CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)
Ryan M. Fox

Project Number
J0614

Project Title
Determining the Ability of Various Soils to Prohibit Ground Water Contamination

Abstract

Objectives/Goals
The Goal of my project is that by testing how different types of contaminates travel through different types of soils, I predict that I will be able to estimate how far a contaminate might travel from the inital point of a spill.

Methods/Materials
My project is to measure how far different contaminates travel through different types of soils. I will take five plastic cylinders and create a rack to hold each type of soil. I will next take five different types of soils-Clay, Sand, Sandy-loam, Decomposed Granite and Topsoil (control) and fill one type of soil in each cylinder. I will then pour one of three different contaminates- Gasoline, Used Motor Oil, and Malathion- into each cylinder and wait ten minutes. I will measure how far and how fast each contaminate travels in each type of soil. This help me will determine the average time and speed it takes an contaminate to travel through different types of soils.

Results
The data I recorded from my investigation enabled me to determine the speed different contaminants travel through different types of soils. It allowed me to determine how much soil in cubic feet would become contaminated by a specific amount of a contaminant. I proved my Hypothesis by comparing my data to that of an actual spill.

Conclusions/Discussion
After completing my project I found that my hypothesis was correct. By testing how contaminates flow through various types of soils, I was able to determine the flow rate of those contaminates through those soils. By measuring the area of the cylinder I was able to determine how much soil was in the cylinders in cubic feet. I could then measure the contaminated part of the soil and determine how much area would be contaminated by one cup of the contaminate. By using this data I can now predict how far a contaminant will move through different soils and how much of the soil will be contaminated.

Summary Statement
My measuring how fast and how far different contaminates travel through different soils, I can determine the depth and amount of soil that has been contaminated at a spill site.

Help Received
Dad- helped with testing and gathering materails; Mom- helped with gathering materials and board construction