

Chapter One

Recognizing the Problem

There are many reasons to be concerned about air pollution in your community. Air pollution may aggravate symptoms of asthma and related respiratory diseases. In addition, certain types of air pollutants are linked with cancer and other non-respiratory problems. Finally, air pollution leads to a variety of environmental problems, including global warming, acid rain, degradation of coastal waters, depletion of the ozone layer, damage to sculptures, buildings, and other historical landmarks, and reduced visibility.

Facilities that must get Title V permits emit pollutants that contribute to these air quality problems. Generally, when a facility owner applies for a Title V permit, he or she must indicate how much of each pollutant the facility releases into the air each year.

A. What pollutants are commonly listed in a Title V permit?

Sulfur dioxide (SO₂). SO₂ reacts with oxides of nitrogen (NO_x) and other substances in the air to form acid rain. Acid rain damages forests, makes lakes and streams unsuitable for most types of fish, and damages buildings, monuments, and cars. Also, high concentrations of SO₂ can cause breathing problems for people with asthma. Symptoms include wheezing, chest tightness, and shortness of breath. SO₂ emissions are transformed in the atmosphere into acidic particles. Long-term exposures to high concentrations of SO₂, in combination with high levels of particulate matter (discussed below), may lead to respiratory illness, weakening of the lungs' defenses, and aggravation of existing cardiovascular disease. People with cardiovascular disease or chronic lung disease, as well as children and the elderly, are most likely to suffer from health problems linked to elevated SO₂ levels.

Particulate Matter (PM)¹. PM essentially consists of small particles of soot, wood smoke, and other compounds in solid or liquid droplet form. PM can

¹ Sometimes you will see this pollutant listed as PM₁₀ or PM_{2.5}. The number refers to the size of particulate matter. PM₁₀ refers to particulates that are 10 microns in diameter or smaller. PM_{2.5} refers to particulates that are 2.5 microns in diameter or smaller. The smaller the particulate, the more dangerous it is to human health. Until recently, U.S. EPA regulations applied to all particulates 10 microns in diameter or smaller as one group. Studies now show that the most serious health threat comes from particulates smaller than 2.5 microns in diameter.

cause respiratory problems, as well as damage to lung tissue and premature death. PM can cause or worsen respiratory diseases and aggravate heart disease. PM reduces visibility, an issue that is of particular concern at national parks and other scenic areas.


Carbon Monoxide (CO). The main source of CO is automobile emissions, but CO is also released by woodstoves and by industrial sources such as boilers and waste incinerators. The health effects related to CO include visual impairment, reduced work capacity, reduced coordination, poor learning ability, and difficulty in performing complex tasks.

Volatile Organic Compounds (VOCs). VOCs combine with oxides of nitrogen (NO_x) in the presence of heat and sunlight to form ground-level ozone. Ground-level ozone damages lung tissue and can make it difficult to breathe. Children and people with asthma and other lung diseases are most susceptible to health problems caused by ground level ozone. When ozone levels are high, however, even healthy adults may suffer. In addition, some VOCs are hazardous in small quantities in the absence of any chemical reaction.


Nitrogen Oxides (NO_x). NO_x is linked to almost every air pollution problem. NO_x emissions result in the formation of ground-level ozone, acid rain, coastal water pollution, and reduced visibility. Because NO_x can travel very long distances after being released into the atmosphere, NO_x released in one state can cause environmental damage in another state.

Hazardous Air Pollutants (HAPs). The Clean Air Act regulates 188 hazardous air pollutants. Hazardous air pollutants are toxic in small quantities. Health problems related to hazardous air pollutants include cancer, respiratory irritation, nervous system problems, and birth defects. To find out about health issues related to a particular HAP, go to www.epa.gov/ttn/uatw/hapindex.html or contact U.S. EPA's Air Risk Information Support Center at (919) 541-0888.

With the exception of individual hazardous air pollutants, which are dangerous in very small quantities, each of the pollutants listed above are widely distributed across the country. The Clean Air Act refers to these pollutants as "criteria pollutants." EPA sets an air quality standard for each of these pollutants at a level that it considers safe for human health. A geographic area that meets or does better than the air quality standard is called an "attainment area."

