**Physical and Chemical Changes**

**Purpose:** To observe both physical and chemical changes.

A physical change is one that changes the appearance of the substance, usually in size or shape or state of matter (phase). Words such as tearing, chopping, freezing, boiling indicate a physical change has taken place. The chemical composition is not changed.

When a chemical change occurs, the starting substances are changed into completely different substances – there is a change in the chemical composition. The substances formed will be very different from the starting substances.

**Procedure**:

1. Place a 0.80 to 1.00 gram sample of Copper (II) Chloride in a large test tube.
2. Add 3.0 mL of water, & stir with stirring rod.
3. Record the temperature of the solution. Leave the thermometer in the test tube for the remainder of the lab.
4. Obtain a piece of Aluminum Foil 2.0 cm by 6.0 cm
5. Record the phase/state of the reactants before the reaction starts.
6. Roll the Al foil around a stirring rod to form a loose cylinder
7. WITH SAFETY GOGGLES ON, drop the stirring rod **and** Al cylinder into the test tube
8. Record observations and record the highest temperature that occurs during or after the reaction.
9. Filter the contents of the test tube. Record the phase or state and color of each of the products.

**Data and Observations:**

Record all data from the procedures in an organized fashion.

Give the symbol or formula for each of the reactants and describe each reactant.

Describe any changes you observe (color, temperature, etc)

**Conclusions and Questions:**

1. List a physical change you observed in this lab:

2. List a chemical change you observed in this lab:

3. Give the names and symbols for the **metal reactant** and the **metal product**.

4. If you produced 1.25 grams of copper in this lab, how many moles would that represent?

5. The substances present before the reaction starts are called the\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. The substances formed in a chemical reaction are called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

7. When something changes state (boiling, freezing… etc.), the change in state is described as \_\_\_\_\_\_\_\_\_\_.

8. Was this reaction endothermic or exothermic, how do you know?