	45	33.1	39.4	36.9	***	***	***	98th Percentile 24-hour Mean
Reading (Temporary)	***	***	***	***	***	***	14.9*	13.26*	***	***	Annual Mean
R02	***	***	***	***	***	***	39.4	43.6	***	***	98th Percentile 24-hour Mean
Reading Airport	***	***	***	***	***	***	***	15.28*	12.48	10.92	Annual Mean
R03	***	***	***	***	***	***	***	33.9	28.4	28.8	98th Percentile 24-hour Mean
Harrisburg Air Basin											
Harrisburg	15.4*	16.6	14.5	16.2	15.7	15.5	14.0	14.28	13.18	12.15	Annual Mean
H11	45.6	47.7	42.7	41.5	35.5	40.1	37	35.6	34.3	33.0	98th Percentile 24-hour Mean
Lancaster Air Basin											
Lancaster	17.8	17.3	16.2	17.6	16.6	18.2	14.1	15.40	13.93	12.19	Annual Mean
L01	47	42.1	40.2	51.5	35.5	45.2	34.9	39.6	35.0	29.4	98th Percentile 24-hour Mean
York Air Basin											
York	16.7	16.9	17.1	17.4	16.5	18.1	14.0	15.68	13.64	11.67	Annual Mean
Y01	41.1	41.3	47.3	47	39	39.4	33.2	37	32.3	26.6	98th Percentile 24-hour Mean

The $PM_{2.5}$ Primary and Secondary National Ambient Air Quality Standards are not applicable to these methods, but are provided below for reference purposes only

Annual Mean (3-year average) = 15 micrograms per cubic meter

24-hour Mean (3-year average of 98th Percentile) = 35 micrograms per cubic meter

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-16. $PM_{2.5}$ Particulate Matter Historical Trend,

Federal Reference Method (FRM) and Federal Equivalent Method (FEM) Monitors (cont.).

Units: micrograms per cubic meter / local conditions

Site Name/PA Site Code	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
Southcentral Region Non-Air Basin											
Perry County	12.2	12.6	13.3	13.1*	12.2	13.1	***	***	***	***	Annual Mean
305	30.2	33.7	36.9	34.5	27.9	29	***	***	***	***	98th Percentile 24-hour Mean
Arendtsville	13.1*	14.1	12.6	13.6	13.7	13.6	11.8	12.31	11.45	11.03	Annual Mean
314	36.5	36	38.9	36.5	36.3	35.8	33.6	30.7	30.5	26.5	98th Percentile 24-hour Mean
Carlisle	***	15.6	14.4	15.3	15.1	14.9	13.0	13.70	13.03	10.95	Annual Mean
316	***	45	41.5	41.6	39.1	40.1	33.3	35.3	33.7	30.2	98th Percentile 24-hour Mean
Carlisle (BAM)										13.67	Annual Mean
316										35.2	99th Percentile 24-hour Mean
Northcentral Region Non-Air Basin											
State College	***	13.9*	11.9*	13.6	13.3	13.4	11.4	11.93	10.79	9.36	Annual Mean
409	***	45	36.9	35.4	37.8	39.7	31.7	33.1	29.7	22.6	98th Percentile 24-hour Mean
Johnstown Air Basin											
Johnstown	16.1*	15.5*	16.1	15.5	14.4	16.8	14.8	14.42*	13.86	11.92	Annual Mean
J01	35.4	42.1	46.6	36.8	36.2	43.2	39	34.6	32.2	28.7	98th Percentile 24-hour Mean
Johnstown (BAM)										12.42*	Annual Mean
J01										30.0	99th Percentile 24-hour Mean
Monongahela Valley Air Basin											
Charleroi	15.5*	15.7	15.2	14.9	14.0	16.4	14.4	15.51	13.03	12.56	Annual Mean
M01	36	44.4	43.3	35.6	35.4	36.4	31.6	40.9	27.2	29.0	98th Percentile 24-hour Mean
Lower Beaver Valley Air Basin											
Beaver Falls	15.9*	16.5	15.3	15.7	15.4	18.3	14.9	15.72*	13.69	13.00	Annual Mean
B11	43.6	42.4	37.7	33.8	43	51.8	37	38.2	31.2	28.7	98th Percentile 24-hour Mean
Southwest Region Non-Air Basin											
Florence	13.3	14.3*	13.6*	13.4	13.2	14.2	11.9*	13.79	11.30*	12.15	Annual Mean
504	30.5	35.5	36.7	33.9	36	39.2	39.3	41.2	26.4	25.8	98th Percentile 24-hour Mean
Washington	15.1	15.8*	14.7	14.7	14.1	15.9	13.1*	14.83	12.27	11.11	Annual Mean
508	33.3	36.6	37.2	33.4	34	33.1	33	37.9	25.6	25.3	98th Percentile 24-hour Mean
Kittanning										11.02*	Annual Mean
512										26.9	99th Percentile 24-hour Mean
Greensburg	16.0*	15.9	14.9*	15.3	14.9	16.8	14.3	15.26	12.67	13.51*	Annual Mean
513	37.2	36	40	34.8	39	38.7	33.5	38.2	29.2	33.3	98th Percentile 24-hour Mean
Erie Air Basin											
Erie	13.8*	13.8*	13.3*	12.6*	11.9	14.4	11.3*	12.06	10.72	9.56*	Annual Mean
E10	28.2	37.5	42.9	29.7	32.5	40.7	30.2	35.1	28.8	27.5	98th Percentile 24-hour Mean

Primary and Secondary National Ambient Air Quality Standards

Annual Mean (3-year average) = 15 micrograms per cubic meter

24-hour Mean (3-year average of 98th Percentile) = 35 micrograms per cubic meter

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-16. $PM_{2.5}$ Particulate Matter Historical Trend,

Federal Reference Method (FRM) and Federal Equivalent Method (FEM) Monitors (cont.).

Units: micrograms per cubic meter / local conditions

Site Name/PA Site Code	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
Northwest Region Non-Air Basin											
Farrell	***	14.9*	14.0	13.8	13.4	14.1	11.8*	13.16	11.61	10.39	Annual Mean
606	***	43	36.6	35.4	34.5	39	30.7	34.9	30.3	24.2	98th Percentile 24-hour Mean

Primary and Secondary National Ambient Air Quality Standards

Annual Mean (3-year average) = 15 micrograms per cubic meter

24-hour Mean (3-year average of 98th Percentile) = 35 micrograms per cubic meter

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-17. $PM_{2.5}$ Particulate Matter Historical Trend, Non-FEM Continuous Method Monitors.

Units: micrograms per cubic meter / local conditions

Site Name/PA Site Code	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
Southeast Pennsylvania Air Basin											
Norristown (TEOM)	***	***	***	***	17.6	18.6	17.8	21.41	22.92	11.33	Annual Mean
P21	***	***	***	***	40.4	42.3	44.5	45.0	44.0	26.7	98th Percentile 24-hour Mean
Reading Air Basin											
Reading (TEOM)	***	***	***	***	15.3*	18.1*	13.6*	***	***	***	Annual Mean
R01	***	***	***	***	35.3	42.4	36.1	***	***	***	98th Percentile 24-hour Mean
Reading (Temp) (TEOM)	***	***	***	***	***	***	18.0*	15.08	***	***	Annual Mean
R02	***	***	***	***	***	***	45.4	36.9	***	***	98th Percentile 24-hour Mean
Reading Airport (TEOM)	***	***	***	***	***	***	***	16.72	16.07	12.89	Annual Mean
R03	***	***	***	***	***	***	***	41.2	43.2	33.9	98th Percentile 24-hour Mean
Harrisburg Air Basin											
Harrisburg (BAM)	***	***	***	***	21.2*	18.6	15.7	14.75	14.63	***	Annual Mean
H11	***	***	***	***	43.4	48.9	43.8	36.4	37.5	***	98th Percentile 24-hour Mean
Lancaster Air Basin											
Lancaster (TEOM)	***	***	***	***	18.7	18.0	18.7	20.45	16.25	14.80	Annual Mean
L01	***	***	***	***	46.1	44.7	46.9	46.6	45.6	33.3	98th Percentile 24-hour Mean
York Air Basin											
York (TEOM)	***	***	***	***	17.7*	16.8	16.9	16.68	14.92	16.14	Annual Mean
Y01	***	***	***	***	38.8	44.3	42.5	43.3	38.4	34.3	98th Percentile 24-hour Mean
Southcentral Region Non-Air Basin											
Arendtsville (TEOM)	***	13.8	13.4	13.3	12.3	11.4	13.6	14.23	13.57	***	Annual Mean
314	***	38.0	39.3	33.4	32.4	34.1	34.2	34.3	30.5	***	98th Percentile 24-hour Mean
Johnstown Air Basin											
Johnstown (BAM)	***	***	***	***	16.1*	16.9	15.8	16.04	15.40	***	Annual Mean
J01	***	***	***	***	40.4	45.8	40.9	42.8	36.7	***	98th Percentile 24-hour Mean
Monongahela Valley Air Basin											
Charleroi (BAM)	***	***	***	***	***	***	10.0*	14.10	16.28	***	Annual Mean
M01	***	***	***	***	***	***	18.9	40.9	36.6	***	98th Percentile 24-hour Mean
Lower Beaver Valley Air Basin											
Beaver Falls (TEOM)	***	***	***	***	17.9*	17.1	15.4	16.19	13.84	14.43	Annual Mean
B11	***	***	***	***	45.7	48.1	39.8	44.0	31.5	32.2	98th Percentile 24-hour Mean
Southwest Region Non-Air Basin											
Kittanning (TEOM)	12.2	14.9	14.3*	12.4	14.3	14.6	13.3	13.58	12.17	***	Annual Mean
512	29.0	42.0	48.3	28.8	37.8	41.2	37.3	36.0	28.2	***	98th Percentile 24-hour Mean

The $PM_{2.5}$ Primary and Secondary National Ambient Air Quality Standards are not applicable to these methods, but are provided below for reference purposes only

Annual Mean (3-year average) = 15 micrograms per cubic meter

24-hour Mean (3-year average of 98th Percentile) = 35 micrograms per cubic meter

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-18. PM_{10} Particulate Matter Summary.

