

Understanding Causes of Air Pollution

WHAT YOU WILL LEARN

To identify causes of air pollution

READING STRATEGY

Create a table like the one below. Fill in examples of indoor and outdoor air pollution.

INDOOR POLLUTION	OUTDOOR POLLUTION
1.	1.
2.	2.
3.	3.

TERMS TO KNOW

pollutant

A volcano erupts in Mexico, spewing smoke and ash thousands of feet into the air. A bus drops off a group of children at school. A carpenter builds shelves for a new kitchen. A power plant makes electricity for a city miles away.

What do all these events have in common? As unlikely as it may seem, they all play a part in air pollution.

Causes of Air Pollution

When a volcano erupts, it throws out huge clouds of smoke and ash, which can spread around the world. Volcanic smoke and ash can block some of the light of the sun and cause winters to be colder than normal for several years. When Mount Saint Helens erupted in the northwestern United States in 1980, the engines of many cars were damaged by dust they sucked in.

Air pollution can be caused by nature in other ways. Forest fires started by lightning can pollute the air with smoke and ash. Windstorms create dust clouds that can throw large amounts of dust into the air.

As powerful as nature is, however, human activities cause far more air pollution. This pollution is of two types: outdoor pollution and indoor pollution.

Outdoor air pollution comes from a variety of sources. Farmers create a great deal of air pollution. As they plow fields, dust is thrown into the air. Winds blowing across fields left bare after crops are harvested pick up still more dust. Another source of pollution on farms comes from the use of chemicals to kill weeds and insects. Many of these chemicals are sprayed by planes or tractors. The wind can carry tiny drops far from the fields.

Dangers of Air Pollution

Factories, power plants, cars, planes, ships, and even lawn mowers also cause air pollution. In fact, anything that burns a fossil fuel such as coal, oil, or natural gas adds to air pollution. Pollution from gasoline engines can reach such dangerous levels in large cities that children and people who have trouble breathing are asked to stay indoors. The gases from burning fuels can also cause eye and lung irritation. Some people can even die from the effects of air pollution.

Staying indoors may not keep a person away from all air pollution, however. Indoor air pollution is now known to be a serious

health threat in the United States. In fact, the air in some buildings is worse than the air outdoors.

Indoor air pollution comes from many things. **Figure 5-1** shows the most common indoor **pollutants**. Pollutants are harmful substances found in the environment.

Pollutants can build up to reach higher levels indoors than they do outside, where natural air currents carry them away. Indoor air levels of some pollutants may often be 2 to 5 times higher than outdoor levels. Indoor pollution is a greater problem now than it was a few years ago. One reason is that houses today are being built to be more airtight; windows and doors have better seals. As a result, pollutants such as cigarette smoke have a harder time getting out. Another reason indoor pollution is such a problem is that people spend up to 80 percent of their time indoors. As a result, even low levels of pollution add up to create health problems.

Air pollution from radon is largely a problem of air being trapped inside houses. Radon is a gas that you cannot see or smell. Radon comes from the natural breakdown of uranium, and is found in soil, rocks, and water. The gas can enter a house through the floor and walls. Radon from water wells comes into the house with water. If air can enter and leave the house easily, the radon escapes. However, a house with tight-fitting doors and windows may trap the radon. People who breathe high levels of radon over a number of years are more likely to get lung cancer. **Map 5-4** shows areas in the United States that have a pos-

