



**Air Management Services
Annual Report for Calendar Year 2018**



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Director**

February, 2019

Introduction

Air Management Services (AMS), a division of the Philadelphia Department of Public Health and the air pollution control agency for the City of Philadelphia, has made great strides over the past few years in protecting the people of our City from the adverse effects of air pollution. This report details our unit's goals, a summary of activities and revenues collected, and our progress in calendar year 2018 toward meeting our objectives set under the Clean Air Act.

Mission and Vision

Mission Statement: Air Management Services, a division of the Philadelphia Department of Public Health, is committed to protecting the health, well-being, and quality of life of the people who live, work and visit Philadelphia from the adverse effects of air pollution.

Vision Statement: To ensure all Philadelphia residents have access to safe, clean air.

Goals

Achieve and maintain the National Ambient Air Quality Standards (NAAQS) in Philadelphia by implementing all relevant federal, state, and local air regulations. These air quality standards may be further reduced based on updated scientific information. Among these are:

- Achieve the 2015 standard of 0.070 parts per million of ozone over eight hours by August 3, 2021.

Philadelphia region attains 2008 Ozone NAAQS

On December 4, 2017, EPA finalized a rule demonstrating the Philadelphia region attained the 2008 Ozone NAAQS.

Other agency goals include:

- The City should minimize risk to all residents from air toxics to less than 1(one) in a million risk of cancer (above what would normally be seen in the general population).
- AMS will also work with EPA and other stakeholders to seek alternative funding sources for the air program from the transportation sector such as emission fees for mobile sources and/or vehicle registration fees.
- Gathering the best information available to appropriately address the many factors involved in the regulation of air quality, including health, quality of life, equity, and economic impacts.
- Improve AMS' profile and its community services to Philadelphians and operate in accordance with the Pennsylvania's Department of Environmental Protection's *Environmental Justice Public Participation Policy*.
- To streamline communication within the agency and with outside groups such as researchers and educators in order to improve the profile and public perception of the

agency and to raise awareness about the importance of clean air to public health and welfare.

- Educate the public about energy efficiency and sustainability.
- Plan and coordinate with other authorities to reduce the impact of air pollution from the transportation sector.
- Assist businesses to help them comply with environmental regulations while being sensitive to the economic implications of these regulations.
- Coordinate with the Mayor's Office of Sustainability to support their goal of making Philadelphia the greenest city in America.
- Maintain existing resources at AMS, particularly our high-caliber knowledge and skill base, by continuing to educate and train employees.
- Coordinate with the Philadelphia Port Authority to establish a detailed and robust annual emission inventory and establish an air toxics and particulate matter monitor near the Delaware River.
- Assist business owners by establishing a web-based system that allows the online submission of permit and license applications and fees.
- Work with the Air Pollution Control Board, the regulated community, and other stakeholders to develop or modify regulations to reduce or control emissions of criteria pollutants to help meet the NAAQS.
- Introduce legislation for the phase-out of #4, #5, and #6 fuel oil by December 31, 2019.
- Work with Other stakeholders and PA DEP on VW NOx reductions calculations and cost effective analysis for the City of Philadelphia
- Submit background document and propose update of regulation (draft AMR IX) for non road sources (construction equipment, diesel cranes at port) to APCB by Dec 31, 2019.
- Submit background document and propose update of regulation for mobile sources (diesel buses, diesel trucks in the center city) to APCB by Dec 31, 2019.

Village Green

Village Green is an initiative funded by the Environmental Protection Agency to help test a new type of solar- and wind-powered, using low-cost modular monitoring equipment. This monitor allows the public to access real-time air quality data collected by the monitoring device housed under the bench-style seat that comprises the bottom portion of the unit (shown below). To find out more please visit:

