



**CALIFORNIA STATE SCIENCE FAIR  
2009 PROJECT SUMMARY**

<b>Name(s)</b> <b>Kendra R. Hoffman</b>	<b>Project Number</b> <b>J2107</b>
<b>Project Title</b> <b>Hand Sanitizing vs. Hand Washing</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The objective in doing this project is to test the effectiveness of using a hand sanitizer versus washing your hands with soap and water.</p> <p><b>Methods/Materials</b> To carry out this experiment, bacteria samples were taken from 4 different employees at a bank. For the first test (on each subject), I swabbed each of their hands before and after having them use the hand sanitizer, keeping each of the samples in separate Petri dishes. On a different day, with the same 4 employees (each tested separately), I carried out my second test. I swabbed each of their hands once again testing for current bacteria, and then had the 4 employees wash their hands thoroughly with soap and water. After washing with soap and water, I swabbed each of the employee the apostrophe mark s hands again and transferred the bacteria into separate Petri dishes. I then took the bacteria home and cultured it in an incubator. After three days, I brought out the Petri dishes and compared the quantity of bacteria in each.</p> <p><b>Results</b> All four subjects showed that using a hand sanitizer was more effective than washing their hands with soap and water. In three out of the four subjects, the hand sanitizer was able to reduce the bacteria on their hands by 100%, leaving no bacteria.</p> <p><b>Conclusions/Discussion</b> In conclusion, my project shows using a hand sanitizer to reduce bacteria on your hands is more effective than washing your hands with soap and water. My hypothesis was correct. The bacterium on each subjectthe apostrophe marks hands was significantly reduced after using the hand sanitizer. Whereas, with the hand-washing method, the bacteria was reduced, but was far less effective.</p>	
<b>Summary Statement</b> My project tests the effectiveness of using a hand sanitizer to reduce bacteria versus washing your hands with soap and water.	
<b>Help Received</b> Science teacher supplied petri dishes and incubator; bank allowed employees to be used as test subjects	