



# Fact Sheet

Commonwealth of Pennsylvania • Department of Environmental Protection

## AIR POLLUTION IN PA

### What is Air?

Air is a thin band of invisible, odorless, tasteless gases that surround the earth, consisting mostly of nitrogen and oxygen. It would be impossible for us to exist without air, because it is essential to life. In fact, the average person breathes about 35 pounds of air every day.

### Air Pollution

The air we breathe in the United States is polluted with nearly 200 million tons of toxic emissions each year. Pollution is created by different sources, but 90 percent of it originates with people. Industry, power plants, cars and trucks, and many consumer products are all contributors. This means that everyone - businesses and consumers - contributes to the problem. Since air pollution is not confined to a specific area and everyone is affected, it is the nation's largest environmental health risk.

### Air Pollutants and Their Effects

#### Outdoor Air Pollution:

Ozone (O<sub>3</sub>) pollution at ground level is one of our most widespread and misunderstood problems. There are two kinds of ozone: stratospheric and ground-level. Both are the same compound, but they have very different effects. Ozone that surrounds the planet high in the atmosphere is called stratospheric ozone. This "good ozone" is naturally occurring and beneficial. Stratospheric ozone forms a protective layer that filters out the sun's harmful ultraviolet (UV) radiation. Unfortunately, chlorofluorocarbons (CFCs) rise to the stratosphere and destroy ozone molecules in the ozone layer. This allows excess UV radiation to reach the earth, which can cause cancer and cataracts in humans, and damage marine life and crops.

Ground-level ozone has a much different effect from stratospheric ozone. This "bad" ozone is the main ingredient in smog, and is produced when volatile organic compounds (VOCs) and nitrogen oxides (NO<sub>x</sub>) react with sunlight. Sources of these two pollutants include gasoline vapors, the

combustion of fossil fuels, automobile emissions and vapors from solvents. Ground-level ozone is a harmful pollutant to humans. When inhaled, it reacts with tissue in our lungs and makes breathing difficult. This type of ozone can inhibit the lungs' ability to function.

Nitrogen Oxides (NO<sub>x</sub>) are produced by burning fossil fuels such as coal, oil, gasoline and natural gas. About half is produced by automobiles, trucks, buses and airplanes. The remaining half comes from industries and power plants that burn fossil fuels to make electricity. Nitrogen oxides threaten our health by entering our lungs and making breathing difficult. NO<sub>x</sub> is one of the two pollutants that create ground-level ozone, and it is one of the two major components in acid rain.

Sulfur Dioxide (SO<sub>2</sub>) is a gas commonly released from coal and oil-burning power plants and furnaces. When inhaled, it can restrict air passages and impair breathing. People with asthma, young children and the elderly are especially susceptible to its negative health effects. SO<sub>2</sub> is the main component in acid rain. It combines with water vapor in the atmosphere to form sulfuric acid, which returns to earth in the form of acid rain, snow or fog.

Carbon Monoxide (CO) is a poisonous compound that cannot be seen or smelled. Sources of carbon monoxide include exhaust from motor vehicles, industrial processes and wood stoves. When inhaled, it replaces oxygen in the blood and can impair vision, alertness and other mental and physical functions. If carbon monoxide reaches high enough levels indoors, it can be fatal.

Carbon Dioxide (CO<sub>2</sub>) is produced by burning fossil fuels. Excess carbon dioxide in the atmosphere can trap the sun's heat, which many scientists believe will cause a "greenhouse effect" or "global warming."

Methane, another heat-trapping gas, is produced by different sources. Methane seeps into the air from swamps, coal mines, oil and gas exploration, landfills and rice paddies. Some animals also

produce methane through their digestive processes.

Particulates are tiny drops of liquid or small particles of dust, metal or other materials that float in the air. They come from coal-burning power plants, steel mills, mining operations and municipal waste incinerators. They also are produced by natural sources such as forest fires and volcanoes. The smallest of these particles travel deep into the lungs and become trapped. Toxic and cancer-causing chemicals can ride on these tiny particles into the lungs, producing greater health problems.

Lead is an extremely poisonous metal. It is emitted into the air from vehicles using lead in their fuels, battery plants and incineration of lead-containing products. Lead poisoning reduces mental abilities; damages blood, nerves and organs; and raises blood pressure. Even small doses are harmful because lead accumulates in the body.

