Air Management Services
Annual Report for Calendar Year 2013

Thomas Huynh
Director

April 11, 2014

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 2013 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:

- The City must achieve the 2008 standard of 0.075 parts per million of ozone over eight hours by 2015.
- Philadelphia must meet the 2006 24-hour standard of 35 micrograms/cubic meter of particulate matter with a mean aerodynamic diameter of less than 2.5 microns ($PM_{2.5}$) by 2015.
- Philadelphia must also meet the 2012 annual standard of 12.0 micrograms per cubic meter of $PM_{2.5}$ by 2020.

Other agency goals include:

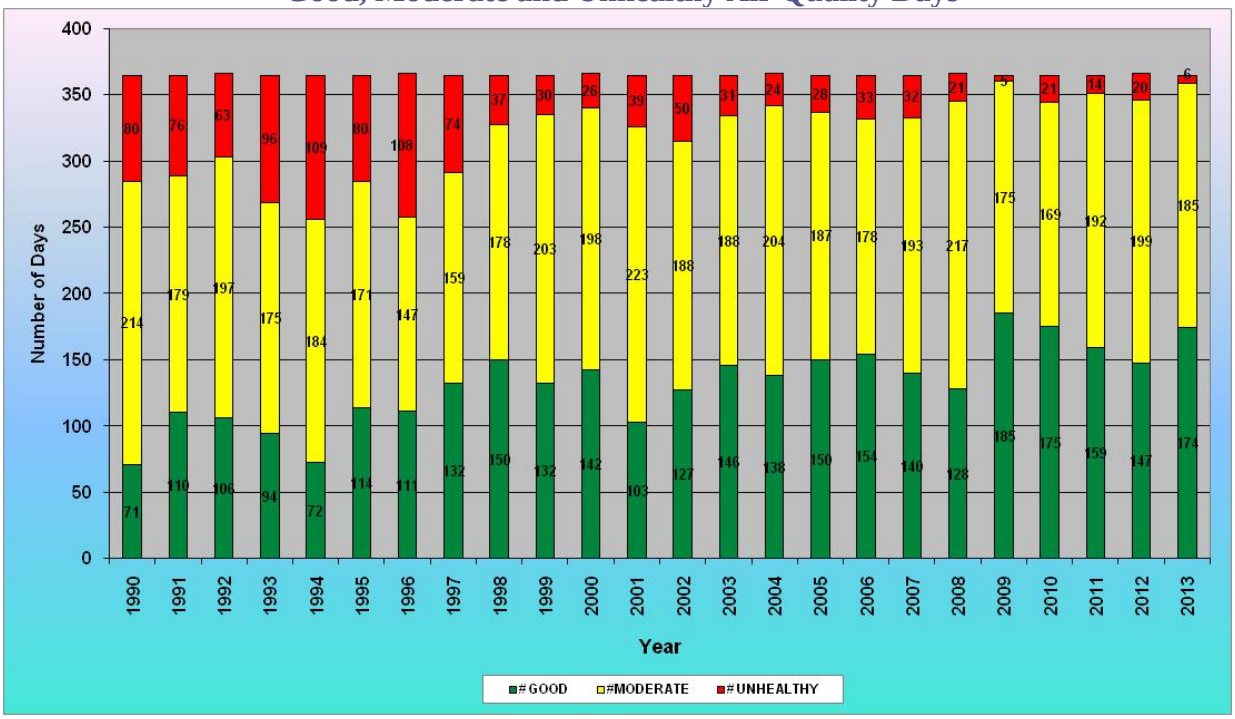
- The City should minimize risk to all residents from air toxics to less than 1 in a million risk of cancer (above what would normally be seen in the general population).
- AMS will also work with EPA and other stakeholders to seek alternative funding sources for the air program from the transportation 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 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 permitting forms and permitting 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.

