Air Pollution Basics

Small Business: Know the FACTS

Air Pollution—What's the Problem?

The clean air we breathe contains, by volume, 21% oxygen, 78% nitrogen, and only 1% other gases. In contrast, polluted air contains other additional chemical compounds in quantities that are sufficient to cause us harm. Depending on the types and quantities of pollution in the air, we can experience immediate, short term harm (acute effects) or long term harm (chronic effects) due to exposure. Specific health effects can include heart and lung diseases, cancer, eye irritation, diseases of the nervous system, and asthma.

The wide variety of health effects caused or aggravated by air pollution creates a significant cost to society. In addition, these compounds can also cause problems for animals and plants, destroying agricultural crops or livestock. Damage can even extend to property in the form of acid rain "eating" away at buildings and statues.

What are the Sources of Air Pollution?

Many pollutants occur naturally. Volcanos, wildfires, and even trees all naturally generate large quantities of air pollution. In addition, a wide range of human activities create tremendous amounts of air pollution. Industrial processes, transportation, and the even use of consumer products can release pollutants into the air.

Over the past three decades, the most common pollutants — which came be called the "criteria" pollutants — were identified as being the most significant pollution problem in the nation. The criteria pollutants include:

- particulate matter (PM),
- carbon monoxide (CO),
- sulfur dioxide (SO_2),
- nitrogen oxides (NO_x),
- ground level ozone (O_3), and
- lead (Pb).

What is being done about this?

To begin to address the problems caused by air pollution, the US Environmental Protection Agency (EPA) created National Ambient Air Quality Standards for each of the criteria pollutants. These standards are the maximum allowable concentration in order to protect the most sensitive people from adverse health effects. Secondary standards have also been established to address health and welfare of animals and the environment.

Counties throughout the nation that do not meet the standards are identified as "non-attainment" areas. There are five levels of non-attainment that reflect the degree to which the air in an area is contaminated: marginal, moderate, serious, severe, and extreme. As the level of non-attainment an area increases, the greater the level of regulation that must be set to reduce its air pollution.

Chemical compounds that cause adverse health effects but not included in the list of pollutants are regulated as hazardous air pollutants (HAPs). While less common, HAPs can cause greater adverse effects at lower concentrations. Because individual HAPs are not always nation-wide issues, it is more difficult to set national standards for these pollutants. As a result, states like Wisconsin have begun developing their own rules for HAP emissions.

Who Regulates Air Pollution?

EPA sets the primary standards for allowed levels of air pollution, then delegates its authority to individual states or to local air pollution control agencies to enforce those standards. This way, each state or local agency can craft regulations that work best in their particular area of concern.

In Wisconsin, EPA has delegated its authority for air pollution regulations to the Department of Natural Resources (DNR). DNR has regulations for the criteria pollutants as well as nearly 500 HAPs.

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How Do I Know if My Business Has Air Pollution?

Some activities are more obvious than others to cause air pollution. Actions likely to emit VOCs and HAPs include:
- Use of adhesives, paints, inks, other solvents or solvent containing materials
- Generation of building or process heat or steam with any fuels (not including electricity)
- Grinding, sanding, welding, material handling or any other activity that creates dust or fumes

In addition, many processes can emit air pollution that may not be obvious.
- Organic compounds: deep fat fryers, dry cleaners, ethylene oxide sterilizers, aluminum scrap sweat furnaces, certain processes at primary metal finishing or foundries.
- Aerosols, mists, fumes: welding, aerosol can filling or crushing, heat treating of metal.
- Dusts: certain processes at primary metal finishing or foundries, unpaved road dust.
- Acid gases: multi-stage parts cleaning with agitated acid baths.

What Do I Have to Do About My Air Pollution?

Meet Regulations

DNR and EPA have developed regulations that dictating actions to protect and improve air quality. For DNR to be allowed to enforce certain national regulations, there must be rules included in the Wisconsin Statutes and the Wisconsin Administrative Code. Where DNR rules have no basis in federal regulations, only DNR can enforce them—this refers to what are called "state-only" rules.

Often EPA rules set the framework that DNR, other state, and local programs must meet, but regulation can be done in a way that best fits the mix of air pollution sources in their jurisdiction. The Wisconsin operation permit program under Title V of the Clean Air Act Amendments of 1990 had to meet certain criteria, but could be put in state rules in a form preferred by the state agency. These permit programs have similar framework, but will vary widely from state to state in how they look and act if a business has plants in multiple states.

Other EPA rules must be taken straight from the Code of Federal Regulations and incorporated into state or local rules to be enforced directly —so they are handled nearly identically from state to state. For example, DNR's new source review rules operate this way in order for the state's program to get approval from EPA as a stand-alone program, it was made nearly identical to the federal regulations.

Apply for Permits

DNR has set certain levels of emissions, above which a business would need to get an air pollution permit. Businesses need to apply for a permit under two scenarios.

1. If a business wants to add or modify processes or activities that in some way generate air pollution, the owner/operator must apply for a construction permit. The construction permit must be issued by DNR before the business begins any of the related construction or modification of the process or activity. A construction permit is good for 18 months, with one 18-month extension allowed upon request

2. Any existing business with air pollution that has emissions above exemption levels must apply for an operation permit. Operation permits are generally good for 5 years and must be renewed prior to the date on which they expire; certain operation permits don't expire.

How Do I Get Details on the Rules?

This fact sheet is not intended to do more than give you broad information on air pollution. There are many detailed fact sheets available from the Small Business Environmental Assistance Program to help a business learn about any DNR or EPA regulations that might apply to them. Contact the SBEAP for assistance on specific regulations, or visit our web site (see below). For more information about air pollution, you can find contacts for staff in DNR's Air Management Program at https://dnr.wi.gov/topic/AirQuality/contacts.html.

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