



Proactive Interpretive Guidance to Address Confounding Factors in Dredged Material

Dredging Operations Environmental Research (DOER) Program

U.S. ARMY CORPS OF ENGINEERS

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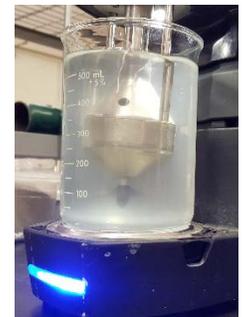
Problem

Dredge material projects require cost effective management strategies based on reliable measures of exposure and effects of the tested material utilizing standardized bioassay models that are selected prior to initiating the evaluation. Results of selected bioassays can be confounded by factors other than contaminants of concern, such as grain size, low or poor quality Total Organic Carbon (TOC), ammonia, sulfides, etc., often resulting costly management decisions that may not be warranted. While published guidance documenting the application and interpretation of these bioassays acknowledge the potential influence of these factors on test results there is little information on how to assess/address the influence of these confounding factors. In the absence of more detailed guidance, regulators assume the pre-selected bioassays are sufficiently robust to accommodate the broad array of material evaluated; when there is an indication that factors other than contaminants are affecting bioassay results regulators are reluctant to consider other lines of evidence and typically default to determining the material is unsuitable for open water placement. Consequently, there is a need to develop better, more technically defensible, documentation of the potential effects of these factors on existing bioassay models, development of procedures to account for the influence of these on bioassay results and improved interpretative guidance to support regulatory decision making. There is addition need to make more informed organism select decisions using the best available science prior to testing



Study Description

This study will examine the prevalent confounding factors and how they affect results of standard bioassay models. Standard and accepted bioassay species will be tested over a range of these factors to establish a better understanding of the species tolerance ranges to non-contaminant of concern factors. Results of these assessments will be employed to inform development of procedures (e.g., inclusion of additional factor based controls) and interpretative guidance to improve regulatory decision making and reduce costly unwarranted management decisions based on confounded test results.



Products

A tech note, SOP, and journal article on *Separation of Sediments into Size Fractions: Methods and Comparative Controls*. Those products are evaluating the one of the most impactful confounding factors and the affect it has on the standard species and alternative species. Based on the those articles and research into the other confounding factors *Decision Guidance* will be produced on the *Selection of Whole Sediment Toxicity Test Organisms*. This guidance will be produced in connection with the dredge material governing agencies so that dredge material managers can leverage the research produced and in turn help keep costs of material management as efficient as possible. The guidance will be installed into future versions of national and regional dredging guidance documents.

Summary

This project will produce guidance that will allow dredge material managers and governing agencies to make informed decisions on species selection based on material parameters that are a best fit for a selection of bioassay species. This informed decision making will allow for more cost effective management of dredge material by reducing the impact of non-contaminant confounding factors.



Balancing operational and environmental initiatives and meeting complex challenges of dredging and dredged material placement in support of the navigation mission.



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