Air Quality Index

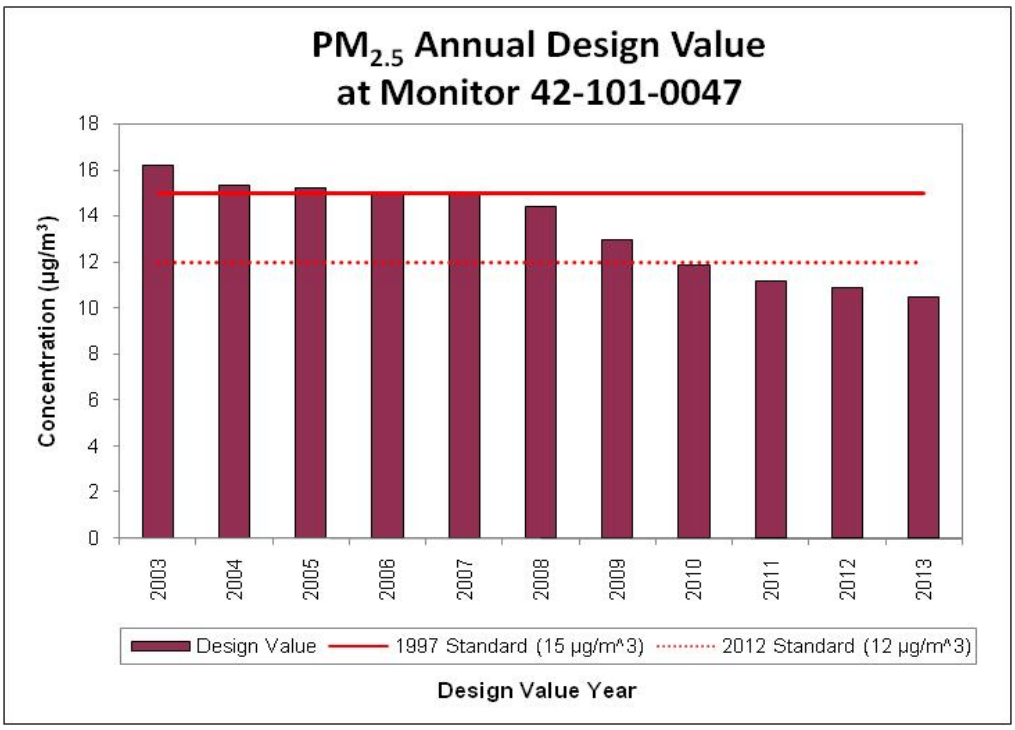
Air quality in Philadelphia has dramatically improved over the past few decades, as evidenced by the relatively fewer number of unhealthy air quality days (adjusted to the current standard) during the past five years, as shown in the graphic below. It is important to note that air pollution, especially ozone which forms in the presence of heat and sunlight, is extremely weather dependent and varies significantly from year to year depending on meteorological trends. Because of an influx of development expected in the coming decades as well as the ongoing effects of climate change, it is anticipated that Philadelphia will have more hot days in the future which will contribute to ozone episodes during the warmer months of the year. 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

