



**CALIFORNIA STATE SCIENCE FAIR  
2010 PROJECT SUMMARY**

<b>Name(s)</b> <b>Rachel S. Dokko</b>	<b>Project Number</b> <b>J1710</b>
<b>Project Title</b> <b>A Shoe Cleaning Machine to Reduce the Levels of Bacteria on Footwear</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> How much bacteria are actually found on the bottoms of shoes, and if there is a significant amount, is there an effective way to get rid of them? If there is a great amount of bacteria found on the bottoms of shoes, then people who wear their shoes inside will spread more bacteria in their houses. This scientific experiment benefits all people who wear their shoes inside their houses. It also gives them the choice of keeping their shoes on, without worrying about the transfer of bacteria.</p> <p><b>Methods/Materials</b> By culturing six pairs of shoes, this hypothesis was tested. The first of the three shoes were worn over a period of 15 days, while every 5th day, the bottom of each shoe was cultured. Then after the 15th day, each shoe was cleaned with the machine, which was built to try and reduce the amount of bacteria. The remaining three pairs of shoes were random samples that were already worn, and were only cultured before and after using the machine.</p> <p><b>Results</b> After the data was collected, it showed that during the 15 days, the bacteria colonies increased 382.39 times, with the highest number of colonies counted being 1,317.5. But luckily, after using the machine, the bacteria diminished by 856.17 colonies, or a 92.59% decrease in bacteria.</p> <p><b>Conclusions/Discussion</b> This proves that even though shoes are a place where many types of bacteria collect, they can easily be removed through a simple and effective cleaning that anyone can carry out in daily life.</p>	
<b>Summary Statement</b> It is a practical way to recude bacteria on shoes, so they can be worn inside without spreading any illness.	
<b>Help Received</b> Father helped operate power tools and wire machine; Uncle taught how to culture bacteria effectively	