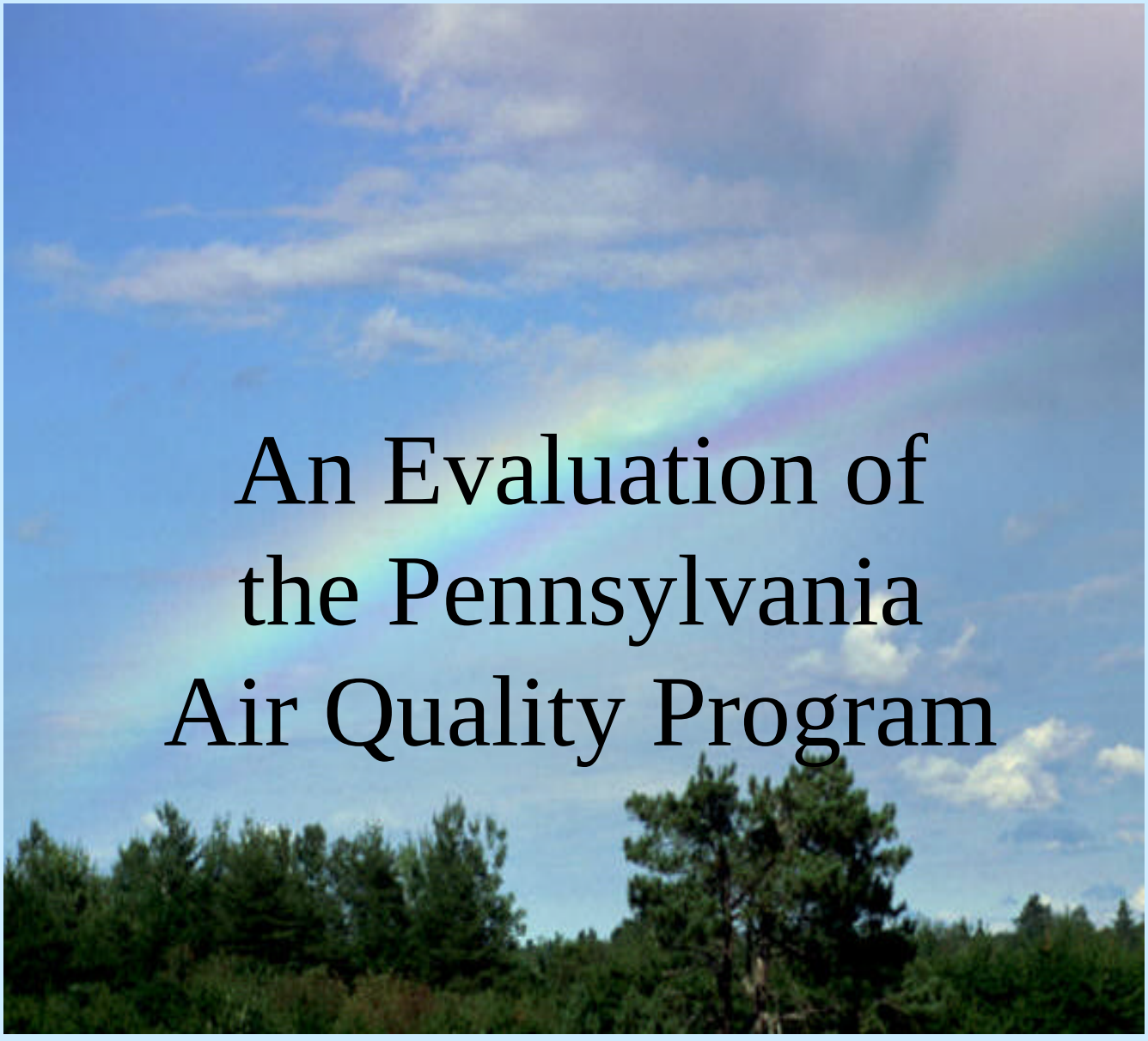

# An Evaluation of the Pennsylvania Air Quality Program

1992 – 2001

Department of Environmental Protection

November 2002

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A MESSAGE FROM THE SECRETARY

I am pleased to provide you with the Department of Environmental Protection's (DEP) report, "An Evaluation of the Pennsylvania Air Quality Program 1992-2001." This evaluation is required under the Air Pollution Control Act (Act 95 of 1992) and considers a number of issues related to DEP's implementation of the program requirements of the Federal Clean Air Act Amendments of 1990. Specifically the evaluation addresses:

- *A determination of whether Section 4.2 of the Air Pollution Control Act has hindered the Commonwealth's efforts to comply with the Federal Clean Air Act.*
- *An evaluation of the steps taken toward reducing emissions along with recommendations.*
- *An evaluation of funding available to implement the Clean Air Act programs.*
- *An analysis of costs and benefits of the Clean Air Act programs.*
- *An evaluation of measures taken to assist small businesses in complying with the Clean Air Act.*
- *A summary of the Citizens Advisory Council and the Air Quality Technical Advisory Committee's activities.*
- *An evaluation of the effectiveness of the Northeast Ozone Transport Commission and recommendations for improving the effectiveness of the commission.*
- *An assessment of the impact of missing Federal deadlines.*

In 1994, the General Assembly passed legislation, over the Governor's veto, to eliminate or suspend the implementation of several major air programs. Since 1995, however, we have made significant progress putting into place programs to improve air quality. We began working with air quality stakeholders in 1995 to develop principles and recommendations to achieve the health-based standards. Subsequently, we developed and implemented mobile and stationary source requirements that have resulted in significant reductions in emissions, including nitrogen oxides (NOx) and volatile organic compounds (VOCs).

Overall, DEP's air quality programs have had remarkable success in improving air quality to meet the health-based National Ambient Air Quality Standards. This is a result of a variety of regulatory and voluntary program efforts that were driven by strategies based on input from citizens, the U.S. Environmental Protection Agency and the regulated community.

Pennsylvania has implemented a series of measures to reduce the emission of NOx, one of the ozone -forming compounds. Through 1999, emissions of NOx were reduced by approximately 40 percent (more than 110,000 tons per ozone season) under the reasonably available control technology (RACT) program and the initial NOx budget program. The full implementation of the revised NOx budget program will result in total overall NOx emissions reductions from the 1990 levels of approximately 75 percent by 2003.

Pennsylvania has implemented a regulatory program to reduce emissions of VOCs, another component of ground level ozone formation. These measures reduce VOCs from wood furniture manufacturing operations, aerospace coating, motor vehicle refueling, solvent cleaning, automobile repair and refinishing, portable fuel containers, and consumer products. When fully implemented, these measures will reduce emissions of VOCs and hazardous air pollutants by more that 25,000 tons per year.

These NOx and VOC emission reduction strategies have substantially reduced the formation of ozone. In October 2001, EPA officially declared the Pittsburgh-Beaver Valley area

to be in attainment with the one-hour ozone standard. With the full implementation of Pennsylvania's NOx Budget program, the five-county Philadelphia area is on track to meet the one-hour ozone standard in 2005.

The Department has promoted pollution prevention and other voluntary measures to reduce air pollutant emissions. Since 1997, pollution prevention efforts of the Governor's Awards for Environmental Excellence winners, alone, have prevented the emission of approximately 112 million tons of air pollutants.

The Department has also developed a partnership with the Electrotechnology Application Center (ETAC) at Northampton Community College that has assisted more than 280 small businesses in eliminating 37.5 million pounds of VOC emissions, including 7.5 million pounds of hazardous air pollutants.

Sulfur oxide emissions from Pennsylvania sources have been reduced by approximately 120,000 tons per year from 1995 emission levels.

Because of the successful implementation of regulatory and voluntary emission reduction measures and innovative public outreach efforts the entire Commonwealth has attained federal ambient air quality standards for other pollutants such as carbon monoxide, nitrogen dioxide, lead and sulfur dioxide.

Pennsylvania's Title V Operating Permit Program was the first to receive full approval in EPA Region 3. The Department has issued approximately 671Title V operating permits representing 95 percent of the total applications. The Department has issued more Title V permits than the total issued by the other five state air quality permitting authorities in EPA Region 3 combined.

The Department has expanded its ambient air quality monitoring program to monitor additional pollutants, including hazardous air pollutants. In addition, new monitoring sites have been established to provide better information about the quality of the air that Pennsylvanian's breathe.

Pennsylvania has also been a leader in efforts to compel EPA to require that sources in states upwind of Pennsylvania reduce their emissions of nitrogen oxides, an ozone precursor. The petition filed under Section 126 of the Clean Air Act and approved by EPA will enable Pennsylvania to attain and continue to maintain the ozone health-based standard.

The ENVIROHELP program has provided free, confidential assistance and information to small businesses in the Commonwealth. ENVIROHELP has responded to more than 5,000 telephone inquiries, conducted nearly 100 free site visits, and provided information to thousands of people through the ENVIROHELP web site.

We look forward to continuing our successes and building upon the recommendations of this evaluation to provide more effective air quality protection programs.

Sincerely,

David E. Hess
Secretary

# Introduction

The Federal Clean Air Act Amendments of 1990 (Clean Air Act or CAA)[1] establish a complex regulatory scheme for the control of air pollution by both Federal and state governments. The Administrator of the US Environmental Protection Agency (EPA) is responsible for promulgating National Ambient Air Quality Standards (NAAQS) for criteria pollutants such as carbon monoxide, lead, sulfur oxide, particulate matter and ozone (including its precursors nitrogen oxides (NOx) and volatile organic compounds (VOC).

In order to implement the mandated federal programs, Pennsylvania's General Assembly made significant changes in the Air Pollution Control Act (APCA) in 1992.[2] These changes provide the Pennsylvania Department of Environmental Protection (Department or DEP) with authority to implement a significant number of new emission reduction strategies and regulatory programs to solve widespread ozone nonattainment and other problems. As a result of the CAA, most of the major population centers in Pennsylvania were designated as being in violation of the national health-based National Ambient Air Quality Standards for ozone in 1992.

Since the 1992 APCA Amendments, the air quality programs implemented for mobile and stationary sources have had remarkable success in improving air quality to meet the health-based National Ambient Air Quality Standards. Recent data show that significant progress has been made in reducing the extent, magnitude, and frequency of high ozone days in the Commonwealth. In fact, Pittsburgh has been officially declared to be in attainment and Philadelphia is on track to meet the one-hour ozone standard in 2005 if out-of-state transport of ozone, NOx and VOC is reduced as planned.

Nevertheless, some of the strategies including automobile emissions testing, employee commute requirements, and gasoline vapor refueling emission control were met with significant resistance by the general public and the regulated community. Opposition to these strategies resulted in legislative action in 1994 to require changes to certain programs, including the automobile emissions testing requirements.

In 1996, in recognition of the need for broader input into the development of programs to meet the ozone health standard, the Department implemented a "stakeholder" process that includes citizens, the U.S. Environmental Protection Agency (EPA), and the regulated community in the development of strategies to provide healthy air quality. Initially, Ozone Stakeholder Working Groups were formed for the Southeast and Southwest Pennsylvania areas. Because of the need for consideration of measures to address continuing violations of the ozone standard in the Susquehanna Valley area and in the Berks-Lehigh-Northampton County area, additional Ozone Stakeholder Working Groups were convened in 1999.

[1] 42 U.S.C. § 7401 et. seq.
[2] Act 95 of 1992

These Ozone Stakeholder Working Groups were instrumental in analyzing the severity and extent of the problem in each area and recommending to the Department specific control strategies to improve ozone air quality. In selecting their recommendations each Stakeholder Group evaluated over 100 potential emission reduction strategies. Based on the Stakeholder recommendations, the Department developed a number of new programs. These include requirements for cleaner gasoline, automobile emissions testing tailored to each area, the recovery of gasoline emissions during automobile refueling (Stage II), solvent cleaning operations, automobile repair and refinishing facilities, nitrogen oxide control from large combustion sources, and consumer products.

The Stakeholders also were invaluable in supporting the reduction of the interstate transport of ozone and ozone precursors. The Stakeholders analyzed the extent of transport into Pennsylvania and supported the Department's efforts to achieve equitable emission reduction strategies in upwind states. This support enabled the Department to be a leader among states in the development and implementation of programs to reduce the interstate transport of ozone.

Another highly successful activity in the Department's efforts to improve ozone air quality in Pennsylvania has been the formation of Ozone Action Partnerships. An Ozone Action Partnership is a coalition of businesses, governments, community groups and individuals that educates the public about the dangers of ground-level ozone and encourage people to take voluntary actions to reduce their contributions to air pollution.

Ozone Action Partnerships have been initiated in the Southeast (Philadelphia), Southwest (Pittsburgh), Susquehanna Valley (Lancaster-York-Harrisburg), and Berks-Lehigh Valley (Reading, Allentown, Bethlehem and Easton). The Southeast partnership is a cooperative effort with New Jersey and Delaware. An Ozone Action Partnership forecasts "Ozone Action Days," called "Code Red Days," when the air is expected to be unhealthy to breathe. On these days the Partnership informs people about the predicted ozone levels and urges them to take voluntary actions to reduce air pollution. Among the voluntary actions urged are carpooling and taking public transportation and not mowing the lawn. Because the ozone problem is the result of human activity, Ozone Action Days are called only in the more populated areas. The activities of the Ozone Stakeholder Working Groups and the Ozone Action Partnerships have been invaluable in educating Pennsylvanians about ozone air quality issues and in developing support for voluntary and regulatory programs to improve ozone air quality.

The 1992 APCA Amendments substantially revised Pennsylvania's existing operating permit program for the control of air pollution. Revisions to the program included new provisions for developing and implementing a state operating permit program consistent with the requirements of Title V of the Clean Air Act. The Pennsylvania Title V operating permit program has also been implemented successfully. Under the CAA, states were required to develop permitting programs that incorporate all applicable state and federal air quality requirements for each large air pollution facility into a single document. This program is designed to ensure that facility operators, the regulators, and the public have ready access to information concerning the

requirements and obligations related to each large facility. Pennsylvania's Title V permit program was the first to receive full approval in EPA Region 3. Pennsylvania has issued approximately 665 Title V operating permits representing 95 percent of the total applications received. The Department has issued more Title V permits than the total issued by the other five state air quality permitting authorities in EPA Region 3.

# Background

The 1992 APCA Amendments authorize the Department to implement the provisions of the Clean Air Act in the Commonwealth.[3]

Section 4.3 of the APCA requires the Department to conduct an evaluation and submit a report to the General Assembly that evaluates the effectiveness of the programs adopted to implement the federal Clean Air Act requirements. The initial evaluation is to be conducted five years after the effective date of the provision and every five years thereafter. [4] The evaluations must consider a number of specific issues related to the implementation of federal air quality program requirements in Pennsylvania.

Specifically, the evaluation addresses the following:

- A determination of whether the limitation imposed by Section 4.2 of the APCA has hindered the Commonwealth's efforts to comply with the federal Clean Air Act. This determination must also include recommendations on whether the provision should be changed.

- An evaluation of the steps taken to implement the Clean Air Act and progress made toward meeting the emission reductions required and recommendations on any additional steps that must be taken.

- An evaluation of funding available to implement the Clean Air Act programs, including:
  - Adequacy of funding to implement CAA programs.
  - Adequacy of funding to implement non-CAA programs.
  - Recommendations on where adjustments should be made.

- An analysis of costs and benefits of Clean Air Act programs, including:
  - Costs imposed on mobile and stationary sources to implement Clean Air Act requirements, including costs on individuals and businesses.
  - Economic costs to the Commonwealth for failing to meet requirements, including the impacts of sanctions.
  - Benefits of compliance with Clean Air Act requirements on public health and the environment.

- An evaluation, in consultation with the Department of Community and Economic Development (formerly the Department of Commerce) and the Office of Small

[3] 35 P.S. § 4004 (1)
[4] 35 P.S. § 4004.3

Business Ombudsman, of the adequacy of the measures taken to assist small businesses in complying with the Clean Air Act.

- A summary of the activities of the Citizens Advisory Council and the Air Quality Technical Advisory Committee under Section 7.6 of the APCA.

- An evaluation of the effectiveness of the Northeast Ozone Transport Commission in meeting the CAA mandates and recommendations for improving the effectiveness of the Commission.

- An assessment of the impact of missing Federal deadlines identified under Section 7.12 of the APCA has had or will have on the State implementation of the Clean Air Act programs.

This evaluation covers air quality program activities undertaken by the Department from July 10, 1992 through December 31, 2001.

# Program History

## Air Pollution Control Act

The Pennsylvania Air Pollution Control Act (APCA), enacted originally on January 8, 1960, established the framework for air pollution control activities in Pennsylvania. Under the original APCA, DEP implemented air pollution control programs that successfully addressed the major public health and welfare air quality concerns of the time. Early air pollution control efforts focused primarily on particulate matter and oxides of sulfur from industrial and utility sources. These programs were successful in bringing air quality into attainment with the health-based air quality standards for particulate matter and oxides of sulfur throughout virtually all of Pennsylvania and assuring protection of "quality of life" concerns related to malodors, open burning and dust fall. In addition, significant strides were made to reduce ground level ozone, but in a few of the major pollution centers of Pennsylvania the measures have not been successful in reducing ozone to levels necessary to protect public health.

The 1990 Amendments to the Clean Air Act required a significant a number of changes to the APCA to authorize DEP to develop and implement the highly prescriptive programs and achieve the goals mandated by Congress. Among these were amendments to:

- Establish the legal basis for the Title V permitting program and emission fees.
- Revise the operating permit program.
- Revise the pre-construction review requirements for new or modified major stationary sources.
- Establish authority for DEP, in consultation with the Pennsylvania Department of Transportation, to develop mobile emission control programs.
- Establish the Small Business Compliance Assistance Program.

## Local Agencies

Section 12 of the APCA reserved powers to political subdivisions to enact air pollution control ordinances that are not less stringent than the requirements of the Clean Air Act, the APCA, and regulations adopted under the acts.[5] The only local air pollution control agencies authorized under the APCA are the Philadelphia Department of Health Air Management Services and the Allegheny County Health Department. Both agencies existed prior to the enactment of the original APCA. The Department and the county agencies have executed agreements that define the working relationships between the state and local air pollution control programs.

[5] 35 P.S. § 4012

# Evaluation Process

To accomplish the evaluations required under Section 4.3 of the APCA, pertinent documents and databases were reviewed and examined.

The documents include:

- Reports prepared by and for DEP including annual ambient air quality reports, state implementation plans, reports from Ozone Stakeholder Working Groups, reports on Pennsylvania's Emission Reduction Credit Registry, and reports on the program's resource needs.

- Regulatory development documents on proposed and final state air quality regulations, including written comments and oral testimony submitted to the Environmental Quality Board by interested parties.

- Financial and budgetary documents, including records of grants received from the EPA and budgets submitted to the Pennsylvania General Assembly.

- Agendas and minutes from meetings of the Citizens Advisory Council, the Air Quality Technical Advisory Committee, the Small Business Compliance Advisory Committee, and the regional compliance roundtables.

The databases include:

- DEP's Air Information Management System and Automated Management Information System.

- EPA's Aerometric Information Retrieval System.

# Consequences of the Limitation Imposed by Section 4.2 of the Pennsylvania Air Pollution Control Act

## Objective

Determine whether the limitation imposed by Section 4.2 of the Pennsylvania Air Pollution Control Act[6] has hindered the Commonwealth's efforts to comply with the federal Clean Air Act, and include recommendations on whether the provisions should be changed.

## Conclusion

Section 4.2 has not hindered the Commonwealth's ability to comply with the federal Clean Air Act requirements and should be retained.

## Background

Subsection 4.2 (a) of the APCA states that " In implementing the requirements of Section 109 of the Clean Air Act, the [Environmental Quality] board may adopt by regulation only those measures which are reasonably required, in accordance with the Clean Air Act deadlines, to achieve and maintain the ambient air quality standards or to satisfy other Clean Air Act requirements, unless otherwise specifically authorized or required by this act or specifically required by the Clean Air Act." Subsection 4.2 (b) of the APCA further specifies that control measures or other requirements that are adopted in implementing the requirements of Section 109 of the CAA "…shall be no more stringent than those required by the Clean Air Act," unless they are authorized or required by the APCA or are specifically required by the CAA. This prohibition does not apply if the Board determines that it is reasonably necessary for a control measure or other requirement to exceed ***minimum*** Clean Air Act requirements in order for the Commonwealth to achieve or maintain ambient air quality standards.[7]

Section 109 of the Clean Air Act relates to the promulgation of national primary and secondary ambient air quality standards by the EPA. The EPA has promulgated national ambient air quality standards (NAAQS) for particulate matter, sulfur dioxide, carbon monoxide, ozone, nitrogen dioxide, and lead.[8]

Section 4.2 of the APCA also provides that the "no more stringent than" provision does not apply to rules or regulations approved prior to the enactment of Section 4.2, or to air pollutants for which no NAAQS has been established by the EPA. A number of legal actions have raised the "no more stringent than" provision as a basis for challenging actions taken by the Department or EPA. In one instance, Section 4.2 of the APCA was used as the basis to object to EPA's approval

[6] 35 P.S. 4004.2
[7] 35 P.S. § 4004.2 (b)(1).
[8] 42 U.S.C. § 7409

of Pennsylvania's new source review (NSR) regulations as a revision to the State Implementation Plan.[9] Duquesne Light Company petitioned EPA to disapprove Pennsylvania's NSR regulation because it contained a provision more stringent than the federal definition of "actual emissions." However, the NSR regulations do not contravene the Section 4.2 of the APCA because the Environmental Quality Board has determined that the regulations are necessary for the Commonwealth to achieve and maintain ambient air quality standards. The case was dismissed by the U. S. Court of Appeals for the Third Circuit because the company lacked standing to file the petition.

Two other issues have been raised pertaining to Section 4.2. One issue concerns the differences among states in the timing of compliance with regulatory requirements associated with the NAAQS for ozone. The other issue concerns differences between the requirements established by DEP and EPA for reporting the emissions of certain chemicals associated with the NAAQS for ozone.

**Differences in the Timing of Compliance**

The Department is sensitive to the timing differences among the various regulatory requirements and has worked with the EPA, Ozone Transport Commission, and other states to coordinate the development and implementation of emission control strategies.

The Department is currently engaged in three multi-state efforts related to attainment of the NAAQS for ozone in Air Quality Control Regions throughout the Northeastern United States. Ozone is produced in the atmosphere by a complex photochemical reaction between two sets of precursors: oxides of nitrogen (NOx) and volatile organic compounds (VOC). Two of these multi-state efforts focus on reducing emissions of NOx and the third focuses on reducing VOC emissions.

The first NOx reduction effort is aimed at fulfilling the commitments in the Memorandum of Understanding executed by the 11 states and the District of Columbia that comprise the Ozone Transport Region (OTR).[10] Those commitments require reductions of NOx emissions, principally from electricity generating stations that are fired with fossil fuels. The schedule for compliance and the stringency of the regulations were developed to be consistent among the OTC member states.