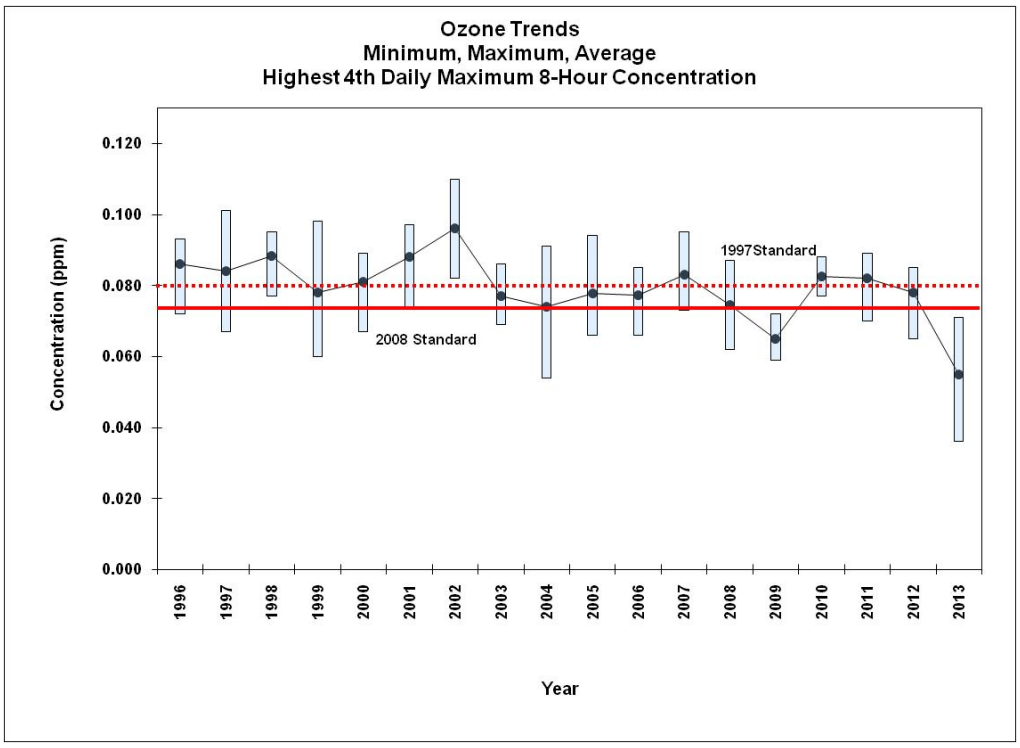


As evidenced from the following graphs, air quality in Philadelphia has been steadily improving even for ozone and fine particulates—two pollutants for which the region is in nonattainment. Notably, particulate matter concentrations have been reduced citywide, and a former hot spot near Castor and Delaware Avenues has been resolved. Currently, Philadelphia is still officially designated as being in nonattainment for fine particulate matter, or $PM_{2.5}$ (particles less than 2.5 micrometers in diameter). As demonstrated below, fine particulate matter pollution has been declining over time and at present we expect that the region will meet our attainment goals for this pollutant in the future. EPA changed the annual standard for $PM_{2.5}$ from 15 micrograms per cubic meter to 12 micrograms per cubic meter in 2012 and altered the 24-hour standard from 65 micrograms per cubic meter to 35 micrograms per cubic meter in 2006. Philadelphia is in the process of being redesignated as in attainment with the old annual standard, and expects to eventually be redesignated as in attainment with the new annual standard.

For 2013, Philadelphia experienced six unhealthy AQI days, one from ozone and five from $PM_{2.5}$. Similar to 2009, 2013 had fewer hot days (days > 90°F) resulting in the low number of unhealthy days from ozone. For 2014 and future years, AMS expects the number of unhealthy days from ozone and $PM_{2.5}$ to slowly trend downward due to regulations that will reduce ozone precursors and $PM_{2.5}$.



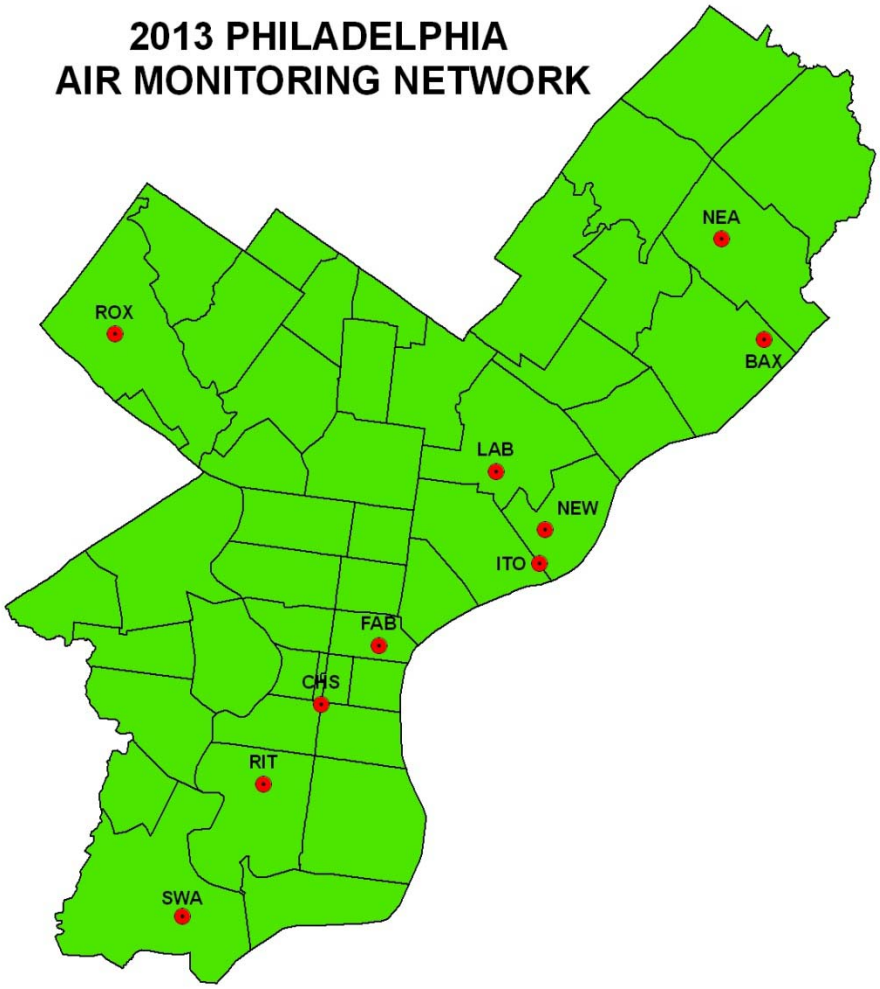
Philadelphia is currently in nonattainment for ozone for meeting the new standard set in 2008. Ozone is a pollutant that is not emitted directly by combustion sources, but forms in the atmosphere in the presence of heat and sunlight as part of a chemical reaction between other pollutants—specifically, 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

