Air Management Services
Annual Report for Calendar Year 2017

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Director

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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 units' goals, a summary of activities and revenues collected, and our progress in calendar year 2016 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 2021.[1]

Philadelphia region attains the annual and 24-hour $PM_{2.5}$ NAAQS

On April 21, 2016, EPA finalized a rule demonstrating the Philadelphia region attained the 1997 annual and 2006 24-hour PM2.5 NAAQS.

Other agency goals include:

- The City should minimize risk to all residents from air toxics to less than 10 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*.

[1] Assumes EPA finalizes designations in 2018. If not, the attainment date is 3 years after the effective nonattainment designation

- 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, 2018
- Start PAQS in March 2018 and collect nine months of data by December 31, 2018
- Work with Other stakeholders and PA DEP on VW NOx reductions calculations and cost effective analysis for the city of Philadelphia and submit to PA DEP by April, 2018
- Propose to PES a voluntary reduction of GHG from each source.
- Reduce the backlog of unpaid fines by 50% and issue operating licenses for 150 facilities by Dec 31, 2018.

Village Green

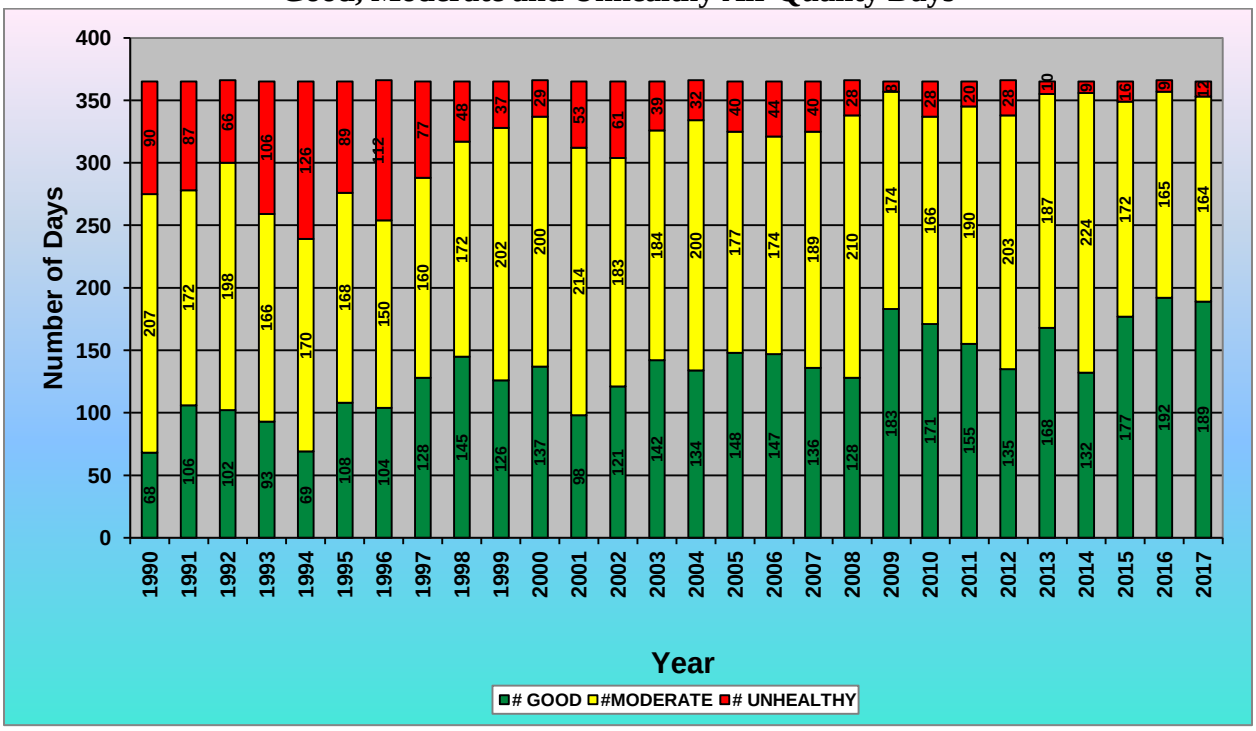
Village Green is an initiative funded by the Environmental Protection Agency to help test a new type of solar- and wind-powered, using low-cost modular monitoring equipment. This monitor allows the public to access real-time air quality data collected by the monitoring device housed under the bench-style 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

