



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Peter J. McLeod	Project Number J0512
Project Title How Does Seawater Affect the Corrosion of Iron?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals Many iron items are exposed to water. Though they are often protected by being alloyed to make steel or coated in zinc (galvanized), they all eventually rust. The purpose of my experiment is to determine whether or not iron exposed to ocean water needs to be protected more than that exposed to rainwater.</p> <p>Methods/Materials 90 baby food jars; 90 iron bar ties; 1 digital camera; 1 electronic balance; 1 fork; 1 roll masking tape; 1 measuring cup, mL; 4 plastic milk jugs, gallon; 1 plastic pouring cup; 1 plastic squirt bottle; 1 Sharpie marker; 4 gallons seawater 4 gallons tap water</p> <p>Label 30 baby food jars "T 1" through "T 30" and fill with 50 mL of tap water. Label 30 baby food jars "S 1" through "S 30" and fill with 50 mL of seawater. Label 30 baby food jars "1" through "30" and leave empty. Using the electronic balance, find the mass of each bar tie and record. Place one bar tie in each jar. Record observations. Photograph wires at the start of the experiment and whenever you notice an interesting change. At the end of the experiment, drain solutions allow to dry, and find the mass of each bar tie.</p> <p>Results The "Seawater" bar ties average mass increased by 0.025 grams. The "Tap Water" bar ties average mass increased by 0.009 grams. The average mass of the "No Water" bar ties increased by 0.004 grams.</p> <p>Conclusions/Discussion Since the "Seawater" bar ties had the greater average mass increase, they must have rusted more than the tap water. These results are supported by visual observations, as well. This data proves the hypothesis correct that iron rusts faster when exposed to seawater than when exposed to tap water.</p>	
Summary Statement To determine whether or not iron exposed to ocean water will corrode more than when exposed to rainwater.	
Help Received Mom helped me practice my speech. Dad helped with collecting materials, using an electronic balance and creating the data table & graph. John and Mark from Home Depot, Escondido helped me find some non-galvanized iron items.	