



**CALIFORNIA SCIENCE & ENGINEERING FAIR  
2019 PROJECT SUMMARY**

<b>Name(s)</b> <b>Nikita Senthil</b>	<b>Project Number</b> <b>J0520</b>
<b>Project Title</b> <b>Feed the Diatoms: The Effect of Iron Filings on the Oxygen Production of Thalassiosira Diatoms</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives</b> The objective of this experiment was to discover the effect of different masses of iron filings on the oxygen production of Thalassiosira diatoms (defined as the concentration of dissolved oxygen in the seawater solution containing the iron and diatoms, measured in milligrams per liter).</p> <p><b>Methods</b> The jars containing seawater were maintained at 21°C; then, the diatom solutions and the respective masses of iron filings were added to each jar. Two hours later, the Azide-Winkler Method was conducted with the help of a portable dissolved oxygen concentration water testing kit. In this step, sodium thiosulfate titrant was utilized to observe the amount of dissolved oxygen in each jar in milligrams per liter. The entire process was repeated two more times for a total of three trials.</p> <p><b>Results</b> On average, when the mass of iron filings was the greatest (20 grams), the amount of dissolved oxygen in the seawater solution containing the diatoms and iron was the greatest (2.02 milligrams per liter), followed by the smaller mass of 10 grams (1.62 milligrams per liter), with the control group yielding the least dissolved oxygen (1.53 milligrams per liter).</p> <p><b>Conclusions</b> Based on the data collected, it can be concluded that increased amounts of iron also increase the amount of oxygen produced by diatoms, fully supporting the hypothesis. A potential implication of these results is that iron fertilization, or artificially increasing the amount of iron in areas of the ocean deficient in iron, may be a feasible option to combat global warming.</p>	
<b>Summary Statement</b> This experiment found that increasing the amount of iron present in seawater also increases the oxygen production of diatoms in the seawater.	
<b>Help Received</b> I designed and conducted the experiment myself in the lab space provided by my science teacher, who also guided me throughout the process.	