- Finalize the Nail Salon Regulation (Reg V or Reg VI, and Title 6) by Dec 31, 2018
- 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, 2018
- Submit background document and propose update of regulation for mobile sources (diesel buses, diesel trucks in the center city) to APCB by Dec 31, 2018

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 Days[2]



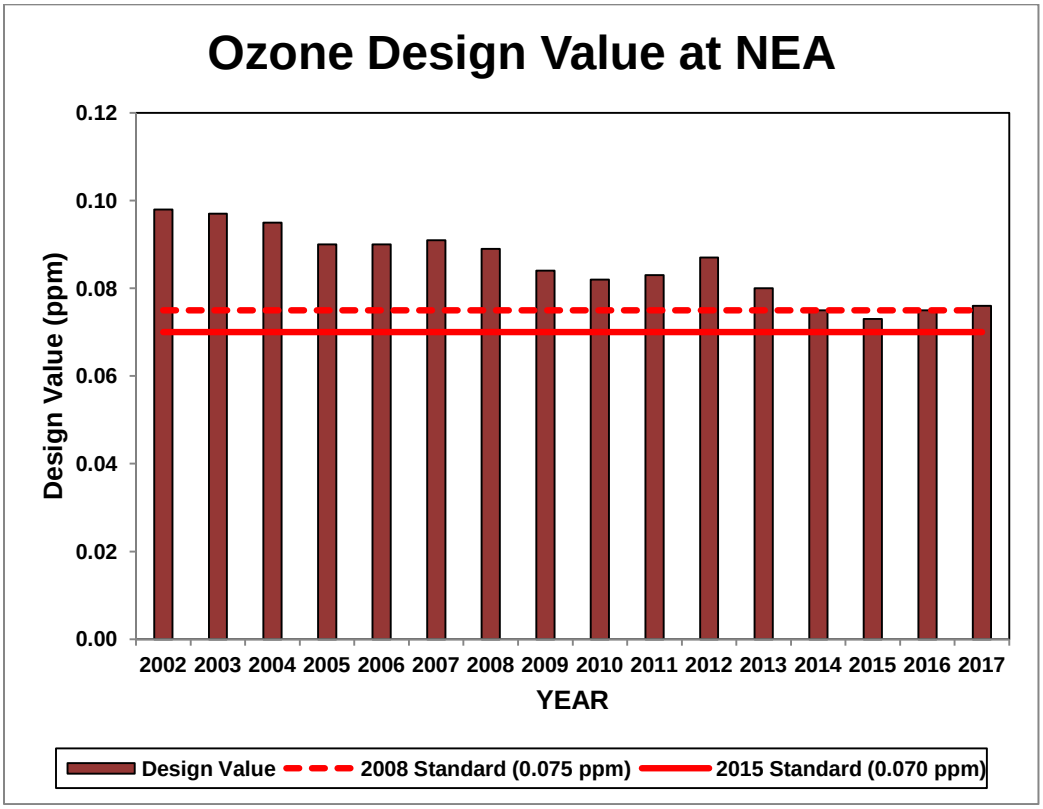
Air quality in Philadelphia has been steadily improving even for ozone and fine particulates – the region is in nonattainment only for ozone. Philadelphia is now designated as being in attainment

[2] Data from 2017 Q4 were taken from AirVision and NOT AQS.

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 PM2.5.

For 2017, Philadelphia experienced twelve unhealthy AQI days, all from ozone. For 2018, 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. AMS expects the number of unhealthy days from $PM_{2.5}$ to decrease due to regulations that will reduce $PM_{2.5}$.

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.



