



The Academy of
Natural Sciences
of DREXEL UNIVERSITY

Shiny Pennies



Materials:

- Tarnished pennies
- Vinegar
- Salt
- Small bowl
- Paper towels
- Water

Instructions:

1. Make predictions about what will happen to the pennies when you put them in the vinegar.
2. Pour vinegar and salt into a bowl and stir.
3. Put a few pennies in the bowl.
4. Count to ten slowly.
5. Remove all the pennies and place them on a paper towel.
6. Take half the pennies and rinse them in water.
7. Observe the changes. Place on a paper towel to dry.

Questions to ask:

- What is the same about the penny?
- What is different about the penny?

- How do the pennies that were rinsed compare to the pennies that were not rinsed?
- Would you like to change anything we did to see if the result is the same?

About this experiment:

Everything around you is made up of tiny particles called atoms. Some things are made up of just one kind of atom. The copper of a penny, for example, is made up of copper atoms. But sometimes atoms of different kinds join to make molecules. Copper atoms can combine with oxygen atoms from the air to make a molecule called copper oxide. The pennies looked dull and dirty because they were covered with copper oxide.

Why did the vinegar and salt clean the pennies?

Copper oxide dissolves in a mixture of weak acid and table salt-and vinegar is an acid. You could also clean your pennies with salt and lemon juice or orange juice, because those juices are acids, too.

Why did the unrinsed pennies turn blue-green? When the vinegar and salt dissolve the copper-oxide layer, they make it easier for the copper atoms to join oxygen from the air and chlorine from the salt to make a blue-green compound called malachite.

Background information courtesy of EXPLORATORIUM.