In addition to the many human health effects, air pollution impacts the economy and the environment. Air pollution may cause greater employee absenteeism as well as increased medical expenses. Pollution results in the destruction of trees, plants and agricultural crops, which can decrease property value and income. Livestock and aquatic life are affected, as well. Air pollution decays rubber, iron and nylon; it makes paint peel and discolor; and it blocks natural sunlight. Acid rain, one result of air pollution that is prominent in Pennsylvania, is particularly corrosive to buildings, statues and other structures. Damage to materials and the environment can lead to enormous restoration costs. Americans pay billions of dollars each year to clean and repair statues, buildings and monuments damaged by acid rain.

### **Indoor Air Pollution:**

Indoor air pollution has been deemed by the federal Environmental Protection Agency (EPA) to be a great environmental health risk. Not only are homes besieged by more chemical compounds each year, but also better insulation seals them tighter. Poor ventilation causes chemical residues to build up, creating a greater health threat.

EPA has listed the following sources of indoor air pollution as the most common in today's modern home: radon, cigarette smoke, automobile exhaust from a garage or a nearby road, dry cleaning residue fumes on newly cleaned clothes, gas from a leaking air conditioner or refrigerator, oil or gas furnace fumes, wood refinishing, new carpet

chemical vapors, residues from pumping gas, residues from home building materials, and home pesticides. For specific product information, you can contact EPA's indoor air clearinghouse at 1-800-438-4318.

Radon is a naturally occurring, odorless and colorless gas originating from uranium deposits deep underground. This gas is most harmful indoors. It seeps into buildings through cracks in the foundation. When inhaled, radon may lodge deep in the lungs, where it may cause lung cancer. Radon is one of the leading causes of lung cancer in the nation, responsible for thousands of deaths each year. Pennsylvanians can call the Radon Division Hotline at (800) 237-2366 for more information on public health and safety as it relates to radon.

Both indoor and outdoor air pollution can cause a great deal of harm.

## **What You Can Do to Improve the Air**

### **Outdoors**

- \* Use your automobile less - Automobiles are responsible for creating a tremendous amount of air pollution. You can reduce auto pollution by car pooling, using mass transportation, walking or bicycling.
- \* Conserve electricity - Electric generation from coal has increased to 56 percent of Pennsylvania's generating power. With technological advances and increased use of lower sulfur coals, sulfur dioxide (a coal combustion by-product) emissions have been reduced in recent years. If we conserve electricity, we save an energy resource and further reduce the total amount of sulfur emissions released into the air.
- \* Reduce waste - Purchase products that are durable, reusable or use less packaging. By repairing broken items and recycling whenever possible, you can help reduce the pollutants that reach the air during manufacturing processes or during disposal of municipal wastes.
- \* Plant trees - Trees absorb carbon dioxide from the air. If you plant shade trees in front of your windows, the foliage in the summer will block out the sun, reducing energy usage for cooling. In the winter bare trees will allow sunlight to enter through the windows, creating a passive solar effect. All trees also prevent soil erosion.

- \* Use non-CFC products - Avoid home insulations containing chlorofluorocarbons (CFCs) and use fans instead of air conditioners. If you do use air conditioners, be sure to have both car and home air conditioners pressure-checked for leaks. Take unwanted refrigerators or air conditioners to a coolant recycling facility before discarding.
- \* Aerosols - Substitute pump sprays for aerosol cans whenever possible. This helps reduce the amount of propellant gases in the air which contribute to ground-level ozone.

### **Indoor**

- \* Test your home for radon. If it is at an unacceptable level, take suggested measures to reduce it.
- \* Use household paints, solvents and pesticides only when there are no alternatives. Use water-based paints and solvents instead of oil-based. Make sure you properly dispose of these chemicals by calling your local environmental agency for information on proper disposal. Do not pour them down the drain, into the ground or put them in the garbage.
- \* Seal containers of paint, solvents and pesticides tightly to prevent volatile chemicals from evaporating into the air.
- \* Refinish furniture and air out newly dry-cleaned clothes in a well ventilated area.
- \* Allow fresh air to enter and circulate regularly throughout your home, especially in the winter months when indoor air tends to be stagnant.
- \* Buy more plants for your house, particularly spider plants. They help cleanse toxic air pollutants naturally.

## **Air Pollution Laws**

### **Federal Clean Air Act**

The Clean Air Act of 1970 set a national goal of clean and healthy air for everyone. It established for the first time specific responsibilities for government and private industry to reduce emissions from vehicles, factories and other pollution sources. This law was amended in 1977 and again in 1990. The Clean Air Act Amendments of 1990 aim to further reduce acid rain, urban air pollution and toxic air emissions. The amendments restrict emissions of previously unregulated pollution sources and tighten existing regulations concerning industrial and automobile pollution.

