

# Observing Evidence of a Chemical Change

## PROBLEM

What kind of changes accompany a chemical change?

## INTRODUCTION

Many substances in the kitchen react with each other. Many do not. When two substances are mixed together, how can you tell if a chemical reaction occurs? In this laboratory investigation, you will mix some common kitchen chemicals together. Then, you will look for evidence that tells you when a chemical reaction occurs.

## MATERIALS (per group)

Baking soda ( $\text{NaHCO}_3$ ); 100 mL beakers (2); cream of tartar (potassium hydrogen tartrate); graduated cylinder; scoop; stirring rod; test tubes; test tube rack; vinegar

## PROCEDURE

1. Using a graduated cylinder, add 10 mL of vinegar to each of two 100 mL beakers.
2. Note the odor of the vinegar in each of the two beakers by wafting the air above the beakers toward your nose and sniffing. To do this, hold the beaker a short distance from your nose and cup your free hand over the mouth of the beaker. Then push the air over the mouth of the beaker toward your nose as shown in the diagram to the right. *CAUTION: Never hold a container directly under your nose and sniff.* Record your observations in the data table on the next page.
3. Using a scoop, add about 5 mL (about 1 teaspoon) of cream of tartar to one of the beakers. Mix the contents of the beaker well with a stirring rod. Note whether any change occurs. Record your observations in the data table on the next page.
4. Using a scoop, add about 5 mL (about 1 teaspoon) of baking soda to the other beaker. Mix the contents of the beaker well with a stirring rod. Note whether any change occurs. Record your observations in the data table on the next page.
5. Decant the liquid from each beaker into a separate, labeled test tube. Be careful not to pour the solid material that settled in the beakers into the test tubes. Note the odor of each by wafting the air above the test tube toward your nose as described above. Record your observations in the data table on the next page.
6. Add a pinch of baking soda to each of the test tubes. Note whether any change occurs in either test tube. Record your observations in the data table on the next page.



**OBSERVATIONS**

- [a] Odor of beakers containing vinegar \_\_\_\_\_  
\_\_\_\_\_
- [b] Description of changes in beaker 1 after adding cream of tartar \_\_\_\_\_  
\_\_\_\_\_
- [c] Description of changes in beaker 2 after adding baking soda \_\_\_\_\_  
\_\_\_\_\_
- [d] Odor of liquid in test tube from beaker 1 \_\_\_\_\_  
\_\_\_\_\_
- [e] Odor of liquid in test tube from beaker 2 \_\_\_\_\_  
\_\_\_\_\_
- [f] Changes in contents of test tube containing liquid from beaker 1 after addition of  
baking soda \_\_\_\_\_  
\_\_\_\_\_
- [g] Changes in contents of test tube containing liquid from beaker 2 after addition of  
baking soda \_\_\_\_\_  
\_\_\_\_\_

**CONCLUSIONS**

1. What kind of changes did you observe that were evidence of a chemical reaction? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
2. Did a chemical reaction occur in both beakers? If not, in which beaker did a chemical  
change occur? \_\_\_\_\_  
\_\_\_\_\_
3. Why did addition of a pinch of baking soda cause a chemical reaction in one test tube,  
but not in the other? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_