



**CALIFORNIA STATE SCIENCE FAIR  
2017 PROJECT SUMMARY**

<b>Name(s)</b> <b>Jackson J. Humphrey</b>	<b>Project Number</b> <b>S1113</b>
<b>Project Title</b> <b>Effects of YO12N Exposure on Chlorella vulgaris and Daphnia magna</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The purpose of this study was to see if YO12N can be used in reducing impacts from eutrophication. Eutrophication is the process by which a body of water becomes rich in dissolved nutrients from fertilizers or sewage. <b>Methods/Materials</b> To conduct this study the Chlorella vulgaris and Daphnia magna were divided into 15 specimen each and then exposed to the YO12N solution. The control group was not exposed to the YO12N solution. The YO12N solution was made by combining distilled water to a % solution then added to the test subjects. The solution added was a 0.50%, 1.00%, and 2.00% of YO12N. A spectrophotometer was used to assess the Chlorella vulgaris, readings were recorded every 2 days for 15 days. The Daphnia magna were exposed to the YO12N solutions, then mortality was observed and recorded for 48 hours. <b>Results</b> The Chlorella vulgaris results were: The control had a 90.1%, the 0.50% YO12N a 91.5%, the 1.00% YO12N a 92.3%, and the 2.00% YO12N a 92.5% light transmittance rate. The Daphnia magna results were: The control had 43.3%, the 0.50% YO12N a 50%, the 1.00% YO12N a 61.7%, and the 2.00% YO12N a 100% mortality rate. <b>Conclusions/Discussion</b> Per my results, my hypothesis was correct. It stated that when compared to the control, the 2% YO12N solution test group would have the least amount of Chlorella growth, and the .5% YO12N solution test group would have the lowest Daphnia mortality rate, when compared to the control. The goal of this study was to find a treatment that simply reduces algal growth to limit eutrophication impacts on fresh water sources with little or no harm to the aquatic life. Using a commercial product for remediation, such as Dawn Dish Soap# used to clean oil-spill covered fowl, has been done in the past with much success.	
<b>Summary Statement</b> With our need for food increasing and our clean water supplies decreasing, pursuing a study of YO12N as a remediation application for eutrophic impacted sites shows promise.	
<b>Help Received</b> Mr. Aalto trained me to use the spectrophotometer and helped me with my data analysis.	