Every technology developed has an effect on the Earth from using raw materials and resources to possible mitigation of other technologies. Environmental engineers try to design techniques to minimize harm done to our environment. Engineers are consistently researching, designing, and testing new ways to help clean up oil spills.

MATERIALS

- large tub or flat container
- tape and marker, dry erase marker, or ruler
- vegetable oil
- water
- food coloring (optional)
- paper or science notebook
- pen or pencil
- oil spill cleaning materials to test such as:
  - straws
  - paper towels
  - cotton balls
  - feathers
  - sand
  - dish soap

PROCEDURE

1. Begin by filling the tub halfway with water. You may wish to use food coloring to color the water.
2. Measure the water level using one of the following methods and record your results in the chart or your science notebook.
   - Place tape at the water line and label “Test 1” start.
   - Use a dry erase marker to record the water level on the side of a glass container and label.
   - Use a ruler to measure the water level from the bottom of the container.
3. Spill a few teaspoons of oil into the water. Record how much oil was added to the container on the chart or in your science notebook.
4. Observe the oil and how it behaves in the water. Record your observations.
5. Problem
   Oil in the water can be harmful to plant and animal life. How can you remove the oil without removing too much water?

DID YOU KNOW?

Oil floats on the top of the water and spreads over a large area. One pint of oil spilled on water can create a one-acre oil slick!

Design

1. Decide which available materials you want to test.
2. Decide how you will use those materials to remove the oil.
3. Record your materials and methods by drawing a picture or describing your solution in the chart or in your science notebook.

Test

1. Using the materials you selected, test out your solution.
2. Using the same method you used to find the starting water level, measure and record the final water level for Test 1 in the chart or your science notebook.
3. Record the difference in the water level from the beginning of the test to the end in the chart or in your science notebook.
4. Estimate how much oil remains and record your results in the chart or in your science notebook.

Experiment continued on next page...
Re-Design

How can you make your design better and more effective at cleaning oil spills?

• Try a different method with the same materials.
• Try new materials using the same method.
• Are there materials that you were not thinking about testing before that might be even better?

Record your results for each additional test in the chart or in your science notebook.

<table>
<thead>
<tr>
<th>Test</th>
<th>Materials Used</th>
<th>Methods Used</th>
<th>Prediction</th>
<th>Water Level</th>
<th>Estimate of Oil Removed</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td>Start: _____ Final: _____ Change in water level: _____</td>
<td>Oil added:</td>
<td>Oil removed:</td>
<td></td>
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<tr>
<td>2</td>
<td></td>
<td></td>
<td>Start: _____ Final: _____ Change in water level: _____</td>
<td>Oil added:</td>
<td>Oil removed:</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td>Start: _____ Final: _____ Change in water level: _____</td>
<td>Oil added:</td>
<td>Oil removed:</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td>Start: _____ Final: _____ Change in water level: _____</td>
<td>Oil added:</td>
<td>Oil removed:</td>
<td></td>
</tr>
</tbody>
</table>

Challenge

What will you do with the oil-covered clean-up material so it won’t become its own clean-up problem? Each year, oil spilled in oceans, lakes and streams harms wildlife and the environment.

Experiment continued on next page...
K–2 GRADE EXPLORATION

Here are some questions you can explore together.

• Why did you choose the materials you did?

• How did you change your experiment to make it pick up more oil?

• What might you try next?

• What might cause an oil spill in the ocean, a lake, or a river?

• Why do you think it is important to clean up oil spills?