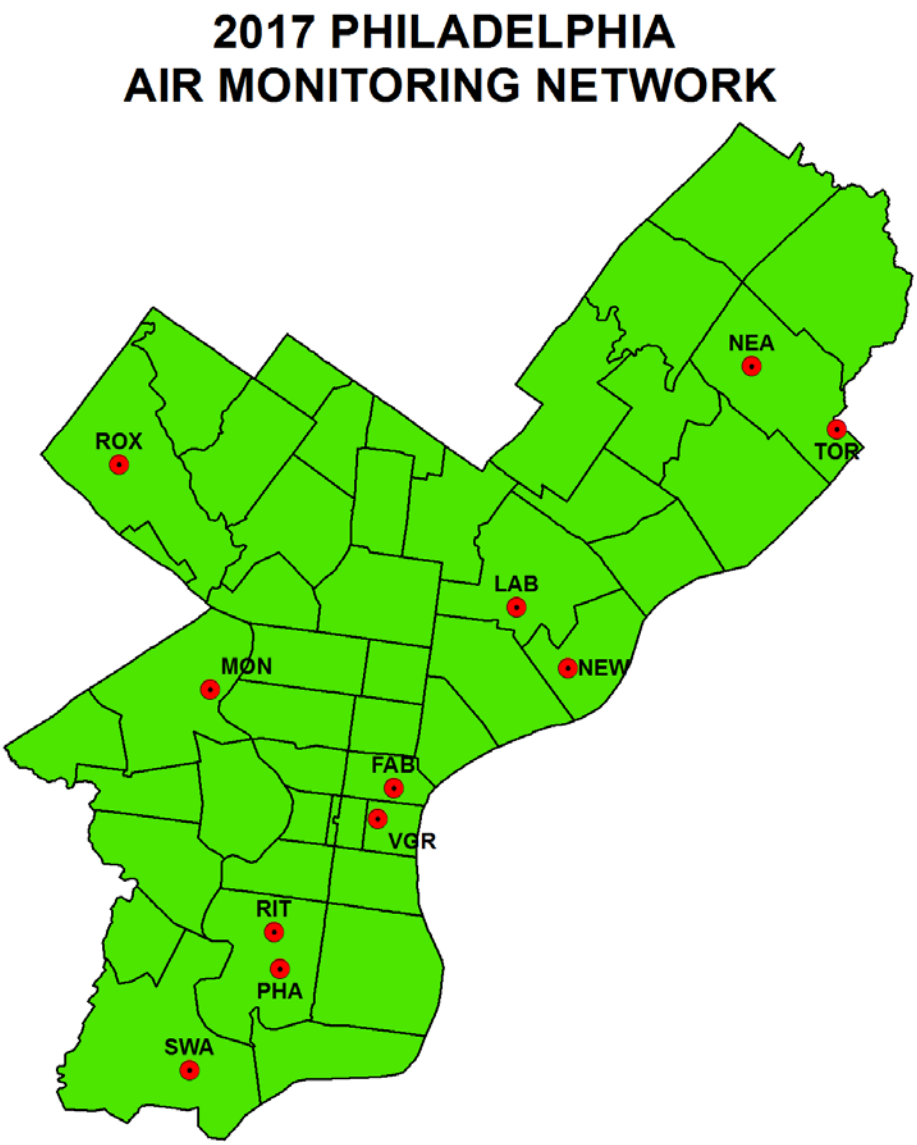
Monitoring Programs

In 2017, 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 (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and particulate matter (PM_{10} 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, 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:

Two Near-Road Monitors in Philadelphia

To study roadway emissions, AMS has two near-road monitors, one along I-76, at Office of Fleet Management Shop 282 located at I-76 & Montgomery Drive (MON), began in July 2015, and one along I-95, at the Torresdale Train Station, began in January 2014. Real time data can be found at: http://www.phila.gov/aqi/realtime.asp

- 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.



In 2017, the number of criteria-related pollutant monitors in operation was around 20 monitors. 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 2017/2018 Air Monitoring Network Plan went to public notice on May 5, 2017, allowing 30 days for public comment. The 2017-2018 Air Monitoring Network Plan for Philadelphia is available here: http://www.phila.gov/health/pdfs/2017-18_AMNP_FINAL.pdf

EPA's Regional Technical Systems Audit (TSA) to evaluate the air monitoring program at AMS occurred September 26-27, 2017. The TSA includes on-site interviews with key program personnel, evaluations of ambient air monitoring sites operated by the agency, and a review of quality assurance and data processing procedures.

