



**CALIFORNIA STATE SCIENCE FAIR  
2002 PROJECT SUMMARY**

<b>Name(s)</b> Steven A. Paletz	<b>Project Number</b> <b>J1129</b>
<b>Project Title</b> <b>Anti-Bacterial Hand Sanitizers: Hype or Help?</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> Hand washing may seem trivial, but failing to do it may have tragic even deadly consequences. By not washing our hands regularly we may be causing our own poor health and spreading germs to others. This project was done to test the effectiveness and claims of waterless anti-bacterial hand sanitizers against the XL1 blue E Coli bacteria.</p> <p><b>Methods/Materials</b> The testing was done by combining a dilution of each product (Purell, Aloeguard, Alcare Plus, 6.2% ethyl alcohol, 62% ethyl alcohol and Bath &amp; Body works) with the XL1 blue E Coli bacteria and plating 50-ml. of the mixture onto a nutrient agar petri dish. Controls were run. Three trials were conducted on each dilution of product to bacteria. Dilutions of both 1:1 and 2:1 of product to bacteria were tested. This was allowed to incubate for a period of 24 hours at 37 degrees Celsius. Following the incubation period, the bacteria were counted and the results were documented and graphed.</p> <p><b>Results</b> The results indicated that Purell, Bath and Body works, Alcare Plus and 6.2 % ethyl alcohol were not effective in killing the bacteria tested. They did not live up to the claims made on each product. Aloeguard, a widely used hospital product, did effectively kill all of the bacteria tested. Ethyl alcohol 62% also worked well to kill the bacteria.</p> <p><b>Conclusions/Discussion</b> Concluding the testing, it was discovered that the antibacterial hand sanitizers were not as effective in killing bacteria as they claim to be. The original hypothesis was partially correct in that the chloroxylenol, found in Aloeguard, as originally suspected, was very effective in killing the bacteria tested, as was the 62% ethyl alcohol. After 24 hours, these products killed 100% of the bacteria colonies tested. The other products simply did not work.</p>	
<b>Summary Statement</b> This project was done to determine the effectiveness or lack there of, of waterless anti-bacterial handsanitizers against the E Coli bacteria.	
<b>Help Received</b> Main assistance came from Dr. Benjamin Cravatt at the UCSD research institute, utilizing lab equipment under his supervision. My Father instructed me in the use on Excel enabling me to graph my results. My Mother and a friend assisted me in selecting the color scheme for my display board.	