CALIFORNIA STATE SCIENCE FAIR
2015 PROJECT SUMMARY

Name(s)
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Project Number
35271

Project Title
Radioactive Particle Protection

Abstract

Objectives/Goals
The goal of this project is to find out which cloth (cotton, linen, or polyester) is the most effective at blocking radiation. My hypothesis is that cotton will be the most effective because it has the same main ingredient as paper, cellulose, and paper has been known to be able to block alpha radiation.

Methods/Materials
A radioactive needle was used as the radiation source. In order to quantify the data, this project required some way to observe the radiation, so a cloud chamber constructed from Peltier coolers was used. After saturating a sponge with alcohol, the chamber was cooled until tracks coming from the radiation source were rendered visible. Then, one of the three cloths was placed on the source to observe how much radiation came through the cloths.

Results
When polyester was placed on the source, under three tracks were visible in each trial. When linen was placed on the source,the first time, three tracks were visible and, after that, less than three tracks were observed. Cotton had three tracks in the first two trials and then showed two in the last. Polyester was the most effective while cotton was the least effective.

Conclusions/Discussion
This experiment disproved my hypothesis. Polyester did significantly better than cotton. This data suggests that the composition of a material is not the only deciding factor in how much radiation will be blocked.

Summary Statement
This project is about radiation and which materials are the most effective at blocking it.

Help Received
Dr. Dumlao supervised me and my father helped me buy the materials..