Year: 2009

Units: micrograms per cubic meter / standard conditions

Site Name	PA Site Code	Arithmetic Annual Mean	Number 24HR Means	Maximum 24-hour Means: 1st Maximum 24HR Mean	1st Maximum Date MM/DD	2nd Maximum 24HR Mean	2nd Maximum Date MM/DD	3rd Maximum 24HR Mean	3rd Maximum Date MM/DD	4th Maximum 24HR Mean	4th Maximum Date MM/DD
Southeast Pennsylvania Air Basin											
Chester (TEOM)	P11	17.6	356	37	06/29	36	09/10	36	11/09	36	11/10
Allentown-Bethlehem-Easton Air Basin											
Allentown (TEOM)	A19	15.1	345	51	02/07	40	01/23	37	11/09	34	03/07
Nazareth (TEOM)	A26	18.0	330	78	01/23	53	02/07	47	10/22	44	08/18
Scranton-Wilkes-Barre Air Basin											
Wilkes-Barre (TEOM)	S28	14.4	365	43	01/23	39	03/07	37	03/06	37	08/04
Reading Air Basin											
Reading Airport (TEOM)	R03	9.2	364	27	06/08	27	08/26	24	11/09	23	08/04
Harrisburg Air Basin											
Harrisburg (TEOM)	H11	16.4	358	48	01/23	47	11/09	41	03/07	38	02/07
Lancaster Air Basin											
Lancaster (TEOM)	L01	16.0	361	43	08/26	41	11/09	37	01/23	37	03/07
York Air Basin											
York (TEOM)	Y01	18.3	354	51	01/23	40	03/07	39	11/09	39	11/10
Southcentral Region Non-Air Basin											
Altoona (TEOM)	308	15.5	362	56	03/06	39	08/09	37	08/04	37	11/09
Northcentral Region Non-Air Basin											
Montoursville	410	14.6*	52	36	11/09	35	08/17	29	02/06	29	10/22
Johnstown Air Basin											
Johnstown (TEOM)	J01	17.4	344	59	02/26	49	02/09	45	03/06	45	08/26
Monongahela Valley Air Basin											
Charleroi	M01	18.6	57	39	11/09	35	05/25	35	09/04	34	08/05
Lower Beaver Valley Air Basin											
Beaver Falls (TEOM)	B11	18.5	353	70	12/30	51	02/26	48	11/09	43	12/18
Upper Beaver Valley Air Basin											
New Castle (TEOM)	B21	22.1	356	61	10/21	60	05/21	59	02/10	56	03/06

Primary and Secondary National Ambient Air Quality Standards

24-hour Mean = 150 micrograms per cubic meter (3-year average, not to be exceeded more than once per year)

Former Annual Mean = 50 micrograms per cubic meter (3-year average)

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-18. PM_{10} Particulate Matter Summary (cont.).

Year: 2009

Units: micrograms per cubic meter / standard conditions

Site Name	PA Site Code	Arithmetic Annual Mean	Number 24HR Means	Maximum 24-hour Means: 1st Maximum 24HR Mean	1st Maximum Date MM/DD	2nd Maximum 24HR Mean	2nd Maximum Date MM/DD	3rd Maximum 24HR Mean	3rd Maximum Date MM/DD	4th Maximum 24HR Mean	4th Maximum Date MM/DD
Erie Air Basin											
Erie (TEOM)	E10	13.1*	332	42	08/09	36	08/16	35	03/06	35	11/08

Primary and Secondary National Ambient Air Quality Standards

24-hour Mean = 150 micrograms per cubic meter (3-year average, not to be exceeded more than once per year)

Former Annual Mean = 50 micrograms per cubic meter (3-year average)

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-19. PM_{10} Particulate Matter Historical Trend.

Units: micrograms per cubic meter

Site Name/PA Site Code	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
Southeast Pennsylvania Air Basin											
Bristol (TEOM)	39	59	64	74	59	56	52	48	45	***	2nd Max 24-hour Average
P01	18	21	18	19	18	18	17	16.6	15.5	***	Annual Mean
Chester (TEOM)	45	66	111	74	63	58	63	46	51	36	2nd Max 24-hour Average
P11	22	23	20	21	23	21	20	18.8	19.4	17.6	Annual Mean
Norristown (TEOM)	41	58	72	55	52	58	55	48	44	***	2nd Max 24-hour Average
P21	19	20	16	19	17	19	17	16.4	15.2	***	Annual Mean
Allentown-Bethlehem-Easton Air Basin											
Allentown (TEOM)	78	78	90	49	45	54	52	45	45	40	2nd Max 24-hour Average
A19	29	21	18	18	15	18	17	14.5	15.5	15.1	Annual Mean
Freemansburg (TEOM)	85	64	90	68	59	55	50	54	50	***	2nd Max 24-hour Average
A25	35	20	20	19	19	19	18	18	16.5	***	Annual Mean
Nazareth (TEOM)	76	101	107	114	115	139	88	70	114	53	2nd Max 24-hour Average
A26	28	30	29	33	32	38	28	20.6	25.9	18.0	Annual Mean
Scranton-Wilkes-Barre Air Basin											
Scranton (TEOM)	40	60	74	66	43	55	52	49	42	***	2nd Max 24-hour Average
S01	16	20	18	17	16	17	17	17.4	16.3	***	Annual Mean
Wilkes-Barre (TEOM)	45	65	69	77	50	58	56	57	44	39	2nd Max 24-hour Average
S28	18	20	19	21	17	20	18	18.5	15.9	14.4	Annual Mean
Reading Air Basin											
Reading (TEOM)	44	66	82	54	52	60	34	***	***	***	2nd Max 24-hour Average
R01	20	22	20	19	20	21	13*	***	***	***	Annual Mean
Reading Airport (TEOM)	***	***	***	***	***	***	***	38	39	27	2nd Max 24-hour Average
R03	***	***	***	***	***	***	***	14.1*	12.2	9.2	Annual Mean
Reading (Central)	50	57	59	50	45	58	47	43	51	***	2nd Max 24-hour Average
R15	27	24	25	25	20	24*	21	21.5*	21.5	***	Annual Mean
Harrisburg Air Basin											
Harrisburg (TEOM)	53	62	72	66	61	56	53	53	47	47	2nd Max 24-hour Average
H11	21	22	20	21	21	21	20	19.9	18.8	16.4	Annual Mean
Lancaster Air Basin											
Lancaster (TEOM)	55	69	107	53	54	63	58	51	48	41	2nd Max 24-hour Average
L01	21	23	21	20	20	20	19	19.2	17.9	16.0	Annual Mean
York Air Basin											
York (TEOM)	53	73	85	77	53	67	62	58	51	40	2nd Max 24-hour Average
Y01	22	24	21	24	22	24	23	21.9	20.3	18.3	Annual Mean

Primary and Secondary National Ambient Air Quality Standards

24-hour Mean = 150 micrograms per cubic meter (3-year average, not to be exceeded more than once per year)

Former Annual Mean = 50 micrograms per cubic meter (3-year average)

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-19. PM_{10} Particulate Matter Historical Trend (cont.).

Units: micrograms per cubic meter

Site Name/PA Site Code	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
Southcentral Region Non-Air Basin											
Altoona (TEOM)	50	76	67	95	63	74	63	68	53	39	2nd Max 24-hour Average
308	20	24	22	20	20	21	19	18	17.6	15.5	Annual Mean
Northcentral Region Non-Air Basin											
Montoursville	***	***	55	41	41	39	38	31	41	35	2nd Max 24-hour Average
410	***	***	20	20	18*	20	17	16.7*	16.9	14.6*	Annual Mean
Johnstown Air Basin											
Johnstown (TEOM)	50	99	68	67	61	73	61	63	52	49	2nd Max 24-hour Average
J01	21	24	24	22	22	24	23	20.9	20.2	17.4	Annual Mean
Monongahela Valley Air Basin											
Charleroi (TEOM)	78	71	62	67	64	75	58	61	50	35	2nd Max 24-hour Average
M01	21	25	21	19	20	23	21	21.4	19.0	18.6	Annual Mean
Monessen	57	58	66	56	60	53	49	55	54	***	2nd Max 24-hour Average
M16	31	31	30	29	25	30	25	27.4	25.1	***	Annual Mean
Lower Beaver Valley Air Basin											
Beaver Falls (TEOM)	51	81	86	77	64	74	81	88	62	51	2nd Max 24-hour Average
B11	22	26	25	22	23	26	26	26.4	20.4	18.5	Annual Mean
Southwest Region Non-Air Basin											
Florence	39	46	59	42	46	47	48	49	46	***	2nd Max 24-hour Average
504	22	20	21	20	16	21	17	21.0*	18.0*	***	Annual Mean
Greensburg (TEOM)	45	61	60	63	50	68	50	61	47	***	2nd Max 24-hour Average
513	19	23	22	22	20*	23	20	20.6	17.6	***	Annual Mean
Upper Beaver Valley Air Basin											
New Castle (TEOM)	61	83	77	89	65	78	72	82	76	60	2nd Max 24-hour Average
B21	28	32	29	26	26	26	27	26.6	27.4	22.1	Annual Mean
Erie Air Basin											
Erie (TEOM)	41	61	60	54	48	53	46	56	65	36	2nd Max 24-hour Average
E10	18	19	19	16	14*	16	15	16.1	16.2*	13.1*	Annual Mean

Primary and Secondary National Ambient Air Quality Standards

24-hour Mean = 150 micrograms per cubic meter (3-year average, not to be exceeded more than once per year)

Former Annual Mean = 50 micrograms per cubic meter (3-year average)

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-20. Lead Suspended Particulate Matter Summary.

Year: 2009

Units: micrograms per cubic meter

Site Name	PA Site Code	Number of Samples	3-Month Averages 1st Maximum	Month	2nd Maximum	Month	3rd Maximum	Month	4th Maximum	Month
Southeast Pennsylvania Air Basin										
Chester	P11	47	0.04	Jun	0.04	Jul	0.04	Aug	0.04	Sep
Reading Air Basin										
Laureldale	R10	56	0.24	May	0.18	Jun	0.16	Jul	0.15	Nov
Southcentral Region Non-Air Basin										
Lyons East	301	57	0.11	Jan	0.09	Jun	0.08	May	0.08	Feb
Lyons South	375	59	0.05	Apr	0.05	Feb	0.05	Mar	0.04	Sep
Johnstown Air Basin										
East Conemaugh	J08	56	0.07	Mar	0.07	Apr	0.07	May	0.04	Nov
Monongahela Valley Air Basin										
Monessen	M16	61	0.04	Jan	0.04	Feb	0.04	Mar	0.04	Apr
Lower Beaver Valley Air Basin										
Vanport	B05	50	0.11	Aug	0.11	Jul	0.11	Jan	0.10	Jun

Primary and Secondary Quarterly National Ambient Air Quality Standard is 1.5 micrograms per cubic meter

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-21. Lead Suspended Particulate Matter Historical Trend.

