CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
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Project Number
J1224

Project Title
Acid Rain: Our Monuments Feel the Pain

Abstract

Objectives/Goals
Which building material is the least susceptible to acid rain: limestone, granite, or marble?

Methods/Materials
12% sulfuric acid solution (11 L), 7 pieces of each material: granite, limestone, marble, and sandstone, digital balance (precision +/- 0.1g), 18.9 L distilled water, 5 plastic (HDPE) containers 475 ml capacity, pH paper (0-7), paper towels, Rooto Professional Drain Opener (2 L), 3.8 liter PE container, measuring cup (238 ml capacity), goggles, gloves.

Results
Overall, the average percentage of material that the limestone lost in the acid was 42.76% of its original weight. The average percentage that the marble lost in acid was 35.50%. Granite lost an average of 0.10% in acid. The sandstone averaged a mass gain of 0.16% of its starting mass. The limestone gained an average of 0.25% in weight in the plain water. The sandstone gained 2.28% in mass in the plain water. The mass of the marble remained unchanged in the plain water. The granite gained 0.33% in the plain water.

Conclusions/Discussion
The data I obtained did support my hypothesis. My experiment showed that the limestone and marble were the two materials that lost the most mass. The granite and the sandstone lost a very little amount of mass or didn#t lose any. I predicted this in my hypothesis, based on my background research. In the end, the sandstone didn#t lose any mass and gained some in both the acid and the water. I believe the reason why this happened was because it absorbed some of the water that was used to clean off the acid.

Summary Statement
I determined which building material used in monuments; limestone, sandstone, marble, or granite are least susceptable to acid rain.

Help Received
Sande Petty-Weeks took pictures under microscope. Dad cut materials and helped make acid solution.