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| Quiz(14pts) |  |
| Completeness(10pts) |  |
| **GRADE:** |  |

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ APES

Mr. Crisci

**Lab: OIL SPILL CLEANUP** Date: **\_\_\_\_\_\_\_\_\_**

**Introduction:** Several things happen that tend to serve as benchmarks in our lives.  Some of your grandparents may remember when JFK was assassinated or when man walked on the moon for the first time.  Maybe you remember the events of September 11, 2001. April of 2010 saw an event that will unfortunately be one of those negative impact events that mark this era and your lives.  The explosion and sinking of the off-shore oil rig BP Deepwater Horizon killed 11 and injured some others, which was tragic enough. However, the escape of many thousands of barrels of oil each day for months has created an environmental oil spill disaster that is unprecedented in this country, and maybe the world.  Not only will wildlife be drastically affected for many generations to come, but the way of life and even health of many hundreds of thousands of people will come into play.

**Method 1 Skimmers, Booms, and Suction**

1. Fill your aluminum pan with water (to a depth of about 1”). Pour a small amount of “crude oil” onto the surface of the water. Describe what the oil does and record your observations.
2. Now take rocks and place them on one side of the pan. This represents the land. During the entire experiment try and keep the oil from touching the rocks. If any oil does get on the rocks it MUST be cleaned off by the end of the lab. I WANT MY ROCKS CLEAN. I WILL BE CHECKING FOR THIS!
3. Using a drinking straw, blow on the surface of the oiled water, lightly at first, then more strongly. This is a simulation of wind transport and mixing. Now place 2 to 3 straws together or a thick string to act as a boom in a loop to try and contain the oil. Try sucking up the oil and disposing of it using pipets.
4. Use another straw or Popsicle stick to stir the oil and water rapidly inside of the boomed area. This is a simulation of mixing by wave action. Did the oil remain contained? What happened to the oil?

**Method 2 Absorbents**

1. If your pan has no oil in it, add some more oil. Place two absorbent pads (cotton/gauze) on the surface, and drag them around gently with your fingers (or tweezers). Remove the absorbent pads. Feel their weight. Dispose of the absorbent pads. How well did the absorbent pads soak up oil? Where they heavy?

**Method 3 Chemical Dispersants**

1. Add several drops of the dishwashing liquid to the surface of the oil spill. This is a simulation of the use of an oil dispersant. Record your observations.
	1. What are the benefits of using an oil dispersant in the real world? Why did BP use chemical dispersants?
	2. Explain the environmental concerns associated with dispersants.

Of the three methods from this simulated cleanup of oil spills, rank them (1 being the best and 3 being the worst) for each of the following criteria:

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| --- | --- | --- | --- |
| **Method** | **Skimmer/Boom** | **Absorbents** | **Chemical Dispersants** |
| Removal of Oil |  |  |  |
| Least amount of waste to dispose of |  |  |  |
| Environmentally safe |  |  |  |

**Land and Oil Bird Simulation**

1. If no oil got on your rock(s) (land) pour a little on it and try and clean it off using any methods you can think of within the means of your classroom supplies.
2. What special problems are evident with regard to cleaning oil off the rock?
3. Dip a feather into your simulated “crude oil”, then place it on a plate. Using absorbent pads or brushes, attempt to clean the oil off the feather and record your observations:

1. Ducks preen, which means they clean their feathers. They pull each one through their mouth, adding a bit of natural oil to the feather to make it water proof. This helps ducks float. What effect could the changes in your feathers have on bird activity – in your answer talk about staying warm and floating:
2. Lastly, STAPLE your CLEANED feather when you hand this lab in. You know when it’s clean when you drop it from shoulder height and it flutters like a feather should.

**Conclusion**

1. What impact does a spill have on the local economy? Use the fishing and tourism as a basis for your answer
2. Why do you think BP burnt the oil off the surface of the ocean?
	1. What are the environmental concerns associated with this?