AMS operates a network of ten air monitoring sites located throughout the City that measure criteria pollutants: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (PM_{10} and $PM_{2.5}$), and lead (Pb). Five of the sites also measure toxics, such as 1,3-butadiene, benzene and carbon tetrachloride. Many of the measurements are made in "real time", meaning that the measurements show pollution levels as they occur, instead of after the fact. The following map shows the location of air monitors and the pollutants 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.



In 2013, the number of criteria-related pollutant monitors in operation ranged from 35-39 monitors. AMS strives to achieve a 75% or greater data quality capture rate each quarter for each

criteria pollutant monitor, per federal requirements, and our goals were exceeded in 2011, 2012, and 2013. With the increased demands on the monitoring network due to new regulatory requirements, meeting this threshold poses a significant challenge to the agency. In addition, staff turnover and budgetary constraints further complicate this task.

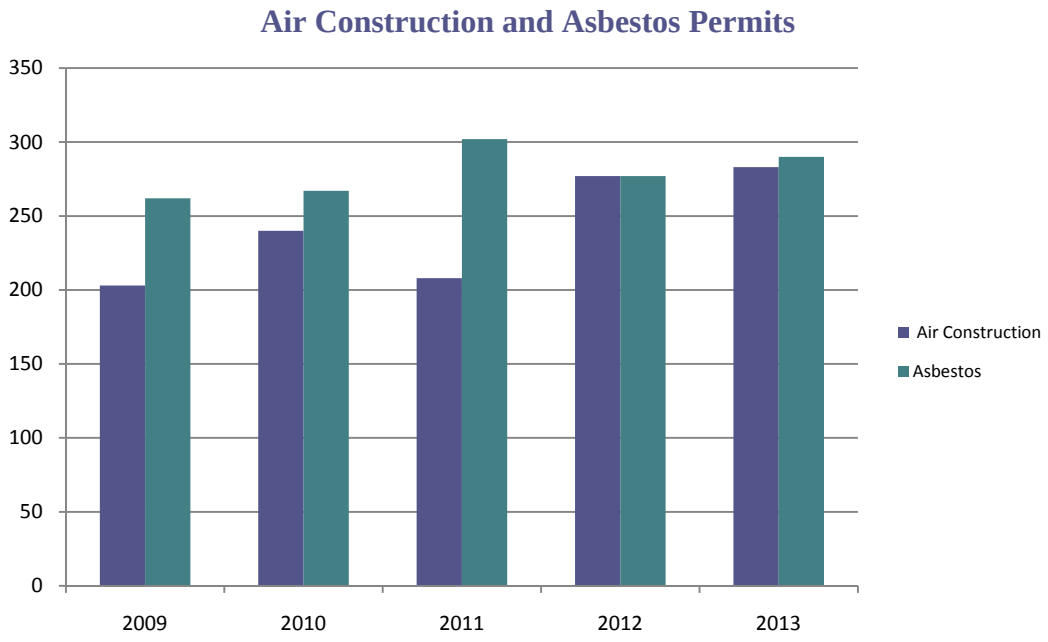
In 2013, AMS was forced to relocate the National Core multi-pollutant station (NCore monitor), formerly at the Baxter Water Treatment Plant, to Northeast Waste at 3000 Lewis Street (NEW) due to construction of a clear well basin at the site by the Philadelphia Water Department. The NCore monitors $PM_{2.5}$, speciated $PM_{2.5}$, $PM_{10-2.5}$, O_3, SO_2, CO, nitrogen oxides ($NO/NO_2/NO_y$), Pb, and basic meteorology. In the coming year:

