CALIFORNIA STATE SCIENCE FAIR
2015 PROJECT SUMMARY

Name(s)

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Project Number

35870

Project Title

Effects of the Sun Protection Factor of Sunscreen on the Permeation of UV Radiation through Polyvinyl Chloride

Abstract

Objectives/Goals

The purpose of this experiment was to determine if wearing sunscreens with high sun protection factors provides users with more protection from ultraviolet radiation.

Methods/Materials

A thin sheet of polyvinyl chloride acted as a model for skin. Squares of polyvinyl chloride were coated with four sunscreens with different sun protection factors (4, 15, 30 and 50). 0.5 grams of sunscreen were applied to each square. The prepared square of polyvinyl chloride that was coated with sunscreen was placed over the sensor of an ultraviolet monitor to determine how much ultraviolet radiation permeated through the polyvinyl chloride. Five trials of this experiment were conducted.

Results

The sun protection factor of 4 showed that an average of 82 mW/m2 of ultraviolet radiation permeated through the sunscreen and polyvinyl chloride. The permeation of ultraviolet radiation decreased as the sun protection factor increased. The sun protection factor of 30 had an average of 14 mW/m2 permeate the polyvinyl chloride, while the sun protection factor of 50 had an average of 13 mW/m2 permeate the polyvinyl chloride

Conclusions/Discussion

The sunscreen with the sun protection factor of 4 offered minimal protection from ultraviolet radiation. The results from the sunscreen with the sun protection factor of 30 and the sun protection factor of 50 show that they offer almost the same amount of protection from ultraviolet radiation.

Summary Statement

Sunscreens with different sun protection factor levels were coated on squares of polyvinyl chloride and placed over an ultraviolet monitor in order to determine how much protection they offer users from UV radiation.

Help Received

My mother and father helped me order an ultraviolet monitor. My chemistry teacher assisted me by suggesting a potential layout for one of my data tables.