

Exploring Marine Transportation

Clean Up Your Act: Marine Oil Spills

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Synopsis of the Activity

This activity will focus on one of the more serious implications associated with marine shipping of oil; oil spills. We will discuss key concepts about the effects oil spills have on marine ecosystems; then, create a mock oil spill in a model marine ecosystem for participants to find ways to clean up using a variety of tools available to them. During the activity, participants will be learning about mitigation practices for marine oil spills and the tough decisions that have to be made in such a crisis.

Activity Goals

Our goals are for people to gain an understanding about the vast amount of oil shipped across the oceans. Many people (especially children) don't realize how much Americans demand oil for every day activities, and how much we import. It's important for people to have some knowledge of this, and also to know the human risks and ecological damage involved in the process.

Misconceptions Students May Have:

- Oil is easy to clean up because it is floating on the surface of the water (not true: oil is not easy to clean up. It is true: oil does float on the surface of the water because it is less dense than water.)

- Marine oil spills are the only source of oil in our oceans (not true: there are natural seeps and non-point sources from land)

Ocean Literacy Principles

- Oceans and humans are interconnected.

Vocabulary

Key terms that will be defined and used in the activity.

- Oil Spills
- Marine Transportation
- Ecosystems
- Direct and Indirect Consumption
- Point and Non-Point Source Pollution

Guiding Questions

- What are some things you do every day that requires the use of oil?
- How about when you drink water from a plastic water bottle? Does that use oil? (water bottle as an example as an indirect usage of oil to illustrate this concept)
- Where do we get oil from? How does it get to the gas station after they drill for it?
- Has anyone ever tried an experiment mixing oil and water together? What happens?

Examples of oil: Diesel for trucks, heating oil to heat homes, oil for use as a lubricant in car engines). The following site http://www.priweb.org/ed/pgws/uses/uses_home.html shows picture that you can



click on to see how oil was used in the making of the object.

Materials

- Poster Visual (i.e. Picture of Exxon Valdez oil spill, world oil shipping routes)
- “Oil”-- Cocoa powder, vegetable oil
- “Ocean”--Tank with water
- “Wildlife”—plastic plants and animals
- Strainer
- Paper towels or sponge
- Turkey baster
- Feathers
- Dawn soap
- “Booms” – straws with string
- Smocks or lab coats

Activity Description

Next we will hand out waterproof ponchos for each visitor to use throughout the remainder of the activities. Then we will break into groups and the visitors will go through a rotation of 2 stations, followed by a discussion and debrief.

STATION 1: Visitors will try and mimic some of the methods we talked about (displayed on poster visuals at station as well) and see if they can come up with any of their own methods that work best to clean up the oil.

STATION 2: We’ll also have an estuary ecosystem cleanup station where visitors would be responsible for cleaning items that represent common plant and animal species found near NJ harbors using dawn soap in a separate bucket of water.

The NOAA lesson cleaning oiled feathers can be found here:

http://response.restoration.noaa.gov/topic_subtopic_entry.php?RECORD_KEY%28entry_subtopic_topic%29=entry_id,subtopic_id,topic_id&entry_i

d(entry_subtopic_topic)=270&subtopic_id(entry_subtopic_topic)=27&topic_id(entry_subtopic_topic)=3

Debrief

We will ask what they think worked the best and why. Most likely, they will all see that despite which method is used; cleanups are difficult as well as harmful to their surroundings. The question of which worked best should lead to a discussion, bringing up some questions, and allowing the visitors to reflect on what they learned and gain a better understanding of our immense use of oil and the problems that can arise from that.



This activity was developed by students in the Spring 2010 Communicating Ocean Science for Informal Audiences (COSIA) class at Rutgers University.