



**CALIFORNIA STATE SCIENCE FAIR  
2002 PROJECT SUMMARY**

<b>Name(s)</b> Whitney M. Cordry	<b>Project Number</b> <b>S0507</b>
<b>Project Title</b> <b>Waiter! There's a Hair in My Hygrometer! Evaluating a Hair Spray's Humidity Effectiveness Claim</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> My objective was to determine the validity of Aussie 12-Hour Hair Spray's humidity effectiveness claim. I hypothesized the product successfully protects hair from the adverse effects of humidity as promoted.</p> <p><b>Methods/Materials</b> Controls were established for hair selection. Two hair hygrometers were built and calibrated together, one as a control. Differences in the instruments' construction caused their reflective disks to rotate within different ranges; calibrating both hygrometers together reconciled their scales. A digital hygrometer validated the control hygrometer's performance. One hair hygrometer was treated with Aussie 12-Hour Hair Spray. All three hygrometers were exposed to three levels of humidity, ranging from 23% to 100%, for timed intervals. The responsiveness of the treated hygrometer determined the validity of the product's claim.</p> <p><b>Results</b> Hygrometer calibration failed three times. Probable causes were identified and corrected. Successful calibration was essential for experimentation, and was achieved on the fourth attempt. In four separate experiments, the control, treated and digital hygrometer readings registered similar and consistent responsiveness to changes in humidity.</p> <p><b>Conclusions/Discussion</b> The data contradicts the hypothesis. All three hygrometers respond similarly and consistently to humidity changes. If the Aussie product worked, the treated hygrometer's data should have clustered around 31% (the reading at the time the hair was treated) indicating the product had successfully created a barrier between hair and humidity, evident in the hair's failure to expand. However, upon review, a procedural flaw was discovered which may have skewed the data. Proposed theory: Twenty-five minutes exposure to 100% humidity washed away the hair spray's water soluble resins. Further experimentation is recommended.</p>	
<b>Summary Statement</b> I applied hygrometer mechanics and hair structural properties to develop an instrument and experiment capable of evaluating a hair spray's humidity effectiveness claims	
<b>Help Received</b>	