13.8: Air Pollution and Illness

Is some air actually bad for you?

This question shouldn't even need an answer. Yes, some air can be harmful.

Air Pollution and Illness

Almost 5 million people die each year because of air pollution. In fact, polluted air causes more deaths than traffic accidents. Air pollution harms the respiratory and circulatory systems. Both outdoor and indoor air can be polluted.
Outdoor Air Pollution

The **Air Quality Index (AQI)** is an assessment of the pollutants in the outdoor air based on their human health effects. The health risks associated with different values of AQI are shown in Figure below. When AQI is high, you should limit the time you spend outdoors. Avoiding exposure to air pollution can help limit its impact on your health. People with certain health problems, including asthma, are very sensitive to the effects of air pollution. They need to be especially careful to avoid it.

Air quality is especially important for sensitive people. They include people with asthma, other respiratory illnesses, and cardiovascular diseases.

AQI generally refers to the levels of ground-level ozone and particulates. **Ozone** is a gas that forms close to the ground when air pollutants are heated by sunlight. It is one of the main components of smog (see Figure below). Smog also contains particulates. **Particulates** are tiny particles of solids or liquids suspended in the air. They are produced mainly by the burning of fossil fuels. The particles settle in airways and the lungs, where they cause damage.

Smog clouds the city of Los Angeles, California. Visible air pollution in the form of smog is a sign that the air is unhealthy.
Indoor Air Pollution

Indoor air may be even more polluted than outdoor air. It may contain harmful substances such as mold, bacteria, and radon. It may also contain carbon monoxide. Carbon monoxide is a gas produced by furnaces and other devices that burn fuel. If it is inhaled, it replaces oxygen in the blood and quickly leads to death. Carbon monoxide is colorless and odorless, but it can be detected with a carbon monoxide detector like the one in Figure below.

A carbon monoxide detector warns you if the level of the gas is too high.

Summary

- Both outdoor and indoor air may contain pollutants that can cause human illness and death.

Review

1. How can you use the Air Quality Index to protect your health?
2. Explain why ground-level ozone is usually a worse problem in the summer than in the winter in North America.
3. Compare and contrast pollutants in outdoor and indoor air, including their effects on human health.