<http://www.epa.gov/air-research/village-green-project>



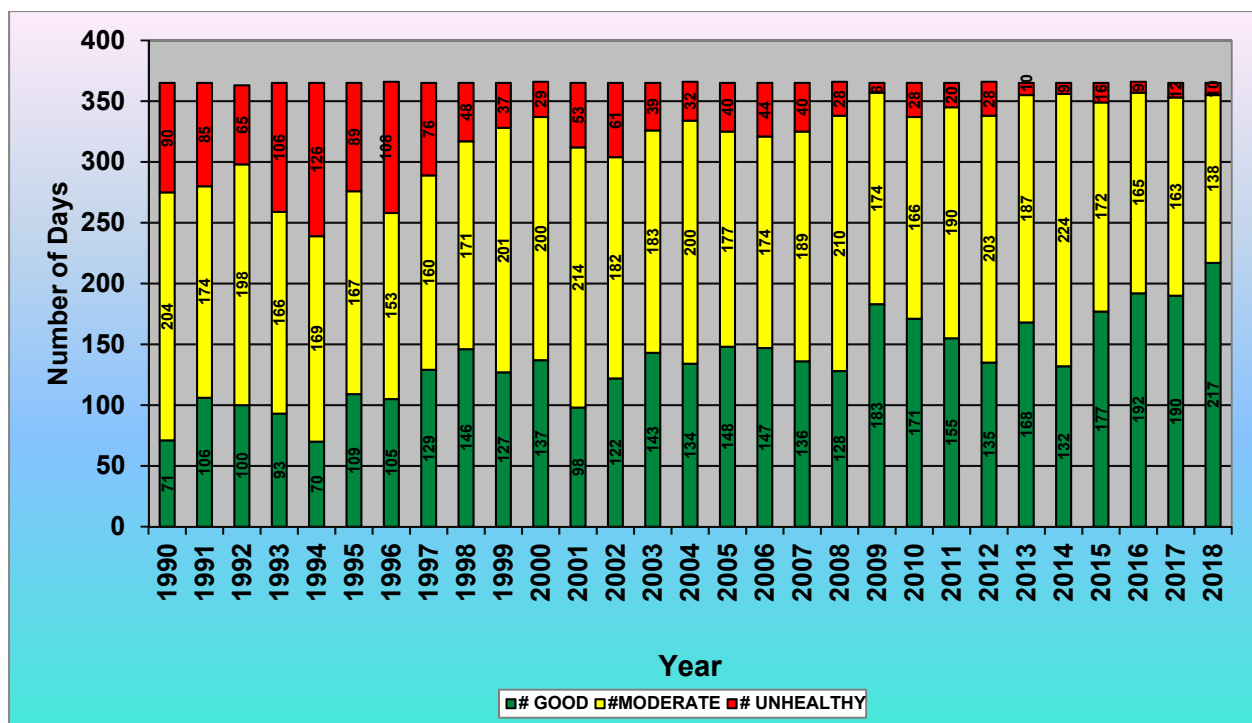
- Install Village Green type air monitoring device (EPA Office of Research and Development PM Monitor) to measure toxics at the Port and SEPTA depot.
- Risk Assessment for cancer and non-cancer risk and finalized and present to the APCB for final approval by Dec 2019.
- Generate air quality data from 50 locations in the Philadelphia Air Quality Survey, make analysis for all four seasons, compare data with NY air quality survey, produce written summary report by Dec 2019 (first round).
- Improve data quality at the Lab by automation and adopting good practices by Dec 2019
- Issue Installation Permits (IPs) for minor sources and start analysis for emission controls for major sources (greater or equal to 10 tons of Methyl Bromide/year) of fumigation at the port by Dec 2019.
- Reduce and resolve all backlogs (NOVs, Conformance checking, and Permits), targeting 50% by Dec 2019.
- Reduce GHG emissions from PES by 10% by Dec 2019:
 1. Through continued energy efficiency initiatives in buildings and fleets, and through expanded use of renewable energy and cleaner fuels
 2. Processes efficiency (Heaters, Boilers, flare, FCCU, SRU, Leaks, Storage Tanks, Coking units, asphalt blowers)
 3. Emissions Control system
- Issue licenses to a minimum of 200 garages; inspect 200 garages that causes the emission of carbon monoxide, nitrogen dioxide, and other toxics to protect the public health by October 2019.
- Finalize all AMS Laboratory Renovation by Dec 31, 2019.

Air Quality Index

Air quality in Philadelphia has dramatically improved over the past few decades, as evidenced by the relatively fewer number of unhealthy air quality days (adjusted to the current standard) during the past several years, as shown in the graphic below. It is important to note that air pollution, especially ozone which forms in the presence of heat and sunlight, is weather dependent and varies significantly from year to year depending on meteorological trends. The decrease in the number of good days and the increase in the number of moderate days can be attributed to changes in the AQI breakpoints due to strengthening of the NAAQS for ozone and PM_{2.5}. In addition, changes to PM_{2.5} sampling from a filter-based to a continuous monitor also affected the number of good and moderate days.

Good, Moderate and Unhealthy Air Quality Days¹

¹ Data from 2018 Q4 were taken from AirVision and NOT AQS.

