



Number 3
April 1991



Contaminated Sediments News

Options for EPA Sediment Strategy to be Picked in April

In 1989, EPA established a Sediment Steering Committee to coordinate sediment activities among the many Headquarter Offices with authority to address sediment issues and the ten Regional Offices. The Steering Committee is chaired by the Assistant Administrator for Water; its members include Deputy Assistant Administrators, Office Directors and the ten Deputy Regional Administrators.

In January 1990, the Sediment Steering committee decided to prepare an Agency-wide Sediment Management Strategy. The Steering Committee formed four workgroups (Assessment and Identification of Risk, Prevention, Remediation, and Management of Dredged Material) to draft options for the strategy. Since

February 1990, 85 staff have worked on the four workgroups and have:

- prepared three drafts of each of fourteen issue papers (February-August 1990);
- briefed senior managers including EPA Deputy Administrator Habicht (September-December 1990); and
- presented options for a strategy to other Federal agencies and ten States (January 1991).

In March and April 1991, Senior managers were briefed on the views of Federal agencies and States. On May 1, the Steering Committee will meet to select preliminary options for the strategy. In June, a draft strategy will be presented to industry and environmental groups for review.

Contaminated Sediment Assessment Methods Workshop

A Contaminated Sediment Assessment Methods Workshop will be held in Narragansett, RI on May 6-8, 1991. These annual workshops, sponsored by EPA's Office of Water, are intended to further the development of sediment criteria and sediment assessment methods through the exchange of ideas and information. This workshop is open to anyone who wishes to attend. If you are interested in presenting information or have questions on the purpose and goals of the workshop please contact Chris Zarba at (202)475-7326. If you would like to be placed on a mailing list to receive all pertinent information on this workshop call 1-800-726-4853.

Sediment Activities Around the Country

EPA Headquarters

SUPERFUND

An evaluation of 486 FY 82 through third-quarter FY 89 Superfund site Records of Decision (RODs) was undertaken to obtain site-specific information regarding sediment contamination, response action methods, and performance goals. (A ROD is a document which reflects extensive site investigation data and preliminary decisions on the type and extent of response action planned). Based on this review, 69 sites identified contaminated sediments in the (continued on p. 2).

Contaminated Sediment Activities Timeline

Mar 18-21, 1991. Fifth Federal Interagency Sedimentation Conference. *Practical Sediment Management Issues and Answers.* Federal Interagency Subcommittee on Sedimentation. Las Vegas, NV.

Apr 7-10, 1991. Founding Conference of the Society of Environmental Toxicology and Chemistry-Europe. *Environmental Sciences and Sustainable Development.* University of Sheffield, England.

Apr 17-18, 1991. American Society of Testing Materials Sediment Toxicology Subcommittee Meeting. Atlantic City, NJ.

May 6-8, 1991. Contaminated Sediment Assessment Methods Workshop. U.S. EPA, Office of Water. Narragansett, RI.

May 19-23, 1991. Annual Conference of the Society for Ecological Restoration. Orlando, FL.

Jun 2-7, 1991. Annual Conference of the International Association for Great Lakes Research. *Sessions on contaminated sediment and ARCs projects.* SUNY Buffalo, NY.

Jun 18-19, 1991. Remedial Approaches for Sites with Contaminated Sediments: Seminar Series. U.S. EPA. Atlanta, GA. Other dates listed on p. 2.

Sep 30-Oct 3, 1991. 18th Annual Aquatic Toxicity Workshop. *Ecological Perspectives on Aquatic Toxicology.* Government Conference Centre. Ottawa, Canada.

CS News is produced by EPA-OWRS to exchange relevant information on contaminated sediments and to increase communication among interested parties. To obtain copies of this report or to contribute information, contact Mike Kravitz, EPA-HQ at (202)475-8085.



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ROD. Of these 69 sites, remediation was selected for 49 sites. The types of remedial action selected were categorized into two subsets consisting of excavation followed by treatment (30 sites) or excavation and containment (19 sites). The treatment technologies most commonly employed were incineration and solidification/stabilization.

Of 67 sites where specific sediment contaminants of concern are provided, 45 sites list metals as contaminants of concern; the most frequently occurring ones are lead, chromium, cadmium, arsenic, and zinc. Other contaminant groups frequently identified are volatile organic compounds, PAHs and PCBs. Cleanup goals varied between sites dependent upon applicable or relevant and appropriate requirements (ARARs) and risk assessments. For more information, contact Carol Bass, OERR, at (202)475-9752.

