

SECTION 1-1

SECTION SUMMARY

The Air Around You

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Guide for Reading

- ◆ How is the atmosphere important to living things?
- ◆ What gases are present in Earth's atmosphere?

Weather is the condition of Earth's atmosphere at a particular time and place. Earth's **atmosphere** is the layer of gases that surrounds the planet.

Earth's atmosphere makes conditions on Earth suitable for living things. The atmosphere contains oxygen and other gases that living things need. The atmosphere also traps energy from the sun, which keeps Earth's surface warm and Earth's water in liquid form, another requirement of living things. In addition, the atmosphere protects Earth from dangerous radiation from the sun and from meteoroids, which are chunks of rock from outer space.

Earth's atmosphere is made up of nitrogen, oxygen, carbon dioxide, water vapor, and many other gases, as well as particles of liquids and solids. Nitrogen makes up about three fourths of the air. It is essential to living things. Bacteria convert nitrogen in air into a form that can be used by plants and animals.

Oxygen is the second-most-abundant gas in air. Plants and animals take oxygen directly from air and use it to release energy from food in a usable form. Oxygen also is needed for fire to burn. A form of oxygen, called **ozone**, which contains three oxygen atoms in each molecule instead of the usual two, is sometimes found in air. It forms when lightning interacts with oxygen in the air.

Carbon dioxide is present in the air in only small amounts. However, it is very important because plants need it to survive. Animals, on the other hand, produce carbon dioxide. The burning of fuels such as wood and coal also produces carbon dioxide.

Water vapor is water in the form of a gas. The amount of water vapor in the air may vary greatly. There may be almost no water vapor in the air above a desert or polar ice sheets. However, as much as five percent of the air may be water vapor above a tropical rain forest. Water vapor is important in weather. It produces clouds and precipitation.

Pure air exists only in laboratories. In the real world, air contains particles of dust, smoke, salt and other chemicals. Most of these particles are too small to be seen without a microscope.