

# Purifying Water Laboratory:

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### Students' Guide

#### Goals

- To learn about the process of water purification
- To relate chemistry to everyday experience

#### The Laboratory

In this laboratory, you will learn to purify water using common separation techniques. You will start out with a mixture of oil and water containing other ingredients, and end up separating the components.

#### Materials for Each Group

- 2 funnels with three pieces of filter paper
- A stand with ring holder
- Rubber tubing
- Four 250 ml beakers
- Two 100 ml beakers
- A 2-liter bottle filled with: tea, coffee, garlic, some old cafeteria grease, salad dressing, etc.
- Containers with sand, rubble, and activated charcoal
- A styrofoam cup
- An iron nail

#### SAFETY

Wear safety goggles at all times.

Activated charcoal is relatively safe for handling. See MSDS sheet for further information.

#### Instructions

Take a sample of known volume of foul water in a 250 ml beaker.

#### Water/Oil Separation:

- a. Put a clean glass funnel on a ring stand.
- b. Connect a piece of rubber tubing to the funnel. No filter paper is required at this stage.
- c. Put another 25 ml beaker underneath the tubing.
- d. Decant the oil and water solution over a glass funnel. Allow the water solution to drop through the tubing. It has all been collected.  
Separate the oil into a 100 ml beaker.

**Physical Separation of Solids:**

- a. Make some holes in a plastic cup with an iron nail.
- b. Fill cup with rubble and sand.
- c. Put cup over a 100 ml beaker.
- d. This step is optional: above the cup, hang a glass funnel on a ring stand, with rubber tubing going into the plastic cup. No filter paper is required at this stage.
- e. Pour the solution into the funnel (or into the cup), and collect the liquids in the glass beaker.

**Chemical Absorption With Charcoal:**

- a. Put 4-5 spoons of activated charcoal in a 250 ml beaker and add to it what is left of the foul water solution.
- b. Put a new filter paper in the funnel, and a clean beaker underneath the rubber tubing.
- c. Shake the solution, and pour it over the funnel.
- d. Collect the residual water solution. How much do you have left? \_\_\_\_\_
- e. How much did you lose on the way? \_\_\_\_\_

**Summary**

Is this an effective way to purify water? \_\_\_\_\_  
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Suggest a way to reduce the amount of water that you loose in the process: \_\_\_\_\_  
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How would you know if the water is really clean? \_\_\_\_\_  
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