



# Contaminated Sediments News



## EPA Office of Water Completes Draft Site Inventory Report

The EPA Office of Water (Standards and Applied Science Division within the Office of Science and Technology) has completed the first draft version of its "site inventory" report on the condition of the Nation's sediment. This report meets the mandate of the Water Resources Development Act of 1992, which charged EPA to conduct a comprehensive national survey of data regarding sediment quality, identify locations that are contaminated, and report its findings to Congress every two years. Entitled *The National Sediment Quality Survey: A Report to Congress on the Extent and Severity of Sediment Contamination in Surface Waters of the United States*, the draft report is undergoing an external scientific peer review and an intra-Agency review. When this review is completed, EPA plans to revise the current draft and distribute a second draft to other federal agencies and states.

EPA examined sediment chemistry measures, fish tissue residue levels, and toxicity test results taken at over 20,000 monitoring stations over the past

15 years. EPA performed a screening-level assessment on these data to determine whether potential contamination problems either currently exist or existed at some point in time over the past 15 years at distinct monitoring locations. Each monitoring site was placed into one of three categories: a higher probability of adverse effects (Tier 1), an intermediate probability of adverse effects (Tier 2), or no indication of potential adverse effects based on available data (Tier 3). Recognizing the imprecise nature of the numerical assessment parameters, Tier 1 sites were distinguished from Tier 2 sites based on the magnitude of a sediment chemistry measure or the degree of corroboration among the different types of sediment quality measures. The preliminary results of this analysis indicate that potentially contaminated sediment is present at one-third to three-quarters of the monitoring stations evaluated, and risks to both aquatic life and human health exist. These results most likely reflect, in part, the fact that monitoring efforts have focused on areas thought to be contaminated.

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## Contaminated Sediment Activities Timeline

**June 8-12, 1996.** *Watershed '96.* Baltimore, MD. Call Water Environment Federation at (703) 684-2400.

**June 16-19, 1996.** *Urban Wet Weather Pollution: Controlling Sewer Overflows and Stormwater Runoff.* Quebec, Canada. Contact Nancy Blatt, WEF, at (703) 684-2400.

**July 14-17, 1996.** *American Water Resources Association Annual Symposium on Watershed Restoration and Management: Physical, Chemical, and Biological Considerations.* Syracuse, NY. Contact Dr. Jeffrey McDonnell at (315) 470-6565.

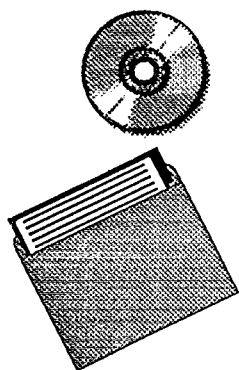
**July 22-25, 1996.** *Multi-Regional Meeting on Water Quality Standards/ Criteria and Related Pro-grams.* Denver, CO. Contact Liz Hiett, Tetra Tech, at (703) 385-6000.

**August 26-29, 1996.** *Multi-Regional Meeting on Water Quality Standards/ Criteria and Related Programs.* Burlington, VT. Contact Liz Hiett, Tetra Tech, at (703) 385-6000.

**September 11-13, 1996.** *National Sediment Bioaccumulation Conference.* Bethesda, MD. Contact Charlie MacPherson/Melissa Bowen, Tetra Tech, at (703) 385-6000. (See related announcement on p. 11).

**November 17-21, 1996.** *Society of Environmental Toxicology and Chemistry 17th Annual Meeting.* Washington, DC. Contact SETAC at (904) 469-1500.

Although site monitoring information in the National Sediment Inventory (NSI) database is extensive, EPA's reliance on electronically available data, mostly from



large national databases, has undoubtedly led to the exclusion of information available from sources such as local and state governments and hard-copy reports. However, the data are sufficient to provide a national

perspective and to identify areas requiring closer inspection. EPA will gather data from additional sources for future biennial sediment quality reports. Site classification based on NSI data cannot substitute for additional study or application of relevant knowledge at the regional, state, and local levels. In time, as the NSI grows to include information on more locations and measurements, NSI data and assessments will reveal trends and help measure progress in minimizing risk. For more information contact Jim Keating, OST, (202) 260-3845.

## EPA Office of Water to Assess Nonpoint Source Pollution Inputs to Contaminated Sediments

EPA's Standards and Applied Science Division within the Office of Science and Technology has initiated an effort to assess the contribution of nonpoint sources to sediment contamination. Because the potential universe of nonpoint sources contributing to sediment contamination could be significant, initial efforts will focus on selected nonpoint source categories including harvested croplands (pesticides), urban areas and atmospheric deposition (PAHs, PCBs, metals, pesticides), and inactive and abandoned mine sites (where information is available). EPA plans to coordinate closely with other federal agencies such as USDA's Agricultural Research Service, the U.S. Geological Survey and the U.S. Fish & Wildlife Service for this effort. For more information contact Bill Tate, OST, (202) 260-7052.

# Regional Activities

## Region 2

### Sediment Decontamination Technology for Dredged Material Management

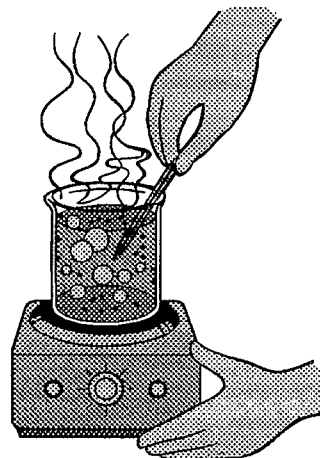
U.S. EPA Region 2 and the U.S. Army Corps of Engineers (USACE), New York District, are jointly managing an investigation of sediment decontamination technologies for dredged material management. Section 405 of the Water Resources Development Act (WRDA) authorizes a fast-track, 2-year investigation, including testing and demonstrating decontamination technologies at both bench- and pilot-scale levels. The primary goals of the project are to decontaminate New York/New Jersey Harbor sediments, to demonstrate the environmental protection and cost-effective aspects of the process, and to determine beneficial uses of the post-treated materials.

