BBC BITESIZE

How carbon dioxide decreased

Alisha Kakar: Scientists have used evidence from rocks to conclude that the Earth's atmosphere several billions of years ago contained a lot of carbon dioxide compared to today.

We know about relatively recent increases in CO2 levels due to human activities since the Industrial Revolution.

But in this video, we're asking, where did almost all of the CO2 go over the 4.6 billion years since the Earth was formed?

What caused this decrease and what evidence do we have about it?

When the oceans formed, carbon dioxide from the air dissolved into the water.

Some of it reacted to form carbonate compounds which built up as sediments on the seafloor and eventually became rocks.

Later, photosynthetic organisms like simple bacteria, then plants and algae, began using light energy to make food through photosynthesis.

This process removes carbon dioxide from the atmosphere and converts it into glucose, which can be stored as starch, reducing CO2 levels even further.

Over time, marine animals evolved.

Their shells and skeletons contained carbon in the form of carbonates, and when they died, these remains settled on the ocean floor, locking away even more carbon.

Over millions of years, layers of dead plants, plankton and marine animals were buried under thick layers of sediment compressed by heat and pressure.

Compressed by heat and pressure, these materials turned into sedimentary rocks such as limestone and into fossil fuels like coal, oil, and natural gas.

This trapped huge amounts of carbon dioxide inside the earth instead of leaving it in the atmosphere.

Time to test your knowledge.

It's over to you.

Which of the following did not cause a decrease in carbon dioxide?

Was it the formation of sedimentary rocks?

Carbon dioxide dissolving in seawater?

Or volcanic activity?

It's volcanic activity that didn't reduce carbon dioxide.

In fact, volcanoes were the main source of it in the Earth's early atmosphere.

So over Earth's lifetime, reduction in carbon dioxide levels is down to: Being absorbed by the oceans.

Plants and algae photosynthesising.

And carbon being locked away inside rocks, oil and natural gas.

The dramatic decrease in carbon dioxide throughout history is one of the reasons life can survive on Earth today.