CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY

Name(s)
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Project Number
J1701

Project Title
Can Ultraviolet Light Purify?

Abstract

Objectives/Goals
The objective of this project is to see if ultraviolet light will reduce the bacterial count in a useable water source making it acceptable to drink.

Methods/Materials
A sample of clear water was obtained from the Kern River. A portion of it was poured in a clear plastic PET bottle and placed under a 100 watt ultraviolet light for disinfection. Samples were taken for bacterial culture at 24, 48, 72, and 96 hours. Controls of boiled Kern River water, Arrowhead bottled water, tap water, and untreated Kern River water were also taken. They were checked for bacterial growth at 24, 48, 72, and 96 hours.

Results
The results showed that it took 72 hours under the 100 watt ultraviolet light to decrease the amount of bacteria in the useable water source to an acceptable level and 96 hours to reduce it further.

Conclusions/Discussion
The bacterial count in the water source was reduced over seventy-two hours of exposure to the ultraviolet light. The amount of time required in the lab setting is prolonged due to the limits of the 100-watt ultraviolet light bulb and the limited heat that it produced. This shows that sun light would reduce the bacterial count in the useable water source at a faster rate because both the higher intensity ultraviolet light and the heat produced by the sun would increase the rate of bacterial death.

Summary Statement
Ultraviolet light can disinfect useable untreated river water and render it drinkable.

Help Received
Dr. Martha Madrid, MD supervised my project in the lab. My mom helped type my project, shop for supplies, and with my display board. My dad helped me with the review and interpretation of the data and helped me write the abstract. Mrs. Melby, my computer teacher helped me with my charts.