Urban Health Effects from Air Toxics and their Burden on Small Business

A look at the impact of hazardous air pollutant (HAP) emissions on urban air quality and the federal standards to control emissions from area sources.
Beyond the well-known and oft-cited indicator of air quality in cities—smog—there are a variety of additional air contaminants that affect human health in urban settings. Commonly referred to as “air toxics,” these contaminants are regulated as hazardous air pollutants (HAPs) by the U.S. Environmental Protection Agency (EPA). HAP emissions in urban areas are of particular concern because of the proximity of large numbers of people to emission sources of toxic air contaminants. The concern for potential health impacts is so prevalent that the quantity of toxic material released in cities (as reported in the EPA-mandated Toxic Release Inventory) has been used recently by Forbes as part of one of five indicators when listing America’s Most (and Least) Toxic Cities. Furthermore, EPA’s National Air Toxic Assessment of 2005 estimated more than 13.8 million people mainly in urban locations were exposed to cancer risks due to emissions of air toxics.

The U.S. Congress recognized the need to focus on air quality in urban areas while revising the U.S. Clean Air Act (CAA), which resulted in the CAA Amendments of 1990. Those amendments mandated that EPA regulate area sources of HAPs and identify a subset of the 187 HAPs already identified by the CAA that presented the greatest threat to public health in the largest number of urban areas. EPA then set out to determine the HAPs emitted by area sources that had the greatest effect on urban air quality and develop a strategy to affect the impact of those air toxics in urban areas. The strategy consisted of four main components: Conducting national air toxics assessments to help identify areas of concern, characterize risks, and track progress; national-, regional-, and community-based initiatives to focus on multimedia and cumulative risks; education and outreach; and the subject of this article—source-specific and sector-based standards for control of emissions from sources of urban HAPs. For the urban HAP part of the strategy, EPA established the Urban Air Toxics Pollutants category and identified those area sources that contributed to these urban HAPs most significantly.

**Area Sources**

Area sources are stationary sources not meeting the definition of a major source (i.e., they have a potential to emit less than 10 tons per year [tpy] of a single HAP and less than 25 tpy of a combination of HAPs). While not major sources in and of themselves, their collective emissions are significant overall, and are estimated to have accounted for 34 percent (the largest individual subcategory) of total HAP emissions-related cancer risk in the United States in 2005, compared to 15 percent by major sources, according to an EPA study. The subset of these smaller stationary sources were identified by EPA as representing 90 percent of the combined emissions of the 30 Urban Air Toxics as required by the CAA Amendments.

These currently identified sources are found in various industries, such as foundries, municipal landfills, dry cleaning facilities, businesses fabricating metal products, and plating and polishing. And, although the origin of the Urban Air Toxics strategy may have begun with an apparent focus on emissions that occurred in urban areas only, EPA determined that nationwide sources of air toxics affected urban air quality and, as a result, area sources both inside and outside of urban areas are subject to National Emission Standards for Hazardous Air Pollutants (NESHAPs).

In the same manner that the CAA requires control technology to be determined, adopted, and applied at major sources, known as Maximum Achievable Control Technology (MACT), area sources are also required to apply control technology. The control technologies intended for area sources are known as Generally Achievable Control Technology (GACT). In some cases, MACT requirements were extended to include GACT requirements, such as the case in the Reciprocating Internal Combustion Engine (RICE) MACT or parallel rules were written for similar emission units at both major and area sources (i.e., Boiler MACT).

Although considered less stringent than MACTs in regard to control requirements, GACT still requires these sources to conduct monitoring, recordkeeping, and reporting; make notifications; and include certifying statements from responsible officials. One common area source NESHAPs is estimated by EPA to impact 5,800 facilities nationwide and regulates industries engaged in metal fabrication and finishing such as the manufacture of electrical cords, boilers, structural steel, bulldozers, and many other metal products. The rule requires that specific work practices be followed when using abrasive blasting, welding, and surface coating; all very common manufacturing activities. Additionally, monitoring for visible emissions from these operations are required along with training, recordkeeping, and reporting.

Because area sources are smaller, non-major sources, they are not likely to be regulated under Title V air permitting programs, and some sources (e.g., automobile body shops) may not even require any type of air permit or registration from their state or local air quality control agency. Because of this, owners of these sources are not likely to have or apply the resources needed to navigate the compliance requirements of the rules and may not even be aware of the requirements at all. Measures have been taken to assist these sources as in Section 507 of the 1990 CAA Amendments, which requires each state to establish a Small Business Stationary Source Technical and Environmental Compliance Assistance Program (also known as the 507 Program and/or Small Business
Environmental Assistance Program, https://nationalsbeap.org/), and funded from the state’s Title V fees. In addition, EPA maintains an outreach program that includes available templates for each NESHAP to be used by these small businesses, something not typically made available for sources subject to major source NESHAPs. These programs are available for affected small businesses to seek out if they choose.

Emissions Reductions
Although some small businesses may be challenged to implement programs to maintain compliance with area source NESHAPs, it is clear that a large majority of them are aware of, and in compliance with, their requirements. Indeed, EPA has indicated that there has been a measurable decrease in HAPs concentrations in urban areas as a result of the Urban Air Toxics strategy. The results of a study conducted by EPA of 12 urban toxics illustrate a reduction of approximately 2.7 percent per year for all compounds studied. Changes in concentrations of individual compounds ranged from a reduction of 6 percent to an increase of 4.5 percent, with 10 of 12 compounds studied showing reductions. EPA notes that site-specific factors may affect these results and that the data illustrate that certain local concentrations may be higher due to the conditions of the area. These results were collected at 30 monitoring sites in urban areas between 2003 and 2010.4

The data collected by EPA demonstrate an overall reduction in HAPs in the nation’s urban areas. However, the ongoing practical application of those regulations at area sources is dependent on local air pollution control and small business agencies’ ability to educate and provide resources, as well providing the sources access to easy-to-understand information on how to achieve compliance. If these resources are not available or if these area sources are required to seek out this information rather than having it provided to them, they may be required to depend on third parties to provide guidance, or worse, left on their own and potentially out of compliance. em

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References
1. United States Federal Register: July 19, 1999 (64 FR 38706 and 64 FR 38711).
5. 42 United States Code Chapter 85, Subchapter I, Part A, Section 7412(c)(3).