



**CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY**

Name(s) Hanni J.M. Newland	Project Number 31767
Project Title The Effect of Various Light Sources on the Rate of an Iodine to Iodide Photochemical Reaction	
Objectives/Goals My goal was to determine the effect of various light sources on the rate of and Iodine to Iodide photochemical reaction. Abstract Methods/Materials Reference solutions were made with iodine and distilled water with varying iodine concentrations (100%,50.0%,25.0%,12.5%,6.25%,3.13%,0.00%) These were used to compare test samples to when data was collected. Three ammonium oxalate solutions were made and iodine was added. Each solution was poured into their respective centrifuge tubes and placed in front of the designated light sources. Each light source had 4.5mL of each solution placed 10cm away and observations of the % concentration of iodine left in each tube were made in comparison to the reference solutions every 15min. for 2hrs. Goggles, Gloves, Face masks, Masking tape, Permanent pen, Metric rulers, Digital scale, Cups, Centrifuge tubes, Test tube rack, Beaker, Graduated cylinders, Beral pipettes, Distilled water, Timer, Plastic spoon, Aluminum foil, Ammonia, Oxalic acid Tincture of Iodine, Light sources-LED, Fluorescent, Incandescent, Shop light w/clamp, Extension cord. Results The most important finding was that after 15min. all solution samples placed in front light had reacted more than the reference solutions which were in the dark. Out of all the light sources the solutions exposed to incandescent light had reacted the fastest. All solutions in front of incandescent light had fully reacted by 60 min. All three of the samples from each of the light sources and the reference solutions all had 0 dev, except for the solutions exposed to the incandescent light. Which had at 30 min. mean 8.11%, avg. dev. 4.60, % deviation 56.69%. After 45 min. mean 3.00%, avg. dev. 1.33, % dev. 44.44%. At 60 min. mean 0.67%, avg. dev. 0.22, % dev. was 33.33%. Conclusions/Discussion The hypothesis that incandescent light would speed up the rate of the reaction the most was supported by the data. It was inferred that the incandescent light (57w) accelerated the reaction the most because its intensity/heat. Out of all the light sources the solutions exposed to incandescent light had reacted the fastest. All solutions in front of incandescent light had fully reacted by 60 min. It was inferred that the solutions in front of the incandescent light may have reacted the fastest due to the heat of the light source. The heat may have given more energy to fuel the reaction than the lower temperature LED and fluorescent sources.	
Summary Statement The purpose of my experiment was to determine the effect of various light sources on the rate of and Iodine to Iodide photochemical reaction.	
Help Received My father and mother helped in the gathering of materials, and made sure that the area used during research and experimentation was free of any hazards or any safety risks.	