CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY

Name(s)
Alexander C. Slavitz

Project Number
S0833

Project Title
The Effect of Common Household Materials on Their Ability to Consistently Absorb Phosphate from the Environment

Abstract

Objectives/Goals
The purpose of this experiment was to find which common household material could absorb the most phosphate. This experiment measured the amount of phosphate remaining before (control), and the amount of phosphate remaining after filtration in order to find how much difference a phosphate absorber could make.

Methods/Materials
In this experiment I used an electrophotometer to analyze the color of my filtered solution after a reagent had been added. This reagent was a phosphate tester that produced a different shade of blue depending on the concentration of phosphate in solution. I did three trials for each independent variable.

Results
In this experiment with no filter, there was 4.426 Mg/L of phosphate in the solution. Each independent variable#s phosphate concentration was measured after filtration to then be divided by the amount of phosphate before filtration. This percent allows one to observe the percent phosphate that each filter is capable of removing. Thus, in this experiment the cloth absorbed 4.54% of the phosphate, rocks/dirt absorbed 9.78%, charcoal absorbed 22.96%, and the sponge released 4.06% or .18 Mg/L upon filtering the solution.

Conclusions/Discussion
This information refutes most of my hypothesis because I originally inferred that the cloth would absorb the most phosphate, followed by the sponge, charcoal, and then rocks/dirt. From my experiment, I have actually found that the charcoal absorbs the most phosphate, followed by rocks/dirt, cloth, and then finally the sponge. This data suggests that individuals in developing countries could use the charcoal from their burnt trash to absorb almost 23% of the phosphate from a running stream. This data also demonstrates that sponges used can actually leech small amounts of phosphate back into the environment through being utilized.

Summary Statement
My project endeavors to find the cheapest, most widely available, and easiest to use apparatus to help mitigate phosphate concentrations in local rivers in developing countries.

Help Received
I received time to access our school's electrophotometer with the superficial guidance of my chemistry teacher.