CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY

Name(s)
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Project Number
J1221

Project Title
What's in the Water?

Abstract

Objectives/Goals
The water in Wolf Creek looks fresh and clear, but how clean is it really? This experiment tested the cleanliness of the creek and surrounding areas to find out if contaminants like arsenic were coming from the nearby mine tailings dump and polluting the water. My hypothesis is that the levels of arsenic will be above the drinking water standard for arsenic, which is 10 parts per billion (ppb).

Methods/Materials
To find the answer, I collected water samples from ponds and creeks around the tailings dump and then tested the samples using an ICP-MS (Inductively Coupled Plasma Mass Spectrometer) at UC Davis college campus.

Results
I found ou that the arsenic levels were lower directly in the tailings dump, 0.965 ppb. The creek samples had higher levels of arsenic, 5.101 ppb. These are all below the drinking water standard.

Conclusions/Discussion
From these data, I concluded that the arsenic in the creek must have come from a source other than the tailings dump, and that my hypothesis was incorrect. Other elements, such as vanadium, lithium, aluminum, iron, and rubidium, followed a similar pattern to arsenic, with higher levels in the creek than the samples taken directly from the tailings dump. This supported my conclusion that some arsenic and other elements came from another source upstream.

Summary Statement
The purpose of this project is to see if the mine tailings near Wolf Creek are contaminating the ground water near the tailngs dump with arsenic and/or other elements.

Help Received
Dad taught me how to collect samples effectively, Joel Comisso ran the ICP-MS with me to test the samples at UC Davis, and science teacher Mr. Kyle gave me a format for organizing the display.