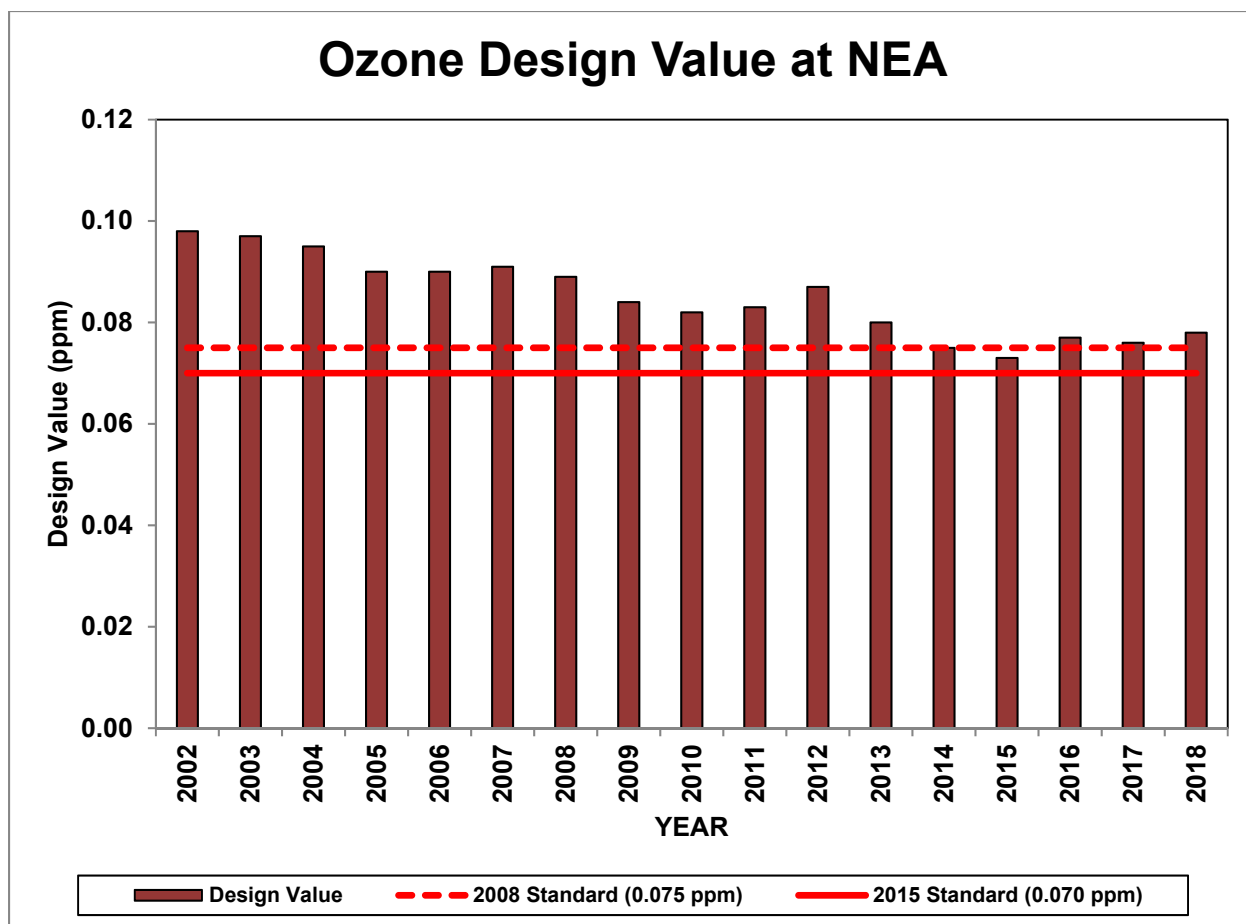


Air quality in Philadelphia has been steadily improving even for ozone and fine particulates – the region is in nonattainment only for ozone. Philadelphia is now designated as being in attainment for fine particulate matter, or PM_{2.5} (particles less than 2.5 micrometers in diameter) for the 2006 24-hour and 1997 annual standards. EPA changed the annual standard for PM_{2.5} from 15 micrograms per cubic meter to 12 micrograms per cubic meter in 2012. Philadelphia currently meets the 2012 annual standard for PM_{2.5}.

For 2018, Philadelphia experienced ten unhealthy AQI days, all from ozone. For 2019, AMS expects the number of unhealthy days from ozone to increase slightly or stay the same due to the more stringent 2015 standard of 70 parts per billion of ozone over eight hours. AMS expects long term trends for ozone to decrease due to regulations that will reduce ozone precursors

Philadelphia is currently in nonattainment for the 2015 8-hour ozone NAAQS. Ozone is a pollutant that is not emitted directly by combustion sources, but forms in the atmosphere in the presence of heat and sunlight as part of a chemical reaction between other pollutants – specifically, oxides of nitrogen and volatile organic compounds. Ozone is very irritating to the lungs and contributes to heart and lung diseases such as asthma.

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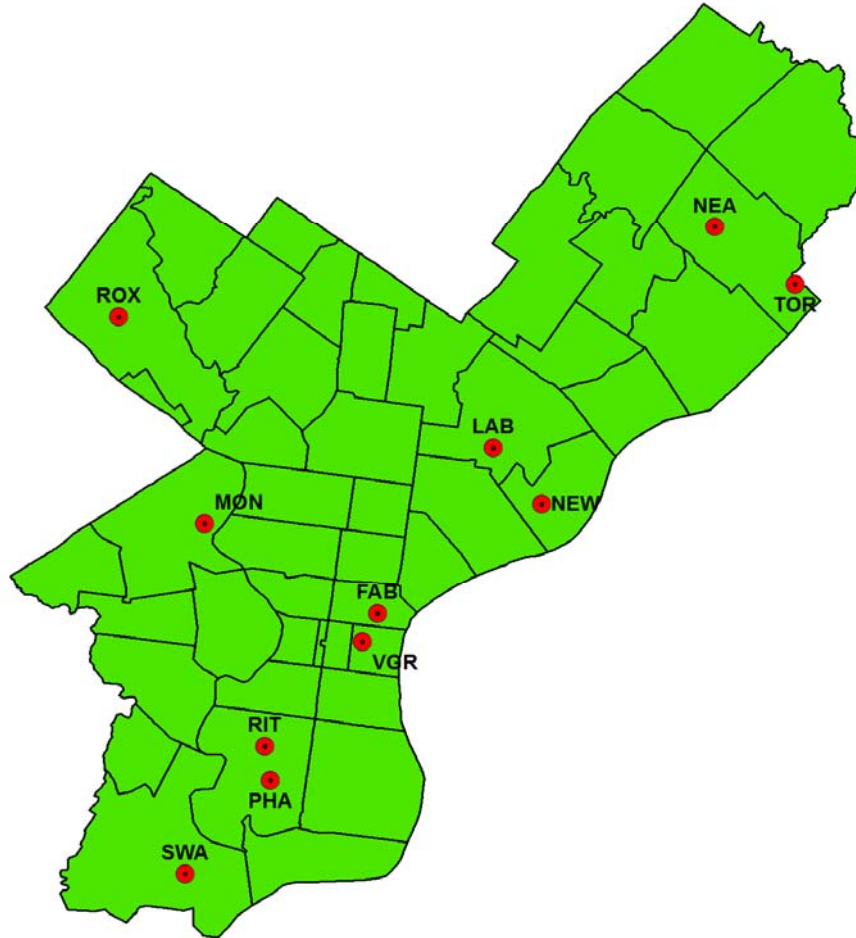


Monitoring Programs#

In 2018, AMS operated a network of eleven air monitoring sites located throughout the City that measure such parameters as criteria pollutants and air toxics. Eight sites (LAB, NEA, NEW, RIT, FAB, TOR, MON, and VGR) measured a number of criteria pollutants, depending on the site: ozone (O₃), carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), and particulate matter (PM₁₀ and PM_{2.5}). These measurements are made in "real time", meaning that the measurements show pollution levels as they occur, instead of after the fact. Four sites (ROX, RIT, SWA, and NEW) also measured toxics through canisters, such as 1,3-butadiene, benzene, and carbon tetrachloride. One site, PHA, measured toxics continuously for part of the year, and AMS is evaluating this new technology. One site, VGR, measured O₃ and PM_{2.5} as part of a pilot study for research and development, utilizing solar and wind turbine power. The following map shows the location of air monitors and the parameters measured at each monitoring location. AMS measures air quality for several reasons:

- To ensure that long-term goals and targets to reduce levels of air pollution are being met.
- To provide information to the public as to how good or bad the air quality is in Philadelphia.
- To ensure attainment with standards set forth by the United States Environmental Protection Agency.

