

# Water Purification Lesson

**Question:** Where does clean water come from?

## **Kentucky Core Content:**

**SC-M-1.1.1** A substance has characteristic physical properties (e.g., density, boiling point, solubility) that are independent of the amount of the sample. A mixture of substances often can be separated into the original substances by using one or more of these characteristic physical properties.

**SC-M-1.3.1** Energy is a property of many substances and is associated with heat, light, electricity, and sound. Energy is transferred in many ways.

**SC-M-2.1.5** Water, which covers the majority of the Earth's surface, circulates through the crust, oceans, and atmosphere in what is known as the water cycle. Water dissolves minerals and gases and may carry them to the oceans.

## **Objectives:**

Students will be able to:

1. Demonstrate that energy is transferred from the sun.
2. Demonstrate the water cycle.
3. Demonstrate water changes from liquid to gas and back.

## **Materials:**

For each group of 4

Large bowl

Plastic wrap

Small Weight (like a large marble)

A small glass

4 cups of dirt, sand, and stones

Enclosed space with a hot lamp, a box or plastic storage tub works well.

Balance

## **Procedure:**

This activity will take approximately 1-2 days.

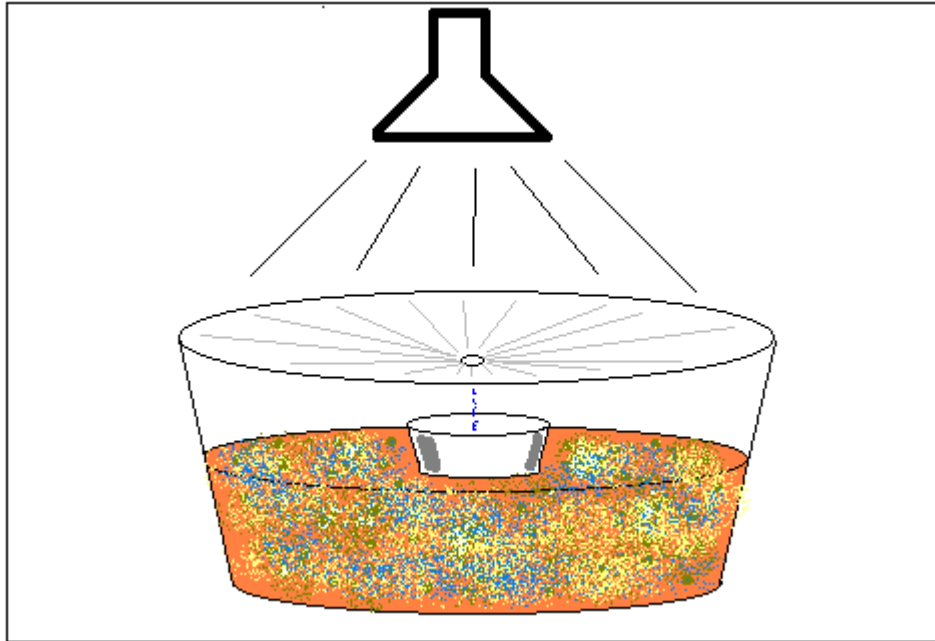
Have students follow these directions:

1. Weigh your bowl and record in grams.
2. Record the total weight of the water and soil you put into the bowl.
3. Pour the dirt, sand, water, and stones into the bowl and mix them up really well. It should look pretty yucky.
4. Record the weight of your small glass.
5. Put the small glass upright in the middle of all this yuck.
6. Cover the bowl with the plastic wrap.
7. Place the small weight on the plastic wrap directly above the glass.
8. Place the bowl into the enclosed space with a hot lamp.
9. After 2 days remove your cup to see how much water you have. Weigh it.
10. Calculate the evaporation rate per hour by dividing the grams of water by the minutes the lamp was on.

**Assessment:**

Students can be assessed through the completion of worksheet (see below) and classroom discussion of the questions.

**Teacher Notes:** This is how the experiment will look while being conducted.



Name: \_\_\_\_\_

### WATER PURIFICATION

Weight of bowl \_\_\_\_\_

Weight of water \_\_\_\_\_

Weight of each type of soil \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Weight of small glass \_\_\_\_\_

Weight of water on the last day (Glass minus last day) \_\_\_\_\_

Calculate your evaporation rate per hour.

#### Questions:

1. What are the two processes that affected the water in your systems?
2. How are these processes responsible for purifying the water?
3. Where else do you see condensation?
4. How does this process work on Earth?
5. What does the plastic wrap represent according to the water cycle?
6. What does the condensation represent according to the water cycle?
7. What would happen if the plastic wrap was dirty?