



Oil Spill Cleanup Challenge



The goal of this activity is to get students thinking about oil in the ocean, and in particular about the 2010 Deepwater Horizon oil spill and the challenging cleanup efforts. Each pair of students will have a water-filled tray to represent the Gulf of Mexico and a set of materials to respond to the simulated oil spill. This activity is useful for a wide range of ages and works well in a camp or classroom setting.

This challenge, including introduction, hands-on activity, and discussion, takes about 1 hour.

Supplies

Oil spill trays

Disposable aluminum trays clean and stack nicely for reuse. Buy as many trays as pairs of students. Utility/stuffing pans from the grocery store work well. 13"x9" is a common size, and works well if you want to use an 8.5"x 11" map in the bottom of the tray.

Print and laminate one map of the Gulf of Mexico for each tray. A map is included in this packet, although you can use Google Earth to obtain whatever map suits your activity. Place (or hot-glue) a map in the bottom of each tray.

Plastic vegetation from a craft store can be glued onto the land side of the map to simulate marsh vegetation.

Oil spill cleanup kit (Prepare one kit per pair of students)

Disposable bag (i.e. a plastic grocery bag) containing the following items:

- A long piece of string for oil booms

- A piece of aluminum foil

- Nylon from stockings (A knee-high stocking for each kit works well)

- Cotton balls

- Paper towels

- Piece of thick yarn

- Coffee filter

- Paper straw

- Spoon

- Chopsticks (or popsicle sticks)

- Critters – small plastic animals (you can usually find these in craft or toy store), pom-poms of various sizes. You should be able to clean and reuse the plastic animals.

Teacher prep materials

Prepare a short presentation that includes photos & videos of the Deepwater Horizon spill and clean up efforts. It is useful to show the students photos of skimmer boats, booms (both near land and offshore), burning efforts, dispersant application, cleanup workers on the beaches and marshes, etc. Many of these photos can be found using a Google image search.

Prepare a squeezable bottle filled with vegetable oil and cocoa powder. Experiment with proportions – the more cocoa powder, the more viscous the oil. Plan to put ~2 ounces of oil into each tray for the spill.

Any obstacles you might have the students contend with during the activity, such as extra pom-poms (animals), feathers (birds), paper straws (wind).

Dish soap – each tray will receive only a few drops to simulate chemical dispersant.

The Challenge

Ahead of time

For each pair of students, prepare a tray and small disposable bag containing their oil spill clean up materials. To prepare the trays, lay (or glue) the laminated maps into the trays and fill $\frac{1}{3}$ – $\frac{1}{2}$ with water. An alternative is to have the students lay the maps and water in the trays as their first step.

Prepare one or two “animal rescue stations” consisting of a small bin with warm soapy water. Students can use these stations to ‘save’ their animals (pom-poms, feathers, etc.) by cleaning oil off their fur or feathers.

With the students

Introduce the Gulf of Mexico and the 2010 Deepwater Horizon oil spill. It is useful for students to see videos and photos. Emphasize that the Macondo wellhead (the source of the spill) was the source, and that the spill lasted for nearly 90 days. Show the students photos that demonstrate the various ways emergency responders tried to manage the spill.

Give the students time to examine the different items in their cleanup kit and make an oil spill response plan – some are good for trapping oil, some for soaking it up, and some for moving around. How would you put these things to best use? Note: This is something the kids don’t do without guidance. Fourth graders tie the string to the nylon and try to soak up the spill; high school students unwrap cotton balls and lay them on the beach as barriers. Definitely talk with them about the materials and how best to use them. Refer to photos used earlier to demonstrate types of response materials. Students should place any animals in the water before the spill.

When everyone is ready, the teacher can move from one tray to the next, dispensing (squirting) the oil into each tray.

Give the students approximately 15-20 minutes to work toward the following goals:

- Contain the oil and prevent it from reaching land
- Remove as much oil as you can
- Save and clean up the animals
- Respond to “challenges” the teachers will pose

While the students are working, the teacher can pose new challenges for the students by adding a few drops of dispersant (dish soap), dropping pom-poms (animals) or feathers (birds) into the water, adding more oil to simulate the 2010 spill, asking one partner to simulate wind by blowing through a straw onto the surface of the water.

Teachers may wish to wander around and ask questions, observe or comment.

Discussion & Cleanup

After the challenge...

Engage students in a discussion about the activity. Some useful questions might be:

What worked? What didn't work?

What was realistic or unrealistic about the activity?

What would you do if you had no time to plan?

What happened when you had more oil, dispersant, wind, or additional animals added to your tray?

How effective were you at keeping the oil off the marsh, removing oil from the water, or cleaning the animals?

How effective were the real efforts to clean up the 2010 Deepwater Horizon spill? (A good overview of the controversy and difficulty estimating the fate of the DWH oil can be found here:

https://en.wikipedia.org/wiki/Deepwater_Horizon_oil_spill_response#Oil_budget

Cleanup

Students can put their oily materials into the disposable bag. Several items, such as the trays and laminated maps, plastic animals, spoons, etc. can be cleaned and reused.



Please note: several versions of this activity can be found online. The activity described in this document was adapted from a version developed by Cynthia Cudaback and was field tested and refined by ECOGIG outreach staff during 2016-2018 summer camps and classroom visits.

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