

Health-Based Criteria for Sediment Disposal Options: A Case Study of the Port of New York/New Jersey

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ABSTRACT

Approximately 4 million cubic yards of sediment are dredged annually from the Port of New York and New Jersey in order to maintain navigable channels. In many cases, the sediments contain elevated levels of numerous contaminants. The New York District of the U.S. Army Corps of Engineers and U.S. Environmental Protection Agency Region II employ a framework of sediment quality evaluation to determine whether contaminated sediments are suitable for open ocean disposal (*i.e.*, do not pose a health risk from bioaccumulation in human food chain) or whether more extensive and costly disposal methods are required. The degree to which chemicals can bioaccumulate from sediments into benthic invertebrates is a key determinant in the permitting decision. The maximally "acceptable" levels of bioaccumulation (bioaccumulation criteria) have been developed over a period of several years, using a variety of different methods. We reviewed the technical bases of these criteria and found that, while some values can be considered "risk-based," others are based on historical background concentrations, Food and Drug Administration Action Levels, limits of detection, and other non-"risk-based" methodologies. Hence, the degree of uncertainty and health protection (or lack thereof) in the criteria varies considerably among the chemicals. We also reviewed the outcomes of several permit applications and found that the bioaccumulation criteria were not

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