AMS Lab staff attended the Mid-Atlantic Regional Air Management Association Monitoring Committee Workshop in Wayne, PA, from November 1-3, 2017. Updates were provided from EPA Region 3 and the Office of Air Quality Planning and Standards (OAQPS). Presentations took place on Enhanced Ozone Monitoring, QA Requirements, PM2.5 FEMs, Exceptional Events, Non-Routine Data, and New Generation Products, along with a Roundtable from Monitoring Leads from each member agency.

AMS completed its second year of monitoring with the Village Green Park Bench Air Pollution Monitoring System at 6th and Arch Streets across from the Constitution Center, measuring PM2.5 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.airnow.gov/index.cfm?action=airnow.villagegreen.

AMS continues to provide Lab tours and outreach to schools and the community.

AMS is planning a new project to install integrated samplers from New York City (Ogawa technology for gaseous pollutants and Harvard Impactors for PM2.5) around Philadelphia. Look for more on this project in 2018.

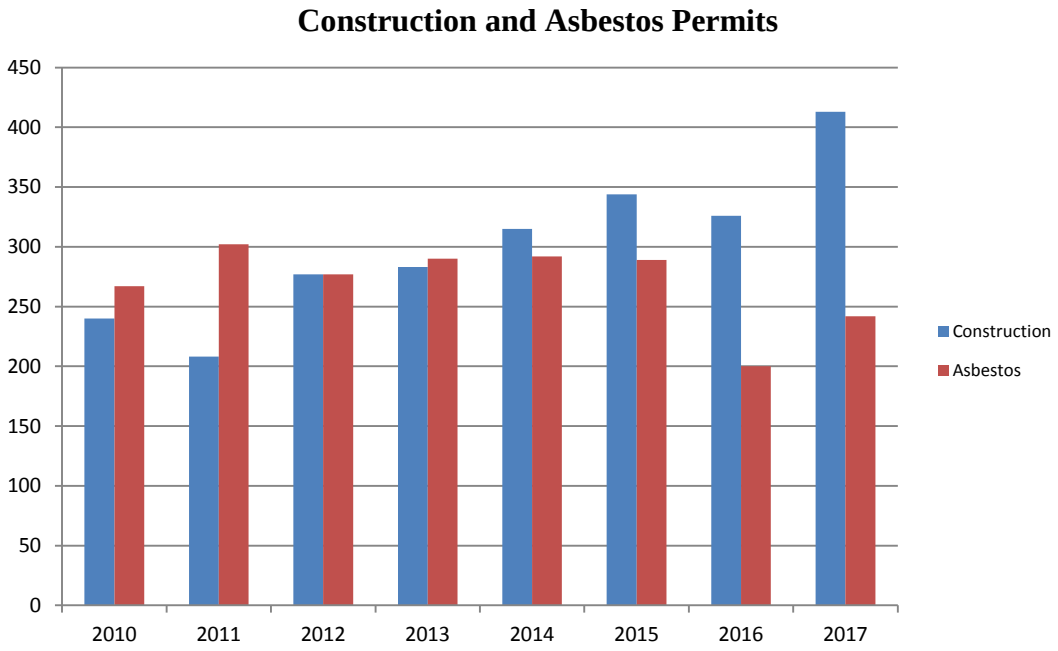
South Philadelphia Air Toxics Outreach and Open Path Monitor

In 2014, AMS installed a research monitor in South Philadelphia called an Open Path Monitor which provides real-time data on air toxics and other pollutants. AMS continued to collaborate with the EPA and the manufacturer to update the equipment, better understand the data, and reach out to community groups to help educate those living in neighborhoods near major industrial sources. On June 18, 2016, AMS attended the GAMP School Outreach Event, an outdoor community movie night and a showcase of student-produced Public Service Announcements (PSAs) regarding the health effects of criteria air pollutants in their community. Judges from EPA Region III and AMS awarded a prize to the student group with the most effective and creative PSA. The EPA, AMS, and Perelman School of Medicine at UPenn fielded community questions and concerns regarding air pollution and environmental health risks.

Permitting Activities

In 2017, AMS issued 413 construction permits and approximately 242 asbestos permits. The increase in construction permits from previous years is partly due to a new dust control permit requirement for some demolitions under a new regulation. AMS expects a small increase in the number of construction permits issued in 2016 due to permits required by new regulations like the new dust control permit. AMS responds to over 95% of construction permit application submissions within a 60-day timeframe and 95% of all major asbestos projects have been issued within the 10-day wait period timeframe. The percentage of major asbestos permits issued within the 10-day wait period should remain constant or show an increase as a result of the new online system when changing from paper to electronic submittal.

