



CALIFORNIA SCIENCE & ENGINEERING FAIR 2019 PROJECT SUMMARY

Name(s) Shreya Vogety	Project Number J0629
Project Title Factors Affecting Crime Scene Investigations	
<p style="text-align: center;">Abstract</p> <p>Objectives In crime scene investigations, it is easy to miss evidence of blood stains without careful application of Luminol, a chemiluminescent substance. My objective is to study the impact of various factors affecting the glow of Luminol.</p> <p>Methods Luminol, Perborate Mixture, Copper Sulfate Crystals, three cups, two small table spoons, Precision Thermometer, pH strips, Google Science Journal App. Each experiment involves three trials in a dark room. A vial of water with four Copper Sulfate crystals, either crushed up or dissolved, is poured into a different cup of water with Luminol and Perborate Mixture mixed into it. The variables being tested are temperature, acidity, larger amounts of Luminol, and crushed up Copper Sulfate vs crystals. The light and duration is measured in the Google Science Journal App, which measures the glow, and charts it on a data point graph and can be exported as a .CSV file.</p> <p>Results I observed that the larger amount of Luminol had the longest duration of luminescence. With changing the temperature, I observed that the Luminol mixture at 145 F had the brightest glow and was only five seconds long, while the Luminol mixture at 85 F was dimmer and slightly longer. A more acidic mixture showed absolutely no light in the graph, and the crushed up Copper Sulfate graph was fluctuating and inconsistent.</p> <p>Conclusions The results showed that between a higher temperature of water and a colder temperature of water, a colder temperature mixture of Luminol would be better, because it glows for a longer duration. Even though a hot mixture would be much brighter, it would only last a few seconds, so it becomes harder to capture as evidence. The results also showed that any trace of acidity would make the Luminol mixture not glow, and this shows that high levels of acidity should be avoided.</p>	
Summary Statement When finding how independent variables affect the brightness and the duration of the glow of Luminol, I established that a cold mixture with generous amounts of Luminol produces brighter and more sustained results.	
Help Received My dad and my sister helped brainstorm ideas and potential variable. Mrs. Patel, the Windemere Ranch Middle School science fair advisor, also guided me through the scientific method.	