



SCIENCE FESTIVAL FACILITATOR'S GUIDE



It's Chemical BEFORE THE EVENT

1. Make sure you have the materials you need.

- Plastic table cover and paper towels to wipe up spills
- Plastic bottles (20-oz. soda bottles or water bottles work well; one for each adult-student pair)
- Medium-sized round balloons (one for each adult-student pair)
- Vinegar
- Baking soda
- Plastic Teaspoons (several to share)
- Funnels (several to share)

2. Watch this video on your smartphone:

<https://www.youtube.com/watch?v=JmzBf3XGsOE>

3. Prepare your station.

- Cover your table with plastic to protect it from spills.
- Distribute plastic bottles, balloons, baking soda, vinegar, teaspoons and funnels around the table for everyone to use.

DURING THE EVENT

Questions to ask participants before they start:

- Who thinks they could inflate this balloon without blowing into it?
- What could we try?
- Let the students make some guesses or even silly tries—remember, there are no wrong hypotheses!
- Good ideas! We're going to try another way.

Instructions:

Please read each set of instructions out loud. Make sure that you direct the correct person to complete each assigned task.

- **Adult:** Pour vinegar into the bottle until it is about 1/2 inch deep. Place the narrow end of the funnel into the neck of the balloon, and hold them for your student.
- **Student:** Pour two spoonfuls of baking soda into the neck of your balloon, using the funnel.
- **Adult:** Stretch the neck of the balloon over the neck of the bottle, being careful not to let the baking soda out of the balloon.
- **Student:** Lift up the balloon so that the baking soda runs into the vinegar. Shake the bottle carefully.
- **Together:** Watch what happens!
- **Optional:** Once the balloon is filled up take it off the bottle, tie it and see if it drops to the ground or floats.

How It Works:

In the plastic bottle, the baking soda (solid) and vinegar (liquid) react to make a gas (carbon dioxide). As the gas forms, its bubbles rise and inflate the balloon. These two substances combine to make a new substance this is called a chemical reaction. If you tried to get your balloon to float you will see that it falls to the ground, that is because carbon dioxide, is heavier than the air and so the balloon wont float.

Vocabulary:

Chemical reaction: What happens when two substances combine to make something new.



Real-World Application:

Chemical reactions happen all around us, all the time! When plants use light to make food and oxygen, or your parents light a match, or you use soap to clean the dirt from your hands ... you're seeing chemistry in action. Understanding chemical reactions is important in many careers like chefs, doctors, and chemical engineers.