Copper in Pennies Lesson (at-home version)

Hello all! This is an experiment that some of you have done with me before, were going to explore how to change the color of pennies! First were going to clean one, then were going to turn it green.

Materials:

1. A penny from before 1982 (this is because pennies made after this date are not made with enough copper)
2. Vinegar
3. Paper towel
4. Plate
5. Salt
6. Bowl

Copper is what old pennies are made of (the statue of liberty, too!) and over time copper oxide forms on the pennies – the vinegar and salt mixture dissolves it!

1) Mix together salt and vinegar in a bowl (think about your **hypothesis** for what might happen)
2) Drop the pennies in once dissolved
3) Let them sit for 5 minutes
4) Take them out and let them dry on a paper towel (they will be clean!) (challenge: use two, rinse one and don't rinse the other – label them)
5) Fold up a paper towel and put it on your plate
6) Drop vinegar on paper towel (just a little!)
7) Place penny on top and observe over the next few hours and days (you can also try dropping the vinegar straight onto the penny – which works better?)

Why?

A chemical reaction has occurred! (A chemical reaction is the combination of two reactants to form something entirely new.) A penny is made of copper. The vinegar on the paper towel helps the copper in the penny easily react with the oxygen in the air to form a blue-green colored compound called malachite.

This is similar to why the Statue of Liberty (which is covered with a layer of copper) has turned greenish-blue. The statue would naturally turn greenish-blue due to exposure to the oxygen in

the air. However, because some rain has acid from pollution in it, the rain speeds up the reaction (just as the vinegar caused the reaction with the penny).

Pennies turn dull due to oxidation – they form a layer of copper oxide on the surface that protects them from further “corruption”. Washing the pennies in a vinegar and salt solution removes that layer from the pennies, exposing the brighter copper underneath.