The Department of Energy, Brookhaven National Laboratory (BNL), and the USACE Waterways Experiment Station (WES) are providing technical support for the project. In addition, there is a "regional" support team with members from the Stevens Institute of Technology, New Jersey Institute of Technology, Rutgers University, and Rensselaer Polytechnic Institute.

Under an open BNL procurement process, seven vendors were awarded contracts to decontaminate sediments from New York's Newtown Creek on a bench scale. Based on the success of the

bench-scale tests, three to four pilot-scale demonstrations, 25 cubic yards each (depending on cost estimates) will be completed either at the vendors' sites or at the Port Authority of New York and the New Jersey Marine Terminal at Newark Bay. Newtown Creek was selected as the project test site because of its enriched sediment concentrations of metals, PCBs, dioxins/furans, and PAHs.

Decontamination will require a "treatment train" approach of several different processes because of the complex and varying nature, and levels, of typical contaminants and their widespread spatial distribution in the Harbor. The seven vendors have demonstrated a variety of treatment technologies, including thermal desorption and destruction, chemical treatments, solidification and stabilization, solvent extraction, physical separation, and soil washing. As of March 1996, all seven vendor bench-scale tests are complete.



Battelle completed a Base-Catalyzed Decomposition bench-scale test focusing on organochlorine-contaminated sediments in September 1995. For this project, WES is conducting four bench-scale tests focusing on manufactured soil production (phytoremediation), solidification/stabilization, physical separation, and dewatering processes. In April 1996, technical evaluations and decisions to progress with pilot-scale demonstrations will be made. Pilot-scale testing will begin in June/July and will be completed by September.

WES will also conduct a manufactured soil pilot-scale test in Newark, New Jersey. This effort might begin as early as April/May to coincide with the growing season and will be completed in December 1996. The project team, however, is currently in a post-project

planning stage, focusing on tasks that would need to be initiated now for scaling up production (100,000 cubic yards) and for achieving full-scale production (500,000 cubic yards). These tasks include permitting, establishing post-treated sediment disposal criteria and beneficial use markets, locating staging sites for production/full-scale facilities, and ongoing, project-specific public outreach efforts.

For more information, contact Eric A. Stern, EPA Region 2 at (212) 637-3806, e-mail: [stern.eric@epamail.gov](mailto:stern.eric@epamail.gov).

## Region 5

### Region 5 Embraces the Team Approach: Introducing the Sediment Team

USEPA Region 5 recently embarked on a journey that reflects a new way of doing business. Last October the Region underwent a reorganization that reflects fundamental changes in the way it perceives itself doing work in the future—that through working with its stakeholders (the communities) and using a little common sense, the Region can achieve a quality environment and way of life.

Region 5 reorganized to streamline the organization and make more efficient use of resources by creating 17 multi-media Teams to address environmental problems in geographic areas and focus on

specific common themes that are cross-cutting in nature. Underlying this reorganization are several premises. First, financial and human resources should be employed with the utmost efficiency. Second, internal barriers must be removed so that the holistic vision of environmental protection is not eclipsed by specific media. And, third, the Region should continue to nurture the federal/state/tribal relationship as it matures from one of oversight to one of true partnership in protecting human health and the environment.

Region 5's Teams can be categorized into three areas and are identified as follows:

1. *Great Waters:* Superior, Michigan, Erie
2. *Geographic:* Northwest Indiana (NWIN), Southeast Michigan (SEMI), Gateway, Cleveland, Upper Mississippi, Crandon Mine, Greater Chicago
3. *Theme:* Pollution Prevention, Brownfields, Toxics, Common Sense Initiative, Environmental Justice, Sediments, Enforcement and Compliance

The Teams are made up of representatives from all of the EPA Programs and led by the Regional Team Manager. The Teams are unique because they are not affiliated with a particular Program, but work instead for the Senior Leadership Team (composed of the Regional Administrator (RA), Deputy RAs, Division Directors, and Program Managers). One team goal is to reach out beyond the Agency to establish linkages with state, tribal, and local groups, industry, and public partners. Strong and effective communication is essential.

One of the theme teams is the Sediments Team. Bonnie Eleder, Regional Team Manager, came from Region 5's Superfund Program. While in the Superfund program she was involved in sediment-related issues, participated on the In-Place Pollutant Task Force, and was the Great Lakes Coordinator. The overall mission of the Sediments Team is

to facilitate cleanup and prevention of contaminated sediment in the Great Lakes ecosystem and other waters in Region 5. The success of the mission will result in a reduction of toxic loadings to, and the restoration of beneficial uses of, our water resources. The scope of the team's mission includes the contaminated sediments of the Great Lakes, and their tributaries, and of other waters in the Region. Other waters include the Mississippi and Ohio Rivers and tributaries, and wetlands which have been impacted by contaminants that have caused or contributed to impaired uses (including navigational restrictions) of these water resources.

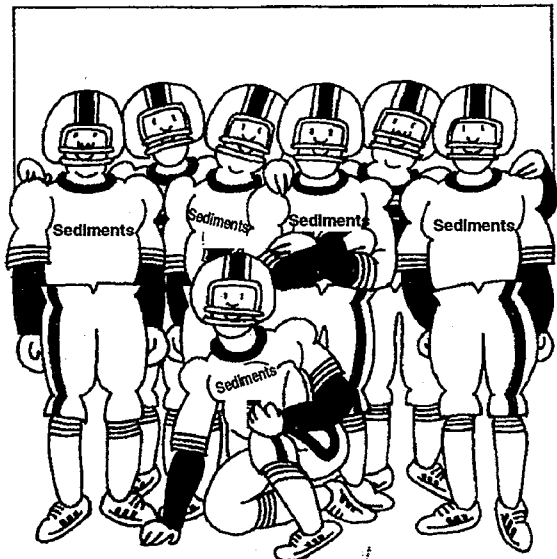
This year the Sediments Team is focusing on remediation, establishing partnerships, and communication. The team is playing key roles in addressing sediments issues and facilitating sediment remediation with several Teams and Programs, including NWIN, SEMI, and Superfund. It is working with the USACE to establish a Regional Dredging Team and Great Lakes Sediment Coordination Committee with participation of the various stakeholders. The team will also communicate using such tools as *Contaminated Sediments News*, development of a Home Page, and involvement on the Sediment Oversight Technical Committee.

