THE UNIVERSITY of ADELAIDE

SCIENCE OUTSIDE THE CLASSROOM

Make an erupting volcano

Recommended age group: all ages

A great activity for younger students, it can be made as simply or as complex as you wish. Aside from the fun of the eruption, this activity can be used to better understand the parts of a volcano, how volcanoes are formed and why they erupt.

You will need:

An empty soft drink bottle
Modelling clay, paper mache or plaster
Plant material, dirt, twigs
Vinegar, ½ cup
Water, ½ cup
Liquid dishwashing soap (optional)
Baking Soda, 3-4 tablespoons
Red food colouring
Large tray or plastic tablecloth

What to do:

Create a model volcano around the bottle using the material of choice. Make sure that the opening to the bottle is clear of clay or plaster, and that no clay drops into the bottle. Decorate the model to make it look authentic using the plant material, dirt, and twigs. Label the different parts of the volcano: crater, magma chamber, crust, vent, side vent, lava, etc. Place your model into the large tray or onto a table covered with the plastic tablecloth. To make your volcano erupt, mix the water, baking soda, and liquid dishwashing soap. Pour the mixture into the top of the bottle. Add a few drops of red food colouring to the vinegar in a separate cup. Pour the vinegar into the lava chamber and watch the volcano erupt. Make sure that you do this somewhere that you don't mind a bit of mess!

How does this work?

Volcanoes form when the pressure below the Earth's upper mantle builds up, causing magma to be pushed upwards. When it gets to the surface, the pressure builds and the volcano erupts, spilling lava, rock ash and gas out of the volcano. The Earth is covered by huge slabs that fit together like a jigsaw. These large plates of earth are called tectonic plates, and they float on top of the Earths molten, or liquid, core of magma. When plates float on top of a liquid they move around and bump into each other, causing friction. These areas are most likely to form volcanoes because, as the plates push against each other, they can form passages where magma can escape.

The volcano you have made doesn’t make magma, but does have pressure causing the eruption. Baking soda is a base, and has a high pH. Vinegar is an acid and has a low pH. When acids and bases come together, they exchange protons. The two original molecules form new molecules during this exchange. Two of the new molecules are water and carbon dioxide. Carbon dioxide is a gas, which rises out of the solution in bubbles. However, as it tries to escape the small area inside your volcano, the bubbles push liquid out of the top of the volcano, too. The pressure inside the volcano increases because of the release of a new gas, causing what looks like an eruption.