Maximum 3-Month Means

Units: micrograms per cubic meter

Site Name	PA Site Code	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Southeast Pennsylvania Air Basin											
Chester	P11	0.05	0.04	0.04	0.04	0.04	0.04	0.05	0.04	0.05	0.04
Northeast Region Non-Air Basin											
Palmerton	205	0.11	0.08	0.09	0.11	0.12	0.25	***	***	***	***
Reading Air Basin											
Laureldale	R10	0.33	0.32	0.24	0.41	0.43	0.40	0.36	0.36	0.24	0.24
Southcentral Region Non-Air Basin											
Lyons East	301	0.25	0.24	0.24	0.15	0.19	0.17	0.17	0.13	0.21	0.11
Lyons South	375	***	***	0.10	0.10	0.10	0.09	0.10	0.07	0.07	0.05
Johnstown Air Basin											
East Conemaugh	J08	0.05	0.04	0.04	0.04	0.05	0.06	0.06	0.07	0.05	0.07
Monongahela Valley Air Basin											
Monessen	M16	0.04	0.04	0.03	0.04	0.04	0.04	0.04	0.04	0.05	0.04
Lower Beaver Valley Air Basin											
Vanport	B05	0.08	0.06	0.07	0.10	0.09	0.15	0.20	0.12	0.17	0.11

Primary and Secondary Quarterly National Ambient Air Quality Standard is 1.5 micrograms per cubic meter

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-22. Total Suspended Particulate Matter Summary.

Units: micrograms per cubic meter

Year: 2009

Site Name	PA Site Code	Geometric Annual Mean	Geometric Standard Deviation	Arithmetic Annual Mean	Number 24-hour Samples	1st Maximum 24HR Mean	1st Maximum Date MM/DD	2nd Maximum 24HR Mean	2nd Maximum Date MM/DD	Minimum 24HR Mean	Minimum Date MM/DD
Southeast Pennsylvania Air Basin											
Chester	P11	25	1.85	27	37	66	09/16	55	11/09	2	03/02
Reading Air Basin											
Laureldale	R10	25	1.69	30	50	100	05/13	63	11/09	6	11/27
Southcentral Region Non-Air Basin											
Lyons East	301	20	1.92	23	49	55	11/09	48	04/25	2	12/09
Lyons South	375	15	1.81	18	51	46	11/09	41	08/17	4	11/27
Johnstown Air Basin											
East Conemaugh	J08	22	1.70	24	49	68	11/09	50	02/06	3	10/16
Monongahela Valley Air Basin											
Monessen	M16	27	1.85	34	50	79	03/14	60	03/02	5	10/16
Lower Beaver Valley Air Basin											
Vanport	B05	22	2.09	28	41	68	01/31	68	02/18	4	11/27

No Primary or Secondary Air Quality Standards

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-23. Total Suspended Particulate Matter Historical Trend.

Annual Geometric Means

Units: micrograms per cubic meter

Site Name	PA Site Code	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Southeast Pennsylvania Air Basin											
Chester	P11	39	36	33	35	34	37	28	32	***	25
Northeast Region Non-Air Basin											
Palmerton	205	28	27	28	30	25	29	***	***	***	***
Reading Air Basin											
Laureldale	R10	44	39	40	39	34	39	31	32	31	25
Southcentral Region Non-Air Basin											
Lyons East	301	39	30	28	42	25	27	26	26	23	20
Lyons South	375	***	***	26	23	21	22	19	21	19	15
Johnstown Air Basin											
East Conemaugh	J08	42	30	28	30	26	30	26	27	23	22
Monongahela Valley Air Basin											
Monessen	M16	42	46	39	38	37	43	40	37	34	27
Lower Beaver Valley Air Basin											
Vanport	B05	35	30	17*	9	8	14	23	29	24	22

No Primary or Secondary Air Quality Standards

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-24. Sulfate Suspended Particulate Matter Summary.

Year: 2009

Units: micrograms per cubic meter

Site Name	PA Site Code	Annual Mean	Number 24HR Samples	Number 30-Day >10	1st Maximum 30-Day Mean	1st Maximum Date MM	2nd Maximum 30-Day Mean	2nd Maximum Date MM	Number 24HR >30	1st Maximum 24HR Mean	1st Maximum Date MM/DD	2nd Maximum 24HR Mean	2nd Maximum Date MM/DD
Reading Air Basin													
Laureldale	R10	7.2	58	1	10.5	8	8.0	7	0	12.5	08/05	12.3	08/17
Johnstown Air Basin													
East Conemaugh	J08	8.2	56	1	11.7	8	9.9	7	0	16.4	08/17	13.8	06/06
Monongahela Valley Air Basin													
Monessen	M16	9.2	61	3	11.6	8	11.1	3	0	17.6	08/05	15.1	05/25

No Primary or Secondary Air Quality Standards

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-25. Nitrate Suspended Particulate Matter Summary.

Year: 2009

Units: micrograms per cubic meter

Site Name	PA Site Code	Annual Mean	Number 24HR Samples	1st Maximum 24HR Mean	1st Maximum Date MM/DD	2nd Maximum 24HR Mean	2nd Maximum Date MM/DD	3rd Maximum 24HR Mean	3rd Maximum Date MM/DD	Minimum 24HR Mean	Minimum Date MM/DD
Reading Air Basin											
Laureldale	R10	2.87	58	12.1	03/14	7.9	02/06	6.7	11/09	1.00	12/03
Johnstown Air Basin											
East Conemaugh	J08	1.95	56	6.1	11/21	6.1	01/19	5.2	01/31	0.59	10/10
Monongahela Valley Air Basin											
Monessen	M16	2.69	61	8.6	01/19	6.4	11/21	5.7	09/04	0.99	11/27

No Primary or Secondary Air Quality Standards

* does not satisfy summary criteria

*** less than 50 percent valid data for year

Table B-26. Photochemical Assessment Monitoring Station (PAMS) Compounds Summary.

Arendtsville, PA

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 2009 (May to October)

Compound	1 Hour Max	Date/Time of Max	Mean
Acetylene	5.08	10/22/2009 10:00	0.28
Ethylene	4.26	10/22/2009 10:00	0.44
Ethane	18.22	9/28/2009 13:00	3.24
Propylene	2.26	5/26/2009 22:00	0.5
Propane	11.58	6/4/2009 10:00	2.04
Isobutane	3.8	5/26/2009 22:00	0.4
Butene-1	0.99	5/26/2009 22:00	0.16
n-Butane	7.01	10/20/2009 8:00	0.62
t-Butene-2	0.32	6/25/2009 12:00	0.01
c-Butene-2	0.21	10/20/2009 8:00	0
Isopentane	6.3	10/22/2009 10:00	0.67
Pentene-1	0.39	7/3/2009 15:00	0.01
n-Pentane	3.08	10/22/2009 10:00	0.39
Isoprene	14.36	8/9/2009 17:00	0.81
trans-2-Pentene	0.28	8/17/2009 6:00	0
c-2-Pentene	0.44	6/29/2009 13:00	0
2,2-Dimethylbutane	0.26	10/22/2009 10:00	0
Cyclopentane	0.66	9/9/2009 21:00	0.02
2,3-Dimethylbutane	1.18	10/22/2009 9:00	0.06
2-Methylpentane	1.72	8/4/2009 8:00	0.13
3-Methylpentane	1.18	8/4/2009 8:00	0.06
n-Hexane	4.34	8/4/2009 8:00	0.11
Methylcyclopentane	1.39	8/4/2009 8:00	0.01
2,4-Dimethylpentane	0.71	6/29/2009 13:00	0
Benzene	2.22	10/22/2009 10:00	0.23
Cyclohexane	2.23	8/4/2009 8:00	0
2-Methylhexane	4.00	8/4/2009 8:00	0.01
2,3-Dimethylpentane	1.04	6/29/2009 13:00	0
3-Methylhexane	5.23	6/11/2009 13:00	0.02
2,2,4-Trimethylpentane	1.45	8/4/2009 8:00	0.06
n-Heptane	10.21	8/4/2009 8:00	0.02
Methylcyclohexane	7.59	8/4/2009 8:00	0.01
2,3,4-Trimethylpentane	0.56	6/29/2009 7:00	0.01

***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 25ºC and generally have a carbon number in the range of C-2–C-12.

Table B-26. Photochemical Assessment Monitoring Station (PAMS) Compounds Summary.

Arendtsville, PA

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 2009 (May to October)

Compound	1 Hour Max	Date/Time of Max	Mean
Toluene	5.77	10/22/2009 10:00	0.68
2-Methylheptane	2.36	8/4/2009 8:00	0
3-Methylheptane	2.4	6/11/2009 13:00	0
n-Octane	5.48	8/4/2009 8:00	0.01
Ethylbenzene	0.86	10/22/2009 10:00	0.03
m/p-Xylene	3.69	6/12/2009 7:00	0.12
Styrene	1.61	7/31/2009 14:00	0
o-Xylene	0.96	10/22/2009 10:00	0.03
n-Nonane	1.66	8/12/2009 8:00	0.01
Isopropylbenzene	0.41	8/20/2009 13:00	0.01
n-Propylbenzene	1.41	8/20/2009 13:00	0
1,3,5-Trimethylbenzene	1.71	8/20/2009 13:00	0
1,2,4-Trimethylbenzene	2.73	8/20/2009 13:00	0.05
o-Ethyltoluene	1.52	6/11/2009 13:00	0
m-Ethyltoluene	3.73	8/20/2009 13:00	0.06
p-Ethyltoluene	2.27	8/20/2009 13:00	0
m-Diethylbenzene	0.66	6/25/2009 11:00	0
p-Diethylbenzene	0.56	8/20/2009 13:00	0
1,2,3-Trimethylbenzene	2.55	8/20/2009 13:00	0.11
n-Decane	2.09	6/11/2009 13:00	0.12
Undecane	1.82	7/31/2009 14:00	0.02
tnmoc*	147.46	6/11/2009 13:00	12.73
pamshc**	74.55	8/4/2009 8:00	11.57
Unidentified VOC	128.13	6/11/2009 13:00	0.92

***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 25ºC and generally have a carbon number in the range of C-2–C-12.

