



# CALIFORNIA SCIENCE & ENGINEERING FAIR 2018 PROJECT SUMMARY

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<b>Project Title</b> How Much Bacteria Is on Your Reusable Bag?	
<b>Abstract</b> <b>Objectives/Goals</b> The purpose of my project was to discover how much bacteria is growing on new and used reusable plastic grocery bags. What happens if you spill liquids? My hypothesis was that spilled liquids will cause the most bacteria to grow and chicken liquid would cause a lot of bacteria to grow. <b>Methods/Materials</b> I took 3 new and 3 used plastic grocery bags, applied liquids, let them dry and then stored the bags for 2 days. I then swabbed the bags and grew bacterial samples in agar petri dishes. To measure the bacterial count, I took photographs of each petri dish and used the software ImageJ (Developed by National Institutes of Health) to count the bacterial colonies. <b>Results</b> My hypothesis for my experiment was if different liquids are spilled on bags, more bacteria growth will occur. I thought that the chicken liquid would grow the most bacteria because it is a raw meat and it would develop more colonies. This hypothesis was partially correct. Spilled liquids on both new and used bags caused higher bacterial counts on both new and used bags compared to the control bags. The new bag control had an average bacterial count of 60 units. This indicates that brand new bags have lower bacteria counts to begin with but when liquids are spilled the bacterial count increases. This also partially occurred for used bags. The used bag control had an average bacterial count of 296.67 and upon spilling juice and milk in the used bags, the count increased to 321.00 and 349.33. However for chicken and grape the bacterial count was lower. <b>Conclusions/Discussion</b> I don't believe that my experiment conclusively proved the effects of spilled liquids on bacteria contamination, but in general used bags were dirtier than new bags, and spilling liquids increased the bacteria count. Spilling juices on used grocery bags caused the most bacterial growth. I was surprised the chicken meat liquid did not cause the most bacterial growth. My petri dishes also grew fungi and mold indicating the presence of other foreign contaminants.	
<b>Summary Statement</b> My project was about measuring bacterial contamination in reusable plastic grocery bags and investigating what liquids would cause the most bacterial growth.	
<b>Help Received</b> Dr. Belluzzi (Santa Barbara City College) reviewed the agar petri dishes to help determine when maximum bacteria growth had occurred and also explained the difference between bacterial, mold, and fungal growths.	