



**CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY**

Name(s) Sage A. Strieker	Project Number J1120
Project Title Murky Waters: The Impact of Oil Spills and Oil Spill Cleanup Dispersants on Gulf Coast Mangrove Habitats	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My objective was to understand the effects of oil spills and oil spill cleanup dispersants on Gulf Coast waters and their mangrove ecosystems.</p> <p>Methods/Materials I created three red mangrove habitats in three tanks, each containing an equal amount of uncontaminated ocean water. The first tank remained this way. I added motor oil to the second and third tanks to simulate the oil spilled in the Gulf Coast in 2010. I added dishwashing liquid (a dispersant) to the third tank to simulate the dispersant used to treat the spill. During 22 days, I logged the changes in the oxygen and pH levels of the water in each tank, and the changes in the appearance of the water and the mangroves.</p> <p>Results For red mangrove habitats to be healthy, an oxygen level of 7 mg/L or higher, and a pH of 8.2 to 8.4 are essential. All three tanks began with healthy oxygen and pH levels. In the first tank, these levels remained steady. In the second tank, the oxygen level reached a low of 0 mg/L and the pH reached a low of 7.8. In the third tank, the oxygen level dropped to a low of 0 mg/L, but the pH level only dropped below 8.2 once, which was probably due to a testing error. The appearance of the water and the trees in the first tank stayed healthy, but in the second and third tanks, the water became polluted and the trees died.</p> <p>Conclusions/Discussion I conclude that we need to find a way to get rid of oil spills, but to find an alternative to using toxic oil dispersants to do it. All three of my tanks started out with healthy oxygen and pH levels, but after 22 days, only the tank free from oil and dispersant stayed healthy. This suggests to me that whole mangrove swamps and their ecosystems could be obliterated under conditions similar to those in the second and third tanks.</p>	
Summary Statement My experiment is designed to demonstrate the effects that oil alone, and oil mixed with cleanup dispersants, have on Gulf Coast mangroves and their habitats.	
Help Received James Crites (my expert) helped me select materials. Ms. Novak helped me decide which direction to take with my project. Victor Alaniz helped me take oxygen and pH levels. Anthony Duran taught me the computer graph program. My mother added water to the tanks and helped me buy supplies.	