**Electrolysis**

**DESCRIPTION:**   
Electrodes made from pencil lead are attached to a 9V battery to electrolyze various solutions. Oxidation occurs and the anode and reduction occurs at the cathode. When a solution of tin (II) chloride is electrolyzed tin metal and chlorine gas are produced:  
 SnCl2 (aq) → Sn (s) + Cl2 (g)  
When a solution of copper (II) chloride is electrolyzed copper metal and chlorine gas are produced:  
 CuCl2 aq) → Cu (s) + Cl2 (g)

**TOPICS COVERED:**- charging by conduction  
- chemical change  
- conductors  
- decomposition  
- evolution of a gas  
- redox

**MATERIALS NEEDED:**- petri dish or microwell plate  
- dilute solution of SnCl2  
- dilute solution of CuCl2  
- 9V battery  
- mechanical pencil lead  
- battery clips with alligator clip leads

**PROCEDURE:**1. Add a few drops of each solution to a well  
2. Attach a piece of pencil lead to each alligator clip  
3. Attach the battery clip to the battery  
4. Place leads in solutions (rinse between solutions)

**ADDITIONAL COMMENTS:**The thicker the pencil lead, the harder it is to break. Potassium iodide also works well, students can see iodine dissolving in the water.

**SAFETY:**   
Safety goggles should be worn at all times.

**REFERNCES:**Lysher, Rita. Personal Interview by Kevin Caran. 20 Jul 2012.