



United States
Environmental Protection
Agency

Office of Air Quality
Planning and Standards
Research Triangle Park, NC 27711

EPA/452-F-98-002
September 1998

A black and white photograph of a busy city street. In the foreground, there is a crowd of people. In the middle ground, there is heavy traffic with cars and a bus. In the background, there is a gas station with a sign that says "GAS MARKET" and price tags for "REGULAR 120⁹" and "UNLEADED 120⁹". The overall scene is hazy, suggesting air pollution.

AIR TOXIC EMISSIONS IN THE CITY

EPA's Strategy for Reducing Health Risks in Urban Areas



Since the Clean Air Act was passed in 1970, much has been done to reduce air pollution across the country. Much attention has been given to the unique problems of our cities and suburbs. But more needs to be done to solve those pollution problems. The 1990 Amendments to the Act expanded the role of the U. S. Environmental Protection Agency (EPA) in identifying "toxic" urban air pollutants for regulation. Such toxic air pollutant emissions in and around our cities are usually caused by the heavy concentration of factories, the large number of vehicles, and other commercial activities. EPA is currently focusing its efforts on toxic air pollutants in such areas and developing an integrated strategy to effectively target those pollutants that pose the greatest threat.

What are toxic air pollutants?

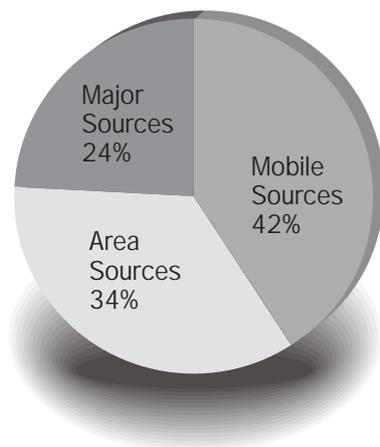
Toxic air pollutants (air toxics) include heavy metals (like mercury and lead), chemicals that are either human-made (like polychlorinated biphenyls [PCB]) or released as a result of human activities (like dioxins and benzene), and pesticides (like chlordane and dichlorodiphenyl trichloroethane [DDT]). They are known to cause or are suspected to cause cancer or other serious human health problems, or cause adverse environmental and ecological effects. Under Section 112 of the Act, EPA is

required to address 188 toxic air pollutants. We are exposed to some of these pollutants often in the form of gasoline, dry cleaning agents, cleaning solvents, and paint strippers. Many of these are used daily in major industrial production facilities, as well as smaller ones, or from the public's everyday activities like driving cars and trucks.

How are these toxic air pollutants controlled?

Control of toxic air pollutants differs from the control of the six widely monitored so-called "criteria" pollutants, such as ozone and particulate matter, for which EPA has established national air quality standards. For these criteria pollutants, states develop and implement their own plans to meet those air quality standards. In contrast, for toxic air pollutants, the Act provides a two step approach:

- 1) Achieve emission reductions through national standards for major industrial sources and mobile sources; and



1993 U.S. Total Air Toxic Pollutant Emissions
Source: EPA, 1998

- 2) Follow-up with additional reductions to address remaining health and environmental risks.

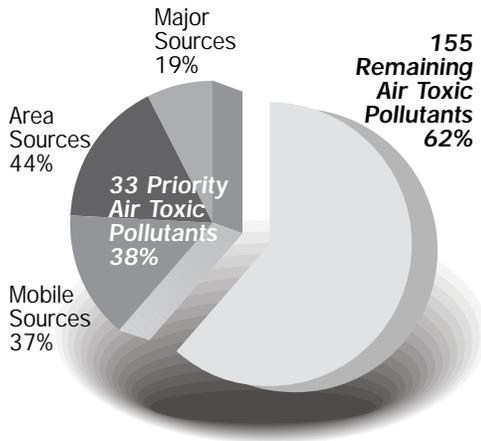
Where do toxic air pollutants come from?

There are literally thousands of sources that emit toxic air pollutants. In the U.S., air toxic emissions come from mobile sources (42%), area sources (34%) and major stationary sources (24%). Mobile sources include cars, trucks, buses, and non-road vehicles like ships or farm equipment. Area sources are smaller stationary sources like dry cleaners, gas stations, and small manufacturing companies. Major stationary sources include large industrial complexes, like chemical plants, oil refineries, and steel mills. Air toxic emissions occur throughout the United States, but the highest concentrations of some of the most toxic air pollutants occur primarily in urban areas.

What are the health and environmental risks of air toxics?

In urban areas, toxic air pollutants are of special concern because of the concentration of people close to sources of emissions. The combination of toxic emissions from vehicles, industry and multiple area sources create an unhealthy mix that varies based on geography, industry, population, and other factors.

Toxic air pollutants can cause human health effects ranging from nausea and difficulty in breathing to cancer. Other potential health effects can also include birth defects, serious developmental delays



Distribution of Emissions of 188 Air Toxic Pollutants

in children, and reduced immunity to disease in adults and children. Toxic air pollutants can also fall onto soil or into lakes and streams where they can weaken ecological systems and can eventually affect human health when eaten in contaminated food, particularly fish

What has EPA done about air toxics emissions so far?

