

HANDS-ON STEM

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Fire Extinguisher

AT A GLANCE

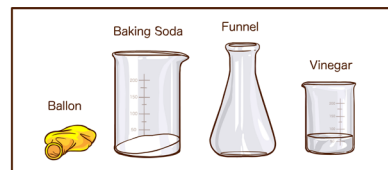
Solution Seekers can use basic household supplies and simple science to put out a (small) flame by creating carbon dioxide. You will need adult supervision and a spark of scientific curiosity!

SAFETY INFORMATION

Fire safety is of the utmost importance during this activity. Students must be supervised at all times. Because of the chemicals in the fire extinguisher and the open flame, it is recommended that young children do not participate in the experiment—but they can still watch the magic of science come to life! Be careful not to add too much vinegar to the container. Allow room for the baking soda to prevent the pressure from building excessively. Be sure to handle the container with care to avoid losing the carbon dioxide. Since carbon dioxide is colorless and odorless, you will not see it come out of the container, but you will definitely be able to see what it does!

MATERIALS

- Plastic bottle
- Container or tall beaker
- Vinegar
- Baking soda
- Candles
- Matches or lighter
- Balloon
- Spoon
- Paper towels



PROCEDURE

1. Add vinegar into a bottle (but not too much) and funnel baking soda into a balloon.
2. Set a paper towel underneath the bottle to catch any ingredients spilling over.
3. Place the balloon on top of the bottle and lift it up so the baking soda enters the bottle.



4. When the baking soda and vinegar mix, they create carbon dioxide gas which fills up the balloon.
5. While the mixture bubbles and foams, light the candle with your matches or lighter.
6. Carefully release the carbon dioxide into a container/beaker.
7. Put the container/beaker next to the flame. Pour out the gas, but not the liquid.
8. Watch in amazement as the candle goes out!
9. Clean up any spills with the paper towels.

THE SCIENCE

In this experiment, students discover the power of chemical reactions. Through this reaction, carbon dioxide was created, which weighs more than oxygen. Fire needs oxygen and fuel to burn. If any one of these components were removed, the fire would go out. By placing the carbon dioxide over the flame, the carbon dioxide replaced the oxygen. Carbon dioxide suffocated the flame and extinguished the candles. And that's how you make a fire extinguisher!