CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)
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Project Number
S0608

Project Title
The Effects of Acid Rain on Different Materials

Abstract

Objectives/Goals
The purpose of this experiment is to:
1) Measure the pH of rain samples falling in different parts of Southern California to see if it is acid rain.
2) To measure the effect of a standard acid rain solution on different metals and rocks.
3) To measure the effect of acid rain that has dissolved chemicals on plant germination and growth.

Methods/Materials
Materials: 1) 1 aluminum rod; 2) 1 brass rod; 3) 1 iron rod; 4) 1 zinc rod; 5) 2 limestone rock pieces; 6) 2 granite pieces; 7) 2 cement pieces; 8) 2 copper pennies; 9) 20 100ml glass bottles; 10) 20 plastic disposable cups; 11) 2 packages of Corn, Sweet Silver Queen (hybrid); 12) Perlite for growing plants; 13) 8 ounce plastic cups for growing seeds; 14) Plastic film; 15) Spray fungicide for preventing mold.
Equipment: 1) Micro gram scale; 2) pH meter with buffers at pH 4.0, 7.0 and 10.0; 3) Drying oven at 200ºF.

Results
not enough room to fit

Conclusions/Discussion
The six samples of rainwater collected in Oak View and San Diego CA have an average pH of 5.79 and are not acid rain.

The artificially made acid rain water was most effective in dissolving limestone and had almost no effect on aluminum. The pH of the acid rain was changed the most by the cement samples and the least by aluminum. A significant amount of iron, zinc, copper, and brass were dissolved in the acid water after 1 month.

The plant germination was slightly less than standard with the zinc, copper, and cement soak water. The effect on growth was different depending on the material used. Copper soak water had the most severe effect, killing all of the seeds after they germinated and brass soak water had the shortest growth after 30 days. The control rain water had the highest rate of growth.

My final conclusion is that acid rain can affect the germination and growth of corn seeds, especially when it comes in contact with metals like copper and brass.

Summary Statement
I am testing what acid rain does to different materials then taking the end result of that and seeing what it does to plant growth

Help Received
my dad helped me by letting me use the equiptment i needed in his lab