OFFICE OF PESTICIDE PROGRAMS (OPP)

OPP is currently developing a sediment bioassay for the freshwater mollusk, *Anodonta imbecilis*. A grant has been given to the University of the District of Columbia to research the uptake of sediment-bound pesticides by freshwater mollusks. This study will be phased, initially using the pesticide atrazine on *A. imbecilis* and gradually expanding to other pesticides and organisms. The information will be used to make regulatory decisions. For more information contact Tom Bailey, OPP, at (703)557-1666.

OFFICE OF WATER ENFORCEMENT AND PERMITS (OWEP)

OWEP, in cooperation with the Environmental Research Laboratory at Duluth and other ORD and OW offices, has developed a draft guidance document designed to enable regulatory authorities to better identify and, where necessary, control bioconcentratable organic compounds that may be present in effluents, nonpoint source runoff, receiving waters, bedded sediments, dredged material, and the tissues of aquatic organisms. Availability of the draft document entitled, "*Assessment and Control of*

Bioconcentratable Contaminants in Surface Waters" is scheduled to be announced in the Federal Register in April 1991.

The approach outlined in the draft guidance is designed to identify and determine the concentration of specific organic compounds in complex mixtures, and predict their concentrations in exposed organisms. The approach is designed to focus on those compounds that can be reliably predicted to accumulate in fish and shellfish so that regulatory authorities may make more informed decisions with regard to controlling these substances.

Field validation of the bioconcentration evaluation protocol is underway. For more information contact Rob Wood, OWEP, at (202)475-9534.

OFFICE OF WATER REGULATIONS AND STANDARDS/CRITERIA AND STANDARDS DIVISION

National Sediment Quality Criteria

Draft sediment criteria documents for phenanthrene, acenaphthene, dieldrin, endrin, fluoranthene and DDT are under development and final "check" bioassays are being conducted for each contaminant. Following internal EPA reviews, the draft criteria documents will be published in the Federal Register in August 1991 for a 60 day public comment period. Included in the public review process will be the Sediment Quality Criteria Guidelines (for non-ionic organic contaminants). This document will articulate the technical basis behind the sediment criteria.

Acid Volatile Sulfide Identified as Key Factor in Determining the Bioavailability of Metals Bound to Sediments

Recent work on the development of sediment criteria for metal contaminants strongly suggests that measurements of the acid volatile sulfide (AVS) content of sediments is extremely valuable in assessing the toxicity of divalent metals bound to sediments. It is expected that AVS normalization will provide the basis for development of sediment criteria for metal contami-

nants in anoxic sediments. Persons needing technical assistance on sediment AVS sampling and analysis and preferred methodologies for measuring AVS can contact Chris Zarba, CSD, at (202)475-7326.

National Estuary Program

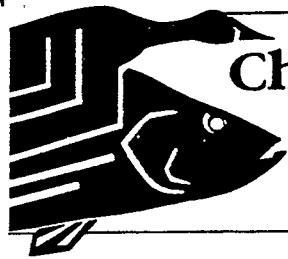
NEW YORK-NEW JERSEY HARBOR ESTUARY

An initial toxics categorization is near completion for the NY-NJ Harbor Estuary Program as part of its characterization process. The list of toxics of concern provided in this report is designed to serve as a basis for the formulation of a Comprehensive Conservation Management Plan for the estuary. Ambient water column and edible fish flesh concentrations of toxics were compared against existing water quality and fish tissue standards and criteria for exceedances. Bulk sediment chemical concentrations in the estuary were also compiled and (continued on p. 4)

Remedial Approaches for Sites with Contaminated Sediments: Seminar Series

Ed Barth of ORD's Center for Environmental Research Information in Cincinnati, OH, is organizing a one and a half day seminar series to disseminate technical information available from the EPA, the Corps of Engineers, and the international community for dredging, disposing and treating contaminated sediments. The intended audience is Superfund remedial project managers, permit writers, contracting engineers, and other individuals involved with small-scale sediment problems. A handbook is being developed to serve as a working document during the seminar series, as well as a practical resource for attendees to use at work. Other pertinent handbooks will also be distributed. There is no fee for attending the seminars; dates and locations are June 18-19, 1991, Atlanta, GA; June 20-21, Philadelphia, PA; July 10-11, San Francisco, CA; July 30-31, Chicago, IL; August 1-2, Kansas City, MO. To register, call Equity Associates at (615)688-0999.

