



**CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY**

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Project Title Could Harmful Algal Blooms Be Expelled from Water Sources using Colored Light Filters?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals For this year's science project I chose to investigate: Could Algal Blooms be Expelled from Water Sources Using Colored Light Filters? I am interested in this topic because it seems that people are little aware of this sizeable problem around the world. I want to see if I can find a solution to this ecological issue, and help the eco-system. The amount of money the U.S. loses because of algal blooms is unreasonable. I hope to find a solution to this problem through this experiment.</p> <p>Methods/Materials After obtaining 4 dark boxes (so unwanted light cannot affect the experiment), 3 sheets of colored light filters (green, blue, and red) algae samples, and large aquarium, begin your experiment. Let the algae grow in the aquarium for 1-2 weeks. Then, separate algae into the 4 containers equally, covering three of them with light filters and one uncovered. To formulate results, take drops of water for samples from each box. Using a microscope, count the number of algae and repeat with 5 drops from each container, and find average of the 5. Record in logbook. The algae number is likely affected by the independent variable, the colored light filters.</p> <p>Results Through my investigation, I found that the green colored light filter hampered the growth of algae the most when compared to the naturally growing uncovered box. Slightly more algae grew in the blue light filter, but still less than in the uncovered container. The red filter however, encouraged the growth of algae and consistently contained more algae than the uncovered container.</p> <p>Conclusions/Discussion I concluded that I did prove my hypothesis. I will explain why my experiment happened the way it did. The biggest influence on the results of this experiment is Photomorphogenesis of plants. The process is controlled by photoreceptors that trigger actions taken by the plant. The Phytochrome controls responding to far-red and red light wavelengths, Cryptochromes and Phototropins are photoreceptors that react to blue light. It has been shown that these receptors may be key to stomatal opening. Triggering these photoreceptors was critical, as the reproduction system was affected by the blue and green light waves. Using these conclusions, light filters could help eliminate Algae Blooms. My experiment was unique in that all studies have been done on land plants, not algae, and that I used these concepts to try to find a way to eliminate plants, not promote growth.</p>	
Summary Statement I was finding an alternative eco-friendly way to slow down spread of Algal Blooms in water, for which I used light filters.	
Help Received School provided materials for experiment	