2018 PHILADELPHIA AIR MONITORING NETWORK



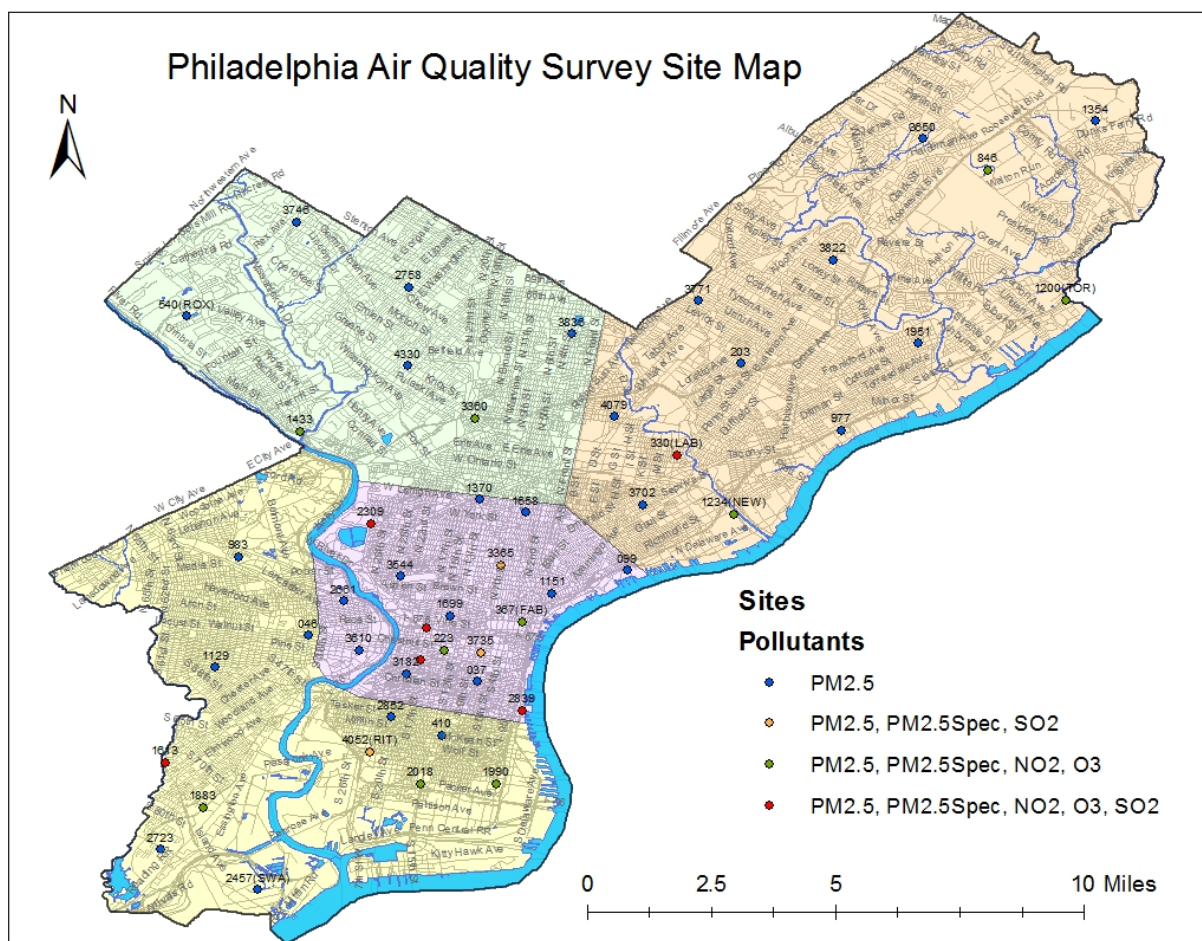
AMS strives to achieve a 75% or greater data quality capture rate each quarter for each criteria pollutant monitor, per federal requirements in each Appendix in 40 CFR Part 50.

The 2018-2019 Air Monitoring Network Plan for Philadelphia is available at:
<https://www.phila.gov/media/20181106115646/2018-19-AMNP-Final-6.26.18.pdf>.

AMS completed its fourth year of monitoring with the Village Green Park Bench Air Pollution Monitoring System at 6th and Arch Streets across from the Constitution Center, measuring PM_{2.5} and ozone, as well as local wind speed, wind direction, temperature, and humidity, utilizing solar and wind turbine power, to increase community awareness of environmental conditions. The Village Green data link is: <http://www.epa.gov/air-research/village-green-project>. AMS is planning to install air monitoring devices similar to Village Green to measure particulate at the Port and SEPTA depot and test sensors: from SCAQMD's AQ-SPEC Air Quality Sensor Performance Evaluation Center: <http://www.aqmd.gov/aq-spec/evaluations>

In 2018, AMS began a new project called the Philadelphia Air Quality Survey (PAQS). This project aims to set up 50 street level, neighborhood-oriented air sampling sites throughout the City to sample the ambient air for PM_{2.5}, NO₂ & SO₂, and O₃. The sites also contain meteorological sensors as well. PAQS capture the seasonal changes and neighborhood-to-neighborhood spatial variances in air quality. The data results may serve as a basis for future work, including: provide policy recommendations for reducing pollution from congested traffic, diesel vehicles and winter time fuel burning; analyze the relations between air quality and land use characteristics and build a land use regression model to predict air pollution levels in different neighborhoods; and study public health impact of air pollution in the City.

