

## Explorers Education Programme



### Explorers Science Experiments - Volcanoes

**Class:** All classes

**Strand:** Energy and Forces / Materials

**Strand Unit:** Forces / Properties and characteristics of materials / Materials and change

**Group size:** 3-4 students

### Aim

To examine the chemical reaction between acids and bases.

Students completing the worksheets will also develop writing and literacy skills.

Experiment suitable for teacher demonstration and/or supervised group experiment for 5<sup>th</sup> and 6<sup>th</sup> Class students.

### Materials

- Vinegar
- Bread soda or baking powder
- A large spoon
- Glass container (Conical flask)
- Plastic / baking tray (to place under the volcano to contain the mess!)

### Methods

1. Add about half a glass of vinegar to a glass container (conical flasks work very well).
2. Mix in a few drops of food colouring.
3. Add a large spoon of bread soda or baking powder.
4. In addition, get students to use the web and/or their school library to research the discussion points below and the worksheet questions.

❖ **The volcano should erupt nicely. If you wish the volcano to erupt over the container just use more vinegar and bread soda. Care should always be taken with food colouring as it does stain clothes.**

### What Happens

- Bread soda / baking powder is a base substance and vinegar is an acidic substance.
- When the two substances are mixed they react.
- This reaction causes foam and emits carbon dioxide.
- The pressure of the gas building up in a confined space can cause an eruption.

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### Discussion Points

- Before students add the bread soda / baking powder to the vinegar discuss what they think will happen?
- After the reaction discuss how swapping the vinegar with water would affect the results?
- Discuss what happens when pressure of gases builds up in a confined area.
- What are the differences between mountainous volcanoes and underwater volcanoes?
- Discuss where in the world you would find volcanoes on land and under the sea.
- Get students to use the web and/or their school library to research these discussion points and the worksheet questions.

### Outcome

The children in the class will have developed skills in the following:

- Questioning
- Observing
- Predicting
- Investigating and experimenting
- Analysing
- Recording and communicating
- Exploring
- Planning
- Making
- Evaluating

In addition the following skills in English will be developed:

- Reading for pleasure and information
- Developing competence, confidence and the ability to write independently
- Developing interests, attitudes, information retrieval skills and the ability to think

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### Useful Links

- [http://www.msnbc.msn.com/id/45258958/ns/technology\\_and\\_science-science/t/first-look-infant-underwater-volcano/#.T0uPMYdmlpU](http://www.msnbc.msn.com/id/45258958/ns/technology_and_science-science/t/first-look-infant-underwater-volcano/#.T0uPMYdmlpU) - How underwater volcanoes form
- <http://www.scholastic.com/teachers/article/general-facts-about-volcanoes> - General facts about volcanoes

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## Worksheet

What do you think will happen when the bread soda / baking powder is added to the vinegar?

| My prediction | What happened and the reason why it happened? |
|---------------|---|
|               |   |

How do you think swapping the vinegar with water would affect the results?

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Using the web and/or your library, explain how volcanoes are formed?

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## Worksheet

What are the differences between mountainous volcanoes and underwater volcanoes?

Where in the world are there volcanoes on land and in the sea?

Are there any volcanoes in Ireland?

What do you call a volcano that is no longer active and will never erupt again?