

The ocean is a major influence on weather and climate

Carbon factory experiment:

Global warming and climate change are affecting many ecosystems on the land and in the ocean, but what are the other unseen effects? The ocean is sometimes described as a carbon sink, since it absorbs more than one quarter of all carbon released into the atmosphere. Many animals such as shell-building animals and coral reefs use this carbon to build their shells and skeletons, but what happens when too much carbon goes into the ocean? This 'carbon factory experiment' allows students to re-enact the effect of adding too much carbon to our ocean, and the chemical reactions behind it.

Method:

- Half fill a test tube with lime water. Test the pH using litmus paper.
- Using a paper straw, blow into the lime water. The water should turn cloudy as calcium carbonate forms, which is used by many animals in the ocean.
- Pre-prepare the glass straws and connectors to make a u-shape tube going from the test tube to the conical flask.
- Now to build our carbon factories! Add vinegar and bicarbonate of soda into the

Activity Learning Objectives:

Students will perform an experiment to discover the effect of ocean acidification on shell building animals, understanding how the addition of carbon dioxide into our atmosphere has an adverse effect

What you will need:

- Pre-prepared calcium hydroxide water (lime water)
- 6x test tubes
- 6x rubber bungs with tube
- 6x conical flasks
- disposable paper straws
- glass straws with connectors
- litmus paper (or alternative)

Further work:

Give students the chemical formulas involved in the carbon factory and get the students to work out the chemical formula or the reaction.

Chemistry links to other Ocean Literacy Principles:

Principle 7:

Discuss the implications of humans and use your chemistry knowledge to try and understand the hydrothermal vent, one of the weirdest habitats in the ocean, and where life originated. See if you can use some chemicals to make your own