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*Spilled: A Study of Oil Spill Dispersants and Their Toxicity to Marine Life*

This project studies the question if there are naturally derived substances that can be effective oil spill dispersants but present less toxicity to marine life. We believed that chemicals derived from kelp could have dispersant properties but be substantially less toxic. Since we could not obtain commercial dispersants we instead tested the component chemicals typically used in oil spill dispersants. We first tested the relative dispersant effectiveness of these substances and compared them to a control with no dispersant as well as a commercial kelp solution. We tested these chemicals in uniform volumes of manufactured seawater and observed dispersant results over a 24 hour period. We found the kelp solution to be a good dispersant over the long term while we found several commercial chemicals to have fast dispersant activity initially but loss of effectiveness over time as certain chemicals tended to evaporate. We then tested toxicity by obtaining live mysid shrimp from a toxicity supply lab in Florida using overnight delivery so as to have shrimp that were relatively unstressed. We tested again each chemical as well as the control in manufactured seawater with oil contamination as well as in a control with no oil. We found a range of toxicity results from immediate 100% mortality with a commercial 'green' soap solution, to modest toxicity with the kelp solution. In conclusion we determined that naturally derived chemicals from kelp could be formulated into oil spill dispersants if reduced toxicity could be traded for longer time requirements to achieve dispersion.