Please contact Bonnie Eleder to discuss sediment issues at (312) 886-4885, or at "[eleder.bonnie@epamail.epa.gov](mailto:eleder.bonnie@epamail.epa.gov)". She can also be contacted for additional information on the other Regional Teams and the Team Managers.

## Region 10

### Coordinated Sediment Management Program

In May 1994 the Washington Departments of Ecology (Ecology) and Natural Resources (DNR), the Puget Sound Water Quality Authority (PSWQA), EPA Region 10, and the Seattle District Corps of Engineers signed an Inter-agency/Intergovernmental Agreement to more comprehensively and cooperatively address sediment issues. The Agreement



identifies tasks requiring immediate attention by the five agencies. Despite the unusual circumstances of the federal fiscal year, progress was made on each task.

### ***Beneficial Uses Work Group***

The Beneficial Uses Work Group convened in January 1995 and continued its effort to develop regional guidelines to encourage projects that include beneficial reuses of dredged sediments. Federal and state agencies and representatives of tribes, ports, and local governments are seeking to promote opportunities to "use" rather than simply "dispose of" clean sediment. These opportunities are often missed due to lack of coordination between dredging activities and beneficial use projects.

The U.S. Army Corps of Engineers (USACE) has developed a spreadsheet listing detailed information about its regional O&M dredging projects. Financial assistance from EPA has also assisted USACE in developing a database of all the beneficial use projects that fall within the Puget Sound Dredged Disposal Analysis (PSDDA) jurisdiction. This information will be made available to the public, possibly through the USACE Home Page, to provide information about when and where clean sediments will be available and to help generate ideas for projects.

Allocating sediment among various beneficial use projects is another

important issue. The Confined Alternative Assessment Procedure (CAAP) presents a means to help in this area. Periodic review of both PSDDA and beneficial use permits will provide opportunities to assess success and will also help in determining ways to increase opportunities for beneficial use projects.

The work group will continue to meet and will prepare a final document to be released in 1996. This document will provide the group's final recommendations to the five Agency Directors and will include the matrices of regulations, a regional glossary of terms, prioritization of types of projects, regional sediment testing requirements, and other information. This guidance should allow for greater interagency consistency regarding approval of projects. Contact Justine Barton, Region 10, (206) 553-4974, or Stephanie Stirling, USACE, (206) 764-6945 for more information.

### ***Multi-User Disposal Site (MUDS)***

Under the lead of the Seattle District Corps, the MUDS effort has resulted in a draft reconnaissance report that has been submitted to USACE Headquarters for review and approval. USACE, EPA, Ecology, DNR, PSWQA, and the Washington Public Ports Association (WPPA) are sponsoring or cooperating in the effort. The reconnaissance study reaffirmed previous findings by the State of Washington that there is a significant need to establish multi-user sites for the disposal of contaminated sediment derived from (1) dredging of federal and non-federal navigation channels, (2) waterfront development projects, (3) site cleanup projects directed through federal or state enforcement actions, and (4) projects with the primary purpose of restoring aquatic habitat.

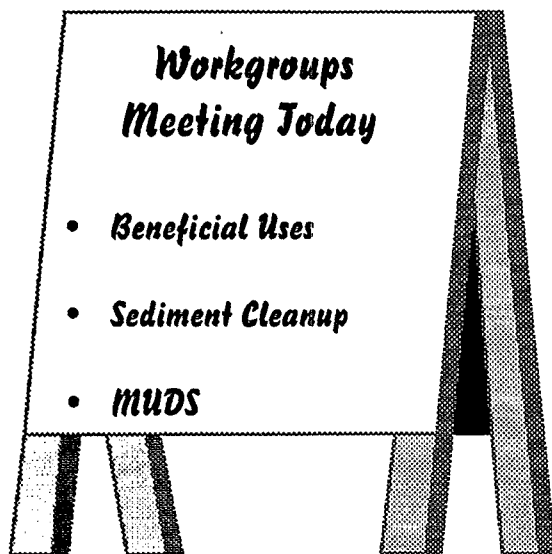
The MUDS study management work group is continuing to scope necessary studies and develop a cost sharing agreement for a feasibility

study. The agencies are attempting to accelerate the planning process by initiating three feasibility-level studies during the reconnaissance phase. The first study, funded by Ecology and EPA, is evaluating alternative approaches to siting a disposal site and developing recommendations for how to locate suitable and publicly acceptable multi-user disposal sites. The second project, funded by DNR, is a legal services contract to develop a contingency management agreement or strategy. The last study, funded by USACE, will produce a scoping document for a joint federal-state programmatic environmental impact statement to be prepared during the feasibility study. For more information, contact Steven Babcock, USACE, (206) 764-3651 or John Malek, EPA, (206) 553-1286.

### ***Sediment Cleanup Work Group***

The Sediment Cleanup Work Group convened in July 1994 and met throughout 1995. In December of 1995, the Work Group, composed of representatives of industry, tribes, environmental groups, ports, and other state and local governments, developed seven consensus recommendations for the Agency Directors. The five Directors and a sixth agency, the Washington Department of Transportation, responded with a collective strategy embracing shared leadership of both sediment cleanup and source control. The strategy outlines three goals addressing the need to take a programmatic v. project-by-project approach, as well as share agency resources. The state will generally lead the effort intended to shift attention and resources from litigation to actual cleanup.

