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Oil Spill Cleanup Worksheet Answer Key

Materials Your Group Should Have
• plastic tub • cup or beaker • ruler

1. Take the plastic tub to the sink and fill it halfway with water. Then bring the tub back to your group's work area.
2. With your teacher, take 1/4 CUP OIL and 1 TABLESPOON COCOA POWDER and mix with a spoon. Then, pour the oil into your tub of water and wait for 30 seconds.

Write down what your group saw happening (observe up to three things). Did the oil and water mix?

3. Take a spoon and try to mix the oil and the water together.

Now what do you see happening (observe up to three things)? Did the oil and water mix?

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4. Using your ruler (or a scale), measure the height of the water and the height of the oil and write the numbers down below.

WATER	OIL

Draw a picture here of what the oil and water in your tub look like.

Why do you think the oil and water do not like each other? Make sure every member of your group gets a chance to speak.

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Now we will try to get the oil back OUT of the water. Look at your teacher's desk. The materials on the desk are what you will use to get the oil out of the water.

Materials Available For Cleanup
• salt • dish soap • microwave • ice • string • popsicle sticks • spoon • cotton balls

Which materials do YOU think will work the best to get the oil out of the water?

Based on the methods used for this project, the cotton balls had the best outcome because they eliminated the most cocoa (oil) from the water. Another close solution would be the rubber bands, because they were used to skim the oil from the rest of the water. It closely simulates the real-world technique of skimming, which uses a boom and a skimmer.

5. Now test! Go to the teacher's desk and take three of the materials that your group thought would help get rid of the oil. You can try them one at a time or mix and match. As you try different materials, answer the questions below.
    a. As you get oil out of the tub, pour it into your group's cup.

MATERIAL 1

What material(s) did you use?

Why did your group choose this material?

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How did you use this material?

6. Take your group's ruler again and measure the height of the oil and water in the tub AND the cup. The oil in the cup is the amount of oil that you got OUT of the water. Write these numbers down below.

WATER		OIL	
TUB	CUP	TUB	CUP

MATERIAL 2

What material(s) did you use?

Why did your group choose this material?

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How did you use this material?

7. Take your group's ruler again and measure the height of the oil and water in the tub AND the cup. The oil in the cup is the amount of oil that you got OUT of the water. Write these numbers down below.

WATER		OIL	
TUB	CUP	TUB	CUP

MATERIAL 3

What material(s) did you use?

Why did your group choose this material?

How did you use this material?

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8. Take your group's ruler again and measure the height of the oil and water in the tub AND the cup. The oil in the cup is the amount of oil that you got OUT of the water. Write these numbers down below.

WATER		OIL	
TUB	CUP	TUB	CUP

9. Great job! Now discuss the questions below as a group and write down your answers.

Which material worked the best? Why?

Which material worked the worst? Why?

Are there any materials that you DIDN'T try that you think would have worked better to get the oil out of the water?

If you had all the materials and money in the world, how would you try to get oil out of water? Draw a picture below of your plan or machine to remove oil from water. (Give it an awesome name! :)

Some examples of this could be a machine that works as a vacuum cleaner for oils, a solar machine that takes up oil, or a floatable machine that collects and stores oil. The shape could be circular.

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STOP here until the teacher tells you to go on.

10. AFTER a class discussion with your teacher, answer this question: Which real-world oil cleanup machine looks the most like the machine that your team designed in Step 9? What real-world strategy is your machine using? If you cannot think of any that your machine design uses, pick your favorite real-world oil cleanup machine and explain how it works.
    Skimming machines are used to manage oil spills based on the National Oceanic and Atmospheric Administration Office of Response and restoration. The EPA states that there are three skimmers: weir skimmers, oleophilic ("oil-attracting") skimmers, and suction skimmers.
    Examples of designs include:
    1. National geographic image
    2. NOAA image

11. Amazing job! If you haven't yet, CAREFULLY dump your tub and cup of water down the drain and turn in this worksheet to your teacher. Don't forget to write your group members' names on it.