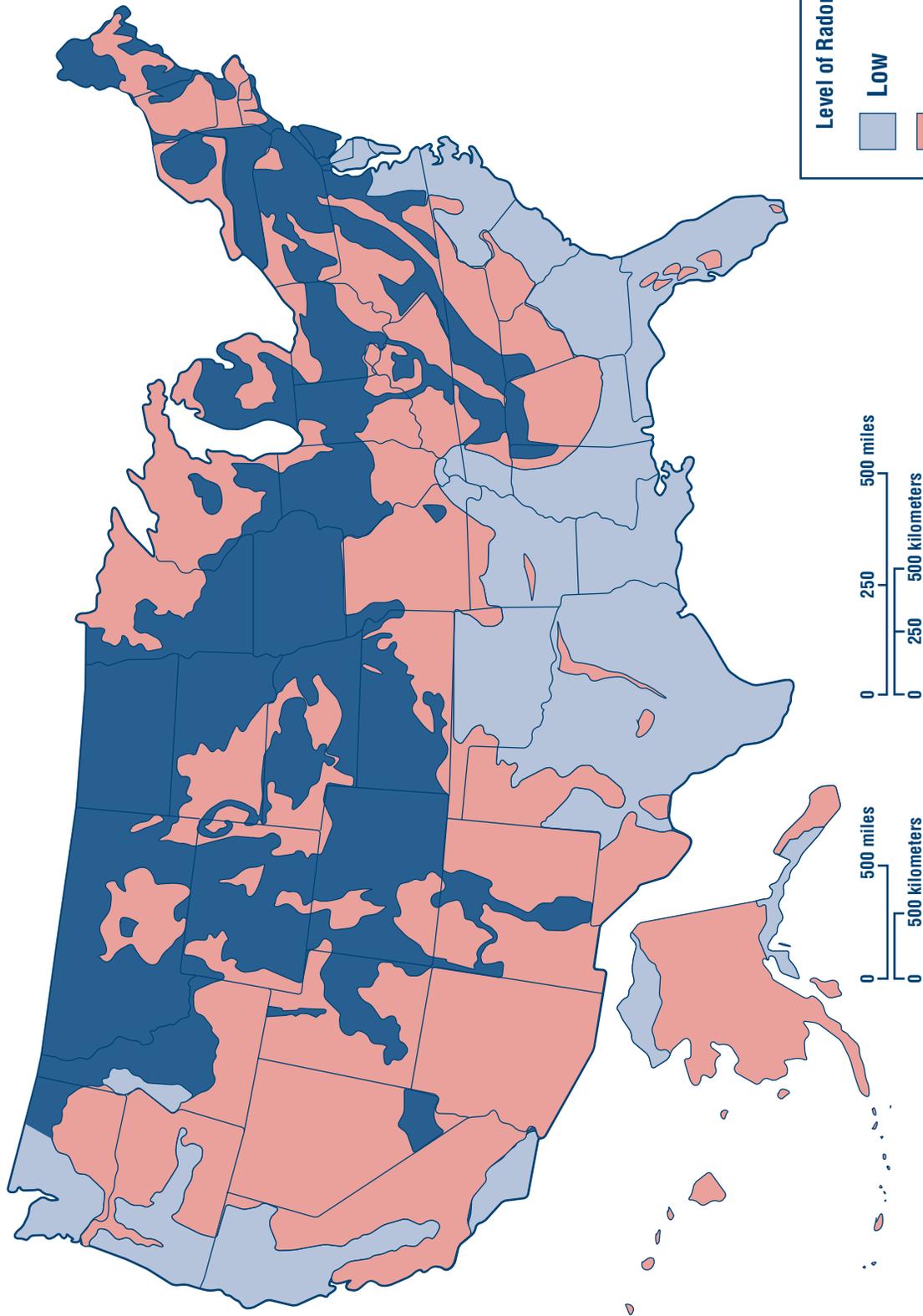
sible radon risk. Notice that the potential for radon varies throughout the country. Many people may choose to have the house and the surrounding land tested for radon before they purchase a home.

Buildings not only trap indoor pollution, they also create it. Asbestos and formaldehyde are found in many building materials. When these substances get loose inside buildings, they can be dangerous. Asbestos is a substance formerly used to fireproof or insulate buildings. However, it is now known to cause certain types of cancer, and by law, may no longer be used in buildings in the United States. However, many older buildings have asbestos in them. Formaldehyde is a gas used as a disinfectant and preservative. It is often used in plywood and other building materials and can cause people to feel ill.

Two other common indoor pollutants are tobacco smoke and gases from burning fuels. Even people who do not smoke are affected by tobacco smoke. Secondhand smoke can intensify the symptoms of asthma, pneumonia, and bronchitis. The United States Environmental Protection Agency (EPA) estimates that smoke inhaled by nonsmokers causes 3,000 cancer deaths and about 40,000 deaths from heart disease each year. Children especially may be harmed by breathing air filled with tobacco smoke.

Gases from fireplaces, stoves, and heaters can also be harmful if they cannot escape from the house. In some cases, enough gases can collect to cause death.

 FIGURE 5-1		Indoor Pollutants
Pollutant	Source	Health Effects
Radon gas	Rocks and soil	May cause lung cancer
Tobacco smoke	Cigarettes, pipes, cigars	Causes lung cancer and other diseases of the lungs
Asbestos	Pipe insulation; ceiling and floor tiles	Causes lung disease; cancer
Fungi, bacteria	Air conditioners	Cause allergies, asthma
Carbon monoxide	Stoves and heating systems	Causes headaches
Formaldehyde	Plywood, particle board, foam insulation	Causes eye, skin, and lung irritation; may cause cancer
Benzene	Certain types of cleaners	May cause leukemia
Styrene	Carpets, plastics	Causes liver and kidney damage



Level of Radon Potential

Low	Moderate / Variable	High
Light Blue	Orange	Dark Blue

Source: <http://energy.cr.usgs.gov/radon/rnus.html>

Using Your Skills

A RECALLING FACTS

Answer these questions about air pollution.

1. Describe the two kinds of air pollution.

2. What are three things in nature that can cause air pollution?

3. Describe two ways in which people cause outdoor air pollution.

4. Why has indoor pollution become a problem?

5. Why is radon a dangerous indoor pollutant?

6. What kinds of health problems does **Figure 5-1** tell you can come from indoor air pollution?