Table B-27. Sulfur Dioxide Point Source Historical Trend.

Units: Tons Per Year

County	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Change Since 2000
Adams	6	19	16	21	28	19	13	20	9	7	17%
Armstrong	187915	190639	183156	197675	204299	209456	191494	202608	211810	122150	-35%
Beaver	40560	35711	40840	39763	44981	41338	32523	27807	17592	24627	-39%
Bedford	3	3	3	3	3	3	3	4	3	1	-67%
Berks	16820	11612	14828	16953	14732	16307	14213	15280	12848	10512	-38%
Blair	3347	3078	1168	1650	2940	2280	3426	3021	3954	3216	-4%
Bradford	53	162	33	132	145	173	83	52	15	23	-57%
Bucks	371	365	388	397	413	440	463	359	265	203	-45%
Butler	2607	2820	2265	2177	2162	1424	1334	1365	1068	817	-69%
Cambria	5856	5911	5842	5620	6924	7168	7363	7691	7183	6696	14%
Cameron	0	0	0	0	0	0	0	0	0	0	**
Carbon	795	762	774	806	768	747	768	752	741	771	-3%
Centre	4223	4182	4360	4316	4319	4527	4541	4279	3450	2262	-46%
Chester	4874	5203	3127	4204	6153	5532	4057	3719	3562	2493	-49%
Clarion	1177	1176	1214	1249	1080	1245	1321	1460	1493	1619	38%
Clearfield	48298	42057	38283	43411	44362	47015	47348	49117	51863	33002	-32%
Clinton	6232	4159	1355	8	12	12	5	5	3	3	-100%
Columbia	495	379	207	263	336	240	193	179	238	202	-59%
Crawford	505	259	356	383	452	434	480	370	381	302	-40%
Cumberland	806	764	708	1064	1180	1065	1171	1126	799	933	16%
Dauphin	764	789	403	808	508	711	460	488	242	112	-85%
Delaware	15398	16184	14539	17370	15964	17050	12638	12295	10316	9549	-38%
Elk	4887	5120	4792	3748	560	642	596	551	615	338	-93%
Erie	10163	8471	4125	3433	2317	2040	807	272	215	173	-98%
Fayette	263	259	261	264	263	25	25	34	27	10	-96%
Forest	0	0	0	0	0	0	0	0	0	0	**
Franklin	79	79	78	51	43	44	33	48	36	29	-63%
Fulton	1	0	0	0	0	0	0	0	0	0	-100%
Greene	166238	186131	159506	140295	149220	146147	135586	145477	160807	93326	-44%
Huntingdon	178	189	155	223	220	207	277	225	170	167	-6%
Indiana	149281	157438	122466	168248	160744	146835	122172	135657	116555	116329	-22%
Jefferson	550	287	364	395	486	543	537	583	441	434	-21%
Juniata	1	2	2	2	2	2	2	2	2	3	200%
Lackawanna	87	97	91	73	89	145	140	143	137	138	59%
Lancaster	670	847	498	721	483	385	181	107	93	69	-90%
Lawrence	28699	32378	28809	24135	26060	21237	15411	19932	14532	8410	-71%
Lebanon	815	767	764	670	252	227	247	250	247	206	-75%
Lehigh	2048	1964	1626	1360	1620	1150	1146	898	831	716	-65%
Luzerne	3552	4313	3788	3472	3875	4699	4558	3702	3868	3047	-14%
Lycoming	77	83	86	80	71	77	104	102	74	108	40%
McKean	3151	4051	3575	3361	3449	3304	3625	3083	3372	2356	-25%
Mercer	45	100	92	121	113	115	108	73	41	37	-18%
Mifflin	9	11	4	6	8	8	7	7	8	8	-11%
Monroe	194	76	58	85	38	35	30	36	31	30	-85%
Montgomery	825	835	712	726	787	821	635	548	311	337	-59%
Montour	107989	111541	111489	124819	127031	127654	129407	127858	42730	17477	-84%

*** no emissions reported

** percentage change N/A

Table B-27. Sulfur Dioxide Point Source Historical Trend (cont.).

Units: Tons Per Year

County	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Change Since 2000
Northampton	54854	51910	56808	61817	62833	58589	53819	53318	36692	35490	-35%
Northumberland	545	571	347	498	524	546	516	531	451	493	-10%
Perry	0	1	1	2	1	1	1	2	2	2	**
Pike	0	0	0	0	0	0	0	0	0	0	**
Potter	64	50	41	50	53	84	78	78	77	59	-8%
Schuylkill	4894	5095	5186	4920	4993	4852	5089	4738	4377	4539	-7%
Snyder	28213	28914	25335	28377	27928	27921	24033	29957	33927	15103	-46%
Somerset	219	205	183	242	253	243	247	265	223	195	-11%
Sullivan	***	***	***	***	***	***	***	***	***	***	***
Susquehanna	0	0	0	0	0	0	0	0	0	0	**
Tioga	85	79	84	67	88	52	54	51	44	39	-54%
Union	23	11	9	68	11	9	23	19	12	49	113%
Venango	1860	1260	1623	1589	1547	1465	1811	1813	1710	1820	-2%
Warren	5214	5981	4896	3204	2858	2977	2949	2628	1616	1260	-76%
Washington	6034	6572	6612	5133	5086	4935	5963	5122	3746	1478	-76%
Wayne	176	74	157	106	83	92	136	142	133	126	-28%
Westmoreland	1143	1581	621	515	674	424	471	456	568	239	-79%
Wyoming	54	611	72	110	456	653	138	84	11	4	-93%
York	71715	53600	80408	83545	102770	113352	102710	115905	108159	67232	-6%
Statewide	**996000**	**997788**	**939589**	**1004804**	**1039650**	**1029723**	**937569**	**986694**	**864726**	**591376**	**-41%**

*** no emissions reported

** percentage change N/A

Table B-28. Oxides of Nitrogen Point Source Historical Trend.

Units: Tons Per Year

County	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Change Since 2000
Adams	187	192	270	774	451	469	182	268	163	162	-13%
Armstrong	23354	23990	23342	16441	18430	18348	16545	16709	18861	5198	-78%
Beaver	34047	30038	35427	28508	28684	27895	30361	29848	30172	11388	-67%
Bedford	432	336	460	401	385	209	238	282	257	561	30%
Berks	5957	4941	5566	5962	5912	5811	5178	5917	5283	4201	-29%
Blair	1059	966	779	868	843	911	898	928	847	753	-29%
Bradford	458	392	464	494	468	514	453	375	324	272	-41%
Bucks	1380	1313	1502	1248	1337	1446	1357	1334	1364	1160	-16%
Butler	2422	2268	1937	1841	1672	1809	1634	1823	1738	1398	-42%
Cambria	2664	2665	2396	1836	2388	2253	2231	2591	2592	1945	-27%
Cameron	1	1	1	1	1	1	1	1	1	1	0%
Carbon	732	685	702	737	711	688	717	693	692	698	-5%
Centre	3426	3134	2172	1727	1420	1452	1469	1401	1391	1375	-60%
Chester	3442	3555	2554	2833	3123	3413	2893	3155	3069	2236	-35%
Clarion	912	761	805	645	641	801	874	922	863	762	-16%
Clearfield	7281	6797	6681	7315	6966	6940	7490	7423	7439	4745	-35%
Clinton	1954	1665	725	589	554	547	532	556	587	560	-71%
Columbia	207	151	158	182	184	197	156	181	172	161	-22%
Crawford	4031	3748	2930	2052	1876	1719	829	865	1099	400	-90%
Cumberland	3442	4531	4423	4386	3027	4213	4997	3448	2638	2870	-17%
Dauphin	1008	776	771	784	694	629	629	769	813	728	-28%
Delaware	11663	13210	11654	12115	11674	13225	11506	11321	9702	8735	-25%
Elk	1724	2026	1619	1526	1359	1363	1325	1255	1288	1280	-26%
Erie	3333	2499	1500	1239	1183	916	706	661	571	592	-82%
Fayette	440	507	540	611	579	166	128	167	144	185	-58%
Forest	378	461	451	446	349	351	369	358	396	322	-15%
Franklin	91	83	136	148	232	399	254	324	288	169	86%
Fulton	8	5	4	4	7	9	8	8	7	4	-50%
Greene	24336	28455	23809	18585	19969	18091	20792	24616	25457	22195	-9%
Huntingdon	110	88	76	78	77	78	70	75	78	80	-27%
Indiana	49041	48638	46949	44918	41115	39945	40804	39837	37921	31856	-35%
Jefferson	1573	514	589	635	672	699	573	566	586	599	-62%
Juniata	235	224	200	270	230	213	201	324	276	299	27%
Lackawanna	379	385	367	358	374	387	304	276	249	225	-41%
Lancaster	1528	1463	1368	1413	1465	1424	1188	1202	1279	1165	-24%
Lawrence	6622	6628	7027	5877	6980	5705	5976	6870	5825	2542	-62%
Lebanon	650	705	854	702	845	695	707	677	664	553	-15%
Lehigh	1484	1268	1371	1061	1167	994	1024	929	861	691	-53%
Luzerne	1898	2617	2041	1718	1374	896	887	1013	1065	1005	-47%
Lycoming	399	369	416	431	426	430	396	446	391	407	2%
McKean	1758	1612	1819	1624	1734	1652	1539	1500	1339	1215	-31%
Mercer	1469	1296	1124	1196	911	833	995	1009	1052	1073	-27%
Mifflin	117	90	88	82	79	85	79	74	77	64	-45%
Monroe	190	70	67	82	63	60	63	70	82	93	-51%
Montgomery	1957	1847	1857	1894	1878	1881	1660	1650	1481	1630	-17%
Montour	16344	12423	12391	11547	11685	12932	13704	13443	13159	5454	-67%

*** no emissions reported

** percentage change N/A

Table B-28. Oxides of Nitrogen Point Source Historical Trend (cont.).