Focus:



Chesapeake Bay Program

The Chesapeake Bay Program

The Chesapeake Bay Program was the first estuary to be entered into the National Estuary Program. During the 1975-1983 research phase of the Chesapeake Bay Program, only a few studies focused on contaminated sediments. These were mainly baywide sampling efforts to map levels of sediment contaminants through chemical "fingerprinting" techniques developed at Virginia Institute of Marine Science. As the Program entered its Implementation Phase in 1984, toxics took a back seat to nutrient reduction and resource management programs. However, some basic state and federal sediment toxicant monitoring programs were initiated to provide a foundation for more comprehensive assessments. With the signing of the 1987 Chesapeake Bay Agreement and the development of the Basinwide Toxics Reduction Strategy in 1988, toxics resurfaced as a major focus of the Program. Further investigations into contaminated sediments within Chesapeake Bay, which are described in the following series of articles, have since been initiated. For more information on the Chesapeake Bay Program, contact Richard Batiuk, EPACBLO, at (301)267-0061.

Sediment Contaminant Monitoring

Routine monitoring of surficial sediments for metal and organic contaminants is seen as a reliable means of obtaining regional contaminant distributions in the Chesapeake Bay and an effective tool to document reductions in sediment contaminants.

Annual monitoring of Chesapeake Bay mainstem sediment was conducted by the Maryland Department of the Environment (MDE) at 22 stations in 1984

and 1985; funds are being sought to reinstitute this program for 1991 and 1992. In 1986, MDE initiated an identical program to monitor sediment metals and organics in the Maryland bay tributaries at over 40 stations. In

Virginia, mainstem sediments were monitored at 8 stations in 1984, 1985, and 1986 by the Virginia Water Control Board (VWCB). In 1986, 28 stations in Virginia's bay tributaries were monitored for metals and organics. For more information, contact Richard Eskin, MDE, at (301)631-3681 and Debra Trent, VWCB, at (804)367-0073.

Ambient Toxicity Assessment Pilot Program

In 1990, the EPA Chesapeake Bay Program and the Maryland Department of Natural Resources funded a 2-year program to broadly assess ambient toxicity of living resources habitats for the purpose of identifying defined regions where ambient toxicity levels warrant further investigations of effects on living resources. Sediment toxicity assessments is one of the three components of the pilot program, the others being water column toxicity and biomarkers. The tiered battery of test methods are being applied to heavily polluted areas (Baltimore Harbor and Elizabeth River), critical habitat areas with potential toxic conditions (Potomac River) and a "control" site (Wye River). Adult and juvenile *Streblospio benedicti* (polychaete worm) survival and growth test; juvenile *Palaemonetes pugio* (grass shrimp) survival and growth test; *Lepidactylus dytiscus* (amphipod) survival, growth and reburial test; and *Hyalella azteca* (amphipod) survival and growth test will all be conducted as part of the ambient program. For copies of the workplan or reports as they become available, contact Ray Alden, Old Dominion University in Norfolk, VA at (804)683-4195.

MDE is participating in this ambient toxicity assessment pilot program by conducting *Leptocheirus plumulosus* (amphipod) and *H. azteca* survival

tests. University of the District of Columbia (UDC) investigators are also participating, conducting a series of recently developed bivalve larvae sediment toxicity tests. For more information, contact Eli Reinharz, MDE, at (301)631-3797 and Harriette Phelps, UDC, at (301)474-0471.

Estuarine Sediment Bioassay Development

Through joint funding from the EPA Chesapeake Bay Program, and the EPA Office of Puget Sound, EPA Environmental Research Laboratory-Newport investigators are developing cultures for *Leptocheirus plumulosus*, *Lepidactylus dytiscus*, *Ampelisca abdita*, *Monoculodes edwardsi* and *Corophium lacustre* from organisms originally collected in Chesapeake Bay. From these cultures, two organisms, *L. plumulosus* and *A. abdita*, have been selected for further acute and chronic toxicity test procedure development. Once the test procedures have been validated in the laboratory, the procedures will be field validated with sediment collected from sites in Chesapeake Bay representing suspected contaminated and uncontaminated sediments. The results of this work combined with that of others will ensure sediment bioassay techniques are available that can cover the full range of salinities in estuarine systems. For more information, contact Rick Swartz, ERL-Newport, at (503)867-4031 or Ted DeWitt, Oregon State University, at (503)867-0260.

