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Study of Green House Effect, Greenhouse gases and global warming and every day example of green house effect.

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Abstract : The greenhouse effect increases the temperature of the Earth by trapping heat in our atmosphere. This keeps the temperature of the Earth higher than it would be if direct heating by the Sun was the only source of warming.1 When sunlight reaches the surface of the Earth, some of it is absorbed which warms the ground and some bounces back to space as heat. Greenhouse gases that are in the atmosphere absorb and then redirect some of this heat back towards the Earth.2

The greenhouse effect is a major factor in keeping the Earth warm because it keeps some of the planet's heat that would otherwise escape from the atmosphere out to space. In fact, without the greenhouse effect the Earth's average global temperature would be much colder and life on Earth as we know it would not be possible.3 The difference between the Earth's actual average temperature 14° C (57.2° F) and the expected effective temperature just with the Sun's radiation -19° C (-2.2° F) gives us the strength of the greenhouse effect, which is 33° C.

Key Words : Green House Effect, Gases, Global Warming

Introduction : The greenhouse effect is a natural process that is millions of years old. It plays a critical role in regulating the overall temperature of the Earth. The greenhouse effect was first discovered by Joseph Fourier in 1827, experimentally verified by John Tyndall in 1861, and quantified by Svante Arrhenius in 1896

To understand exactly how the greenhouse effect works, imagine the following: a warm, sunny day where the sun shines bright on the Earth. This sunlight (shortwave radiation) passes into the planet's atmosphere and warms the Earth. Part of this energy is absorbed by the Earth's surface, transformed into heat (longwave radiation) and radiated back towards space. But as this heat goes up through the atmosphere, some of it is trapped by the different greenhouse gases and doesn't escape into space. This in turn warms up the Earth's atmosphere; just like the windows of

a greenhouse that lets light in and keeps the heat within to warm the plants growing inside. Since some of the heat can't escape into space, it continues to add up which then warms up the Earth. This is what we call the greenhouse effect. So the more greenhouse gases you have in the atmosphere, the more heat stays on Earth.

If the amount of energy from the sun and the amount of greenhouse gases in the atmosphere remain the same, then the average temperature on Earth will also be constant. But this is no longer the case. The amount of greenhouse gases in our atmosphere is the highest it has been in the last 3 million years.5 6 This is enhancing the greenhouse effect and making the Earth warmer than normal, which is affecting the planet's weather patterns, creating global warming and climate change.

An everyday example of the greenhouse effect

If you open the door of a car that has been left parked in the sun for a couple of hours, you'll notice that the temperature inside the car is much warmer than the temperature outside. This is because the windows of the car allow the sunlight to enter. This light, once inside, is then partially converted into heat. However, these same windows do not allow the heat inside the car to pass through as easily as light, so some of this heat accumulates. The net effect is that more heat remains in than can come out, increasing the temperature inside the car.

Greenhouse gases and global warming

"Gas molecules that absorb thermal infrared radiation, and are in significant enough quantity, can force the climate system. These type of gas molecules are called greenhouse gases," Michael Daley, an associate professor of Environmental Science at Lasell College told Live Science. Carbon dioxide (CO2) and other greenhouse gases act like a blanket, absorbing IR radiation and preventing it from escaping into outer space. The net effect is the gradual heating of Earth's atmosphere and surface, a process known as global warming.

These greenhouse gases include water vapor, CO2, methane, nitrous oxide (N2O) and other gases, according to the Environmental Protection Agency (EPA). Since the dawn of the Industrial Revolution in the early 1800s, the burning of fossil fuels like coal, oil and gasoline have greatly increased the concentration of greenhouse gases in the atmosphere, especially CO2,

National Oceanic and Atmospheric Administration (NOAA). "Deforestation is the second largest anthropogenic source of carbon dioxide to the atmosphere ranging between 6 percent and 17 percent," said Daley.

Atmospheric CO2 levels have increased by more than 40 percent since the beginning of the Industrial Revolution, from about 280 parts per million (ppm) in the 1800s to 400 ppm today. The last time Earth's atmospheric levels of CO2 reached 400 ppm was during the Pliocene Epoch, between 5 million and 3 million years ago, according to the University of California, San Diego's Scripps Institution of Oceanography.

The greenhouse effect, combined with increasing levels of greenhouse gases and the resulting global warming, is expected to have profound implications, according to the near-universal consensus of scientists.

If global warming continues unchecked, it will cause significant climate change, a rise in sea levels, increasing ocean acidification, extreme weather events and other severe natural and societal impacts, according to NASA, the EPA and other scientific and governmental bodies.

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