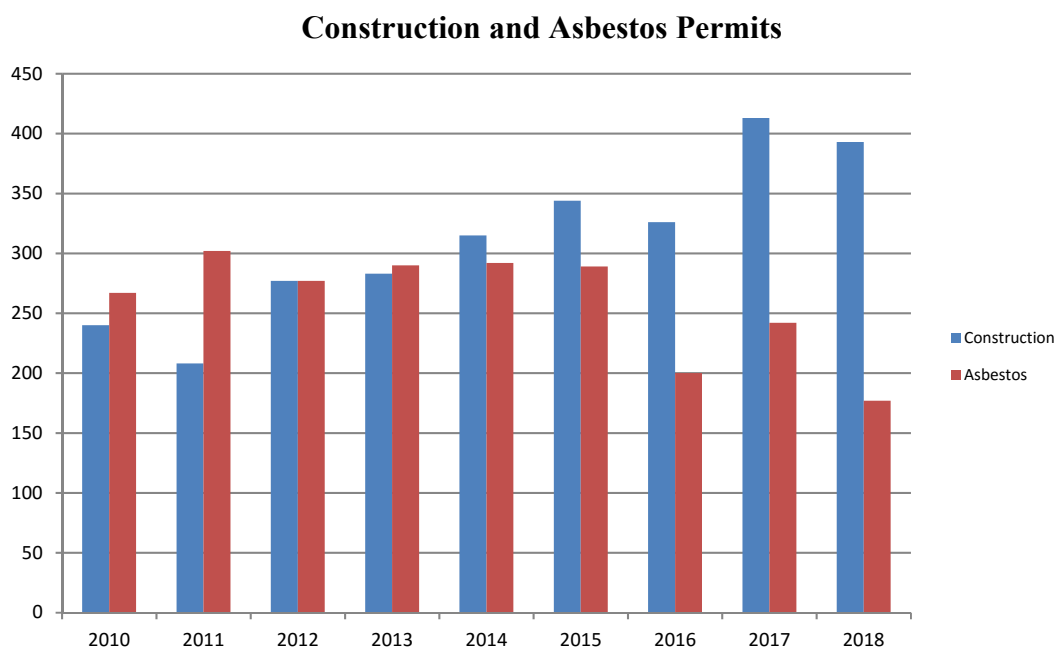
More details about the PAQS project can be found in the 2018-2019 Air Monitoring Network Plan for Philadelphia available at <https://www.phila.gov/media/20181106115646/2018-19-AMNP-Final-6.26.18.pdf>



Permitting Activities

In 2018, AMS issued 393 construction permits and approximately 177 asbestos permits. The increase in construction permits issued in recent years is partly due to a new dust control permit requirement for certain demolition activities. We expect an increase in 2019 due to a proposed new dust control permit requirement for certain construction activities that disturb the ground.

The chart below lists the number of construction permits (installation permits, plan approvals, and general permits) to install or modify sources of air pollution and the number of asbestos abatement permits issued from 2010 to 2018.



Enforcement Activities

AMS handles citizen complaints, periodic inspections of regulated facilities, and enforces state, local and federal laws related to air quality. In 2018, the enforcement of violations was distributed amongst AMS staff after the position was vacated early in the year. AMS is looking to consolidate the work and hire for the enforcement position in 2019. By having additional staff trained in the enforcement process it addresses the concern if the position is vacated in the future. On average, violations issued in 2018 are being resolved within our goal of 180 days from the date of issuance. Violations issued prior to 2018 are being addressed periodically to clear up the backlog left when the position was vacated.

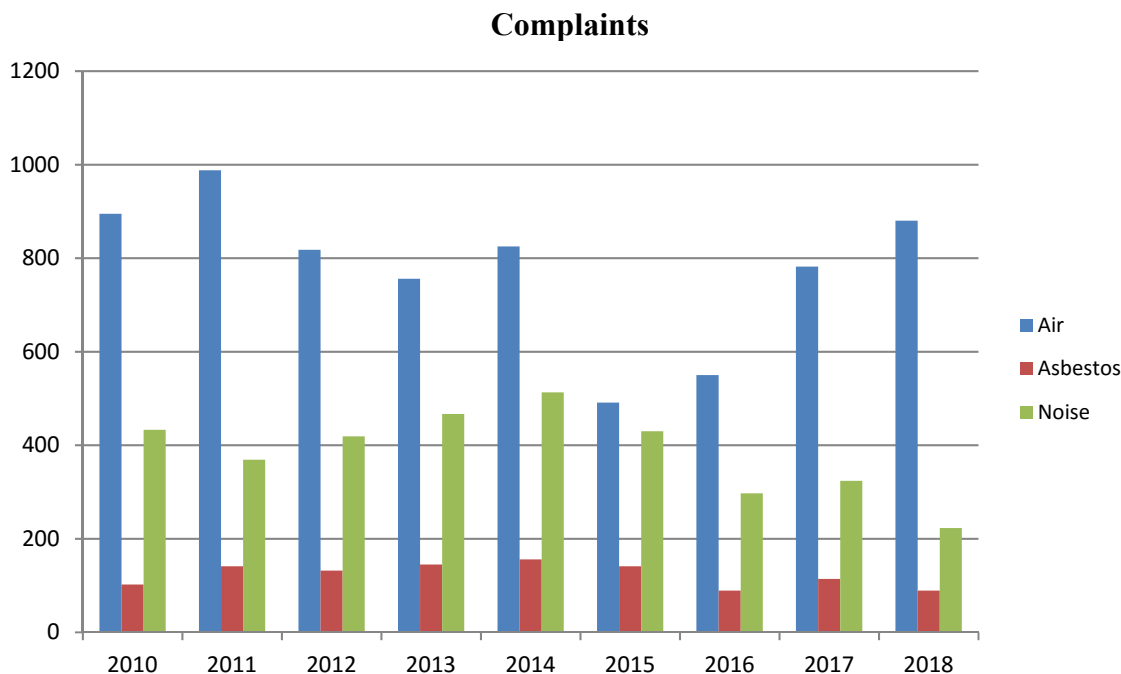
In 2017 AMS fully implemented the online cloud based Citizenserve system to monitor and track inspections and enforcement activities for the Asbestos and Facility Compliance and Enforcement units. In 2018 AMS created an enforcement timeline and routing system within

