



**Animated PowerPoints**

**The Green House Effect - Video Script**



Tomatoes are good for our health in many ways. For example, they care for your skin, reduce your blood pressure, and prevent cancer. There is no surprise then that tomatoes are eaten all over the Earth. For tomatoes to grow, they need temperatures between 20 – 24°C. Many countries where people eat tomatoes will only reach 20 – 24°C during their summer. For these countries, it means they can only grow tomatoes during the summer. If these countries want to eat tomatoes outside of the summer, they will need to buy them from other countries or use greenhouses.

Greenhouses are made from glass or plastics. Because greenhouses are made from glass or plastic, they allow for sunlight to enter. The glass or plastic used to build a greenhouse permits light to pass through them because you can see through them. The sunlight warms the ground and the air inside the greenhouse. The glass or plastic used to build a greenhouse permits light to pass through them because they are see-through but reduces how much heat can escape. The temperature inside the greenhouse increases because it is easy for sunlight to enter and heat the air, but most of the hot air becomes trapped and cannot escape. Greenhouses are like the blanket we wrap ourselves up in at night to keep us warm; they keep trap heat to keep the fruit and vegetables inside them warm.

Why does this matter?

The Earth is like a greenhouse. Surrounding our Earth are gases that we cannot see. These gases that we cannot see are what makes the Earth's Atmosphere. The Earth's atmosphere and its gases are like the glass or plastic used to build a greenhouse; they allow sunlight to pass through. The Earth, its land, oceans, and air are warmed up as sunlight passes through the atmosphere. Of the gases that make up our atmosphere, three of them can trap heat like the glass or plastic used to build a greenhouse. We call these gases that can trap heat, Greenhouse Gases. Greenhouse Gases are given their name because they act like the glass or plastic used to build a greenhouse — they allow light to pass through and trap heat.

Greenhouse gases are essential for life on Earth. Greenhouse gases are essential for life on Earth because, without them, the Earth's heat would escape, and the average temperature would be -18°C. At -18°C, there would be little life on Earth. Greenhouse gases in the Earth's atmosphere help keep average temperatures at 14°C — ideal for living things to survive. We call this process the greenhouse effect.

Greenhouse gases are like the blanket we wrap ourselves up in at night to keep us warm; they are keeping Earth warm.

**Look back at this diagram and explain to yourself how the greenhouse effect works**

But what happens if the blanket becomes too thick?



What happens if the amount of Greenhouse gas in the atmosphere increases?

What will happen to the temperature of Earth?

As you might expect, the answer to these questions is simple — Earth's average temperature will increase. So, this leads us to ask a different question: how is it possible for there be more greenhouse gas in our atmosphere?

Let's find out.

One of the greenhouse gases in our atmosphere is called carbon dioxide. Carbon dioxide is essential for life on Earth. For example, trees and plants use carbon dioxide to create the food they need to grow. When animals and humans eat food, they are taking in carbon. The carbon in the bodies of animals and humans mixes with oxygen to create carbon dioxide. When animals and humans breathe out, they release carbon dioxide. The carbon dioxide that comes from animals and humans on its own will not make much of a difference to the average temperature on Earth.

Where else can we find greenhouse gases?

In the late 1700s, some 200 years ago, humans realised that fossil fuels could be used to create energy on a large scale. Fossil fuels, such as coal, oil and gas, are formed from the dead plants, trees and animals from 300 million years ago. We use fossil fuels to power our homes, places of work, cars, buses, trains, planes and much more. We call the last 200 years since we began using fossil fuels the industrial revolution.

The industrial revolution began in Europe, spread to the USA and is now happening in Asia, Africa, and South America. In the last 60 years, we have learnt that using fossil fuels releases carbon dioxide and other greenhouse gases. Fossil fuel use makes up 2/3 of the human released greenhouse gases in the atmosphere.

**Look back at this diagram and explain to yourself what fossil fuels are and how they are increasing the amount of carbon dioxide in the atmosphere**

The remaining 1/3 of human released greenhouse gases comes from farming and how humans use land. Today, farmers use machines to increase the amount of food they can grow. These machines run on fossil fuels. During the industrial revolution, the



Earth's population has grown, meaning more people to feed. We are farming more cows today than ever before. Cows release greenhouse gases.

How humans use land releases more greenhouse gases. Do you remember that plants and trees need carbon to grow? Plants and trees soak up carbon dioxide and store it like a sponge soaks up water. We call plants and trees that store carbon dioxide, carbon sinks. Carbon sinks are found on land and in our oceans. Over the last 80 years, humans have been cutting down trees to make way for farms and building new towns and cities. Every time forests are cut down, not only do we reduce how much carbon dioxide is soaked up, but the carbon dioxide also stored in the trees is released. Today, it is estimated that 1/2 of all human released carbon dioxide can be stored in carbon sinks. The rest stays in the atmosphere.

**Look back at this diagram and explain to yourself how farming and land use are increasing the amount of carbon dioxide in the atmosphere**

The result of fossil fuel use, farming and how we use our land is the levels of greenhouse gases in the atmosphere are higher than at any time in the last 800,000 years. The Earth is getting warmer. We call the warming of the Earth, caused by human released greenhouse gases, the Enhanced Greenhouse Effect. The Enhanced Greenhouse effect is causing our climate to change.

**Look back at this diagram and explain to yourself how the enhanced greenhouse effect is causing our climate to change.**