The second NOx reduction effort is designed to achieve reductions from upwind states to our west and south. To achieve reductions in upwind states, the Commonwealth, together with other northeastern states, petitioned EPA under Section 126 of the federal Clean Air Act to reduce the interstate transport of NOx emissions.[11] Section 126 authorizes a downwind state to petition EPA for a finding that major stationary sources or groups of sources upwind of the state emit air

[9] Duquesne Light Co. v. EPA, 166 F.3rd 609 (1999)
[10] 42U.S.C. § 7511c
[11] 42 U.S.C. § 7426

pollutants in violation of the prohibition of Section 110(a)(2)(D)(i) of the CAA[12] because, among other reasons, their emissions contribute significantly to nonattainment, or interfere with maintenance, of a NAAQS in the state. If EPA grants the requested finding, the existing sources must shutdown in three months unless EPA directly regulates the sources by establishing emissions limitations and a compliance period extending beyond three months but no later than three years from the finding.

Based upon those petitions, EPA made a finding that certain stationary sources emit NOX in violation of the CAA and contribute to ozone nonattainment in downwind states. The schedule for compliance and the stringency of the emission limitations were developed by EPA and are consistent among the affected states of Delaware, Indiana, Kentucky, Maryland, Michigan, North Carolina, New Jersey, New York, Ohio, Pennsylvania, Virginia, West Virginia, and the District of Columbia.

The Department has aggressively pursued a Clean Air Act Section 126 action to assure that emitters of ozone precursors located in upwind states reduce emissions to the levels necessary to eliminate their adverse effects on Pennsylvania air quality. In addition, Pennsylvania has been a leader in efforts to reduce transport of ozone and has worked closely with the Ozone Transport Commission and with EPA to develop a coordinated approach to reduce emissions of NOx.

The third multi-state activity is designed to achieve reductions in VOC throughout the Ozone Transport Region. Model rules have been developed by the OTC states to reduce VOC emissions from mobile equipment repair and refinishing operations, solvent cleaning operations, consumer products, architectural and industrial maintenance coatings, and portable fuel containers.

The NOx and VOC emission reduction strategies are necessary to enable the Philadelphia, Lancaster and Allentown areas to achieve and maintain the one-hour ozone standard and to enable the entire state to meet the eight-hour ozone standard.

**Differences in Monitoring and Reporting Requirements**

The Department adopted rules for reporting certain emissions: sulfur oxides ($SO_2$), nitrogen oxides (NOx), particulates, visibility, hydrogen chloride (HCl), carbon monoxide (CO), hydrogen sulfide ($H_2S$), total reduced sulfur (TRS), and vinyl chloride using continuous monitors in 1979. These rules were designed to establish a monitoring and reporting program to assure compliance with *emission rate limits*. In the 1980s, EPA adopted continuous monitoring rules for new large sources. These rules were similar to the Department's rules and address *emission rate limits*. In the 1990s, EPA adopted continuous monitoring rules for the acid rain program that are different from the EPA Part 60 monitoring requirements. These rules are designed to measure *mass emissions* on an annual basis and address NOx and $SO_2$ emissions. Some facilities may be subject to two or more of these monitoring program requirements. The differences in the

[12] 42 U.S.C. § 7410 (a)(2)(D)(i)

monitoring requirements may cause the costs that facilities must incur to comply with the rules to be somewhat higher in Pennsylvania that they are in other states.

The differing monitoring and reporting requirements mainly affect electric generators that are subject to the federal acid rain program. It should be noted that the hardware used to monitor the emissions is the same for all of the continuous monitoring programs. However, the EPA Part 75 monitoring rules require different quality assurance tests and reporting parameters from the EPA Part 60 or Department procedures. These differences in quality assurance and reporting procedures result in affected facilities choosing to maintain two separate electronic records documenting the same pollutant: one set in the format specified by EPA for the acid rain program and another in a format specified by the Department to meet the EPA Part 60 and Department programs.

Industry representatives believe that additional costs are incurred when complying with the different state and federal reporting requirements. These representatives contend that bearing the incremental costs places them at a competitive disadvantage relative to competitors in other states. They explain that this competitive disadvantage is a direct consequence of retaining regulations in Pennsylvania that are, they believe, more stringent than the regulations applied in other states to comply with the same CAA requirements. Industry representatives recommend that the reporting requirements in Pennsylvania should be revised to correspond to the EPA Part 75 rules. To address these concerns, the Department is reviewing its source monitoring requirements with the Air Quality Technical Advisory Committee and considering recommendations for harmonizing the state and federal monitoring requirements.

Another potential concern involves reporting of VOC emissions. Some representatives from industry believe that EPA requires the reporting of VOC emissions on a facility-wide basis. The Department requires source-specific data reporting. Industry representatives contend that this difference may preclude the use of some commercially available software.

In 1992, the Department adopted reporting rules for VOC and NOx emissions to implement CAA requirements. These rules specify source level data reporting consistent with EPA implementing guidance. In reviewing the EPA inventory reporting requirements, the Department could find no instance where facility-wide emission totals were acceptable. In all cases, EPA requires data on a source basis. The reported differences between the EPA and Department emission reporting requirements appear to be a result of EPA's inconsistent application of its emission reporting requirements, and not because of reporting requirements unique to Pennsylvania.

Based on the Department's analysis of the issues related to emission monitoring and reporting, detailed source level monitoring and reporting is required to comply with the CAA. The federal and state continuous monitoring programs serve different purposes. The newest federal programs generally determine *mass emissions* over a long time interval, up to a year for some pollutants. The monitoring required for state purposes assures compliance with *emission rate*

*limits*. The averaging period for these emission rate limits may be as short as several minutes. These shorter averaging periods are necessary to assure that the ambient levels of pollutants do not exceed the health-based National Ambient Air Quality Standards.

In addition, it is necessary to document and report certain emissions at the individual source level to assure that emission reductions used for netting and for emission reduction credits for new source construction are based on accurate source-specific data.

**Discussion and Recommendations**

The procedures used in developing the state's regulations for implementing the NAAQS expressly consider the conformance of newly promulgated regulations with Section 4.2.

Assuring that the costs of implementing the NAAQS will not be excessive is important to sustaining the economic competitiveness of regulated facilities in Pennsylvania. It is therefore recommended that the “no more stringent than” provision be retained as set forth in the 1992 APCA amendments.

# Steps Taken and Progress Made toward Required Emission Reductions

## Objective

Evaluate the steps taken to implement the Clean Air Act and progress made toward meeting the emission reductions required, and include recommendations on any additional steps that must be taken.[13]

## Conclusion

During the interval covered by this evaluation, the principle pollutant of concern has been ozone, and the Department has made substantial progress in achieving the health-based ozone standard. The Ozone Stakeholder Working Group process was instrumental in building a consensus on the measures to be implemented to achieve and maintain the standard. Maintenance of Pennsylvania's progress is contingent upon successfully reducing interstate transport of ozone and ozone precursors.

## Background

EPA has established six NAAQS. Table 1 of this evaluation identifies the NAAQS pollutants, their ambient air quality standards, the counties monitoring nonattainment in relation to the NAAQS when the 1992 amendments to the APCA were enacted, and the counties monitoring nonattainment at the end of 2001. A number of counties that are monitoring attainment continue to be designated as nonattainment areas under Section 107 of the Clean Air Act.[14] These counties will continue to be designated as non-attainment until 10-year maintenance plans for the areas are submitted by the Commonwealth and approved by EPA. Maintenance plans have been submitted to EPA for the Southwest Pennsylvania non-attainment area and for the Berks County ozone non-attainment area.

The Department also regulates emissions of certain federally designated hazardous air pollutants or air toxics. In 1997, air toxics emissions from sources in Pennsylvania, as reported in EPA's Toxics Release Inventory, declined from 27,776 tons in 1992 to 20,025 tons. This represents a 27.9 percent decrease in total reported emissions during that period.

The CAA also requires implementation of an acid deposition program to reduce sulfur oxide and nitrogen oxide emissions. Pennsylvania has also administered regulatory programs related to control of malodors, open burning, and fugitive dust for decades. Data regarding trends in citizens' complaints for these programs, however, have not been compiled in this evaluation.

[13] 35 P.S. § 4004.3 (2)
[14] 42. U.S.C. § 7407

Table 1 provides several important insights about air quality in Pennsylvania. For all pollutants except ozone, the NAAQS have been attained throughout all or almost the entire Commonwealth. As shown in the last two columns of Table 1, many areas where individual NAAQS were not attained prior to the 1992 APCA amendments, now meet these health standards.

The locations of monitoring sites operated by the Department are shown in Appendix B. New monitoring equipment has been installed in a number of the existing sites to measure fine particulate ($PM_{2.5}$). In addition, several new monitoring sites have been established to collect data in areas where air quality has not been monitored..

**Table 1**
**Federal Clean Air Act Pollutants Regulated in Pennsylvania**

| Air Pollutant | Maximum Allowable Concentration | Averaging Time | Non-attainment Areas Prior to 1992 APCA[1] | Current Monitored Non-attainment Counties[1] |
|---|---|---|---|---|
| Carbon Monoxide (CO) | 35 ppm<br>9 ppm | 1 hour<br>8 hours | City of Philadelphia; part of Allegheny County | None |
| Lead (Pb) | 1.5 $\mu g/m^3$ | 3 months | None | None |
| Nitrogen Dioxide ($NO_2$) | 100 $\mu g/m^3$ | 1 year | None | None |
| Ozone ($O_3$)[2] | 0.12 ppm | 1 hour | 45 Counties | Lehigh, Lancaster, Philadelphia, Bucks, Delaware, Chester, Montgomery |
| Particulate Matter measured as $PM_{10}$ [3] | 150 $\mu g/m^3$<br>50 $\mu g/m^3$ | 24 hours<br>1 year | Part of Allegheny County | None |
| Sulfur Dioxide ($SO_2$) | 365 $\mu g/m^3$ (0.14 ppm)<br>80 $\mu g/m^3$ (0.03 ppm)<br>1,300 $\mu g/m^3$ (0.5 ppm)[4] | 24 hours<br>1 year<br>3 hours | Parts of Allegheny County, parts of Armstrong County, and parts of Warren County | None |

[1] Maps showing attainment/nonattainment areas are contained in Appendix C.

[2] In 1997, EPA established a new NAAQS for $O_3$ of 0.08 ppm measured as the average of the fourth highest 8-hour concentrations over 3 years. Litigation has delayed its implementation. Although EPA has not designated non-attainment areas, ambient air quality monitoring indicates that most of the more populated counties in Pennsylvania may violate this standard.

[3] Particulate matter with aerodynamic diameters equal to or less than 10 microns. EPA has now established an additional NAAQS for $PM_{2.5}$, particulate matter with aerodynamic diameters equal to or less than 2.5 microns. Those standards are 15 $\mu g/m^3$ as an annual average and 65 $\mu g/m^3$ as a 24-hour average. EPA has not designated non-attainment areas.

[4] Secondary standard intended to protect public welfare.

However, ground level ozone continues to be the most troublesome air quality problem facing Pennsylvanians. Measured levels of ozone in the Philadelphia area, the Lehigh Valley, and Lancaster County have exceeded the one-hour health-based NAAQS for ozone. The continued non-attainment of the ozone standard in these areas is due, in part, to local influences and to a more significant extent, to transported ozone and ozone precursors from states to our south and west. Nevertheless, these areas are continuing to make progress toward attainment of the NAAQS for ozone. Measures have been implemented to bring other areas of Pennsylvania into attainment for the ozone standard.

The Clean Air Act requires attainment of the one-hour ozone standard in the Philadelphia area by 2005. Recently implemented programs and other programs under development, including the Ozone Transport Commission NOx strategy and a number of programs to control and reduce VOC emissions are expected to bring the Philadelphia, Lehigh Valley, and Lancaster areas into attainment for the one-hour ozone standard. The long-range transport of ozone and its precursors, NOx and VOC, from sources in upwind states greatly complicates attainment of the NAAQS in these three areas. Long-range transport is especially troublesome in Southeast and Southwest Pennsylvania.

As of 1992, forty-five counties in Pennsylvania had monitored ambient ozone concentrations above the NAAQS so often that they were designated by EPA as non-attainment areas. However, through the summer of 2001, Lehigh and Lancaster counties, had minor violations of the one-hour ozone standard. In addition, although the five-county Philadelphia area violated the one-hour ozone standard, substantial progress has been made in reducing the magnitude and frequency of the violations in this area.

In 1997, EPA promulgated a more protective health-based, eight-hour standard for ozone. Although the standard has yet to be implemented, DEP monitors air quality to determine the attainment status of the standard. In general, all of the more populated counties in the state would violate this more protective standard. Nonetheless, the emission reduction strategies being developed to meet the one-hour standard will also be beneficial in meeting the eight-hour standard. The Department expects that full implementation of the one-hour strategies will also result in all areas of Pennsylvania, with the exception of the Philadelphia area, meeting the eight-hour standard. Because the eight-hour standard has yet to be implemented, this evaluation focuses only on the one-hour ozone standard.

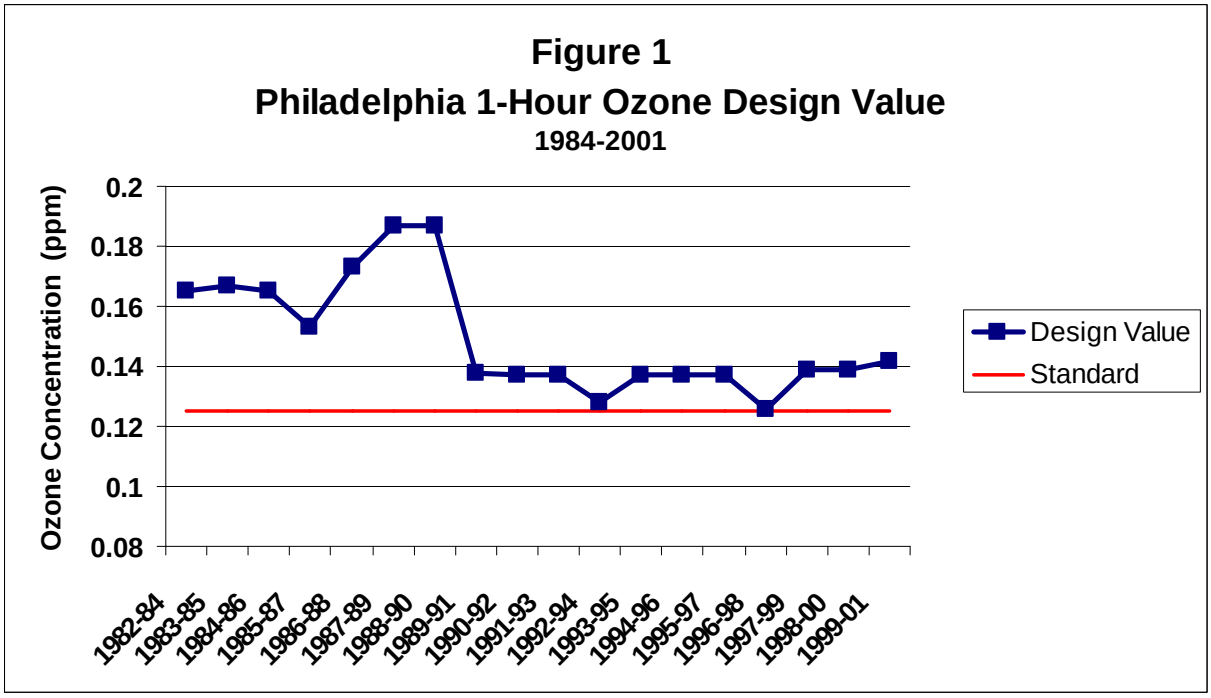
## Southeast Pennsylvania Ozone Air Quality

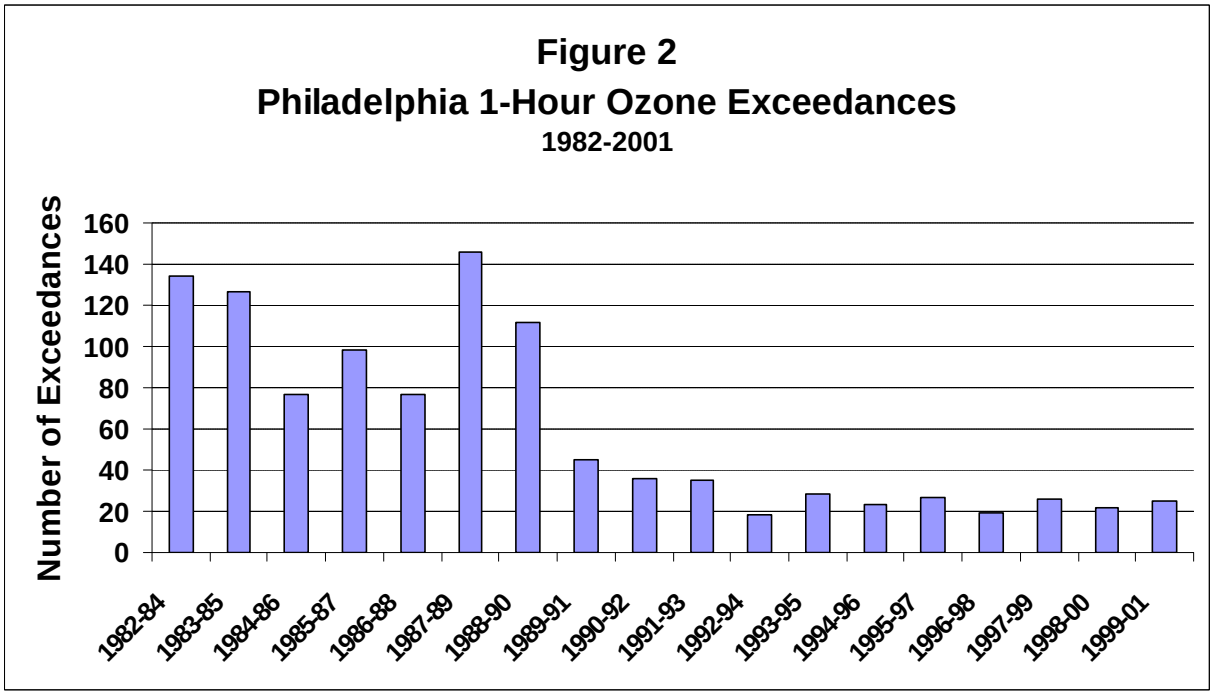
Southeast Pennsylvania, including Bucks, Chester, Delaware, Montgomery, and Philadelphia counties, is classified as a "severe" ozone non-attainment area. This “severe” classification is based on air quality data available prior to the enactment of the 1990 Clean Air Act. Ambient ozone air quality for this area is based on air quality monitoring at sites operated by DEP and by the Philadelphia County’s Air Management Services (AMS).

Additional monitoring is also conducted by the neighboring states of Maryland, Delaware, and New Jersey in the tri-state Consolidated Metropolitan Statistical Area. The monitoring data from those states are not reviewed in this evaluation.

Since the 1990 CAA, important strides have been made to reduce the number of days when the ozone standard is exceeded and the severity of the exceedances. Peak ozone levels are, however, highly dependent on meteorological parameters, particularly temperature. In addition, air entering Pennsylvania from the west and south is already at or near the level of the one-hour ozone standard. Because of year-to-year temperature variations and high background concentrations it is very difficult to assess local progress in reducing ozone levels.

Ozone air quality exceedance trend information for the Southeast Pennsylvania ozone non-attainment area is shown in Figures 1 and 2. Figure 1 shows measured ozone design values for monitoring sites in the area. The ozone design values are based on the fourth highest one-hour concentration over a three-year period at each sampling site. Figure 2 shows a comparison of the total numbers of exceedance days observed during the three-year periods from 1982 through 2001. The total number of exceedances has decreased from more than140 in 1987-89 to 25 during these successive three-year periods. These data show continuing reductions in the measured ozone levels.






In summary, air quality data for Southeast Pennsylvania indicate that progress is being made and air quality is improving. The number of days during the summer ozone season when the standard has been exceeded is declining over time, and the area is approaching attainment. People residing in and around Philadelphia are experiencing fewer exceedance days, and are being exposed to lower levels of ozone during exceedance days. Nevertheless, large populations are still being exposed to ambient ozone concentrations that exceed the National Ambient Air Quality Standard and the area continues to fall short of attaining the one-hour ozone standard in the southeast region.

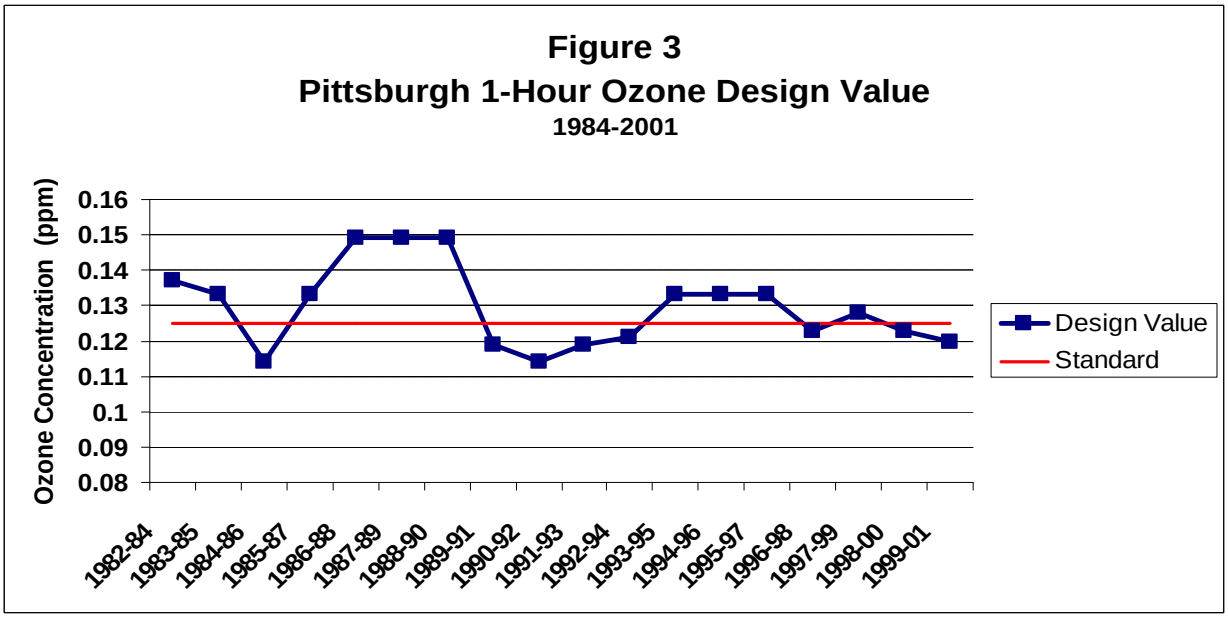
During the past few years, however, economic growth in Southeast Pennsylvania has been stronger than projected. In the absence of effective ozone control programs, the increased emissions of ozone precursors associated with that economic growth would, undoubtedly, have caused ambient ozone concentrations to increase in the region. The improvements in ozone concentrations that have occurred, instead, indicate that the steps that have been taken to reduce emissions of ozone precursors have offset the increase in emissions of those pollutants that has accompanied the economic growth.

