

## APES

Names (Groups of 2) \_\_\_\_\_

### Ocean Oil Spill Cleanup Lab

In this activity, you will simulate a limited oil spill in the Gulf of Mexico and then clean it up. You will decide which materials you will use from the list below. Set up the materials as described below and strategize your efforts. You have this class period to complete the activity. Submit analysis questions into Turnitin.com by 11:52 on Monday 4/3.

#### Student Materials:

8" aluminum pie pan	50mL beaker	11 cm thin rubber tubing
cotton pads	paper towels	1000mL beaker
1mL pipette	vegetable oil	stop watch

- 1) Fill your 1000mL beaker to the 600mL mark and carefully pour water into the 8 in. pie pan to simulate the Gulf of Mexico.
- 2) When the teacher says so, add the 10 ml of vegetable oil found in the 50mL beaker to simulate an oil spill. After one minute, observe and record what happens to the oil.
- 3) Next, gently blow across the water to simulate the wind. Observe and record what happens.
- 4) On the teacher's command, begin to cleanup the oil spill using the materials you purchased. You are allowed a total of 10 minutes. Time is critical in cleanup to lessen the environmental damage and reduce the amount of oil dispersion across the water's surface area.
- 5) Try to cleanup efficiently, because you will be "charged" for the use of each piece of equipment and for how well you are able to clean up the spill.

**Keep track of the time and/or the number used for each method of cleanup.** Fill in the chart below to calculate the cost of your cleanup efforts.

#### Expense Summary Chart

Equipment and Techniques	Cost	Minutes of Use and Number Used		Total Cost for Each Used
1mL pipette (simulates a skimmer boat)	\$100.00/minute	Minutes	Number	
Rubber tubing (simulates oil boom to corral the oil)	\$50.00			
Cotton Pads (simulates absorbent pads)	\$20/pad			
Paper Towels (simulates absorbent pads)	\$30.00/sheet			
Waste Disposal Discarded Cotton Pads Discarded Paper Towels	\$10.00/each \$15.00/each			
Container for Wastewater (1000mL beaker)	\$1000/each			
Labor	\$1000/person/minute			
Total Cost of Cleanup				

**Names**

**Website to find Answers to the Ocean Oil Spill Lab:**

- 1) <http://www.ceoe.udel.edu/oilspill/cleanup.html>

**Please retype question in bold.**

**Analysis Questions:**

1) Define the Following Terms

oil skimmer boat –

absorbent pad for oil cleanup –

floating oil boom –

2) Describe what you observed when the oil spill first occurred. What effect did the simulated wind have on oil dispersion and eventual cleanup efforts?

3) Was there any oil left in the water after 10 minutes of cleanup? Describe what you see. In a real ocean oil spill, what will happen to the oil that still remains after the cleanup is completed?

4) Which technique(s) seemed to work best? Why?

5) What importance does immediate response have in cleaning efforts?

6) Do you think crude or refined oil behaves the way that vegetable oil does? Why or Why not? (Hint: think of density differences, solubility properties, and dispersal rates. Also, go to the second website listed above. For the sake of this lab, the vegetable oil will be considered a TYPE 2 oil. Read the information about the different types to help you answer this question)

List and describe one U.S. and one International Law, Act, Treaty, etc that have safeguards against ocean oil spills. Include in your description the name, date, and purpose of the legislation. Use the following sites to help you find the answers.

<http://www.epa.gov/oem/content/lawsregs/opaover.htm>

[http://en.wikipedia.org/wiki/MARPOL\\_73/78](http://en.wikipedia.org/wiki/MARPOL_73/78)

[http://en.wikipedia.org/wiki/United\\_Nations\\_Convention\\_on\\_the\\_Law\\_of\\_the\\_Sea](http://en.wikipedia.org/wiki/United_Nations_Convention_on_the_Law_of_the_Sea)