- AMS is expected to run a new Near-Road Monitor at the Torresdale Train Station (TOR) to measure NO_2, CO, and $PM_{2.5}$ from I-95 commuter traffic, due to an increase in mobile source emissions in urban areas. The EPA has promulgated new monitoring requirements for the NO_2 monitoring network in support of a new 1-hour NO_2 National Ambient Air Quality Standard.
- AMS will run Open Path Monitors for air toxics continuously in the parking lot of the Philadelphia Housing Authority facility at 3100 Penrose Ferry Rd near the Philadelphia Energy Solution refinery to measure acetaldehyde, benzene, 1,3-butadiene, ethylbenzene, formaldehyde, hydrogen fluoride, m-xylene, nitrogen oxide, o-xylene, p-xylene, styrene, sulfur dioxide, toluene, and trimethylbenzene. EPA awarded AMS a Community Scale Air Toxics Monitoring Grant to assist AMS in assessing the degree and extent to which air toxics from the Refinery impact neighborhoods in South Philadelphia. Plans include continued work with the University of Pennsylvania and the Girard Academic Music Program (GAMP) School to provide outreach to the South Philadelphia community.
- AMS will shut down the ITO air monitoring site at Castor and Delaware Avenues that measures PM_{10}, TSP, and BaP. Concentrations have significantly been reduced at this former hot spot in the City.

Permitting Activities

In 2013, AMS issued 283 construction permits and 290 asbestos permits. The increase in construction permits in recent years is partly due to the new regulatory requirements for perchloroethylene dry cleaners and reciprocating engine generators in addition to the ongoing economic recovery. AMS does not expect a significant change in the number of construction permits issued in 2014. AMS responds to all air permit application submissions within a 60-day timeframe and 98% of all major asbestos projects have been issued within the 10-day wait period timeframe.

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 in 2009-2013.

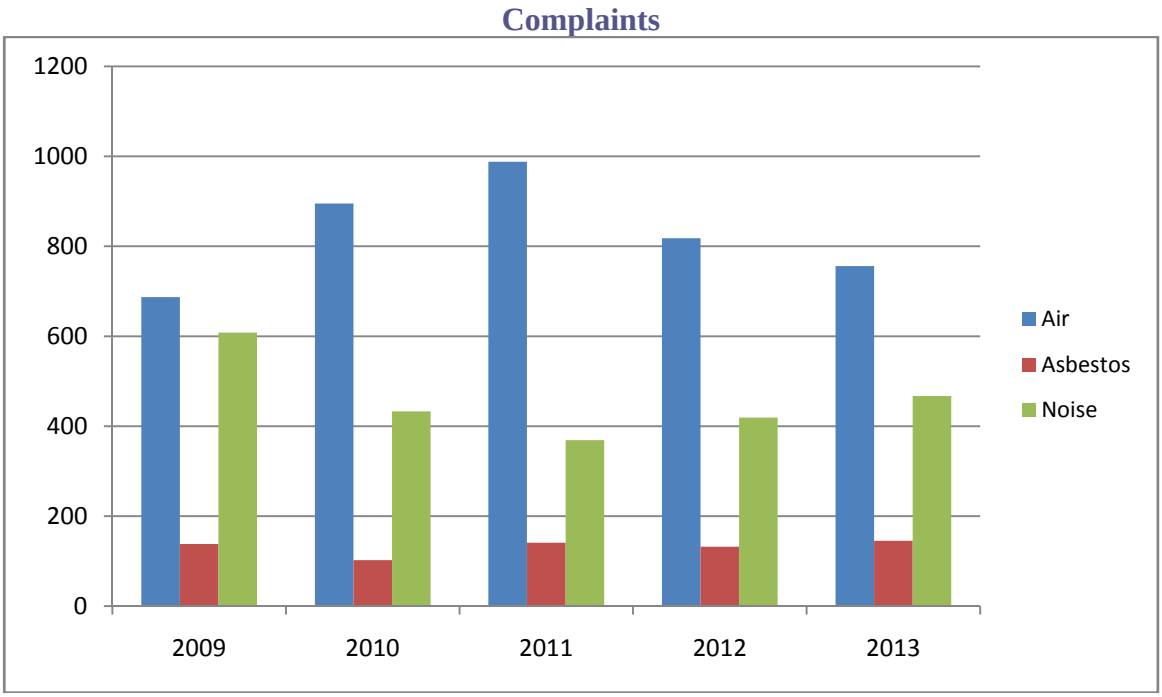


Enforcement Activities

AMS handles citizen complaints, periodic inspections of regulated facilities, and enforces state, local and federal laws related to air quality. In 2013, a large number of unresolved enforcement cases were finally settled by AMS with the help of the Philadelphia Law Department.
AMS entered into consent agreements with two facilities that alone accounted for 66 violations over the last several years. Resolution of these cases required extensive overtime investigations triggered by citizen complaints.

