



**CALIFORNIA STATE SCIENCE FAIR  
2008 PROJECT SUMMARY**

<b>Name(s)</b> Grace I. Ng	<b>Project Number</b> <b>J1924</b>
<b>Project Title</b> <b>Rust, Rust, Go Away. Don't Come Back Another Day</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> Metals remain the favorite raw material to be used to build enormous structures as big as oil drilling platforms to as little as small nails. Unfortunately, it is a constant battle to ward off rust from developing in metals. There are many means to prevent rusting, however many are hazardous to human health and harmful to the environment. This research is attempting to use safe common household products to explore ways to protect metal from rusting in different environments.</p> <p><b>Methods/Materials</b> Use steel wool to remove any protective and/or galvanized layer. Pick six nails to be the controls, six each to be coated with vegetable oil, shortening, mink oil, baby oil, Lanolin, and Vaseline. Place nails into cups filled with tap water, tap water and vinegar, rain water, and tap water with salt; completely submerge the nail and place it outdoor under the shade. Observe and record the changes over a 7-day period.</p> <p><b>Results</b> Lanolin provided the best protection. Vaseline was almost as good as Lanolin in the salt water and vinegar water. Mink oil and shortening provided moderate protection. Baby oil and vegetable oil seemed to provide the least protection. The condition of rusting for the control was, somehow, similar to baby &amp; vegetable oils. The medium and conditions played a significant role for the extent of rusting. Rusting in salty water was substantially higher for all coatings. However, nails in vinegar water did not rust at all.</p> <p><b>Conclusions/Discussion</b> No single coating material worked well in all environments. Depending on the medium and conditions, many of the coatings ended with no rust to complete rust in a relatively short time. Salt water hastened the rusting process to a much greater pace. Nevertheless, most of the time, any protection was better than none at all.</p>	
<b>Summary Statement</b> Explore safe coating materials that slow rusting and examine effectiveness of coating materials in different environments.	
<b>Help Received</b> Dad and Mom gave advice; Brother and Sister inspired; Mrs. Maiorca supported in every way.	