Purifying Water Laboratory: Isoke Baptiste

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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