Moreover, the Southeast Ozone Stakeholder Working Group recommendations include programs intended to reduce emissions of ozone precursors both within the stakeholder areas and in areas upwind from the region. These programs include the NOx allowance program established under the Ozone Transport Commission Memorandum of Understanding[15], and EPA's Regional NOx reduction program, and VOC emission reduction strategies developed by the OTC states. The reductions in NOx and VOC emissions that are projected as a result of these programs provide high likelihood of attaining the current one-hour ozone standard in Southeast Pennsylvania by 2005.

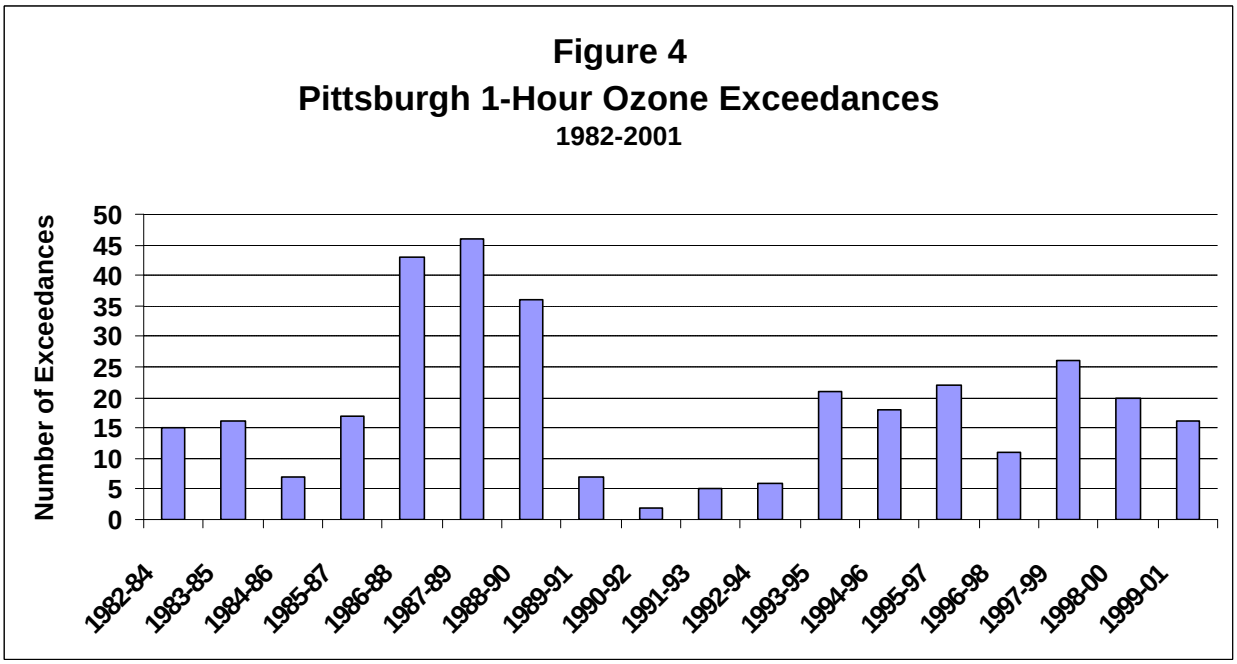
**Southwest Pennsylvania Ozone Air Quality**

Southwest Pennsylvania, including Allegheny, Armstrong, Beaver, Butler, Fayette, Washington, and Westmoreland Counties was classified as a "moderate" ozone non-attainment area based on air quality data available preceding the 1990 CAA. In October 2001, EPA reclassified the area as attainment based on measured ozone concentrations for the three most recent years – 1999 through 2001. This success was a direct result of the efforts of the Southwest Ozone Stakeholders and implementation of their recommended emission reduction programs.

Ambient ozone air quality data for the area is based air quality monitoring at sites operated by DEP and the Allegheny County Health Department (ACHD). The design values for the one-hour average ambient ozone concentration for the three-year periods from 1982 through 2001, compared to the NAAQS, is presented in Figure 3. A comparison of the total number of exceedance days observed during the three-year periods from 1982 through 2001 is presented in Figure 4. The data presented in Figures 3 and 4 show that ambient ozone concentrations have improved from the levels experienced between 1993 and 1997.




[15] "Memorandum of Understanding among the States of the Ozone Transport Commission on Development of a Regional Strategy Concerning the Control of Stationary Source Nitrogen Oxide Emissions," September 27, 1994.




Based on 1991 through 1994 monitoring data, EPA determined on July 19, 1995 that measured air quality in the area met the ozone NAAQS and that the statutory requirement for an attainment demonstration (and other related requirements) was no longer applicable.

Although Southwest Pennsylvania succeeded in attaining the NAAQS for ozone from 1991 through 1994, events during 1995 caused exceedances that resulted in a violation of the ozone NAAQS. Ozone is a secondary pollutant that is formed in photo-chemical reactions between NOx and VOC in the presence of sunlight. These reactions are most potent on hot, sunny, calm days. Ambient ozone concentrations are therefore strongly influenced by meteorological conditions.

During the summer of 1995, meteorological conditions contributed to the formation of ozone in the region on an unusually large number of days, resulting in 17 exceedances of the one-hour ozone standard. A significant portion of measured ozone was contributed by emissions transported in from other states. As a result, the number of exceedance days that occurred during that summer caused the region to be redesignated as a non-attainment area.

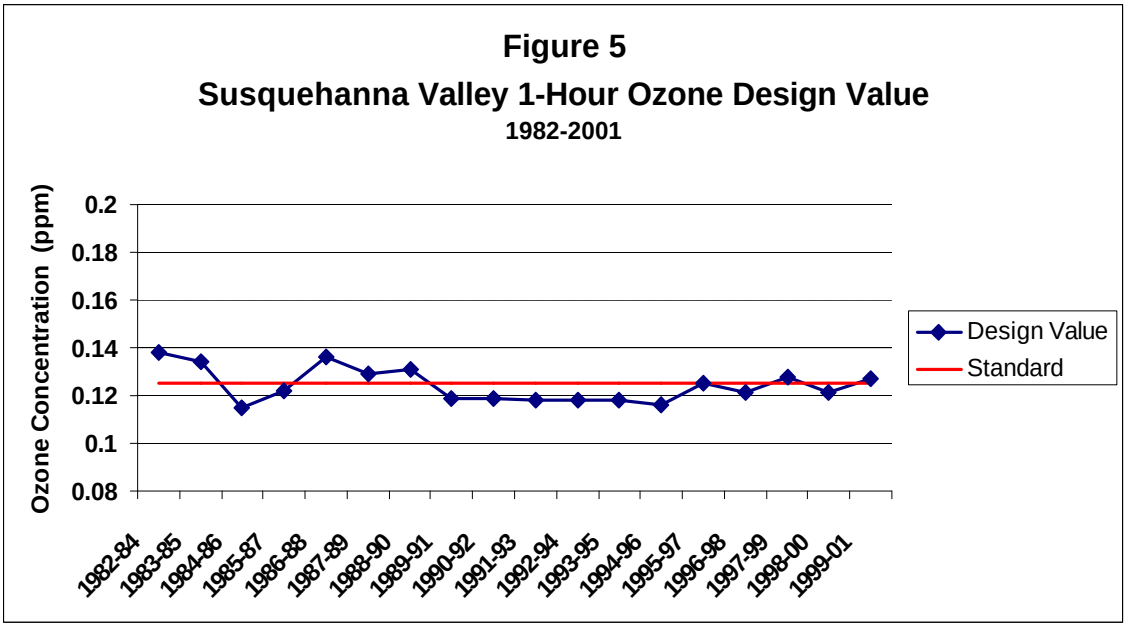
Southwest Pennsylvania is greatly affected by long-range transport of ozone and its precursors. Monitors located in Pennsylvania near the Ohio and West Virginia borders routinely measure ozone concentrations that are between 0.10 and 0.11 ppm, which represents 83 to 92 percent of the maximum level allowed under the NAAQS. Consequently, ozone photo-chemical grid modeling and weight-of-analysis has projected that, if only local actions are taken to reduce

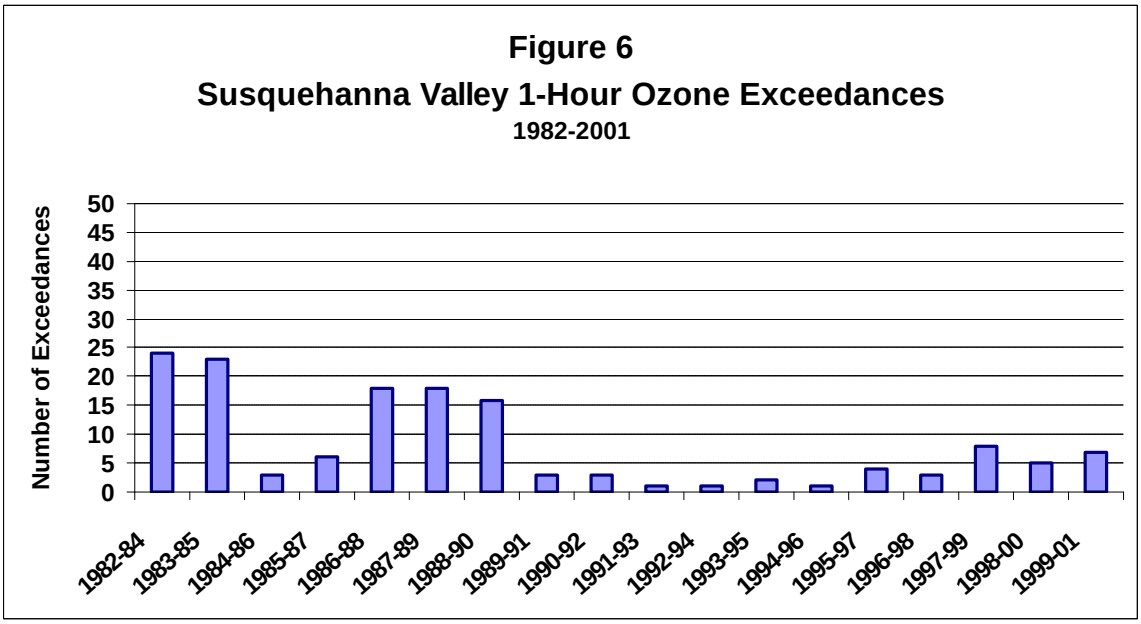
emissions of ozone precursors, the region will still fail to attain the standard. The weight-of-evidence analysis that DEP has conducted as part of the region's SIP indicates a need for reduction in long-range transport of ozone precursors.

On the basis of that analysis, the SIP demonstrates that regulations adopted to reduce emissions of ozone precursors within the region, combined with actions to reduce emissions from sources in upwind states will result in attainment of the NAAQS. Upwind states will be required to reduce emissions in response either to Pennsylvania's petition under Section 126 of the Clean Air Act or EPA's Section 110 SIP call.

**Susquehanna Valley Ozone Air Quality**

In 1999, an Ozone Stakeholder Working Group was established for Southcentral Pennsylvania. The Stakeholders considered ozone air quality in Lancaster, York, Dauphin, Cumberland, and Lebanon counties. This group issued recommendations for additional measures, including the implementation of a motor vehicle testing program and the NOx SIP call, to improve the ozone air quality in the area. Following the establishment of the Stakeholders' Group, four ozone exceedances occurred in Lancaster County, during 1999-2001, violating the one-hour ozone standard. Nevertheless, the Department expects that complete implementation of the Stakeholder recommendations will result in Lancaster County meeting the one-hour ozone standard and that the remaining Susquehanna Valley Counties will continue to meet the one-hour ozone NAAQS. In addition, the Susquehanna Valley Ozone Action Partnership was established for these counties to increase public awareness of ozone air quality issues and to promote voluntary actions to reduce ozone-related emissions.




## Lehigh Valley/Reading Ozone Air Quality

In 1999, an Ozone Stakeholder Working Group was established for Lehigh, Northampton and Berks counties. This group issued recommendations for additional measures, including the implementation of a motor vehicle testing program and the NOx SIP call, to improve the ozone air quality in the area. Following the establishment of the Stakeholders' Group, four exceedances occurred in Lehigh County, during 1999-2001, violating the health-based ozone NAAQS.

Nevertheless, the Department expects that complete implementation of the Stakeholder recommendations will result in Lehigh County meeting the one-hour standard. In addition, the Lehigh Valley Ozone Action Partnership was established for these counties counties to increase public awareness of ozone air quality issues and to promote voluntary actions to reduce ozone-related emissions.

**Figure 7**
**Lehigh Valley/Reading 1-Hour Ozone Design Value**
**1982-2001**

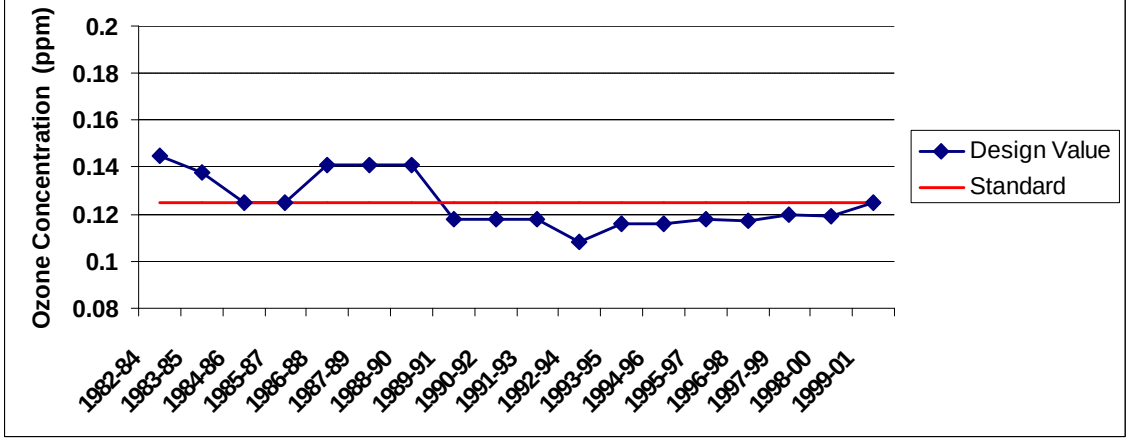
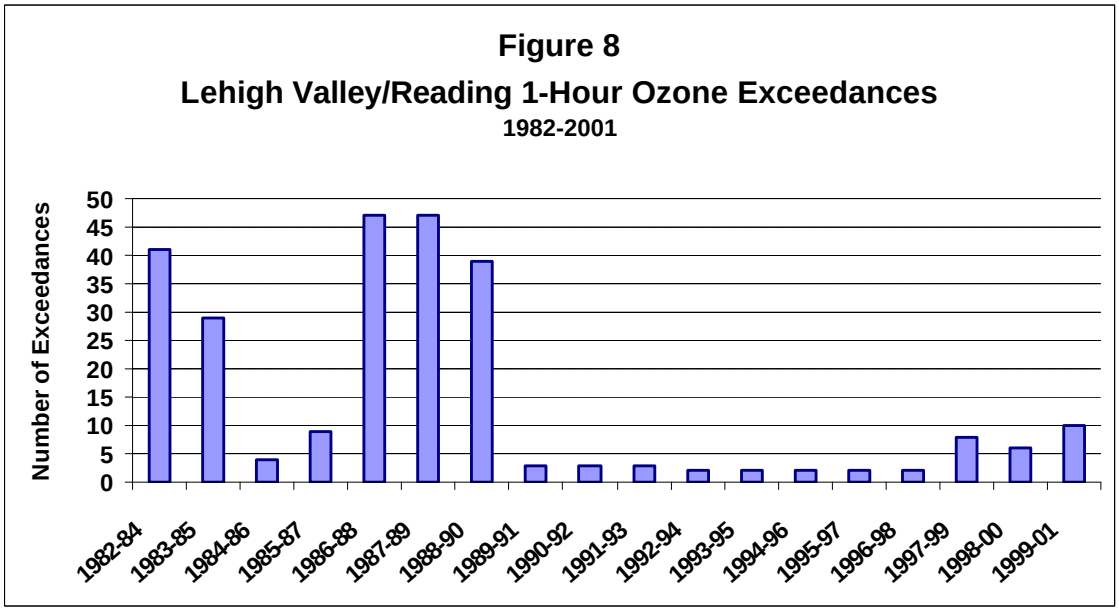



**Figure 8**
**Lehigh Valley/Reading 1-Hour Ozone Exceedances**
**1982-2001**



## Steps to Achieve Reductions

The Clean Air Act required the Department to submit official plans to the EPA for a number of areas of Pennsylvania. These plans were required for the areas with the highest ozone concentration at the time of the 1990 Clean Air Act Amendments. The following summarizes the development of these plans.

### Ozone Stakeholder Working Groups

Three areas of the state that have been designated non-attainment areas for ozone were required under the CAA to develop attainment plans. Southeast Pennsylvania has been classified as a severe ozone non-attainment area. Southwest Pennsylvania and Lehigh Valley/Reading have been classified as moderate ozone non-attainment areas. Southeast Pennsylvania has, therefore, been required to perform planning that is more extensive and to take some actions that are more extensive than those mandated in the state's two moderate ozone non-attainment areas. All three areas have also been required to develop contingency plans that would be implemented if the reductions in ambient ozone concentrations achieved by implementing all of the other plans are not adequate to bring the areas into attainment with the ozone standard.

The planning has involved a significant level of public participation, including the formation and utilization of Ozone Stakeholder Working Groups. These Stakeholder Working Groups have been instrumental in defining both statewide and local initiatives to address ozone air quality problems. . The Ozone Stakeholder Working Group reports may be accessed at:

http://www.dep.state.pa.us/dep/deputate/airwaste/aq/plans/neg_comm_air.htm.

In addition, the process has provided significant opportunities for public education and development of public support for voluntary and regulatory ozone initiatives.

Ozone Stakeholder Working Groups in Southeast Pennsylvania, Southwest Pennsylvania, the Lehigh Valley/Reading area and Southcentral Pennsylvania to developed recommendations for regional strategies for attaining and maintaining the NAAQS for atmospheric (ground-level) ozone. Participants represented various interested parties including: industries; environmental groups; regional planning, health, and transportation organizations; staff in DEP’s central and regional offices; DEP's Citizens Advisory Council; PENNDOT; and EPA.

Individuals who participated in the Ozone Stakeholder Working Groups generally agree that the stakeholder process is an excellent, constructive addition to the Air Quality Program. Participants commended the facilitators who presided over the Stakeholder Working Group meetings and generally agreed that people representing different interests respected each other’s positions. Stakeholders indicated that the process helped individuals recognize that regulatory

requirements to reduce ozone emissions have been adopted for a variety of emission sources and that no particular segment has been required to bear a disproportionate share of the emission reduction burden.

The Air Quality Program has also used the stakeholder process to refine the Southeastern and Southwestern Pennsylvania Stakeholder recommendations for automobile refinishing, solvent cleaning, and the enhanced decentralized emissions inspection and maintenance program. An abridged version of the stakeholder process involving only DEP representatives and pertinent regulated industries has been used to address primarily technical issues such as formats for Air Information Management System reporting.

Voluntary Programs

In addition to the regulatory emission reduction programs that have been established for various stationary and mobile sources of air pollutant emissions, DEP has initiated several voluntary emission reduction programs for ozone. The most prominent voluntary programs are the Ozone Action Partnerships in which agreements have been negotiated among businesses, government agencies, and environmental groups to assist in attaining the NAAQS for atmospheric ozone. The partnerships educate the general public about the causes and risks of excessive ambient ozone concentrations, and encourage people to make appropriate voluntary changes in their lifestyles. The partnerships also encourage voluntary actions that will reduce emissions of ozone precursors on Ozone Action Days. Ozone Action Days are days for which weather forecasts predict that meteorological conditions will cause excessive atmospheric ozone concentrations. The lawnmower exchange program is another voluntary program. Lawnmower exchange programs offer discount coupons for electric lawnmowers to citizens who trade in their gasoline-powered lawnmowers. While the programs were not specifically developed as a control strategy, they demonstrate the value of economic-based incentives to change the habits of individuals. The lawnmower program has provided a very valuable opportunity to educate the public about air quality issues and five years after inception, has retired over 2,000 lawnmowers and gas-trimmers in exchange for electric equipment.

Plans Developed

For Southeast Pennsylvania, a severe ozone nonattainment area, DEP developed and submitted to EPA three plans that, when implemented sequentially, are projected to achieve the NAAQS for ozone by 2005. The first plan is a Rate of Progress Plan that achieved a 15 percent reduction in VOC emissions from sources in the region through 1996. For the three-year period ending in 1999, DEP developed and submitted to EPA a second revision to the SIP identifying planned reductions in ozone precursor emissions accounting for an additional three percent per year. Thus, the first two plans have provided, in total, a 24 percent reduction in emissions of ozone precursors through 1999. Additional plans include regional emission control strategies designed to reduce the long-range transport of ozone and its precursors into Pennsylvania. These plans are projected to achieve additional emission reductions totaling 18 percent through 2005.

For Southwest Pennsylvania, three plans were submitted to EPA. The Rate of Progress Plan, approved by EPA, was designed to achieve a 15 percent reduction of VOC emissions from sources in the area through 1996. The second plan demonstrated that the NAAQS for ozone would be attained. The area did monitor attainment of the standard in 2000. EPA has not taken action on the plan because the area monitored attainment, necessitating the development of the third plan—a maintenance plan. The Department submitted the maintenance plan that provides an analysis of growth over the next ten years and defines contingency control measures to achieve additional emission reductions if the area monitors non-attainment. On October 19, 2001, EPA approved the maintenance plan and redesignated the area to attainment/maintenance (66 FR 53094). On December 18, 2001, EarthJustice Legal Defense Fund (EarthJustice), representing Sierra Club and the Group Against Smog Pollution, Inc. (GASP), filed a petition in the U.S. Court of Appeals for the Third Circuit challenging the redesignation.

