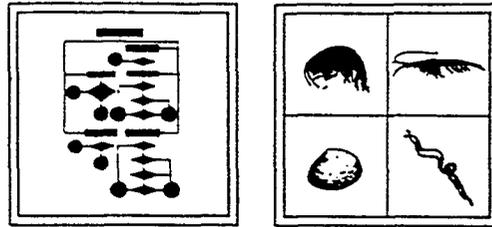




# Evaluation Of Dredged Material Proposed For Ocean Disposal

## Testing Manual



Dredged Marine Sediments Have Special Problems Related to Salt and THM Precursor Content

Salinity Impacts  
 Bromide-THMs

Must Elutriate Marine Sediments to Remove Excessive Salts Before Disposal in Freshwater of Low Salinity Part of Delta

May Be Able to Control Rate of Contaminated Sediment Placement Within Freshwater Part of Delta to Control Salinity-Bromide Problem

<http://home.pacbell.net/gfredlee/aquafund.html>

### Contaminated Sediments - Aquafund

Aquatic sediments tend to accumulate a variety of chemical constituents that represent potential threats to water quality. The issue of pollutants in aquatic sediment is of sufficient concern to potentially lead to a new national Superfund-like program - "Aquafund" - in which large amounts of money could be spent to investigate and remediate contaminated sediments. Further, the US EPA is in the process of developing approaches for placing restrictions on NPDES permitted discharges that are based on the potential of constituents in these discharges to accumulate in aquatic sediments to a sufficient extent to be adverse to the waterbody's beneficial uses.

Dr. G. Fred Lee and Anne Jones-Lee have worked for many years on the evaluation of the water quality significance of contaminants in harbor and waterway sediments. Their work included conducting more than \$1 million in research on the significance of contaminants in waterway sediments associated with navigational dredging projects that are conducted throughout the US. They have published papers and reports on the technical issues of impacts of sediment-associated contaminants, including factors that affect the availability of such contaminants.

There is considerable interest today in developing sediment quality criteria for regulating contaminated sediments. Several approaches have been proposed for the evaluation of the water quality significance of chemical constituents in aquatic sediments. While chemical-concentration-based approaches, such as equilibrium partitioning and co-occurrence, are being used, such approaches tend to be unreliable in their assessment of the water quality significance of chemicals in aquatic sediments. Drs. Lee and Jones-Lee's writings discuss many of the reasons that chemical-concentration-based approaches are not reliable for estimating sediment toxicity or bioaccumulation of sediment-associated chemicals into aquatic life. They recommend that biological-effects-based approaches (sediment toxicity and actual bioaccumulation) be used.

Dr. Lee presents a several-day short-course on sediment quality/water quality issues which can be made available at any location where a local sponsor will make arrangements.

### Additional Information on Contaminated Sediments

If you would like additional technical information on the evaluation and management of sediment-associated contaminants, including deficiencies in some of the current approaches and making more technically reliable assessments and management decisions, or would like to access downloadable technical publications on this topic, click on the link below.

- [Publications on Contaminated Sediments](#)



## New Regulatory Areas of Concern

US EPA Is Attempting to Develop Chemical Concentration-Based Sediment Quality Criteria That Can Lead to Sediment Quality Standards

Significant Fundamental Problems with Proposed Approach

Trying to Over-Simplify Regulating Chemicals

Regulating Chemicals in Sediments Rather Than Chemical Impacts

Cannot Reliably Estimate Impacts on Beneficial Uses Based on Chemical Concentrations of Constituents in Sediments

No Relationship Between Total Concentration of Contaminants and Impact on Water Quality

Should Use Biological Effects-Based Approaches Based on Actual Measured Toxicity and Bioaccumulation

Corps of Engineers and US EPA Have Been Regulating Open-Water Disposal of Contaminated Dredged Sediments Since the 1970's Using Biological Effects-Based Approaches - Should Be the Approach Used for Developing Sediment Quality Criteria

<http://home.pacbell.net/gfredlee/watrqual>

### Water Quality Evaluation & Management

#### Wastewater Discharges and Stormwater Runoff

Regulatory approaches typically used today tend to significantly over-regulate chemicals in point-source domestic and industrial wastewater discharges and non-point-source runoff from urban, agricultural, rural, forested, and mining areas. This is due to inadequate considerations being given to the aquatic chemistry of chemical constituents that influence their impacts on the beneficial uses of waterbodies. Dr. G. Fred Lee has worked on the development of water quality criteria and their implementation into water quality standards and discharge limits since the mid-1960's. He and Dr. Anne Jones-Lee have published extensively on this topic, with particular attention to residual chemicals in municipal and industrial wastewater discharges, urban and highway stormwater runoff, and non-point-source stormwater runoff from urban, agricultural, range, and forested lands. They have also developed a water quality-based hazard assessment approach for the evaluation of the impact of chemical constituents in a waterbody or tributary to it, on the beneficial uses of the waterbody.

While regulated chemicals tend to be over-regulated by current regulatory approaches, there is a vast arena of unregulated or inadequately regulated chemicals, such as the organophosphorus pesticides, that are adverse to the beneficial uses of waterbodies, which are not being adequately addressed by current regulatory approaches. Urban area and some rural stormwater runoff has been found to be highly toxic to aquatic life due to these and other chemicals.

An area of emphasis of their work has been the impacts of chemical constituents in urban area runoff and in highway stormwater runoff on water quality/use-impairment of receiving waters. They have published information on an Evaluation Monitoring approach for the identification of real water quality problems-use impairments caused by stormwater runoff. This suggested alternative to the traditional, mechanical monitoring of stormwater runoff provides a technically valid, cost-effective approach for developing reliable BMPs for managing stormwater runoff water quality impacts.

### Additional Information on Water Quality Evaluation and Management

If you would like additional information on the work of Dr. Lee and Jones-Lee in the area of water quality evaluation and management, including their work on impact and management of pesticides, water quality standards and NPDES permits, and stormwater quality evaluation and management, or would like to access downloadable technical publications on those topics, click on the topic below.

- [Publications on Water Quality Implications of Stormwater Runoff](#)
- [Publications on Water Quality](#)