The first goal establishes a new Inter-agency Cleanup Program that will (1) produce several, collaborative technical and policy products to advance the effectiveness and efficiency of sediment management; (2) develop a unified position that defines the collective government position/program; and (3) establish an interagency Technical Assistance team to focus on prioritized, transactional cleanups (e.g., construction and real estate actions).



The second goal creates a Demonstration Pilot Project to (1) develop a place-based project where agencies will enter into partnerships with local interests and provide grant funding; (2) establish and implement priority actions related to sediments and aquatic habitat; and (3) institutionalize agreements via an Areawide Plan/Environmental Impact Statement for decision making, general and/or streamlined permits for implementation of the areawide plan, and agency resource and responsibility allocations for priority actions.

The last goal addresses Flexible and Creative Models for State and Non-State Funding for Cleanup to: (1) pursue a supplemental budget appropriation during the 1996 state legislative session to initiate the new sediment strategy and (2) identify new mechanisms for public and private financial contribution to cleanup.

The six agencies have been working to implement many of the elements of the Sediment Cleanup Strategy. Local governments are being contacted regarding partnering for the demonstration pilot project. The demonstration area will be selected later this year based on aquatic resources at risk, local interest, and financial capability. An appropriation by the State of Washington will be used by the local governmental partner for staffing, technical studies, database system development, and/or prioritization process facilitation. In addition a number of technical and policy guidance documents are under joint development by the agencies.

Copies of the Sediment Cleanup Work Group final report and the agencies' Sediment Cleanup Strategy: An Inter-agency Overview are available by request. Contact Rachel Friedman-Thomas, Ecology, (360) 407-6909 or John Malek, EPA, (206) 553-1286.

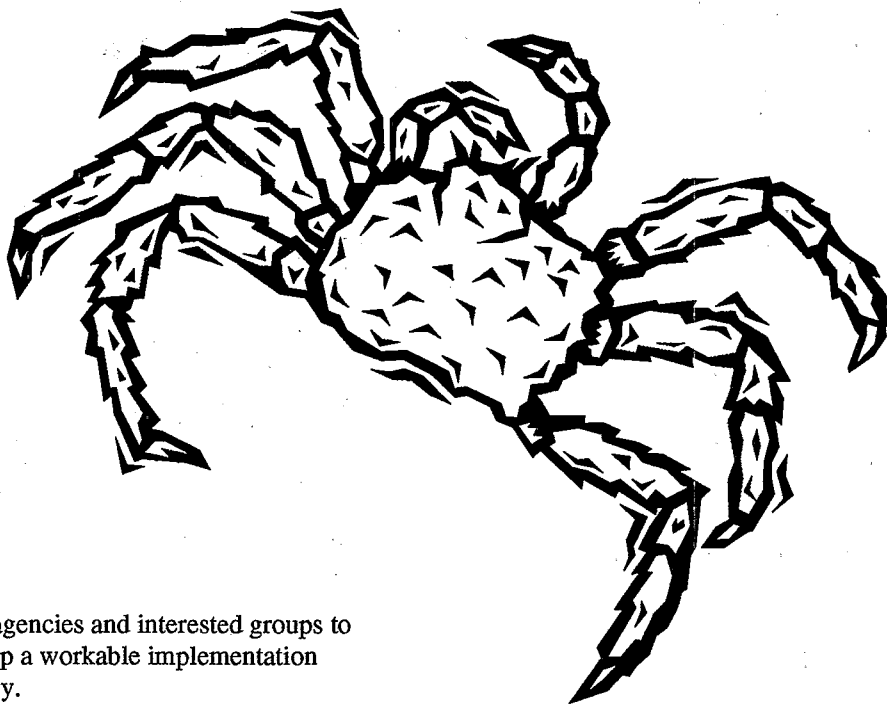
### **Human Health Sediment Criteria**

As reported in the last issue of *Contaminated Sediments News*, the Washington Department of Ecology is developing human health sediment criteria. With much of the technical development work completed, Ecology is now working with

other agencies and interested groups to develop a workable implementation strategy.

Previously, the Washington Department of Health (DOH) compiled and analyzed Biota-Sediment Accumulation Factors (BSAFs) from nationwide sources and made recommendations to Ecology as described in DOH's Tier I Report (June 1995). To ensure that BSAFs would be scientifically defensible and would provide protective estimates of the bioaccumulation potential of chemicals of concern, Ecology also hired an outside contractor, PTI Environmental Services, to conduct an independent analysis of the BSAF data analyzed by DOH. Although DOH and PTI chose different statistical approaches to analyze the BSAF data set, results differed by less than a factor of 10 in all cases, and less than a factor of 3 in most.

PTI's analysis found highly significant regressions of BSAFs for PCBs and dioxins in finfish and for PAHs and PCBs in shellfish. While actual results reported in PTI's Analysis of BSAF Values for Nonpolar Organic Compounds in Finfish and Shellfish (November 1995) differ from those reported by DOH, upper confidence limits on the regression fall in the same range as the upper percentiles recommended by DOH.



PTI has prepared two other reports for Ecology: *Technical Review of Distributional Analysis Approaches for Cancer Potency Factors* (July 1995) and *Bioaccumulation Factor Approach Analysis for Metals and Polar Organic Compounds* (October 1995). Copies of the PTI and DOH reports are available from Ecology.

Ecology is still considering alternative approaches and input parameters for development of health-based sediment criteria. As the criteria process moves forward, Ecology will use the information in the two reports and public input to make decisions.

For more information, contact Laura Weiss, Ecology, (360) 407-7446 or John Malek, EPA, (206) 553-1286.

CS News is produced by EPA OST to exchange information on contaminated sediments and to increase communication among interested parties. To obtain copies of this report or to contribute information, contact Jane Marshall Farris, EPA OST, mail code 4305, at (202) 260-8897.

To be added to the mailing list or to make changes to your address, please fax your request to Melissa Bowen, Tetra Tech, at (703) 385-6007.



