# Challenges of Translating Lab-based Oil-spill Fate & Effects Study Results into Estimates of Real-World Impacts

Estimates of real-world impacts from oil spills are often based on toxicity, biodegradability, and dispersant-effectiveness tests performed in glassware in a lab. It is fairly intuitive that oil dissolves, dilutes, and spreads very differently in beakers than in the real world. What is less intuitive is how these differences bias estimates of damages from spills and how to compensate for them.

This seminar will describe why toxicity thresholds determined in standard toxicity tests make oil appear more toxic than it is, common mistakes made while performing dispersed oil biodegradation tests, and negative bias inherent in closed-system dispersant-effectiveness testing. Oil industry experts on each of these test methods will also describe recommendations to minimize these biases to ensure better oil spill contingency planning and better decision making during response.

Presenters: Tom Coolbaugh, PhD chemist; Tim Nedwed, PhD chemical/environmental engineer; Tom Parkerton, PhD toxicologist
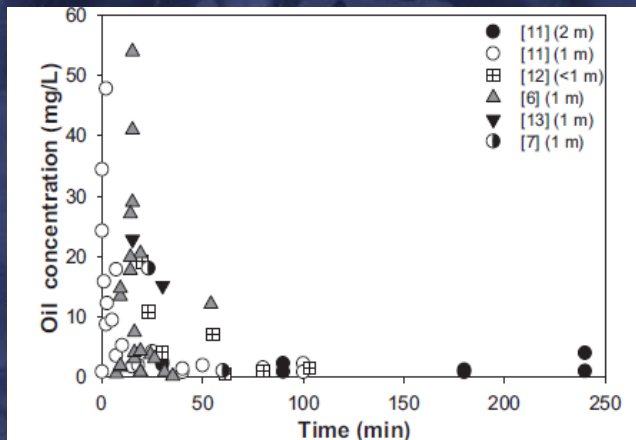


Oil rapidly dilutes in the marine water column. Berjarano et al. 2014 ET&C 33:732–742.
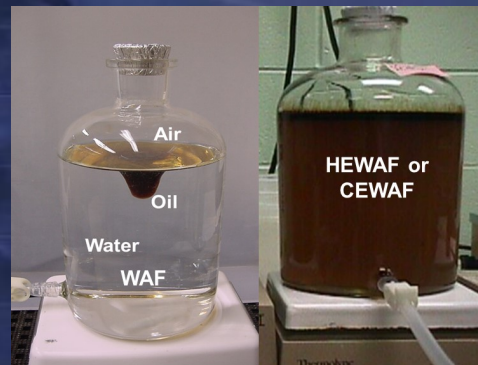


Dispersed oil droplets artificially buffer dissolved phase concentrations of oil in closed systems.



Surfactant contamination of the water surface in a closed system keeps oil from sheening and thereby eliminates dispersion from sheens

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