They also establish a national permits program to make the law more workable, and an improved enforcement program to ensure better compliance.

### **Pennsylvania Air Pollution Control Act**

In order to protect the health and welfare of the people of Pennsylvania, the state implemented the Pennsylvania Air Pollution Control Act in 1960. The Act allocated the former Department of Environmental Resources (DER), the Environmental Quality Board and the Environmental Hearing Board with powers to work to reduce and prevent air pollution. It also established reduction targets of air pollutants in order to protect the citizens, plant and animal life, property, recreational resources, commerce, agriculture and the development of industry within the Commonwealth.

### **Pennsylvania Air Pollution Control Act Amendments of 1992**

Under amendments to the Federal Clean Air Act, Pennsylvania was required to come into compliance with new federal air standards. To comply, the state's Air Pollution Control Act adopted the federal standards. Key components of the amended legislation include: establishing a new operating permit program, granting the authority to develop regulatory and evaluation programs, providing necessary revenues for operating the programs, strengthening enforcement tools and creating required assistance and advisory programs. Many of these programs are now in place.

### **Controlling Air Pollution**

#### **Responsibility of the Department of Environmental Protection (DEP)**

Renamed the Department of Environmental Protection (DEP) after the split of the DER in 1995, the state environmental agency continues to have a critical role in controlling Pennsylvania's air pollution. It now has a new approach in accomplishing this task: the improved, customer-friendly DEP is dedicated to creating a model for environmental protection and enhancement, helping people comply with air pollution regulations, but responding swiftly if they do not.

One important responsibility of the DEP is regulating emissions released into the air by issuing permits to factories, electric power plants and various other air pollution sources. DEP also approves air quality plans for the construction and

modification of air pollution sources. Because air pollution sources are abundant, continual monitoring throughout the state is necessary to ensure compliance with Pennsylvania's clean air requirements. DEP not only conducts investigations on air pollution complaints, but it also enforces penalties against violators who choose not to comply and cooperate.

DEP also serves as the coordinator of local, state and federal air pollution control efforts, as well as provides technical assistance and educational outreach to industry, businesses, schools and citizen groups.

For more information, visit DEP's website at [www.state.pa.us](http://www.state.pa.us), Keyword: "DEP Air Quality."

For further information on DEP's programs, contact the regional office in your area:

### **DEP REGIONAL OFFICES**

#### **Southeast Region**

2 East Main Street  
Norristown, PA 19401  
484-250-5900

**Counties:** Bucks, Chester, Delaware, Montgomery and Philadelphia

#### **Southwest Region**

400 Waterfront Drive  
Pittsburgh, PA 15222-4745  
412-442-4000

**Counties:** Allegheny, Armstrong, Beaver, Cambria, Fayette, Greene, Indiana, Somerset, Washington and Westmoreland

#### **Southcentral Region**

909 Elmerton Avenue  
Harrisburg, PA 17110  
717-705-4700

**Counties:** Adams, Bedford, Berks, Blair, Cumberland, Dauphin, Franklin, Fulton, Huntingdon, Juniata, Lancaster, Lebanon, Mifflin, Perry and York

#### **Northcentral Region**

208 W. Third Street, Suite 101  
Williamsport, PA 17701  
570-327-3637

**Counties:** Bradford, Cameron, Clearfield, Centre, Clinton, Columbia, Lycoming, Montour, Northumberland, Potter, Snyder, Sullivan, Tioga and Union

#### **Northeast Region**

2 Public Square  
Wilkes-Barre, PA 18711-0790  
570-826-2511

**Counties:** Carbon, Lackawanna, Lehigh, Luzerne, Monroe, Northampton, Pike, Schuylkill, Susquehanna, Wayne and Wyoming

#### **Northwest Region**

230 Chestnut Street  
Meadville, PA 16335-3481  
814-332-6940

**Counties:** Butler, Clarion, Crawford, Elk, Erie, Forest, Jefferson, Lawrence, McKean, Mercer, Venango and Warren

### **Responsibility of the Environmental Protection Agency (EPA)**

The federal government has overall responsibility to ensure that the states are complying with the federal air pollution laws.

EPA also has the responsibility for several issues that Pennsylvania does not. These include global warming, protection of the stratospheric ozone layer and indoor air pollution.

For information on these programs, and the complete federal role in all air pollution matters, contact the EPA's Regional Office:

Environmental Protection Agency  
Region III  
841 Chestnut Street  
Philadelphia, PA 19107-4431      215-597-9800