

Soaking Spuds

Marine Fishes

What you need!

- Potatoes
- Knife
- Two bowls of water
- Salt



All kinds of animals live in the water. Many of them inhabit freshwater rivers and lakes, but the majority of underwater life lives in the oceans. The systems of marine animals are quite different from freshwater animals because they live in salt water. Try this activity to see how salt water affects potatoes.

What you do:

1. Cut a small potato into several round slices.
2. Divide the slices into two bowls.
3. Fill both bowls with water.
4. Add two tablespoons of salt to one of the dishes, and label it "salt water."
5. Let the potatoes soak for 15 minutes.
6. Compare the potatoes - how do they look and feel?

Ask yourself

- Is there a difference in firmness between the two potatoes?
- Why does a potato become limp in salt water?
- How do you think marine fish avoid becoming 'limp potatoes'?
- Are there fish that can live in both fresh and salt water?

What did you find out?

In this experiment, water molecules move from areas of low salt concentration to areas of high salt concentration. Osmosis, the movement of water between two different concentrations, stops occurring only when the two solutions come into balance with one another.

When we added salt to the water, we increased the concentration in that dish. This meant the concentration in the salt water was out of balance with the concentration of water in the potato slices. Water moved out of the potatoes and into the salt water to try to reduce the concentration in the salt water and create a balance. Because the potatoes lost water they became limp. In the other bowl, the concentration of the water and the potatoes were in balance, so the spuds stayed pretty much as firm as when they were sliced.

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What did you find out? (cont.)

Salt-water fish have to deal with osmosis on a daily basis. When you go swimming in the ocean, you also lose water, which is why your skin feels tight if you stay in too long. Without special adaptations, the salt water would suck water out of marine animals' bodies by osmosis and dehydrate them. Marine animals have adapted to counteract the process of osmosis.

Fish that live in the ocean cannot afford to keep losing their body water so they have to counteract osmosis. They do this by continually drinking seawater. Unfortunately, drinking a lot of saltwater can cause other problems with the internal organs. Most marine fishes counteract this by having special cells on their gills to dump the salt from their bodies back into the ocean.

Specific Learner Expectations (SLE)

Grade 8 Unit B: Cells and Systems.

SLE 1: Investigate and describe the role of cells within living things – describe the movement of gases and liquids into and out of cells during diffusion and osmosis, based on concentration differences.

Grade 8 Unit E: Freshwater and Saltwater Systems.

SLE 3: Analyze factors affecting productivity and species distribution in marine and freshwater environments – analyze factors that contribute to the development of adaptations in species found in saltwater and freshwater environments.