Planning for Lehigh Valley/Reading was similar to that for Southwestern Pennsylvania. On November 12, 1993, Pennsylvania submitted a request to EPA for redesignation of Berks County to attainment for ozone. Pennsylvania amended this plan on January 13, 1994 and May 12, 1995. On October 10, 1996, EPA published a proposed approval of the redesignation request, maintenance plan, and inventories, contingent upon Pennsylvania correcting deficiencies identified in the submittals (61 FR 53174). On January 28, 1997, Pennsylvania submitted a maintenance plan and emission inventory for Berks County. This submission superceded the previous submittals and addressed the requirements of EPA's proposed approval. On May 7, 1997, EPA approved the maintenance plan and emissions inventories for Berks County and redesignated the area to attainment/maintenance (62 FR 24826).

Actions Implemented

The plans discussed in the previous section identify specific actions that must be taken to achieve the projected emission reductions. These actions are summarized in Table 2 of this evaluation.

**Table 2**
**Emission Reduction Actions Initiated after the 1992 APCA Amendments**

| Program Areas | Actions Taken to Reduce Emissions of Ozone Precursors |
|---|---|
| Federal | Federal Motor Vehicle Control Program -Tier I Standards<br>Consumer Products<br>Autobody Refinishing - Refinish Materials<br>Architectural and Industrial Maintenance Surface Coatings<br>Onboard Refueling Controls<br>Nonroad Engine Emissions Controls<br>National Emission Standards for Hazardous Air Pollutants<br>Treatment, Storage, and Disposal Facilities for Hazardous Waste<br>Reformulated Gasoline (Southeast Pennsylvania) |
| State | Improved Rule Effectiveness<br>Highway Marking Conversions<br>Source and Process Shutdowns<br>NOx Allowances under the OTC MOU<br>Reasonably Available Control Technology for NOx and VOC<br>Wood Furniture Finishing<br>Solvent Cleaning Operations<br>Automobile Refinishing |
| Southeast Pennsylvania | High Enhanced Emissions Inspection and Maintenance<br>Stage II Vapor Recovery at Retail Gasoline Service Stations |
| Southwest Pennsylvania | Enhanced Emissions Inspection and Maintenance<br>Stage II Vapor Recovery at Retail Gasoline Service Stations<br>Low Reid Vapor Pressure Gasoline |
| Susquehanna Valley | Enhanced Emissions Inspection and Maintenance [1]<br>Scheduled to begin in 2003 |
| Lehigh Valley/Reading | Enhanced Emissions Inspection and Maintenance [1]<br>Scheduled to begin in 2003 |

1. I/M programs are administered by the Pennsylvania Department of Transportation.

For Southeast Pennsylvania and Southwest Pennsylvania however, the photochemical grid modeling conducted in developing the SIP revisions has revealed that the actions in Table 2 will not reduce ambient ozone concentrations adequately to attain and maintain the NAAQS. Rather, attainment and maintenance of the ozone standard in these two regions also requires measures to address long-range transport of ozone and its precursors from upwind states. The SIP revisions therefore include reductions of emissions from sources in specific upwind states in response to either the state's petition under Section 126 of the CAA or EPA's Section 110 SIP call.

Finally, in addition to the specific actions listed in Table 2, Ozone Action Partnerships have been established in Southeast, Southwest, and Southcentral Pennsylvania, and the Lehigh Valley/Reading area. Because these are voluntary programs, it is difficult to assess the extent of reductions in emissions of ozone precursors that are being achieved as a result of the Ozone

Action Partnerships. Nevertheless, these programs have been extremely effective in alerting the public to the adverse consequences of high ozone levels and have resulted in voluntary actions that help reduce ozone concentrations.

## Progress on Other Pollutants

Since the 1992 APCA Amendments, significant progress has been made in reducing emissions of other pollutants of concern as described below. Additional information concerning ambient air quality monitoring is contained in the "Pennsylvania Air Quality Monitoring 2000 Annual Report." The report may be accessed at:

http://www.dep.state.pa.us/dep/deputate/airwaste/aq/aqm/aqreport.htm.

### Sulfur Dioxide ($SO_2$)

In 1991, most of Pennsylvania was in attainment with the NAAQS for $SO_2$. Portions of Allegheny, Armstrong, and Warren counties were, however, designated as non-attainment areas. In December 2001, DEP submitted to EPA a redesignation request for Warren County. A redesignation request for Allegheny County is under development by the Allegheny County Health Department. Monitoring data show that these areas measure attainment of the sulfur dioxide standard.

### Particulate Matter ($PM_{10}$)

In 1992, a portion of Allegheny County was classified as a non-attainment area for $PM_{10}$. The area monitoring non-attainment is extremely localized and is the result of emissions from a single facility in the area. A redesignation request for this area is being prepared by the Allegheny County Health Department. The remainder of the state has easily attained the NAAQS for $PM_{10}$. Monitoring data show that ambient $PM_{10}$ concentrations have improved in eight of the fourteen areas monitored.

### Carbon Monoxide (CO)

Two areas of Pennsylvania were classified as non-attainment areas for CO. Those areas are Philadelphia and a portion of Allegheny County. Subsequently, Philadelphia attained the NAAQS for carbon monoxide. In addition, ambient concentrations of CO have been uniformly reduced throughout the state. Monitoring data show that the Allegheny County area has measured attainment of the carbon monoxide standard and a redesignation request has been submitted to EPA.

Since 1992, several regulatory programs to reduce CO emissions have been implemented. They include the use of oxygenated gasoline in the Philadelphia area, federal programs for reducing emissions from motor vehicles, and Pennsylvania's enhanced emissions I/M programs for motor

vehicles. Implementation of these programs has significantly reduced CO emissions in the Philadelphia and Allegheny County areas.

Nitrogen Dioxide ($NO_2$)

In 1992, the entire Commonwealth was in attainment with the NAAQS for $NO_2$ and remains in attainment. No major areas within Pennsylvania have experienced increased ambient concentrations of $NO_2$ and many areas have achieved slight improvements.

Lead (Pb)

In 1992, the Commonwealth achieved the NAAQS for lead and still remains in attainment today. For all regions except Philadelphia, ambient concentrations of lead have diminished substantially during the past ten years. In the second quarter of 1998, however, an exceedance of the NAAQS for lead was detected at the monitoring site adjacent to Franklin Smelting in Philadelphia. The lead smelting operation at that site has since been discontinued.

## Discussion and Recommendations

The Department has taken numerous steps to plan, implement, and administer programs and actions designed to reduce emissions and ambient concentrations of air pollutants, especially ozone. Generally, the available data indicate that those steps have been effective, particularly when evaluated in relation to the significant increases in economic activity and vehicle miles traveled that have occurred in many areas throughout the state. The increases in manufacturing and vehicle miles traveled would otherwise have resulted in greater concentrations of ambient air pollutants. Designation of a region as a non-attainment area has an adverse effect on economic and employment growth. It has been recommended that DEP should petition EPA for timely redesignation of any region in which ambient air quality has improved sufficiently to qualify it for designation as an attainment area.

# Adequacy of Funding for the Air Quality Program

## Objective

Evaluate the funding available to implement the Clean Air Act programs, determine whether that funding is sufficient or inadequate, and recommend where adjustments should be made.[16]

## Conclusion

The fiscal information examined for this evaluation indicates that the overall level of funding for the Air Quality Program is sufficient. While adjustments to the allocation of funds among specific program initiatives may be desirable, there is no apparent need to augment the funding for the program.

## Discussion and Recommendations

The Air Quality Program obtains its funding from a number of revenue sources. The first four sources of revenues listed in Table 3 are deposited in the Clean Air Fund. These are permit/inspection fees, fines and penalties, interim emission fees, and Title V emission fees.

Section 6.3(a) of the APCA provides for the establishment of fees sufficient to cover the indirect and direct costs of administering air quality programs including the plan approval process, Title V permit program required under the Clean Air Act and other CAA requirements. In addition, these fees cover the costs of administering the Small Business Stationary Source Technical and Environmental Compliance Assistance Program, Compliance Advisory Committee and Office of Small Business Ombudsman.[17]

An annual interim emission fee of $14 per ton for sulfur dioxide, nitrogen oxides, particulate matter of ten microns or less and volatile organic compounds was established under Section 6.3(b) of the APCA to cover the direct and indirect costs of administering Pennsylvania's air pollution control operating permit programs including the program required under Title V of the CAA.[18] Interim emission fees were initially collected during the 1992-1993 fiscal year for actual emissions occurring in the 1991 calendar. The interim emission fee program ended in fiscal year 1994-1995 for emissions occurring during the 1993 calendar year.

In accordance with Section 6.3(c) of the APCA and its implementing regulations in 25 Pa. Code § 127.705, the Environmental Quality Board established permanent annual emission fees the owners or operators of Title V facilities. An annual emission fee of $37 was initially paid for each ton of a regulated pollutant actually emitted from the facility for the 1994 calendar year. The

[16] 35 P.S. § 4004.3 (3)
[17] 35.P.S. § 4004.6 (3)(a)
[18] 42 U.S.C. § 7661a

permanent fee does not apply to emissions greater than 4,000 tons for any regulated pollutant. Adjustments to the emission fees are based on changes in the Consumer Price Index.

Section 6.3 (c) of the APCA provides that emission fees paid by the owners/operators of Title V facilities must be used solely to cover all reasonable direct and indirect costs required to support the Title V permits program. The fees may also be used to cover other related requirements of the CAA and the reasonable indirect and direct costs of administering the Small Business Stationary Source Technical and Environmental Compliance Assistance Program, Compliance Advisory Committee and the Office of Small Business Ombudsman.

EPA approved Pennsylvania's permanent emission fee program on July 30, 1996. If the Administrator makes a determination that the Department is not adequately administering or enforcing an approved fee program, the Administrator may collect reasonable fees from the affected sources to cover the Administrator's costs of administering the Title V permit program.

Sanctions including loss of highway funding and 2:1 emission offsets for the construction of new or modified stationary facilities may also be imposed under Section 179 of the CAA if EPA determines that the Commonwealth is not adequately administering or enforcing the approved fee program.[19]

The Commonwealth's General Fund and Federal grant funds also provide funding for air quality programs. The Air Quality Program receives federal funds from EPA to satisfy grant commitment for certain air quality program measures. The Section 105 federal funds, authorized by the Clean Air Act, require the state to provide matching funds. DEP uses the General Fund to provide the matching funds. A combination of these sources provides the funding for planning, coordination, and operation of statewide air pollution control activities to fulfill the grant requirements. DEP cannot use Title V fees to match the EPA Section 105 grant monies nor can grant funds be used to support the Title V activities.

In December 1992, the Pennsylvania Legislature passed Act 166, which created the Alternative Fuels Incentive Grant (AFIG) Fund. The fund receives an allocation annually from the Commonwealth's General Fund equal to 0.25 mills of the utility gross receipts tax collected during each fiscal year under the Tax Reform Code of 1971. The annual allocation has been between $3.5 million and $4 million. This AFIG funding source was not included in Table 3 since these funds are not used to support the general operations needed to implement the Clean Air Act or regulatory program.[20]

These funds are provided as grants to private citizens, school districts and vocational schools, municipal authorities, political subdivisions, nonprofit entities and corporations and partnerships incorporated or registered in the Commonwealth. The grants cover a percentage of the added cost of purchasing vehicles that operate on alternative fuels, converting conventional fuel

[19] 42 U. S. C. § 7509
[20] 75 Pa C. S. §§ 7201 et. seq.

vehicles to operate on alternative fuels, and establishing the refueling and recharging infrastructure. AFIG also funds advanced alternative fuel vehicle technology research, development, and demonstration.

## Table 3

## PENNSYLVANIA AIR QUALITY PROGRAM FUNDING

| FISCAL YEARS: | FY92/93 | FY93/94 | FY94/95 | FY95/96 | FY96/97 | FY97/98 | FY98/99 | FY99/00 | FY00/01 |
|---|---|---|---|---|---|---|---|---|---|
| **REVENUE:** | | | | | | | | | |
| Permit/Inspection Fees | 1,566,401 | 1,570,200 | 1,835,053 | 2,053,870 | 1,851,617 | 1,783,358 | 2,788,468 | 2,601,161 | 1,763,350 |
| Fines and Penalties | 3,151,314 | 3,188,088 | 2,735,279 | 2,548,741 | 1,490,148 | 1,814,037 | 2,299,670 | 2,378,436 | 2,290,397 |
| Interim Emission Fees | 6,825,632 | 6,980,487 | 7,108,264 | 955,191 | 901,320 | 789,303 | 125,795 | 0 | 0 |
| Title V Emission Fees | | | 392 | 16,681,197 | 18,033,426 | 15,353,527 | 14,787,736 | 14,640,470 | 15,242,949 |
| State Funding | 4,680,251 | 4,716,753 | 7,598,753 | 7,019,699 | 5,684,977 | 4,975,574 | 5,654,369 | 6,521,975 | 7,438,429 |
| Federal Funding | 5,750,645 | 4,762,646 | 5,593,817 | 4,736,510 | 3,927,354 | 4,408,048 | 4,627,222 | 4,656,830 | 4,522,780 |
| Transfer from App. 679 to Clean Air Acct * | 7,025,341 | | | | | | | | |
| Interest on Securities | 223,273 | 720,310 | 1,163,352 | 1,632,224 | 1,851,159 | 2,090,185 | 2,163,524 | 2,414,000 | 2,824,544 |
| Miscellaneous Revenue | | | | 17 | 17,605 | 2,891 | 111,113 | 121,860 | 338,837 |
| **TOTAL REVENUE** | 29,222,857 | 21,938,485 | 26,034,910 | 35,627,450 | 33,757,606 | 31,216,923 | 32,557,896 | 33,334,732 | 34,421,286 |
| **TOTAL EXPENDITURES:** | 14,571,912 | 19,404,458 | 26,126,516 | 29,760,171 | 26,472,758 | 27,637,072 | 30,134,042 | 30,016,323 | 30,577,306 |
| **BALANCE:** | **14,650,946** | **2,534,027** | **(91,606)** | **5,867,279** | **7,284,848** | **3,579,850** | **2,423,855** | **3,318,409** | **3,843,980** |

* When the Air Pollution Control Act was passed, funds in the restricted account for the Air Program (Appropriation 679), were transferred from the restricted account to a special fund now known as the Clean Air fund.

The program's accounting system is structured for major functional responsibilities, permitting, enforcement, planning, etc., except for the AFIG program, which is funded by a separate legislative appropriation. In addition, the accounting system provides an adequate management tool.

# Costs and Benefits of Clean Air Act Programs

## Objective

Analyze costs and benefits of Clean Air Act programs including: (1) costs imposed on mobile and stationary sources to implement CAA requirements, including costs on individuals and businesses; (2) economic costs to the Commonwealth for failing to meet requirements, including the impacts of sanctions; and (3) benefits of compliance with CAA requirements on public health and the environment.[21]

## Conclusion

There are no specific cost and benefit data for Pennsylvania. However, the EPA publishes national cost and benefit data, which show that the costs associated with attaining the national health standard are far less than the economic and environmental benefits achieved. These cost and benefit data are peer reviewed and published when EPA promulgates the NAAQS.

In addition, most new regulatory programs provide flexibility and alternative compliance options, including emissions trading, to allow regulated entities to select the lowest cost compliance option.

## Background

The Department, Allegheny County Health Department, and Philadelphia's Air Management Services do not compile data on the actual costs incurred in complying with CAA standards and regulations. Similarly, interviews conducted with industry representatives did not yield sufficient information to allow reliable evaluation of compliance costs for any category of emission sources, any industrial sector, or any regulatory initiative.

One company that has attempted to develop an accounting system to isolate costs of complying with each regulation explained the primary reason for this lack of information. The company's efforts revealed that the costs of complying with any single regulation are so entwined with the costs of production and complying with other regulations that it is impossible to determine the costs of any individual regulation.

Without this data, this evaluation focused on the cost-effectiveness of potential emission reduction strategies that would reliably meet the DEP's emission reduction goals. Specifically, the evaluation examined whether total compliance costs might be reduced by shifting requirements among classes of emission sources, including point sources (i.e., major stationary sources), area sources (i.e., small, dispersed stationary sources), mobile sources, and emission sources located in different geographic areas.

[21] 35 P.S. § 4004.3 (4)

## Cost-Effectiveness for Individual Emission Sources

Each Ozone Stakeholder Group evaluated more than 100 individual emission reduction strategies to determine their cost and emission reduction potential. The emission reduction strategies were ranked and the Stakeholders recommended to the DEP the most cost-effective strategies.

As part of the rulemaking process, DEP provides estimates, based on the Stakeholders' recommendations and other information, of the cost of each proposed regulation to the general public, business community, local government, and the Commonwealth.

In implementing most strategies, the DEP provides flexibility to select any control option that meets the emission goals specified in the strategy.

## Costs of Failing to Attain Clean Air Act Requirements

In addition to the direct impact on public health, determined by EPA when promulgating the NAAQS, there are other costs associated with failing to meet the CAA requirements. EPA is authorized to impose certain discretionary and mandatory sanctions if the state does not implement regulations and control programs to attain the NAAQS on a timely basis in the nonattainment area. These sanctions would be imposed until EPA determined that a state has met its obligations. The mandatory sanctions specified in Section 179 (b) of the CAA include: requiring companies to reduce emissions or purchase emission reductions (offsets) equal to twice the amount of the expected emissions from major new and modified sources; and withholding highway funds. The prohibition on highway funding does not apply to projects or grants for safety purposes.[22] In addition, EPA has the authority to impose any of the mandatory sanctions at any time as discretionary sanctions, including withholding of Section 105 grant funds.

EPA has imposed mandatory sanctions on Pennsylvania or a portion of the Commonwealth on only two occasions. In 1983, sanctions were imposed when the state failed to implement an emissions inspection and maintenance program for motor vehicles in certain areas. At the time, Pennsylvania did not receive the allotment of federal highway funds for the I/M areas that it otherwise would have obtained during the 1983 construction season.

In 1997, mandatory sanctions were imposed for a single day when the state was late in obtaining EPA approval for its enhanced decentralized emissions inspection and maintenance program for motor vehicles. In that instance, the sanction required the state to offset emissions from major new or modified sources in the Pittsburgh area at a ratio of 2 to 1 instead of the usual ratio of 1.15 to 1. Because the offset sanction was in effect for only one day, there were no economic costs for the Commonwealth or the regulated community.

[22] 42 U.S.C. § 7509

Economic studies published in 1996 and 1997 analyzed the statistical relationship between a county's economic activity and its attainment status in relation to the NAAQS. Henderson conducted a statistical analysis of data on the number of establishments in five specific industries located in 742 urban counties nationwide from 1980 through 1987. He examined the correlation between these data and whether the individual counties attained the NAAQS for ozone, while statistically controlling the general scale of economic activity in the counties. Henderson found that, in four of the five industries, counties that attained the standards for at least three consecutive years experienced seven percent to 10 percent more growth than counties that did not attain the standards in any of the three preceding years. Moreover, assuming that non-attainment influenced a firm's decision to locate only during the years when counties were in non-attainment, Henderson also discovered a significant correlation between a county's attainment status and its industrial growth in two of the five industries. Based on this empirical evidence, Henderson concluded "...a firm may be looking for a county to show a sustained record of attainment before relocating or staying there." The study thus indicates that non-attainment status has a persistent inhibiting effect on economic activity.[23]

Kahn obtained similar results in his study. He analyzed the correlation between the rate of growth in a county's manufacturing jobs from 1982 through 1988 and its attainment status for particulate matter in 1977, while statistically controlling the growth rate in non-manufacturing employment. He found that, for manufacturing industries in the aggregate, the rate of growth in counties that did not attain the NAAQS was eight percent to nine percent lower than the rate in other counties.[24]

These studies provide strong evidence that areas designated as non-attainment in Pennsylvania likely have experienced lower rates of economic growth than otherwise would have occurred had they met the NAAQS. Even without sanctions, those localities – and the state – have paid a price in lost economic development for not achieving and maintaining federal NAAQS.

**Benefits from Complying with Clean Air Act Requirements**

The Air Quality Program regulates the emissions and ambient concentrations of six pollutants for which EPA has established NAAQS, and four pollutants for which the state has established Pennsylvania Ambient Air Quality Standards. The NAAQS pollutants are carbon monoxide, nitrogen dioxide, ozone, sulfur dioxide, lead, and particulate matter, measured as either $PM_{10}$ (particulate matter with aerodynamic diameters of at most 10 microns) or $PM_{2.5}$ (particulate matter with aerodynamic diameters of at most 2.5 microns). The pollutants for which the state

[23] Henderson, J. Vernon (1996), "Effects of Air Quality Regulation," *American Economic Review*, Vol. 86, No. 4 (September), pp. 789-813.

[24] Kahn, Matthew E. (1997), "Particulate Pollution Trends in the United States," *Journal of Regional Science and Urban Economics*, Vol. 27, No. 1 (February), pp. 87-107.

has retained ambient standards are beryllium, fluorides, and hydrogen sulfide and settled particulate.

Controlling emissions of these pollutants reduces the risks to public health and welfare. The two health standards violated in Pennsylvania are $PM_{2.5}$ and ozone. EPA estimates nationally the benefit of achieving the $PM_{2.5}$ standard at between $19 billion and $104 billion. The estimated benefit for achieving the ozone standard is between $400 million and $2.1 billion. The specific health impacts of not achieving these and the other standards are summarized briefly below.

*Carbon monoxide* is a poisonous gas that is invisible and odorless. When inhaled, it enters the bloodstream, replaces oxygen in the blood, and inhibits the delivery of oxygen to body tissue. It can impair vision, alertness, and other mental and physical functions. At high concentrations indoors, it is fatal. It poses particularly severe risk to people with cardiovascular disease.

*Nitrogen dioxide* is a highly toxic gas that irritates the eyes and the sinuses, and can aggravate respiratory illnesses. It creates an odorous haze that blocks natural sunlight and reduces visibility. It is a precursor in the formation of ozone and a precursor to acid rain deposition, which can damage materials, forests, and aquatic and other ecosystems. Oxides of nitrogen react in the atmosphere to form nitrates, which are particulate compounds that represent a substantial portion of fine particulate matter, $PM_{10}$ and $PM_{2.5}$. Nitrate fine particles can also contribute to asthma cases.

*Ozone* at ground level is a strong irritant to the eyes and the upper respiratory system. When inhaled, it reacts with tissue in the lungs, impairs the ability of the lungs to function, and sensitizes lung tissue to other irritants. Asthmatics, people with impaired respiratory systems, and people who work or exercise outdoors are particularly susceptible. Ozone also causes damage to crops.

*Sulfur dioxide* is a gas that, at high levels of exposure, restricts air passages, impairs breathing, and aggravates respiratory illnesses. Asthmatics, the elderly, and young children are especially susceptible. Sulfur dioxide is a precursor in acid rain deposition and damages vegetation, including trees and crops, fabrics, and building materials. It reacts in the atmosphere to produce sulfates, which are particulate compounds that represent an appreciable portion of fine particulate matter, $PM_{10}$ and $PM_{2.5}$. Sulfates can reduce visibility and are components of acid rain deposition. High concentrations of sulfates have also been correlated with respiratory illnesses.

