

TEACHING TIP

CHEMICAL SPILL!

Mark Russo, Jemez Springs, NM

OBJECTIVES: Learn what an ecosystem is and how each part is connected; take inventory of the plants and animals that live in a given stream area; evaluate the possible short- and long-term effects of a chemical spill to an ecosystem located in and around a stream. Possible long-term objective: Work together to develop a plan to reverse the damage of a chemical spill.

MATERIALS: 1. Wrist watch or stop watch
2. Large bag of plain popcorn
3. Paper/pencil or field notebook for each student or group

TIME: 30 to 40 minutes

AGE LEVEL: 4th to 8th grade

SCENARIO: You are an environmental inspection team in charge of keeping records of the ecosystem surrounding the Potomac River, close to Washington DC. But oh no! There's been a chemical spill! While a local gas station was waiting for a shipment of gas to refill its tanks underground, the eighteen-wheeler carrying the gas jack-knifed, flipped onto its side, and spilled the gas into a nearby stream. What will you do?

YOUR MISSION: Assess the stream and surrounding area for possible damage to the environment. What are some solutions to fix the problems?

PROCEDURE:

"Before the Spill"

As you walk around the stream area, notice what plants and animals live there. What animals can you not see now that might depend on this stream (nocturnal animals)? Write down the number of plants, animals, and insects you saw. If you finish early, draw something you found that you've never seen before. When we return, we'll have a simulated chemical spill and see how many of the critters we saw were affected!

"The Spill"

1. How long will it take our "chemical" to go from one point to another (choose a visible point a fair distance away from starting point)? One volunteer be the timer.
2. We'll use popcorn as our "chemical." We need two volunteers to assist in the accident that caused the spill. Each person take a corner of the bag, and when the timer says, "GO!" both of you pull hard. Timer ready? Yank!
3. Timer, how long did that take? How long would it take a fire and rescue team to get here? Did all of our chemical get washed down stream? Some of the popcorn is stuck along the sides; some never made it to the stream! How would it affect the plants and the animals that drink from this stream? How could we clean the stream? [Last question may lead to a more long-term project.]

CONCLUSION:

"The Web of Life"

Students stand in a close circle. Teacher stands in the center with a ball of string or yarn. Hand the first end of the string to the sun (a student). Afterwards, keep unrolling the string back and forth across the circle with students (plants, animals, water, and soil) gradually adding to the web of life. They should each hold their part of the web (string) taut. The sun feeds a plant, which feeds an animal, which dies and feeds worms, insects, and soil, which grow plants, which feed another animal. . . Declaring the first plant as pond scum (algae) may help to add a water ecosystem. Once everyone is a part of the web, it should look fairly web-like. Make sure they hold the string tight! Then give each student a chance to "disturb" the web by asking the sun, or the fish, or the bear, etc. to shake the string (one at a time!). Who felt it? What would happen if acid rain killed all the algae in the pond? Cut algae's connection to the web. What would die as a result? Cut that person's connection, etc. The web begins to fall apart. Follow with discussion.