AMS has investigated the possibility of implementing an online cloud-based permit, license, and enforcement system that could be directly accessible by staff in the field. This new technology should increase the speed, efficiency, and accuracy of complaint response and inspection reporting. It would enhance the ability to track and document all compliance and enforcement related activities. New inspection forms would be developed and a new method of monitoring an inspector's work would be created. The new system should streamline the enforcement process and minimize the time required to close a violation.

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:

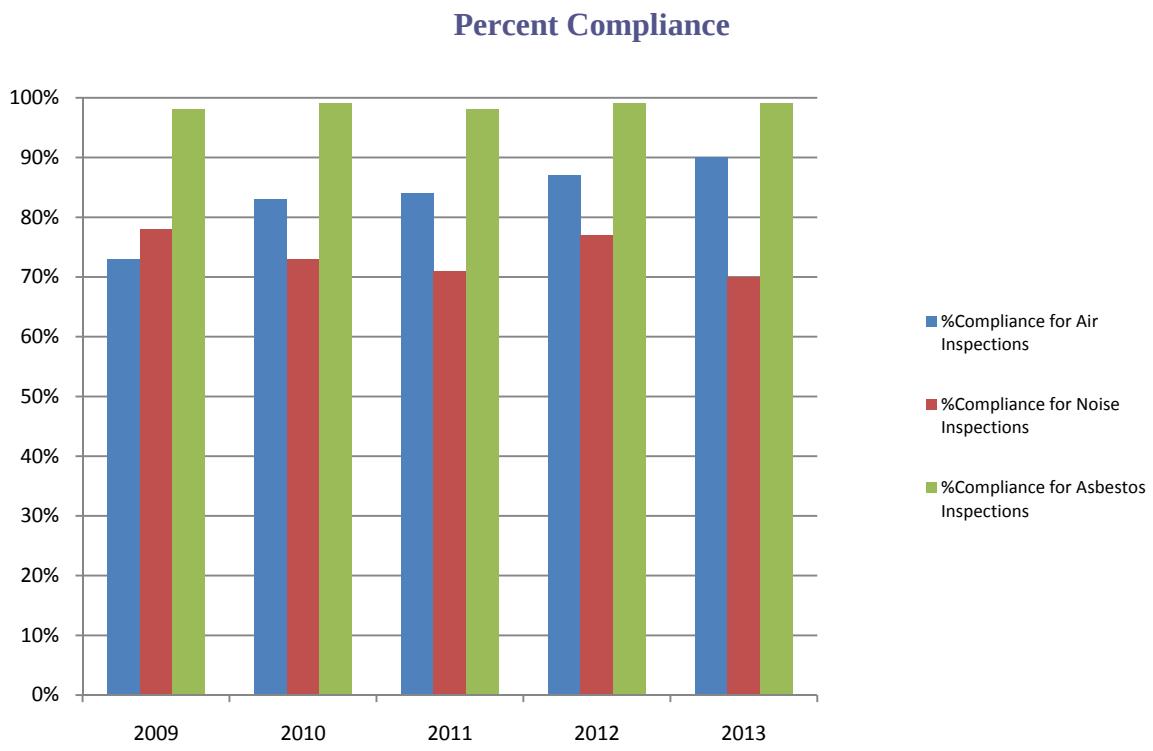


In 2013, there were 145 asbestos complaints, 756 air complaints and 467 noise complaints. As illustrated above, asbestos has tended to stay fairly consistent over time. It is anticipated the total number of asbestos complaints received and serviced will remain consistent on an annual basis. Air and Noise 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.