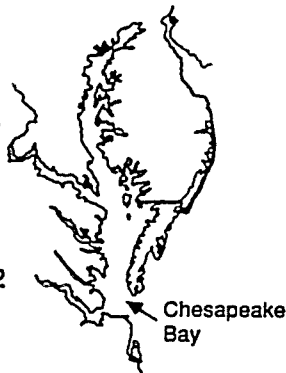
In close coordination with ERL-Newport investigators, there are several concurrent bioassay development efforts ongoing in the Chesapeake Bay area. Researchers at Old Dominion University (ODU) are refining chronic test procedures for *L. dytiscus* and *Streblospio benedicti*. Maryland Department of Environment (MDE) is developing a partial-lifecycle chronic test for *L. plumulosus*, while University of the District of Columbia (UDC) investigators are finalizing *Mya arenaria*, *Corbicula fluminea* and *Crassostrea gigas* chronic test procedures. For more information, contact Ray Alden, ODU, at (804)683-4195; Eli Reinharz, MDE, at (301)631-3797; (continued on p. 4)

and Harriette Phelps. UDC, at (301)474-0471.

NOAA Involvement in the Chesapeake Bay

As part of NOAA's National Status and Trends (NS&T) Program, 17 monitoring stations are sampled throughout Chesapeake Bay to collect information on sediments, bivalves, and fishes.

The Benthic Surveillance Project has collected data at 5 sites since 1984 and the Mussel Watch Project added 12 stations in 1986. In FY 92 NOAA is planning to study historical trends in Bay pollution using sediment cores. For more information contact Tom O'Connor, NS&T Program, at (301)443-8655.



GALVESTON BAY PROGRAM

Members from the Galveston Bay Program are participating on an interagency coordinating team to address the problem of dredging and dredged material disposal in Galveston Bay. This team will determine possible disposal sites and alternatives for dredged material. For more information contact Frank Shipley, Galveston Bay Program, at (713)283-3950.

SAN FRANCISCO ESTUARY PROJECT

The San Francisco Estuary Project (SFEP) has initiated a "dredging re-use demonstration project" to promote the beneficial use of dredged material in the San Francisco Estuary by 1) identifying and documenting the most feasible sites for beneficial use projects; 2) demonstrating the feasibility of using dredged spoils for possible wetland habitat creation, levee maintenance and/or erosion control; and 3) generating real-life information regarding costs, monitoring and construction requirements for such projects.

Recently, SFEP has produced two documents relating to the subjects of dredging and pollutants in the San Francisco Estuary: 1) *Status and Trends Report on Dredging and Waterway Modification in the San Francisco Estuary*, and 2) *Status and Trends Report on Pollutants in the San Francisco Estuary*. To receive a copy of these documents, or for more information on the dredging re-use demonstration project, contact Mike Monroe, SFEP, at (415)464-7993.

SANTA MONICA BAY RESTORATION PROJECT

The Santa Monica Bay Restoration Project (SMBRP) has initiated a study of physical and chemical characteristics of contaminated sediments off the Palos Verdes Peninsula. A geophysical survey served to assess sediment surface and underlying structure. This information will ultimately lead to mitigation alternatives. For more information contact Rainer Hoenicke, SMBRP, at (213)266-7500.

PUGET SOUND ESTUARY PROGRAM

The Puget Sound Estuary Program has recently published a report highlighting the accomplishments of the Puget Sound Urban Bay Action Program, entitled "*The Urban Bay Action Program: Action Team Accomplishments 1985-1990*". This program began in 1985 with funding from EPA to develop and carry out action plans for seven urban harbors and embayments around the Sound.

The goals of the program are to protect these ecosystems from further degradation from man-made toxics (and other water quality problems as appropriate), to restore degraded areas and to protect beneficial uses. Contaminated sediments is one of the major focuses. This program has already been immensely successful in enforcement efforts and remedial actions, and can serve as a useful model for geographically targeted watershed protection efforts. EPA has also produced a report which describes the basic approach and philosophy of the program entitled "*The Urban Bay Action Program Approach: A Focused Toxics Control Strategy*", document number EPA 910/9-90-002. For more information contact Jack Gakstatter, Region X, at (206)553-0966.

(continued from p. 2)

surficial sediment concentration gradient maps are being produced for this effort.

