

Mustard Mystery

"Is there silver in that coin?"

Is there really silver in a silver colored coin? Here's a neat way to find out and learn some chemistry at the same time.

Things You Will Need:

A quarter, a dime, and a nickel
all dated before 1965

A quarter, a dime, and a nickel
all dated after 1965

A small amount of mustard (yes...the stuff you put on
your hotdog!)



What To Do:

- Rub a small amount of mustard on each coin.
- Let the coins sit with the mustard on them overnight.
- In the morning, wash the mustard off the coins.

What You Find:

Only the coins that have silver in them will have black tarnish on them. Do you know why?

Sulphur is a chemical that is very common in our day to day world. The mustard you spice up your hotdog or hamburger with contains quite a bit of sulphur. When sulphur touches silver a new chemical called **silver sulphide** appears. The black tarnish that you see on bright silver is silver sulphide.

Eggs also contain a lot of sulphur. If you eat eggs with a silver plated fork you will find that your fork has black tarnish on it when you are finished. This is silver sulphide. You made a new chemical while eating your breakfast!

**Why did you have to use coins that
were made before 1965?**

Remember that we were testing to find out if there was silver in the silver colored coins. The 1792 Mint Act said that American money had to be made of gold, silver and copper. The dollar, half-dollar, quarter, dime and half-dime were composed of silver. A silver crisis caused the replacement of silver in quarters and dimes in 1965. The half-dollar was composed of 40 percent silver from 1965 to 1970. These coins are now made of cupro-nickel clad, with a pure copper core,

and an outer layer of a 75 percent copper, 25 percent nickel alloy. Nickels are made from the same 75-25 alloy. So even though coins made after 1965 look like they are silver there is no silver in them.

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