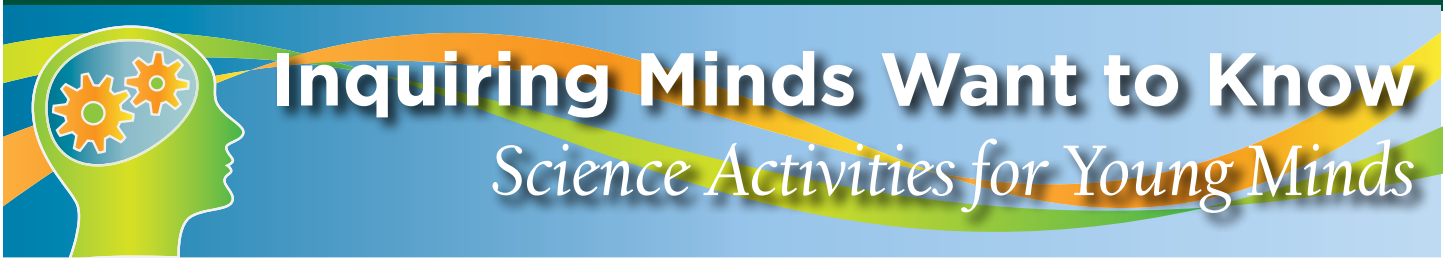

Incredible Inflating Balloon

WHAT YOU'LL NEED

- ❑ Safety goggles for each participant
- ❑ Plastic tablecloths
- ❑ Paper towels
- ❑ Funnel for vinegar
- ❑ Funnel for baking soda
- ❑ 1-cup measuring cup
- ❑ 1-tablespoon measuring spoon
- ❑ 9- to 12-inch balloons
- ❑ Empty plastic bottles
- ❑ Baking soda
- ❑ Vinegar

WHAT TO DO

Remember: The purpose is NOT to teach a specific topic but to help children experience the excitement of **science exploration!**

GETTING READY

1. Decide if children will work alone, in pairs or in small groups.
2. Decide how materials will be distributed (will they come and get them, or will you have them ready for use at stations or tables?).
3. Put plastic tablecloths on surfaces to protect from spills.
4. Set out supplies and materials.

LET'S GO

1. Have children put on their safety goggles to protect their eyes. Measure out 1 cup of vinegar and pour it into each plastic bottle using the vinegar funnel. Time to **observe!** NOTE: Vinegar may sting if it gets onto a scrape or scratch on a child's hand.

   What does the vinegar smell like? What does it look like? What does it feel like? Does it feel like water or different?

2. Have the children gently stretch out their balloons a few times. Then measure out 1 Tbsp. of baking soda and pour it into each balloon using the baking soda funnel. Time to **observe!**

   What does the baking soda smell like? What does it look like? What does it feel like?

3. Now carefully cover the top of the plastic bottle with the open end of the balloon, making sure not to spill any of the baking soda into the vinegar. Be sure that the balloon is securely on top of the bottle before continuing. Time to **predict!**

   What do you think we are going to do next? What do you think will happen if we combine the baking soda and the vinegar? Why did we put the baking soda into the balloon? What is going to happen to the balloon?

4. Now lift the balloon up so that the baking soda falls into the vinegar and **observe** what happens! The mixture should fizz, bubble and expand, and the balloon should begin to fill up.

TALK IT OVER

What happened when you added the baking soda to the vinegar?

What were you able to observe in the bottle?

What happened to the balloon?

How do you think the balloon inflated without anyone blowing air into it?

*What do you think caused the **reaction** we saw?*

Did any of the baking soda disappear? Where did it go?

Could you add more baking soda to the vinegar and get the same reaction?

GOOD TO KNOW

2- to 5-year-olds:

Although the materials are non-toxic, be sure to have enough adults to help little hands measure the baking soda and vinegar.

6- to 18-year-olds:

Try the activity using different amounts of baking soda and vinegar and see if the reactions are similar or different. Try varying the temperature of the vinegar and see if that changes the reaction. *Could you add enough baking soda to cause the balloon to fly off?*

THE SCIENCE BEHIND IT

Bicarbonate of soda – baking soda, as we commonly know it – is a chemical base. This base reacts with the acid of the vinegar (its scientific name is acetic acid) and causes a chemical reaction called an acid-base reaction. This chemical reaction produces carbon dioxide gas. Gases need a lot of room to spread out, and after the carbon dioxide fills the bottle, it moves into the balloon, causing it to inflate.

RESOURCES

- Your local university Extension office – http://msue.anr.msu.edu/county.
- Science Blast website – http://4h.msue.msu.edu/programs/science_technology/science_blast.
- PBS – http://www.pbs.org/parents/education/science/.
- Steve Spangler website – http://www.stevespanglerscience.com/lab/experiments/acid-base-rocket

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