CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY

Name(s)
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Project Number
J0814

Project Title
Can the Addition of Polymer Improve the Performance of a Sandbag?

Abstract

Objectives/Goals
My objective was to engineer a better sandbag by adding polymer to it.

Methods/Materials
I built a flood table with a spillway and made 2 types of sandbags (with and without polymer). I built a dam (2 rows deep, 11 in total) and flooded the table with 4 liters of water. I had a helper take away the catch basin after 20 seconds. I measured this amount of water using graduated cylinders. I did this 10 times for each type of sandbag dam.

Results
The dam with regular sandbags had similar results in all 10 trials; about 1 liter of water passed through in 20 seconds. The dam made with polymer sandbags let more and more water through with each trial. By trial 9 and 10 the dam was useless; almost all 4 liters passed through within 20 seconds.

Conclusions/Discussion
My hypothesis was false. Adding polymer to the sandbags did not improve their performance. The polymer sandbags absorbed so much water that it lifted the corners and edges, creating passageways. The polymer sandbags became like solid bricks, forcing the water to go in between the bags. With each trial the force of the water made these passages bigger. I recommend that we focus on flood prevention instead by building better levees, clearing creeks, and planting vegetation.

Summary Statement
Can the Addition of Polymer Improve the Performance of a Sandbag?

Help Received
My brother Gregory helped with pulling the catch basin away after 20 seconds. My mother helped with the typing . Mr. Dolan, my 6th grade science teacher, taught me how to follow the scientific method.