



# CALIFORNIA STATE SCIENCE FAIR 2011 PROJECT SUMMARY

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<b>Project Title</b> Oil Spills and Dispersants: A Deadly Duo?	
<b>Objectives/Goals</b> The objective of my experiment was to simulate the use of dispersant by British Petroleum (BP) to clean up oil in the Gulf of Mexico Oil Spill. The experiment tested whether the amount of dispersant put into oil contaminated water affected dissolved oxygen levels and health of rotifers. My hypothesis was, "If the concentration of dispersant is increased in salt water, then the dissolved oxygen (DO) levels will decrease and the number of live rotifers will decrease." <b>Abstract</b> <b>Methods/Materials</b> A hypothetical dispersant was made based on information publicly available because the dispersant used by BP was not commercially available. A control of salt water was tested against water containing only oil and water containing oil and different concentrations of oil and dispersant varying from 1/10 to 10 times the amount of dispersant BP claimed to have used in the Gulf of Mexico. DO measurements were taken with a dissolved oxygen probe at various times for 22 hours. The second part of the experiment used live rotifers, microorganisms at the bottom of the food chain in the Gulf of Mexico, to study the effects of oil and dispersant on marine microorganisms. Rotifers were added to each jar under the same conditions as the first part of the experiment and the DO levels were taken immediately and for 3 days thereafter. <b>Results</b> Results from the first part of the experiment showed that the dispersant helped maintain DO levels because the jars with the highest dispersant concentration had DO levels closest to the control. In the second part of the experiment, the DO levels significantly dropped over time for all conditions. Upon inspection under a microscope, the only jar in which live rotifers were found was in the sea water control. <b>Conclusions/Discussion</b> The data in the first part of the experiment supported the hypothesis, but DO levels did not decrease significantly as more dispersant was added. The amount of dispersant used by BP seems reasonable because low (1/10x) or high (10x) concentrations of dispersant did not significantly affect DO levels. The data in the second part of the experiment confirmed the hypothesis. The rotifers in jars with oil and dispersant did not carry out cellular respiration to the same degree as seen in the control. Based on the results, regardless of DO levels, the use of dispersants seems to negatively impact the survival of marine organisms in oil contaminated water.	
<b>Summary Statement</b> To determine whether the use of dispersants in the Gulf of Mexico Oil Spill negatively affected water quality and marine life	
<b>Help Received</b> Used dissolved oxygen probe and microscope from La Reina High School; Father helped arrange presentation on poster board	