



The Pressure's On

Primary Audience: 3rd – 5th

Description: Observe what happens when water and antacid combine and make carbon dioxide gas.

Key Words: Belching, Pressure, Gas expansion

Materials:

- One cereal bowl
- 16-ounce (480-ml) clear plastic soda bottle
- 1/4 cup (63 ml) tap water
- 2 effervescent antacid tablets

Instructions:

1. Put the bowl on top of the table and place the soda bottle in it.
2. Pour the water into the bottle.
3. Break the antacid tablets in half.
4. Drop all tablet pieces into the bottle of water and quickly place your hand over the bottle's top.
5. Watch the bottle and the material inside.
6. When it becomes too hard for you to hold your hand over the bottle due to the pressure, lift your hand quickly and see what happens inside the bottle.

What's going on?

When the tablets mix with the water, carbon dioxide gas is made and when you cover the top of the bottle it prevents the gas from escaping. This allows the carbon dioxide pressure to increase inside the bottle.

Pressure increased on any mixture of gas and liquid causes more gas to dissolve in the liquid and makes the gas bubbles smaller in size. When you raise your hand from the bottle, it reduces the pressure on top of the water and the gas above the water escapes. Due to the lowered pressure in the bottle, gas bubbles begin to rise from the surface of the water. While the bubbles are rising, they expand and push a portion of the liquid to the surface. This causes emerging foam.

Topic: Chemistry

Something similar happens with the gas inside of your body resulting a stomach ache or even a loud BURP as gas escapes through your mouth.

Extensions:

1. Try the same experiment with different equipment and materials. What happens when you use vinegar and baking soda instead of water and antacid tablets? Could you substitute a balloon for the bottle? What happens to the balloon as the gas expands?