

**WATER, THE UNIVERSAL
SOLVENT - WHATEVER THAT IS!
PRIMARY TREATMENT**

COOPERATIVE LEARNING

Objective: Students will utilize their observation skills to enable them to conclude that water is a solvent.

Background Reference: Wastewater Treatment/ Solvent: IV B (see foldout on wastewater treatment)

Subject: Science

Skills: Observation, creative thinking, recording, cooperative learning

Materials: Baby food jars, or similar (14)

paper clips	water	activity sheet
gum	oil, 1 tsp.	sugar, 1 tsp.
soap powder	baking soda	cork
candy- 1 piece	penny	coffee grains
piece of aluminum	piece of paper	salt, 1 tsp.

Procedure:

1. Dissolve sugar or salt in water and ask the students where it went?
- can have them taste the water to prove it didn't disappear.
 - a. **Explain** that the sugar/salt and water mixed together to make a solution.
 - b. **Explain** that water is a solvent because so many things dissolve in it.
 - c. **Explain** that the sugar/salt dissolved in the water fit between the molecules of water. This can be demonstrated with a jar full of marbles (representing the water). Pour water into it and watch it fill around the marbles.
2. Some materials float in water, some materials sink in water, and some materials are suspended in water.
 - a. Fill the jars with water approximately 1/2 way.
 - b. Have the students record on their activity sheet the items to be tested, e.g., paper clips, oil, etc.
 - c. Have them record their prediction of what will happen when it comes in contact with the water, e.g., float, sink, suspended.
 - d. Place one item at a time, each in a different jar. Students should record what they observe.
 - e. Empty all the jars in a clear one/two gallon jar and have the students observe what happens and record their results on the activity sheet.

Extension:

1. Have students read and follow the diagram of the wastewater treatment process and sludge treatment process on the special insert included in this guide.
2. Research what is "dissolved" in sea water.
3. Fill a large tub with water and have students learn about water displacement using clay. The students will take a handful of clay, place it into the water and record what happens to both the clay and the water. Have the students try and form the clay so it will float.
 - a. Discuss why clay can both float and sink.
 - b. Ask what other materials could be used to conduct this experiment.

Note: Explain that this is what happens in a wastewater treatment plant.

