Observing Chemical and Physical Changes

In this laboratory activity you will observe chemical and physical changes that occur within a zip lock plastic bag containing various substances. You will then construct and carry out experiments that will allow you to explain these observations. This is a qualitative experiment so measuring exact quantities is not necessary.

When you make observations of chemical changes you should *always* look for:

- temperature changes
- color changes
- precipitation
- bubbles (gas formation)
- changes in odor (use proper procedures for smelling chemicals)

Materials
Morton® Safe-T-Power Snow & Ice Melt
Distilled White Vinegar
Baking Soda
Red Cabbage Cooking Water
(boil cut up red cabbage until cooking liquid is deep purple then separate liquid)
Plastic Bag and Small Plastic Cup
1 plastic spoon (approximately 1 tsp)

Step One: Description of Starting Substances
Take a very careful look at each substance and describe the substance in as much detail as you can - note physical state: gas, liquid, solid, note any color or absence of color, note texture: size of crystals, shape of crystals, note any odors **but be VERY careful smelling chemicals - never put anything directly under your nose!**

Step Two: Chemical Reactions

1. Add one level teaspoon of baking soda to the plastic bag.
2. Add two level teaspoons of ice melt to the plastic bag.
3. Combine about 10 mL of vinegar and 10mL of cabbage cooking water in the small cup.
4. Carefully place the small cup inside the bag without allowing it to tip over and mix with the solids.
5. Close the bag. It should be sealed. Push extra air out of the bag as you close it.
6. Turn the bag upside down spilling the cup contents into the mixture of solids.
7. Watch very carefully and take notes in your laboratory notebook. Record all of your observations carefully.

Step Three: Designing Your Own Experiment
Combine the available materials leaving out one or more of them until you can determine which substances are responsible for each observation.

Step Four: Research
Using the Internet determine the chemical composition of all materials. Use this information to hypothesize what chemical reactions are occurring in these experiments. Write balanced equations for all reactions that occur.

Step Five: Report
Prepare a short (1-2 page) report on this experiment summarizing your results and your conclusions.