CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY

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Project Number
22131

Project Title
Does Temperature Affect Oil Spill Cleanup?

Abstract

Objectives/Goals
Oil spills occur in rivers and oceans in a variety of locations around the world. The purpose of these tests is to find out if the same procedures should be used in cold and warm temperatures of water.

Methods/Materials
The sorbents tested were: Sea Sweep, Enviro-Bond 403, Spill Magic, Sawdust and Peat Moss. Each test started with 200 ml of salt water placed in an ice bath for the tests at 6.6ºC (44ºF) and in a water bath for the tests at 21ºC (70ºF). 50 ml of crude oil was added. When the correct temperature was reached, 50 ml of sorbent was weighed and added. After ten minutes the sorbent was strained from the mixture. The oil and water left was measured. To establish a control, a test was performed at each temperature with no sorbent.

Results
Temperature did have an effect on the performances of the sorbents. Most sorbents worked better at the colder temperature when compared by volume and weight. When compared by volume of sorbent, Enviro-Bond worked best at both temperatures. When compared by weight of sorbent, peat moss worked best at 21ºC and Enviro-Bond worked the best at 6.6ºC.

Conclusions/Discussion
The sorbents chosen are those used in oil spill cleanups. Sea Sweep and Spill Magic are absorbents. Enviro-Bond is a polymer which chemically bonds to a hydrocarbon. Sawdust and peat moss are adsorbents. The adsorbents were expected to work better in the colder temperature. The absorbents were expected to work better in the warmer temperature.

Summary Statement
The purpose of this experiment is to find out if the same cleanup methods can be used in different temperatures of water.

Help Received
Parents helped handle crude oil (hazardous materials). Mother generated graphs.