



**CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY**

Name(s) Crista R. Walters	Project Number J2127
Project Title Is Green Clean or Mean?	
Abstract Objectives/Goals The goal of this project was to investigate if natural environmentally friendly cleaning products are more effective and longer lasting for killing bacteria than conventional cleaning products. The natural products tested were Dawn Dish Detergent, Green Works Natural All Purpose Cleaner Spray, and Seventh Generation Natural All-Purpose Cleaner Spray. The conventional products tested were Clorox Regular Bleach, Lysol Antibacterial Kitchen Cleaner #Citrus# Spray, and 409 Antibacterial Kitchen All Purpose Cleaner #Lemon Fresh# Spray. Methods/Materials Medium preparation: A 2x4ft hard plastic sheet simulated a kitchen counter top (SKCT) and was used for 3 weeks. Divide into 6 sections labeled Soap & Water (SW), Green Works (GW), Seventh Generation (7th Gen), Bleach (B), 409, and Lysol (L). Contaminate the SKCT with liquid from a package of chicken. For each Stage, the sections were cleaned with the product and 6 blood agar dishes were planted with medium from each section and incubated between 90-100 degrees. Bacterial colonies were counted and recorded. Stage I - Control; Stage II - 1st cleaning; Stage III - No cleaning; Stage IV - 2nd cleaning; Stage V - 3rd cleaning. Results Stage I: Bacterial colony counts were high in all products showing contamination throughout all sections. Stage II: 1st cleaning - Bacterial colony counts were <7 in all blood agar dishes. Stage III: 32 hrs later SW had 269, B had 68, 7th Gen had 31, L had 25, 409 had 10 and GW had 8 bacterial colonies cultured. Stage IV: 2nd cleaning # B had 22, 7th Gen had 13, GW 409 and L had 3 each and SW had 2 Bacterial colonies cultured. Stage V: 3rd cleaning # L had 57, B had 28, 7th Gen had 15, GW had 3, SW had 2 bacterial colonies and 409 had 1 colony. Conclusions/Discussion It was thought that conventional products would outperform and be more effective than natural products. This is not what happened. Green Works and 409 were the best and performed about equally. Soap and Water was 2nd, Seventh Generation 3rd, Lysol 4th, and Bleach 5th. The study might be redesigned to drop bacteria onto empty plates containing only the various solutions and then see if the bacteria could grow. Another study could investigate different concentrations of bleach to see at what concentration bacterial growth is unaffected.	
Summary Statement The goal of this project was to investigate if natural environmentally friendly cleaning products are more effective and longer lasting for killing bacteria than conventional cleaning products.	
Help Received Blood agar dishes provided by Dr. Migler at St. John's Hospital; Mother helped proof read and format report.	