Salt vs Fresh

Salt water is heavier than fresh water. Find out what that means for divers in salt vs. fresh water!

Materials

- 2 clear plastic cups
- Salt water (table salt + warm water)
- Fresh water
- Large plastic bead
- Food coloring (2 colors)

Process

1. Mix your salt water by adding salt to your water, stir until salt is completely dissolved. Continue adding salt and stirring until dissolved until salt stops dissolving. Add a drop of food coloring and stir in.
2. Fill the second cup with the same amount of fresh water and mix in a drop of a different food coloring.
3. Put the bead in the salt water and tap it a few times. What happens?
4. Move the bead into the fresh water, tap it a few times. What happens? What changed from salt to fresh? What has stayed the same? What does this mean for somebody swimming or diving in salt water vs fresh?

So What's Happening?

The idea of *buoyancy* is how much something sinks or floats in the water. Divers are mainly concerned with how much the float in two different fluids: fresh water (lakes or rivers) and salt water (oceans). Salt water is heavier (more dense) than fresh water (because of the salt dissolved in the water) so things have different buoyancies in the different types of water.

Density is weight per volume, or how much "stuff" something is made of. Your bead will float in the salt water for the same reason you can stand on the ground. You can stand on the ground because there is a lot of "stuff" under you, it's more dense. You can't stand in the air because there isn't enough "stuff" to hold you up, it's less dense than the ground. Your bead floats in salt water because there is more "stuff" holding it up than there is in fresh water.

Vocabulary

- **Buoyancy –** how much something sinks or floats in the water
- **Density –** how much "stuff" makes up things of the same size

For More Information

Explorit Science Center. "Science Bytes: Float, Sink, or Swim." Last Modified 2011.
http://www.explorit.org/science/bytes/float.html

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http://hyperphysics.phy-astr.gsu.edu/Hbase/hframe.html

Kids.Net.Au. "Density." Last Modified 2011.
http://encyclopedia.kids.net.au/page/de/Density

PBS Kids Go! "Water Density." Last Modified 2010.
http://pbskids.org/zoom/activities/sci/waterdensity.html