## *The R/V Mudpuppy to the Rescue for Great Lakes Contaminated Sediments!*

### ***Background on Contaminated Sediments in the Great Lakes***

Contaminated sediments are a significant problem in the Great Lakes basin. Although discharges of toxic substances to the Great Lakes have been reduced in the last 20 years, persistent high concentrations of contaminants in the bottom sediments of rivers and harbors have raised considerable concern about potential risks to aquatic organisms, wildlife, and humans. As a result, advisories against fish consumption are in place in most locations around the Great Lakes.

Problem harbor and tributary areas in the Great Lakes basin have been identified and labeled as "Areas of Concern" (AOCs). The 31 AOCs on the U.S. side of the basin are locations where beneficial uses are impaired for any one of 14 designated criteria. To address these beneficial use impairments, each AOC developed a Remedial Action Plan (RAP). All RAPs written to date have identified contaminated bottom sediments as a significant problem that must

be addressed to attain beneficial uses. Before developing specific plans that detail how to remediate these contaminated sediment problems, it is critical to characterize the nature and extent of sediment contamination. Most AOCs, however, had access to only limited sediment information to assist them in addressing characterization and remediation questions.

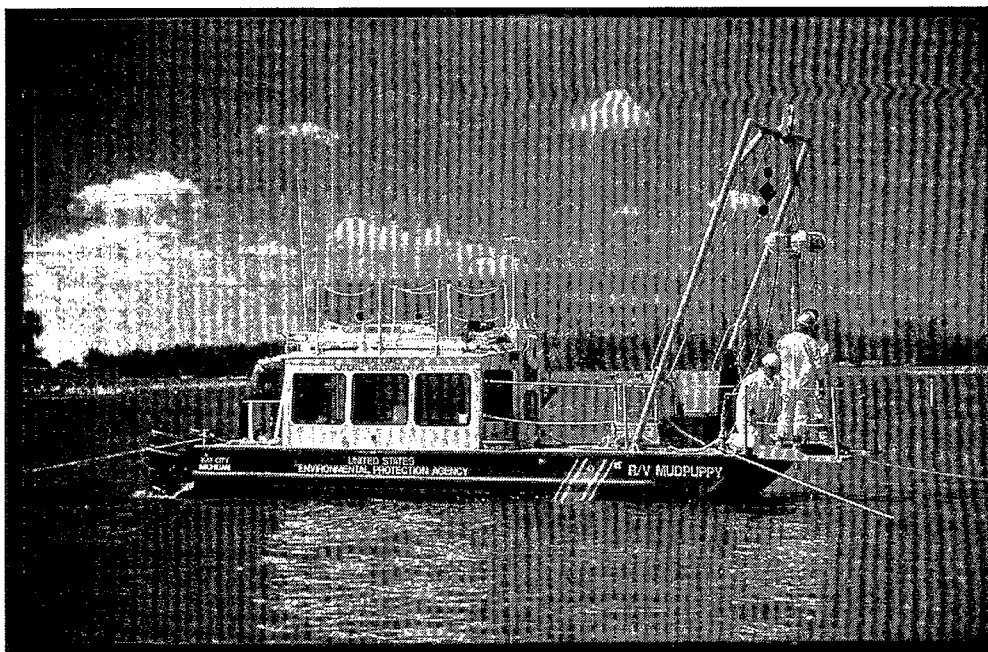
### ***The R/V Mudpuppy Gets Involved***

U.S. EPA's Great Lakes National Program Office (GLNPO) has been responding in a number of ways to the need for gathering high-quality sediment information to assist AOCs in making remedial action decisions. One such route has been through the services of the R/V *Mudpuppy*. The *Mudpuppy* is a 32-foot flat-bottom boat specifically designed for sediment sampling in shallow rivers and harbors. It is equipped with a vibro-coring unit that allows the sampling of cores up to 15 feet long. It also has a differentially corrected global positioning system

(GPS) with submeter accuracy that allows for precise and accurate determinations of sample locations. Once samples are collected, they can either be subsampled and processed on board or at land-based facilities. A triple-axle trailer allows the vessel to be transported easily from one project location to the next.

GLNPO typically works closely with state agencies and local communities involved in the RAP process to develop sampling plans, testing protocols, and QAPPs for individual projects. *Mudpuppy* surveys provide data that allow the three-dimensional mapping of these project sites.

To date, the *Mudpuppy* has been used to perform sediment assessments at 16 Great Lakes AOCs (see map). The bulk of this work has been conducted to collect information on the physical, chemical, and biological nature of sediments. Typically, projects use a two-phased sediment assessment approach. The first phase includes a comprehensive sampling of the entire AOC to help pinpoint the location of "hot spots." These "hot spots" are then delineated in the second phase to provide information necessary for making remedial decisions. The overall goal of this effort is to generate the information needed to make scientifically defensible remediation decisions.



## Two Great Lakes Projects Completed Using the Mudpuppy

Two such projects recently completed include the St. Louis River in Minnesota and White Lake in western Michigan. In the St. Louis River project, GLNPO worked in conjunction with the Minnesota Pollution Control Agency (MPCA) and the Wisconsin Department of Natural Resources to develop a sampling program using the two-phased approach. In 1993, a large-scale sediment survey encompassing 30 miles of the river was conducted. Approximately 40 cores were taken for chemical analysis and toxicity testing. The results demonstrated that PAH and metals contamination was localized, with direct ties to former discharges in many areas (see map below).

