

Solvent the Problem

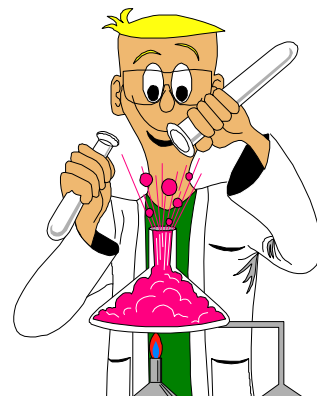
Objectives:

The students will compare the solubility of materials in various solvents.

The students will compare the solubility of materials in water.

Materials:

Test tube holder, 12 test tubes, 2 graduated cylinders, baby oil, water, rubbing alcohol, baking soda, salt, sugar, Epsom salts, tape



Procedure:

1. Label 4 test tubes, "H₂O". Label 4 test tubes, "oil". Label 4 test tubes, "alcohol". Label 4 test tubes, "control".
2. Prepare your "controls" by adding the following labels (one to each test tube): "NaCl", "sugar", "E. salt", "baking soda". Add 0.5g of each substance to the appropriate test tubes.
DO NOT ADD ANYTHING ELSE TO THESE TEST TUBES!.
3. Prepare your "H₂O" test tubes by adding the following labels (one to each test tube): "NaCl", "sugar", "E. salt", "baking soda". Add 0.5g of each substance to the appropriate test tubes. Add 10 ml of water to each test tube.
4. Observe the test tubes for 1 minute and compare them to your "controls". Note your observations in the table below.
5. Shake each test tube (after covering the opening with your thumb) as indicated in the Results table and note your observations.
6. Repeat steps 3 through 6 with the "oil" and with the "alcohol" test tubes.

Results:

Water	1 minute	10 shakes	20 shakes	30 shakes	40 shakes	50 shakes
NaCl						
Sugar						
Baking soda						
E. Salts						

Oil	1 minute	10 shakes	20 shakes	30 shakes	40 shakes	50 shakes
NaCl						
Sugar						
Baking soda						
E. Salts						

Alcohol	1 minute	10 shakes	20 shakes	30 shakes	40 shakes	50 shakes
NaCl						
Sugar						
Baking soda						
E. Salts						

1. Which solutes dissolved most easily in each of the solvents?
2. Which solutes were most difficult to dissolve in each of the solvents?
3. Why is water considered the universal solvent?
4. Why was it important to have “control” test tubes?
5. Why is the knowledge of solvents and solutions important protecting the ocean?

