

Presentation Type: Poster

Track: Aquatic Toxicology and Ecology

Session: Digging Deep into Sediment Toxicity Testing Methods

Abstract Title: The Influence of Test Conditions on the Performance of *Chironomus dilutus* and *Hyalella azteca* in Sediment Toxicity Tests

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Abstract: In most all sediment toxicity assessments, the performance of organisms in control sediments is a key parameter in defining sediment toxicity, whether through direct statistical comparison to control or by normalizing to control performance to compare results across sites or batches of samples. We evaluated some factors that affect control performance and how they might affect the interpretation of sediment toxicity test data. In this presentation we discuss several studies examining the influence of test conditions on the performance of *Chironomus dilutus* and *Hyalella azteca*. For example, analysis of replicate data from approximately 140 toxicity tests showed that in control sediment, ending weights of midge larva showed a strong tendency to be higher than the treatment mean in replicates where the survival was lower than the treatment mean, a bias that is partially compensated for by using biomass instead of weight as the expression of growth. Additional studies using different numbers of organisms confirmed that under standard levels of food addition, beakers stocked with fewer organisms yield larger organisms at the end of 10-d exposures. In studies with *Hyalella azteca*, 10-d and 28-d growth was evaluated using 12 different control water formulations; these studies indicated that formulations enriched with sodium chloride generally yielded higher ending weights and/or better survival than other formulations. The effect of sodium chloride addition on amphipod growth was further evaluated in a study with a range of sodium chloride concentrations. Other studies discussed include evaluating the effect of varying organic carbon concentrations, which indicated little influence of sediment organic carbon content over a range of 1% TOC down to concentrations as low as 0.03% TOC. Implications of these experiments for the conduct and interpretation of sediment toxicity tests will be discussed.

*This abstract does not necessarily reflect EPA policy.*