* Title
  + Pollution Diffusion
* Objectives
  + Students will observe simulated water pollution and its effect on the plants that grow in/around it
* Standards
  + 1.LS.4 Use a model to represent the relationship between the needs of different plants and animals (including humans) and the places they live
  + 4.LS.2 Use evidence to support the explanation that a change in the environment may result in a plant or animal will survive and reproduce, move to a new location, or die
  + 5.LS.1 Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment
* Vocabulary
  + Pollution
  + Diffusion
* Materials
  + One of each per group of (or one of each if doing a whole-class demo):
    - Large clear jar filled with water
    - Dark color food dye
    - Stalk of celery with leaves still attached
    - Knife (for teacher use only)
      * Before the activity, use the knife to cut the bottom end off the celery stalk. Leave the leaves intact on the stalk.
* Introduction
  + What is pollution?
    - Pollution is the presence of a substance(s) that is harmful to the natural environment. Pollution can cause plants and animals to get sick or even die. Pollution can travel between organisms that are using the same polluted resource.
  + What examples of pollution can you think of? Where do you think pollution can occur?
    - There are several types of pollution including (but not limited to) air pollution, water pollution, soil pollution, and noise pollution.
  + Today we will be talking about water pollution and how it can affect the plants that grow in and around it.
* Procedure
  + Gather students around the jar. Drop a few drops of food dye into the water and have students make observations
    - What happens to the food dye as it hits the water? Does it stay in one spot or does it move around? When the dye hits the water it diffuses (spreads throughout the water). As it diffuses, the water begins to change color from clear to the color of the dye. The water has still changed color, even if the color is very light (if it is too hard to see, add more food dye to the water. The darker the color the better)
    - This is what happens with water pollution; it doesn’t really stay in one spot, but instead moves around.
      * Ex. If a sewer system leaks into a river, that waste will not stay in one spot, but will instead diffuse throughout the water.
    - Place the celery stalk cut end down into the water. Now leave it alone for 4-24 hours.
  + After enough time has passed, remove the celery from the water. Using the knife, begin to cut pieces off the stalk, starting at the bottom. You should be able to see the food dye color inside the stalk (if you can’t see any of the color, consider leaving the stalk in the water longer or adding more food dye)
  + Have students make observations about the stalk. What has happened to the color inside the stalk? (remember that in this activity food dye = pollution)
* Conclusion
  + As the celery stalk absorbed water, it also absorbed the pollution that was in it. What does this mean for plants that grow in/around polluted water? What about the animals (including humans) that eat those plants?