Marine Environmental Update

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# ENVIRONMENTAL ISSUE OUTLOOK FOR 1994

The environmental outlook of the Clinton Administration and Congress for 1994 may cause radical changes to current policies and government structure. The outlook on environmental issues in the coming year includes elevation of the independent EPA to a Cabinet level program, reforming federal technological research programs, re-authorizing the Clean Water Act, preservation of additional wetlands areas, and controlling non-point pollution.

Elevating the EPA status (HR 3425) would change its contracting procedures, add new environmental justice requirements targeting enforcement for industries near low-income and minority areas and restructure the gathering of environmental statistics. The fate of this particular Cabinet bill in the House and Senate may reflect this year's legislative attitude towards environmental policy. In addition, a new effort through a greater use of industrial sectors and multimedia regulations was recently outlined by EPA Administrator, Carol M. Browner. This reorganization measure features methods to better coordinate permitting, rule making, record-keeping, and reporting. The EPA has predicted that multimedia regulations will be used more frequently in the future.

## ● ALSO IN THIS ISSUE ●

The Clinton Administration, in conjunction with Congress and the EPA, has also embraced a concept of developing a new, stronger U.S. environmental technology industry. Members of Congress and the Vice President feel the $200 billion-plus annual international environmental technology market may promote new jobs and greater profits. Consequently, members of Congress have recently introduced more than a dozen new environmental technology bills. However, Senate staff members believe that the $4 billion in federal dollars, which is being directed towards research to develop environmental technologies, lacks focus. They have stressed the need for a more concise direction by the administration on how these funds are better allocated, rather than budgeting more money towards the issue without appropriate guidance.

Another issue on the agenda is a comprehensive strategy to develop criteria for determining contaminated sediment; currently the EPA lacks a practical method. EPA will also continue to update effluent guidelines for a variety of categories and this will include multimedia regulations for a single pollutant. Moreover, the EPA plans to restructure its hazardous waste identification process and recycling schemes under the Resource Conservation and Recovery Act (RCRA).

Additional reforms are also expected in the Comprehensive Environmental Response Compensation, and Liability Act (CERCLA), Toxic Substances Control Act (TSCA), and rules for radioactive and biotechnological waste. Finally, the reauthorization of the Clean Water Act (CWA) will also be a particularly high legislative priority in 1994. The CWA is discussed in detail in the following article.

--*Environment Reporter*, Vol. 24, No. 38, January 21, 1994, pp. 1660-1686.

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## CLEAN WATER ACT REAUTHORIZATION OF 1994

The reauthorization of the Clean Water Act in 1994 will be a top priority for the congressional staff and the Clinton administration. Currently, this plan is under close scrutiny by environmentalists and bipartisan parties. However, regardless of its authorization, progress on a variety of issues, including a storm water permitting program and the wetlands reform plan will continue. Additional issues that will be addressed include: an extension of the state revolving loan fund program, which provides funds to states for water infrastructure projects now set to expire at the end of fiscal 1994; control of polluted runoff from a variety of sources encompassing storm water discharges, reductions of discharges of toxic chemicals, enhanced pollution prevention incentives, and enforcement.

The wetlands reform bill (S 1304) will be incorporated into the broader CWA reauthorization bill. The bill would reestablish the idea of "no net loss" of wetlands while enhancing the quality and viability of wetlands through long-term goals. The wetlands bill will also address water pollution issues, including non-point source pollution, highly toxic substances, and bioaccumulative chemical discharges into waters. The bill would then require states to identify polluted water bodies and develop non-point source pollution control plans. Such plans would have to be consistent with non-point source pollution control guidelines developed by EPA.

Recently, Senator Bob Graham (D-Fla) proposed a bill for the Clean Water Act which will contain a number of provisions that will substantially affect manufacturing and other related businesses. The bill (S 114) will be evaluated by the Senate Environmental and Public Works Subcommittee on Clean Water, Fisheries, and Wildlife which Senator Graham chairs.

In the bill, Graham requests that the National Academy of Sciences research substances that cause developmental effects on human and aquatic life. He called for streamlining the EPA's authority to ban discharges of highly toxic chemicals into surface waters. Furthermore, the bill promises no set-aside allocations within state revolving funds (SRF) for watershed planning. Eliminating these allocations is a significant change from previous bills for which these allocations were characteristic. The bill would also authorize $2.5 billion each year for states and communities to build appropriate water treatment facilities in compliance with regulation. If Congress meets deficit-reduction targets set in 1993, an additional $500 million will be allocated. Finally, Graham's bill dictates that a state would be responsible to supply suitable authority for appropriate enforcement measures so as to ensure that non-point source pollution control plans are implemented properly. If the state fails to show sufficient and adequate enforcement measures under the federal program requirements, then the EPA would assume responsibility as the primary governing authority.

