REDOX Lab

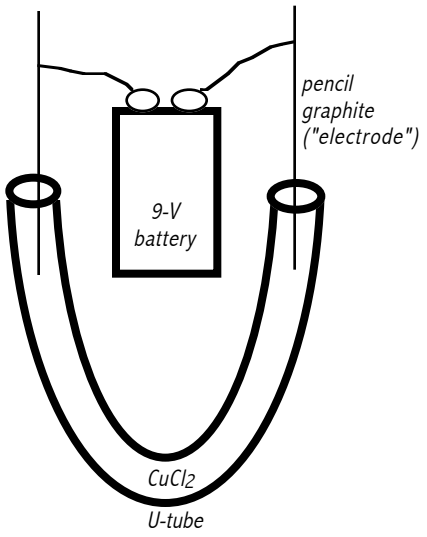
In this activity you will produce copper metal from a solution of copper(II) chloride by electrolysis. A 9-V battery will provide the electric current.

Industrial-scale electrolysis uses large quantities of electricity making it an expensive (although effective) way to obtain or purify metals.

PROCEDURE:

1. Set-up apparatus as shown in diagram. Use alligator clips to make all connections. Fill U-tube with enough $CuCl_2$ solution to partially immerse electrodes.
2. Observe the reaction for about 3 minutes.
3. Cautiously sniff each electrode. Note any odors.
4. Reverse the polarity & repeat steps 2 & 3.

apparatus for simple electrolysis



OBSERVATIONS:

QUESTIONS:

1. Write the balanced chemical reaction which occurred. (hint: it's a decomposition)

2. Which species is being reduced? _____ Which is being oxidized? _____

3. The ***cathode*** is the electrode at which reduction occurs.
   - Which electrode (positive or negative) is the cathode? _____
   - What change did you *observe* at the cathode?
   - Write the half reaction for the cathode:

4. The ***anode*** is the electrode at which oxidation occurs.
   - Which electrode (positive or negative) is the anode? _____
   - What change did you *observe* at the anode?
   - Write the half reaction for the anode:

5. There was also a secondary chemical reaction occurring simultaneously. Write its balanced equation: (hint: it involved the water)