



**CALIFORNIA STATE SCIENCE FAIR  
2009 PROJECT SUMMARY**

<b>Name(s)</b> Natalya Dreszer	<b>Project Number</b> <b>J1105</b>
<b>Project Title</b> <b>The Algae Challenge for the Future: Gauging the Bioremediation Efficacy of Three Photosynthesizers</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> Global warming is an urgent problem, and is mostly caused by the greenhouse gasses that come from burning fossil fuels. Algae have been talked about as an alternative fuel source, and are photosynthesizing organisms that can clean up CO<sub>2</sub>. This experiment was designed to see which photosynthesizer would use the most carbon dioxide and that comes from burning fossil fuels and which would grow the best.</p> <p><b>Methods/Materials</b> In this project, exhaust was pumped into three different types of algae/Cyanobacteria growth conditions, and controls without the exhaust and without algae were also run. The pH of the conditions was measured before and after pumping, and after a day of photosynthesizing. The amount of algae was measured before and after a two week period of pumping.</p> <p><b>Results</b> Cyanobacteria, Chlorella and then pond algae were expected to clean up the most CO<sub>2</sub> and grow the most, in that order. Pond algae actually grew the best, and used up most of the CO<sub>2</sub>, while Cyanobacteria and Chlorella were significantly less successful.</p> <p><b>Conclusions/Discussion</b> The Cyanobacteria did not thrive in direct sunlight conditions, so an additional round was grown on a north-facing windowsill. All of the rounds were grown with the same nutrient rich, sterilized pond water, but considering how poorly they grew this may not have been sufficient for the Chlorella algae and Cyanobacteria. Measuring the growth of the photosynthesizers was difficult until a colorimeter was used in the third and final round. The results of this experiment suggest that pond algae may be the simplest to grow, so it can be used immediately to decrease Global Warming!</p>	
<b>Summary Statement</b> Three photosynthesizers were compared to see which could use the most carbon dioxide and the results suggest that common pond algae can immediate be used to decrease global warming!	
<b>Help Received</b> My science teacher helped with ideas and loaned a colorimeter; Dad aggravated and pushed me to finish on time.	