

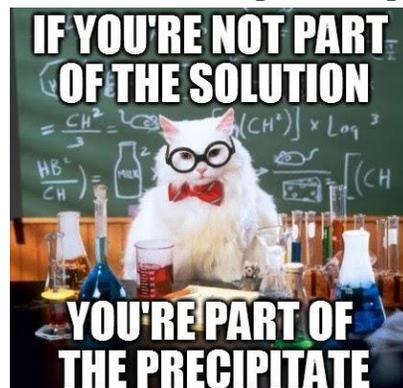
## Chemical Reaction in a Bag

**Objective:** Identify the formation of a new substance by using evidence of a possible chemical change such as production of a gas, change in temperature, production of a precipitate, or color change.

**Materials:** calcium chloride ( $\text{CaCl}_2$ , solid), sodium bicarbonate ( $\text{NaHCO}_3$ , solid) phenol red (liquid), pipette, graduated cylinder (10mL), measuring spoons, two plastic cups, sandwich size plastic bag, goggles

### Procedures:

1. Put on your goggles. Goggles must be worn until the activity is cleaned up at all lab tables.
1. Observe the physical properties of all three chemical substances, but do not taste! Add your observations of each substance to **Data Table 1**.
2. Scoop out 1 mL of calcium chloride ( $\text{CaCl}_2$ , solid) and place it in one of the plastic cups.
3. Scoop out 2 mL of sodium bicarbonate ( $\text{NaHCO}_3$ , solid) and place it in the other plastic ramekin cup.
4. Pipette 6 mL of phenol red (liquid) into the 10mL graduated cylinder.
5. Make sure you have completed **Data Table 1** before moving on to the next step!
6. Pour the phenol red to the bottom right corner of the plastic sandwich bag. Gently twist the corner of the bag with the phenol red and have one team member hold the bag in this position to keep the phenol red separated for the next step.
7. Add the calcium chloride and sodium bicarbonate to the bottom left corner of the bag at the same time. Gently press on the bag to remove any air and seal the bag quickly!
8. Combine all of the chemicals in the bag thoroughly by gently tilting the bag side to side. Do not turn the bag upside down! *Note: If the bag begins to expand too much, open it slightly to release some pressure.*
9. Record your observations about the changes taking place inside the bag by drawing labeled diagrams in **Data Table 2**. Refer to the Objective section at the top of this page for assistance.
10. Check with your teacher for clean-up instructions.



Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

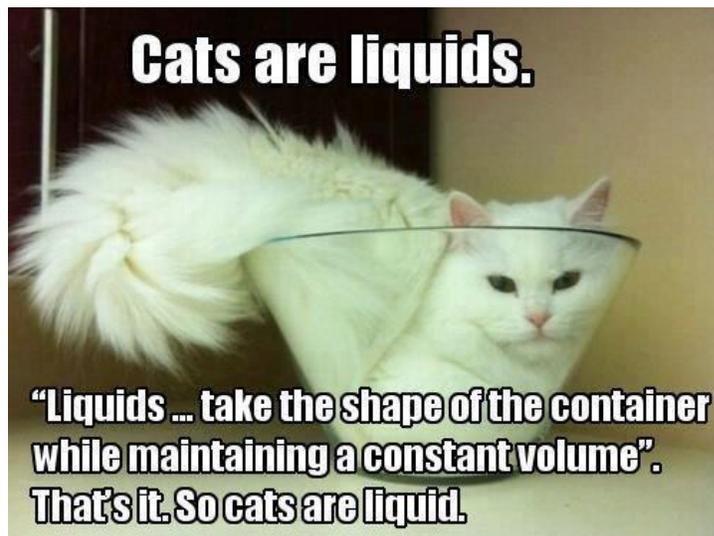
### Data and Observations:

<b>Data Table 1</b>		
<b>Chemical Name</b>	<b>Observations (texture, color, smell, state of matter, etc.)</b>	<b>Labeled Diagram (with color!)</b>
<b>sodium bicarbonate (NaHCO<sub>3</sub>)</b>		
<b>calcium chloride (CaCl<sub>2</sub>)</b>		
<b>phenol red</b>		

<b>Data Table 2</b>	<b>Observations and Evidence of Chemical Change</b>	<b>Labeled Diagram (with color!)</b>
<b>Phenol red added to bag</b>		
<b>NaHCO<sub>3</sub> and CaCl<sub>2</sub> added to bag</b>		
<b>Final observations</b>		

## Analysis:

1. What did you observe when you added the phenol red to the bag?
2. What did you observe when you added the sodium bicarbonate and calcium carbonate to the bag?



3. What did you observe when you combined all of the chemicals in the bag together?
4. What signs of a chemical reaction did you observe when you combined all of the chemicals in the bag?
5. How do you know that new substances were formed?

## Making Connections:

1. What are the four signs that a chemical reaction has occurred?
2. How are chemical changes different from physical changes?