Sediment Dredging at Superfund Megasites: Assessing the Effectiveness

Karl Gustavson, Army Engineer Research and Development Center, Environmental Lab, Risk Assessment Branch

Decisions about whether or not to dredge contaminated sediments have proven to be among the most controversial at Superfund sites. The scientific and technical difficulties associated with accurately characterizing a site and selecting a remedy are augmented by the uncertainty in estimating the ultimate effect of remedial actions on human and ecologic risk. In response to controversies regarding the efficacy of dredging at reducing risk at contaminated sediment sites, the Committee on Sediment Dredging at Superfund megasites was convened by the National Research Council of the National Academies. In brief, the committee was charged with evaluating the effectiveness of dredging of contaminated sediments at Superfund megasites, including short-term and long-term changes in contaminant transport and ecologic effects. Overall, the committee was charged to strive to develop recommendations that would facilitate scientifically based and timely decision-making for megasites in the future.

The committee concluded that sediment dredging can be effectively implemented to remove contaminants from aquatic systems, but technical limitations often constrain its ability to achieve expected outcomes. Dredging has had systematic difficulties in achieving short-term surface sediment cleanup levels. However, under some conditions dredging can achieve cleanup levels and aid recovery of biota at contaminated sediment sites. The committee emphasized the need for monitoring to establish whether or not the remedial action was having its intended effect, but determined that monitoring at most Superfund sites has been inadequate to determine whether dredging has been effective in achieving remedial action objectives. The NRC report provides several recommendations for improving future decision making including that EPA should improve site tracking, implement better pre- and post-remediation monitoring and adaptive management, and support research to examine the relationship between the remedial actions, site conditions, and risk reduction. This presentation will summarize the findings of the NRC report.