

Name _____ Science Course _____

Pre Lab Due _____ Post Lab Due _____ Grade _____

What's the Best Way to Clean Up an Oil Spill?

Marine (ocean) oil spills are an environmental problem. Spills expand in the water, sometimes forming “tar balls” that wash up onto beaches and shore lines. In this investigation, you will be learning why oil is difficult to clean up, and then will test your own ideas on how to best clean up marine oil spills. Essentially oil can be cleaned up by skimming or absorbing. Skimming is when oil is mechanically removed from the water. Absorbing is when materials are used to soak up the oil first, before trying to remove it from the water. In this lab, you will be testing various methods of removing oil from water.

PreLab Questions

1. What do you know about how well oil and water mix? Use an example to explain your answer.
2. What is the difference between skimming and absorbing methods of oil removal?
3. Make a prediction of what material will best help remove oil from water. Why do you think this material will work better than the others?

The following materials will be provided to use as you test your methods of oil removal.

Paper towels	Dish detergent
Cotton balls	Bar Soap
Cloth rag	Sawdust
Sponge	Dry cereal

Procedure:

1. Pour approximately 5 mL of oil into a graduated cylinder and then into a paper cup. You will be using this oil throughout the lab.
2. Fill a shallow aluminum pan about 1 cm deep with water
3. Tie the ends of a piece of twine together so that you form a loop with an approximate diameter of 10 cm. This will be your “boom” (a floating barrier used to contain floating oil)

- and prevent it from spreading over a large area).
4. Float the boom in the center of the pan.
 5. Pour a small amount of oil from your cup in the center of your boom.
 6. In the data table, describe what is happening to the oil and how effective the boom is at containing the oil.
 7. Now use a spoon to try and remove the oil from the water. This is called skimming.
 8. In the data table, describe what is happening to the oil and how effective the spoon is at removing the oil.
 9. Attempt to clean up the oil using any of the materials available for you in the lab (see the list above). Use one material at a time using any safe method you can think of, to clean up the spill. Materials can be used in a variety of ways, there is no “one right way.” In the data table below, record what you did, and how it worked. Describe how you used the item, described what effect the method had, and then describe its effectiveness.
 10. After you have tested six additional methods rate each method using the A-F scale.

Post Lab Questions

How could the boom be improved?

Overall, was skimming or absorbing a better method of oil removal? Back up your answer using the data from your experiment.

Which method that you tested, removed the most oil? Why do you think that is?

Which method that you tested, removed the least amount of oil? Why do you think that is?

Besides the materials available to you during this lab, what other materials might be good to try? Why do you think they would work differently than the ones you've already tested?

How do you think the order in which you used materials affected the grade you gave them?

Apply what you did in this lab to cleaning up an actual oil spill in an ocean. How is it the same?
How is it different?

What are the challenges of cleaning up a marine oil spill?

Student Data Table for Oil Spill Lab

Material	Method used Describe how you used the item to remove or contain the oil.	Effectiveness Describe what happened, and whether or not the material helped remove or contain the oil.	Rating (A-F)
String	Boom: tied string in a circle trying to contain the oil so it wouldn't spread.		
Spoon	Skimming: used spoon to scoop oil off the top of the water.		

