Tabletop Oil Spill

About This Lesson

Time Frame: One class period

Grade Level: 3-12

Academic Question: How does oil behave in water during an oil spill event?

Application: This short experiment demonstrates how oil can affect various species and habitats. This activity gives students an introduction to experimenting with oil removal techniques.

Objectives:

- To observe the characteristics of oil in a simulated oil spill and its effects on various biological organisms.
- To attempt to remove the oil from the water using different techniques.

Background:

Large oil spills are not common along the Texas coast; however, many smaller spills occur on a regular basis. Through training and quick response, many of these smaller spills are removed with little effect on the environment. Oil spills can cause many short and long-term problems for our environment. There are many techniques employed for the removal of oil from an aquatic system. The response to a spill in a ship channel would be different than a spill near a wetland. Most importantly, after an oil spill occurs, a plan must be quickly developed, and action must begin.

Getting Started

Materials:

- 12x15 Rubbermaid/Tupperware dishwashing pans
- Cooking oil
- ½ measuring cup
- Cold Water
- 10ft of drip irrigation tubing
- Package of ¼ inch irrigation tubing connecting barbs
- Oyster shell
- Package of bird feathers
- Small plant material (stems and leaves from the yard to simulate wetland plants- ferns and grasses work well)
- Oil-sorb diaper cut in to 6x6 inch pieces (available at auto/marine stores)
- Dishwashing soap
- Paper towels

Process:

1. Develop an interrupted case study scenario appropriate to your region, based on the background information provided above.
2. Begin with a discussion of oil spills and their effect on the environment. Students should be able to recall possible recent events. Remind them that oil spills both big and small can have effects. (can be done as a demonstration or in lab groups of 3-4 students)
3. Present the interrupted case study to the students.
4. Take the plastic tubs and fill ½-3/4 full of cold water. (warmer water does not hold the oil together as well as cool or cold water)
5. Add 1/4 cup of cooking oil to the center of the tub of water.
6. The oil should form into a circle of oil toward the center.
7. Have the students lightly blow on one side of the tub and observe how the oil reacts to the simulated wind. (have them try to keep it off the sides of the tub by blowing)
8. Have the students observe what occurs when they dip a few feathers in to the water, and then the oil. Remove the feathers and place in a paper towel.
9. Have them repeat the process with the oyster shell and the small plant material.
10. Lastly, have the students develop a plan for removing the oil. The can make a simulated oil boom out of the irrigation tubing and then remove the oil using the oil-sorb diaper.
11. Remind them they now have oil-contaminated products that must be disposed of properly.
12. Once a majority of the oil has been removed, have the students clean their work area using soap.

Evaluation/Extension

- Have the students research a recent oil spill event.
- Have the students experiment with various other materials for removal or dispersal.
- Have the students look up oiled bird clean up protocols.
- Have them discuss what coastal habitat is most vulnerable to an oil spill event and why.

This module was originally developed as part of the "Hurricane Recovery Workshops for Students", held in Corpus Christi in 2017.