



Fighting Germs

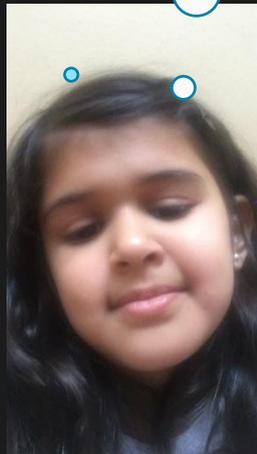
Avani Deshpande, Grade 5, University Elementary School

Introduction

Why does my stomach hurts?

Probably, there are Germs in my stomach as I ate food without washing my hands

How do I prevent Germs from spreading?
Let me do a science project on it



Motivation

Fight Germs and
be healthy



Which is better
Disinfectant to stop
germ spread?
COPPER or
SANITIZING WIPES

My Hypothesis

- Disinfectants prevent bacterial growth
- Sanitizing wipes are better than natural disinfectants

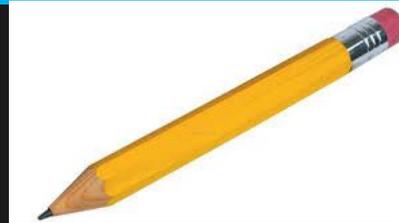


My Experiment: Which is a Better Disinfectant?

- Copper is a natural disinfectant sourced from Earth and Disinfectant wipes (Brand: Lysol) are man-made which has chemicals such as quaternary ammonium compounds “quats”.
- Through this experiment, I will compare Copper wire with Disinfectant wipes to see which generates less bacterial growth.

Science Project Details

- **Step 1:** To take a reading, you wash your hands and wear your gloves, then take a sterilized swab (careful not to touch the other swabs). Rub it against the surface (which can be either doorknob or pencil then) and streak into to agar dish.
- **Step 2:** Label each dish. Label should consists of the surface name, time, date and disinfectant type:{unclean OR copper OR wipes}
- **Step 3:** Keep it in a incubator (if you have one) or a warm, humid place (like a oven).



SURFACE UNDER TEST



Science Project Details

- **Step 4:** Leave it for two to three days and then take it out.

I monitored it on daily basis at exact same time and took the readings.

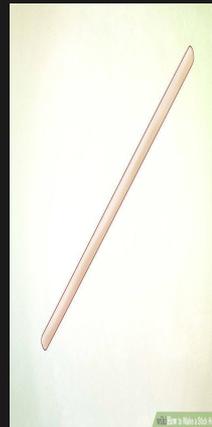
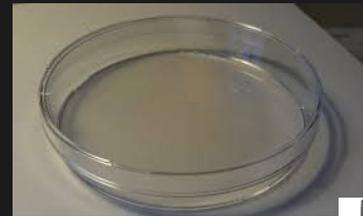
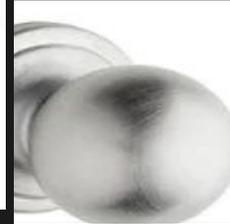
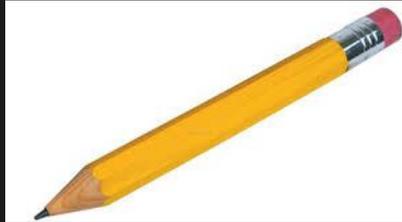


- **Step 5:** Wear your Face mask and gloves, take a stick and count the number of bacterial colonies. After taking the readings, seal the petri dish with a Para film and keep in cold place (i just kept it outside my house, as temperature was below -15 degrees, as good as a natural fridge!).