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 2017.



Enforcement Activities

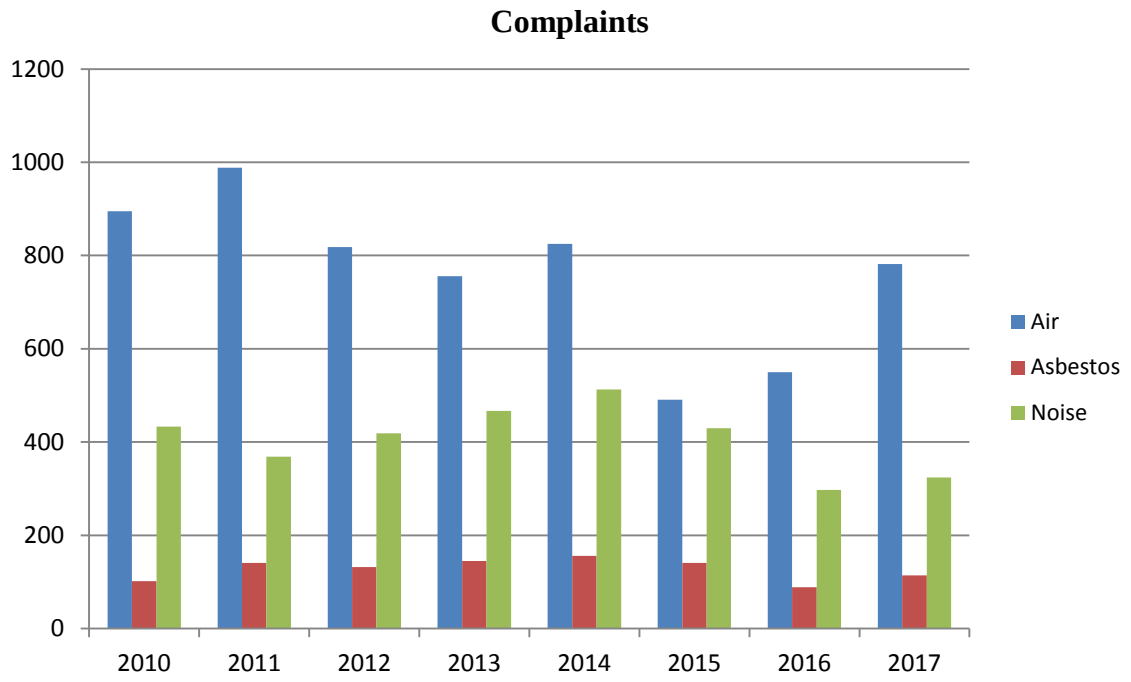
AMS handles citizen complaints, periodic inspections of regulated facilities, and enforces state, local and federal laws related to air quality. In 2017, AMS filled the enforcement position that was vacant the previous year. Violations issued in 2017 are being resolved within our goal of 180 days from the date of issuance. Violations issued prior to 2017 are being addressed periodically to clear up the backlog left from the vacancy. In 2018, AMS looks to add an

additional enforcement position to keep current on settling violations within our enforcement timeline and avoid the creation of an enforcement backlog due to a vacancy in the position.

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 will continue to make changes to the system to tailor it to its specific needs.

In 2018, 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 which regulations are being drafted for or have been recently adopted by the agency.

