



## **Classroom Teacher Preparation**

### **Earth Science 1: Oil Spill**

**Please use the following to prepare for the next SfS lesson.**

#### **Description:**

This lesson provides students with a deeper understanding of the issues that surround an oil spill and highlights methods of environmental clean-up. Using a model of an oil spill in an “ocean”, students act as environmental engineers to test different methods for effectively cleaning up the spill, and determine the harmful effects that oil spills and their clean-up have on animals and the environment.

#### **Lesson Objectives – SWBAT (“Students Will Be Able To...”):**

**3<sup>rd</sup>-8<sup>th</sup>**

- Describe the different methods that environmental engineers use to clean up an oil spill including: booms, skimmers, vacuums, dispersants, and absorbents
- Explain how an oil spill affects the environment

#### **Disciplinary Core Idea (DCI):**

**ESS3 Earth and Human Activity – ESS3.C Human impacts on Earth’s systems**

- (3<sup>rd</sup>-5<sup>th</sup>) Societal activities have had major effects on the land, ocean, atmosphere, and even outer space. Societal activities can also help protect Earth’s resources and environments.
- (6<sup>th</sup>-8<sup>th</sup>) Human activities have altered the biosphere, sometimes damaging it, although changes to environments can have different impacts for different living things. Activities and technologies can be engineered to reduce people’s impacts on Earth.

#### **Science & Engineering Practice (SEP):**

**Developing and Using Models**

- (3<sup>rd</sup>-5<sup>th</sup>) Identify limitations of models.
- (6<sup>th</sup>-8<sup>th</sup>) Evaluate limitations of a model for a proposed object or tool.

#### **Crosscutting Concept (CCC):**

**Stability and Change**

- (3<sup>rd</sup>-5<sup>th</sup>) Some systems appear stable, but over long periods of time will eventually change.
- (6<sup>th</sup>-8<sup>th</sup>) Stability might be disturbed either by sudden events or gradual changes that accumulate over time.

#### **Preparation:**

This lesson is an introduction to the topic.

#### **Room Set Up for Activities:**

This lesson can be messy. Students should have a flat table or open floor space to work in small groups of 3-4 students. There are enough materials for up to 8 groups.



## Safety:

There are no safety precautions for this lesson but the activity is messy and cooking oil is used which can stain clothing.

## Related Modules:

This lesson may be taught as part of a sequence or group of related modules on **Human Impact** on the environment. Other modules include:

*Life Science 10: Population and Sustainability* – Introduces population-related concepts, focusing on those relating to human impact. Students (unsuspectingly) explore the concept of the Tragedy of the Commons through a group ‘fishing’ activity.

*Engineering 6: Saving the Beach* – Examines the causes of beach erosion and discuss how erosion affects a beach and its ‘stakeholders’. Students work in small groups to engineer solutions to beach erosion through brainstorming, planning, and designing prototypes for their model beaches.

*Technology 5: e-Trashing our Future* – Students get an opportunity to examine the increasing volume of e-waste in society and how our country is dealing with our technology habits.

For other module sequences and groups, look here: [www.sciencefromscientists.org/sequences](http://www.sciencefromscientists.org/sequences)

## Standards Covered:

Please click the following link to our website to review the standards covered by this lesson, listed by state: <http://www.sciencefromscientists.org/standards/>

Lessons are matched to both national NGSS and local state standards.

## After Our Visit:

*Extend this lesson by taking a look at the long-term effects that oil has on an environment by examining photographs of a very small area of Alaska’s coastline to identify how populations of organisms change over time following an oil spill.*

Access this Extension activity by visiting the Classroom Post found on our website at [sciencefromscientists.org/cohorts](http://sciencefromscientists.org/cohorts). Use the name of your school/cohort and password to log in.

To help Evaluate, check out our Open Response questions online at [sciencefromscientists.org/open-response-questions](http://sciencefromscientists.org/open-response-questions). They are freely available for all of our lessons for current teachers. Use the password supplied by your instructor to log in.

## Additional Resources:

- Oil in the Ocean Video (2:32): <http://oceantoday.noaa.gov/oilinthocean/>
- Scholastic’s Oil Spill in the Gulf of Mexico Collection: <http://www.scholastic.com/browse/collection.jsp?id=745>
- Tracking the Oil Spill (Deepwater Horizon): <http://www.nytimes.com/interactive/2010/05/01/us/20100501-oil-spill-tracker.html>
- NOAA Office of Response and Restoration Information and Activities for Teachers and Students: <http://response.restoration.noaa.gov/kids/kids.html>
- NPR article - Why Dawn Is The Bird Cleaner Of Choice In Oil Spills <http://www.npr.org/templates/story/story.php?storyId=127999735>