Contact Eric Stern, Region II, at (212)264-5283, if you have any research information or available data sets on water column, fish tissue, or sediments for the New York-New Jersey Harbor Estuary.

NARRAGANSETT BAY ESTUARY PROGRAM

One of the priority concerns for the Narragansett Bay Estuary Program is the presence of historic and continuing contamination of metals and organics from both point and non-point sources in the estuary. In order to rank the most contaminated sites in Narragansett Bay, sediment quality surveys are being conducted to determine the benthic community at several sites as well as the chemistry of surface sediments. Camera surveys are also being used to measure the redox potential to estimate biological activity at the sites. For more information contact Katrina Kipp, Region I, at (617)565-3523.

ORD Activities

ORD-DULUTH

Further research continues on the development of TIE (toxicity identification evaluation) methodologies for sediments. As mentioned in the last newsletter, TIEs are used to identify specific compounds responsible for toxicity in acutely toxic sediments. Ongoing TIE research includes the following:

- Investigating benthic species for testing as opposed to upper water column organisms;
- Evaluating the suitability of pore water as a test fraction; and
- Developing alternative analytical methodologies for sediment TIEs.

The TIE methodology will be useful for (continued on p. 5)

making permit decisions for NPDES permits, aiding managers in making decisions about remediation options, and lending insight concerning dredged material disposal options.

Other ORD-Duluth activities include:

- Conducting further metal criteria work regarding AVS concentrations in sediments using both laboratory and field testing. They are currently working at freshwater sites contaminated with copper.
- Initiating an effort to develop food chain models. These models will be used as a basis for sediment criteria development for bioaccumulative metals and the evaluation of NPDES permits.
- Continuing field validation studies for the EqP approach for nonpolar organics. Scientists are currently working at a site near Huntsville, AL, contaminated with DDT.
- Initiating mesocosm studies with the pesticide dieldrin, to validate the EqP approach for deriving sediment quality criteria.
- Working with the Great Lakes Region V to assess dredged material to assist in disposal decisions.
- Continuing development of standardized toxicity tests with suspended and solid phase sediments, as well as aqueous fractions of sediments (elutriate, pore water).

For more information contact Gary Ankley, ORD-Duluth, at (218)720-5603.

ERL-GULF BREEZE

ERL-Gulf Breeze has been working with synthetic contaminated sediments to determine the effects on estuarine and freshwater vascular plants. Using substrates with varying concentrations of organic matter, contaminant effects on survival and growth of seedlings was studied. The effects of twelve industrial and municipal effluents as well as herbicides on vascular plants were also examined. Prior to these experiments, several plant types and animals were studied to determine if there would be any changes in

reproduction, growth, and ecdysis as a result of being in artificial sediments. All organisms responded positively to this environment. These findings are contained in publications by Walsh, et al., listed under the Relevant Literature section of this newsletter.

ERL-ATHENS

Scientists at ERL-Athens have been working with the EPA Office of Water Regulations and Standards to develop sediment quality criteria for the purpose of managing contaminated sediments in the nation's waterways. One approach used in the development of sediment quality criteria is the equilibrium-partitioning (EqP) approach. This approach is based on assessing the risk associated with porewater exposure of sedimentary contaminants to the benthic community. ERL-Athens has produced a report, "*A Geochemical Assessment of Potential Porewater Exposure to EPA-Regulated Metal and Ionizable Organic Contaminants for Use in Developing Equilibrium-Partitioning Sediment Quality Criteria*" which assesses the ability to predict porewater concentrations of various metals and organic compounds using geochemical-speciation modeling. For more information contact Nick Loux, ERL-Athens, at (404)546-3174.

ORD-CINCINNATI

On June 13-14, 1990, EPA's Risk Reduction Engineering Laboratory (RREL) sponsored a "Workshop on Innovative Technologies for the Treatment of Contaminated Sediments". Its purpose was to provide interested parties with current information on innovative treatment technologies for contaminated sediments, and to provide RREL staff the opportunity to increase their understanding of the problems associated with the management of contaminated sediments treatment at various locations throughout the United States.

The workshop was organized into six sessions related to policy and technology development: Setting the Scene; Dredged Materials Removal, Pretreatment, and Disposal; Extraction Technologies; Biological/Chemical Treat-

ment Technologies; Other Technologies of Interest; and an open discussion on Future Direction for Contaminated Sediments Treatment.