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:

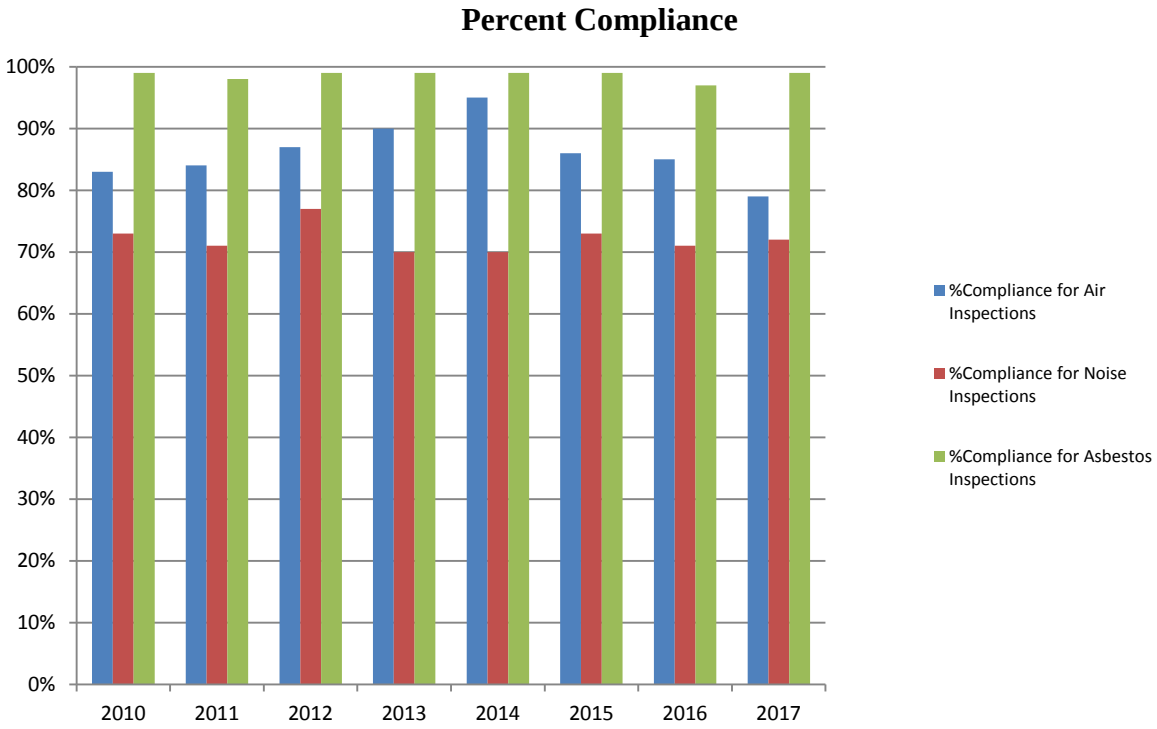


In 2017, there were 114 asbestos complaints, 782 air complaints and 324 noise complaints. As illustrated above, asbestos has tended to stay consistent over time. It is anticipated the total number of asbestos complaints received and serviced will remain consistent on an annual basis. Air and Noise complaints 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 increase in air complaints in 2017 was due to increased community awareness of fugitive dust issues from construction sites and numerous odor complaints from an ongoing enforcement case.

Inspection Activities:

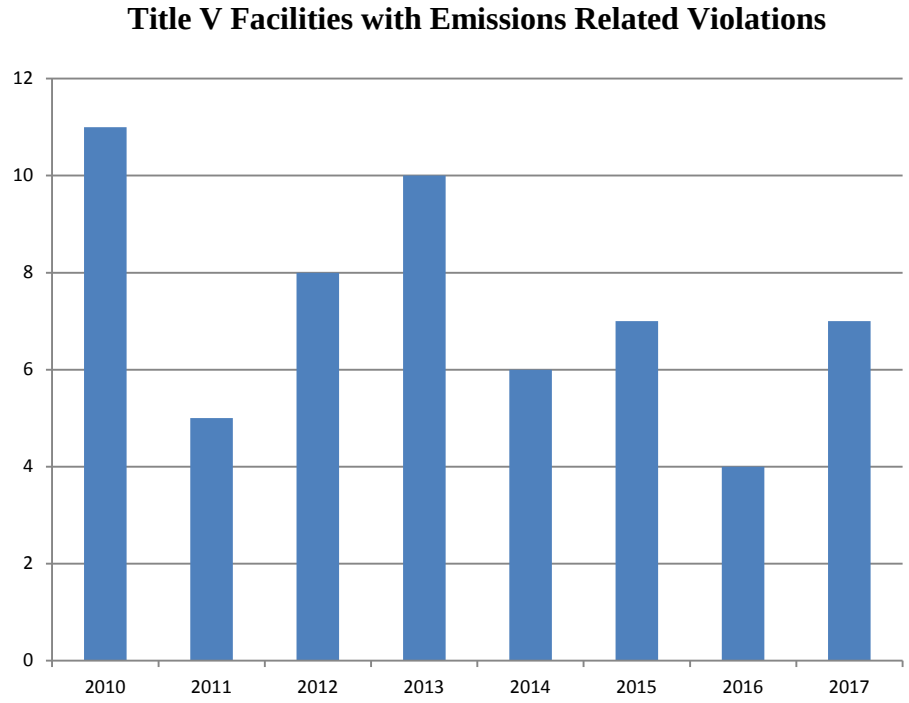
AMS is supported by a team of well-trained engineers and inspectors who enforce state, local and federal laws related to air quality and noise. They respond to citizen complaints and conduct periodic inspections of regulated facilities. When necessary, they issue Notices of Violation (NOVs) when regulation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