Units: Tons Per Year

County	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Change Since 2000
Northampton	14844	15579	15431	15868	16339	16560	11954	12874	9819	8547	-42%
Northumberland	573	605	522	611	605	653	600	595	634	640	12%
Perry	147	74	118	164	148	105	79	167	171	150	2%
Pike	3	3	1	5	15	0	0	0	2	1	-67%
Potter	1338	1317	1209	1386	1110	1193	1105	1145	1052	901	-33%
Schuylkill	1399	1498	1513	1324	1343	1554	1392	1281	1283	1208	-14%
Snyder	6563	7588	5479	3644	2998	2995	2800	3871	4255	1851	-72%
Somerset	218	216	234	286	260	257	250	252	191	183	-16%
Sullivan	***	***	***	***	***	***	***	***	***	***	***
Susquehanna	29	22	37	22	22	26	32	37	24	21	-28%
Tioga	526	393	476	623	568	463	447	453	427	381	-28%
Union	100	105	124	134	120	101	107	102	100	98	-2%
Venango	997	906	700	644	678	609	764	860	805	634	-36%
Warren	1581	1642	1336	961	843	963	867	797	707	671	-58%
Washington	11617	11669	10941	8752	7957	7771	9645	8098	6732	2869	-75%
Wayne	41	34	36	43	31	33	31	33	31	29	-29%
Westmoreland	3030	2801	2874	2872	2833	2820	2281	2180	2035	1433	-53%
Wyoming	700	696	742	697	852	826	672	637	628	616	-12%
York	21767	17172	22912	20492	23874	20833	19617	22195	21816	18639	-14%
Statewide	**291596**	**282708**	**277067**	**246712**	**246790**	**241456**	**237565**	**243737**	**235315**	**162879**	**-44%**

*** no emissions reported

** percentage change N/A

Table B-29. Carbon Monoxide Point Source Historical Trend.

Units: Tons Per Year

County	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Change Since 2000
Adams	41	34	99	227	201	354	243	333	347	322	685%
Armstrong	1709	1694	1597	1783	1647	1796	1651	1595	1755	4423	159%
Beaver	31342	39938	33731	23484	22394	27297	26482	28769	30740	24261	-23%
Bedford	125	101	126	147	114	85	77	83	94	127	2%
Berks	1508	1368	1534	1729	1758	1583	1606	1648	1759	1601	6%
Blair	1048	1131	1011	1079	835	796	662	628	660	635	-39%
Bradford	266	290	305	438	498	473	482	434	340	280	5%
Bucks	344	369	342	352	521	327	415	491	477	361	5%
Butler	2137	1974	2005	1961	2146	2154	2184	2253	2079	1509	-29%
Cambria	3639	1252	1214	1196	1324	1306	1258	1294	1295	1285	-65%
Cameron	0	1	1	1	1	0	0	1	1	0	**
Carbon	9420	9301	9450	9414	9626	9450	9340	9564	9143	8559	-9%
Centre	1340	1267	1249	1311	1200	1111	1205	942	888	733	-45%
Chester	7483	6147	6226	6120	7180	7123	7906	6529	1900	1623	-78%
Clarion	173	244	440	328	318	460	508	402	356	317	83%
Clearfield	390	360	358	385	361	461	474	458	446	312	-20%
Clinton	766	647	410	426	439	445	488	478	525	517	-33%
Columbia	30	29	31	24	27	36	32	40	50	49	63%
Crawford	88	68	59	60	55	59	62	49	52	43	-51%
Cumberland	103	169	174	131	123	127	123	130	187	332	222%
Dauphin	533	383	339	419	516	504	685	656	783	448	-16%
Delaware	6590	3471	3410	3249	3470	3822	3688	3575	3196	3077	-53%
Elk	2584	1281	912	729	1615	2207	2365	2348	2519	1227	-53%
Erie	3526	2832	852	566	568	643	602	664	626	641	-82%
Fayette	156	174	87	116	101	82	61	53	45	69	-56%
Forest	216	257	248	272	239	225	227	220	241	225	4%
Franklin	53	63	88	86	132	271	154	216	263	208	292%
Fulton	2	1	4	4	6	7	6	6	6	3	50%
Greene	1986	1705	1543	1312	1163	1263	1426	1689	1779	1581	-20%
Huntingdon	73	74	73	76	72	77	69	70	75	78	7%
Indiana	2312	3224	3102	3394	4117	5191	5367	5400	4974	4690	103%
Jefferson	283	203	220	214	257	213	219	220	207	179	-37%
Juniata	43	24	22	28	17	20	23	29	24	39	-9%
Lackawanna	380	415	406	500	533	524	507	493	338	327	-14%
Lancaster	1392	1364	1370	1310	1206	1146	1162	1151	1159	1347	-3%
Lawrence	2069	1863	1796	1781	1978	1961	1902	1652	1893	1376	-33%
Lebanon	2318	2208	1811	1489	515	448	504	502	481	400	-83%
Lehigh	536	550	473	419	458	469	501	360	4205	1513	182%
Luzerne	325	299	293	320	354	367	252	260	287	259	-20%
Lycoming	830	656	654	704	722	906	828	733	782	516	-38%
McKean	360	271	254	251	252	275	292	261	258	225	-38%
Mercer	193	232	338	349	383	376	389	343	420	337	75%
Mifflin	243	193	188	217	250	273	244	236	249	265	9%
Monroe	122	94	150	147	132	117	152	180	189	148	21%
Montgomery	1021	1114	1150	1183	1250	1200	1133	1102	1107	1080	6%
Montour	832	813	843	898	863	950	966	868	821	955	15%

*** no emissions reported

** percentage change N/A

Table B-29. Carbon Monoxide Point Source Historical Trend (cont.).

Units: Tons Per Year

County	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Change Since 2000
Northampton	4993	4933	18771	17920	14131	18189	6650	5156	4122	3757	-25%
Northumberland	510	555	471	561	552	567	515	505	509	511	0%
Perry	18	5	12	13	8	8	2	5	3	11	-39%
Pike	1	1	0	2	4	0	1	0	1	0	-100%
Potter	1081	1143	1264	1153	767	831	1146	1084	972	927	-14%
Schuylkill	910	933	1150	1310	1305	1347	1380	1410	1364	1270	40%
Snyder	354	432	415	376	366	378	343	394	421	234	-34%
Somerset	522	478	520	760	671	666	673	715	634	501	-4%
Sullivan	***	***	***	***	***	***	***	***	***	***	***
Susquehanna	3	2	7	2	3	2	2	3	2	3	0%
Tioga	854	775	715	840	267	217	195	189	199	170	-80%
Union	156	148	126	122	127	109	103	80	75	70	-55%
Venango	342	295	292	342	336	310	300	292	319	277	-19%
Warren	535	535	540	494	500	520	440	571	643	513	-4%
Washington	1317	672	602	600	272	432	504	456	361	199	-85%
Wayne	3	2	2	3	2	2	2	0	2	2	-33%
Westmoreland	2494	2889	2254	1839	1304	1309	1176	1239	1300	825	-67%
Wyoming	395	453	398	460	461	534	553	462	437	446	13%
York	2811	2335	2582	2638	2661	2513	2313	2739	2162	2408	-14%
Statewide	**108229**	**106734**	**111109**	**100064**	**95674**	**106914**	**95220**	**94708**	**93547**	**80626**	**-26%**

*** no emissions reported

** percentage change N/A

Table B-30. Volatile Organic Compounds (VOC) Point Source Historical Trend.

Units: Tons Per Year

County	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Change Since 2000
Adams	210	223	179	175	208	202	197	210	191	81	-61%
Armstrong	309	161	169	167	168	183	188	174	181	192	-38%
Beaver	920	888	826	770	814	648	669	621	599	482	-48%
Bedford	455	324	336	303	259	215	229	207	179	194	-57%
Berks	1925	1757	1740	1609	1728	1595	1433	1294	1247	1113	-42%
Blair	556	532	442	402	439	439	439	395	387	346	-38%
Bradford	520	527	562	626	654	681	690	646	492	320	-38%
Bucks	1858	1320	792	783	759	728	734	664	579	469	-75%
Butler	985	828	908	885	785	782	678	691	673	488	-50%
Cambria	262	163	127	139	146	107	104	105	121	78	-70%
Cameron	28	22	14	8	10	15	9	4	4	2	-93%
Carbon	321	205	242	288	344	347	359	304	368	220	-31%
Centre	34	35	45	83	32	38	37	27	22	17	-50%
Chester	2337	1816	1424	1338	1466	1433	1304	1058	1046	766	-67%
Clarion	250	210	277	247	226	334	309	260	320	255	2%
Clearfield	114	100	109	88	89	78	83	71	54	47	-59%
Clinton	281	253	202	191	181	212	187	199	211	204	-27%
Columbia	150	126	119	142	158	153	132	100	86	66	-56%
Crawford	263	208	173	171	219	207	199	173	121	95	-64%
Cumberland	401	321	351	367	372	349	299	293	286	260	-35%
Dauphin	428	381	343	293	324	358	404	366	291	221	-48%
Delaware	2298	2017	2074	1894	1712	1766	1658	1704	1395	1187	-48%
Elk	316	234	271	189	276	276	281	332	379	262	-17%
Erie	1463	1271	512	538	619	610	611	614	525	381	-74%
Fayette	90	45	48	43	55	38	37	53	61	68	-24%
Forest	54	46	50	66	65	61	64	66	73	68	26%
Franklin	330	246	271	230	281	281	301	351	293	239	-28%
Fulton	73	40	40	36	63	91	109	88	76	32	-56%
Greene	726	781	711	642	708	629	593	622	729	772	6%
Huntingdon	142	129	95	88	95	113	119	121	123	80	-44%
Indiana	420	377	344	361	351	357	341	382	341	336	-20%
Jefferson	211	141	151	161	162	122	107	101	104	93	-56%
Juniata	201	259	251	213	235	233	238	233	196	225	12%
Lackawanna	410	347	360	334	303	296	267	282	284	263	-36%
Lancaster	3341	2907	3259	3244	3088	3159	3090	2796	2379	1995	-40%
Lawrence	348	292	399	433	347	309	290	219	196	195	-44%
Lebanon	1025	922	435	208	221	220	227	225	194	149	-85%
Lehigh	1036	1073	875	786	857	895	858	838	886	736	-29%
Luzerne	1059	1001	1015	933	736	788	771	826	859	530	-50%
Lycoming	636	498	430	356	325	352	345	342	246	187	-71%
McKean	922	842	788	677	776	772	899	833	1056	919	0%
Mercer	967	679	688	545	533	480	515	485	473	373	-61%
Mifflin	156	138	131	152	142	152	170	163	87	62	-60%
Monroe	95	45	46	80	75	72	74	65	65	67	-29%
Montgomery	1692	1469	1333	1233	1141	1002	935	883	746	642	-62%
Montour	114	37	35	38	35	42	43	34	22	35	-69%

*** no emissions reported

** percentage change N/A

Table B-30. Volatile Organic Compounds (VOC) Point Source Historical Trend (cont.).