A full report highlighting the workshop is available through the National Technical Information Service and is listed under the Relevant Literature section of this newsletter. For more information contact Jon Herrmann, ORD-Cincinnati, at (513)569-7839.

Regional Programs

REGION I

Region I and the New England Division, Corps of Engineers, are currently updating the regional dredged material testing manual developed in 1989. As reported in the August 1989 issue of "Contaminated Sediments News", this manual was developed within the framework of the national testing protocol which was issued Draft in January 1990. When the draft national manual is issued "interim" in 1991, an updated regional manual will also be issued reflecting the national guidance. Proposed changes in the regional document beyond the national guidance include methodologies for:

- Sample collection and storage;
- Modified flow-through amphipod toxicity tests; and
- Chemical analyses of marine sediments and tissues.

Region I plans to issue the revised protocol in the summer/fall of 1991. For more information contact Dave Tomey, Region I, at (617)565-4425.

The State of Connecticut is currently handling at least 3 cases where companies have been ordered to remove sediments contaminated with lead. The Upjohn Company and the International Nickel Company are removing lead-contaminated sediment from Connecticut rivers, while lead shot will be removed from land owned by DuPont in Lordship, CT. Specific cleanup objectives are now being established for each project. For more information contact Dick Mason, CT DEP, at (203)566-5903.

REGION II

Scientists in Region II are analyzing samples which were collected in October as part of a monitoring program at the New York Bight Mud Dump Site. Sediment and polychaetes were collected from thirty-nine stations and analyzed for metals, dioxin, and organochlorines. For more information contact Alex Lechich, Region II, at (212)264-1302.

Region II and the New York District of the U.S. Army Corps of Engineers are in the process of developing evaluative guidelines for the ocean disposal of dredged material contaminated with 2,3,7,8-TCDD at the 6-Mile Ocean Disposal Site. As part of this evaluation, they are determining the long-term bioavailability (180 days) of chlorinated hydrocarbons as evidenced by bioaccumulation in representative marine species. Contaminated sediment for the bioassays was collected at the Diamond-Shamrock site in the lower Passaic River, NJ. For more information contact Eric Stern, Region II, at (212)264-5283.

REGION IV

Region IV is gaining momentum in its efforts to address contaminated sediments issues. Current activities include the recent establishment of an Inter-Divisional Contaminated Sediments Workgroup to address regional concerns, whose first task is to provide input to the Agency-wide Sediment Management Strategy. The Workgroup is also creating an inventory of coastal sediment chemistry and biological effects information. Upon its completion, this database will be evaluated to determine specific locations of concern as well as areas in need of further testing. A regional Inter-agency Contaminated Sediments Task Force is also in the planning stages. For more information, contact Catherine Fox, Region IV, at (404)347-2126.

REGION V

In October 1990, Ralph R. Bauer, the Deputy Regional Administrator of Region V announced a plan to reduce the total toxic releases into the Grand

Calumet River, IN, by 50% over the next five years. The Grand Calumet is a tributary of Lake Michigan that has served as an industrial sewer since the late 1800s. Its sediments have become so saturated with contaminants that, according to Bauer, "every pound of pollutants (released) winds up in the Great Lakes".

To support the 50% toxins reduction goal, Region V is using a multi-media, geographical enforcement initiative in Northwest Indiana. On a single day last fall, the Department of Justice, on behalf of the Region, filed lawsuits against Inland Steel for violations of the CWA, CAA, RCRA and SDWA at their Indiana Harbor plant and against Bethlehem Steel for violations of RCRA and SDWA at its Burns Harbor plant. A third suit was also filed against Federated Metals, a smelting facility, to remedy releases of hazardous wastes into a lake and wetland. These lawsuits seek substantial penalties and cleanup, including sediment contaminant cleanup where necessary.

In addition to these filings, the Region also announced the settlement of CWA litigation against USX Gary which requires the steel giant to spend \$25 million to improve water pollution controls, \$7.5 million to conduct a sediment contamination investigation and cleanup of five miles of the Grand Calumet, and the payment of a \$1.6 million penalty. For more information contact Michael Mikulka, Region V, at (312)886-6760.

REGION IX

The California State Water Resources Control Board (SWRCB) recently sponsored a technical workshop on Sediment Quality Assessment and the development of sediment quality objectives for bays and estuaries of California. At the February 6-8 workshop, experts from around the country outlined overall assessment strategies and identified critical areas of research and development needed to support sediment quality objectives. A summary of workshop conclusions should be available in April 1991. Contact Stefan Lorenzato, SWRCB, at (916)322-3048 for a copy.

