**The Case of the Mystery Powder**

**Purpose:** The crime scene investigators are overwhelmed with work from the holidays and they need your help. There was break and enter at the strip mall down the road and they need to collect and examine the evidence. There was some white powder that was found at the scene and it is your job is to identify what it is. They were able to extract some of the powder from the crime scene so that you can test it.

**Back Ground Information:** When determining the identity of an unknown substance, crime lab experts must use testing procedures that give results that clearly distinguish one material from another. Forensic chemists often perform more than one positive test on an unknown substance.

Example: When testing an unknown white powder to determine whether or not it is cocaine, the chemist will run a series of tests on the powder. If all tests are positive for cocaine, they can feel certain that the results are correct

**A common technique used in forensic science is the idea of physical and chemical change.**

A physical change is usually a change of state and the molecules in the substance DO NOT change

Examples: - -

- -

A chemical change is when a new substance is created and the molecules in the substance DO change.

Examples: - -

- -

**Variables:**

Responding Variable(s): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Controlled Variable(s):\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Manipulated Variable(s):\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Procedure:**

1. Complete the properties section in the chart
2. Raise your hand and get Ms. Smith to check it before you move onto the various tests
3. You are now able to get the testing sheet, various solutions, an eye dropper and a petri dish
   1. You are to do THREE drops maximum of the various solutions
   2. Record your observations after you have slightly mixed the powder
4. Your chart must be filled in COMPLETELY AND WITH DETAIL before you may move onto the mystery powder.
   1. The mystery powder is one of the powders that you tested. It is your job to determine what powder it could be (PLEASE DO NOT SHOUT OUT WHAT POWDER YOU THINK IT IS, LET OTHERS FIGURE IT OUT FOR THEMSELVES).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Powder** | **Properties (Color, Texture, Shape)** | **Water Test** | **Vinegar Test** | **Iodine Test** | **Indicator Test** |
| Baking Soda |  |  |  |  |  |
| Baby Powder |  |  |  |  |  |
| Corn Starch |  |  |  |  |  |
| Sugar |  |  |  |  |  |
| Cream of Tartar |  |  |  |  |  |
| Mystery |  |  |  |  |  |

The mystery Powder is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ because of the following three reasons:

1. 2. 3.