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The Earth's early atmosphere

Alisha Kakar: Do you know how the Earth's atmosphere has changed since it was formed around 4.6 billion years ago?

Understanding the early atmosphere helps us to learn how life began and why Earth can support life today.

Scientists believe the Earth's early atmosphere came from volcanic activity that released gases similar to those found on Mars and Venus today.

It consisted of a large amount of carbon dioxide, little or no oxygen, and very small amounts of other gases like ammonia and methane.

Volcanic activity also released water vapour, which condensed as the earth cooled to form the oceans.

But how did these gases change over time?

Over millions of years, the composition changed from being rich in carbon dioxide to mostly nitrogen and oxygen.

The mix we're familiar with.

We can see this with a pie chart, which shows which elements are most abundant in the Earth's atmosphere today.

The amount of carbon dioxide has reduced dramatically since the Earth's early days.

Volcanic activity continued, but oceans formed and absorbed lots of the carbon dioxide.

Organisms like algae and plants began photosynthesising, and that converted carbon dioxide into oxygen.

Over time, this created conditions for animals to evolve.

Today, the Earth's atmosphere consists of around 78% nitrogen and 21% oxygen.

Around 1% is made up of gases like argon, carbon dioxide, methane, and neon.

Water vapour is an important component, but its concentration can vary depending on the location and the temperature.

Now it's over to you with a quick question.

What produced the gases in Earth's early atmosphere?

Was it volcanic activity?

Photosynthesis by early plants?

Or evaporation of the oceans?

It was volcanic activity that released high amounts of carbon dioxide into the Earth's early atmosphere.

So from volcanoes and oceans to photosynthesising plants, every stage has helped shape the atmosphere we rely on today.