STEAM Hack:
FIRE EXTINGUISHER

What's Happening

When you mix baking soda and vinegar a chemical reaction happens. We know this because a gas produced (i.e., we see bubbles) and the temperature goes down. The gas produced is carbon dioxide and this reaction produces so much of it that it pushes all the other gasses, like air, out of the glass. Carbon dioxide (CO_2) is a really interesting gas for a lot of reasons, including the fact that CO_2 is heavier than air. When we tip our glass, this carbon dioxide falls onto the candle and displaces the air. Because fire needs air to burn, the candle goes out. Carbon dioxide is so good at putting out fires that it is even used in fire extinguishers.

Try this: We know, from our bottle rocket hack, that fizzing tablets and water also create carbon dioxide. Will that reaction work to put out a candle?

To Do

1. Add vinegar to your glass until it is about 1/4 full.
2. Add 1 to 2 spoons of baking soda into your glass and watch the reaction. What happens? Is there a color change? Do bubbles form? Does the temperature change?
3. As the reaction begins calming down, light your candle.
4. Slowly tip the glass over the candle, being careful not to pour out any of the liquid. Did the candle go out?

Supplies

- Candle
- Tall glass or container
- Baking soda
- Vinegar
- Lighter

TESLA SCIENCE CENTER AT WARDENCLYFFE

teslasciencecenter.org
info@teslasciencecenter.org