

Title - *Chemical Reaction - $\text{CuCl}_2 + \text{H}_2\text{O} + \text{Al}$*

By - Debbie Conroy

Primary Subject - Science

Grade Level - 5-7

What happens when aluminum foil meets a solution of copper chloride and water?

Supplies:

- glass beaker
- 100-150ml tap water
- teaspoon
- copper chloride granules
- 1 piece aluminum foil

Procedure:

1. Pour 100-150 ml of tap water in the glass, having students note the temperature of the beaker by gently touching the glass. Measure the temperature using a metal thermometer.
2. Mix 2-3 heaping teaspoons of copper chloride (CuCl_2) with the water. Have the students note the color of the solution; write the chemical formula on the board or chart ($\text{CuCl}_2 + \text{H}_2\text{O}$). Ask them to feel the beaker for temperature change (an indicator that a chemical reaction is occurring) or emission of gas through bubbles (another indicator of a chemical reaction). Nothing should be happening at this point.
3. Fold a strip of aluminum foil in half and half again. Sit the foil strip in the solution. At this point do not let the kids touch the beaker or have their faces close to the beaker because the chemical reaction will happen now. Students should note that the aluminum foil portion submerged in the solution will start to change color, bubbles are occurring, a gas is being emitted and a smell is obvious. The liquid begins to change from a pretty blue to a greenish color. Using a metal spoon or other type implement submerge all of the foil into the solution as it is disintegrating.
4. Add to your chemical formula + Al which is the catalyst for the chemical reaction to occur - explain that Chlorine is an acid and is munching away at the aluminum, leaving behind just the copper portion of the copper chloride. So, in the end you have a solution of water and aluminum chloride gas, with copper being the precipitate. Spoon out the brownish material and let it dry on a paper towel - this is pure copper. The smell and gas released was the Aluminum Chloride.

This is a big WOW demonstration!

E-Mail [Debbie Conroy!](#)