



**CALIFORNIA SCIENCE & ENGINEERING FAIR
2018 PROJECT SUMMARY**

Name(s) Eleanor C. Addison	Project Number 38646
Project Title Sunprints, Sunscreens, and Sunburns: Testing UV Protection	
Abstract Objectives/Goals The objective of this experiment is to find the sunscreen that best protects skin from sunburns for the lowest price, and to see if marketed SPF ratings are reliable. Methods/Materials 12 types of sunblock, acrylic sheets, Sunprint (cyanotype) paper, thin-line tape, midday sunlight, Adobe Photoshop (to accurately measure exposed Sunprint paper) and a tub of water. A pre-test was performed to determine optimum exposure times. Multiple sunscreens were then applied to acrylic sheets and exposed for 3 time periods each on Sunprint paper in the sunlight to determine how much UV radiation each one blocked. Results Within the constraints of this experiment, sunscreen sticks blocked out the most UV radiation. Higher prices didn't equal better protection. In addition, marketed SPF ratings didn't always match the measured protection level. Conclusions/Discussion For the best sun protection, this experiment indicates that you should use sunscreen sticks, and avoid sunscreen sprays (which had the worst performance, but perhaps because they didn't stick well to the acrylic sheets). Don't rely too heavily on SPF ratings, as their measured performance often differed. Higher prices didn't mean higher measured UV protection, the low-cost lotions had the best price performance. Finally, the one organic sunscreen tested had the worst performance and was not worth the money spent on it.	
Summary Statement Using cyanotype paper to measure UV light, I found that sunscreen sticks provide the most UV protection, price isn't the most important factor, and SPF ratings are often unreliable.	
Help Received None: I performed the experiment, wrote up my results, and put together the board myself.	