**STUDENT NAME:**

What’s in a Change?

The words change and reaction are thrown around a lot in science, but what does each of these terms really mean? Making observations and understanding what’s happening at a molecular level can help us understand what’s taking place. A physical change, such as a state change or dissolving, does not create a new substance, but a chemical reaction does. In a chemical reaction, there is a change in the composition of the substances in question; in a physical change there is a difference in the appearance or simple display of a sample of matter without a change in composition. Is the reactant actually changing, or are we relying on its existing, internal properties to change into a different form? In the activities below, we will observe and determine a physical change vs a chemical reaction.

1. Watch this [video](https://www.pbs.org/video/the-magic-of-dry-ice-bagytb/) on dry ice experiments from 0:37-5:17

Quick Check: What is dry ice?

2. Record observations from dry ice experiments into Table 1.

3. Watch this [video](https://www.youtube.com/watch?v=VZl1u5RglWA) on the Reaction in a Bag activity.

1. Now that you have seen the activity, I think you have what it takes to try it on your own! Follow the procedure below with an adult or guardian.

**Materials:**

Ziploc sandwich bag (freezer style works best)

3 tsp of baking soda (sodium bicarbonate)

Napkin or paper towel

½ cup of vinegar (acetic acid)

¼ cup warm water

Measuring cups

Food Coloring (optional)

**Procedure**

1. Pour ¼ cup of warm water into the Ziploc bag
2. Pour ½ cup vinegar into the Ziploc bag.
3. Add 3 tsp baking soda to the napkin. Fold napkin so baking soda is secure.
4. Place the napkin of baking soda into the zip lock bag without allowing it to mix with vinegar.
5. Seal bag tightly and quickly.
6. Shake the bag and record what you observe in Table 1.

**Table 1**

|  |  |  |  |
| --- | --- | --- | --- |
| **Reactants** | **Observations** | **New substance formed?** | **Type of Change****(Chemical or Physical)** |
| Dry ice and Water |  |  |  |
| Baking soda (sodium bicarbonate) and vinegar (acetic acid) |  |  |  |