

NAME _____

Physical and Chemical Changes Laboratory

Purpose: To identify chemical and physical changes in matter.

Background: When a substance undergoes a chemical change, a new substance is produced. The new substance will have a different composition and also different properties than the original substance. These changes take place as the result of a chemical reaction. Observations that indicate a chemical reaction has occurred include such changes as a change in color, the formation of a solid (precipitate) or the formation of a gas.

In a physical change, the substance is not altered. Only its appearance is changed. No new substance has been formed. For example, when we cut a piece of paper a physical change occurs. We still have the same piece of paper, but the physical appearance has changed.

Safety Precautions: Safety goggles and must be worn at all times. Failure to do so will result in a ZERO and removal from the laboratory.

Directions: In this lab experiment, ten stations will be set up with different mini experiments. All mini experiments will include a procedure that will tell you what to do step by step. Please do not perform ANY unauthorized experiments. These experiments will allow you to observe and conclude whether a physical or a chemical change has taken place. You will be timed at each lab station.

Pre Lab Questions:

State whether the following are Physical (P) or chemical (C) changes and justify your answer:

Souring of milk _____

Justification:

Breaking glass _____

Justification:

Decaying of food _____

Justification:

Burning of coal _____

Justification:

Dissolving sugar in tea _____

Justification:

Melting chocolate _____

Justification:

Rusting of iron _____

Justification:

Breaking a Pencil _____

Justification:

Breaking a toothpick _____

Justification:

List Evidence of a Chemical Change:

Data Table

| Station | Experiment | Observations | Physical Change | Chemical Change |
|---------|--|--------------|-----------------|-----------------|
| 1 | CuCl ₂ and Al | | | |
| 2 | Melting Ice | | | |
| 3 | Adding Mg with HCl | | | |
| 4 | Spoiling Fruit | | | |
| 5 | Boiling Water | | | |
| 6 | Crushing Tums | | | |
| 7 | Using Bleach to Fade dye on construction paper | | | |
| 8 | Sublimation of Carbon dioxide | | | |
| 9 | Baking soda (NaHCO ₃) and Vinegar (H ₂ C ₂ H ₃ O ₂) | | | |
| 10 | Dissolving Sugar (C ₁₂ H ₂₂ O ₁₁) and Water | | | |

Station 1:

- Place 1 piece of Aluminum wire into the CuCl_2 solution and record your observations
- When finished, pour the liquid waste down the sink and dump the solid waste into the trash.
- If any solid waste gets into the sink, wipe out with a paper towel.
- Then rinse out the test tube and place onto test tube rack for drying.

Station 2:

- Record your observation of the melting H_2O

Station 3:

- *There is a VERY dangerous acid at this station. Do not allow any to come in contact with your skin*
- Place a strip of the Magnesium (Mg) into the hydrochloric acid (HCl)
- Use the glass stirring rod to push the Magnesium (Mg) strip into the solution if necessary
- Record your observations

-When finished, pour the solution into the sink: **DO NOT ALLOW THE MAGNESIUM STRIP TO GO DOWN THE DRAIN**

-Thoroughly rinse and dry off the magnesium strip and place it back into the beaker

-Rinse out the test tube with water and place on the test tube rack for drying

Station 4:

-Record your observations

Station 5:

-Record your observations

Station 6:

-Remove one *tums* from the bottle and place into the mortar and pestle.

-Grind the *tums* with the pestle.

-Record your observations

-When finished, rinse out and dry both the mortar and pestle.

Station 7:

-Remove one strip of colored paper from the beaker.

- Dip the paper into the bleach solution.
- Record your observations.
- When finished, dispose of the paper in the waste beaker.

Station 8:

- Record your observations of the sublimation of carbon dioxide

Station 9:

- Place two droppers full of vinegar into the empty mixture flask.
- Place two scoops of the baking soda into the mixture flask.
- Swirl the solution.
- Record your observations
- When finished, pour the mixture into the sink and rinse and dry the Erlenmeyer flask.

Station 10:

- Fill the Erlenmeyer flask with 75 mL of water.
- Open a packet of sugar and pour into the Erlenmeyer flask.
- Properly dispose of sugar packet.

- Swirl the solution
- Record your observations.
- When finished, pour the mixture into the sink and rinse and dry the Erlenmeyer flask.