

August 7, 2008

Discovery Lesson Plan: Exploring Natural Seepage of Oil from the Oceans' Floors

OBJECTIVES: The students will be able to construct a model of an underwater seep. They will be able to label the parts of their seep. They will be able to explain why the oil seeps the way it does. They will be able to formulate an idea as to how this could apply to petroleum seepage from the earth's crust.

MATERIALS: Book, *Oil, DK Science Book*
12oz. Clear plastic cup
Small mixing bowl
2 ml cooking oil
10 cm³ cleaned, playground sand
30 cm³ soil (from the backyard is fine)
salt and fresh water

READ: *Oil*

DISCUSS: Where in the world the naturally occurring oil seepages exist. Review difficult vocabulary, answer any questions. Explain procedures for discovery experiment.

PROCEDURE:

Pour sand into the bottom of the plastic cup. Pour the oil onto the sand and add 1 ml of water. In the small bowl, thoroughly mix the soil and the remaining water. Pack this mixture tightly on top of the sand, oil and water already in the glass. Mold the clay into a thin disk layering on the top of the soil and seal tightly to the inside edges of the cup so that the soil and water mixture is sealed well below the clay. Divide the class in half and fill the glasses with fresh or salt water. Observe the water to see if the oil seeps through to the surface. Record the time it takes to begin seeping. Estimate the amount of oil that is seeping to the top.

DISCUSSION:

How long do you think it would take all the oil to seep to the top?
How would you design an experiment that would measure this?
How could you get the oil to seep faster? Agitation? Pressure?
What was more effective salt or fresh water?
How can you test this? How can you measure this?
How does this apply to petroleum seeping up from the ocean floor?
Would it matter if larger particle sizes were used?
Would it matter if heat were applied?

FOLLOW-UP:

Students will draw the cup and it's parts in their science journal.
Students will label all parts of the cup and it's contents.
Students will write answers to above questions in journal using their own thoughts and explanations.

EVALUATE:

Students will report what could have been done differently to improve the investigation. Students will review the scientific method within their groups and debate if the investigation followed the proper procedures.

FIELD TRIP:

Take a follow-up field trip to view the seeps in the Santa Barbara Channel!