 **Criteria pollutants:** certain air pollutants that are widely distributed across the country. Their are six criteria pollutants (CO, PM, SO_2 , NO_x , O_3 , and lead).

An area that does not meet the standard is called a “nonattainment area.” You can contact your Permitting Authority or U.S. EPA regional office for information about the attainment status of your area. See Appendix B for contact information. You can also obtain information on the Internet about the attainment status of your area by going to www.epa.gov/docs/epacfr40/find-aid.info/, clicking on “State Regulation References (1996, 1999)” and then selecting your area from the map.

 **Nonattainment area:** a geographic area in which the level of a criteria air pollutant is higher than allowed under federal standards.

B. Is there an air pollution problem in my community?

Many people are not concerned about air quality in their community unless they can actually see the polluted air. Unfortunately, *clear* air is not necessarily *clean* air. In fact, many invisible air pollutants pose serious health risks.

More than half of all Americans live in places where the air is sometimes unhealthy to breathe. Surprisingly, air quality in places where people go to escape the dirt and grime of city life is sometimes worse than air quality in major U.S. cities. For example, a recent survey indicates that air quality at Great Smoky Mountains National Park is often worse than air quality in major U.S. cities.²

Several resources available on the Internet can help you assess air quality in your region. If you have access to the Internet, you can try the following websites:

- <http://www.scorecard.org/> : This site, maintained by Environmental Defense, Inc. provides information about hazardous air pollutants according to zip code. It also provides information about criteria pollutants in each state. Be sure to check both hazardous air pollutants and criteria pollutants.
- <http://www.epa.gov/airnow/>: This site offers real-time ground-level ozone information for many parts of the country and health information about other air pollutants.

² Jayne E. Mardock, et. al, “No Escape: A Midseason Look at Ozone in 1999,” Clean Air Network, Clean Air Task Force, August 1999, p. 3.

- <http://www.epa.gov/cumulativeexposure/index.htm>: Once you reach this site, click on “air” to reach U.S. EPA’s assessment of estimated 1990 outdoor concentrations of hazardous air pollutants across the continental United States.

Box 1.1: Criteria Pollutants and Hazardous Air Pollutants are Regulated Differently

As you review a Title V permit, it will be helpful for you to understand the difference between the way the Clean Air Act regulates criteria pollutants and the way it regulates hazardous air pollutants.

Criteria Pollutants: For each criteria pollutant, U.S. EPA and state governors identify non-attainment areas. For some pollutants (CO, PM, O₃), U.S. EPA then classifies the nonattainment areas. (For example, for ozone U.S. EPA uses the following classifications: “marginal,” “moderate,” “serious,” “severe,” or “extreme.”) U.S. EPA also establishes deadlines by which these areas must be brought into compliance with federal air quality standards. Each state must submit a “state implementation plan” (“SIP”) to U.S. EPA that demonstrates how the state will achieve or maintain air quality that satisfies federal standards. SIPs are primarily made up of state regulations. Once approved by U.S. EPA, a SIP requirement is federally enforceable (i.e., can be enforced by U.S. EPA and the public). Any SIP requirement that applies to a Title V facility must be included in the facility’s permit. More information about SIPs is provided on page 38. Facilities that release large amounts of a criteria pollutant may be subject to “New Source Performance Standards” (“NSPS”). See page 42 for more information.

Hazardous Air Pollutants: The primary way that EPA regulates hazardous air pollutants is through implementation of federal “Maximum Available Control Technology” (“MACT”) standards. Congress identified 189 hazardous air pollutants in the 1990 Clean Air Act. (One hazardous air pollutant has since been removed from the list.) U.S. EPA must identify categories of facilities that release these pollutants and establish MACT standards for each category. State and local environmental agencies may seek delegation from U.S. EPA of the authority to implement and administer MACT standards. For a state or locality to receive delegation, it must demonstrate that the state or local MACT requirements are just as stringent as the federal MACT requirements. Any MACT requirement that applies to a Title V facility must be included in the facility’s Title V permit. Refer to Part Two, page 125 for more information.