Ocean acidification experiment instructions

Results have been released about the first field observations of ocean acidification. Experiments undertaken by the Australian Antarctic Division compared modern day plankton shells with fossilised shells (pre industrial revolution) trapped in the sediments between Tasmania and Antarctica. The weights of the shells were compared to determine which had a greater mass and therefore more calcium carbonate.

Materials

4 clean glass jars
4 shells
1 cup vinegar (Don't worry; the ocean is never going to become an acid as strong as vinegar.)
1 cup tap water
1 cup of sea water
½ cup of vinegar and ½ cup sea water, mixed
electronic scales (will need to be quite accurate – see your science teacher)

Directions

Step 1

Fill each jar with one of the following solutions:
1 cup of vinegar
1 cup of tap water
1 cup of sea water
½ cup of vinegar and ½ cup sea water, mixed

Step 2

Clean shells of any grit and dirt. Dry the shells well and weigh each one, taking the time to record observations about the shell. Note its size, colour, shape, texture and weight. If you are unable to locate an accurate scale to weigh each shell, you can still conduct this experiment by making observations about what you see before, during and after the experiment.

Step 3

Place each shell in a jar containing a different liquid and be sure to record which shell went into which jar.

Step 4

Leave the jars for one week, making observations about changes you see in this time (such as fading colour and changes in shape and texture). Time scales may vary depending on your class requirements.

Step 5

Take the shells out of the solution at the end of the experiment and dry them thoroughly. Re-weigh each shell and record any changes. Do not leave them exposed to the air for extended periods before re-weighing them.

Record your observations and compare with the original information. Note any changes in size, colour, shape, texture and weight.

Please consider the environment when collecting shells for this experiment and never take a shell that may be the home of a special little creature, and never collect material from protected areas. Tread lightly.

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Ocean acidification experiment

Dr Will Howard collects tiny zooplankton (microscopic organisms living near the surface of the ocean) shells from the ocean to determine the effect of pH on the ability of the zooplankton to produce calcium carbonate, which is essential for them to grow strong shells or skeletons.

You too can conduct an experiment like Dr Will and determine the effects of an acid environment on calcium carbonate shells by comparing the weights of shells before and after your experiment.

Name of scientist
Grade of scientist
Date of experiment

Aim or hypothesis

Method

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Materials

Results:

Tap water		Observations
Date		
Shell weight before		
Date		
Shell weight after		

Sea water		Observations
Date		
Shell weight before		
Date		
Shell weight after		

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Sea water and vinegar		Observations
Date		
Shell weight before		
Date		
Shell weight after		

Vinegar		Observations
Date		
Shell weight before		
Date		
Shell weight after		

Conclusions