



Curiosity Guide #206

Liquid Forces

Accompanies Curious Crew, Season 2, Episode 6 (#206)

Pepper Bowl

Investigation #6

Description

Try this investigation and watch liquid forces in action!

Materials

- Several bowls of water
- Pepper or baby powder
- Liquid soap
- Cotton swabs

Procedure

- 1) Fill several bowls with water.
- 2) Sprinkle pepper over the surface of the water in each bowl, so that the water is fully covered.
- 3) Place a squirt of liquid soap on the tip of a cotton swab or your finger.
- 4) Gently touch the center of the pepper in one bowl.
- 5) Coat a cotton swab or two with soap. Touch different places in the other bowls.
- 6) What do you observe? Did the pepper move? Did some of the pepper begin to fall?

My Results

Explanation

Pepper easily floats on top of the water, due to the water molecules sticking together, or **cohesion**, and due to the water's **surface tension**. Adding soap breaks the cohesive force among the droplets and eliminates the surface tension. The broken tension in the center of the bowl causes the remaining forces to pull the pepper quickly to the outside ring of the bowl. Some of the soap begins to flow over the surface, and pepper flecks begin to sink through the water droplets. No matter where the soap touches the surface, the pepper will scatter away from the reduced surface tension in that area.

Something else to think about: Have your parents ever told you to wash your hands and be sure to use soap? That is really good advice. Water droplets want to stick together. However, when we add soap, those little water droplets are separated from one another and can't stick together. Instead, they flow over our hands and wash away dirt and germs. Soap is pretty amazing! It can break the cohesive power between water molecules, keep us healthy, and make us smell good, too!

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