

Science Kids Explore



COPPER!®

GROWING COLONIES AND DISINFECTING FINGERPRINTS

What You Need

- An unwashed finger.
- Something made of copper, such as a penny or a piece of copper tubing. The copper cannot be covered with any kind of a lacquer, or it won't work. If you have metal coupons, one of copper and one of stainless steel, those would also work. You need something small, because you will be pressing it against an agar Petri dish.
- Stainless steel tableware or some other household item made of uncoated stainless steel. Again, you need something small.
- Two agar Petri dishes. To get them, contact a local hospital or a science supply house. You could also make your own. The web site called The Kitchen Pantry Scientist (<http://kitchenpantryscientist.com>) has instructions; the page is named Homemade Petri Plates-Microbial Zoos.

The Procedure

1. Press your unwashed finger onto the copper and the stainless steel.
2. Let the copper and stainless steel sit at room temperature (about 68 degrees F) for three hours.
3. Press the copper and stainless steel against the nutrient agar plates.
4. Incubate the agar plates for 12 hours at about 100 degrees F.
5. Wash your hands before handling the agar plates.
6. Throw them away, without touching inside them, after you've had a chance to examine the results.

What You Should See

- The agar plate for the stainless steel should have a colony that grew from whatever was on your unwashed finger. If you see large, fuzzy colonies, those are probably fungi. Small, white colonies are probably bacteria.
- The agar plate for the copper should be clean.

What Happened

The germs from your hands were able to thrive in the agar plate that had the stainless steel pressed into it, but the copper inhibited growth of the germs on it, and so by the time you pressed the copper into the agar plate, the surface was disinfected. When copper is used as an antimicrobial, it will kill more than 99.9 percent of some extremely harmful bacteria within two hours of contact. For this to be effective, the copper surface has to be clean and cannot be cross-contaminated.

Why This Experiment Works

Throughout history, copper has often been used for its microbial properties. Scientists do not understand why, although they have many theories, but they do know it is effective and they are currently trying to identify what is actually happening. In particular, the EPA is extremely interested in copper's ability to kill microbes effectively. ■

