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**7****For the Teacher****Objective**

In this activity, students will use their powers of observation, prediction, critical thinking, and problem solving to learn that all leaks are not created equal.

**Materials Needed**

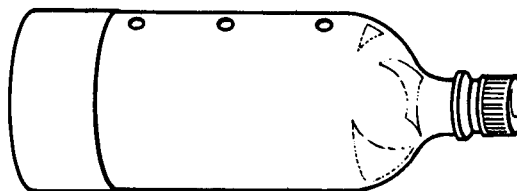
- 1 plastic two-liter pop container
- a compass, awl, or anything sharp and pointed to poke a round hole in the plastic container
- a sink, bucket, or dishpan

**Curiosity Hook**

Have a pop container full of colored liquid (food coloring in water) leaking from a single hole. Set this up where students can see it as they come into the classroom.

**Setup**

1. Fill a two-liter plastic pop container with colored water and screw the lid on. Have students hypothesize what will happen if you poke three holes in the container. Have students draw their predictions on the diagram under 1 on the student page.
2. Lay the container on its side, and poke three holes in it similar to the pattern shown below.



3. Stand the bottle upright, remove the lid, and let the water spray into a sink, bucket or dishpan.

**Safety Concerns**

Be cautious when poking holes in the container.

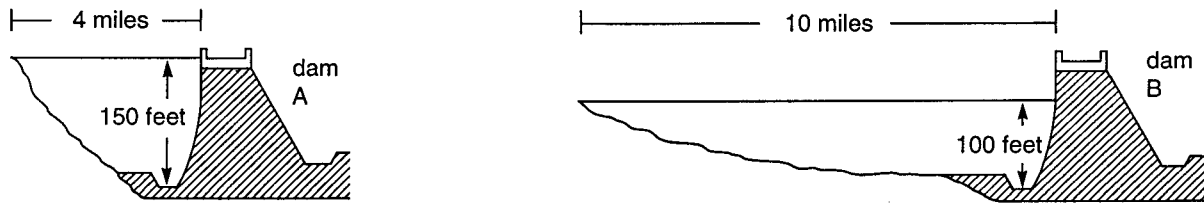
**Outcomes and Explanations**

Water will spray the greatest distance with the most force from the bottom hole, and more water will spray through the middle hole than the top hole. Why? The deeper you

go in water, the greater the pressure (weight) of water pushing down on you. The bottom hole has more water pushing down on it than the other two holes. Therefore, the water pressure is least at the top hole, greater at the middle hole, and greatest at the bottom hole. Thus, the water is pushed with more pressure (force) out of the bottom hole than out of the other two holes. Discuss the effect of increasing water pressure on the holes, and have students write the explanation for the demonstration under 2 on the student page.

## Application

Draw the diagrams below on a chalkboard or overhead, and challenge students to explain which dam has the greatest pressure at the base and why.



**Answer:** Dam A would have the greatest water pressure on its base. It is the depth, not the amount of water behind the dam, that determines pressure.

## Take Home

Encourage your students to demonstrate and explain this activity to their parents, siblings, or friends.