

## Task Home

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Student Task

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Student Work

Technical Quality

# Oil Spill Administration Procedures

Contributed by: Kentucky Department of Education (KDE)

## Description:

Students use one of four absorbent products to separate as much of the oil and water mixture as they are able to do.

The purpose of this task is for students to collect and analyze data for the purpose of determining which absorbent is best, based upon the qualitative and quantitative measures established.

This task designed to take students approximately 45 minutes to complete. Students work together for up to 20 minutes and then to go on to the individual work inside the Student Response Form.

## Overall Task Content Area:

Physical Science  
Science and Technology  
Science in Personal and Social Perspectives

## Specific Knowledge Areas:

Abilities necessary to do scientific inquiry

## Performance Expectations:

- conducting investigations
- using equipment
- gathering, organizing, and representing data
- formulating conclusions from investigational data
- applying scientific principles to develop explanations and solve new problems

## National Science Education Standards:

**8 A SI 1:** Abilities necessary to do scientific inquiry: Grades 9-12

**1.2** Design and conduct a scientific investigation.

**1.3** Use appropriate tools and techniques to gather, analyze, and interpret data.

**1.4** Develop descriptions, explanations, predictions, and models using evidence.

**1.5** Think critically and logically to make the relationships between evidence and explanations.

**1.7** Communicate scientific procedures and explanations.

**1.8** Use mathematics in all aspects of scientific inquiry.

**8 B PS 1: Properties and changes of properties in matter: Grades 5-8**

**1.1** A mixture of substances often can be separated into the original substances using one or more of the characteristic properties of the substance(s).

**8 E ST 1: Abilities of technological design: Grades 5-8**

**1.2** Design a solution or product.

**8 F SPSP 4: Risks and benefits: Grades 5-8**

**4.3** Individuals can use a systemic approach to thinking critically about risks and benefits. Examples include applying probability estimates to risks and comparing them to estimated personal and social benefits.

(Use the "hot" link on the [PALS home page](#) to check the full text of related National Science Education Standards, if desired.)

**National Council of Teachers of Mathematics:**

**AL1: Understand patterns, relations and functions:**

**Grades 6-8 f.** represent, analyze, and generalize a variety of patterns with tables, graphs, words, and, when possible, symbolic rules

**PS2: Solve problems that arise in mathematics and in other contexts:**

**Grades 6-8**

**General Instructions to the Teacher:**

Students should be prepared to go to work as soon as they enter the room where the test is to be administered. All materials should be readily available and placed in a convenient location for students to access them.

This task designed to take students approximately 45 minutes to complete. Students work together for up to 20 minutes. They are instructed to notify you when finished with the group work, and then to go on to the individual work inside the Student Response Form. If students are still working together 20 minutes after the testing begins, instruct them to cease their group work and begin individual work. At this point students should open their Student Response Forms to the Individual Activity portion. They may no longer talk. Whether or not they are just beginning their individual work, remind students that they now have about 25 minutes to complete the individual activity.

**Materials for "Oil Spill":**

At this station students should have:

- one student response form for each student
- one "disposable oil spill" kit for each group. Each kit contains:
  - four plastic boats for water/oil mixture
  - feather, sponge, length of yarn, bag of styrofoam pieces
  - 4 styrofoam cups

- one 1-quart plastic container of water/oil mixture (3:1) *SEE ADVANCE PREPARATION BELOW.*
- one roll of paper towels
- one 250-ml beaker for each student
- sharpened pencils

### **Advance Preparation:**

Group assignments should be made in advance and the room should be arranged to facilitate group work (i.e. tables and chairs appropriately arranged.)

Prior to the time when the test is to be administered, mix one cup oil and three cups water. Place exactly one cup of the oil and water mixture in each of the four plastic boats. Be sure to shake the mixture well before pouring.

Use the original quart container to collect the mixture when cleaning up. Use a plastic bag to dispose of materials in the task.

### **Safety:**

- Be careful.
- Teachers and students should always exercise appropriate safety precautions and utilize appropriate laboratory safety procedures and equipment when working on science performance tasks.

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