Inspection Activities:

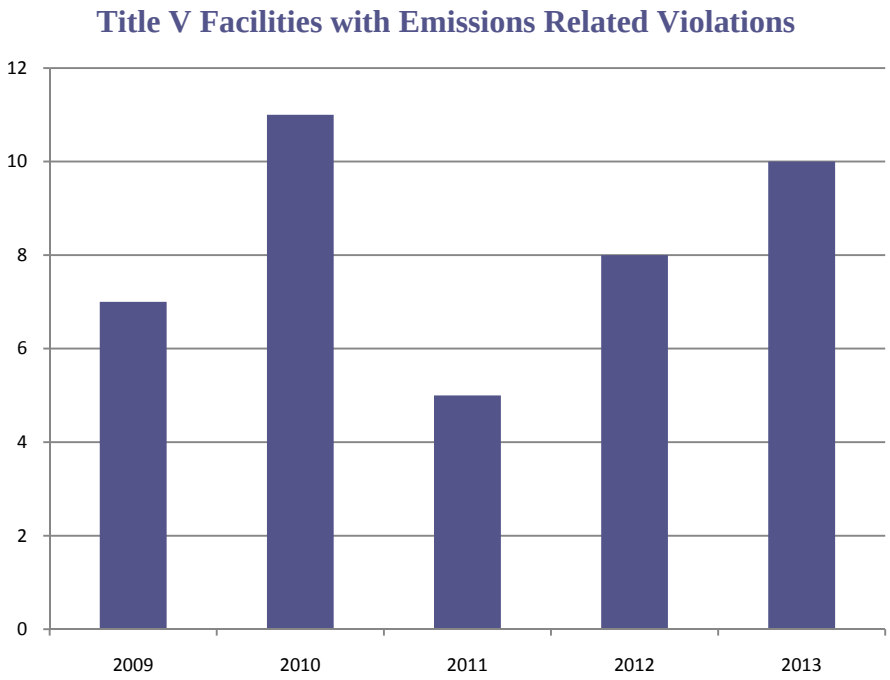
AMS is supported by a team of well trained inspectors who enforce state, local and federal laws related to air quality and noise. They respond to citizen complaints and conduct periodic spot inspections of regulated facilities. When necessary, they issue Notices of Violation (NOVs).

In 2013 there were 723 air inspections conducted resulting in 72 air violations, and 306 noise inspections conducted resulting in 93 violations. The Compliance rate in 2013 for air inspection has continued to improve to 90% from 87% in 2012 while noise compliance has decreased slightly from 77% to 70%. There were somewhat more noise complaints in 2013 due to three cases in which the time needed for resolution was significantly higher than usual. Some of the resolutions could not be corrected in a short time frame and required time to order/install /repair equipment to address the issue. The number of complaints received is usually proprotional to the time need for remediation.



AMS issued 17 asbestos violations as a result of inspecting 1,477 total projects in 2013. The compliance rate is 99% which is consistent with the previous year in Philadelphia. It is anticipated the total number of asbestos violations resulting from inspections will remain consistent on an annual basis.

Title V facilities with emission-related violations between 2009 and 2013 are as follows:



A Title V facility is a major source of pollution that is required to have air quality permits to operate under the Title V of the 1990 Federal Clean Air Act Amendments. In 2013, AMS issued ten emission-related violations to these facilities. The upward trend in these violations over the last three years may be due to an enhanced inspection strategy implemented by the AMS engineering staff.

