Science 10 Lab: Chemistry in a Zip Lock Bag

PROBLEM: What types of evidence indicate a chemical change has taken place?

HYPOTHESIS: (Read the whole procedure and come up with an "If... then...." statement that relates to the PROBLEM)

EXPERIMENTAL DESIGN: (How are you going to solve the problem? What are the manipulated, controlled and responding variables?)

MATERIALS:

baking soda	calcium chloride
bromothymol blue	zip lock plastic bag
measuring spoon	plastic vial (15 mL)
graduated cylinder	scoopula

PROCEDURE:

1. Record the appearance of each of the three chemicals before the reaction.
2. Put one scoop full of baking soda in a zip lock bag
3. Put two scoops of calcium chloride in the same bag.
4. Measure 10 mL of bromothymol blue into a plastic vial. (If any bromothymol blue is dripping down the outside of the vial use paper towel to wipe this off.)
5. VERY CAREFULLY place the vial UPRIGHT in the bag. (The contents if the vial MUST NOT SPILL)
6. Try to remove as much air as possible and seal the bag.
7. Hide your bag from the other groups, tip the vial inside the bag
8. Record ALL observations

OBSERVATIONS: Make a proper table to record your qualitative observations of the baking soda, calcium chloride and the bromothymol blue before mixing and qualitative observations of the contents after mixing.

CONCLUSION: Answer the PROBLEM (given at the top of this page) using the sentence format "According to the evidence gathered in this experiment..."

QUESTIONS: (Refer to the lab, a dictionary, your memory, your notes from Sci 9 , this chemistry booklet or if you have a textbook see page 235)

1. What is the definition of a chemical change?
2. What types of evidence indicate a chemical change has take place in this experiment?
3. a) What is the definition of a chemical property?
   b) What is one chemical property of bromothymol blue?
4. a) What is meant by endothermic or exothermic chemical reactions?
   b) Is the reaction that took place in the zip lock bag exothermic or endothermic?

Inquiry Activity — Rates of Reaction

Name: _____

(Student book page 168)

1. What factors can affect the rate of a chemical reaction?

_____

2. Explain how each of the following factors can change the rate of a chemical reaction.

   a) concentration of the reactants

   _____

   _____

   b) temperature of the reactants

   _____

   _____

   c) surface area of the reactants

   _____

   _____

3. The formation of rust (iron oxide) occurs when oxygen in the air reacts with iron. Using what you know about the factors affecting the rate of a chemical reaction, describe some methods that might prevent or slow down rusting.

_____

_____

_____

4. The enzyme papain, derived from papaya fruit, catalyzes the breakdown of the fibrous protein in meat. If the human digestive system already has enzymes to aid digestion, why are enzymes like papain sometimes added to the cooking process?

_____

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