Carbon cycle: exchanging carbon dioxide between the atmosphere and ocean (for pupils)

Introduction

Carbon dioxide dissolves in the ocean. There is an exchange of carbon dioxide between the atmosphere and the ocean's surface.

Universal indicator goes yellow in the presence of acid.

Carbon dioxide dissolved in water (known as being in **solution**) is acidic.

What you need

Eye protection

2 beakers

Universal Indicator solution

Sea water

Tap water (fresh water)

Drinking straw

Stopwatch

A copy of the carbon cycle diagram (below)

Safety

Wear eye protection. Blow gently through the straws; do *not* suck up water. Dispose of the straws at the end of the activity.

What to do

1. Pour 100 cm^3 of sea water into one beaker and 100 cm^3 of fresh water into the other beaker.
2. Put several drops of universal indicator into each.
3. Using the straw, blow gently and consistently into the water, first for the sea water, then the fresh water. For each, time how long it takes the indicator to become yellow. Record the results.

Questions

Q 1.	What did it mean when the indicator was yellow?
Q 2.	Which beaker turned yellow quickest?
Q 3.	Which water absorbs more carbon dioxide before becoming acidic?
Q 4.	Highlight this part of the carbon cycle on your diagram.

Overall questions on the carbon cycle

Q 1.	Carbon is in the cycle in solid, liquid and gas forms. Which products show each of these forms (one example of each)?
Q 2.	Which processes happen quickly (give examples)? Which ones happen very slowly (give examples)?
Q 3.	Which processes are going on outside the window today?

Q 4.	Which processes do you take part in?
Q 5.	Which processes did dinosaurs take part in?
Q 6.	Coal and natural gas form from ancient plants. What processes affected these plants that probably won't affect the plants you see outside the window?

THE CARBON CYCLE