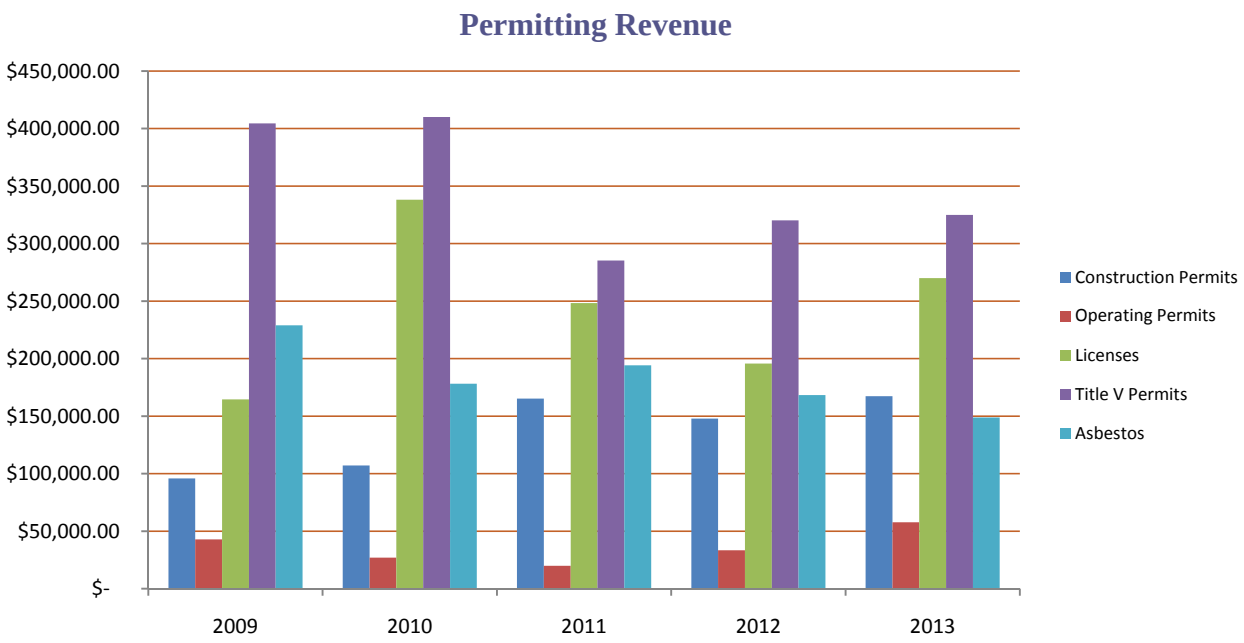
Budget and Revenue

Revenue Generation

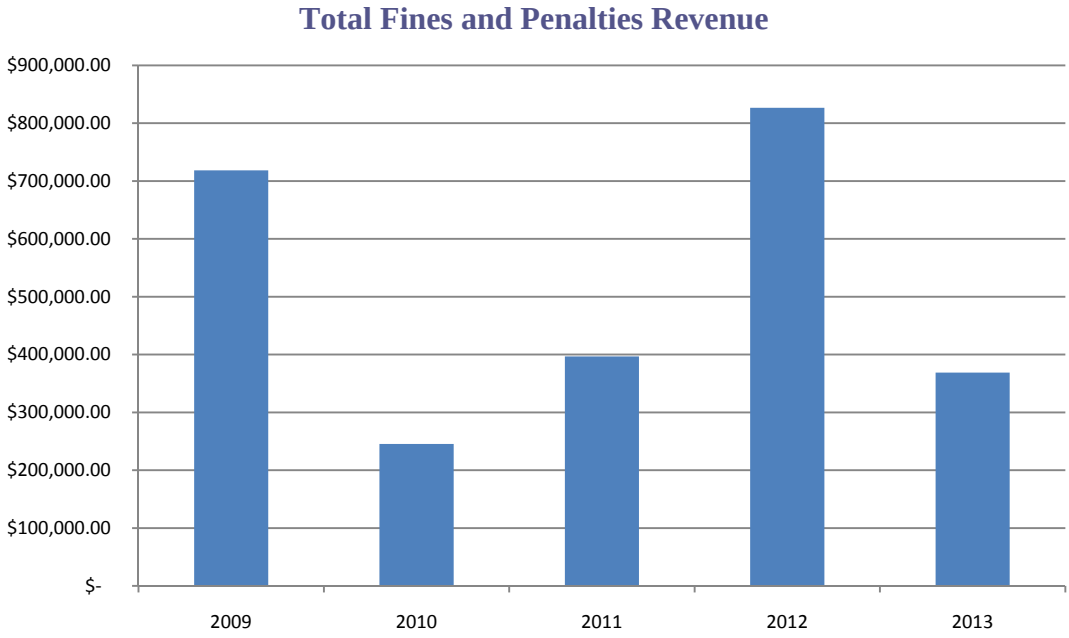
The chart below shows the fees received from construction permits (application fees), operating permits (application and annual administration fees), licenses including asbestos (application and renewal fees), and Title V permits (emission fees) in the years 2009-2013. The change in construction permit 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 received for 2014.

There was a large increase in license fees received in 2010 due to a lot of back fees and penalties collected from facilities that had overdue licenses. AMS does not expect a significant change in license fees received in 2014.

Title V emission fees have reduced over the years primarily due to decreases in emissions from the major facilities as a result of stringent emission controls, conversion to natural gas and shutdown of some units. AMS expects an increase in Title V emission fees received in 2014 due to an increase in the fee per ton of pollutant emitted under Pennsylvania regulations.



Below is the sum of fines and penalties revenue collected over the past five years. In 2013, AMS received $368,688. This is a significant reduction from fines received in 2012 due to large-scale enforcement and resolution at several major facilities who previously were issued violations, and a reduced backlog of unresolved violations from previous year.



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 provide financial assistance for dry cleaners to enable them to operate in compliance with new regulations, and have been searching out new opportunities to educate the public about the importance of air quality.

AMS will gear its work in the future to provide 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.