In June 1990, the SWRCB published a report entitled, "Evaluation of the AET Approach for Assessing Contamination of Marine Sediments in California". This report describes recent work devoted to determining the feasibility of developing California Sediment Quality Assessment values using the Apparent Effects Threshold (AET) method that has been previously used in the Puget Sound area. For more information contact Brian Melzian, Region IX, at (401)782-3163.

REGION X

The Puget Sound Water Quality Management Plan (Plan) is a comprehensive action plan addressing a range of problems affecting Puget Sound's water quality. The Plan called for the development of a sediment management program to address the identification and handling of contaminated sediments in Puget Sound. The program includes provisions for improving controls for sources of sediment contamination, a decision process for conducting sediment cleanup, requirements for dredging and disposal of sediments and sediment quality standards.

In March of 1991 the Washington Department of Ecology (Ecology) adopted a final rule known as, "Sediment Management Standards". This rule contains chemical and biological sediment quality standards that define how sediment contamination is measured and establishes a goal for the quality of sediments throughout the State. The rule details how the sediment quality standards will be applied in source control decisions (e.g., NPDES permits), including provisions for establishment of "sediment impact zones" (dilution zones) in those areas where technical feasibility or cost prevent permitted discharges from meeting the sediment standards. The rule also establishes a cleanup decision process for investigating and conducting contaminated sediment cleanup actions, including chemical and biological sediment cleanup standards.

Ecology is also drafting a new state rule known as the Dredged Material (continued on p. 7)

Management Standards. These standards will address sediment testing; site designation; dredging, material transport, and disposal; and site monitoring for confined disposal in three environments (upland, nearshore, and aquatic). The rule is scheduled for adoption in 1991.

Great Lakes National Program Office (GLNPO)

GLNPO established the Assessment and Remediation of Contaminated Sediments (ARCS) Program for the development and testing of assessment and remedial action alternatives for contaminated sediments. GLNPO and the Lake Michigan Federation are producing a series of Fact Sheets on the ARCS Program. To receive these Fact Sheets contact Glenda Daniel, Lake Michigan Federation, at (312)939-0838.

Five sites were listed as requiring priority consideration in the Great Lakes region. Information summaries on each of these sites have been produced which include existing information on sediment and tissue contamination in the areas. In addition, a summary has been compiled on treatment technologies which includes a literature review and ranking of each treatment technology that could be applied to the Great Lakes sediment. For more information contact Dave Cowgill, GLNPO, at (312)353-3576.

U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers is evaluating a separation technique to allow beneficial use of marginally polluted dredged material from Duluth-Superior Harbor. In order to maintain suitable depths for commercial navigation, approximately 100,000 cubic yards of silt, sand, and clay are dredged and disposed of annually from the adjacent St. Louis Bay and Superior Bay. At Duluth-Superior Harbor the typical disposal method has been placement within the Erie Pier Confined Disposal Facility (CDF). CDFs are large diked containment areas typically placed in the water or along the shoreline near the channel

to be dredged. CDF siting requires a large parcel of property in highly developed urban areas. Siting is controversial and often has resulted in a loss of valuable wetland or shallow water habitat.

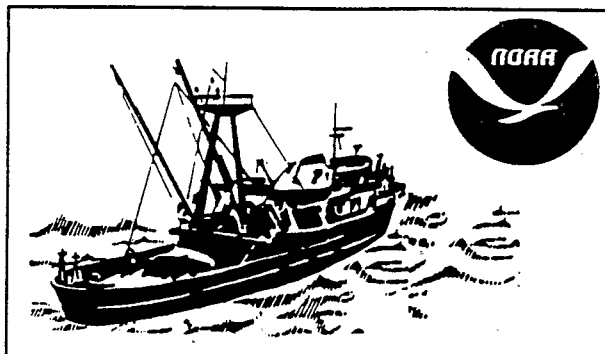
Recently, a construction firm suggested removing the sand from the dredged material to market it as fill for road construction projects. A "washing" operation was developed within the CDF; by manipulating the flow of water down a sluiceway constructed in the dredged material, the heavier sand particles settled out while the fines (and associated contaminants) were carried down into a pond area of the CDF. The sand was subsequently moved to a storage area on the CDF to dry.

