



**CALIFORNIA STATE SCIENCE FAIR  
2009 PROJECT SUMMARY**

<b>Name(s)</b> <b>Jacquelyn D. Shoults</b>	<b>Project Number</b> <b>J2125</b>
<b>Project Title</b> <b>It's Not Easy Being Green</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> I predict that most people don't know what makes and removes the green that builds up in a swimmer's hair, because according to my research, copper creates that green and requires certain unusual chemicals such as special shampoo, vinegar or tomato juice to get rid of it.</p> <p><b>Methods/Materials</b> - 1/4 liter JSerra pool water - 100 drops Leslie's Pool Test Kit Sulfuric Acid- 50ml Muratic Acid &amp;#8232;- 100ml Malibu Makeover Chemicals - 1/4 liter pool water from JSerra swimming pool- 24 Q-Tips&amp;#8232;- 100ml Tomato Juice/Paste - 100ml Lemon Juice - 24 Cotton balls &amp;#8232;- 100ml White Vinegar - 25ml Salt - 24 1# x 1/2# towel strips&amp;#8232;- Tap water, unlimited/running water - 100ml Leslie's Pool Copper Algacide - 50ml Malibu Copper Sulfate &amp;#8232;- 2 inches pure copper wire &amp;#8232;</p> <p><b>Results</b> The Malibu Wellness chemical showed the lowest presence of copper with 50 ppm (parts per million) using the test strips. Visual inspection was also completed looking for the hair with the least presence of copper (blue). From best to worst, the following was observed, and again showing the Malibu Wellness chemical removed the most copper: #1 Malibu, #2 Vinegar, #3 Lemon, #4 Tomato, #5 Salt, #6 Tap.&amp;#8232;</p> <p><b>Conclusions/Discussion</b> Copper can turn hair green/blue. Malibu Makeover Shampoo was the chemical that removed the most copper, followed by vinegar, tomato juice and lemon juice. This experiment also showed that most people (92%) did not know that copper in pool water turns hair green. Surprisingly, many people (35%) did know the best way to remove it is special shampoo.</p>	
<b>Summary Statement</b> Copper can turn hair green/blue, Malibu Makeover Shampoo was the chemical that removed the most copper, and this experiment also showed that most people (92%) did not know that copper in pool water turns hair green.	
<b>Help Received</b> Malibu Makeover Shampoo supplied products; Family helped purchase items/using chemicals	