In 2017, there were 2135 air inspections conducted resulting in 443 air violations, and 400 noise inspections conducted resulting in 114 violations. The reported number of air inspections have significantly increased from 2016 due to the addition of three new inspectors which enabled AMS to inspect all air pollution licenses in 2017. The compliance rate in 2017 for air inspections decreased from last year's rate of 85% due to an enforcement case with ongoing violations. The noise compliance rate continues to be consistently around this year's rate of 71%. 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 69 asbestos violations as a result of inspecting 2,370 total projects in 2017. The compliance rate is 98.6%, which is relatively consistent with the previous year in Philadelphia. It is anticipated that the total number of asbestos violations resulting from inspections will show a dramatic increase for CY 2016 as a direct result of staff increase.

Title V facilities with emission-related violations between 2012 and 2017 are as follows:



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 2017, AMS issued emission-related violations to seven 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.

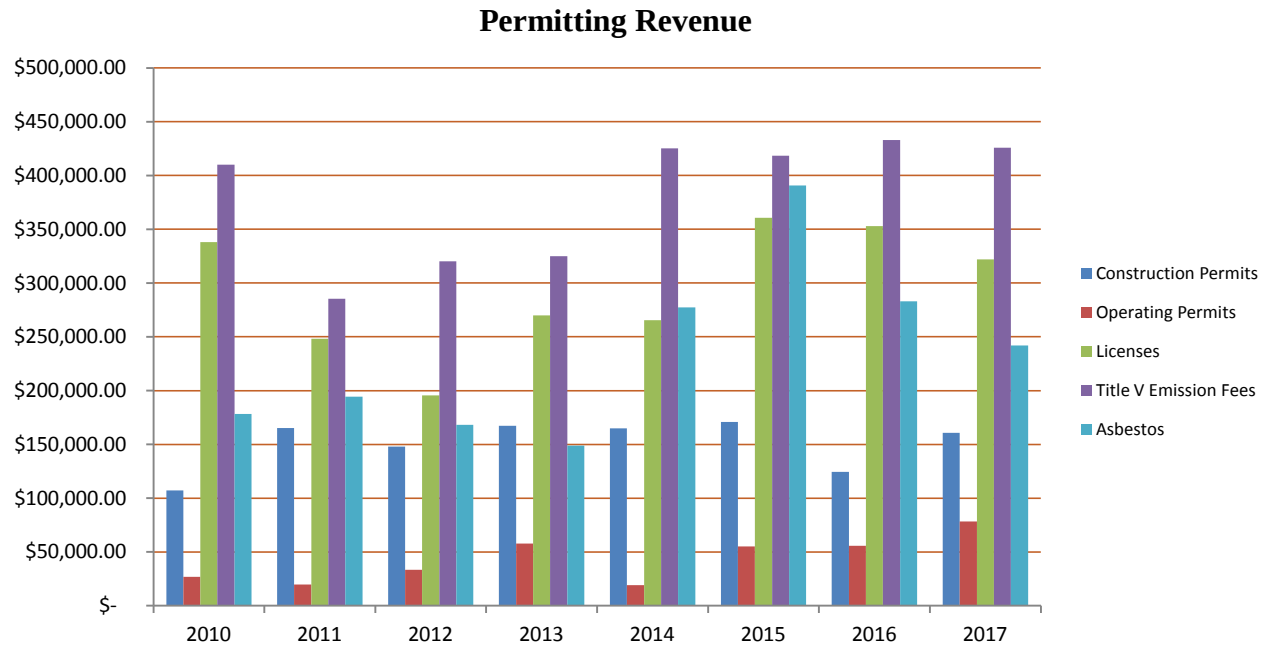
Budget and Revenue

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, $111,790.00), and Title V permits (emission fees) in the years 2010-2017. 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.

