



**CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY**

Name(s) Chloe C. Peyton	Project Number J1720
Project Title Metals vs. Cleaning Agents	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My objective was to determine which anti-microbials, metals or cleaning agents, are the most potent in killing bacteria grown in Petri dishes.</p> <p>Methods/Materials Cotton swabs were used to obtain household bacteria. 18 Petri dishes with agar were used to grow bacteria and three were used as a control. I put a drop of Mr. Clean on three Petri dishes and did the same procedure for Lysol and Purell. For the metals I put a silver dime on the bacteria in three dishes. I did this again for Brass and Copper. Then after incubating the Petri dishes at 37 degrees Celsius for one and one half weeks, I checked them and measured the kill zone around the antimicrobial in centimeters.</p> <p>Results All metals but especially silver was the most potent anti-bacterial. It killed a diameter of 2 centimeters, 2.5 centimeters and 2 centimeters in the kill zones of the three trials. The silver and copper showed a greenish blue colored chemical reaction. I used a metal cookie tin with a lid and placed a heating pad on the top. The temperature of the incubator was held constant at 37 degrees Celsius as measured with a cooking thermometer. I stacked the Petri dishes and re-stacked them over several days to distribute the heat evenly.</p> <p>Conclusions/Discussion In my experiment, I discovered that silver is the best antimicrobial to kill household bacteria. Findings indicated that silver is the most potent killer of bacteria and based on my findings, my hypothesis was not correct. Metals, on average kill nearly twice the bacteria than cleaning agents used in this study. My findings support my observations that many buildings with high use by people have metal hand rails and door knobs. After conducting this experiment I now realize that the reason for the use of metals for hand railing and door knobs may be based on the antimicrobial properties of metals. I was also disappointed in the kill zones of the antimicrobial agents.</p>	
Summary Statement I believe when antimicrobials are applied to bacteria grown in a Petri dish, the kill zone will be larger for antimicrobials than metals.	
Help Received	