

Name: \_\_\_\_\_, Period: \_\_\_\_\_

## Is it Physical or Chemical?

**Introduction:** Most changes that occur can be classified as physical or chemical changes.

- **Physical changes** are a change in a substance's state of matter. In other words, the substances is still the same chemical make up only transformed into a solid, liquid or a gas through absorbing or releasing energy.
- **Chemical changes** are a change in the substance's chemical composition. There are often multiple evidences that a chemical reaction had occurred, but the most important of which is the formation of a new substance. Other evidence include change in color, change in temperature, formation of a solid (precipitate), light emitted, gas released (bubbling), and presence of an odor (also a gas).

**Instructions:** Materials for the changes you will perform are located at different stations in the room. Follow the instructions at each station. You should go to each station, not necessarily in order, record the type of change (physical or chemical) along with your observations and conclusions about the type of change involved. FOLLOW ALL DIRECTIONS and clean each station before you leave.

### **Safety Precautions:**

Do NOT mix any items unless instructed. Do NOT taste any materials; some of them are poisonous. Wear goggles and other safety gear at all times.

### **Stations & Station Procedures:**

#### **Station #1: Acetic Acid and Sodium Bicarbonate**

1. Put 1 pipette full of Acetic Acid (Vinegar) into a test tube.
2. Use a stick to put a small scoop of Sodium Bicarbonate (Baking Soda).
3. After you observations are recorded, pour the test content in the sink and rinse the test tube with water before returning it to the rack.

Observations:

Type of Change: (circle one)

Physical Change

Chemical Change

Evidence to support the type of change circled above:

#### **Station #2: Iodine on a Potato**

1. Cut a small fresh slice from the potato if one has not been done for you.
2. Use a dropper to put 1- 2 drops of iodine solution on the potato slice.
3. After recording your observations, throw away the used slice of potato into the trash.

#### **Station #2 Part B Iodine and Milk**

4. Add one drop of Iodine to the milk container
5. Record your observations
6. Leave this item at the station

Observations:

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Type of Change: (circle one)
Physical Change                      Chemical Change
Evidence to support the type of change circled above:

**Station #3: Sodium Chloride**

1. Fill a test tube about  $\frac{1}{4}$  full with tap water.
2. Use a stick to add a small amount of salt to the water.
3. Cover the mouth of the test tube with your thumb and vigorously shake the tube.
4. When you have completed recording your observation, pour the test tube contents into the sink
5. Rinse the test tube with water before putting it back into the rack.

Observations:
Type of Change: (circle one)
Physical Change                      Chemical Change
Evidence to support the type of change circled above:

**Station #4: Effervescence Tablet**

1. Fill a test tube about  $\frac{1}{4}$  full with tap water.
2. Put a small piece of crushed effervescence tablet into the water in the test tube.
3. When you have complete writing your observations, pour the test tube contents into the sink and rinse the test tube with water before putting it back into the rack.

Observations:
Type of Change: (circle one)
Physical Change                      Chemical Change
Evidence to support the type of change circled above:

**Station #5: Ice**

1. Put one - two small pieces of ice into a test tube
2. For one minute, observe what happens to the solid ice while holding the test tube cupped in your hand.
3. When you have completed writing your observations, pour the test tube content into the sink and rinse it before returning it back to the rack.

Observations:
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Type of Change: (circle one)	Physical Change                      Chemical Change
Evidence to support the type of change circled above:	

**Station #6: Matches**

1. Strike a match and watch it as it burns.
2. Blow the match out before it reaches half way down the stick. Do not let it burn your fingers.
3. Write your observations and rinse the used match in tap water and dispose of it in the container for used matches.

Observations:
Type of Change: (circle one)
Physical Change                      Chemical Change
Evidence to support the type of change circled above:

**Station #7: pH Indicators**

1. Fill a test tube about  $\frac{1}{4}$  full of grape juice using a pipette.
2. Using the other pipette, add 2-3 pipettes full of acetic acid (vinegar) into the test tube, and gently shake the tube.
3. Write your observations, and rinse the test tubes in the sink before returning back to the test tube rack.

Observations:
Type of Change: (circle one)
Physical Change                      Chemical Change
Evidence to support the type of change circled above:

**Station #8: pH Indicators**

1. Fill a test tube about  $\frac{1}{4}$  full of grape juice using a pipette.
2. Using the other pipette, add 2-3 pipettes full of sodium bicarbonate solution into the test tube and gently shake the tube.

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3. Write your observations, and rinse the test tubes in the sink before returning back to the test tube rack.

Observations:

Type of Change: (circle one)

Physical Change

Chemical Change

Evidence to support the type of change circled above:

### Station #9: Alchemy

1. Fill 1 pipette with copper chloride
2. Place copper chloride in a test tube
3. Then take one small piece of aluminum and roll it into a ball to drop into the test tube.
4. When your observations are written, pour the contents into the big beaker at your lab station clean the beaker with water. Pour the contents into the "Liquid Waste Container" located at the station for your Teacher to dispose as hazardous waste.

Observations:

Type of Change: (circle one)

Physical Change

Chemical Change

Evidence to support the type of change circled above:

### Station #10: Water Baths

1. Fill a test tube  $\frac{1}{4}$  or less with tap water.
2. Place in the salt water ice bath and stir around gently and constantly for 2 minutes without removing.
3. Take the test tube out after 2 minutes. Record your observations.
4. Rinse the inside AND outside of the test tube very well with water and return to the test tube rack.

Observations:

Type of Change: (circle one)

Physical Change

Chemical Change

Evidence to support the type of change circled above:

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## CER Conclusion

*Make sure you have all your observations completed, type of change selected, and all evidences to support the type of change recorded before completing the conclusion. You will need to reference the information you gathered from the stations.*

**Before submitting your final CER, please complete your self-evaluation using the CER Rubric. Attach your Self Evaluation to this document and submit everything before the end of class today.**

### Conclusion

You will write a conclusion to support which stations were **physical changes** and which ones were **chemical changes** using a CER format and rubric.

- **Claim**: Write a statement about which stations were physical/chemical changes.
- **Evidences**: Referring to the evidences you wrote at each station, use the evidences you gathered to support your claim that a physical/chemical change occurred.
- **Reasoning**: Using the definition of a physical/chemical change (see first page) describe how you knew which stations were physical/chemical changes.