

CHEMISTRY and REACTIONS (3-5)

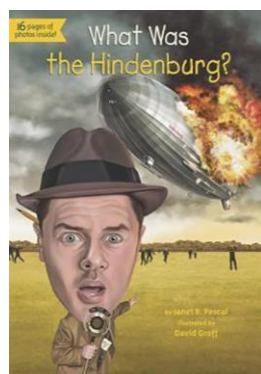
The SCIENCE of CHEMICAL REACTIONS:

Chemistry is the study of matter, its properties and how substances combine or separate to form other substances.

A **chemical reaction** is a process that rearranges molecules, permanently changing a substance.

Chemical reactions involve an **exchange of energy**, either releasing or absorbing it.

Chemists use this knowledge to make new substances and improve our daily lives.



LITERACY CONNECTION:

Humans used chemistry and physics to fly in giant balloons before airplanes became popular. [*What was the Hindenburg?*](#) by Janet B. Pascal explains what happened in one of the most famous airship disasters in history. There are many resources online to help you learn more about the [history of the Zeppelin and the Hindenburg](#).

ACTIVITY: INFLATING a BALLOON

Materials: 1 empty water bottle, 1 balloon, 1 funnel, 1/3 cup baking soda, 1 cup vinegar

1. Stretch the balloon out, then put it over the small end of the funnel.
2. Pour ~1/3 cup of baking soda into the funnel. **TIP:** Gently shake the balloon around until it all falls into the balloon.
3. Rinse off the funnel, then use it to pour 1 cup vinegar into a water bottle.
4. Gently stretch the opening of the balloon over the opening of the bottle. **TIP:** Make sure the balloon hangs down at the side to keep the baking soda from falling in.
5. Lift the balloon so that it is completely upright allowing all of the baking soda to fall into the vinegar and watch the balloon inflate!



What is happening? Baking soda + vinegar → chemical reaction that releases carbon dioxide

EXPLORE: Try experimenting by adding food coloring or different quantities of vinegar and baking soda to see how the reaction changes. Just make sure to increase a little at a time to avoid a baking soda/vinegar volcano eruption!

For step-by-step instructions, watch the video at: [Balloon Inflation STEM Activity](#)

This at-home educational activity is from the Literacy Coalition of Palm Beach County's literacy-based Stories & STEM program. Stories & STEM is made possible with support from Prime Time Palm Beach County, Inc., which receives significant funding from the Children's Services Council of Palm Beach County, Inc.

Having fun? Send pictures or video links of you and your Stories & STEM projects to csharkey@literacypbc.org