



CALIFORNIA STATE SCIENCE FAIR 2017 PROJECT SUMMARY

Name(s) Omid Kevin Daliri; Ivor Benjamin Myers	Project Number J0605
Project Title What Is the Extent of Iron and Copper Corrosion In Different Saltwater and Acidic Solutions?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals Our project was about testing and finding the total amount of corrosion accumulated on iron and copper in different possible solutions. We experimented to find the extent of corrosion of the two metals in different saltwater and acidic solutions.</p> <p>Methods/Materials Six blocks of iron, six blocks of copper, labeled solutions (100% distilled water, 965 mL distilled water with 35 grams of salt, 900 mL distilled water with 100 grams of salt, 900 mL distilled water with 100 mL of vinegar, 500 mL distilled water with 500 mL of vinegar, and 100% vinegar), scale, salt, vinegar, distilled water. We left the metals in the water, checking regularly, for 3 weeks. At the end of 3 weeks we massed and photographed the metals.</p> <p>Results The masses of iron in the 100% distilled water and 3.5% salt solutions both increased by one gram. The iron in the 10% salt, 10%, 50%, and 100% vinegar solutions stayed constant. The mass of the copper in the 100% distilled water solution increased by 1 gram. The copper in the 50% vinegar solution decreased by 1 gram. The copper in the 3.5% salt, 10% and 100% vinegar solutions stayed constant. Our photos show that both iron and copper had a significant amount of change visually. The iron 100% Water, 3.5% Salt, and 10% salt solutions were covered in the pastel-orange color of rust. Iron in the 100% water had the most visible corrosion. The iron in the vinegar solutions became darker. The levels of gray deepened as the vinegar percentage increased. The copper 3.5% and 10% salt solutions covered the metals in a green patina. But the copper 3.5% salt was more covered than the 10% salt. The 50% and 100% vinegar solutions affected the copper similarly to the iron, turning the copper into an almost black color. The 10% vinegar solution, only caused edges to change colors.</p> <p>Conclusions/Discussion Our hypothesis was that the solutions with the highest percentage of vinegar and salt mixed in would have the most corrosion, the vinegar would cause the highest amount of corrosion overall, and between iron and copper, iron would be corroded the greatest in all solutions. Our hypothesis seems to be incorrect and inconclusive. We found that we had two ways of analyzing our data; visually and the recorded masses. Each metal was affected differently and the vinegar and salt solutions were affected the metals differently, so we were unable to compare the data against each other.</p>	
Summary Statement Our test showed that different metals are affected differently by corrosion, and that acidic and saltwater solutions also affect the extent of corrosion and dissimilar metals differently.	
Help Received We received no help. We designed, executed, and analyzed our data by ourselves.	