*Lead* is a highly toxic metal. When inhaled or ingested in large doses, it impairs mental abilities, damages nerves and the liver, and raises blood pressure. It is a suspected carcinogen of the lungs and the kidneys.

*Particulate matter* is a complex mixture of solid or liquid matter. The smaller particles ($PM_{10}$ and $PM_{2.5}$) can penetrate deep into the lungs and become trapped. They can aggravate or cause respiratory illnesses. They can also transport toxic or carcinogenic chemicals into the lungs, causing greater health risks. Particulate matter also soils and damages materials. A substantial portion of fine particulate matter consists of nitrates and sulfates.

*Hazardous Air Pollutants* are regulated under Section 112 of the CAA which authorizes EPA to establish national emission standards to protect public health. Prior to the 1990 amendments, Section 112 of the CAA required the Administrator to list as hazardous air pollutants, those pollutants which cause or contribute to air pollution which may reasonably be anticipated to result in an increase in mortality or an increase in serious irreversible, or incapacitating reversible illness. Listing of a pollutant under Section 112 signified the Administrator's intent to develop emission standards for one or more stationary source categories emitting that pollutant. This approach proved difficult and was minimally effective at reducing emissions. Under this program EPA developed National Emission Standards for Hazardous Air Pollutants for seven specific hazardous substances: asbestos, benzene, beryllium, inorganic arsenic, mercury, radionuclides (including radon-222), and vinyl chloride.

Pennsylvania has been delegated authority under the CAA to implement programs for major sources of these hazardous substances. Pennsylvania also implements a federally delegated program related to asbestos demolition and renovation projects. This program requires that contractors notify the Department of planned activities that will result in the disturbance of significant amounts of asbestos and requires that asbestos removal contractors implement control programs to minimize worker and public exposure to asbestos.

In addition, the CAA mandated that EPA develop technology-based standards for 189 hazardous substances and 174 source categories. For each affected source category, EPA is to determine the maximum achievable control technology (MACT). The MACT standards were to have been established within two, four, seven and ten years after the enactment of the CAA. Under Section 112(j) of the CAA, states with approved Title V permit programs are required to establish the standards on a case-by-case basis through a permitting action within 18 months after EPA fails to promulgate a MACT standard by the statutory deadline.

Pennsylvania's requirements for approval of new sources specify that new HAP sources must meet best available technology (BAT) levels of emissions. The Department will continue to assure that the combination of MACT requirements for existing sources and BAT for new sources minimizes public exposure to HAP compounds. In addition, Pennsylvania has been delegated authority to implement MACT standards for five "area source" categories: chromium electroplating; halogenated solvent cleaning; dry cleaning; secondary aluminum smelting; and ethylene oxide sterilization.

Improvements in air quality have a direct impact on public health and the environment. Wherever the state's implementation plans and actions have fulfilled federal air quality standards and technological criteria, associated benefits have come with attainment.

Quantifying the benefits of improvements in air quality is difficult and beyond the resources of this evaluation. EPA acknowledges there are no reliable ways to measure the benefits of reducing current levels of exposure to pollutants in the outdoor air, but has repeatedly estimated that the cost of achieving the standards clearly outweighs the cost of the controls. From a non-quantification perspective, EPA explains that reducing the current ambient concentrations of airborne chemicals in general will decrease:

- The probability of adverse effects on public health and welfare.
- The number of people who are susceptible to harm at the prevailing concentrations.
- The probability that susceptible people will be harmed.

Clearly, Pennsylvania's air quality improvements have decreased the public's exposure to adverse public health risk and have improved the environment.

**Discussion and Recommendations**

Based on data contained in the Ozone Stakeholder Working Group reports, the Air Quality Program has developed strategies that provide cost-effective emission reduction plans to attain and maintain ambient air quality standards. Pennsylvania has attained all applicable NAAQS except for ozone. For ozone, Pennsylvania has reduced the geographic extent, magnitude, and frequency of exposure to high ozone concentrations. However, Pennsylvania has not yet met the one-hour ozone standard in Southeastern Pennsylvania, Lancaster County, and Lehigh County. The Ozone Stakeholder Working Groups' efforts were an excellent means of developing these plans and balancing the interests of the communities affected.

# Adequacy of Small Business Compliance Assistance Measures

## Objective

Evaluate the Office of Small Business Ombudsman and the adequacy of measures taken by the Commonwealth to assist small businesses in complying with the Clean Air Act.[25]

## Conclusion

The Pennsylvania Small Business Compliance Assistance Program provides adequate compliance assistance for both state and federal regulatory programs. The Chair of the Small Business Advisory Committee, also a small business owner, participates in EPA's Small Business Compliance Assistance Program and has reported that Pennsylvania's program is one of the best in the country in terms of types of programs and services offered. These programs should be continued and expanded if possible.

## Background

Section 7661(f) of the 1990 CAA and Section 7.7 of Pennsylvania's APCA require the Department to develop and implement a Small Business Stationary Source Technical and Environmental Compliance Assistance Program (Small Business Program).[26] The primary components of the program include: a Small Business Ombudsman (SBO), a Small Business Assistance Program (SBAP) and a Compliance Advisory Panel (CAP). The Small Business Program for stationary sources must include adequate mechanisms for:

- Developing, collecting and coordinating information concerning compliance methods and technology.
- Assisting the small business stationary sources with pollution prevention and accidental release detection.
- Ensuring that the small business owners receive notice of rights under the APCA and the CAA in order to evaluate compliance methods and applicable regulatory programs.

The Small Business Program must also provide compliance assistance in determining applicable regulatory requirements and obtaining permits in a timely and efficient manner.[27]

[25] 35 P.S. § 4004.3 (5)
[26] 42 U.S.C. § 7661 (f)
[27] 35 P.S. § 4007.7

**Small Business Ombudsman**

Section 7.9 of the APCA established an Office of Small Business Ombudsman (SBO) within the Pennsylvania Department of Commerce (renamed the Department of Community and Economic Development).[28] A 1996 Amendment to the APCA transferred the Office of the SBO to DEP for the purpose of serving as the primary point of contact for small business compliance related issues.[29] The SBO Office is now located in DEP's Office of Pollution Prevention and Compliance Assistance. The office staff includes a full-time SBO, a full-time administrative assistant and two full-time program analysts.

The SBO performs four principal activities:

- Mediating between DEP and individual small businesses
- Assisting in the development of small business compliance assistance programs for DEP
- Assisting in the development of financial programs to facilitate compliance by small businesses
- Educating small businesses about the assistance DEP provides for environmental management and compliance.

In addition, the SBO office staff works closely with the Small Business Assistance Program, also known as ENVIROHELP, to assist small businesses in implementing pollution prevention strategies and energy efficient technologies which reduce pollution and energy consumption.

The SBO's low-interest loan program is the Small Business Pollution Prevention Assistance Account. This loan program extends loans at an annual interest rate of two percent to finance expenditures on pollution prevention or energy efficiency by small businesses. The SBO loan program replaced the Air Quality Improvement Fund, which provided low-interest loans for air pollution control facilities and equipment, and for changes in operations or production practices.

The SBO loan program operates a revolving loan fund that will eventually total $10 million. The fund is administered by two state agencies, DEP and the Department of Community and Economic Development. The maximum loan amount is 75 percent of the total eligible cost of the project up to $50,000 and may not be used for pollution control equipment. The projects funded by the Pollution Prevention Assistance Account must repay their investments within the term of the loans. The SBO has obtained suggestions for improvement to the loan program and the types of projects funded from DEP regional offices as well as the Pennsylvania Small Business Development Centers. Recently most of the loan applications have been for energy

[28] 35 P.S. § 4007.9
[29] Amended 1996, Dec. 18, P.L. 1150, No. 174 §1

efficiency projects such as new heating, ventilation and air conditioning systems and for building renovations. The loan program has provided funding for various types of projects including the following:

- Dry cleaners to purchase new equipment that results in reduced toxic air pollutant emissions
- Wood de-barkers and chippers for controlling particulate matter
- High volume-low pressure spray guns to assist auto body paint shops in their efforts to reduce toxic air emissions.

The SBO has developed a grant program that will fund 80 percent of the cost of a pollution prevention and energy efficiency site assessment up to a maximum of $5,000 for a small business and $15,000 to permit holders regardless of size. Under this program businesses are able to have trained assessors study their operations and plant processes to identify areas for energy conservation and emission reductions.

Another program the SBO currently promotes is the Pennsylvania Environmental Assistance Network. The Network is comprised of both for-profit and non-profit environmental service providers. Businesses are provided with technical assistance to implement pollution prevention and energy-efficient technologies. The Network encourages the business community to engage in best management practices and environmental management systems.

## Small Business Assistance Programs

### Outreach for Dry Cleaners

In May 2001, a compliance calendar was published for use by dry cleaner establishments in the Commonwealth. Dry cleaners are required by federal regulation to keep maintenance and perchloroethylene usage records for five years. The calendar is designed to assist the small business owner in maintaining these records. This project is expected to be an annual compliance assistance effort.

### Outreach for Auto Body Shops

In November 2000, new air quality regulations became effective for the Mobile Equipment Repair and Refinishing (MERR) shops in Pennsylvania. The Bureau of Air Quality's Compliance Assistance and Pollution Prevention (BAQ-CAPP) section developed the following outreach program to assist the shops in understanding the new and existing regulations.

*Mailing*

The first part of the program was accomplished in March 2001. A mailing was sent to over 9,000 Pennsylvania businesses affected by the MERR regulation, including over 3,600 auto body shops. Included in the mailing was a copy of the MERR regulation, a brochure titled "The Bottom Line on Refinishing," which explains the regulation and a cover letter that included an explanation of the summer intern outreach project.

*Intern Outreach Program*

The second part of the program - the MERR Intern Outreach Project - consisted of visits to auto body shops throughout Pennsylvania by 17 summer interns. These interns explained the regulations, promoted DEP compliance assistance programs, and screened facilities for additional compliance assistance. From May 22 through May 24, 2001, the interns attended a mandatory training program held at the Pennsylvania College of Technology in Williamsport, Pennsylvania. During the summer of 2001, the interns visited 1,530 shops and recommended that 213 shops receive follow-up visits. A compliance letter was sent to these shops.

Contacts at the shops were asked to mail back survey cards to help evaluate the success of the summer intern program, and 220 survey cards were returned. This represented a 14 percent response rate. All but two of the comments were very positive.

*Penn STAR Mobile Demonstration Trailer*

Another responsibility of the interns was to promote the third part of the outreach program-the Pennsylvania College of Technology's PennSTAR mobile demonstration trailer. The PennSTAR program, which is funded by a $500,000 grant from DEP, instructs collision-refinishing technicians about ways to reduce their coating material consumption and comply with environmental regulations. The PennSTAR program teaches the technicians how they can optimize their paint spray techniques and manage material usage and disposal. By altering the spray techniques it is possible to reduce paint over-spray without sacrificing finish quality, thereby reducing consumption, cost, pollution, and waste.

ENVIROHELP

The SBO works closely with ENVIROHELP. The ENVIROHELP program was established by DEP to assist small businesses with understanding and complying with local, state and federal environmental regulations. In addition, ENVIROHELP assists small business in developing and adopting pollution prevention and energy efficiency strategies. ENVIROHELP provides services to small businesses, such as free and confidential site visits; educational seminars; a confidential website; and provides free permit application reviews; In addition, ENVIROHELP represents small businesses at DEP and provides information about environmental regulations.

The identities of all business contacts with ENVIROHELP are confidential and are not disclosed to the Department. The helpline does not provide assistance on radiation issues.

A contractor, TetraTech EM, Inc. (TetraTech), formerly known as PRC, has operated ENVIROHELP since 1993. This program was initially called AIRHELP. In 1998, it was expanded to become a multi-media program and its name was changed to ENVIROHELP. Following is a summary of the contract costs for TetraTech for the last five years.

Table 4
Summary of Contract Costs for Tetra-Tech

| Fiscal Year | Amount |
|---|---|
| 96/97 | $306,949 |
| 97/98 | $269,765 |
| 98/99 | $192,844 |
| 99/00 | $175,648 |
| 00/01 | $152,422 |

The ENVIROHELP contractor has undertaken a number of measures to assist small businesses in complying with CAA requirements, as well as with solid and hazardous waste regulations and in implementing pollution prevention initiatives. Specifically:

- ENVIROHELP operates a toll-free telephone hotline. Services provided in response to calls include helping small businesses understand which regulations apply to them, identifying forms they must submit, assisting in completing forms, reviewing forms that have been completed, and assisting in estimating emission levels. ENVIROHELP staff members are not permitted to fill out forms for the businesses, but they may answer questions about how the forms should be completed.

- ENVIROHELP makes site visits to small businesses. Services provided during site visits include identifying the regulations that apply to the facilities, advising about pollution prevention opportunities, and assisting businesses in estimating emission levels.

- ENVIROHELP operates a web site where numerous documents from DEP, EPA, the Department of Energy, the Small Business Administration, and other agencies can be found. It also maintains a schedule of upcoming events. The web site is cross-linked with DEP's web site.

- ENVIROHELP collaborates with the SBO's office in developing and presenting workshops for small businesses.

- ENVIROHELP publishes a quarterly newsletter, which is mailed to approximately 1,200 recipients. The mailing list includes small businesses as well as publishing houses, trade associations, and business organizations that provide information to small businesses.

- ENVIROHELP develops and publishes compliance guides and flyers. The topics addressed have included wood furniture manufacturing, degreasing, automobile refinishing, bakeries, printing, emission reduction credits, and methods for estimating emission levels. All guides and flyers discuss pollution prevention.

- ENVIROHELP receives confidential calls from a variety of sources. Some learn about ENVIROHELP from the outreach material. Other contacts are made based on referrals from other state agencies such as Team PA, the Governor's Action Team, Small Business Development Centers, the Industrial Resource Centers, the National Federation of Independent Businesses, and the Chamber of Business and Industry.

Activities of the Small Business Assistance Program are summarized in Table 5.

**Table 5**

**ACTIVITY OF THE**
**AIRHELP/ENVIROHELP PROGRAM**
**1993 THROUGH 2001**

| Year | Hotline callers | Site Visits | Form Reviews | Bulletin Board System/Website Users | Seminars (number/total attendees)[1] | Newsletters[2] |
|---|---|---|---|---|---|---|
| 1994[3] | 758 | 13 | 0 | Unknown | 8/108 | 4 |
| 1995 | 932 | 19 | 3 | Unknown | 5/≈13 | 4 |
| 1996 | 1,060 | 14 | 2 | 788/NA[4] | 3/143 | 4 |
| 1997 | 599 | 10 | 5 | 309/NA | 8/≈150 | 4 |
| 1998 | 458 | 7 | 7 | 309/6,422 | 0 | 4 |
| 1999 | 411 | 10 | 9 | NA/≈14,000[5] | 0 | 3 |
| 2000 | 567 | 4 | 4 | >20,000 | 3/≈50 | 2 |
| 2001 | 689 | 2 | 3 | ≈40,000 | 0 | 2 |

1. Number of seminars held/total number of attendees
2. Each newsletter was mailed to approximately 1,200 persons
3. The AIRHELP program began operation in March 1993
4. NA = Not applicable
5. ≈ = Approximately

## Small Business Compliance Advisory Committee

Section 7.8 of the APCA established a Compliance Advisory Committee.[30] The Small Business Compliance Advisory Committee consists of 11 members, including four appointed by the Governor, and four appointed by each of the majority and minority leaders of the state Senate and House of Representatives. Additional members include the Secretary of DEP or his designee, the Small Business Ombudsman or his designee, and the Secretary of the Department of Community and Economic Development or his designee.

The Small Business Compliance Advisory Committee meets quarterly. The primary responsibility of the committee is to provide advice to DEP from a layperson's perspective about CAA requirements that affect small businesses that operate stationary emission sources. The committee relies heavily on the Air Quality Program to identify issues and to furnish information for the committee to consider. It also obtains useful information from ENVIROHELP.

[30] 35 P.S. § 4007.8

One of the committee's major activities is reviewing and commenting on draft regulations. Committee members are also invited to attend meetings of other advisory committees, e.g., the Chair of the Small Business Compliance Advisory Committee has participated in meetings of the 21st Century Environment Commission. The committee also participates in the national conference on SBOs and Small Business Assistance Programs that is held annually by EPA.

Finally, in addition to the services provided by the Small Business Stationary Source Technical and Environmental Compliance Assistance Program (SBTCP), DEP regional offices provide compliance assistance and pollution prevention services to small businesses. The Northwest Region Office staff has been particularly active in this regard.

DEP's most notable success in this area occurred in the powdered metal industry. In the production of die-cast parts from powdered metals, the amounts and characteristics of air pollutants emitted from the process depend on the lubricants used in the process.

To encourage pollution prevention in this industry, DEP formed a team of staff from its central office, its Northcentral Region Office, and its Northwest Region Office to work with the powdered metal industry. Led by the Northwest Region Office, the DEP team first performed stack testing using materials and facilities furnished by the industry. The testing determined the emission characteristics of different lubricants.

The team then worked with firms in the industry to educate them about the results of the testing. Educational efforts included a workshop that brought together representatives from DEP's team, firms in the industry, and lubricant manufacturers. Outreach consisted of presentations by DEP personnel on permitting requirements and presentations by lubricant manufacturers on production options. In addition, DEP and the powdered metal industry sponsored a conference at Pennsylvania State University's powdered metal laboratory. The conference had two purposes: (1) to reduce industry anxiety about interacting with DEP; and (2) to educate DEP staff from the Northwest and Northcentral Region Offices about the technological options.

As a result of these efforts, some firms have switched predominantly to clean-burning lubricants, while a few have installed emissions control equipment that allows them to continue using the traditional lubricants. The regional offices estimate that with these adjustments, approximately 80 percent of the firms will be exempt from any permitting, most others will qualify for general permits, and only a few will require plan approvals.

In addition to its work with the powdered metal industry, the Northwest Region Office has conducted a similar effort with the automobile refinishing industry. At a DEP-sponsored seminar, material and paint suppliers provided information to refinishing companies about how they could reduce both emissions and spray-painting costs by installing a new technology spray gun. The Southeast Region staff also conducted similar training for automobile refinishing facility operators. The Northwest Region Office is now initiating an effort to provide similar

compliance assistance and pollution prevention services to small businesses in the tool and die industry.

**Electrotechnology Application Center**

In order to demonstrate technology alternatives that will assist small and medium sized businesses to comply with DEP's volatile organic compound regulations, DEP issued a grant to the Electrotechnology Application Center (ETAC or Center) of the Northampton County Community College. The grant has been in effect since August 1998. Following is a summary of the grants awarded to ETAC for each fiscal year:

Table 6
Summary of DEP Grant Funding to ETAC

| Fiscal Year | Amount |
|---|---|
| 98/99 | $399,600 |
| 99/00 | $399,600 |
| 00/01 | $600,000 |

The Center specializes in applying technologies, e.g., infrared, ultraviolet, microwave, and radio frequency, to improve heating, drying, coating, and curing processes. These technologies release less volatile organic compounds than other more-traditional solvent-based approaches. The Center also assists companies in improving their processes and exploring pollution prevention and energy efficiencies. ETAC's services are confidential. A summary of the Center's activities and the environmental benefits of the program are shown in Table 7.

**Table 7**
**Summary of ETAC Activities and Benefits**

| **Calendar Year** | **1999** | **2000** | **2001** | **Total to Date** |
|---|---|---|---|---|
| Companies Consulted | 68 | 68 | 72 | 208 |
| Different Industry types | 20 | 5 | 4 | 29 |
| Different Counties | 19 | 12 | 11 | 42 |
| Demonstration Projects Completed | 15 | 16 | 11 | 42 |
| Emissions Reductions of VOC Projected Over 10 Years | 3383 | 10356 | 5260 | 18999 |
| Emissions Reductions of HAPS Projected Over 10 Years | 0 | 251 | 438 | 689 |
| Emissions Reductions of Particulates Projected Over 10 Years | 70.5 | 0 | 0 | 70.5 |

## Discussion and Recommendations

Members of the Small Business Compliance Advisory Committee believe that the committee does a good job. The Chair of the Committee stated that it is among the top ten percent nationwide.

To improve small business programs already in place, DEP should consider ways to increase opportunities for laypersons to provide feedback on draft regulations under consideration by the Small Business Compliance Advisory Committee. New techniques to keep the committee informed of DEP activities between quarterly meetings should also be discussed.

Many small businesses are reluctant to contact the Department because they are afraid the contact will result in an enforcement action. Therefore, the confidentiality provisions established for ENVIROHELP and ETAC must be maintained. The Department can reduce this concern by publicizing success stories and expanding efforts to make small businesses aware of ENVIROHELP and ETAC services as well as DEP's pollution prevention and compliance assistance activities. Only a small percentage of Pennsylvania's small businesses utilize these programs.

# Activities of the Citizens Advisory Council and the Air Quality Technical Advisory Committee

## Objective

Summarize and evaluate the activities of the Citizens Advisory Council (CAC or Council) and the Air Quality Technical Advisory Committee (AQTAC) as they relate to the Air Quality Program.[31]

## Conclusion

One of the CAC's biggest accomplishments was successfully facilitating the controversy between DEP and EPA about proper reporting of enforcement data in late-1997 and early-1998. The Council's efforts have been effective and the work performed by CAC has been successful. Personnel in EPA's Region 3 office concur that CAC was helpful in resolving the controversy. The Council was also an active participant on all of the Ozone Stakeholder groups.

The AQTAC members have provided valuable assistance to the Department by advising DEP on technical details of proposed regulations.

# Citizens Advisory Council

## Organizational Structure, Responsibilities, and Staffing

Act 275 of 1970, which established the original Department of Environmental Resources, also created the CAC to enable citizen involvement in the state's environmental decision making.[32] The Council has 18 members. The Pennsylvania House of Representatives, the Senate and the Governor each appoint six members. In addition, the Secretary of DEP is a member of the CAC. The membership is geographically and professionally diverse and includes representatives from business, local government, and conservation and citizen organizations.

The Council is charged with reviewing all environmental legislation, regulations, and policies affecting DEP. More specifically, the mission established for CAC by Act 275 of 1970 includes performing non-partisan, independent oversight of DEP operations, management, and policy; evaluating environmental issues and laws; participating in the formulation of environmental regulations; and providing advice concerning environmental matters to DEP, the Governor, and the General Assembly.

[31] 35 P S. § 4004.3 (6).
[32] Act 275 of 1970

The Council holds ten meetings annually, including one two-day meeting held in a different part of the state each year. Members also communicate through conference calls and subcommittee meetings. All meetings are open to the public and include opportunities to comment on the issues being considered. The Department's executive staff and the CAC also interact on a regular basis.

