

The Cost of Cleaning Up

Comparative Toxicity of Oil Dispersants Corexit 9500 and Finasol OSR 52 to the sheepshead minnow, as an indicator of ecosystem health

Since the Deepwater Horizon (DWH) oil spill and subsequent cleanup effort there has been intense interest into the impact on coastal ecosystems and the economies that rely on them. The decision to use oil dispersants, of which 7 million liters were used, has been met with intense scrutiny and their relative toxicity to marine environments is of great concern.

McCall Calvert, a National Science Foundation summer research student at the College of Charleston, has been working with the National Oceanic and Atmospheric Administration (NOAA) to investigate the effects of the chemical dispersants on various estuarine species such as the sheepshead minnow, *Cyprinodon variegatus*. NSF's Research Experience for Undergrads (REU) is a national program dedicated to exposing aspiring scientists to natural science research in many academic institutions across the United States.

Corexit 9500 and Finasol OSR 52 are the two chemical dispersants under investigation. Their toxicities are of great concern because 7 million liters of Corexit 9500 were applied in the Deepwater Horizon remediation efforts, while Finasol OSR 52 remains the only oil dispersant approved for use by each of the four major international regulating agencies, U.S. EPA, France's CEDRE, the U.K.'s EA, and the E.U.'s EMSA.



Calvert feeding fish in the laboratory

The target species for testing is the sheepshead minnow, *Cyprinodon variegatus*, a small (4-6 cm) estuarine fish species that is an important prey item for many commercially and recreationally important fish. Understanding toxic effects in estuaries is important because of the role they play as breeding and rearing waters for many economically important fish. Lethal and sublethal effects, such as hatching success and enzymatic activity were used to assess toxicity. Sheepshead minnow sensitivity to oil dispersants will shed light on the impact of oil spill remediation efforts and provide information to develop better rules and regulations regarding the application of chemical dispersants in the event of future spills.

Marie E. DeLorenzo
CCEHBR, NOS/NCCOS/NOAA
Estuaries and Land Use Branch (ELUB)
Marie.delorenzo@noaa.gov

McCall Calvert
College of Charleston
Grice Marine Laboratory
calvertm@beloit.edu