**Chemical reaction experiment**

**Combine two liquids to observe another precipitate. Teacher**

**Aim**: To investigate how do you know when a precipitate is formed in a chemical reaction?

**Materials** for Each Group

Weigh two grams each of baking soda and calcium chloride.

**Procedure**

Expected Results: **Bubbling and a white precipitate appear.**

**Discuss student observations.**

• What did you observe when you mixed the baking soda solution and the calcium chloride solution? **The solutions bubbled and little white particles of solid formed**.

• Did you observe a precipitate?

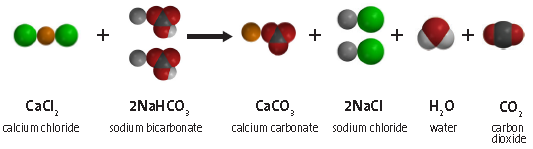
**Yes. The white particles appeared after the two solutions were combined.**

• Do you think this was a chemical reaction?

**Yes. Why? The two substances that were combined were liquids and the substances that were produced were a solid and a gas. These products seem to be different from the reactants.**

**Discuss the products produced in this chemical reaction.**

The chemical reactions seen so far, certain atoms in the reactant molecules unbond from one another and then rearrange and rebond in different ways to form the products. The same type and number of atoms were in the reactants as were in the products.



Make sure you see that every type of atom on the left side of the equation is also on the right. Also be sure that they see that there is an equal number of each type on both sides of the equation.

Questions:

• What products of the reaction do you recognize?

**Sodium chloride (NaCl), water (H2O), and carbon dioxide (CO2).**

• Look at the product side of the chemical equation. What gas is produced in the chemical reaction?

**Carbon dioxide gas.**

• What do you think is the precipitate, why?

**The salt and water are clear and colourless as a solution, so the precipitate must be**

**CaCO3, which is calcium carbonate. Calcium carbonate is ordinary chalk.**

• How many of each type of atom is on the reactant side of the equation?

**1 calcium atom, 2 chlorine atoms, 2 sodium atoms, 2 hydrogen atoms, 2 carbon atoms, and 6 oxygen atoms.**

• How many of each type of atom is on the product side of the chemical equation?

**1 calcium atom, 2 chlorine atoms, 2 sodium atoms, 2 hydrogen atoms, 2 carbon atoms, and 6 oxygen atoms.**

• Is this a balanced chemical equation? Why?

**Yes. The same type and number of atoms are in the reactants and products.**

**Chemical reaction experiment**

**Combine two liquids to observe another precipitate. \***

**Aim**: To investigate how do you know when a precipitate is formed in a chemical reaction?

**Materials** for Each Group

• Baking soda • Calcium chloride • Water • Graduated cylinder • Measuring spoon (½ teaspoon) or balance • 2 clear plastic cups • Masking tape • Pen

Weigh two grams each of baking soda and calcium chloride.

**Procedure**

1. Use masking tape and a pen to label 2 plastic cups baking soda solution and calcium chloride solution.

2. Use a graduated cylinder to add 20 mL of water to each cup.

3. Add 2 g (about ½ teaspoon) of calcium chloride to the water in its labelled cup. Swirl until as much of the calcium chloride dissolves as possible.

4. Add 2 g (about ½ teaspoon) of baking soda to the water in its labelled cup. Swirl until as much of the baking soda dissolves as possible. There may be some undissolved baking soda remaining in the bottom of the cup.

5. Carefully pour the baking soda solution into the calcium chloride solution. Try not to pour in any undissolved baking soda. Observe.

Expected Results (answer before doing the experiment):

**Your observations.**

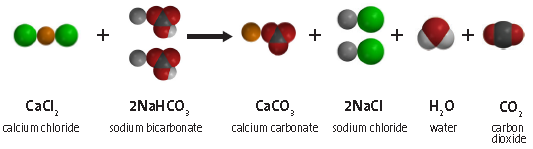
• What did you observe when you mixed the baking soda solution and the calcium chloride solution?

• Did you observe a precipitate, describe it?

• Do you think this was a chemical reaction, why?

**Discuss the products produced in this chemical reaction.**

The chemical reactions seen so far, certain atoms in the reactant molecules unbond from one another and then rearrange and rebond in different ways to form the products. The same type and number of atoms were in the reactants as were in the products.



Make sure you see that every type of atom on the left side of the equation is also on the right. Also be sure that they see that there is an equal number of each type on both sides of the equation.

Questions:

• What products of the reaction do you recognize?

• Look at the product side of the chemical equation. What gas is produced in the chemical reaction?

• What do you think is the precipitate, why?

• How many of each type of atom is on the reactant side of the equation?

• How many of each type of atom is on the product side of the chemical equation?

• Is this a balanced chemical equation? Why?