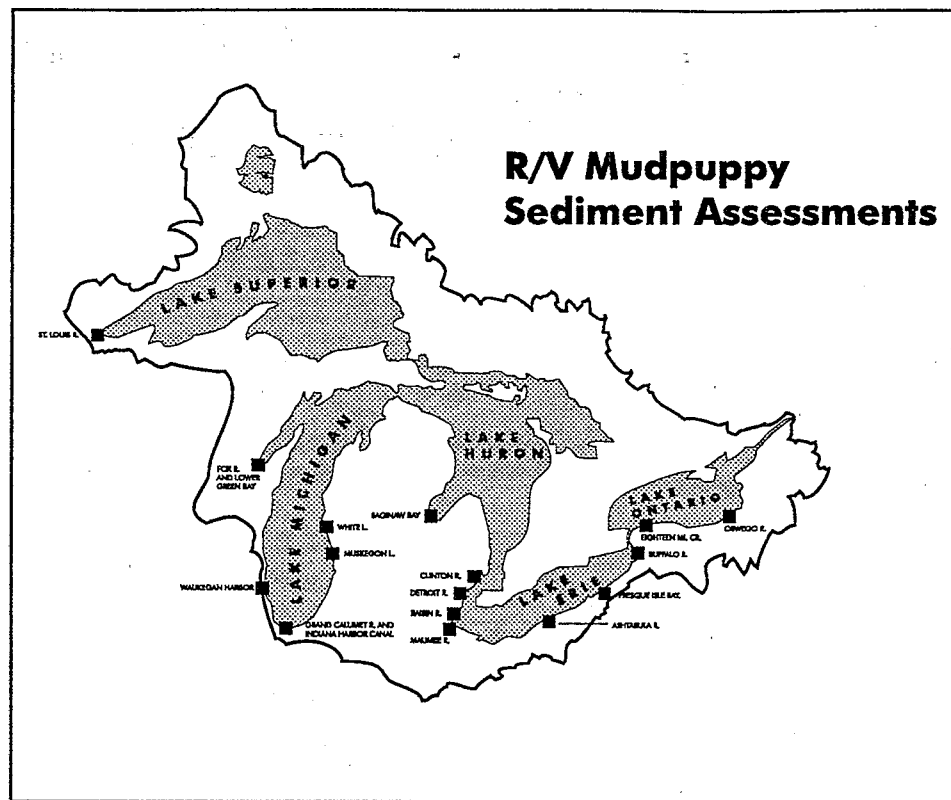
Using the results from the first phase, the most contaminated deposits were then targeted for detailed sampling in 1994. In the project's second year, six "hot spots" were sampled intensively. The MPCA is currently examining remedial options for several locations based on the information generated by the project.

In the White Lake project, GLNPO conducted sediment sampling adjacent to a tannery in conjunction with the Michigan Department of Environmental Quality (DEQ). In October 1994, the

*Mudpuppy* was used to collect sediment cores from 30 sites.

The sediment samples contained numerous animal hairs and a distinct purple color. Upon analysis of the samples, it was determined that the purple color was the result of very high chromium concentrations (upwards of 10,000 ppm).

## R/V Mudpuppy Sediment Assessments

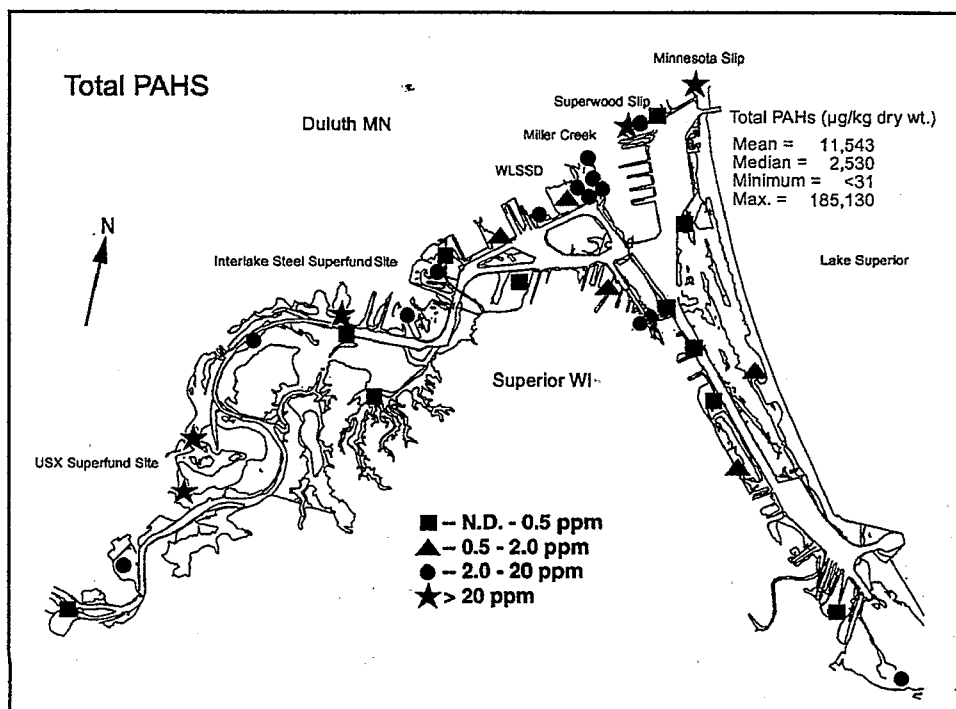


The sediments also contained elevated levels of mercury and arsenic.

GLNPO is currently working with the local community through the White Lake Public Advisory Council (PAC), Michigan DEQ, and the National Oceanic and Atmospheric Administration's Great Lakes Environmental Research Laboratory to come up with a second sampling plan focused on the biological impacts of these sediments. This phase will look at the existing benthic community, conduct toxicity tests, and perform bioaccumulation experiments. After this work is completed, informed decisions can be made in the selection of remedial options.

There is still much sediment assessment and characterization work to be done in the Great Lakes basin. With appropriate budgetary support, GLNPO intends to provide the staff support and the R/V *Mudpuppy* services that are critical to the identification and subsequent remediation of contaminated sediment sites throughout the basin.

For more information contact Marc Tuchman, GLNPO, at (312) 353-1369.



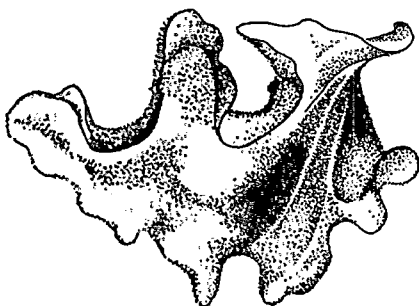
# ORD Activities

## Narragansett

### Sea Lettuce Removes Ammonia From Marine Waters and Sediments

Recent ORD laboratory experiments have revealed a new technique for addressing ammonia toxicity, a concern in many marine sediments. The results show that sea lettuce, *Ulva lactuca*, removes ammonia from both marine waters and sediments.

