

EXECUTIVE SUMMARY

Published techniques for extraction of marine infaunal animals from sediments were reviewed for their potential use in bioaccumulation studies. The goal was to identify the most promising techniques for extraction of small spionid and capitellid polychaetes from fine-grained sediments typically found on dredged material mounds. The review identified two categories of techniques: physical disturbance and behavioral reactions. Techniques based on behavioral reactions were selected for testing because the polychaetes live in tubes composed of fine-grained sediment and are likely to remain in the tubes despite mechanical separation of the sediments.

Living *Streblospio benedicti* and/or *Polydora cornuta* were subjected to five different extraction techniques: shaking, vibrating, electric current, oxygen depletion with sodium sulfite, and oxygen depletion with gaseous nitrogen. Criteria for selecting the technique of choice included: speed, gentleness, simplicity and efficacy.

Shaking, vibrating and electric current were unsuccessful in driving worms from their tubes. Oxygen depletion with gaseous nitrogen was effective, but slow. Oxygen depletion with sodium sulfite was successful and showed great promise as a technique for rapidly gathering sufficient biomass for chemical analyses.

Based on tests and extrapolation from previous studies, we estimated that 20 g wet weight of tissue could be obtained from four 400 cm² grab samples from typical dredged material mounds.

We recommend that the oxygen depletion technique be tested at a suitable disposal site 10-30 days after disposal operations have ended. Tests will require construction of at least 16 test chambers and collection of a minimum of 16 grab samples from a disposal site with recent disposal activity.