CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY

Name(s)
Audrey E. Landale

Project Number
S1315

Project Title
The Effect of Lead in Gasoline on the Environment Near Major Roadways

Abstract

Objectives/Goals
My objective was to find out if any bacteria in the soil near roadways had developed resistance to lead. I hypothesized that the farther away from the road my samples were, the less lead resistant bacteria they would have.

Methods/Materials
To see if bacteria had developed lead resistance I tested the top 0-5cm of soil at 0.5, 5, 10, 20, and 50m away from a major road. Then I made agar plates with nutrient agar with and without lead nitrate, and diluted the soil samples with sterile deionized water. Then I plated different amounts of different dilutions onto the plates with and without lead, let the bacterial colonies grow, and counted them.

Results
Overall I found that there was a high percentage of lead resistant bacteria closest to the road, then the percent decreased, but at 20 and 50m, percentages rose again.

Conclusions/Discussion
My results partially supported my hypothesis, but I was able to find out that bacteria did grow lead resistance, which was my objective. As far as I know, I am the first person to test for lead resistant bacteria near roadways.

Summary Statement
My project was to test soil samples near roadways for lead resistant bacteria.

Help Received
I used the materials and research facilities of the Harvery Mudd College Biology Department; Nancy V. Hamlett advised me on procedures.