The CAC support staff consists of three, full-time employees, the Executive Director, an Environmental Planner, and an Administrative Assistant. The staff is responsible for all of the Council's administrative functions. Staff also write and publish a monthly newsletter, *The CAC Advisory*, which covers multi-media environmental issues including air quality, maintain the CAC web site, and publish the Council's Annual Report.

The APCA of 1992 established additional responsibility for the CAC. Section 7.6 (a) of the APCA requires the Department to consult with the CAC, as appropriate in consideration of SIPs and regulations needed for the implementation the federal Clean Air Act.[33] The CAC complied with this legislative mandate by amending its by-laws and forming a standing Air Committee to address air quality management issues and regulations. The Council is the only advisory committee in Pennsylvania that is authorized to consider not only the impacts of air pollution control, but also the interactive effects of air quality management on other environmental media.

**Activities Performed by the Citizens Advisory Council**

In fulfilling its responsibilities, the CAC not only responds to requests by DEP, but also independently initiates its own involvement in many issues. The main activities CAC has performed in relation to air quality management since 1990 are documented in its *Five-Year Report: Summary of CAC Air Activities, July 1997* and in its *Five-Year Report: Summary of CAC Air Activities (1997-2000)* The most notable activities are summarized below.

The CAC, in response to a request from the Secretary of DEP in late 1996, performed an independent review of allegations by the EPA Region 3 Inspector General that DEP was not reporting "significant violators" as required in an EPA/DEP grant agreement. The Council conducted an intensive and expedient study of specific allegations and concluded that the controversy between EPA and DEP originated from failures in communication for which both agencies shared responsibility. The CAC made numerous recommendations intended to resolve the controversy, reviewed DEP's response to the report and continues to monitor the activity. A majority of the recommendations are being implemented.

In response to another request from the Secretary of DEP in late 1995, CAC conducted an assessment of DEP procedures for public participation and outreach on environmental issues. The Council prepared a position paper on public participation reform, highlighting the need to improve DEP's traditional communication efforts with the general public. The CAC has worked with DEP on developing non-traditional approaches to communication and has provided

[33] 35 P.S. § 4007.6 (a)

guidelines for using advisory committees and regional roundtables as communication mechanisms.

The CAC has also provided advice on a large number of specific air quality regulations and issues. The topics examined include: RACT permitting for VOC and NOx; emission reduction credits and associated offset provisions in the new source review program; permitting and emission fees under the Title V program; market-based incentives; strategies for complying with revisions to the NAAQS for ozone and particulate matter, including issues such as employer trip reduction, low emission vehicles, long-range transport of air pollutants, Stage II vapor recovery systems, and centralized and decentralized enhanced emissions inspection and maintenance programs for motor vehicles; the Small Business Compliance Assistance Program; Ozone Action Partnerships; emissions monitoring and ambient air quality monitoring; and public participation and education on issues relating to air quality management. In addressing these issues, CAC has sponsored numerous panel discussions.

Members of CAC also serve in other regulatory and advisory capacities for DEP. Many of these roles relate, in whole or in part, to air quality management. In particular, five CAC members serve on the Environmental Quality Board (EQB), the 20-member body responsible for approving the adoption of DEP rules and regulations. CAC also selects a member to serve on the Rules Committee of the Environmental Hearing Board and one CAC member is also a member of the AQTAC. CAC representatives have also served on the 21st Century Environment Commission and on the Southeast Pennsylvania, Southwest Pennsylvania, Lehigh Valley /Berks County, and Southcentral Ozone Stakeholder Working Groups. The CAC is also a member of the Susquehanna Valley Ozone Action Partnership.

**Discussion and Recommendations**

DEP should continue to coordinate activities with the CAC, as appropriate.

# Air Quality Technical Advisory Committee

## Organizational Structure, Responsibilities, and Staffing

The Air Quality Technical Advisory Committee (AQTAC) is authorized under Section 7.6 (b) of the APCA[34]. The AQTAC was originally part of a combined Air and Water Quality Technical Advisory Committee (AWQTAC) formed by DEP. The AWQTAC separated into two committees (AQTAC and the Water Resources Advisory Committee) in 1996 to enable its volunteer members to use their time together more efficiently.

The APCA mandates that AQTAC must include at least 11 members with technical experience in controlling air pollution from stationary or mobile sources. In contrast to CAC, AQTAC members are selected by DEP and interact primarily with the senior staff of the Bureau of Air Quality. Members are not appointed as a representative of a particular constituency. In practice, however, members are employees in specific industry sectors or members of specific organizations and often express opinions that are representative of those affiliations.

The AQTAC provides advice on the technical and economic impacts, or other social impacts, that are associated with air pollution control regulations and policies, and with new control techniques or technologies that affect air quality. The AQTAC furnishes technical advice on DEP policies and regulations required to implement the CAA. It also facilitates public participation by encouraging attendees to comment on the technical issues under consideration at its meetings. In general, AQTAC discusses each air quality regulation that DEP considers and AQTAC comments are presented to the Environmental Quality Board for consideration.

The Air Quality Technical Advisory Committee meets approximately eight times annually and suggests topics to DEP. Based on the list of topics and DEP concerns, DEP and the chairperson of the AQTAC develop a specific agenda for each AQTAC meeting. Notices of meetings are published in the *Pennsylvania Bulletin*, DEP's weekly *Environmental Protection UPDATE* and on the DEP web site.

## AQTAC Activities

The AQTAC has provided advice on the air quality regulations and programs considered by DEP. Most notably, it has furnished advice relating to the allocation of the state's budget of NOx allowances among emission sources affected by the OTC Memorandum of Understanding. The Committee also provided valuable insights on the case-by-case RACT permitting program, the Title V permitting program, the surface coating VOC regulations, the Source Testing Manual, mobile equipment repair and refinishing regulations, solvent cleaning regulations, heavy-duty diesel emissions control regulations, portable fuel container regulations, architectural and industrial maintenance coatings regulations, and consumer products regulations.

[34] 35 P.S. § 4007.6 (b)

Members of AQTAC make several types of contributions to the Commonwealth's Air Quality Program. Members serve as a good sounding board for program staff and furnish valuable advice on key technical and program issues. Their technical insights have strengthened and, on occasion, redirected DEP's programs.

Finally, AQTAC meetings have provided a forum for citizens, business, and industry to comment on regulations or programs before DEP formally proposes them.

According to AQTAC members, several important factors would enhance their ability to provide technical advice to the Department. First, they urge DEP staff to look at the "big picture" associated with the specific air quality issues, policies, and regulations under consideration. They also urge staff to consider the long-term aspects and consequences of the air quality proposals. Nevertheless, AQTAC members recognize that the Department is constrained by tight deadlines and the prescriptive nature of the CAA and its implementing regulations.

**Discussion and Recommendations**

The Department should continue to consult with AQTAC in an advisory capacity on technical matters related to the air program. The optimal number and schedule of meetings should be determined jointly by DEP and AQTAC.

# Summarize and Evaluate the Effectiveness of the Ozone Transport Commission in Meeting the Clean Air Mandates

## Objective

Summarize and evaluate the effectiveness of the Ozone Transport Commission (OTC) in meeting the Clean Air Act mandates and include recommendations for improvement. [35]

## Conclusion

Pennsylvania's affiliation with the OTC has been very advantageous. The OTC created the first multi-state regulatory strategy for coordinated regional control of atmospheric ozone levels. DEP staff members attended all OTC meetings, led in the development of the numerous emission reduction strategies, and provided for uniform emission reduction strategies among the OTC states. The OTC provides a forum for representatives from different states to share information and develop measures to achieve and maintain the ambient ozone standard by attainment dates mandated under the Clean Air Act.

## Background

The Clean Air Act of 1990 recognized that ambient ozone concentrations in excess of the NAAQS were occurring throughout much of the northeastern United States. Ozone and its precursors, NOx and VOC, are routinely transported across the region by prevailing winds. Section 184(a) of the CAA established a single ozone transport region (OTR) by operation of law. The OTR is comprised of States of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, northern Virginia and the District of Columbia.[36]

Section 176A(b) of the CAA also required the EPA Administrator to establish the Ozone Transport Commission (OTC), whose membership, at a minimum consists of: (1) the Governor of each state in the region or a designee; (2) the EPA Administrator or a designee; (3) the Regional Administrator for each EPA Regional Office in the OTR and an air pollution control official representing each member state in the OTR, appointed by the Governor.[37] The OTC is required to assess the degree of interstate transport of ozone or its precursors throughout the OTR and to recommend regional strategies that mitigate interstate pollution. The Commission also recommends measures to the EPA Administrator for attaining the ozone standard that member states can include in their implementation plans.

Efforts of the OTC focus on four major areas: (1) analysis of the formation and transport of ozone; (2) development of mobile, stationary and area source emission reduction strategies; (3)

[35] 35 S. § 4004.3 (7)
[36] 42 U.S.C. § 7511c
[37] 42 U.S.C. § 7506a (b)(1)

advocacy for EPA to take action to reduce VOC and NOx emissions using federal emission reduction measures; and (4) advocacy for states upwind of the OTR to reduce VOC and NOx emissions transported into the OTR.

The analysis of the formation and transport of ozone was conducted through the cooperative efforts of the member states with assistance from EPA. This assessment was a major effort in which the states in the northeast region joined together to develop strategies to mitigate interstate pollution. New emission inventories were developed and modeled to simulate the formation and transport of ozone. The effort resulted in an improved understanding of the ozone problem and identified the importance of mobile source VOC and NOx emissions and NOx emissions from large stationary sources.

In 1994, based on the analysis, the OTC adopted and submitted a recommendation to the EPA Administrator under Sections 176A and 184 of the CAA to implement the California Low Emission Vehicle program throughout the ozone transport region. In 1995, the EPA promulgated a low emission vehicle rule implementing the recommendation. Virginia and the automobile manufacturers subsequently appealed this rule. The District of Columbia District Court of Appeals overturned the recommendation on procedural grounds. Subsequently, the OTC, in cooperation with EPA, negotiated an equivalent program agreed to by the automobile manufacturers. This alternative program, known as the National Low Emission Vehicle program (NLEV), is applicable in to the entire United States with the exception of California. An enhanced NLEV program became the foundation for the EPA Tier II motor vehicle emission standards that were promulgated in February 2000.

The OTC analysis also showed the importance of NOx emissions from large stationary sources located within and outside the ozone transport region. The OTC analysis in conjunction with ambient monitoring data along Pennsylvania's western border confirmed that implementing emission reduction strategies in the OTR alone would not be sufficient for major eastern cities to achieve the ozone health-based standard. In September 1994, based on this analysis the OTC adopted a memorandum of understanding (MOU) to achieve regional reductions of NOx emissions.[38] The Commonwealth of is not a signatory to the MOU. The NOx MOU reduces emissions from large stationary sources in the OTR.

In June 1995, the NOx Budget Program was established through the cooperative efforts of the OTC, EPA, industry, and environmental groups. This program established a model rule to assist OTC member states in developing and adopting similar regulatory programs. The model rule included a trading program that provides for the most cost-effective emission reductions. The MOU established two phases for sequential reductions of NOx emissions from affected sources in the OTR. Most electric utility and industrial boilers that are fired with fossil fuels are affected sources. The NOx Budget Program caps total NOx emissions from affected sources in the OTR at 219,000 tons per ozone season during Phase II of the program, beginning in 1999, and at

[38] "Memorandum of Understanding among the States of the Ozone Transport Commission on Development of a Regional Strategy Concerning the Control of Stationary Source Nitrogen Oxide Emissions," September 27, 1994.

143,000 tons per ozone season during Phase III, beginning in 2003. These levels are far below the baseline emission level of 490,000 tons that were emitted in 1990.

The NOx Budget Program uses an allowance trading system that relies on voluntary exchange in a free market to achieve pollution reductions at costs lower than those incurred with a command-and-control program. Allowances may be bought, sold, or banked. Any person may acquire allowances and participate in the trading system. Sources in Pennsylvania are allowed to trade NOx allowances with any other facility in the state and with any facilities in states that have approved NOx Budget Program rules.

The OTC also made recommendations to EPA to initiate efforts to reduce the transport of NOx into the OTR. In 1996, the EPA, in cooperation with the Environmental Council of States (ECOS), convened the Ozone Transport Assessment Group (OTAG) to evaluate the interstate transport of ozone across eastern states. OTAG consisted of representatives from 37 "eastern-most" states and the District of Columbia as well as representatives from industry and environmental groups. The goal of OTAG was to assess the significance of pollutant transport and recommend control strategies for reducing transport. The major OTAG conclusion was that "Regional NOx reductions are effective in producing ozone benefits; the more NOx reduced, the greater the benefit." However, OTAG could not reach a consensus on how much NOx emissions needed to be reduced.

In 1997, to compel the EPA to deal with the ozone transport problem, Pennsylvania was one of the leading OTR states to petition the EPA under Section 126 of the CAA.[39] Section 126 pertains to interstate pollution abatement. Specifically, when it is shown that air pollution from one or more sources in another state are interfering with a petitioning state's ability to attain a NAAQS, EPA shall require the specific sources in that state to reduce emissions to a specified federal emission limit.

In response to the Section 126 petitions by Pennsylvania and other OTC states, the EPA reviewed the OTAG's analysis and solicited public comment. Then, under Section 110 of the CAA, the EPA determined that the existing plans of 22 eastern states and the District of Columbia were not adequate to control interstate air pollution and formally called for revisions to those states implementation plans. This "SIP Call" directed states to revise their plans to reduce NOx emissions from sources within their jurisdictions to a specified amount. EPA also promulgated rules granting the Section 126 petitions mandating that specific sources in Northeastern, Midwestern and Southern states reduce their emissions to meet federal emission limits set to reduce interstate transport of NOx from those sources. Compliance with the "SIP Call" would be deemed compliance with the Section 126 emission limits.

In addition, the OTC strongly advocated that EPA undertake additional federal emission reduction measures. This advocacy has taken the form of resolutions and MOUs. Communications with EPA on emission reduction rulemakings include: (1) low sulfur gasoline;

[39] 42 U.S.C. § 7426

(2) low VOC paints and consumer products, (3) lower emitting on-road and off-road vehicles and heavy-duty diesel engines; and (4) the use of innovative technology and pollution prevention programs. The OTC has also advocated using public information and education to reduce ozone emissions.

In 2001, the OTC states recognized the need for additional emission reductions within the Northeast. EPA at the same time determined that attainment plans for Baltimore, Philadelphia, New York, and western Massachusetts would be adequate only if additional measures were adopted. EPA specified the amount of this shortfall for each area. In response, the OTC states signed an MOU calling for the adoption of seven additional emission reduction strategies necessary to meet this shortfall and attain the one-hour ozone standard throughout the OTR. These strategies provide for the development and implementation of uniform control programs to meet the EPA-identified emission reduction "shortfall" in Baltimore, Philadelphia, New York, and western Massachusetts.

**Discussion and Recommendations**

Pennsylvania's association with the OTC has provided an increased opportunity to reduce the interstate transport of ozone entering Pennsylvania. The OTC has also enhanced Pennsylvania's call for a level playing field via uniform NOx emission standards in the Eastern United States.

The OTC was instrumental in demonstrating to EPA and ECOS the importance of long-range transport leading to establishment of OTAG. The information developed by OTAG further documented the impact of long-range transport on ambient ozone levels in the OTR and has been instrumental in the EPA decision to issue its "SIP Call" under Section 110 of the CAA. Further, the OTC-developed NOx Budget Program and Allowance Trading System form the basis for the EPA "SIP Call." The OTC therefore has contributed materially to subsequent initiatives undertaken to deal with the long-range transport component of ambient ozone concentrations in the OTR.

The OTC also has been active in promoting several technologies for reducing emissions from mobile sources. It has been an advocate for both the National Low Emission Vehicle (NLEV) Program and the Tier II Motor Vehicle and Low Sulfur Fuel Standards that were promulgated by the EPA.

The OTC has been effective in developing more consistent and uniform ozone strategies; therefore, Pennsylvania is not put at an economic disadvantage relative to other states.

It is strongly recommended that DEP continue to participate in and provide leadership to the OTC. The OTC has proven to be a useful forum for the exchange of information among states and the promotion of policies and programs that benefit Pennsylvania.

# Impact of the Federal Government's Missed Deadlines

## Objective

Evaluate the impact of missing federal deadlines identified under Section 7.12 of the APCA and the impact the missed deadlines has had or will have on implementing CAA programs. [40]

## Conclusion

EPA has missed many deadlines established under the 1990 CAA. As described, several of the delays had impacts on DEP, on the owners of regulated facilities and on the environment. When an EPA delay has caused DEP to miss Clean Air Act deadlines, EPA has provided guidance on how to deal with the delay without triggering sanctions or enforcement actions.

## Background

In accordance with the CAA, EPA develops air quality standards, regulations, and guidance that the states must implement to operate air quality management programs. If a state fails to implement certain activities on a timely basis, EPA is authorized to impose sanctions on the state until the deficiencies are remedied. The sanctions include withholding highway funds, withholding funds for constructing sewage treatment plants, and imposing more stringent requirements for offsetting emissions from new major sources.[41]

However, EPA has often missed deadlines for adopting standards and regulations or issuing guidance required by the CAA. Because EPA had to develop and implement more than 100 regulations and programs to implement new CAA requirements, missed deadlines were inevitable. When the Pennsylvania General Assembly enacted the APCA, it was concerned that the Commonwealth might face sanctions if the EPA missed deadlines for certain regulations and guidance

The basis for this concern was documented in a report published on March 5, 1992 by the Senate Environmental Resources and Energy Committee pursuant to Senate Resolution 68. The report, entitled *Status of Federal Clean Air Act Amendments Implementation in Pennsylvania*, contained a list of 13 major CAA regulations and actions mandated by Congress for which EPA had missed deadlines. The Regional Administrator for the EPA Region 3 stated in the report that even though EPA might be late in performing some of its required actions, his office might still impose sanctions on noncompliant states. He said: "I cannot commit to you that the sanctions will not be imposed even if the regulations aren't promulgated (by the EPA)."

[40] 35 P.S. § 4004.3 (8)
[41] 42 U.S.C. § 7509 (b)

The General Assembly wanted to ensure that sanctions would not be imposed on Pennsylvania because EPA contributed to DEP's delay in meeting its obligations under the CAA. It therefore enacted Section 7.12 of the APCA, which states:

> "Whenever the Environmental Protection Agency has missed a deadline for developing regulations or guidance on which states must rely to comply with deadlines in the Clean Air Act by more than ninety (90) days and, in the opinion of the department, the Environmental Protection Agency has failed to provide it with timely guidance needed to comply with the act in a timely manner, the department may bring a legal action against the Environmental Protection Agency in a court of competent jurisdiction seeking an injunction to restrain the Environmental Protection Agency from enforcing the applicable Clean Air Act deadline on the Commonwealth until and unless the Environmental Protection Agency develops the appropriate regulation or guidance which allows the Commonwealth a reasonable opportunity to comply with the Clean Air Act."

The Department has interpreted Section 7.12 as a provision pertaining to overall sanctions on the Commonwealth of Pennsylvania, and not to actions by EPA on or against individual emission sources in the state. To date, DEP has not found it necessary to seek an injunction to restrain EPA from imposing sanctions on the Commonwealth. However, DEP has taken legal action against the EPA under Section 126 of the CAA, pertaining to interstate pollution abatement and to citizen suits respectively.

## Effects of EPA's Missing of Key Deadlines Specified by the Clean Air Act or by Regulatory Practice

In examining the repercussions the Commonwealth might experience as a result of EPA's missed deadlines, the examination focused on key deadlines. DEP examined missed deadlines that had or potentially may have important effects on air quality in Pennsylvania, on the development and approval of implementation plans for non-attainment areas, on DEP operations or administrative costs, or on timely or efficient compliance by emission sources in the state.

Of these, there was an in-depth examination of four major instances when EPA missed deadlines imposed under the CAA. Those instances relate to the EPA delays in approving RACT and Title V permits, issuing MACT standards for specific categories of emission sources, making decisions about changes in attainment status, and promulgating federal regulations for reducing VOC emissions from consumer and commercial products.

There are three other major rulemakings on which EPA has missed CAA deadlines. They relate to rules on new source review (NSR) and prevention of significant deterioration (PSD), compliance assurance monitoring, and sources' potential to emit. The EPA's missed deadlines on the latter two rulemakings are relatively recent, so there have been no appreciable impacts to date. The NSR impacts have been minimal because Pennsylvania adopted revised NSR regulations following the 1990 CAA amendments.

However, EPA's failure to develop a new program to address NSR and PSD issues is longstanding. In fact, revision of these programs is more than ten years overdue. These revisions are necessary, among other things, to eliminate the volumes of sometimes-contradictory policy, guidance and court opinions that have developed over the past thirty years. Development of a comprehensive new NSR and PSD program is necessary to clear up ambiguities and uncertainties in the existing programs and to facilitate implementation of programs such as emission trading programs.

**Delays in Approving RACT Permits**

Provisions in the CAA require that certain sources in non-attainment areas must reduce emissions through the use of reasonably available control technology (RACT).

DEP developed regulations that implemented this requirement through case-by-case permit requirements. EPA determined that to satisfy CAA requirements each of these RACT determinations must be reviewed and approved by EPA as a revision to Pennsylvania's SIP. Most affected sources developed and submitted applications for RACT permits to DEP by the July 15, 1994 deadline. The Department developed permits for these facilities and submitted the permits to EPA. The CAA specifies that EPA is to review and take action on any proposed SIP revision within 12 months after it makes a determination that the submission from the state is administratively complete. However, EPA did not meet the requirement for action on the SIP submissions. For most of the permits, EPA took longer than the one-year period allowed by the CAA. As of the end of 2001, EPA had approved 70 percent of the RACT determinations submitted to the agency.

EPA's delay in processing RACT applications has caused problems. Sources that are potentially eligible for emission reductions credits under case-by-case determinations cannot create credits until the RACT determination is SIP-approved. The number of ERCs for which they qualify cannot be determined until the baseline emission rate in their RACT permits have been established. As a result, facility owners cannot obtain or sell ERCs for curtailment, shutdown or over-control sources until the RACT permits for the sources have been approved by EPA.

To expedite the approval process, DEP and EPA Region 3 staff have agreed on a procedure that will prioritize how the RACT permits and Title V permits will be processed. Procedures for notifying DEP when the processing of SIP revisions will be delayed have also been developed. DEP considers delays in EPA approval of RACT determinations involving ERCs a top priority and has requested that EPA give these permits priority for approval.

