



**CALIFORNIA SCIENCE & ENGINEERING FAIR
2018 PROJECT SUMMARY**

Name(s) Sofia N. Truong	Project Number 38158
Project Title Another Nail Bites the Rust	
Abstract Objectives/Goals America has spent over 300 billion dollars in repairs for rusted bridges and buildings. The purpose of this project is to determine what is the effect of a certain pH of a liquid on the rusting process of metal. This project tests what liquid will induce an untreated nail to rust the fastest. Methods/Materials Four acidic liquids (vinegar, orange juice, Coke, and Sprite) and three basic liquids (water, salt water, and boiled water) were chosen for this project. Two pre-weighed common untreated nails were placed in each liquids with the head of the nails resting on the edge of a container to see the difference as the nails rusted. The nails were observed daily for 14 days for its appearance, luster, color, and weight. Results My experimental results showed that plain water and salt water had created the most rust on the nail and had an increase in weight because of the rust that had formed on the nails. The color of the rust was orange and signs of rust had started in the first 24 hours. Conclusions/Discussion My hypothesis that the most acidic and most corrosive liquid will rust the nail the fastest did not happen with my experiment. My research for this experiment showed that rusting process of metals are affected by the ph of a liquid. It will be interesting to further this experiment by finding out the effects of evaporation and carbonation on the ph of a liquid.	
Summary Statement The purpose of this project is to determine the effect of ph of liquids on the rusting process of metals by using liquids of different levels of pH and immersing untreated nails in them for 2 weeks and observing for levels of rusting.	
Help Received My mother supervised the experiment and help me put together my board. My father helped me fill up this form.	