Units: Tons Per Year

County	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Change Since 2000
Northampton	511	551	845	838	1108	1184	487	374	312	246	-52%
Northumberland	1096	910	847	719	716	664	741	682	574	511	-53%
Perry	33	0	0	1	2	3	5	2	7	10	-70%
Pike	0	0	0	0	1	0	0	0	0	0	**
Potter	141	146	135	136	170	202	221	240	232	206	46%
Schuylkill	551	407	438	317	407	427	324	498	296	444	-19%
Snyder	511	534	530	467	415	395	439	376	300	224	-56%
Somerset	98	86	75	77	58	89	80	75	68	58	-41%
Sullivan	***	***	***	***	***	***	***	***	***	***	***
Susquehanna	1	0	1	0	0	0	0	0	0	0	-100%
Tioga	277	230	192	215	152	146	124	143	775	124	-55%
Union	768	672	579	557	562	397	325	196	138	91	-88%
Venango	686	483	247	273	155	88	89	104	140	116	-83%
Warren	1180	693	580	602	590	542	557	584	576	495	-58%
Washington	235	175	201	184	158	172	162	152	147	110	-53%
Wayne	1	0	1	0	0	0	0	1	0	2	100%
Westmoreland	986	1313	844	795	828	888	776	736	686	536	-46%
Wyoming	299	290	354	351	318	340	351	348	321	370	24%
York	3509	3316	2994	1953	1564	1422	1321	1353	1374	1204	-66%
Statewide	**41615**	**36042**	**32855**	**30040**	**29786**	**29179**	**27628**	**26384**	**25192**	**20559**	**-51%**

*** no emissions reported

** percentage change N/A

APPENDIX C. MONITORING SITES, PARAMETERS AND ADDRESSES

Figure C-1. Commonwealth of Pennsylvania Active Air Monitoring Sites.

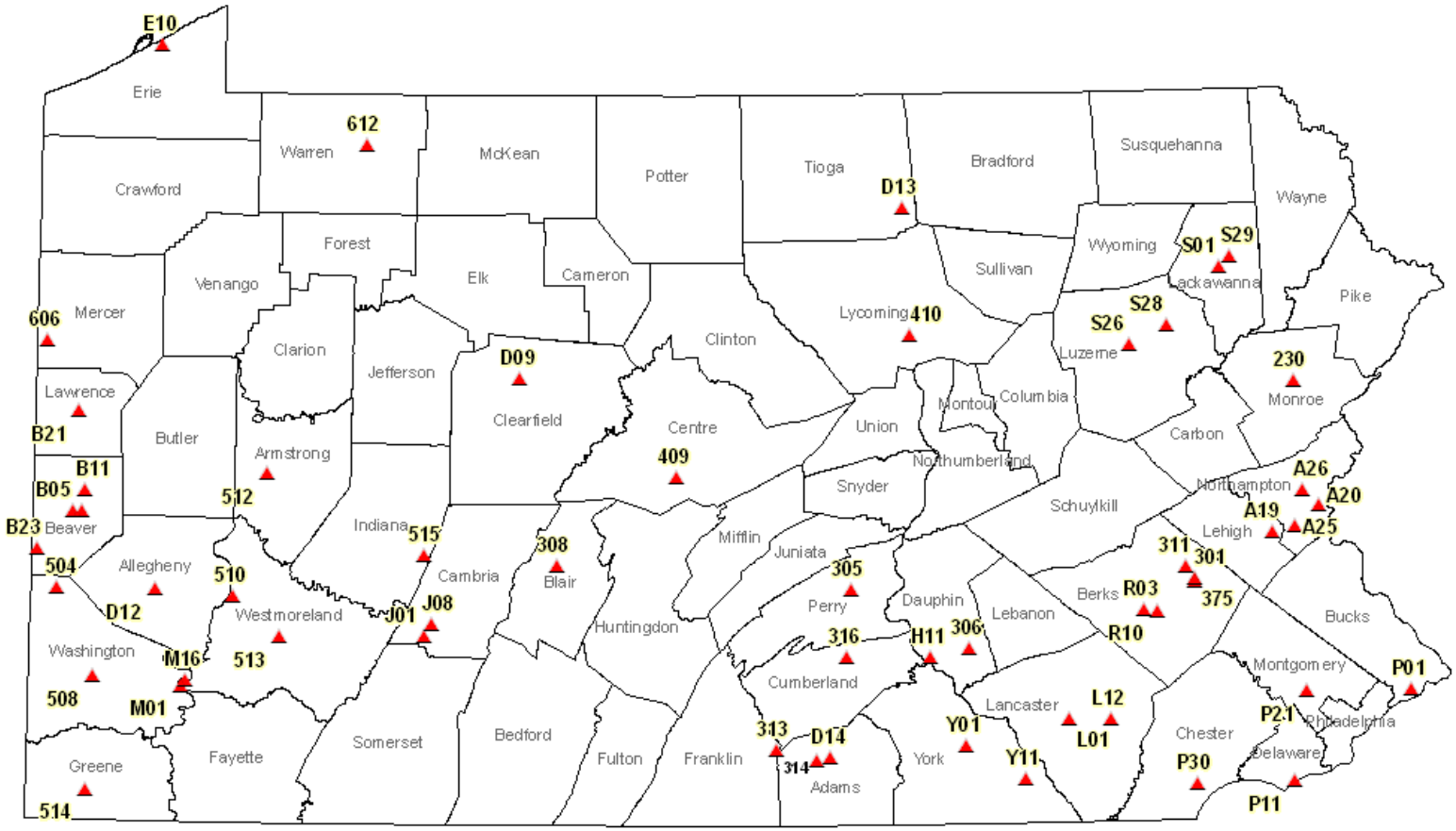

Table C-1. Air Monitoring Site Locations and Parameters Monitored.

PA SITE CODE	SITE NAME	EPA-AQS SITE CODE	COUNTY	STREET ADDRESS	LATITUDE LONGITUDE	OZONE	SULFUR DIOXIDE	NITROGEN DIOXIDE	CARBON MONOXIDE	$PM_{2.5}$	$PM_{2.5}$ SPEC	PM_{10}	TSP	LEAD	SULFATES	NITRATES
Southeast Region. Bucks, Chester, Delaware, Montgomery and Philadelphia Counties																
Southeast Pennsylvania Air Basin																
P01	BRISTOL	42-017-0012	Bucks	Roosevelt Junior High School Rockview Ln	40 06 27 N 74 52 57 W	X	X	X	X	$X_{D2.5}$						
P11	CHESTER	42-045-0002	Delaware	Front & Norris Sts	39 50 08 N 75 22 22 W	X	X	X		$X_{D2.5}$ $X_{C2.5}$		X_{C10}	X	X		
P21	NORRISTOWN	42-091-0013	Montgomery	State Armory 1046 Belvoir Rd	40 06 45 N 75 18 34 W	X	X			$X_{D2.5}$ $X_{C2.5T}$						
P30	NEW GARDEN AIRPORT	42-029-0100	Chester	1235 Newark Rd New Garden Arpt	39 50 04 N 75 46 05 W	X				$X_{D2.5}$ $X_{C2.5}$	X					
Northeast Region. Carbon, Lackawanna, Lehigh, Luzerne, Monroe, Northampton, Pike, Schuylkill, Susquehanna, Wayne and Wyoming Counties																
Allentown-Bethlehem-Easton Air Basin																
A19	ALLENTOWN	42-077-0004	Lehigh	Allentown State Hosp, Rear 1600 Hanover Ave	40 36 43 N 75 25 58 W	X						X_{C10}				
A20	EASTON	42-095-8000	Northampton	Spring Garden	40 41 32 N 75 14 14 W	X										
A25	FREEMANSBURG	42-095-0025	Northampton	Washington & Cambria Sts	40 37 41 N 75 20 28 W	X		X	X	$X_{D2.5}$ $X_{C2.5}$	X					
A26	NAZARETH	42-095-1000	Northampton	S Green & Delaware	40 44 04 N 75 18 46 W							X_{C10}				
Scranton-Wilkes-Barre Air Basin																
S01	SCRANTON	42-069-2006	Lackawanna	Behind Penn State Campus George St	41 26 34 N 75 37 23 W	X		X	X	$X_{D2.5}$ $X_{C2.5}$	X					
S26	NANTICOKE	42-079-1100	Luzerne	255 Lwr Broadway	41 12 33 N 76 00 13 W	X										
S28	WILKES-BARRE	42-079-1101	Luzerne	Chilwick & Washington Sts	41 15 58 N 75 50 47 W	X	X					X_{C10}				

X Parameter monitored at the site

$X_{D2.5}$ Discrete $PM2_{2.5}$ Sampler, Federal Reference Method (FRM) or Federal Equivalent Method (FEM)

$X_{C2.5}$ Continuous $PM_{2.5}$ Sampler, Federal Equivalent Method (FEM)

$X_{C2.5T}$ Continuous $PM_{2.5}$ Sampler (TEOM), Non-FEM

X_{D10} Discrete PM_{10} Sampler, Federal Reference Method (FRM)

X_{C10} Continuous PM_{10} Sampler, Federal Equivalent Method (FEM)

Table C-1. Air Monitoring Site Locations and Parameters Monitored (cont.).

