



**CALIFORNIA STATE SCIENCE FAIR  
2014 PROJECT SUMMARY**

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| <b>Name(s)</b><br><b>Dante J. Basile</b>  | <b>Project Number</b><br><b>J1502</b> |
| <b>Project Title</b><br><b>Bacterial Populations Collected from Fast-Food Restaurant Surfaces</b>   |                                       |
| <p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b><br/>This project was designed to assess the bacterial populations found on commonly handled surfaces of fast-food restaurants. It was hypothesized that the bathroom floors would most likely exhibit the greatest bacterial colony populations.</p> <p><b>Methods/Materials</b><br/>Six restaurants were visited, and five surfaces were sampled at each location to determine which surface exhibited the greatest average bacterial population. At each of the six restaurants, the bathroom floor, bathroom soap dispenser, entrance door handle, table, and chair were sampled with a sterile cotton tip applicator. Nutrient Agar 1.5 % was inoculated with the samples collected. After five days, the resulting colonies on each petrie dish were counted, and the average bacterial colony count of each surface was calculated.</p> <p><b>Results</b><br/>The average surface bacterial colony counts ranked the sampled surfaces in the following order from greatest to lowest population: bathroom floor, chair, bathroom soap dispenser, entrance handle, and table top.</p> <p><b>Conclusions/Discussion</b><br/>The fast-food restaurant bathroom floors and chairs harbored the greatest danger of exposure of bacteria to patrons. In contrast, the restaurant table top surfaces and entrance handles were less likely to expose patrons to bacteria. Of the surfaces sampled and cultured, two produced notable colonies that appear to be bacteria of the potentially pathogenic <i>Clostridium</i> genus. Microscopic examination of the cultured colony revealed the presence of bacilli with endospores. The morphology of these bacteria was consistent with <i>Clostridium</i>. Thioglycollate liquid media is an optimal medium for <i>Clostridium</i>. Accordingly, the possible <i>Clostridium</i> bacteria were introduced into the thioglycollate media. The bacteria flourished in the thioglycollate medium without the formation of endospores. This corroborated the gross microscopic identification. These basic tests demonstrated that fast-food restaurant surfaces may promote potentially dangerous bacteria.</p> |                                       |
| <b>Summary Statement</b><br>Five surfaces of six fast-food restaurants were sampled for the presence of bacteria.   |                                       |
| <b>Help Received</b>  |                                       |