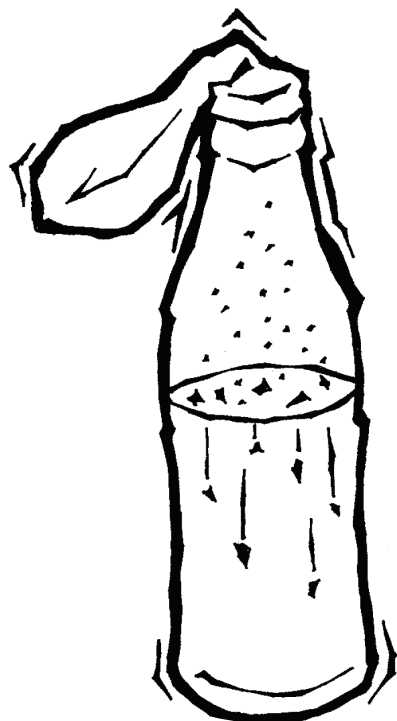


EXPAND ON THIS!

MIX HOUSEHOLD ACIDS AND BASES TO EXPLORE SOME CHEMICAL REACTIONS!

You'll Need:

- ★ plastic cup
- ★ vinegar
- ★ baking soda
- ★ 2 balloons
- ★ 20 oz. plastic soda bottle (or equivalent)
- ★ measuring cups and spoons
- ★ permanent marker
- ★ optional: funnel



Duration:

30 minutes

Good to Know:

Household acids and bases (like vinegar and baking soda) provide a great opportunity to explore some chemistry with your kids. When you mix an acid, like vinegar (acetic acid), with a base, like baking soda (sodium bicarbonate), a chemical reaction occurs and you make something completely new. In this case, mixing a solid and liquid together, produces bubbles filled with a gas, carbon dioxide (CO₂).

Kids might know carbon dioxide as “the air we breathe out.” This is true, but the composition of our air may surprise you. The air we breathe is mainly nitrogen (about 78%) and oxygen (about 21%) and only 1% of other gases like carbon dioxide. This activity lets kids explore how carbon dioxide and air are different. It turns out that carbon dioxide is a really heavy molecule!

Here's How:

1. Explain to your child that the goal will be to mix the baking soda and vinegar together in the bottle and produce enough carbon dioxide gas to fill an entire balloon. In a plastic cup, let her experiment with how much vinegar and baking soda to use. (As a guide, approximately 1 cup of vinegar and 1 tablespoon of baking soda will work well.)
2. When you've decided on your recipe, pour the vinegar into the bottle. Then pour the baking soda into one of the balloons (a funnel helps!) Place the balloon with baking soda completely over the mouth of the bottle, being careful not to pour the baking soda in just yet.
3. Now get ready for some chemistry! Carefully straighten the balloon and shake gently so the baking soda empties into the bottle. The carbonate in the baking soda reacts with the vinegar and produces carbon dioxide gas which will fill the balloon and cause it to expand! When the balloon is full, or when the solution stops bubbling, tie off the balloon. Use a permanent marker to label the balloon, carbon dioxide or CO₂.



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4. Have your girls blow up a second balloon to the same size as the carbon dioxide filled balloon and label it "air." Encourage your girls to think about what our air is made of and which gas will weigh more: a balloon filled with carbon dioxide or a balloon filled with air?
5. Have a balloon dropping contest! Try dropping both balloons from the same height, and predict which one will hit the ground first. Try it 3 times to make sure you collected accurate results.
6. Challenge your girls to think of other sources of carbon dioxide gas. How do carbonated beverages get their names? Try quickly placing a balloon over a newly opened bottle of soda to collect the gas. Or mix an antacid tablet with water in a similar way to the experiment described above. Now, repeat the balloon dropping contest. How do they compare?