--*Environment Reporter*, Vol. 24, No. 38, January 21, 1994, pp. 1660-1686.
--*Environmental Compliance Bulletin*, Vol. 1, No. 4, January 31, 1994, p. 4.

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## OFFICIALS FEAR THAT SCREENING LEVELS MAY BE USED AS CLEANUP STANDARDS

Site screening levels currently under development by the EPA have caused concerns among federal and state officials that they may be used as "de facto"cleanup standards. The concern was that responsible parties required to clean up waste sites under a state

program might use screening levels as a justification that the federal government will not be concerned with concentrations below those levels. This concern could become a serious problem in states with standards for non-degradation of ground water. To avoid such concerns, the EPA decided to issue "action levels" along with the site screening levels.

Screening levels for 30 of the most frequently occurring contaminants at superfund sites are contained within the draft guidance under development. The use of screening guidance will most likely result in more efficient sampling techniques. According to the EPA, contaminant levels below which there is no concern and above which further site-specific evaluation would be warranted will be detailed within the guidelines.

Direct ingestion of ground water and soil, and inhalation of dust and vapors are the only exposure pathways addressed within the levels of soil screening. A complete technical background document supporting the draft screening levels is expected to be available soon (based on information available at the time of publication).

--*Environment Reporter*, Vol. 24, No. 32, December 10, 1993, p. 1492.

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## FAST TRACK CLEANUP FOR MILITARY BASE CLOSURE

On July 2, 1993, President Clinton announced a Five-Point Plan which encompasses various strategies to speed up the recovery process within communities where military bases are designated for closure. The Five-Point Plan includes job-centered property disposal, easy access to help, transition coordinators, planning grants to communities, and fast track cleanup. Fast Track Cleanup, which consists of an Environmental Baseline Survey, Base Realignment and Closure (BRAC) Environmental Coordinator, BRAC Cleanup Team, BRAC Cleanup Plan, and the Restoration Advisory Board, is defined as follows:

- Environmental Baseline Survey (EBS) is a fence-to-fence survey of environmental conditions for the discovery of areas of concern as well as areas ready for safe and quick reuse. EBS will compile all information available and serve as a database for reports such as: Finding Suitability to Lease, Finding Suitability to Transfer, Community Environmental Response Facilitation Act (CERFA), and BRAC Cleanup Plan.

- BRAC Environmental Coordinator will act as a Navy environmental representative dedicated to base cleanup and closure, implement all environmental cleanup and compliance programs related to the closure, co-chair the community's Restoration Advisory Board and act as a key player on the BRAC Cleanup Team.

- BRAC Cleanup Team (BCT) includes three members: BRAC Environmental Coordinator, the EPA representative and the State regulator. The team will expedite reuse and redevelopment of closing bases through accelerated cleanup processes.

- BRAC Cleanup Plan (BCP) is a phased plan that establishes the priority of environmental programs involving the support of cleanup, reuse, and redevelopment methods. This plan, which includes BCT, develops from a "bottom-up" review measure, establishes a comprehensive cleanup strategy, and is driven by the community reuse plan.

- Restoration Advisory Board (RAB) is intended to improve public participation in base closure areas. This board will be co-chaired by BRAC Environmental Coordinator and a member of the community. The purpose of the RAB is to serve as a forum for the discussion and exchange of information between government agencies and the public. The goal is to involve the community in the decision making process of environmental cleanup under programs such as the Installation Restoration and Underground Storage Tank Programs. RAB members are asked to review and comment on technical issues of the cleanup processes. RABs will review and evaluate numerous reports and their participation should significantly contribute to the success of BRAC Cleanup Plans.

--*Restoration Advisory Board Fact Sheet*, Long Beach Naval Complex.
--*Public Notice, Formation of RAB*, Naval Training Center San Diego.

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## RISK ASSESSMENT DEEMED FEASIBLE AS CLEANUP ALTERNATIVES AT DOE WEAPONS SITES

In the fall of 1993, Thomas Grumbly, the Assistant Energy Secretary for Environmental Restoration and Waste Management, asked the National Academy of Sciences (NAS) to form a committee in order to better review risk management pertaining to DOE's environmental remediation program. A committee was formed by the National Research Council to determine if a risk-based approach to evaluating the consequences of alternative actions in DOE's remediation program was feasible and

desirable. In addition, the committee was asked to provide advice on the establishment of a credible risk assessment program which would define the major public health and environmental risks at DOE facilities. Finally, the committee was asked to consider if an institution, other than the DOE, could perform the necessary assessments better than the department itself.

