

## The Greenhouse Effect and Greenhouse Gasses

Have you ever been inside a greenhouse on a cold winter day? It might be cold outside, but inside the greenhouse lush green plants flourish in the warmth and sunshine. Greenhouses are made of glass and are designed to hold heat inside. Our planet's atmosphere traps energy just like a greenhouse. Energy from the Sun can enter the Earth's atmosphere, but not all of it can easily find its way out again.

What blocks the Sun's energy from escaping from the Earth? Unlike a greenhouse, the Earth does not have a layer of glass over it! Instead, molecules in our atmosphere called greenhouse gasses absorb the heat. Greenhouse gasses include water vapor, methane, ozone, nitrous oxide, and carbon dioxide. There may not be much of some of these gasses in our atmosphere, but they can have a big impact. Each greenhouse gas molecule is made of three or more atoms that are bonded loosely together. These molecules are able to absorb heat and then vibrate. They eventually release the heat energy and it is often absorbed by another greenhouse gas molecule.

The greenhouse effect is useful because trapping some energy keeps the temperature of the planet mild and suitable for living things. Without its atmosphere and the greenhouse effect, the average temperature at the surface of the Earth would be zero degrees Fahrenheit. However, too many greenhouse gases can cause the temperature to increase out of control. Such is Venus where greenhouse gases are abundant and the average temperature at the surface is more than 855 degrees Fahrenheit (457 degrees Celsius).

You might hear people talking about the greenhouse effect as if it is a bad thing. It is not a bad thing, but people are concerned because Earth's greenhouse is warming up very rapidly. This is happening because we are currently adding more greenhouse gases to our atmosphere, increasing the greenhouse effect. The increased Greenhouse Effect is causing changes in our climate that can affect our lives.