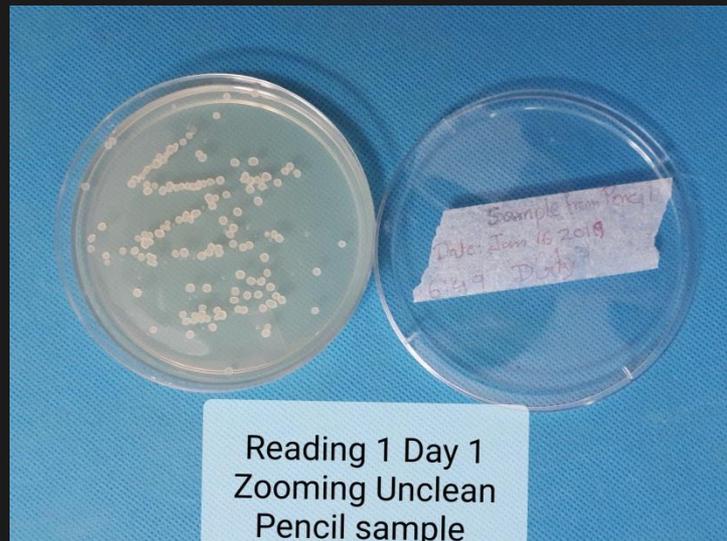


Equipment Used

- Pencil
- Door knob
- Sanitizing wipes
- Agar dishes
- Cotton swabs
- Cooking oven
- Timer
- Copper wires
- Latex gloves
- A stick

