



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Sean P. Batir	Project Number J1105
Project Title The Unseen Enigma: Can Sunscreens and Sunglasses Really Protect against UV Rays?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals As UV rays from the sun grow more intense due to the deteriorating ozone layer, finding the appropriate UV protection will be important toward safeguarding against the threat of skin cancer. This investigation was designed to find out how sunscreens and protective lenses effectively provide protection against harmful UV rays. Hopefully by performing this experiment, the common household conception that simply applying a bit of sunscreen and protective lenses will protect against UV rays will be either supported or disproved.</p> <p>Methods/Materials This experiment was performed with the usage of solar energy beads. Coming in five colors, the beads were separated according to their color and placed into groups of ten. They were then applied with sunscreens bearing different SPF ratings, while others were placed under protective lenses. They were tested upon two different dates in about two hour intervals between 10am - 4:00pm, when the rays of the sun are commonly at their highest intensity. The beads reacted to sunlight, producing different shades of the same color. A UV intensity meter was also used in this experiment to measure the intensity of UV rays as revealed on the card with low, medium or high and is correlated to the SPF ratings from 8 to 70. A scale was then created to quantify these ratings, and they were then recorded and graphed.</p> <p>Results From the results of this experiment, the findings suggest that lighter beads required less of an SPF rating than darker colors, while a recently new innovation known as polychromic lenses proved to be better at UV prevention in comparison to polarized sunglasses. Also, it was noticed that by about SPF 45 the results remained the same, regardless of a higher SPF rating.</p> <p>Conclusions/Discussion Contrary to popular belief, it was found that using sunscreen and polychromic transition lenses did provide some protection, but they did not totally eliminate all of the harmful rays. Even upon a cloudy day UV rays were just as intense, sometimes even more! Hopefully these findings will encourage scientists to develop more efficient methods of UV protection. As the ozone layer is thinning due to global warming, UV rays will only become more intense until they ultimately prove to become fatal.</p>	
Summary Statement This project focused on determining if sunscreens and protective lenses really do provide maximum UV protection using solar energy beads and a UV intensity meter.	
Help Received Mother helped take pictures; Teachers assisted in providing guidance and support.	