The delays in obtaining EPA's approval of case-by-case RACT requirements should not adversely affect air quality. Facility owners are legally mandated to reduce their emissions to the levels specified in their DEP-issued RACT permits, even if EPA has not yet completed its review of the determinations. Therefore, the required emission reductions have already occurred. As long as the rate of compliance with the DEP-approved RACT provisions is high, the state will

achieve its projected air quality improvements. Inspections performed by regional office staff indicate a very high compliance rate.

In summary, delays in certification of ERCs for specific sources are the primary consequence of EPA's delay in approving case-by-case RACT determinations as SIP revisions. Source owners and potential purchasers of ERCs have borne the cost of those delays. As discussed, DEP and EPA have attempted to mitigate those costs by prioritizing the processing of the SIP revisions.

**Delays in Issuing MACT Standards**

Section 112 of the CAA requires EPA to establish maximum achievable control technology (MACT) standards for a large number of categories of emission sources over a ten-year period. DEP uses those standards to determine the reductions in air toxics emissions that individual sources within a category must achieve.[42] EPA has missed the mandated deadlines for issuing MACT standards for certain source categories.

If EPA does not issue a MACT standard for certain source categories by May 15, 2002, Section 112 (j) of the CAA requires the state to develop case-by-case MACT for that category. EPA may fail to promulgate 32 MACT standards covering 60 source categories by the May 15, 2002 deadline.

To date, EPA's delay in issuing MACT standards has not had much impact since DEP already issues permits to new sources and determines their allowable air toxics emissions on the basis of Best Available Technology in accordance with Section 6.6 of the Air Pollution Control Act.[43] In addition, emission limits established for new sources in particular categories in Pennsylvania might be inconsistent with the emission limits for new sources in other states.

Moreover, if EPA promulgates MACT standards that are more stringent than BAT established by the Department, DEP must reopen the federally enforceable permits including Title V permits and revise them to include emission limits that are consistent with EPA's MACT standards. To date, EPA has not compelled DEP to reopen any permits or to specify revised emission limits that are more stringent than those originally established.

The main consequence of EPA's missed deadlines for establishing MACT standards has been delays in setting emission limits for some existing air toxics sources. Missed deadlines for MACT standards may have delayed achieving some decreases in air toxics emissions.

[42] 42 U.S.C. § 7412
[43] 35 P S. § 4006.6.

**Delays in Decisions about Changes in Attainment Status**

After the summer of 1988, when multiple exceedances of the NAAQS for ozone occurred, the Pittsburgh area was designated a moderate non-attainment area. Throughout the three-year period from 1990 to 1992, the area complied with the standard. On that basis, Pennsylvania petitioned EPA to change the region's status to an attainment area.

EPA delayed its decision on the Commonwealth's petition because of deficiencies in Pennsylvania's vehicle emission inspection and maintenance program and in the RACT permit program for the area. EPA did not act on Pennsylvania's request until July 19, 1995. However, during the summer of 1995 before the redesignation was to become effective, additional exceedances of the NAAQS for ozone occurred resulting in violation of the one-hour ozone standard. This prevented the area from being designated attainment.

In 1996, DEP created the Southwest Pennsylvania Ozone Stakeholder Working Group to help develop a plan for the area to again attain the ozone standard. The stakeholder recommendations recognized the importance of the interstate transport of ozone and ozone precursors as well as the need for Southwestern Pennsylvania to further reduce emissions. Although DEP implemented the stakeholder recommendations during 1997 and subsequent years, the area had additional exceedances in 1997, 1998, and 1999. These continuing exceedances were due in part to the continuing high level of ozone and ozone precursors transported into Western Pennsylvania. After implementation of the Stakeholder recommendations, DEP submitted a new attainment redesignation request that was approved by EPA in October 2001. (66 FR 53094).

**Delays in Issuing Federal Standards**

States are allowed to take credit in their SIPs for projected emissions reductions that are planned but not promulgated by EPA. Even though EPA missed the CAA deadlines for issuing regulations to reduce VOC emissions from consumer and commercial products, combustors and incinerators, and other source categories, Pennsylvania was allowed to take credit for projected emission reductions from those regulations. There have been no adverse consequences resulting from EPA's delay.

**Legal Actions Taken by DEP against EPA**

Although DEP has not initiated legal action against EPA pursuant to Section 7.12 of the APCA of 1992, it has taken action against EPA under Section 126 of the CAA. DEP also has intervened against EPA in other suits. Most recently, DEP participated in a major action taken against EPA under Section 126 relating to interstate pollution abatement. DEP's purpose in bringing the lawsuit is to reduce emissions of ozone and its precursors that are transported from sources in other states. Those emissions are creating high background levels of ozone and are contributing to violations of the NAAQS for ozone in Pennsylvania. In August 1997, Pennsylvania and seven other northeastern States submitted petitions to EPA under Section 126 of the Clean Air Act

(CAA) seeking to mitigate significant transport of NOx, one of the main precursors of ozone. The petition requested that EPA make a finding that certain major stationary sources or groups of sources in states upwind of Pennsylvania emit NOx emissions in violation of the CAA's prohibition of emissions that contribute significantly to one-hour ozone nonattainment or maintenance problems in the petitioning State. On May 25, 1999 EPA granted the states' petitions related to the one-hour ozone standard.[44] As a result of EPA's granting of the petitions, approximately 400 facilities in 12 states and the District of Columbia will have to reduce annual emissions by a total of nearly 510,000 tons from projected 2007 emission levels, providing reduced ozone levels and improved health for all Pennsylvanians.

**Discussion and Recommendations**

The Department is not requesting or recommending additional authority from the General Assembly to take legal action against EPA. DEP believes it has sufficient legal authority under the APCA and CAA to remedy disputes with EPA.

Moreover, the evidence strongly indicates that good communication between DEP and EPA can mitigate problems arising from missed federal CAA deadlines. Since EPA's missed deadlines often affect many states, it would likely be more effective to collaborate with organizations including the Environmental Council of the States, the State and Territorial Air Pollution Program Administrators, the OTC, and the Mid-Atlantic Regional Air Management Association to develop and implement strategies to reduce air pollution.

[44] 64 FR 28250

# Conclusion

Since the Air Pollution Control Act amendments of 1992 were enacted, the Department has made significant strides in developing the programs mandated by the APCA and the federal Clean Air Act. These programs have improved air quality in most of the Commonwealth to levels that protect the public health. Ground level ozone air quality remains a concern in certain parts of the Commonwealth. Existing and proposed emission reduction programs, however, are designed to assure that the remainder of the Commonwealth will achieve and maintain the NAAQS for ozone.

The development and implementation of these ozone control programs have involved significant public input and support. The Ozone Stakeholder Working Groups were instrumental in the development of emission reduction strategies that reflect local needs and concerns. The involvement of the Citizens Advisory Council and the Air Quality Technical Advisory Committee in reviewing policy and regulations has been beneficial to the Department.

The permitting programs for new and existing stationary sources assure that the health of Pennsylvania's citizens is protected while providing for industrial growth and development. The new source permit program assures that new sources will have "best available technology" controls to minimize the emissions of air pollutants. The Department's Title V permitting program was among the first approved by EPA. Permits issued under Title V clearly define compliance requirements for the source operator and the public, providing for citizen involvement and participation in the permitting process.

The Department has been a leader in Ozone Transport Commission (OTC) activities. Through the efforts of Pennsylvania and other states in the Ozone Transport Region, significant ozone-related VOC and NOx emission reduction programs that benefit the entire region have been developed. Most notably, through the OTC, Pennsylvania was instrumental in persuading EPA to require upwind states to reduce NOx emissions by filing a petition under Section 126 of the CAA.

Funds available to support the program are adequate. The combination of Title V permit fees and other permit fees, combined with other revenue sources have enabled the Department to provide staffing and other resources to carry out program mandates. The funding provided for the Small Business Compliance Assistance Program provides a valuable service to Commonwealth businesses.

The Department has determined that Section 4.2 has not hindered the Commonwealth's efforts to comply with the mandates of the 1990 CAA and should therefore be retained because programs mandated by federal and state law have been implemented effectively.

# List of Tables and Figures

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# APPENDIX A: ACRONYMS

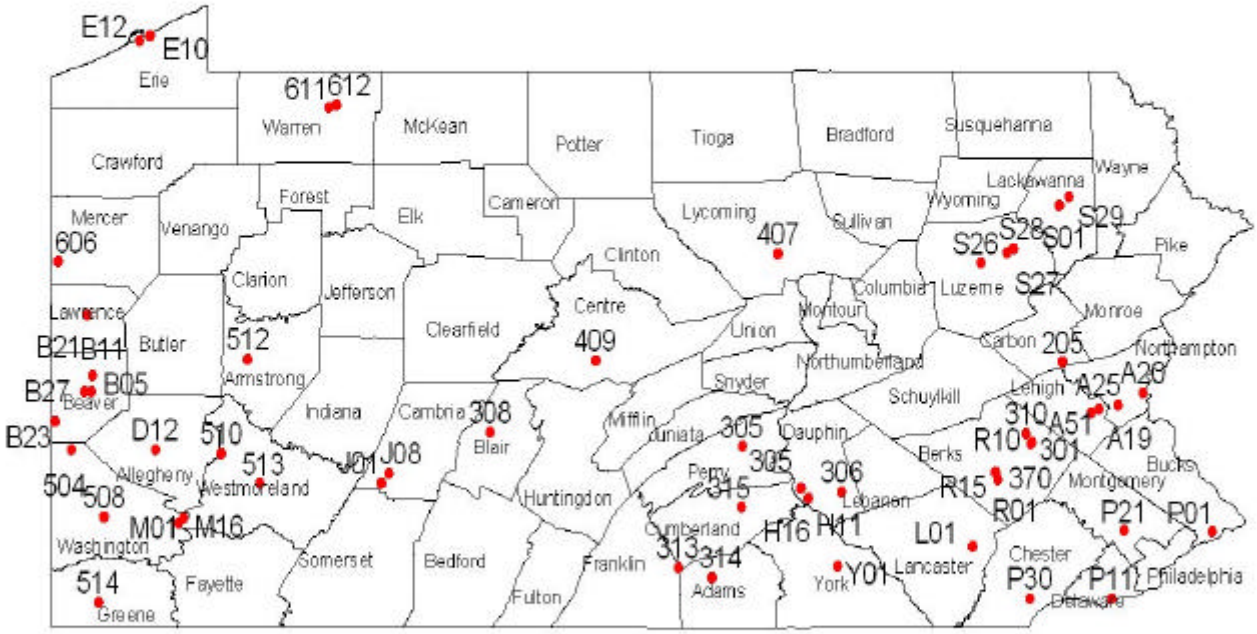
| Acronym | Term |
|---|---|
| ACHD | Allegheny County Health Department |
| AFIG | Alternative Fuels Incentive Grant |
| AIM | Architectural and Industrial Maintenance |
| AIMS | Air Information Management System |
| AIRS | Aerometric Information Retrieval System |
| AMIS | Automated Information Management System |
| AMS | Air Management Services - Philadelphia Department of Health |
| APCA | Pennsylvania Air Pollution Control Act |
| AQTAC | Air Quality Technical Advisory Committee |
| AWQTAC | Air and Water Quality Technical Advisory Committee |
| BACT | Best Available Control Technology |
| BAQ | Bureau of Air Quality |
| BAT | Best Available Technology |
| Be | Beryllium |
| BLRWM | Bureau of Land Recycling and Waste Management |
| CAA | Federal Clean Air Act |
| CAC | Citizens Advisory Council |
| CAM | Compliance Assurance Monitoring |
| CAP | Compliance Advisory Panel |
| CO | Carbon Monoxide |
| DEP | Department of Environmental Protection |
| ECOS | Environmental Council of States |
| EPA | U. S. Environmental Protection Agency |
| EQB | Environmental Quality Board |
| ERC | Emission Reduction Credit |
| ETAC | ElectroTechnology Application Center |
| FMVCP | Federal Motor Vehicle Control Program |
| H2S | Hydrogen Sulfide |
| HAP | Hazardous Air Pollutant |
| I/M | Motor Vehicle Inspection and Maintenance Program |
| IPP | Independent Power Producer |
| LAER | Lowest Achievable Emission Rate |
| MACT | Maximum Achievable Control Technology |

| | |
|---|---|
| MARAMA | Mid-Atlantic Regional Air Management Association |
| MOU | Memorandum of Understanding |
| NAAQS | National Ambient Air Quality Standard |
| NESHAP | National Emission Standards for Hazardous Air Pollutants |
| NLEV | National Low Emission Vehicle |
| NLEV | National Low Emission Vehicle |
| $NO_2$ | Nitrogen Dioxide |
| $NO_x$ | Oxides of Nitrogen |
| NSR | New Source Review |
| O3 | Ozone |
| OTAG | Ozone Transport Assessment Group |
| OTC | Ozone Transport Commission |
| OTC MOU | Ozone Transport Commission Memorandum of Understanding |
| OTR | Ozone Transport Region |
| P2A2 | Pollution Prevention Assistance Account |
| PAAQS | Pennsylvania Ambient Air Quality Standards |
| Pb | Lead |
| PEAN | Pennsylvania Environmental Assistance Network |
| PennDOT | Pennsylvania Department of Transportation |
| PH | Log of the Concentration of Negative Ions |
| PM | Particulate Matter |
| PM10 | Particulate Matter With an Aerodynamic Diameter less than 10 Microns |
| PM2.5 | Particulate Matter With an Aerodynamic Diameter less than 2.5 Microns |
| RACT | Reasonably Available Control Technology |
| RBI | Regulatory Basics Initiative |
| SBA | Small Business Administration |
| SBAP | Small Business Assistance Program |
| SBCAP | Small Business Compliance Assistance Program |
| SBO | Small Business Ombudsman |
| SBTCP | Small Business Stationary Source Technical and Environmental Compliance Assistance Program |
| SIP | State Implementation Plan |
| SO2 | Sulfur Dioxide |
| SOx | Oxides of Sulfur |
| TRI | Toxics Release Inventory |
| TSDF | Transport, Storage and Disposal Facility |
| VOC | Volatile Organic Compound |

# APPENDIX B

## Location of Air Quality Monitoring Sites

# Commonwealth of Pennsylvania
# 2000 Air Monitoring Sites




Numbers Indicate Station Identifiers

# SOUTHEAST PENNSYLVANIA AIR BASIN SITES

SITE LOCATIONS

| PA SITE CODE | SITE NAME | EPA-AIRS SITE CODE | COUNTY | STREET ADDRESS | LATITUDE LONGITUDE |
|---|---|---|---|---|---|
| P01 | BRISTOL | 42-017-0012 | BUCKS | Roosevelt Junior High School<br>Rockview Lane | 40 06 27<br>74 52 57 |
| P11 | CHESTER | 42-045-0002 | DELAWARE | Front & Norris Streets | 39 50 08<br>75 22 22 |
| P21 | NORRISTOWN | 42-091-0013 | MONTGOMERY | State Armory<br>1046 Belvoir Road | 40 06 45<br>75 18 34 |
| P30 | NEW GARDEN (TOUGHKENAMON) | 42-029-0100 | CHESTER | 1235 Newark Road<br>New Garden Airport | 39 50 04<br>75 46 04 |

PARAMETERS MONITORED

| COUNTY | PA SITE CODE | PM-10 | PM-2.5 | PM-2.5 Spec | TSP | SULFATES | LEAD | NITRATES | SULFUR DIOXIDE | NITROGEN DIOXIDE | OZONE | CARBON MONOXIDE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUCKS | P01 | X | NEW | | | | | | X | X | X | X |
| DELAWARE | P11 | X | NEW | NEW | X | | X | | X | X | X | |
| CHESTER | P30 | | NEW | NEW | | | | | | | NEW | |
| MONTGOMERY | P21 | X | NEW | | | | | | X | X | X | X |

# ALLENTOWN - BETHLEHEM - EASTON AIR BASIN SITES

SITE LOCATIONS

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

PARAMETERS MONITORED

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

# REGION II NON - AIR BASIN SITES

SITE LOCATIONS

| PA SITE CODE | SITE NAME | EPA-AIRS SITE CODE | COUNTY | STREET ADDRESS | LATITUDE LONGITUDE |
|---|---|---|---|---|---|
| 205 | PALMERTON | 42-025-0105 | CARBON | New Jersey Zinc Research Bldg.<br>Fourth Street & Franklin Avenue | 40 48 12<br>75 36 31 |

PARAMETERS MONITORED

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

# SCRANTON - WILKES-BARRE AIR BASIN SITES

SITE LOCATIONS

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

PARAMETERS MONITORED

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

# READING AIR BASIN SITES

SITE LOCATIONS

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

PARAMETERS MONITORED

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

# HARRISBURG AIR BASIN SITES

SITE LOCATIONS

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

PARAMETERS MONITORED

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

# LANCASTER AIR BASIN SITES

SITE LOCATIONS

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

PARAMETERS MONITORED

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

# YORK AIR BASIN SITES

SITE LOCATIONS

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

PARAMETERS MONITORED

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

# REGION III NON - AIR BASIN SITES

SITE LOCATIONS

| PA SITE CODE | SITE NAME | EPA-AIRS SITE CODE | COUNTY | STREET ADDRESS | LATITUDE LONGITUDE |
|---|---|---|---|---|---|
| 301 | LYONS EAST | 42-011-0717 | BERKS | Near State & Kemp Streets | 40 28 36<br>75 45 33 |
| 305 | PERRY COUNTY | 42-099-0301 | PERRY | Little Buffalo State Park | 40 27 26<br>77 09 57 |
| 306 | HERSHEY | 42-043-1100 | DAUPHIN | Hershey Foods Technical Center<br>Sipe Avenue & Mae Street | 40 16 21<br>76 40 53 |
| 308 | ALTOONA | 42-013-0801 | BLAIR | Ward Trucking Corporation<br>Second Avenue & Seventh Street | 40 32 07<br>78 22 15 |
| 310 | KUTZTOWN | 42-011-0001 | BERKS | Kutztown State College<br>Grim Science Building | 40 30 40<br>75 47 11 |
| 313 | METHODIST HILL | 42-055-0001 | FRANKLIN | Forest Road<br>(High Elevation Site) | 39 57 40<br>77 28 31 |
| 314 | ARENDTSVILLE | 42-001-0001 | ADAMS | Penn State Research Orchard | 39 55 25<br>77 18 29 |
| 315 | CARLISLE | 42-041-0100 | CUMBERLAND | North Middlesex Road | 40 15 07<br>77 08 27 |
| 370 | LYONS SOUTH | 42-011-0003 | BERKS | Heffner & Deka Roads | 40 28 06<br>75 45 51 |

PARAMETERS MONITORED

| COUNTY | PA SITE CODE | PM-10 | PM-2.5 | PM-2.5 S{EC | TSP | SULFATES | LEAD | NITRATES | SULFUR DIOXIDE | NITROGEN DIOXIDE | OZONE | CARBON MONOXIDE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BERKS | 301 | | | | X | | X | | | | | |
| | 310 | | | | | | | | | | X | |
| | 370 | | | | X | | X | | | | | |
| PERRY | 305 | | NEW | NEW | | | | | X | X | X | |
| CUMBERLAND | 315 | | NEW | | | | | | | | | |
| DAUPHIN | 306 | | | | | | | | | | X | |
| FRANKLIN | 313 | | | | | | | | | | NEW | |
| ADAMS | 314 | | NEW | | | | | | | X | | X |
| BLAIR | 308 | X | | | | | | | X | X | X | X |

# REGION IV NON - AIR BASIN SITES

SITE LOCATIONS

| PA SITE CODE | SITE NAME | EPA-AIRS SITE CODE | COUNTY | STREET ADDRESS | LATITUDE LONGITUDE |
|---|---|---|---|---|---|
| 407 | WILLIAMSPORT | 42-081-0403 | LYCOMING | East Third & Railway Streets | 41 14 46<br>76 59 24 |
| 409 | STATE COLLEGE | 42-027-0100 | CENTRE | Pennsylvania State University | 40 48 40<br>77 52 38 |

PARAMETERS MONITORED

| COUNTY | PA SITE CODE | PM-10 | PM-2.5 | PM-2.5 SPEC | TSP | SULFATES | LEAD | NITRATES | SULFUR DIOXIDE | NITROGEN DIOXIDE | OZONE | CARBON MONOXIDE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LYCOMING | 407 | X | | | | | | | X | | X | |
| CENTRE | 409 | | NEW | NEW | | | | | NEW | NEW | NEW | |

