Pollution Can Be Everywhere

Objective: To understand that the water cycle is a closed system, to observe and understand some of the effects of pollution.

Materials: five bins, five large cards (one each with the words, "Ocean," "River," "Stream," "Plants," and "Cloud") water, mud, five plastic cups

Vocabulary: Condensation, evaporation, evapotranspiration, precipitation, pollution, cycle

Set up: Create a wide circle with the bins. Label each bin with one of the five cards. Fill each bin with the same amount of water. When students arrive give each student a cup.

Leading the Activity:

1. Tell students they are participating in the *water cycle*. Explain that the water cycle is a *closed system* (define) so they must be very careful with the water they use. Their job is to play a part and take water from the places (the bins) where they would receive water in the cycle.
2. Students will play "ocean," "river," stream," "plants," or "cloud." Acting as their part they can get water from only certain other places. The following must be understood:

If students are:	**students can get water…**
• Ocean	from river, stream, cloud
• River	from stream, cloud
• Stream	from cloud, river
• Plants	from cloud, river, stream
• Cloud	from river, stream

3. When the instructor says, "go!" students will leave their *base* bin (students who are playing "ocean" have the "ocean" bin as a base) to a different bin from which they can take water. There they will fill their cup. Carefully, they must walk back to their base bin, and dump the gathered water into it. Students continue to gather water from all the sources they can until the instructor says to stop (about three minutes.)
4. Step back from the activity, and ask students to evaluate the work they have done. Which bin has the most amount of water? Which bin has the least amount of water? Why? Did any water spill? Does this activity show

how the cycle is closed? Think about the local area. What changed the water depth in certain areas? What is a drought? What about flooding?

5. Ask students to start again. While they are collecting water, tell them to pause where they are. Announce that a big factory on the river's edge has decided to dump its waste into the river to get rid of it. Put several handfuls of mud into the bin labeled "River." (Be sure to tell students that the mud represents the *pollution*, and it is not a real form of pollution.) Tell the cycle participants to resume their gathering, and continue for two more minutes. When stopping this time, look closely at the water. Ask about the levels again, but then look at the color of the water. Which bins are darker in color? Which bin is the darkest? Why? Explain that pollution may enter the cycle at a point, but because the cycle is closed, it affects all parts of the cycle.

Follow up Activities:

1. Have students do some research on actual spills in different bodies of water. Have them find out how the event happened and what happened to clean it up. They can write a paper and present it to the class.
2. With your students write a story about a fictitious spill and how the animals adapt to the changes. Do they need to go somewhere else because the water system is polluted?
3. Read or show *The Lorax* by Dr. Seuss. Ask if the pollution that happens in the story could have been prevented and what steps could have been taken throughout the story to maintain a safe habitat for all animals and plants.
4. Have your students think about the amount of water they use. How does it continue in the cycle? Make tables of water use, and discuss ways to change it.
5. Have students make a drawing of the water cycle using the different bodies of water experienced in the activity. Indicate (with arrows) the directions of the water droplets to demonstrate the cycle.

ABQ BIOPARK