

Explorer Education Programme



Explorers Science Experiments – Oil and Water Interactions

Class: All classes

Strand: Materials

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

Group size: Demonstrate this experiment. Allow individuals to use experiment when the bottle with oil and water is ready.

Aim

To examine how oil and water interact physically when undisturbed and to examine how this interaction is changed both physically and chemically by the addition of effervescent tablets.

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

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

Materials

- Old plastic bottle
- Cooking oil
- Water
- Food colouring
- Effervescent tablet (e.g. Alka-Seltzer)
- Thumb tack

Methods

1. Fill the bottle with 1/5 of water and add a little bit of food colouring to it.
2. Pour in another 3/5 of oil.
3. Place a thumb tack in the lid.
4. Add the effervescent tablet to the bottle (leave the lid off until the liquid has stopped bubbling).

What Happens

- When the tablet mixes with the water it fizzes and releases carbon dioxide.
- This gas floats to the surface of the oil and brings a small amount of coloured water with it.
- When it reaches the surface the gas leaves the bottle and the water sinks back down through the oil to the bottom of the bottle.

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Discussion Points

- Before the experiment, discuss with the students how electric lava lamps work? Are they made of oil and water?
- Electric lava lamps are filled with wax and oil. When the wax is heated by the bulb at the base of the lamp it heats up and becomes a liquid. This liquid floats up to the surface of the oil (away from the bulb which is the heat source). It cools at the top of the lamp as there is no heat source there, it then becomes a solid again and sinks back down through the oil.
- Once the oil and water have been added to the bottle ask the students what do they think will happen when the effervescent tablet is added?
- (This part of the experiment can be linked with the rockets experiment as the same effervescent tablets are being used).
- Discuss why the tablets release gas once they come in contact with the water but not the oil?
- Discuss what happens when oil is spilled at sea? What are the impacts on wildlife and habitats from oil spills?
- 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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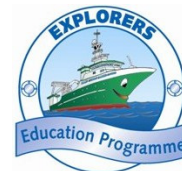
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Useful Links

- <http://greenhouseneutralfoundation.org/articles/2010/03/06/mother-nature%E2%80%99s-effervescence-%E2%80%98bubbles%E2%80%99/> - Page about natural effervescence
- http://library.thinkquest.org/CR0215471/oil_spills.htm - Information on oil spills
- <http://www.itopf.com/marine-spills/fate/weathering-process/> - Behaviour of oil at sea

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Worksheet

What materials are used to make an electric lava lamp?

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What do you think will happen when the **effervescent tablet is added** to the bottle with the water and oil?

My prediction	What happened and the reason why it happened?

In the experiment, explain why do the tablets release gas once they come in contact with the water but not the oil?

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Worksheet

Using the web and/or your library, explain what happens when an oil spill occurs in the sea?

What are the impacts on marine wildlife and habitats from oil spills?

Can you name the locations and years of two major oil spill accidents at sea?