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Comparative Evaluation of Five Toxicity Tests with Sediments from San Francisco Bay and Tomales Bay, California

Edward R. Long[1], Michael F. Buchman[1], Steven M. Bay[2], Ronald J. Breteler[3], R. Scott Carr[4], Peter M. Chapman[5], Jo Ellen Hose[6], Andrew L. Lissner[7], John Scott[8], Douglas A. Wolfe[9]

[1]National Oceanic and Atmospheric Administration, Pacific Office, Ocean Assessments Division, Seattle, WA
[2]Southern California Coastal Water Research Project, Long Beach, CA
[3]Springborn Life Sciences, Inc., Wareham, MA
[4]Battelle Ocean Sciences, Duxbury, MA
[5]E.V.S. Consultants, North Vancouver, British Columbia, Canada
[6]Occidental College, Los Angeles, CA
[7]Science Applications International Corporation, San Diego, CA
[8]Science Applications International Corporation, Narragansett, RI
[9]National Oceanic and Atmospheric Administration, Ocean Assessments Division, Rockville, MD

ABSTRACT

The relative sensitivity, analytical precision, discriminatory power and concordance among endpoints and with sediment chemistry were compared among five sediment toxicity tests. The tests were performed with aliquotes of 15 composited, homogenized sediment samples. Surival and a variety of sublethal endpoints were determined in tests performed with the amphipods *Rhepoxynius abronius* and *Ampelisca abdita,* embryos of the mussel *Mytilus edulis,* embryos of the urchin *Strongylocentrotus purpuratus,* and the polychaete *Dinophilus gyrociliatus.* Each sample was also tested for trace metal and organic compound concentrations, organic carbon content and texture. Two of the five tests (survival among *M. edulis* and survival among *R. abronius*) were highly sensitive to the samples and had relatively high precision, but the results were correlated most highly with sedimentological variables. One of the tests (survival among *R. abdita)* was relatively insensitive, but te results were highly correlated with only the concentrations of toxic chemicals. The test with *S. purpuratus* indicated mutagenicity in several samples that had high hydrocarbon concentrations. The test of pore water with *D. gyrociliatus* was intermediate in sensitivity and precision and not correlated highly with the results from other tests.

Keywords: Sediment toxicity, Comparative evaluation, Methods, Bioassay, San Francisco Bay