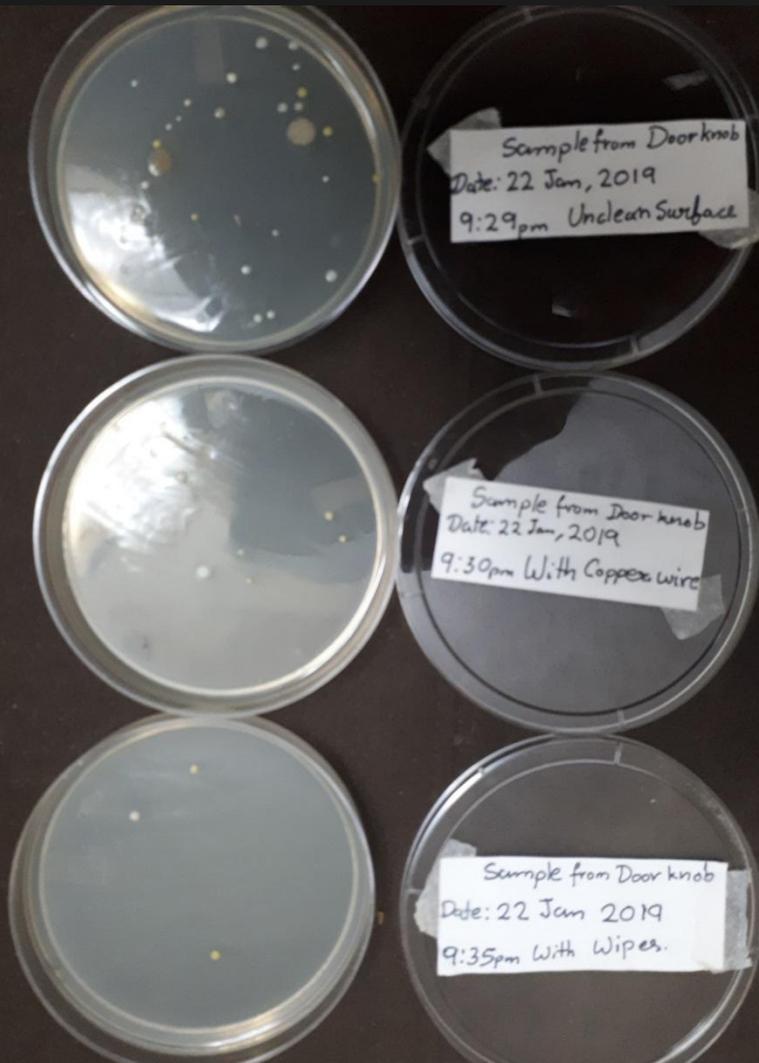


Bacterial Growth: Surface Pencil



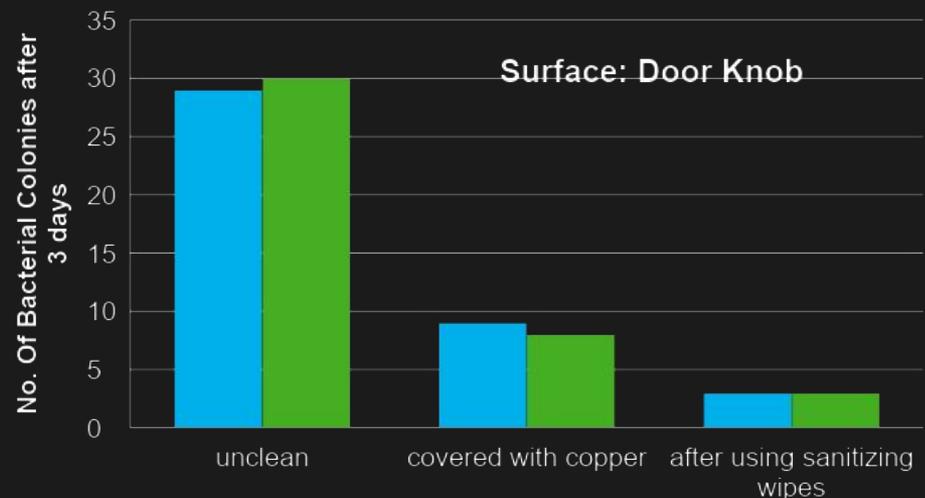
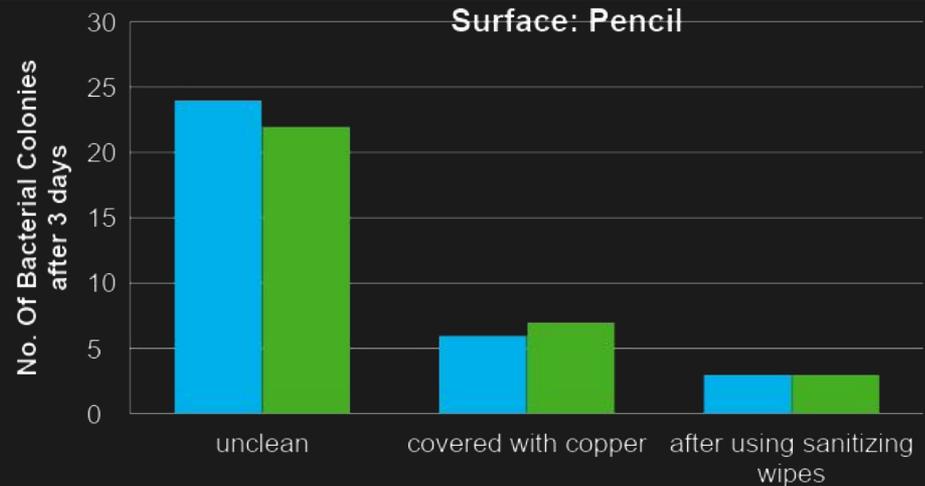
- Photos showing the bacterial growth on agar dishes.
- No bacteria on reference dish shows agar plates were clean

Bacterial Growth: Surface Door Knob



Results

- Bacteria colonies after 3 days
- Results showed that sanitizing wipes is better than copper material.
- However, the copper material is also effective in controlling bacteria growth



Conclusion

- I think it was a great experience for me to know more and learn about germs and bacteria.
- Although sanitizing wipes claim to kill 99.99% of the germs, they are loaded with Chemicals called quaternary ammonium compounds “quats”, commonly found in wipes are especially problematic.
- These chemicals are skin irritants, can irritate your lungs, and have been linked to asthma and reproductive harm. The overuse of quats can also lead to the promotion of antibacterial-resistant bacteria (“superbugs”), which is bad news for everyone.
- So, my results show that, copper, which is a natural bacteria resistant material is a better at daily use as the results are **ALMOST** close.