PA SITE CODE	SITE NAME	EPA-AQS SITE CODE	COUNTY	STREET ADDRESS	LATITUDE LONGITUDE	OZONE	SULFUR DIOXIDE	NITROGEN DIOXIDE	CARBON MONOXIDE	$PM_{2.5}$	$PM_{2.5}$ SPEC	PM_{10}	TSP	LEAD	SULFATES	NITRATES
S29	PECKVILLE	42-069-0101	Lackawanna	Pleasant Ave & Erie St, Wilson Fire Co. No. 1	41 28 45 N 75 34 41 W	X										
Northeast Region Non-AirBasin																
230	SWIFTWATER	42-089-0002	Monroe	DEP/DCNR Pocono District Office	41 04 59 N 75 19 24 W	X										
Southcentral Region. Adams, Bedford, Berks, Blair, Cumberland, Dauphin, Franklin, Fulton, Huntingdon, Juniata, Lancaster, Lebanon, Mifflin, Perry and York Counties																
Reading Air Basin																
RO3	READING AIRPORT	42-011-0011	Berks	1059 Arnold Rd	40 23 01 N 75 58 07 W	X	X	X	X	$X_{D2.5}$ $X_{C2.5T}$	X	X_{C10}				
R10	LAURELDALE	42-011-1717	Berks	Muhlenberg Twp Authority, Spring Valley Rd Substation	40 22 38 N 75 54 53 W								X	X	X	X
Harrisburg Air Basin																
H11	HARRISBURG	42-043-0401	Dauphin	1833 UPS Dr	40 14 42 N 76 50 41 W	X		X	X	$X_{C2.5}$	X	X_{C10}				
Lancaster Air Basin																
L01	LANCASTER	42-071-0007	Lancaster	Lincoln Junior High School	40 02 49 N 76 17 00 W	X		X		$X_{D2.5}$ $X_{C2.5T}$	X	X_{C10}				
York Air Basin																
Y01	YORK	42-133-0008	York	Davis Junior High School, Hill St	39 57 56 N 76 41 59 W	X	X	X	X	$X_{D2.5}$ $X_{C2.5T}$	X	X_{C10}				
Southcentral Region Non-Air Basin																
301	LYONS EAST	42-011-0717	Berks	Near State & Kemp Sts	40 28 36 N 75 45 33 W								X	X		
305	PERRY COUNTY	42-099-0301	Perry	Little Buffalo State Park	40 27 26 N 77 09 57 W	X	X	X								
306	HERSHEY	42-043-1100	Dauphin	Hershey Foods Technical Centr Sipe Ave & Mae St	40 16 21 N 76 40 53 W	X										

X Parameter monitored at the site
$X_{D2.5}$ Discrete $PM2_{2.5}$ Sampler, Federal Reference Method (FRM) or Federal Equivalent Method (FEM)
$X_{C2.5}$ Continuous $PM_{2.5}$ Sampler, Federal Equivalent Method (FEM)
$X_{C2.5T}$ Continuous $PM_{2.5}$ Sampler (TEOM), Non-FEM
X_{D10} Discrete PM_{10} Sampler, Federal Reference Method (FRM)
X_{C10} Continuous PM_{10} Sampler, Federal Equivalent Method (FEM)

Table C-1. Air Monitoring Site Locations and Parameters Monitored (cont.).

PA SITE CODE	SITE NAME	EPA-AQS SITE CODE	COUNTY	STREET ADDRESS	LATITUDE LONGITUDE	OZONE	SULFUR DIOXIDE	NITROGEN DIOXIDE	CARBON MONOXIDE	$PM_{2.5}$	$PM_{2.5}$ SPEC	PM_{10}	TSP	LEAD	SULFATES	NITRATES
308	ALTOONA	42-013-0801	Blair	Ward Trucking Corporation Second Ave & 7th St	40 32 07 N 78 22 15 W	X	X					X_{C10}				
311	KUTZTOWN	42-011-0006	Berks	Kutztown University Campus	40 30 51 N 75 47 23 W	X										
313	METHODIST HILL	42-055-0001	Franklin	Forest Rd (High Elevation Site)	39 57 40 N 77 28 31 W	X										
314	ARENDTSVILLE	42-001-0001	Adams	Penn State Research Orchard	39 55 25 N 77 18 29 W			X	X	$X_{D2.5}$ $X_{C2.5}$	X					
316	CARLISLE	42-041-0101	Cumberland	Imperial Court	40 14 48 N 77 11 12 W					$X_{D2.5}$ $X_{C2.5}$						
375	LYONS SOUTH	42-011-0005	Berks	Heffner & Dryville Rds	40 27 59 N 75 45 32 W								X	X		
D14	BIGLERVILLE	42-001-0002	Adams	Penn State Research Orchard, University Drive	39 56 06 N 77 15 10 W	X										
L12	LANCASTER DOWNWIND	42-071-0012	Lancaster	3545 W Newport Rd	40 02 38 N 76 06 45 W	X										
Y11	YORK DOWNWIND	42-133-0011	York	2650 Delta Rd	39 51 40 N 76 27 43 W	X										
Northcentral Region. Bradford, Cameron, Centre, Clearfield, Clinton, Columbia, Lycoming, Montour, Northumberland, Potter, Snyder, Sullivan, Tioga and Union Counties																
Northcentral Region Non-Air Basin																
409	STATE COLLEGE	42-027-0100	Centre	Pennsylvania State Univ.,West of Big Hollow Rd State College	40 48 40 N 77 52 38 W	X	X	X		$X_{D2.5}$	X					
410	MONTOURSVILLE	42-081-0100	Lycoming	PA State Police Rear Parking Lot, 899 Cherry St	41 15 01 N 76 54 51 W	X						X_{D10}				
D09	MOSHANNON	42-033-4000	Clearfield	Moshannon State Forest Elliott State Park North of Cessna	41 07 03 N 78 31 34 W	X										

X Parameter monitored at the site
$X_{D2.5}$ Discrete $PM2_{2.5}$ Sampler, Federal Reference Method (FRM) or Federal Equivalent Method (FEM)
$X_{C2.5}$ Continuous $PM_{2.5}$ Sampler, Federal Equivalent Method (FEM)
$X_{C2.5T}$ Continuous $PM_{2.5}$ Sampler (TEOM), Non-FEM
X_{D10} Discrete PM_{10} Sampler, Federal Reference Method (FRM)
X_{C10} Continuous PM_{10} Sampler, Federal Equivalent Method (FEM)

Table C-1. Air Monitoring Site Locations and Parameters Monitored (cont.).

PA SITE CODE	SITE NAME	EPA-AQS SITE CODE	COUNTY	STREET ADDRESS	LATITUDE LONGITUDE	OZONE	SULFUR DIOXIDE	NITROGEN DIOXIDE	CARBON MONOXIDE	$PM_{2.5}$	$PM_{2.5}$ SPEC	PM_{10}	TSP	LEAD	SULFATES	NITRATES
D13	TIOGA COUNTY	42-117-4000	Tioga	North of Gleason	41 38 44 N 76 56 17 W	X										
Southwest Region. Allegheny, Armstrong, Beaver, Cambria, Fayette, Greene, Indiana, Somerset, Washington and Westmoreland Counties																
Johnstown-Air Basin																
J01	JOHNSTOWN	42-021-0011	Cambria	Miller Auto Body Crafts Shop One Messenger St	40 18 35 N 78 54 54 W	X	X	X	X	$X_{D2.5}$ $X_{C2.5}$	X	X_{C10}				
J08	EAST CONEMAUGH	42-021-0808	Cambria	Recreation Field Citron Alley & First St	40 20 53 N 78 52 58 W								X	X	X	X
Monongahela Valley-Air Basin																
M01	CHARLEROI	42-125-0005	Washington	Borough Waste Treatment Plant Front St	40 08 48 N 79 54 08 W	X	X	X	X	$X_{D2.5}$ $X_{C2.5}$		X_{C10}				
M16	MONESSEN	42-129-0007	Westmoreland	Monessen Community Centr, 435 Donner Ave	40 10 00 N 79 52 30 W								X	X	X	X
Lower Beaver Valley-Air Basin																
B05	VANPORT	42-007-0505	Beaver	Vanport Water Works Tamaqui Dr	40 41 05 N 80 19 30 W								X	X		
B11	BEAVER FALLS	42-007-0014	Beaver	Eighth St & River Alley	40 44 52 N 80 19 00 W	X		X		$X_{D2.5}$ $X_{C2.5T}$		X_{C10}				
B23	HOOKSTOWN	42-007-0002	Beaver	FAA Microwave Relay Tower	40 33 47 N 80 30 16 W	X	X									
B27	BRIGHTON TOWNSHIP	42-007-0005	Beaver	1015 Sebring Rd	40 41 05 N 80 21 35 W	X	X									
Allegheny County Air Basin																
D12	PITTSBURGH	42-003-0010	Allegheny	Carnegie Science Center	40 26 44 N 80 00 59 W	X	X	X	X							
Southwest Region Non-Air Basin																
504	FLORENCE	42-125-5001	Washington	Hillman State Park	40 26 44 N 80 25 16 W	X	X			$X_{D2.5}$ $X_{C2.5}$	X					

X Parameter monitored at the site
$X_{D2.5}$ Discrete $PM2_{2.5}$ Sampler, Federal Reference Method (FRM) or Federal Equivalent Method (FEM)
$X_{C2.5}$ Continuous $PM_{2.5}$ Sampler, Federal Equivalent Method (FEM)
$X_{C2.5T}$ Continuous $PM_{2.5}$ Sampler (TEOM), Non-FEM
X_{D10} Discrete PM_{10} Sampler, Federal Reference Method (FRM)
X_{C10} Continuous PM_{10} Sampler, Federal Equivalent Method (FEM)

Table C-1. Air Monitoring Site Locations and Parameters Monitored (cont.).

