Names: _____

Copper Penny Oxidation Lab

Design an experiment that will demonstrate the process of oxidation on a copper penny. Make sure that your penny is dated 1982 or earlier. Pennies newer than 1982 don't show copper oxidation because they are mostly made out of zinc. Don't forget a control. Your group will receive three pennies. You will let this experiment run for a few days until each penny is very dry, so don't fill up your containers full of liquid. During that time you will take pictures each day at approximately the same height and angle from the pennies.

Materials you can use: water, salt, dilute hydrochloric acid, vinegar and distilled water. Please discuss with your group first before making a decision on how to proceed with this lab.

1. What question would be appropriate to ask before you begin?

2. What are the materials you decided to use?

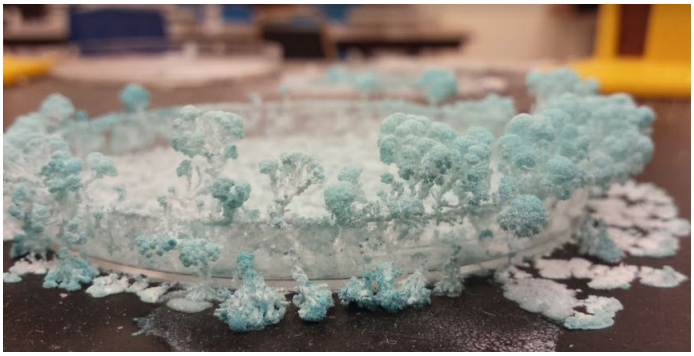
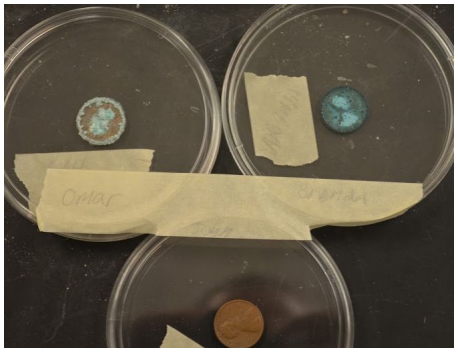
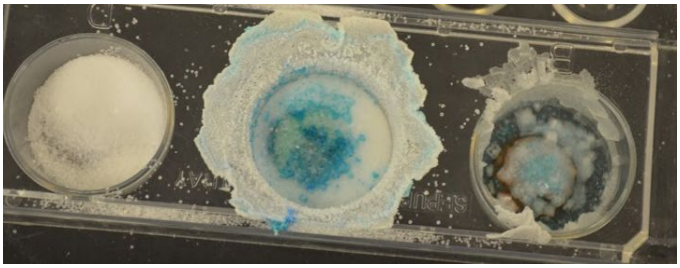
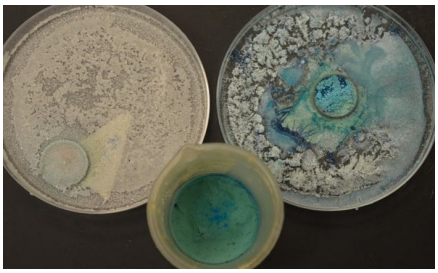
3. What is going to be your control?

4. Create a step by step procedure, detailing quantities and each step required for your experiment.

5. Each day you will observe what is happening with each penny. Write those observations here.

6. Write a statement of conclusion. What did you prove and why do you think, based on knowledge from lessons, certain pennies oxidized quicker or more than others?

Teacher Insights, Reflections and Procedures

- Before they complete this lab we will have discusses what chemical weather and oxidation are. Students will have read Section 3 on my website found here. http://earthscience.xyz/Weathering
- I leave this lab wide open for interpretation and do not give very much help. This almost an assessment on their ability to follow the scientific method.
    - I am looking for:
        - The ability to use a control correctly. Control for most experiments should be distilled water or just a plain penny open to the air. However if they are testing Hcl, then they might use 1 drop of the control and multiple drops for their other two variables. This is a difficult concept I have decided for students to get and follow through correctly so when we are all done, this is one to discuss.
        - To use data. The amount of material they use should be well documented.
        - Their ability to understand oxidation. It has to do with water for the most part. The experiments that work best are with water and salt. Acid tends to clean their penny. I don't tell them this until their lab is complete.
    - Here are some images of some of the cool oxidized penny formation that have happened.
        -  
        -  
        -