



COLLECTING THE EVIDENCE: WATER ALL OVER THE WORLD

Objectives:

The student will be able to:

- Discuss why water is an important natural resource;
- Observe how much of the Earth's surface is covered by water;
- Remove salt from water.

Suggested Grade Level:

6-8

Subjects:

Science, Social Studies,
Language Arts, Geography

Time:

60-90 minutes

Materials:

- Dinner plate
- Saucer
- Glass bowl
- Table salt
- Water
- Old magazine
- Glue sticks
- Scissors
- Paper
- Globe or world map
- Paper clips
- Heavy black marker
- Student sheet (included)
- Teacher sheet (included)

BACKGROUND INFORMATION

Living things always need water. Water covers about three-quarters of the earth's surface. It can be found in the earth's oceans, lakes, streams, and other bodies of water, as well as ice, in the atmosphere, and underground.

Water found in water bodies on the earth's surface is called surface water. Most surface water is salt water. Plants and animals that live on land or in fresh water cannot use salt water unless the salt is removed from it. The process of removing salt from salt water is called desalination.

TERMS

desalination: the purification of salt or brackish water by removing dissolved salts.

surface water: precipitation that does not soak into the ground or return to the atmosphere by evaporation or transpiration, and is stored in streams, lakes, wetlands and reservoirs.

ADVANCE PREPARATION

- A. Gather the materials.
- B. Copy the student sheet for distribution.

PROCEDURE

- I. Setting the stage
 - A. Using globe or world map, ask the students to describe the earth's surface. Have them identify the large land masses and bodies of water.
 - B. Ask the students what other bodies of water they can see.
 - C. Have students estimate about how much of the earth's surface is covered by water (*about three fourths*).

II. Activity

A. Tell the students that water is a natural resource all living things must have. In some places, there is not enough fresh water and the only water is salty ocean water. The people who live in those places must find ways to take the salt out of the water before using it. This is called desalination. Desalination is done in large plants (*like factories*). We will make a model of a desalination plant.

1. Make salt water by dissolving about 2 teaspoons (10 mL) of table salt in one cup (250 mL) of water.
2. Get a dinner plate, a saucer, and a clear glass bowl that is wider than the saucer.
3. Put a saucer on the dinner plate.
4. Fill the saucer with salt water.
5. Place the glass bowl down over the saucer.
6. Put this apparatus outside in a sunny place. After a time, the students should see small drops of water on the inside of the bowl. On a very warm, sunny day this will happen quickly.

B. Ask the students to address the following items after you are able to observe drops.

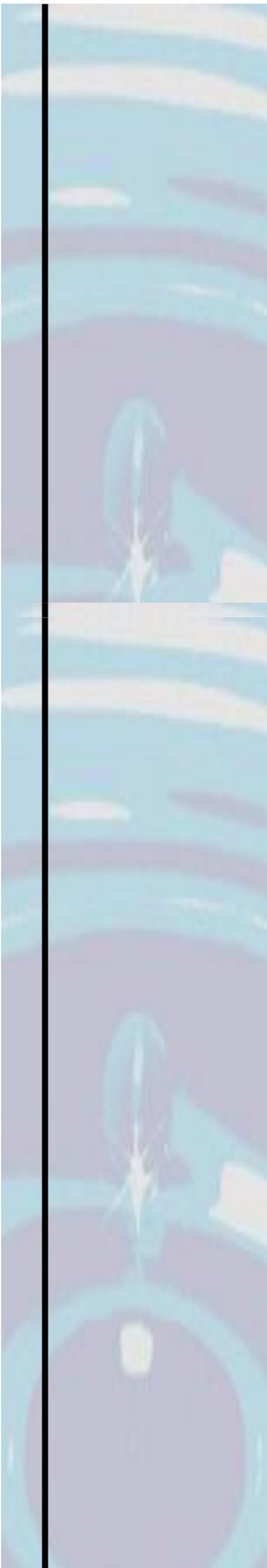
1. Describe what you would do to find out if the drops of water inside the bowl are fresh water or salt water. (*They should be able to identify tasting as the simplest way to determine this, but discuss with them that unless they are specifically directed to taste something in an experiment, they should never do so.*)
2. Describe what you would do to collect the drops of water that form inside the bowl.
3. Describe problems that might occur when water is being desalted.

C. Discuss again with the students how much more salt water there is than fresh water. Have them state why desalting water might be very important to people.

D. Ask the students what caused the water to evaporate in the model. (*The sunshine's warmth or solar energy*) Remind them that energy is always required by a process that changes matter. While solar energy is free, other forms of energy are not; people who use these energy resources must pay for them. Because of the large energy requirements of the desalination facilities, desalted ocean water is expensive. In places in the world that have very little fresh water (but lots of ocean water), people pay much more for their water. Ask the students how this might affect how people use water. (*This would probably cause them to use water more carefully and less wastefully*).

III. Follow-Up

A. Give the students old magazines, paper, scissors, and glue sticks. Have them cut out pictures that show how water is used. Have them use the pictures to make collages of how water is used.



IV. Extensions

A. Have the students design and conduct experiments investigating desalination. For example, will the model work in a dark place, or how could the model be improved?

B. Have the students complete the student sheet “Geographic Water Terms.” This is a good activity for cooperative learning groups. The answers for the matching exercise are: 1-H, 2-C, 3-E, 4-I, 5-B, 6-J, 7-A, 8-F, 9-D, 10-G.

R E S O U R C E S

Mallinson, G. and J.B. Mallinson, Science Horizons, Silver Burdett & Ginn, Morristown, New Jersey, 1989.

Thank you to the Environmental Protection Agency *Water Sourcebook* for this activity!

http://water.epa.gov/learn/kids/drinkingwater/wsb_index.cfm

STUDENT SHEET

Match the terms with their definitions. Use a globe or a world map to help you determine the answers.

- | | |
|--------------------|---|
| _____ 1. Bay | A. A large stream of water that flows across the land and usually empties |
| _____ 2. Harbor | B. Land with water around it on three out of four sides. |
| _____ 3. Ocean | C. A protected place where ships are safe from the ocean's waves. |
| _____ 4. Port | D. A body of land entirely surrounded by water. |
| _____ 5. Peninsula | E. The largest body of water. |
| _____ 6. Lake | F. A large body of water that reaches into the land. |
| _____ 7. River | G. The land along a sea or ocean. |
| _____ 8. Gulf | H. A small body of water reaching into the land. |
| _____ 9. Island | I. A place where ships load and unload goods. |
| _____ 10. Coast | J. A body of water entirely surrounded by land. |

Now use each term in a sentence. To be sure you have used them correctly, check the definitions in a dictionary. Rewrite any sentences you need to improve.

1. Bay-
2. Harbor-
3. Ocean-
4. Port-
5. Peninsula-
6. Lake-
7. River-
8. Gulf-
9. Island-
10. Coast-