Forming and Naming Ionic Compounds

Problem: When do ionic substances react to form a product? What are the names and formulas of those products?

Introduction: When they dissolve in water, ionic compounds break apart into ions. These ions move about among the water molecules bumping into the other ions and molecules in the solution. When two ionic solutions are mixed several things can happen! In this experiment, you will have an opportunity to mix various ionic compounds in solution. When solutions of some ionic compounds are mixed, the cation from one and the anion from another form an insoluble compound which appears as a cloudy or grainy solid, called a precipitate. On the other hand, if all cation-anion combinations form soluble pairs, no precipitate appears. All of the ions remain in solution.

In this experiment, your task will be to mix ions of different kinds and to observe whether they form precipitates. If a precipitate is formed, you will write the formula of the new compound and name the product.

Materials:
Goggles
Gloves
Dropper containers with chemicals
Microwell plates

Safety:
Wear safety goggles and gloves. No food or drink.

Procedure:

1. Put on lab safety supplies. Set your microwell plate on a sheet of paper.
2. Label the well plate to match the chart below, with cations at the top and anions down the left side. Place the dropper bottles next to their labels.
3. In each well, place three drops of each solution that corresponds to that well's column and row.
4. Record in your observations table any reaction that occurs or cloudiness that develops. Note the color and texture (use a toothpick to help determine texture). In cases where no reaction occurs write NR. Continue mixing and recording until your data table is complete.

5. Pour solutions into the container I have up front. Rinse microwell plates in the sink. Throw toothpicks away into the trashcan.

	Cu^{2+} (from $CuSO_4$)	Ag^{+} (from $AgNO_3$)	Sr^{2+} (from $SrCl_2$)
$Fe(CN)_6^{4-}$ (from $K_4Fe(CN)_6$)			
CO_3^{2-} (from Na_2CO_3)			
PO_4^{3-} (from Na_3PO_4)			

Data Analysis

1. For each case in which a reaction occurred, write the formula for the substance formed.
2. For each formula, write the correct chemical name for the compound formed.