Oil Spill Cleanup

Subject: Science  
Grades: 6-8

Duration: One class period (55 minute)

Materials

Per Class
Students bring paper and pencil for note-taking and drawing sketches.
World map
Paper towels for clean up
Newspaper to cover tables
Cooking oil

One each per group of two students:
Shallow pan partially-filled with water
Tubs or ziploc bags to distribute materials
Water dropper
Magnifier
Feather
Fur cut into 2"x 2" square
Hay/Straw
Cloth cut into 2"x 2" square
Newspaper cut into 2"x 2" square
Oil sorbent cut into 2"x 2" square

Lesson Overview
In this lesson, students compare the effectiveness of various materials to clean up oil spills in the ocean. Other clean up methods, including containment and bioremediation are presented. The use of petroleum, how it is transported to the U.S., and the effects oil spills on wildlife is discussed.

Essential Questions
Where does oil come from and how does it get here?  
What are some ways oil is used by humans?  
What impact does an oil spill have on the environment?  
What are some ways an oil spill can be cleaned up?

Objectives
After this lesson, students will be able to:
1. Describe where oil comes.
2. Give examples of how we use oil.
3. Explain how oil spills affect birds, people and wildlife.
4. Explain which materials are effective at cleaning up oil spills and why.
5. Give examples of ways we can use less oil.

Background
Offshore drilling methods are used to get oil from beneath the ocean. The U.S. also imports oil from countries in the Middle East, across the Atlantic Ocean, that is transported by ocean tanker to the U.S..

Oil can be spilled into the ocean either from the drill pad or when it is being transported in oil tankers.
Advance Preparation

- Cut 2” squares of materials

Procedure

1. Class discussion

- How is oil used in daily life?
  
  *Plastics, Styrofoam, polyester clothing, gasoline, home heating oil….*

- How is oil formed?
  
  *Plants and animals that lived millions of years ago, died and were subjected to great heat and pressure that formed them into coal and oil deposits.*

- Where is oil found?
  
  *Oil is found in a variety of locations throughout the world, depending upon an area’s geology. Oil is found in lower Michigan, western states, in the Arctic, and especially in the middle eastern countries of Kuwait, Saudi Arabia, Iraq, Iran, and Egypt. (show world map)*

- How does it get to us?
  
  *Oil is pumped out of the ground, like water is from a well for drinking water. Oil is then brought to our country in large ships, or oil tankers, that contain several hundred thousand of gallons of oil. Oil super tankers contain millions of gallons of oil.*

- How does oil affect wildlife?
  
  **Fish:** Suffocation when gills are clogged.
  
  Damages kidneys, intestines, lungs, or liver.
  
  Kills babies inside eggs

  **Bird:** Damages feathers – A bird’s feathers trap air.
  
  Oiled feathers cannot trap air; this causes the bird to not be able to keep warm, fly, or float.
  
  Kills babies inside eggs
  
  Poisons through ingestion of food and water contaminated by oil, or by trying to clean its feathers.
  
  Damages kidneys, intestines, lungs, or liver.
  
  Those that consume oil have trouble laying eggs.
  
  Stress increases likelihood of disease.

  **Wildlife:** An aquatic animal’s fur traps air.
  
  Oiled fur cannot trap air; this causes the animal to not be able to keep warm or float.
  
  Poisons through ingestion of food and water contaminated by oil, or by trying to clean its fur.
  
  Damages kidneys, intestines, lungs, or liver.

2. How does oil affect bird feathers (groups of two)? (Activity)

- Examine a feather with a hand lens. Sketch what you see. Describe aloud.
- Dip into **water** for one minute. Observe, sketch, and compare to original observation.
- Dip into **oil** for one minute. Observe, sketch, and compare to original observation.
- Wash feather with detergent, rinse, and dry. Observe, sketch, and compare.
- What changes do you notice after exposure to oil and detergents?
- How might these changes affect normal bird activity?
3. How does oil affect animal fur?

- Examine a square of fur with a hand lens. Sketch what you see. Describe aloud.
- Dip into water for one minute. Observe, sketch, and compare to original observation.
- Dip into oil for one minute. Observe, sketch, and compare to original observation.
- Wash fur with detergent, rinse, and dry. Observe, sketch, and compare.
- What changes do you notice after exposure to oil and detergents?
- How might these changes affect normal animal activity?

4. Oil Spill Clean Up Activity

- Put a drop of oil onto water in plastic container. What happens to it?
- Place straw onto oil in water. Does it pick up the oil? Does it pick up the water? Would it be an effective way to remove spilled oil from the ocean or lake?
- Place newspaper onto oil in water. Does it pick up the oil? Does it pick up the water? Would it be an effective way to remove spilled oil from the ocean or lake?
- Place piece of cloth onto oil in water. Does it pick up the oil? Does it pick up the water? Would it be an effective way to remove spilled oil from the ocean or lake?
- Place sorbent onto oil in water. Does it pick up the oil? Does it pick up the water? Would it be an effective way to remove spilled oil from the ocean or lake?
- Which material works best to remove the oil and NOT the water? Can the sorbent clean up all of the oil?

Learning Assessment

1. How do we use oil?

2. Is oil a renewable resource?

3. What are some of the consequences of oil spills for fish, birds and wildlife?

4. Which material is most effective at cleaning up an oil spill? Why?

5. How can we use less oil to help prevent oil spills and protect the environment?