



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Kabir A. Torres	Project Number J1128
Project Title Cleaning Up Oil Spills in Aquatic Environments	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals To determine if changes in temperature and environment (purified, lake and sea water), affect the amount of oil and water absorbed by 3 different sorbents. I hypothesize firstly, that if there are changes in temperature and environment then the ability of the sorbent to absorb oil and water will change. Secondly, at high temperatures there will be more absorption of oil due to less viscosity of the oil. Thirdly, in purified water there will be more oil absorption due to the absence of organic and inorganic substances that could interfere with oil absorption.</p> <p>Methods/Materials Used 81 samples in 3 groups: A-Enviro-Bond, B-Macerated paper and C-Coconut husk; 3 stages in each group: Room (55-65 °F), High (90-100 °F) and Low (30-40 °F) temperatures. Each stage had 9 containers: a set of 3 for validation purpose from each water type: purified, lake and sea water. Manipulated variables: changes in temperature and water types. Constant variables: amount of water, Marvel Mystery Oil, sorbent, and time periods. Within groups A, B and C, the control groups were the samples with purified water at room temperature and the specific sorbent. Hot and cold water baths and thermometers were used to maintain temperature ranges. A stocking with 10 g of sorbent was placed in 300 ml of water and 50 ml of oil for 30 minutes of absorption; drained for 5 minutes. Measure the amount of oil and water absorbed (Responding variable) with graduated cylinder. Repeat for all samples.</p> <p>Results Temperature variable: In Group A, all 3 types of water had more oil absorption at high temperature, followed by room (Control Group) and low temperatures. In Group B and Group C with all 3 types of water, at high temperature there was more oil absorption, but water absorption resulted in changes without any specific pattern. Water variable: In all 3 groups, changes in the type of water resulted in changes in oil and water absorption without any specific pattern.</p> <p>Conclusions/Discussion The first and second parts of my hypothesis were proven correct, changes in the temperature and water types resulted in changes in the sorbents oil and water absorption and samples at high temperature (90-100 °F) absorbed the most oil in all the sorbents groups. The third part of my hypothesis could not be proven. The change in water types (purified, lake and sea) showed no specific pattern in the oil absorption in this experiment.</p>	
Summary Statement I tested the effect of changes in temperatures and environment (water types); on the absorbency capacity of three sorbents that could be used for oil spill clean-up and environment preservation.	
Help Received My parents and grandma acted as observers to validate the experiment; drove me to the sea and lake, helped with clean up, graphs, and proof-reading the project. Mrs. Blakemore loaned a triple beam scale. New Pig Corporation supplied their product.	