



**CALIFORNIA STATE SCIENCE FAIR
2016 PROJECT SUMMARY**

Name(s) Alexa M. Gamble	Project Number J1507
Project Title The Effectiveness of Bleach: Its Impact on Microorganism Reduction in Relation to Time in Park Drinking Fountain Water	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective is to determine the efficiency of bleach in relation to the time it remains on drinking fountains' spigots in reducing the amount of microorganisms in its water, as compared to the fountain's Before control sample, and as measured by colonies' total surface area.</p> <p>Methods/Materials Stopwatch; spray bottle; 30 LB Agar Plates, pipettes, and swabs; 5 parks with 3 drinking fountains each; incubator made from plastic bin, heat lamp, 2 thermometers. Collected Before and After water samples from each fountain leaving bleach spray on all 5 Fountain #1's for 1 minute, Fountain #2's for 5 minutes, and Fountain #3's for 10 minutes. Measured microorganism colony growth from each water sample in sq.cm, recording totals and characteristics, comparing the total surface area in the Before bleach spray water sample to the corresponding fountain After samples for each time period the spray was left on contact: 1 minute, 5 minutes, and 10 minutes.</p> <p>Results In relation to time, allowing bleach to remain on the spigot surface for 5 minutes proved to reduce the greatest amount of microorganisms (10.20 sq.cm), which was 2.05 sq.cm more than waiting 1 minute and almost 6 sq.cm more than waiting 10 minutes.</p> <p>Conclusions/Discussion The performance of the bleach was enhanced by leaving it on the fountains' spigots for 5 minutes, showing the greatest average reduction in microorganisms when compared to its Before water samples. Since leaving bleach on contact for 5 minutes proved to reduce the most microorganisms, this would be an important lesson to implement at home for cleaning, and in hospitals for disinfecting.</p>	
Summary Statement I showed that a 5 minute wait time on spigots has a positive impact on bleach's ability to reduce microorganisms in water from drinking fountains.	
Help Received I built the incubator, but my mom bought the materials on my list. My dad drove me to all the parks for my population data and water sample collection.	