Exploring Oil Seeps

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Experiment Record

Secondary Pupils

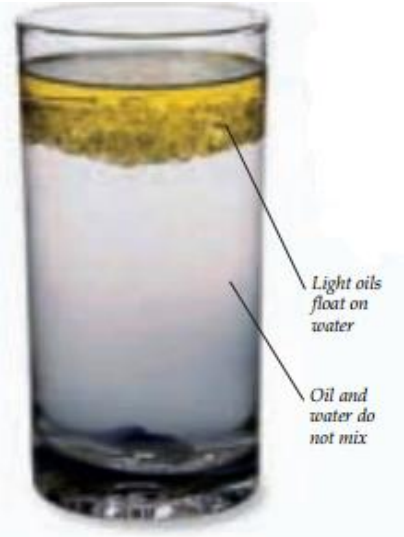
Background

Oil and gas seeps are natural springs where liquid and gaseous hydrocarbons leak out of the ground. These seeps are fed by natural underground accumulations of oil and natural gas. Oil that leaks to the Earth's surface looks tar-like due to evaporation of lighter components over time.

This activity models the formation and process of oil seeps. After the activity, discuss how density of oil and Earth's materials contribute to the process and any modifications that could be made to the model.

Materials

- 1 Large clear glass
- 1 Small mixing bowl
- 2 ml Cooking oil
- 10 cm ^{3} Sand
- 30 cm ^{3} Soil
- 1 Piece of modelling clay
- Water



Instructions

1. Pour sand into bottom of the glass.
2. Pour the oil into the sand and add 1 ml of water.
3. Mix the soil with water until it is very wet, then pack tightly into the glass on top of the sand mixture.
4. Flatten the modelling clay into a circle as large as the opening of the glass.
5. Make a thin seal over the soil with the clay.
6. Fill the glass with water.
7. Observe the surface of the water to see how long it takes the oil to seep through the layers to the top of the water.
8. If seeping doesn't occur after 10 minutes, agitate the sides of the container to accelerate the seep effect.
9. Record observations

Developed for *Curriculum for Excellence*
by Aberdeen City Council and Satrosphere Science Centre
with support from The Society of Petroleum Engineers

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Results

1. How long did it take for the oil to seep to the top?

_____

2. Did the oil seep faster after you agitated the glass?

_____

Assessment Questions:

1. How long do you think it would take for all the oil to seep to the top?

_____

2. Would the oil seep faster if you continually agitated the glass?

_____

3. Would a taller glass with more water (more pressure) affect the rate of seepage?

_____

4. What effect would using salt water have?

_____

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