

**Potential Effects of Dredging on Aquatic Receptors.** Michael Kravitz, USEPA ORD/NCEA, and Dennis Timberlake, USEPA ORD/NRMRL

Since dredging is being considered as a remedial alternative at a number of prominent Superfund sites, it is important to understand its potential effects on aquatic receptors, as well as the benefits that may accrue in the form of reduced long-term risk from contamination. This presentation deals with the former (i.e., potential effects). Dredging suspends contaminated and anoxic sediments into the water column, increasing exposure of aquatic organisms to contamination and low DO. The risks of dredging polluted sediments are primarily related to the shift of pollutants from the particulate to the dissolved phase. Dredging can also enhance the downstream transport of particulate, colloidal and dissolved phases. Finally, dredging causes impacts to the physical habitat, which can be evaluated in terms of recovery of benthic communities following the cessation of dredging. When evaluating the risks of dredging, the following should be borne in mind: 1) the magnitude of release and transport of contaminants can be controlled by operational practices including use of specially designed dredges, 2) most of the contaminants remain bound to sediment particles during dredging, and desorption appears to be slow for the most hydrophobic contaminants, and 3) estimates of bioavailability that assume only two phases (i.e. particulate and dissolved) may be too high. This trend is especially true in light of work showing that colloids associate strongly with hydrophobic contaminants and reduce their bioavailability.

Finally, it is important to put the risks of dredging into perspective when evaluating its feasibility as a remedial alternative. Projected dredging-related increases in water-column contaminant loads should be compared to current and projected water column concentrations resulting from natural perturbations (e.g. bioturbation, storm events).