



Objective

Students will investigate the densities of fresh water and salt water and will observe how fresh water floats on top of salt water.

Materials

- one set per student group:
- one 2-liter plastic soda bottle,
- cut in half, or a clear plastic tub
- one 2-oz. food jar (like those for pimentos or baby food)
- salt
- water
- blue food coloring
- 4" x 6" sheet of plastic wrap

Background

The movement of water in the ocean is not only driven by winds and the turn of the earth, but also by masses of cold, salty water formed at the poles that sink to the ocean floor. As sea water freezes in the Arctic, the salt is "squeezed out." The newly frozen ice floe is mostly fresh water that floats. The ocean water beneath the ice floe has become slightly saltier and more dense. This heavier water sinks to the ocean floor and flows to the equator. As this water slowly sinks, other surface water replaces it. The cycle repeats itself as more surface water freezes. Fresh water returns to the ocean as ice floes melt or rain falls.

Action

1. Fill the bottom half of the plastic soda bottle with water. Fill the 2-oz. food jar with water.
2. Add about 2 tablespoons of salt to the water in the plastic soda bottle.
3. Add 4 drops of blue food coloring to the water in the 2-oz. food jar.
4. Carefully place plastic wrap over top of food jar.
5. Holding the plastic wrap and the top of the jar, carefully lower the food jar into salty water in the soda bottle. Once the jar is settled on the bottom, slowly lift the plastic wrap off. The fresh blue water should rise to float on top of the salty water.

Deeper Depths

Students may want to try this experiment with variations. Try water of different temperatures, water with more or less salt, water in the bottle and jar that is both fresh or both salt, or ice colored with blue food coloring.