Samples from the washing operation indicated that this procedure was successful in recovering coarse material. Whereas the dredged material typically contained 70% fines, the washed material being reclaimed contained 15% fines. Total organic carbon (TOC) values in the dredged material were 1-5% while the washed material contained less than 0.1% TOC. Total concentrations of nickel, lead, copper, zinc, mercury, and cadmium were reduced in the washed material as compared to the dredged material by factors of 50-90%. All measured contaminants in the washed material were below levels of concern and would be judged suitable for unrestricted disposal by the Corps.

Based on these results, the Corps will be investigating the use of this separation technique at other harbors. By extending the life of CDFs, disposal costs are reduced and dredged material is managed more effectively. For more information contact Dave Bowman, U.S. COE-Detroit, at (313)226-2223.

NOAA

As part of its National Status and Trends Program, NOAA is conducting a number of studies on sediment quality, including surveys of sediment



toxicity in selected estuaries. A survey of sediment toxicity in San Francisco Bay was completed in the late winter/early spring of 1990. Tests were performed with mussel larvae and sea urchin larvae exposed to elutriates and with the Microtox test of organic extracts from 45 sites. A number of the sites were determined to be toxic throughout the estuary. The 1990 survey data will be published in a NOAA Technical Memorandum in the spring of 1991. The report will also include the summarized results from 61 previous studies of sediment toxicity in San Francisco Bay, as well as an overview of other measures of toxicant-associated biological effects on resident fish and invertebrates.

Sediments from 39 sites in the Hudson River/Raritan Bay estuary will be tested with amphipods, bivalve larvae, and Microtox tests in the spring of 1991. Samples will be collected from Western Long Island Sound, the East River, lower Hudson River, the Kills, Newark Bay, and Raritan Bay. Data are expected to be available by late summer 1991.

A survey of the toxicity of sediments from 30 sites in Tampa Bay, FL, is scheduled to begin in June 1991. Samples will be collected in Hillsborough Bay, Old Tampa Bay, middle and lower Tampa Bay, Boca Ciega Bay and within the other subdivisions of the estuary. Toxicity tests will be conducted with amphipods exposed to solid phase sediments, Microtox tests of organic extracts, and sea urchin sperm following exposure to porewater extracts. Data should be available in the fall of 1991.

For more information contact Doug Wolfe, NOAA, at (301)443-8933 or Ed Long, NOAA, at (206)526-6338.

RELEVANT LITERATURE

- Management Plan Assessment Report for Dredged Material Management Year 1989 (PSDDA Annual Report). PSDDA 1990. *Contact Sediment Management Unit, Dept. of Ecology, Mailstop PV-11, Olympia, WA 98506.*
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- Interpretation of Metal Concentration in Estuarine Sediments of Florida Using Aluminum as a Reference Element. Schropp, S.J., F.G. Lewis, H.L. Windom, J.R. Ryan, F.C. Calder and L.C. Burney. 1990. *Estuaries 13:227-235.*
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- Status and Trends Report on Dredging and Waterway Modification in the San Francisco Estuary (SFEP, 1990). *Contact Mike Monroe at (415)464-7993.*
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- Synthetic Sediments: A Tool for Research. Walsh, G.E., D.E. Weber, L.K. Esry and M.T. Nguyen. 1991. *Proc. Fifth Federal Interagency Sedimentation Conference, March 18-21, 1991. Las Vegas, NV.*
- The Urban Bay Action Program: Action Team Accomplishments 1985-1990 (EPA 1990). *Contact Jack Gakstatter at (206)553-0966.*
- The Urban Bay Action Program Approach: A Focused Toxics Control Strategy (EPA 1990; EPA 910/9-90-002). *Contact Jack Gakstatter at (206)553-0966.*
- Toxicity Assessment of Dredged Materials: Acute and Chronic Toxicity as Determined by Bioassays and Bioaccumulation Tests. Melzian, B. 1990. *In: Proceedings of the International Seminar on the Environmental Aspects of Dredging Activities, 27 November-1 December 1989, Nantes, France. Contact Brian Melzian, Region IX, at (401)782-3163.*
- Workshop on Innovative Technologies for Treatment of Contaminated Sediments, June 13-14, 1990. Summary Report (EPA 1990; EPA/600/2-90/054). (Order No. PB90-110-134/AS. *Call 703-487-4650 to obtain a copy).*