



UNIT TITLE

Concepts

People all over the world depend on oil. The United States uses more oil than any other place in the world for heating our homes, transportation, growing food, and making many other products. The more we use the more we need to drill for and transport which increases the risk of oil leaking, spilling, or being dumped into our oceans. People can help prevent oil pollution in a variety of ways including using less, conserving energy, and buying less plastic products.

HCPS III Benchmarks

SC 2.1.1
SC 2.1.2
HE.K-2.5.1
LA.2.6.1
SS.2.5.1
SS.2.7.4

Duration

1 hour

Source Material

MARE Sandy Shores
PRISM

Vocabulary

Pollution
Oil drilling
Ingest

Oil On The Beach

Summary

Students will learn about the ways humans use oil in their everyday life and how it becomes a pollutant in the ocean. They will explore methods of cleaning up an oil spill and gain a better understanding for why oil spills are almost impossible to clean up. This understanding will help students understand why we need to work to decrease our oil use and how to prevent oil pollution.

Objectives

- Students will explore different materials that could be used to clean up and oil spill
- Students will use the knowledge gained through exploration to determine the best materials for oil clean up
- Students will be able to identify sources of oil pollution and ways that humans can decrease the risk of polluting our oceans with oil

Materials

1 Ziploc bag per group with each of the following clean-up items:
nylon stocking, cotton balls, sand, haw or straw, and a feather
1 clear plastic bin per group
Enough water to fill the bins 2/3 of the way full
1 Bottle of dark oil (dark sesame oil works great!)
Paper towels
Newspaper
Oil on the beach prediction & results datasheets (1/student)

Making Connections

Students may recall seeing oil spills on television and the impacts that these types of disasters can have on marine life. Learning about the different materials that can be used to clean up an oil spill and experiencing the impossibility of cleaning it all up will provide students with a better understanding of the importance in conservation and avoiding the risk of oil pollution.

Teacher Prep for Activity

Make one bag of clean-up items for each group and fill ocean bins 2/3 full with water. Copy enough of the oil on the beach prediction and results datasheets for each student.



Background

People all over the world depend on oil. In the United States we use the most oil of any other place in the world for heating our homes, transportation, growing our food, and making materials like plastic. Oil is obtained by **drilling** deep wells on the land or below the surface of the ocean. After we obtain the oil, we have to transport it to the different places we need it. The more oil we use the more drilling and transporting needs to be done. Each time we have to transport oil, we take a big risk of the oil leaking, spilling, or being dumped into our oceans. The problem is that spilled oil is almost impossible to clean up. Oil that is not cleaned up immediately can be washed onto the shore by currents, waves, and tidal changes. Many marine organisms like seabirds, monk seals, turtles, and fish can get covered in the oil and are poisoned if they **ingest** (consume) it while cleaning themselves off. When the oil reaches the sandy shore many other organisms are affected. They may not be able to find food and starve or cannot breathe and suffocate. People can help **prevent** (stop) oil from **polluting** our oceans and sandy shores by using less, driving less, conserving energy, and many more ways.

Procedure

Cleaning Up An Oil Spill

1. Ask the students to pretend there was an oil spill off the coast of the Hawaiian Islands. Explain that we need to clean it up as soon as possible because as time goes by the waves, tides, and currents will spread the oil and make it impossible to clean up. Tell them to pretend they are conservation scientists and their job is to clean up the oil spill before it hits the sandy shore and our plants and animals are affected. (~2 minutes)
2. Divide the students into groups (groups of four or five works best). Each group should receive their own small ocean (clear bin with water inside) on newspaper and a couple paper towels to place next to the ocean bin. Each group should also get one bag with several clean-up items. Explain that each item in their bag represents one method actually used to clean up oil spills. (~5 minutes)
3. Give each student an oil on the beach predictions worksheet. Point out the section or column for predictions. Review with the students what it means to make predictions. Do one example with the students using the first item on the list and working together to make and record a prediction for that item. (~3 minutes)
4. Ask the groups to work together to make predictions about how well each item in their bag will clean up the oil and have them record their predictions. They should explain why they feel each item will clean up either a little or a lot of the oil. (~10 minutes)
5. Explain that they will now work with the members of their group with their ocean bin and each group will receive a few drops of oil in their ocean. Each member of the group should choose one item from the bag and take turns trying to clean up the oil with their item. Explain that after they use the item they should place it on the paper towel next to their ocean bin. After each item is tried they should decide how well the item cleaned up the oil and check the correct box on their datasheet. Explain that not everyone in the group has to agree and they can each make their own decisions and fill out their own datasheet. (~5 minutes)
6. Give each student an oil on the beach results datasheet and place a few drops of oil into each ocean bin. (HINT: you may have to add a few additional drops to each ocean bin after the students get started and begin to clean up or absorb their oil) LET THE FUN BEGIN! (~10 minutes)



7. After each group has completed their oil clean up and recorded their results on their datasheets, lead a group discussion and record the answers to the following questions on chart paper or the board in front of the class. (~10 minutes)

Discussion Questions:

- A. Which item worked best?

HINT: Students may find feathers and fur worked the best which explains why oil spills are so dangerous for birds, seals, and other similar animals.

- B. Which item did not work well at all?

HINT: Ask the groups to explain their answers and provide evidence for their Conclusion

- C. Which group thinks their water is now clean?

HINT: If students answer “YES”, ask them if it is clean enough to drink – NO!

Ask the students define what is clean enough and lead them towards a decision that it should be as clean as it was before the spill, not just cleaner that it was after the spill

- D. Would any group say they were 100% successful in cleaning up their spill?

HINT: Their response should be “NO” and help them to understand that it is impossible to clean up an oil spill completely

- E. What can we do to prevent oil spills from happening in the first place?

HINT: Possible answers could include using less oil by driving our cars less, buying fewer products that require oil to make, practice energy conservation, etc.

Emphasize that each one of us can play a big part in reducing the amount of oil used and the number of oil spills.

8. To end the session, hold up the key concepts for this activity and have students read each one out loud together. (~5 minutes)

Key Concepts:

- 1. Oil spilled at sea can travel with currents, tides, and waves to the sandy shore where it can harm the plants and animals that live there.**
- 2. Oil spills are almost impossible to clean up. People can help to prevent them by reducing their use of oil.**

Assessments

Predictions made

Data collected and datasheets complete



STUDENT NAME _____

OIL on the BEACH

Predictions Data Sheet

| Name of the clean-up item | What do you think <u>will</u> happen? |
|----------------------------------|--|
| Nylon | |
| Cotton Ball | |
| Sand | |
| Hay or Straw | |
| Feather | |



STUDENT NAME _____

OIL on the BEACH

Results Data Sheet

| Name of the clean-up item | How well did it clean up the oil? |
|----------------------------------|--|
| Nylon | |
| Cotton Ball | |
| Sand | |
| Hay or Straw | |
| Feather | |