



**CALIFORNIA STATE SCIENCE FAIR  
2011 PROJECT SUMMARY**

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| <b>Name(s)</b><br><b>Nicholas M. Sebastiani</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Project Number</b><br><b>J0616</b> |
| <b>Project Title</b><br><b>Chlorine Decay in Tap Water</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                       |
| <b>Abstract</b><br><b>Objectives/Goals</b><br>This experiment tested chlorine decay in different temperatures of water. This experiment will help to determine if tap and/or drinking water is clean. Finally, this experiment could help to tell if swimming pools are sanitary and safe enough to use at various times of the year.<br><b>Methods/Materials</b><br>For each test, a colorimeter (chlorine measuring device) was used. To perform the experiment, three amber bottles, which were the same size for all of the tests, contained water at a controlled temperature (cold or warm), and one bottle was a control at room temperature. All of these bottles had the same amount of chlorine (bleach) in them at the beginning of the experiment. The bottles were tested with the colorimeter once every day for seven days. This controlled time which is also a factor in chlorine decay. Also, the amber bottles controlled light which is another factor in chlorine decay.<br><b>Results</b><br>The data in this experiment shows how the chlorine concentration changed for each temperature, and it was consistent in each bottle. Throughout this experiment, the warmer bottle lost more chlorine than the cold and room temperature bottles. This means that to keep water chlorinated for extended periods of time, it is more beneficial to use colder water. This is due to the fact that in warm water chlorine undergoes chemical reactions and reacts with other chemical compounds in the water at a faster rate than cold water.<br><b>Conclusions/Discussion</b><br>The results support the hypothesis. The amount of chlorine in the warm water did decay at a faster rate than the cold water as stated in the hypothesis, but the amount of chlorine in the cold water did not grow as stated in the hypothesis. Overall, it can be said that chlorine decays at a slower rate in cold water, and at a faster rate in warm water. |                                       |
| <b>Summary Statement</b><br>This experiment tested chlorine decay at different temperatures of tap water.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                       |
| <b>Help Received</b><br>My Dad showed me how to take chlorine measurements.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                       |