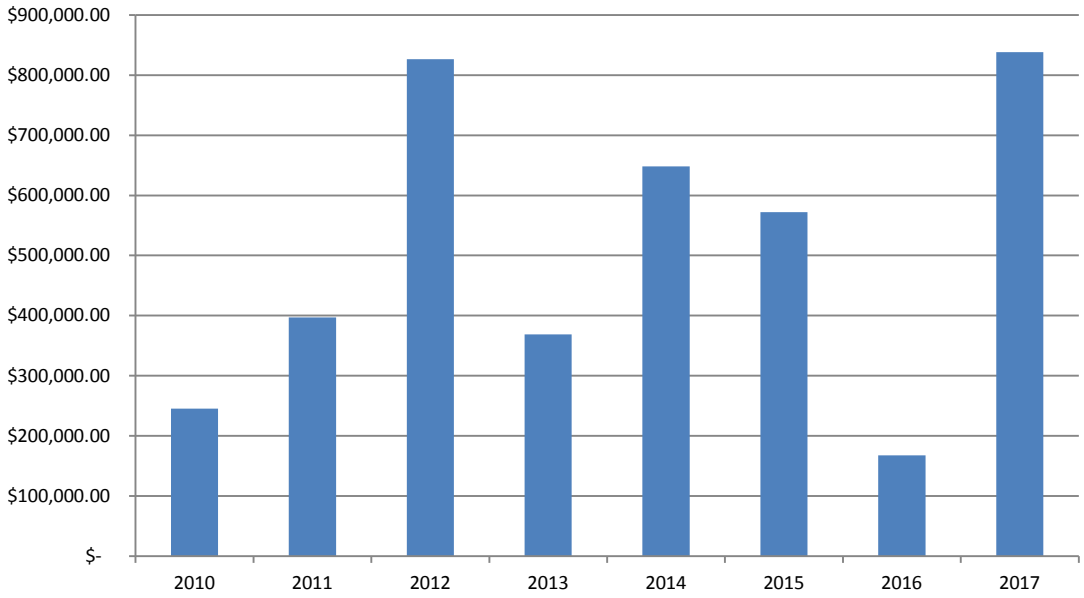
There was a large increase in license fees received in 2017 due to an influx of back fees and penalties collected from facilities that had overdue licenses. AMS does not expect a significant change in license fees received in 2018.

License fees have increased in recent years partly due to more facilities paying past overdue fees. Title V emission fees have generally declined over the years primarily due to stringent emission controls, conversion to natural gas, and the shutdown of some units. Title V emission fees increased in 2014 due to an increase in the dollar per ton fee in Pennsylvania regulations from $57.50 to $85.00. Title V emission fees have remained fairly steady since 2014. AMS does not expect major changes in emission fees in 2018.



Below is the sum of fines and penalties revenue collected from 2010 to 2017. In 2017, AMS received $837,940. The penalties have significantly increased due to filling the enforcement position and resolving outstanding violations from previous years. Two large settlements over $100,000 from Title V facilities also contributed to the increase in penalties. AMS is planning on adding an additional enforcement position in the upcoming year.

Total Fines and Penalties Revenue



New 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). To better protect Philadelphians from silica dust and other particulate matter emanating from C&D activities, the amendment provides work practice standards and permitting requirements. AMS is working with the Philadelphia Department of License and Inspections, the Building Owners and Managers Association Philadelphia, and the Center of Construction Research and Planning.

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 2017:

- 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 construction and demolition to suppress dusts before they became airborne.

- AMS completed the Philadelphia Air Quality Survey analysis, identifying all light poles where monitors are installed and operated, installed some of the plates on the light poles, finalize the contract with Zev and Queens college to purchase equipment and conduct land use regression analysis (LUR).

- 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

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.