PA SITE CODE	SITE NAME	EPA-AQS SITE CODE	COUNTY	STREET ADDRESS	LATITUDE LONGITUDE	OZONE	SULFUR DIOXIDE	NITROGEN DIOXIDE	CARBON MONOXIDE	$PM_{2.5}$	$PM_{2.5}$ SPEC	PM_{10}	TSP	LEAD	SULFATES	NITRATES
508	WASHINGTON	42-125-0200	Washington	McCarrell & Fayette Sts	40 10 14 N 80 15 42 W	X				$X_{D2.5}$						
510	MURRYSVILLE	42-129-0006	Westmoreland	Murrysville Volun. Fire Co. Old William Penn Hwy & Sardis Ave.	40 25 41 N 79 41 35 W	X										
512	KITTANNING	42-005-0001	Armstrong	PA State Police Barracks, Glade Dr & Nolte Rd	40 48 51 N 79 33 54 W	X				$X_{C2.5}$						
513	GREENSBURG	42-129-0008	Westmoreland	PA Dept. of Transportation Bldg, Donohue Rd	40 18 17 N 79 30 20 W	X			X	$X_{D2.5}$ $X_{C2.5}$	X					
514	HOLBROOK	42-059-0002	Greene	Field 5 km southeast of Holbrook	39 48 58 N 80 17 06 W	X	X									
515	STRONGSTOWN	42-063-0004	Indiana	PA Dept. of Transportation Bldg, Rte. 403	40 33 48 N 78 55 12 W	X	X									
Northwest Region. Butler, Clarion, Crawford, Elk, Erie, Forest, Jefferson, Lawrence, McKean, Mercer, Venango and Warren Counties																
Upper Beaver Valley-Air Basin																
B21	NEW CASTLE	42-073-0015	Lawrence	Croton Ave & Jefferson St	40 59 45 N 80 20 48 W	X	X		X			X_{C10}				
Erie-Air Basin																
E10	ERIE	42-049-0003	Erie	East 10th & Marne Sts	42 08 30 N 80 02 19 W	X	X	X	X	$X_{D2.5}$ $X_{C2.5}$	X	X_{C10}				
Northwest Region Non-Air Basin																
606	FARRELL	42-085-0100	Mercer	Farrell High School Field, New Castle Rd & Mercer Ave	41 12 52 N 80 28 59 W	X				$X_{D2.5}$						
612	WARREN OVERLOOK	42-123-0004	Warren	Overlook Site near Stone Hill Rd	41 50 41 N 79 10 11 W		X									

X Parameter monitored at the site
$X_{D2.5}$ Discrete $PM2_{2.5}$ Sampler, Federal Reference Method (FRM) or Federal Equivalent Method (FEM)
$X_{C2.5}$ Continuous $PM_{2.5}$ Sampler, Federal Equivalent Method (FEM)
$X_{C2.5T}$ Continuous $PM_{2.5}$ Sampler (TEOM), Non-FEM
X_{D10} Discrete PM_{10} Sampler, Federal Reference Method (FRM)
X_{C10} Continuous PM_{10} Sampler, Federal Equivalent Method (FEM)

APPENDIX D. 2009 ELEMENTAL MERCURY VAPOR SUMMARY

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Air Quality

2009 ELEMENTAL MERCURY VAPOR SUMMARY

Instrumental Method: Tekran 2537A Analyzer (Cold Vapor Atomic Fluorescence Spectrometry)

Site Location: Lancaster, Lincoln Junior High School

Monitoring for Mercury Vapor Started June 21, 1999

Valid Hours: 8116 (92.6% Data Availability)

Units: nanograms per cubic meter (ng/m^3)

Annual Average (Mean)	1.5	
1st Maximum Hour Average	9.3	11/10/2009 10:00
2nd Maximum Hour Average	4.3	11/18/2009 07:00
3rd Maximum Hour Average	3.8	01/10/2009 17:00
Maximum 5-minute Sample	12.0	11/10/09 10:10

Number of 1-Hour Average Values in Ranges

0 to 1	1 to 2	2 to 4	4 to 6	6 or more
0.41%	93.65%	5.91%	0.01%	0.01%

Mercury Vapor Historical Trend											
	1999*	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**
Annual Mean	1.8	1.8	1.8	1.8	1.8	1.7	1.6	2.1	1.6	1.6	1.5
1st Maximum Hour Average	7.9	37.2	7.4	16.7	6.95	26.0	9.09	122.1	21.5	6.5	9.3
2nd Maximum Hour Average	7.6	32.3	7.3	14.5	5.78	12.4	7.27	84.5	18.9	6.0	4.3

* June 21, 1999 through December 31, 1999

An episode of higher than normal mercury vapor concentrations started on December 6, 2006, and continued for several weeks with concentrations gradually decreasing. The Department investigated but did not locate the source of mercury emissions. By March 2007, the ambient mercury concentrations had dropped to levels measured historically at this site.

There are no national or Pennsylvania Ambient Air Quality Standards
Other Standards or guidelines:
Agency for Toxic Substances and Disease Registry of the U. S. Dept. of Health and Human Services (ATSDR) Minimal Risk Level for Hazardous Substances, Inhalation Chronic 0.0002 mg/m3 (200 ng/m^3)
Neurol. Final 03/99 007439-97-6

EPA Integrated Risk Information System (IRIS) Reference Concentration: 0.0003 mg/m^3 (300 ng/m^3)

The risk to human health from direct exposure by inhalation to elemental mercury vapor in ambient air is believed to be well below any level of concern. Mercury deposited to surface waters is concentrated in the food chain and may reach levels in fish that are unsafe for consumption.

APPENDIX E. MONITORING METHODS

EPA mandates specific methods of sampling and analysis for all pollutants regulated by national ambient air quality standards (NAAQS). These regulations are published in the Code of Federal Regulations (CFR), and are adhered to by DEP. EPA generally approves one analysis method for each pollutant known as the Federal Reference Method (FRM). If a different method can be shown to provide adequate analysis, it may be submitted and approved by the EPA as a Federal Equivalent Method (FEM) or Automated Equivalent Method (AEM) and used in place of the FRM. DEP uses only FRM or FEM methods for all NAAQS-regulated pollutant monitoring.

EPA-approved methods include both continuous and discrete methods.

Continuous methods are automated methods that analyze continuous samples of ambient air for the specified pollutant *in situ*. The output of these specialized air monitoring instruments are hourly pollutant concentrations, which are electronically transmitted to and stored in a data logging device (datalogger). The data is transferred from the datalogger to central operations via DEP's telecommunication network, where real-time measurements can be accessed.

Discrete methods are "manual" methods that require physical removal of a sample (usually a filter through which ambient air as been passed) from its collection site. For this reason, the pollutant concentrations obtained are for a defined or "discrete" period of time; air is not sampled continuously by the instrument.

Table E-1 provides details on the methods and instrumentation utilized by the Bureau of Air Quality, Air Quality Monitoring Division.

Table E-1. Ambient Air Monitoring Equipment and Methods.

PARAMETER	MANUFACTURER/INSTRUMENT/MODEL	EPA METHOD DESIGNATION
Continuous Gaseous Sampling		
O_3	Teledyne Advanced Pollution Instrumentation Model 400 Photometric Ozone Analyzer http://www.teledyne-api.com/products/400e.asp	Automated Equivalent Method: EQOA-0992-087 57 FR 44565, 9/28/92 63 FR 31992, 6/11/98 67 FR 57811, 9/12/02
SO_2	Teledyne Advanced Pollution Instrumentation Model 100A UV Fluorescence SO2 Analyzer http://www.teledyne-api.com/products/100e.asp	Automated Equivalent Method: EQSA-0495-100 60 FR 17061, 4/4/95
$NO/NO_2/NO_x$	Teledyne Advanced Pollution Instrumentation Model 200A Chemiluminescence Nitrogen Oxides Analyzer for Ambient Concentrations http://www.teledyne-api.com/products/200e.asp	Automated Reference Method: RFNA-1194-099 59 FR 61892, 12/2/94
CO	Teledyne Advanced Pollution Instrumentation Model 300 CO Gas Filter Correlation Analyzer http://www.teledyne-api.com/products/300e.asp	Automated Reference Method: RFCA-1093-093 58 FR 58166, 10/29/93
Particulate Sampling		
$PM_{2.5}$		
Discrete	R&P Partisol-Plus Model 2025 Sequential Air Sampler w/WINS and R&P Partisol-Plus Model 2025 Sequential Air Sampler w/VSCC http://www.thermoscientific.com/wps/portal/ts/products/detail?navigationId=L10405&categoryId=89579&productId=11960559.htm	Manual Reference Method: RFPS-0498-118 63 FR 18911, 4/16/98 67 FR 15567, 4/2/02 (EQPM-0202-145 redesignated as manual reference method 12/18/06)
Continuous	Met One Instruments Beta-Attenuation Mass (BAM) Model 1020 http://www.metone.com/documents/BAM-1020_6-08.pdf	Automated Equivalent Method EQPM-0308-170 73 FR 13224, 3/12/08 73 FR 22362, 4/25/08

	R&P TEOM Series 8500a Filter Dynamics Measurement System (FDMS) and TEOM Series 1400ab http://www.thermoscientific.com/wps/portal/ts/products/detail?productId=11960562&groupType=PRODUCT&searchType=0	None
$PM_{2.5}$ SPECIATION	Met One Instruments SASS PM2.5 Ambient Chemical Speciation Air Sampler http://www.metone.com/documents/SASS0301Particulate.pdf	None
PM_{10}		
Discrete	Thermo GMW PM10 High-Volume Air Sampler - Volumetric http://www.thermo.com/com/cda/product/detail/1,1055,23297,00.html	Manual Reference Method: RFPS-1287-063 52 FR 45684, 12/01/87 53FR 1062, 1/15/88
Continuous	Rupprecht & Patashnick (R&P) Tapered Element Oscillating Microbalance (TEOM) Series 1400 Ambient Particulate Monitor http://www.thermoscientific.com/wps/portal/ts/products/detail?navigationId=L10405&categoryId=89579&productId=11960558	Automated Equivalent Method: EQPM-1090-079 55 FR 43406, 10/29/90
TSP	Thermo GMW TSP High Volume Air Sampler – Mass Flow http://www.thermo.com/com/cda/product/detail/1,1055,23329,00.html and Thermo GMW TSP High Volume Air Sampler – Volumetric http://www.thermo.com/com/cda/product/detail/1,1055,23328,00.html	Manual Reference Method 40 CFR Part 50, Appendix B 47 FR 54912, 12/6/82 48 FR 17355, 4/22/83
LEAD	Laboratory analysis of TSP filters by Inductively Coupled Argon Plasma-Optical Emission Spectrometry	Manual Equivalent Method EQL-0592-086 57 FR 20823, 5/15/92
SO_4, NO_3	Laboratory analysis of TSP filters by Ion Chromatography	EPA Method 300.0

This and related environmental information are available electronically via the Internet. For more information, visit us through the DEP web site at http://www.depweb.state.pa.us/
(Choose “Air” from the left-hand menu)

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