



**CALIFORNIA STATE SCIENCE FAIR  
2010 PROJECT SUMMARY**

<b>Name(s)</b> Esther N. Hills	<b>Project Number</b> <b>J2114</b>
<b>Project Title</b> <b>What Is the Best Way to Clean a Stuffed Animal of Both Dirt Particles and Bacteria?</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> My goal was to learn what method cleaned stuffed animals of dirt and bacteria the best.</p> <p><b>Methods/Materials</b> I used 15 stuffed animals (5 for the control group and 10 for testing), 25 Sheep's Blood Auger plates, a microscope, flower bed dirt, and 10 different products for cleaning. I rolled my 10 stuffed animals in the dirt. Then I swabbed them using the travel swabs. Then I inoculated my auger plates. Afterward I incubated the plates for 24 hours and the next day I counted the bacteria spores. Then I disposed properly of my plates. The second way I found my data was the microscope part of my project. I cut fibers off all 10 of my stuffed animals before and after they were cleaned. I counted dirt particles, under a microscope from fibers cut off of all 10 bears and I drew pictures of what I saw. I cleaned the stuffed animals using the following methods: 1) Nothing, 2) Clorox Disinfectant Wipes, 3) Vacuum Hose, 4) Baking Soda &amp; Water, 5) Freezer Bag in Freezer, 6) Washing Machine, 7) Febreze, 8) Dryer 9) Isopropyl Rubbing Alcohol, and 10) Salt Water Bowl. After cleaning, I repeated the processes for counting bacteria and dirt particles and compared the before and after results. In the end, the cleaning product that worked the best was the one with the least amount of dirt particles and bacteria.</p> <p><b>Results</b> After cleaning 10 different ways, for the bacteria part of my experiment, 2 of the stuffed animals had 0 bacteria spores, 2 had 1 bacteria spore, 2 had 3 and the rest had in between 13 and 21 bacteria spores. For the dirt particles part of my experiment, one of the stuffed animals had 4 dirt particles, one had 5, one had 9, the rest were in between 11-50 dirt particles.</p> <p><b>Conclusions/Discussion</b> Clorox Disinfectant Wipes and freezing the stuffed animal in the freezer were the best ways to kill bacteria. Both methods had 0 bacteria spores after the cleaning was done. The washing machine and Clorox Disinfectant Wipes were the best ways to get rid of dirt particles. The washing machine had 4 particles after cleaning and the Clorox Disinfectant Wipes had 5. These data suggest that Clorox Disinfectant Wipes is the best way to clean a stuffed animal for both dirt particles and bacteria. This was different from my hypothesis because I thought the washing machine would be the best cleaning method, but the washing machine was only the best way to get rid of dirt particles.</p>	
<b>Summary Statement</b> Of 10 methods, my project finds the best way to clean a stuffed animal for both dirt particles and bacteria.	
<b>Help Received</b> Science teacher and adult volunteer supervised lab work. Friends helped inoculate, incubate and dispose of auger plates. Mom helped with typing and setting up my board.	