Citizenserve to assign and track enforcement activities which has assisted in case resolution. In 2019, AMS will continue to make changes to the system to tailor it to its specific needs.

In 2019, AMS anticipates the number of inspections and number of violations to increase as a direct result of a staff increase of air pollution control inspectors and environmental engineers. The staff increase is needed to inspect new air pollution sources for the newly adopted dust control and parking garage regulations.

Complaint Response

AMS responds to complaints from the public regarding various nuisance and air pollution issues, such as noise, vibration, odor, smoke, idling vehicles, dust, asbestos, and carbon monoxide. Below is a summary of recent activities:

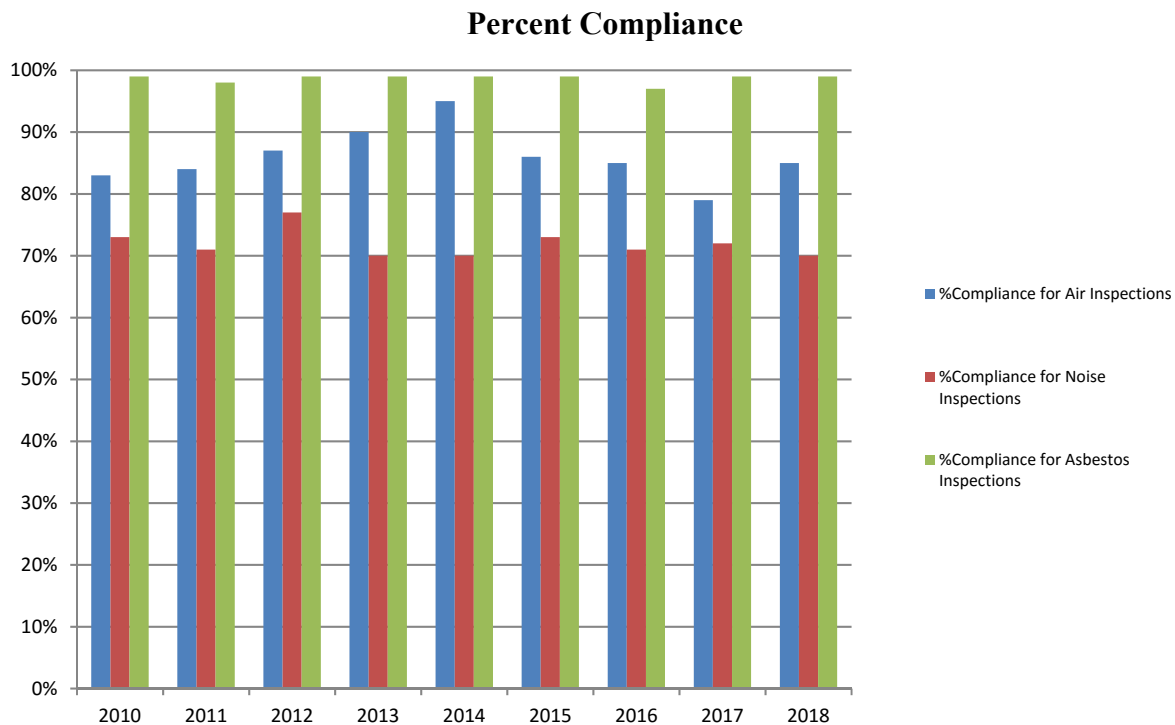


In 2018, there were 89 asbestos complaints, 880 air complaints and 233 noise complaints. As illustrated above, asbestos has tended to stay consistent over time. It is anticipated the total number of asbestos complaints received and serviced will remain consistent on an annual basis. Air and Noise complaints tend to be more variable, and depend on weather and other factors. Complaints are sometimes clustered when there is a significant issue in a particular community in a given year, and may decline once that problem is resolved. The decrease in noise complaints in 2018 was due to new violations being corrected in a timely manner. When violations are unresolved, AMS would receive multiple complaints until the case is closed.

Inspection Activities

AMS is supported by a team of well-trained engineers and inspectors who enforce state, local and federal laws related to air quality and noise. They respond to citizen complaints and conduct periodic inspections of regulated facilities. When necessary, they issue Notices of Violation (NOVs) when regulation or permit deviations are observed.

