

## USING A SPIKED SEDIMENT BIOASSAY TO ESTABLISH A NO-EFFECT CONCENTRATION FOR DIOXIN EXPOSURE TO THE AMPHIPOD *AMPELISCA ABDITA*

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(Received 12 November 1996; Accepted 27 June 1997)

**Abstract**—A recent study conducted by the National Oceanic and Atmospheric Administration (NOAA) reported a highly significant correlation between 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (2,3,7,8-TCDD) concentrations and amphipod (*Ampelisca abdita*) mortality in sediment samples collected from the lower Passaic River and Newark Bay. However, there is a paucity of data regarding the potential effects of 2,3,7,8-TCDD on benthic invertebrates under controlled laboratory exposures. In this study, 10-d whole-sediment bioassays using the marine amphipod *A. abdita* were conducted on spiked sediment samples representing a range of 2,3,7,8-TCDD concentrations (0–25 µg/kg dry weight). No effects on survival or growth relative to controls were observed at any test concentration. The highest 2,3,7,8-TCDD concentration reported from the NOAA study was 0.62 µg/kg. Therefore, the lack of 2,3,7,8-TCDD toxicity in this study indicates that the mortality observed in the NOAA study was probably due to factors or chemicals other than 2,3,7,8-TCDD. This study demonstrates the utility of spiked sediment bioassays in evaluating cause and effect relationships between sediment contamination and benthic invertebrate mortality.

**Keywords**—2,3,7,8-Tetrachlorodibenzo-*p*-dioxin    Sediment toxicity    Spiked sediment bioassay    *Ampelisca abdita*