



**What is ocean acidification?**

* Each year the ocean currently absorbs around 25% of all the carbon dioxide we emit.
* Carbon dioxide (CO₂) dissolves in sea water to form carbonic acid, which lowers the pH of the water making it more acidic.
* As we emit more and more CO₂ into the atmosphere, this means that the oceans are becoming more and more acidic – a process called OCEAN ACIDIFICATION.
* The normal pH range of seawater is 7.5 to 8.4. Ocean acidification refers to any lowering of this pH
* Future projections show that by 2060, seawater acidity could have increased by 120%.

**Why does it matter?**

* Many of the plants and animals living the oceans have skeletons or shells made out of calcium carbonate.
* Some species are very sensitive to changes in acidity. As ocean acidity increases, their shells and skeletons may start to dissolve, affecting their ability to build and repair their shells. This could ultimately affect the survival of some species.
* Physiological processes within organisms, for example growth and reproduction, are also sensitive to changes in pH.
* Microscopic plankton at the bottom of the food chain, shellfish and molluscs, and plants that cement the coral reefs together may all be affected, with wider implications for the marine food web, habitats, and the food security of many human populations.

**What’s happening in the Arctic?**

* Cold water has the potential to absorb more CO₂ than warm water. This means that ocean acidification will be most evident in the Polar Regions.
* Cold water also contains a lower concentration of buffering ions than warm water, so has a lower ability to buffer changes in pH.
* Increasing acidity can already be measured in Arctic Ocean seawater, and biological responses have been detected. For example, some species of pteropod have been seen to have increased pitting and peeling to their calcium carbonate shells.
* Experiments have shown that some polar plankton species grow more slowly in acidic water.

**What can be done about it?**

* The most effective response to ocean acidification is to reduce and limit the amount of CO₂ that we emit into the atmosphere.
* There are currently no ways of remediating ocean acidification once it has occurred.
* Research is needed into ways that ecosystems can become more resilient to ocean acidification.

**Source:** EPOCA *Ocean Acidification – The Facts* (2009) [www.epoca-project.eu](http://www.epoca-project.eu)