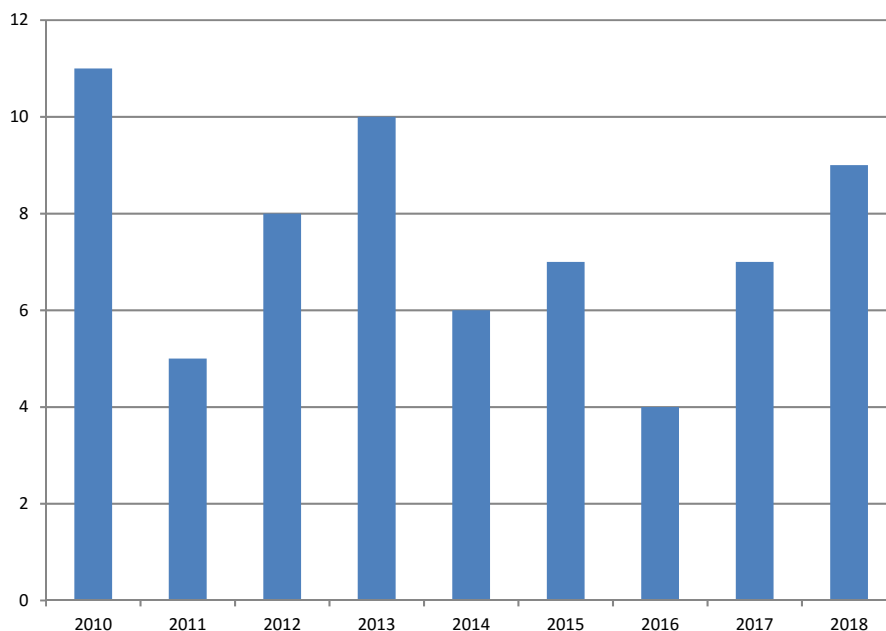
In 2018, there were 2308 air inspections conducted resulting in 343 air violations, and 287 noise inspections conducted resulting in 85 violations. The number of air inspections should increase in 2019 due to new sources needing permits to comply with the new dust control and parking garage regulations. AMS is planning to hire an additional two inspectors to address the increased workload. The compliance rate in 2018 for air inspections was 85%, which is the average over the past nine years. The noise compliance rate continues to be consistently around this year's rate of 70% even with the amount of noise investigations decreasing. As for noise inspections, the compliance rate is generally lower than air inspections due to the longer time frame to resolve violations, which often involves installing and/or repairing equipment to come into compliance with the restrictions of the Code.



AMS issued 45 asbestos violations as a result of inspecting 2,123 total projects in 2018. The compliance rate is 98.6%, which is relatively consistent with the previous year in Philadelphia. The decrease in the number of asbestos violations issued from 2017 to 2018 is a direct result of a

focused effort by the asbestos inspectors to inspect properly notified asbestos projects routinely and often in order to bring increased awareness of project vigilance by AMS Asbestos Inspectors. The Asbestos Unit is now fully staffed and it is anticipated that the total number of asbestos violations resulting from inspections will show an increase for CY 2019 as a direct result of staff increase.

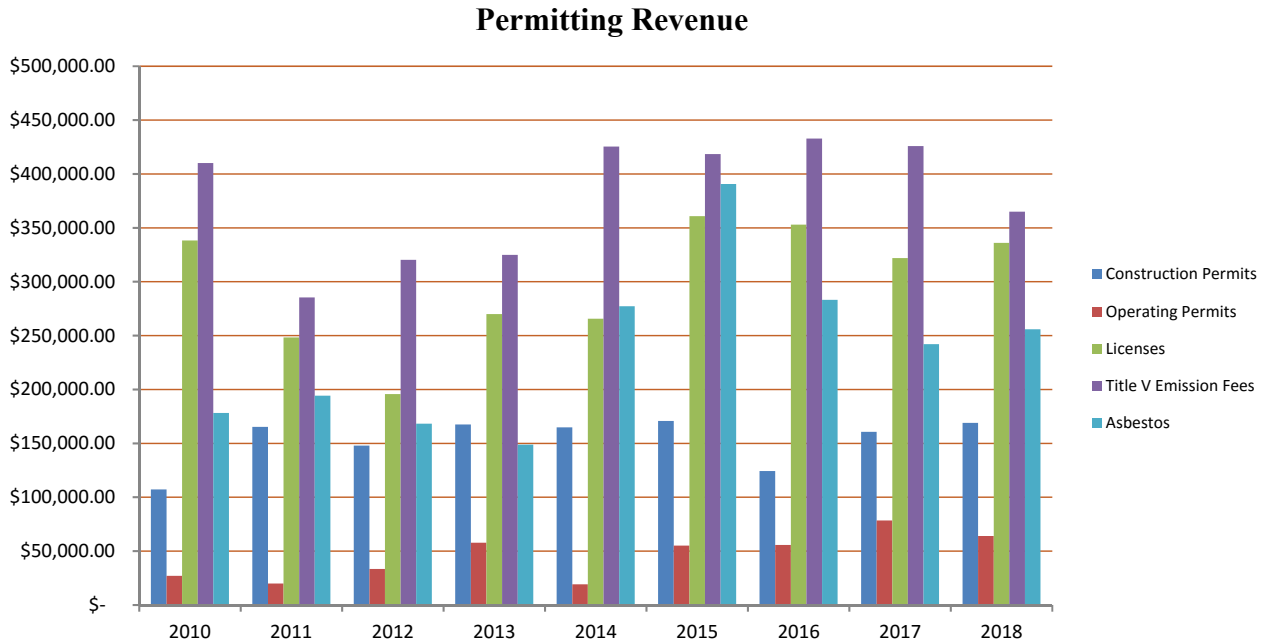
Title V Facilities with Emissions Related Violations



