CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY

Name(s)
Pavlina A. Crowley

Project Number
J0908

Project Title
Water Contamination Across the Nation

Abstract

Objectives/Goals
My objective was to determine the quality of tap water in various regions of the United States for unsafe quantities of certain contaminants.

Methods/Materials
Untreated tap water was obtained from nine rural and urban regions in the United States and tested for contamination. I tested for nitrates, nitrites, bacteria, lead, pH levels, pesticides and chlorine.

Results
New Jersey, San Diego and Washington D.C. had high nitrate and nitrite levels.
Bacteria was found in Arcata and Jersey City. Pesticides were found in Kneeland and Bainbridge Island. Chicago, San Diego, Washington D.C., New Jersey and Eureka had hard water. pH levels were above the desired level in every region except Kneeland. Lead tested negatively in every region. Only New Jersey had minimal amounts of chlorine.

Conclusions/Discussion
My results partially supported my hypothesis. Water in various regions in the United States did differ. Population size did seem to affect water quality. Big cities had high nitrate and nitrite levels. Human and animal waste products that seep into the water show up as nitrates and nitrites. New York city water was surprisingly clean. My research showed that water in New York city is tested around 350,000 times a year. There was bacteria found in the small town of Arcata. I attribute this to the large concentration of cattle farms and septic systems. Pesticides were found in the farming and logging regions. High Ph levels (alkaline water) could explain the bitter taste of most of the water I tested. Alkaline water requires more chlorine to destroy disease organisms. The chlorine did not show up when tested because it must have evaporated in transport. Chlorine dissipates over time. Most regional water samples showed some contamination although not always in the amounts I expected.

Summary Statement
My projects purpose was to test and compare tap water samples from geographically diverse urban and rural sources for various contaminants.

Help Received
Family and friends sent water samples from around the United States to make my project possible.