



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Shelby L. Constance	Project Number J1110
Project Title Determining How Effective RIT Sun Guard and Scotchgard Are at Blocking UVR after Multiple Washes	
Objectives/Goals The objective of my project is to increase a fabrics ability to block ultraviolet radiation (UVR) in sunlight. I believe that the combination treatment of RIT Sun Guard (RSG) and Scotchgard (Sg) to fabric will provide the greatest UVR blocking potential.	
Abstract Methods/Materials Nine fabrics were tested using 2 different procedures. Fabric samples (2 ½ x 2 ½) were cut and raw edges finished with a serger. For trial #1, 4 unwashed samples of each of the 9 fabrics were attached to a clear page protector sheet. One sample treated with RSG, one treated with Sg, one treated with RSG & Sg and one left untreated as my control. This same process was used for trial #2 using samples washed 2 times, trial #3 using samples washed 4 times, and trial #4 using samples washed 6 times. PROCEDURE #1: In the dark room a sheet of Black & White Photosensitive Paper was inserted into each page protector sheet, then placed in a contact printer and exposed for 1 second to a 15-watt germicidal lamp. The paper was then developed and compared to a grayscale and all sample areas given a numerical value. This entire process was then repeated and results of both sets of trials averaged. PROCEDURE #2: Sun-Sensitive Nature Paper was slipped into each page protector sheet and exposed to sunlight for 2 minutes, then a water bath for 1 minute and dried. The developed paper was then compared to a blue scale and given a numerical value. This process was then repeated and the results of both sets of trials averaged.	
Results After comparing the averaged test results of both procedures the most effective treatment after 6 washes was the combination of RIT Sun Guard and Scotchgard on fabrics of 100% silk, 100% cotton, and 97% cotton & 3% spandex. Fabrics which tested to provide the least protection were the untreated control samples of 50% polyester & 50% rayon, and 55% linen & 45% rayon.	
Conclusions/Discussion My conclusion is that both methods of testing proved that a fabric with a high percentage of cotton and silk treated with RIT Sun Guard and Scotchgard will provide the best protection from UVR after multiple washes.	
Summary Statement I tested 9 different fabrics using Black & White Photo Paper and Sun-Sensitive Nature Paper and found that the combination treatment of RIT Sun Guard and Scotchgard on cotton and silk fabrics provided the best UVR blocking after 6 washes.	
Help Received Tamela Ryatt, High School photography teacher, allowed me to use her dark room to conduct my test trials, and my mother helped with typing.	