*Ulva*, a rooted macrophyte with a cosmopolitan distribution, reduced ammonia in water-only exposures from 75 mg/l to 5 mg/l within 8 hours. In addition, the same treatment reduced amphipod mortality from 75 percent to 20 percent. For static bedded sediments, *Ulva* reduced interstitial water ammonia concentrations from 60 mg/l to approximately 20 mg/l while overlying water concentrations of ammonia remained at less than 1 mg/l throughout the experiment.



*Ulva lactuca*

To determine possible interferences and limitations of using *Ulva* as an ammonia removal method, ORD performed spiking experiments with organics and metals. Along with efficiently removing ammonia, *Ulva* took up less than 10 percent of five different metals; however, it did remove up to 60 percent of organics. For more information on removing ammonia using *Ulva*, contact Kay Ho, AED, (401) 782-3196.

### Sediment Homogenization Alters Interstitial Water Geochemistry

Mechanically homogenizing sediment samples before distributing them to replicates or performing analyses is a common practice in many sediment toxicity testing and chemistry protocols (e.g., ASTM, USACE, U.S. EPA). This ensures that samples are well mixed so that sediment-related variability is distributed equally across replicates.

Preliminary studies at the U.S. EPA Atlantic Ecology Division laboratory demonstrate that homogenization also produces some unintentional effects, such as altering the geochemistry of PCBs in sediment interstitial waters. Specifically, there is a significant increase, generally by a factor of two, in PCB concentrations in interstitial waters. The data suggest that sediment homogenization may have unexpected consequences when attempting to determine the bioavailability of sediment-associated contaminants, especially if sediment interstitial waters are assumed to be a primary exposure route. For more information, contact Rob Burgess at (401) 782-3106.

### Four New Virginian Province EMAP-Estuarines Documents Now Available

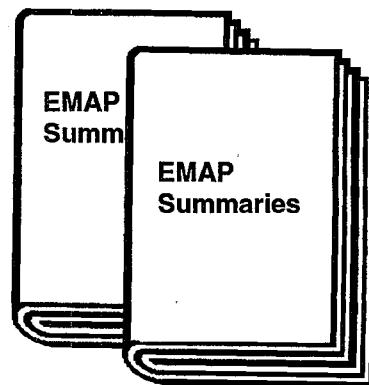
Statistical summaries for the EMAP Virginian Province are now available for 1992 and 1990-1993. *EMAP-Virginian Province: 1992* (EPA/620/R-94/019, July 1994) contains results from a single year of monitoring for indicators of the ecological condition of bays and estuaries. The summary includes monitoring data collected during July, August, and September of 1992 from 126 probability-based stations, from Cape Cod, Massachusetts, to Cape Henry, Virginia. *EMAP-Virginian Province: 1990-1993* (EPA/620/R-94/026, June 1995) includes data from the

first 4-year cycle of field monitoring collected each year during July, August, and September from 425 stations within the Virginian Province. Indicators monitored include water quality (temperature, salinity, water clarity, and dissolved oxygen concentration), sediment contamination, sediment toxicity, benthic community structure, fish community structure, and fish gross external pathology.

*The EMAP-Virginian Province Quality Assurance Report: 1990-1993* (EPA/620/R-94/007, September 1995) is also available. This report documents activities conducted in conjunction with sampling performed by EMAP-Estuaries in the Virginian Province from 1990 to 1993. The report discusses the results of QA activities by indicator, data qualifier flags, data quality, and (where appropriate) lessons learned and changes or solutions proposed to improve data quality.

In addition, the *EMAP-Estuaries Laboratory Methods Manual Volume 1: Biological and Physical Analyses* (EPA/620/R-95/008, August 1995) has also been released. This document replaces the previous *EMAP-Estuaries Laboratory Methods Manual* (referenced as EPA, 1993 or Klemm et al., 1993), which was never officially released other than in draft form. Volume 1 of the new manual contains procedures for biological and physical analyses of EMAP samples. Volume 2 will present methods for the chemical analyses of sediments and tissues.

For copies of these documents, contact Darryl Keith, AED, (401) 782-3135.



## Duluth

### New Method for Determining Growth of Midge Larvae in Sediment Tests

Research at ORD-Duluth has shown that the particle size and organic content of sediments can confound the measurement of growth in sediment tests with the midge, *Chironomus tentans*. When larvae are weighed at the end of the test, the contents of the digestive tract are included in the weight measurement. Research has shown that the size of the sediment particles and the organic content of the sediment influences the relative weight of the gut contents and can thereby bias the measurement of weight. To circumvent this difficulty, measurement ash-free dry weight has been adopted instead of simple dry weight measurement used previously. This procedural change eliminated sediment particles in the gut from the weight calculation and has been shown to reduce variability over other methods. For more information contact Gary Ankley, ORD-Duluth, at (218) 720-5603.

### Toxicity Identification Evaluation Methods for Solid-Phase Sediment Testing Under Development

Identifying the specific chemicals causing sediment toxicity can be a critical step in defining appropriate management options for contaminated sediments. Previous sediment TIE guidance has focused on the use of pore water testing. Researchers at ORD-Duluth and ORD-Narragansett, in collaboration with researchers at USGS in Columbia, Missouri, are now developing TIE procedures that can be used for solid-phase sediment tests. Target chemicals for these TIE methods include ammonia, cationic metals, and nonpolar organic compounds. Supplemental guidance on sediment TIE should be available within a year. For more information contact Gary Ankley, ORD-Duluth, at (218) 720-5603.

