Response Summary:

Dr. Moore gave two presentations on recent work carried out by the ERDC regarding variability in laboratory bioaccumulation tests and the associated implications for interpretative guidance.

Aquatic Placement of Dredged Sediments: Interpreting Bioaccumulation

Summary

Dr. Moore presented the findings from a recent ERDC study that evaluated the use of the comparisons of Magnitude of Differences (MODs) assessment factor used to evaluate tissue residues generated in sediment bioaccumulation testing. Bioaccumulation testing exposes infaunal organisms to dredged material and reference sediment to assess the potential for contaminant-related impacts; the tissue residue concentrations are then compared to look for statistical and ecological significance. The USEPA/USACE Ocean Testing manual (OTM) and Inland Testing Manual (ITM) guidelines include various statistical inferences and numerous assessment factors (including a comparison of MODs of tissue residues) for evaluating and interpreting bioaccumulation testing results; however, the details of how to apply and interpret some of these factors is lacking. The goal of this particular study was to help clarify the application and use of the comparison of MODs assessment factor in bioaccumulation testing.

Quantifying Variability of Laboratory Bioaccumulation Tests

David Moore, USACE Engineering Research & Development Center (ERDC)

Summary

Dr. Moore's second presentation shared the findings from a related ERDC study designed to quantify the variability of laboratory sediment bioaccumulation tests via a ring test. Homogenized test sediment from New Bedford Harbor was distributed to four bioassay labs to conduct 28-day benthic bioaccumulation tests. Both marine and freshwater test species were included. All of the tissue resides were then analyzed by a single lab (ERDC) for PCB congeners, PAHs, and lipids.

Period of Performance:

30 April through 2 May, 2019.

Benefits of the Response to the USACE Dredging/Navigation Program:

Presentation provided opportunity for technology transfer relating to bioaccumulation testing to help inform better, more cost effective decision making.

Deliverable:

Presentations summarizing results of recent ERDC research.

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