



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

Name(s) Daniel Puga	Project Number J0624
Project Title Metal Corrosion: How Oxygen Affects the Rate of Corrosion in a Wet/ Dry Case	
<p style="text-align: center;">Abstract</p> <p>Objectives The objective of this project is to measure the rate of corrosion in a wet/dry case in which the wet area of a given metal remains constant while the dry area exposed to air/oxygen varies.</p> <p>Methods Multiple iron and zinc nails of different sizes were partially submerged in an acid solution (white vinegar at 5% acidity) keeping the wet area constant and systematically varying the area exposed to air/oxygen. Once measurable amounts of rust were formed, the nails were removed from the solution and the rust was weighed using a precision scale. Multiple trials were performed to establish validity.</p> <p>Results Several nails of iron and zinc were tested for corrosion in white vinegar at a constant wet area and with the area exposed to oxygen varying. In a wet/dry metal corrosion case, the amount of rust formed in the area exposed to air/oxygen varies directly with the total dry area.</p> <p>Conclusions Repeated trials with multiple nails revealed that in a wet/dry metal corrosion case, the total area of a metal exposed to air/oxygen (dry area) varies directly with the corrosion rate.</p>	
Summary Statement I discovered that in a wet/dry metal corrosion case, the rate of corrosion is directly proportional to the total area exposed to air/oxygen.	
Help Received My project supervisor explained the details of corrosion, I performed the experiments myself.	