

**CLARIFICATION****THE NEANTHES 20-DAY BIOASSAY - REQUIREMENTS FOR AMMONIA/SULFIDES MONITORING AND INITIAL WEIGHT**

Prepared by David Fox (Corps of Engineers) for the PSDDA agencies.

**INTRODUCTION**

The PSDDA agencies implemented the Neanthes 20-day biomass test at the beginning of Dredging Year 1993. At that time no formal requirements were established for ammonia/sulfides monitoring or initial worm weight. The Recommended Protocols for Measuring Selected Environmental Variables in Puget Sound (PSEP, 1991) include ammonia and sulfides as optional measurements. The PSEP-recommended starting weight for individual worms is 0.5-1.0 mg (dry weight), which corresponds to an age of 2-3 weeks post-emergence.

**PROBLEM IDENTIFICATION**

Nontreatment factors such as ammonia and sulfides can affect the results of sublethal bioassays such as the Neanthes biomass test. When such nontreatment effects occur, water quality monitoring measurements are essential in determining the factors contributing to the expressed effect. The Waterways Experiment Station has made the following recommendations regarding the Neanthes biomass test (Moore et al., 1992): 1) measured total ammonia levels in tests with *N. arenaceodentata* should be < 10 mg/L (overlying water) and 2) measured total sulfides concentrations should be < 3.0 mg/l (overlying water).

Worm size is also a critical factor and can affect handling errors and growth rate at the beginning of the test.

**PROPOSED ACTION/MODIFICATION**

The PSDDA agencies are instituting the requirement to conduct ammonia and sulfides monitoring at the beginning and end of the Neanthes 20-day biomass test. In addition, there is evidence that aqueous ammonia may reach its maximum value nearer the beginning of the test (Cappellino, 1993). Therefore, it is highly recommended that ammonia and sulfides monitoring also be conducted prior to the first and second water renewals. The minimum worm size that may be used is 0.5 mg (dry weight). While it is recommended that the starting weight be less than 1.0 mg, the PSDDA agencies are not establishing this as a requirement at this time due to the logistics involved in obtaining worms from the supplier.

**REFERENCES**

Cappellino, S. 1993. Letter to the Dredged Material Management Office dated 9 June 1993. Parametrix, Seattle.

Moore, David W., and Dillon, Thomas M. 1992. Chronic sublethal effects of San Francisco Bay sediments on *Nereis (Neanthes) arenaceodentata*; Nontreatment factors, Miscellaneous Paper D-92-4. U.S. Army Corps of Engineers Waterways Experiment Station, Vicksburg.

PSEP, 1991. Recommended Protocols for Measuring Selected Environmental Variables in Puget Sound, Puget Sound Water Quality Authority, Olympia.