# JOHNSTOWN AIR BASIN SITES

SITE LOCATIONS

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

PARAMETERS MONITORED

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

# MONONGAHELA VALLEY AIR BASIN SITES

SITE LOCATIONS

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

PARAMETERS MONITORED

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

# LOWER BEAVER VALLEY AIR BASIN SITES

SITE LOCATIONS

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

PARAMETERS MONITORED

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

# REGION V NON - AIR BASIN SITES

SITE LOCATIONS

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

PARAMETERS MONITORED

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

# UPPER BEAVER VALLEY AIR BASIN SITES

SITE LOCATIONS

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

PARAMETERS MONITORED

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

# ERIE AIR BASIN SITES

SITE LOCATIONS

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

PARAMETERS MONITORED

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

# REGION VI NON - AIR BASIN SITES

SITE LOCATIONS

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

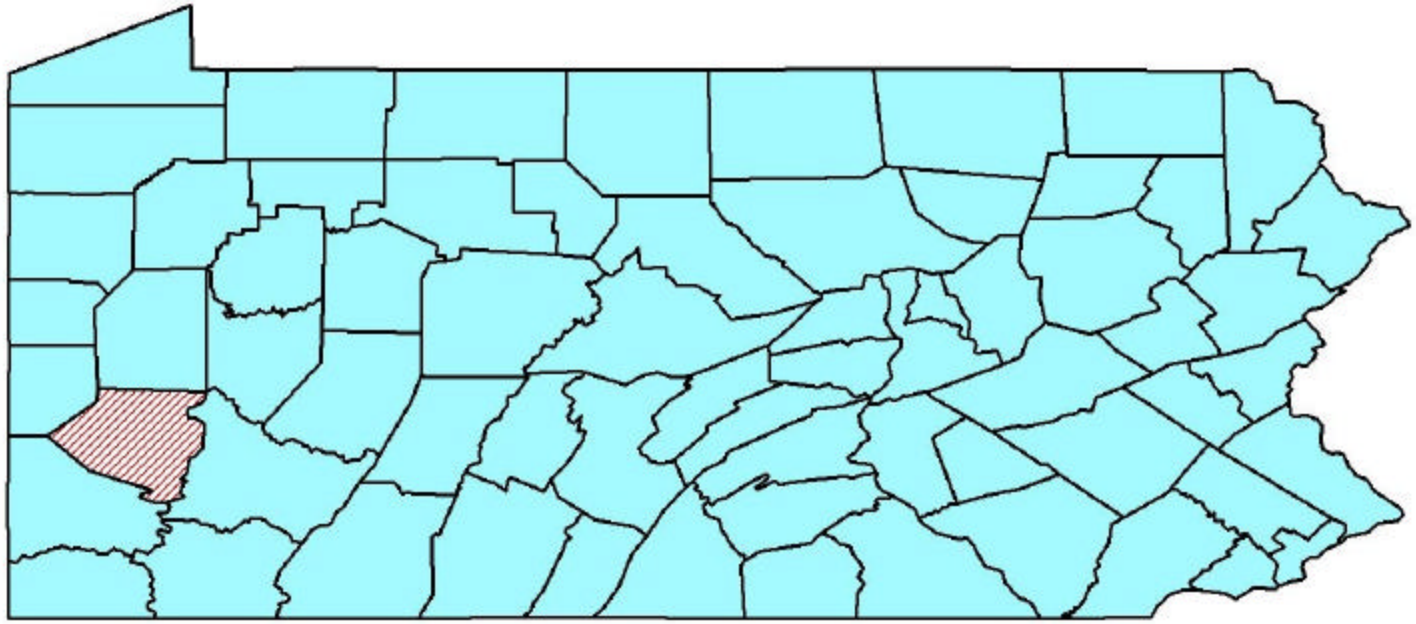
PARAMETERS MONITORED

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

# APPENDIX C

## Attainment and Nonattainment Area Maps

# PM-10 Non-attainment Counties
# Prior to the 1992 APCA Amendments

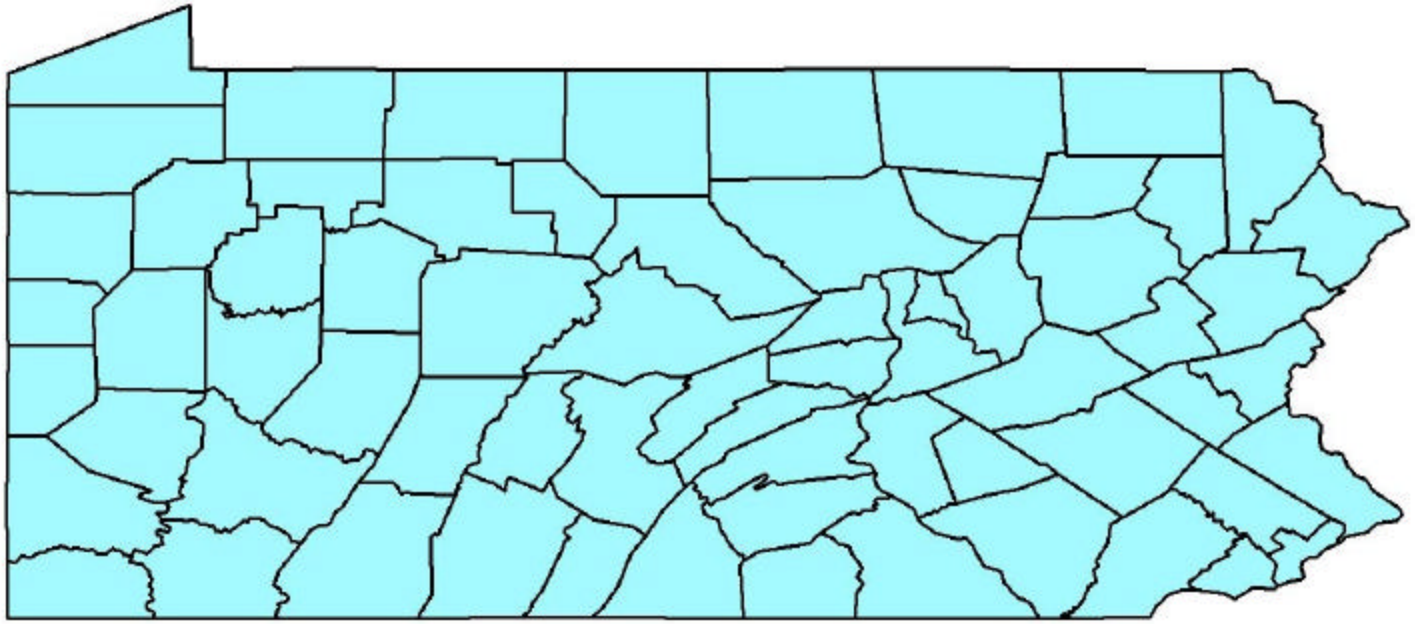


PM-10

Attainment

Non-attainment (Denotes Portion of County in Non-Attainment)

# Current Monitored PM-10
# Non-attainment Counties

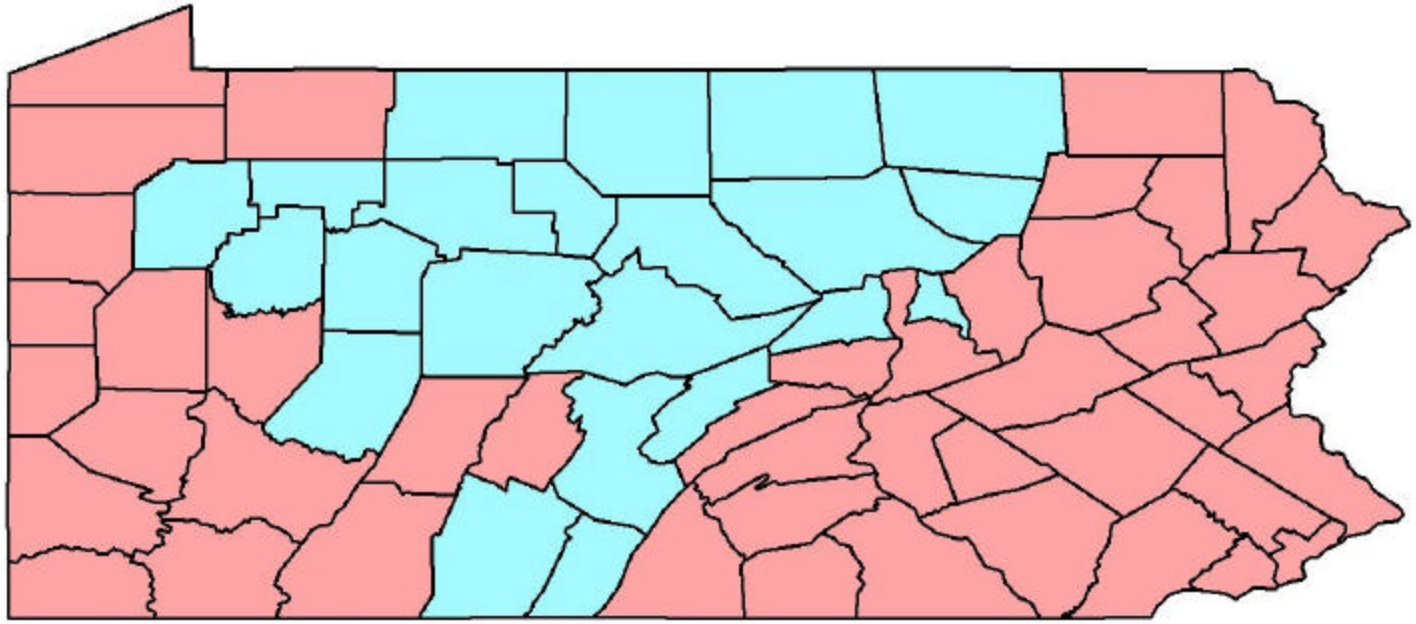


PM-10

Attainment

Non-attainment (Denotes Portion of County in Non-Attainment)

# 1-Hour Ozone Non-attainment Counties Prior to the 1992 APCA Amendments

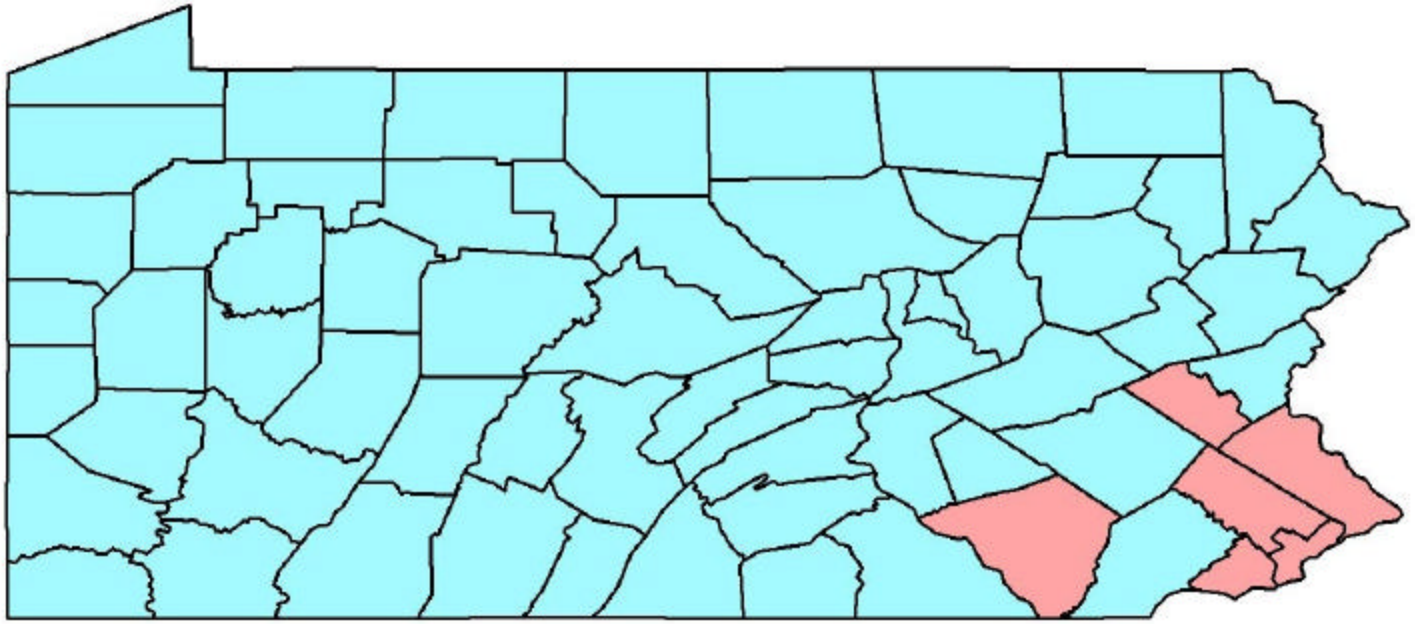


1-Hour Ozone

Attainment

Nonattainment

# Current Monitored 1-Hour Ozone
# Non-attainment Counties

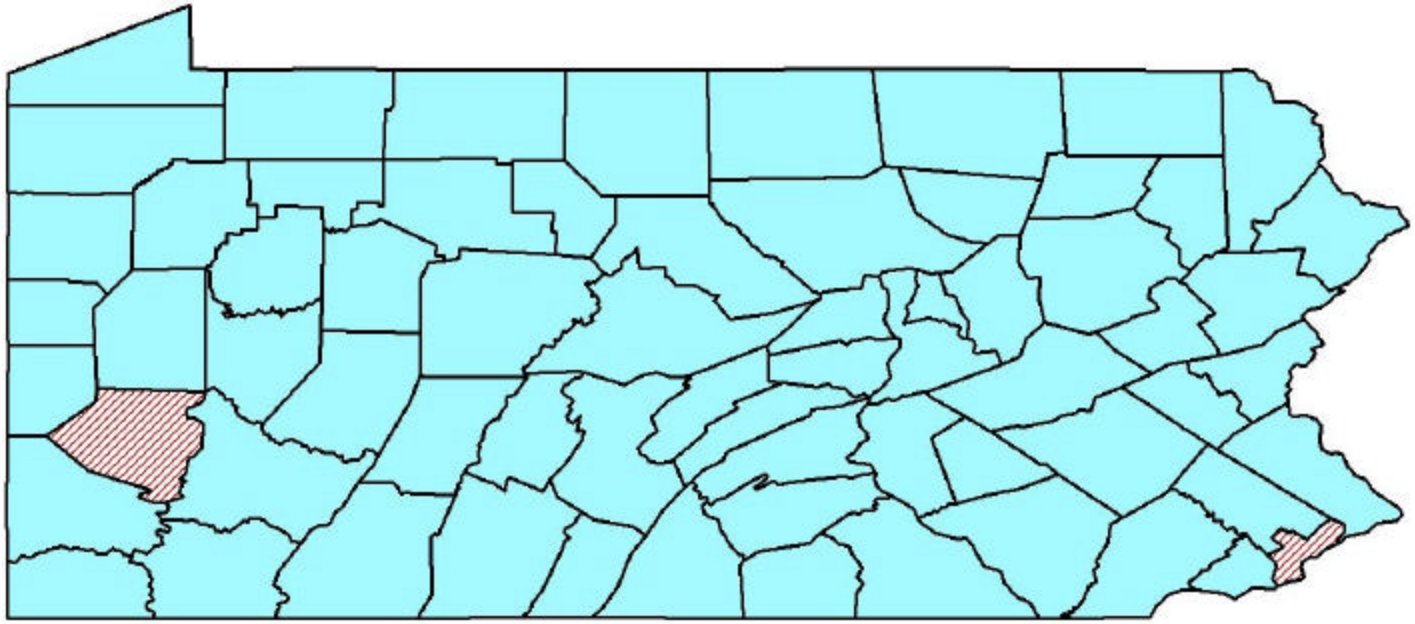


1-Hour Ozone

Attainment

Nonattainment

# Carbon Monoxide Non-attainment Counties Prior to the 1992 APCA Amendments

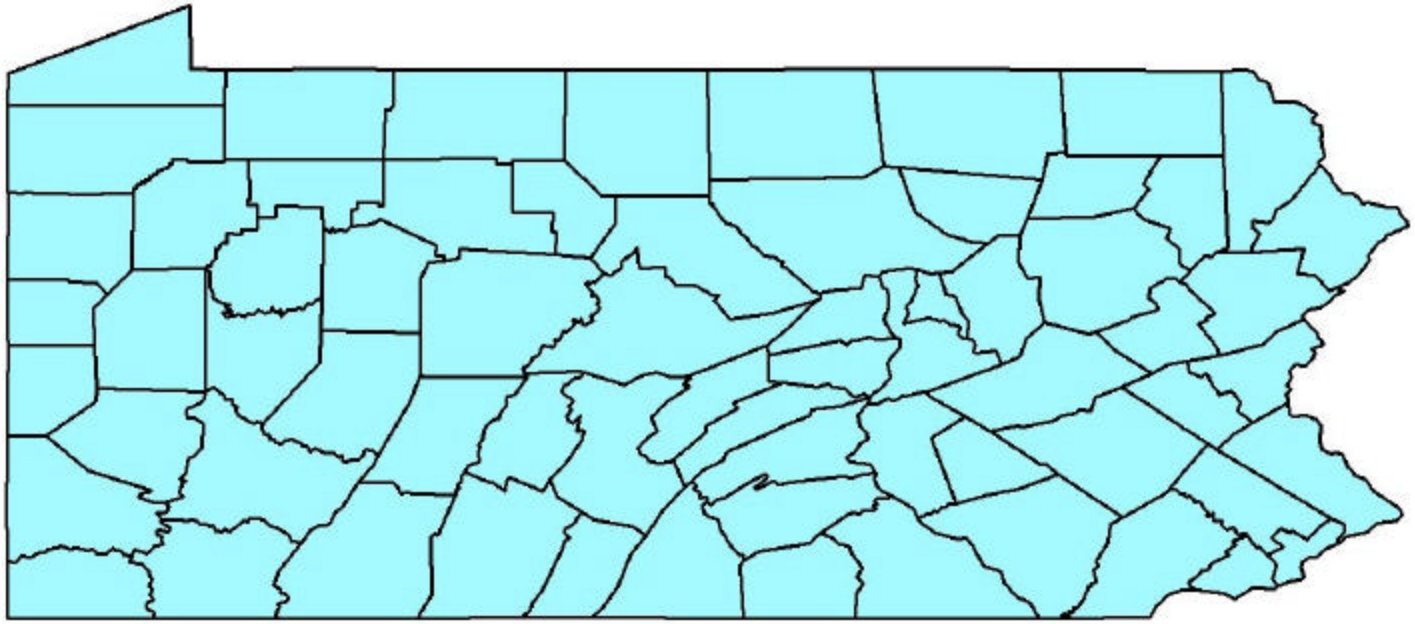


Carbon Monoxide

Attainment

Non-attainment (Denotes Portion of County in Non-Attainment)

# Current Monitored Carbon Monoxide Non-attainment Counties

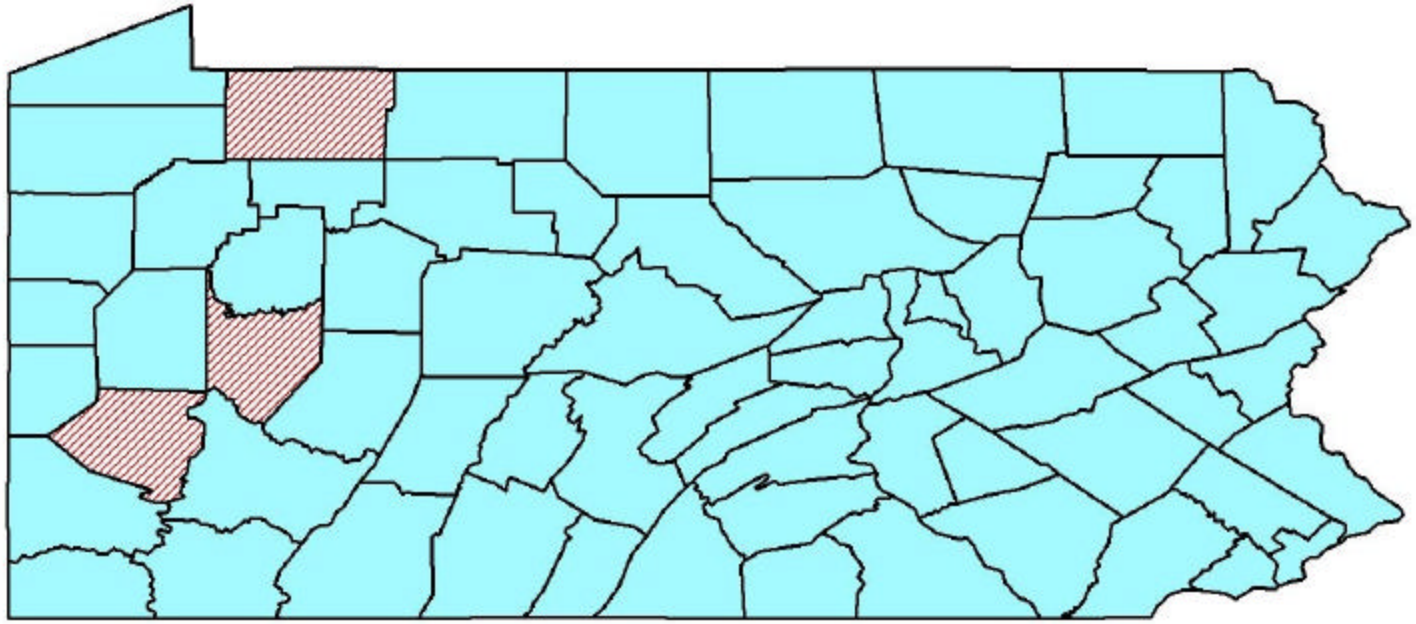


Carbon Monoxide

Attainment

Non-attainment (Denotes Portion of County in Non-Attainment)

# Sulfur Dioxide Non-attainment Counties Prior to the 1992 APCA Amendments

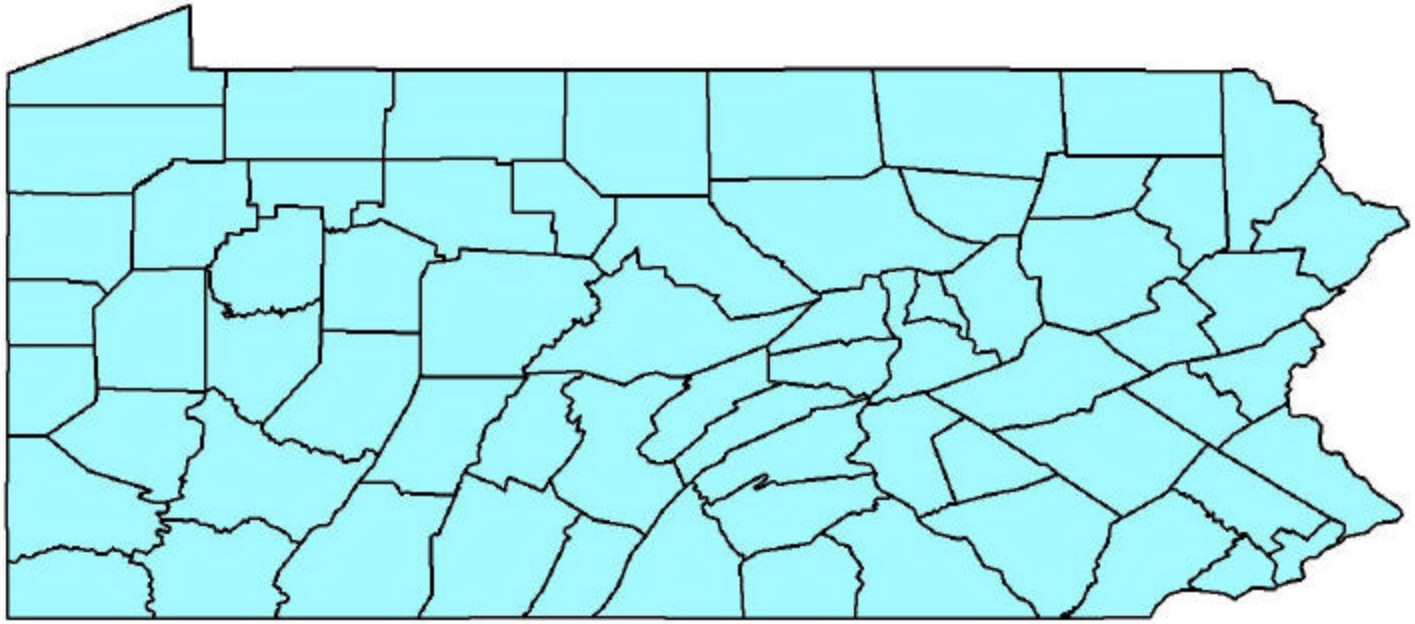


**Sulfur Dioxide**

**Attainment**

**Non-attainment (Denotes Portion of County in Non-Attainment)**

# Current Monitored Sulfur Dioxide Non-attainment Counties



**Sulfur Dioxide**

**Attainment**

**Non-attainment (Denotes Portion of County in Non-Attainment)**