



**CALIFORNIA STATE SCIENCE FAIR  
2013 PROJECT SUMMARY**

<b>Name(s)</b> <b>Ben Bence; Christopher Paghastian</b>	<b>Project Number</b> <b>S1502</b>
<b>Project Title</b> <b>Does Copper Encourage Pseudo-nitzschia to Grow and Contain More Domoic Acid?</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The project tested if increasing the amount of copper in a culture of Pseudo-nitzschia would encourage its growth and thus contain more domoic acid. It was hypothesized that the culture with the highest amount of copper would grow the most and so produce the most domoic acid. It has been found that drainage pipes can add copper to the ocean, which Pseudo-nitzschia feed on. Pseudo-nitzschia also produce domoic acid, which has been known to poison and kill marine wildlife.</p> <p><b>Methods/Materials</b> Three cultures of Pseudo-nitzschia were grown, one grown in distilled water with no added copper, another that was exposed to a low amount of copper, and a third that was exposed to a high amount of copper. These cultures grew over the course of 72 hours. The cultures were then put through an ELISA test and read through a spectrophotometer which read their absorbance.</p> <p><b>Results</b> The culture that produced the most domoic acid was the culture that was injected with a low dose of copper. It had an average of 1142.13 ppb. The culture that grew in autoclaved seawater with distilled seawater had the lowest average at 952.55 ppb. The average ppb of the culture that grew in the water exposed to a high dose of copper had an average of 1089.38 ppb.</p> <p><b>Conclusions/Discussion</b> It was found that the culture that was exposed to a low amount of copper grew the most and produced the most domoic acid. The results suggest that drainage pipes add subtle amounts of copper to the ocean, and those amounts are enough to encourage Pseudo-nitzschia to grow and make the ocean contain more domoic acid.</p>	
<b>Summary Statement</b> Three cultures of Pseudo-nitzschia were grown, one with a low dose of copper, one with a high dose of copper, and one that was not exposed to copper, and the culture exposed to a low dose of copper contained the most domoic acid.	
<b>Help Received</b> Lab equipment was used at Moss Landing Marine Laboratories under the supervision of Moss Landing Marine Laboratories student April Woods	