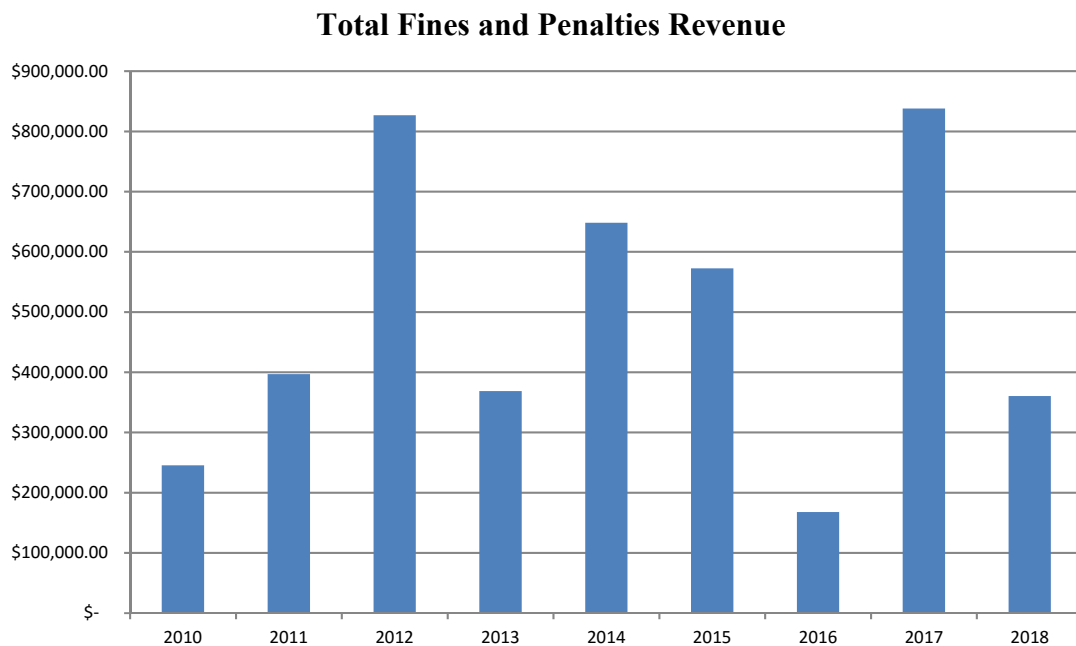
A Title V facility is a major source of pollution that is required to have air quality permits to operate under Title V of the 1990 Federal Clean Air Act Amendments. In 2018, AMS issued emission-related violations to nine Title V facilities. The variation from year to year is slight, which is due to a decrease in major emitting facilities and an increase in the focus of companies on demonstrating compliance with regulations.

Revenue Generation

The chart below shows the fees received from construction permits (application fees), operating permits (application and annual administration fees), licenses including asbestos (application and renewal fees, \$107,200.00), and Title V permits (emission fees) in the years 2010-2018. The change in construction permit fees is due to a variety of factors, including the economy and the new regulatory requirements for perchloroethylene dry cleaners and reciprocating engine generators. AMS does not expect a significant change in construction permit fees for 2018.



Below is the sum of fines and penalties revenue collected from 2010 to 2018. In 2018, AMS received \$360,320. The penalties were significantly lower in 2018 due to two large settlements over \$480,000 from Title V facilities in 2017. The enforcement of violations are currently distributed amongst AMS personnel but AMS is planning on consolidating it to one position in the upcoming year.



Amendments to Dust Control Regulation

AMS amended Air Management Regulation I and II, to include a section for control of dust generated from construction and demolition activities (C&D) and earthworks activities were approved by the Air Pollution Control Board on October 25, 2018 and will go into effect on February 4, 2019. To better protect Philadelphians from silica dust and other particulate matter emanating from C&D activities including earthworks, the amendments updated notification, work practice standards and permitting requirements.

Conclusion

AMS has implemented its agency-wide Strategic Plan to review its operations for improving air quality and reducing the impact of nuisances while promoting sustainability and job creation as well as outreach and education on air quality issues. It has been focused on finding ways to allow permit and license applicants to submit forms and pay fees online, investigating ways to improve staff training and exploring ways to connect more closely to the public as well as partners such as universities and nonprofits. In addition, AMS has been working to educate the public about the importance of air quality. These are the major AMS accomplishments in 2018:

- The Asbestos, Source Registration, and Facilities Compliances & Enforcement sections continue to utilize a cloud based permit, license, and enforcement system. The system allows the online submission of asbestos notifications, license applications, and fees. It also allowed inspectors to use tablet computers in the field to document their inspections.
- Amended the Philadelphia Code and Air Management Regulation II Section IX to control dusts from earthworks, construction and demolition to suppress dusts before they became airborne. This regulation is effective from Feb 4, 2019.
- AMS completed the Philadelphia Air Quality Survey analysis, identifying all light poles where monitors are installed and operated, AMS already completed measuring air pollutants for pilot program (May-Aug 2018) and Fall season (Sep-Nov 2019).
- Finalized the two years monitoring plan for a continuous open-path air toxics monitor in South Philadelphia and prepare and submit the final report to EPA.
- Finalized fee increase that has been approved by City Council and signed by the Mayor on Jan 4, 2019 effective immediately (Jan 4, 2019). The increase will generate around \$460,000.

- Sent letters to a minimum of 200 garages; planned to issue licenses and inspect a minimum of 200 garages that causes the emission of carbon monoxide, nitrogen dioxide, and other toxics to protect the public health.
- Issued Temporary Installation Permits (IPs) for minor sources and started analysis for emission controls for major sources (greater or equal to 10 tons of Methyl Bromide/year) of fumigation at the port.

AMS will continue to gear its work in the future providing outreach to affected populations that may experience adverse human health effects from air emissions. This will include building relationships with the University of Pennsylvania, Drexel University, and community groups.