## NOAA

### NOAA Releases Report on Sediment Toxicity in the Hudson-Raritan Estuary

The National Oceanic and Atmospheric Administration recently released its latest report on the toxicity of sediments in selected estuaries of the United States. A cooperative effort of NOAA, EPA Region 2, the New York District of the Army Corps of Engineers, Science Applications International Corporation, the National Marine Fisheries Service, the National Biological Service, and Battelle Ocean Sciences, the report focuses on a survey of the Hudson River/Raritan Bay Estuary of New York and New Jersey.

Performed by the National Status and Trends Program, the survey was conducted as a part of NOAA's bioeffects assessments. Samples collected throughout the entire study area in the first phase of the survey were tested in four laboratory bioassays.

Additional samples collected in the Newark Bay/Passaic River/Hackensack River area were tested with only one bioassay.

The survey identified the incidence and severity of toxicity in the different test samples. Toxicity was most severe in samples taken from the East River, the lower Passaic River, and Arthur Kill. The survey also determined spatial patterns in toxicity for each individual test and all tests combined, and the report provides estimates of the

spatial extent of toxicity in both kilometers and percent of total area.

The survey also determined relationships between toxicity and bulk sediment chemistry for samples collected in both phases. During the first phase, extremely high PAH concentrations appeared to make a substantial contribution to toxicity in the samples from the vicinity of the East River. However, in the second phase, mixtures of chlorinated organic hydrocarbons, including dioxins, furans, PCBs, and pesticides, were associated with toxicity in samples in the vicinity of the lower Passaic River.

Copies of the report titled *Magnitude and Extent of Sediment Toxicity in the Hudson-Raritan Estuary*, NOAA Technical Memorandum NOS ORCA 88, are available from U.S. NOAA/ORCA, SSMC4, 1305 East-West Hwy., Silver Spring, MD 20910, (301) 713-3034.

## Creature Feature

I can stay curled up like this for years until the next rainy season when I can get a "breath" of water. What am I? Answer on p. 11.



### **ASTM Symposium in Orlando, Florida**

ASTM will host its Sixth Symposium on Environmental Toxicology and Risk Assessment in Orlando, Florida, at the Omni Rosen, April 14-18, 1996. This is the 23rd symposium sponsored by ASTM Committee E47 on biological effects and environmental fate.

A total of 75 platform presentations and a poster session are planned for the symposium. The focus of this year's meeting is the use of modeling in developing risk assessments for a variety of situations, including human health assessments, specific site assessments, and ecosystem-level assessments. In addition to modeling and risk assessment, topics of interest include the development and use of biomarkers and aquatic and sediment toxicity assessments and issues for fish, invertebrates, and plants. The plenary session will focus on appropriate application and documentation for Environmental Risk Assessments necessary to define the boundaries between these and other types of environmental or hazard assessments.

Contact Jim Dwyer (NBS, Columbia, MO; (513) 876-1894; e-mail [jim\\_dwyer@nbs.gov](mailto:jim_dwyer@nbs.gov)) for more information.

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### **ASTM Committee E47 to Hold Subcommittee Meetings on Standards Development**

In addition to the symposium, 13 subcommittees within ASTM Committee E47 will meet during the week of April 14th in Orlando, FL to discuss development of ASTM standard methods. These E47 subcommittees include Aquatic Toxicology (E47.01), Terminology (E47.02), Sediment Toxicology (E47.03), Wildlife Toxicology (E47.04), Quality Assurance (E47.05), Environmental Fate (E47.06), Biostatistics (47.07), Biological Field Methods (E47.08), Biomarkers (E47.09), USA TAG to TSO TC 147.SC5 (E47.10), Plant Toxicology (E47.11), Behavioral Toxicology (E47.12), and Risk Assessment (E47.13).

Contact Susan Canning at (610) 832-9714 (e-mail [scanning@local.astm.org](mailto:scanning@local.astm.org)) for more information.

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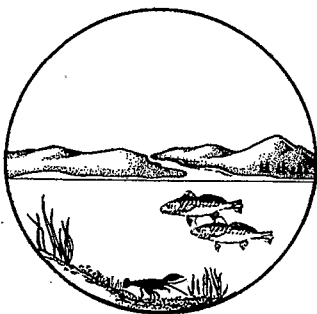
### **Meeting to Explore a Potential Role for ASTM in Risk Communication and Risk Management**

A meeting is planned on April 18, 1996, following the ASTM Symposium in Orlando at the Omni Rosen to discuss ASTM's potential role in dealing with risk communication and management. Participants from ASTM Committees E47, E50, and E51 will be asked to provide input. Interested persons should contact Clifford Duke (CommonSense Environmental, Inc., Cincinnati, OH; (513) 985-9229; e-mail [73473.1450@compuserve.com](mailto:73473.1450@compuserve.com)) for more information.

# Announcements

## Come See Us on the Internet!

CS News can be downloaded on the internet through EPA's Office of Science and Technology's home page. The address is: <http://www.epa.gov/OW/OST>. Past issues of CS News can also be downloaded in the publications section of the home page.



## National Sediment Bioaccumulation Conference is Back On!

The National Sediment Bioaccumulation Conference has been officially rescheduled for September 11-13, 1996 in Bethesda, Maryland. The format and agenda will be identical to the original conference format, pending availability of the speakers. If you previously registered for the conference, you will automatically receive a new registration form. **YOU MUST RE-REGISTER.**

Due to the overwhelming response we received earlier, participants are encouraged to register early. For more information on conference registration, contact Charlie MacPherson or Melissa Bowen, Tetra Tech, at (703) 385-6000.

## Short Course Offered

A short course on Water Quality/Sediment Quality Evaluation - Sediment Quality Criteria is being offered in Seattle, Washington, on April 22-24, 1996. Dr. G. Fred Lee will lead the course. Dr. Lee has more than 35 years of experience in water and sediment quality issues. The cost for the course is:

45-day Advance:	\$720
Gov't/Student:	\$810
Standard:	\$900

For more information contact E3, Environmental Education Enterprises at (916) 753-9630.

Creature Feature answer: The African lungfish.



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