

Published July 22nd, 2009

Science in the Kitchen ~ Easy Experiments for Kids

By Jonathan Winter



Brothers Jefferson and Jonathan Wake create CO₂ using vinegar and baking soda
Photo Jennifer Wake

Many people know that mixing baking soda and vinegar creates a reaction. This is a very popular experiment in schools because these ingredients are pretty safe to work with. But did you know there's more going on in this experiment than just fizz and bubbles? Here is a two-step experiment that helps you notice more.

1. Gather these supplies:

- Vinegar
- Baking soda
- Measuring spoons and measuring cup
- A thermometer (helpful but not essential)
- A resealable plastic bag (sandwich size or larger)
- A candle and something to light it with

2. Start your experiment: Step 1

Pour one ounce (1/8 cup) vinegar into the bag. (Be careful not to splash it in your eyes or it will sting and you'll need

to rinse them with water!) Tip the bag so the liquid is in the corner and set the thermometer in. Wait a moment and then read the temperature. Pour in one teaspoon of baking soda and quickly seal the bag. You can leave the thermometer in the bag if it will fit. Is the bag inflating? You can let some gas out if it looks like the bag might pop. Check the temperature again.

3. What happened?

The mixture of baking soda and vinegar actually created two chemical reactions. The first was the creation of carbonic acid as the two ingredients were mixed. Then this weak liquid acid turned immediately into a gas. As the gas formed, it used up heat around it and the liquid cooled down (an endothermic reaction). Even without a thermometer you can probably feel that the bag is colder. You just created a cold pack!

4. Continue your experiment: Step 2

With adult help, light the candle. Carefully open the bag and gently pour the invisible gas over the candle flame. Be careful not to actually pour the liquid on the flame. It may feel silly, like you are pretending to pour something out, since you can't see it, but the gas in the bag is heavier than the surrounding air and you can pour it even if you can't see it.

5. What happened?

The gas you just made is carbon dioxide, or CO₂, the same ingredient that is used in fire extinguishers. CO₂ stops oxygen from getting to the candle flame. Since fire needs oxygen to burn, the candle goes out. You just created a fire extinguisher!

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He lives in Moraga with his wife, children, numerous pets - and he experiments frequently in his kitchen.

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