As of September 1998, EPA has issued 27 air toxics standards for many of the major industrial sources, including chemical

List of 33 Priority Air Toxics for the Integrated Urban Air Toxics Strategy

acetaldehyde	ethylene oxide
acrolein	formaldehyde
acrylonitrile	hydrazine
arsenic compounds	lead compounds
benzene	manganese compounds
bis(2-ethylhexyl)phthalate	mercury compounds
1,3-butadiene	methyl chloride
cadmium compounds	methylene diphenyl diisocyanate (MDI)
carbon tetrachloride	methylene chloride (dichloromethane)
chloroform	nickel compounds
chromium compounds	polycyclic organic matter (POM)
coke oven emissions	propylene dichloride (1,2-dichloropropane)
1,4-dichlorobenzene	quinoline
1,3-dichloropropene	tetrachloroethylene (perchloroethylene)
2,3,7,8-tetrachlorodibenzo-p-dioxin (& congeners) & TCDF congeners)	trichloroethylene
ethylene dibromide (dibromoethane)	vinyl chloride
ethylene dichloride (1,2-dichloroethane)	

plants, steel mills, lead smelters, as well as some categories of smaller sources, like dry cleaners. When fully implemented, these standards should reduce air toxic emissions by almost a million tons per year. When standards for such sources are fully implemented, toxic emissions should drop by another 1 million tons.

Standards to control emissions of hydrocarbons and particulate matter from mobile sources are also reducing air toxics, even with the increases in vehicle miles traveled each year. For instance, Low Emission Vehicles (LEV) emit approximately 99% less Volatile Organic Compound (VOC) than were emitted by vehicles before the initiation of emission controls with the Clean Air Act. As another example, eliminating leaded gasoline has resulted in a sharp decline in airborne lead. In addition, hydrocarbon and particulate matter from highway diesel engines and non-road engines such as found in construction, agricultural, and industrial equipment have also been controlled, and tighter controls are envisioned in the upcoming few years.

What is EPA's new urban air toxics strategy?

Now EPA is turning its attention to the area source emissions in and around cities that, together with major and mobile source emissions, increase health risks in urban areas.

The new urban air toxics strategy's goal is to reduce health risks. As a first step, under Section 112 of the Act, EPA has identified 33 of the 188 toxic air pollutants as the greatest threat to public health in

urban areas (see List) in terms of their various sources, toxicity, and emissions. These 33 pollutants are responsible for an estimated 38% of all emissions of air toxics.

EPA's new strategy is to target these pollutants in cities by using a variety of national and local controls as appropriate. This integrated approach gives EPA and the State and local governments the ability to cooperatively address specific risks and administer direct and cost efficient controls. The approach will use authorities given to EPA under the Clean Air Act and other statutes to reduce air toxic emissions from area, mobile and major sources.

EPA will focus on getting better information through enhanced monitoring; conducting more research on air toxics; reducing public health risk; and implementing specific controls that will be most beneficial to the greatest number of people in and around cities.

The urban air toxics strategy identifies a draft list of 34 categories of area sources that emit significant amounts of the listed air toxics and could be subject to future regulation. It also identifies the need for further studies of mobile and stationary sources in urban environments. The strategy includes both near- and long-term objectives to achieve emission reductions.



Who will be affected by the urban air toxics strategy?

The urban air toxic strategy will cover most of our major metropolitan areas. Within these urban areas, various interests may perceive the actions differently. EPA is making every effort to address the unique perspectives of the following groups and welcomes their input to support an equitable approach:

Public Health Groups—Public health concerns are a priority to EPA in this strategy, especially the impact of air toxics on susceptible groups, like children. EPA will identify and address the health risks to children and seniors.

Environmental Justice Communities—The cumulative impact of multiple emission sources on minority populations and low income populations in urban areas is of special concern. The urban air toxics strategy will help identify and plan actions to decrease emissions that affect these communities.

Small Business Communities—Because of the focus on reducing emissions from area sources in the urban air toxics strategy, impacts could be felt by the small

businesses. However, EPA strives to ensure that any regulations do not unfairly impact small business.

State and Local Governments—National standards for mobile and major sources may not adequately address the risks in urban areas because of the combined emissions from these and many different types of smaller sources. For this reason, state and local agencies will have an active role in tailoring local approaches to reducing risks in urban areas and will be asked to help develop practical programs that allow them to carry out the strategy.

Environmental Interest Groups—Environmental groups will be encouraged to help EPA to ensure that it improves public health while also providing flexibility for the business community.

Urban Developers—The urban air toxics strategy is designed so as not to unfairly limit the efforts of developers interested in creating business opportunities in urban industrial sites or areas needing revitalization. EPA will work with these interests to ensure that public health protection is achieved and economic development is encouraged.

What is the schedule for the urban air toxics strategy?

The draft urban air toxics strategy was completed on August 31, 1998, and is available for public comment until November 30, 1998. EPA expects to complete the final strategy in the spring of 1999. It includes a 2-year schedule to develop and implement mobile source standards for air toxics, coupled with a 10-year schedule to develop urban area source emissions standards and a work plan to address remaining risks.

What will EPA's urban air toxics strategy accomplish?

Each year in the U.S. millions of tons of hazardous air pollutants are released into the air. By cutting emissions of air toxics we are reducing significant health and environmental risks. The urban air toxics strategy promises great strides in identifying the most effective ways to control these pollutants. We expect to achieve at least 75% reduction from 1990 conditions in the estimated incidence of cancer due to exposures to air toxics, as well as reductions in risks of other diseases.

Where can I get more information on urban air toxics?

U.S. Environmental Protection Agency
Office of Air Quality Planning and Standards
MD-15
Research Triangle Park, North Carolina 27711
Contact: Laura McKelvey (919) 541-5497
email: mckelvey.laura@epamail.epa.gov

U.S. Environmental Protection Agency
Office of Mobile Sources
Ann Arbor, Michigan 48105
Contact: Tandi Bagian (734) 214-4901
email: bagian.tandi@epamail.epa.gov

Or visit EPA's Website at www.epa.gov/airlinks