

Name: _____

The ozone layer protects life on Earth by absorbing harmful ultraviolet radiation from the Sun. Too much ultraviolet radiation can cause sunburn, skin cancer, and damaged eyesight. Ultraviolet radiation can harm crops and materials such as plastic or paint. Ozone absorbs ultraviolet radiation but lets other types of radiation, such as visible light, pass through.

The greenhouse effect keeps Earth warm.

A jacket helps keep you warm on a cool day by slowing the movement of heat energy away from your body. In a similar way, certain gases in the atmosphere slow the movement of energy away from Earth's surface. The gases absorb and emit infrared radiation, which keeps energy in Earth's system for a while. This process was named the because it reminded scientists of the way glass traps warmth inside a greenhouse. Radiation from the Sun, including visible light, warms Earth's surface, which then emits infrared radiation. If the atmosphere had no greenhouse gases, the infrared radiation would go straight through the atmosphere into outer space. Earth's average surface temperature would be only about -18°C (0°F). Water would freeze, and it would be too cold for most forms of life on Earth to survive.

KEY CONCEPTS

1. Name and describe two of the ways gases can affect radiation.
2. What type of radiation does the ozone layer affect?
3. How do greenhouse gases keep Earth warm?

CRITICAL THINKING

4. Infer: What would happen if gases in the atmosphere absorbed visible light?
5. Compare and Contrast: How are ozone and greenhouse gases alike?

How are they different?