The committee concluded that risk assessment was feasible and desirable. The committee felt it could be used even in situations where information is limited as long as its purposes and limitations are well defined. The committee also recognized that risk assessment is useful in comparing outcomes and cost effectiveness of alternative actions.

The committee's report, "Building Consensus Through Risk Assessment and Management of DOE's Environmental Remediation Program," concluded that the use of risk assessment for determining priorities of remediation is a "...highly desirable component of the remediation decision-making process." Limited numbers of copies of the report are available from the National Academy Press; telephone (202) 334-3313 or (800) 624-6264.

--*Environment Reporter*, Vol. 24, No. 36, January 7, 1994, p. 1601.

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## SUPREME COURT REFUSES TO REVIEW STATE ROLE IN NPL FACILITY CLEANUP

On January 24, 1994, the U.S. Supreme Court upheld a decision by the U.S. Court of Appeals for the Tenth Circuit that the Army must comply with State of Colorado hazardous waste management standards in regards to cleanup efforts located at the Rocky Mountain Arsenal. The court rejected the Clinton administration's arguments that the cleanup should be dictated solely by the federal Superfund law. The Rocky Mountain Arsenal is a 92.7-acre lined basin that was used as a disposal site between 1956 and 1982 for various chemical weapons including mustard gas and nerve agents. The Arsenal is one of 215 sites around the country. It could take until 2034 to restore the area and cost estimates range up to 17.7 billion dollars.

--*Environment Reporter*, Vol. 24, No. 39, January 28, 1994, p. 1696.

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## CITIZEN SUITS UNDER THE CLEAN WATER ACT

Two recent rulings made by the Federal Court of Appeals affect a private citizen's ability to file suit under the Clean Water Act.

**Citizen Groups May Not Sue Over Discharges of Unlisted Pollutants:** A federal appeals court ruled December 4, 1993, that a citizen group may not bring suit under the Clean Water Act against Eastern Kodak Co. over discharges of pollutants that are not listed within a permit (Atlantic States Legal Foundation v. Eastman Kodak Co., CA2, No.93-7091, 12/14/93). The U.S. Court of Appeals for the Second Circuit upheld the district court's decision which contended that there was no legal foundation authorizing Atlantic States to bring suit under the Clean Water Act over discharges of pollutants not listed in Kodak's state-issued discharge permit. The appeals court ruled that discharges of unlisted pollutants are not unlawful under the Clean Water Act.

The court stated that in "Viewing the regulatory scheme as a whole, however, it is clear that the permit is intended to identify and limit the most harmful pollutants while leaving the control of the vast number of other pollutants to disclosure requirements..." The Court concurs with the EPA that every pollutant discharged from a facility will not necessarily be regulated under the facility's permit. In addition, the court concluded that even if New York law did prohibit the discharge of unlisted pollutants, a citizen suit over such discharges could not be maintained in federal court due to legislative overlap with the state.

**Individuals May Not Sue to Enforce State Water Quality Standards:** A federal appeals court ruled that private individuals and groups may not bring citizen suits under the Clean Water Act to enforce state water quality standards in discharge permits. Citizen suits may be used to enforce standards imposed on companies through Clean Water Act discharge permits to achieve water quality standards, but not to enforce the water quality standards themselves.

Judge William Ingram wrote in the majority opinion, "state water quality standards can constitute effluent standards, violations of which may be attainable in a citizen suit, only if they are incorporated in a (discharge) permit through effluent limitations." In the dissent, Judge Pregerson stated that the CWA allows citizens to enforce conditions of permits and discharges in order to ensure water quality.

--*Environment Reporter*, Vol. 24, No. 35, December 31, 1993, p. 1565.

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## SEDIMENT CHARACTERIZATION ONE YEAR AFTER GULF WAR

The 1991 Gulf War resulted in the release of 6-8 million barrels of crude oil into the environment, and emission of an enormous amount of burnt and unburnt crude oil from the burning and gushing oil wells into the atmosphere. Many publications, and several symposia and conferences, have considered this environmental catastrophe. Volume 27 of the Marine Pollution Bulletin contains several papers covering a variety of topics concerning the environmental impacts caused by the war.

One particular example is the coordinated effort by the Meteorology and Environmental Protection Administration (MEPA), Regional Organization for the Protection of the Marine Environment (ROPME), the National Oceanic and Atmospheric Administration (NOAA), and the International Oceanographic Commission (IOC). This study investigated how the spill affected benthic, subtidal, and intertidal sediments. Results from experiments showed that concentrations of nickel, lead, and vanadium were significantly increased in the Abu Ali area. In addition, manganese levels were 3 to 15 times greater than area baseline values. Hydrocarbon analysis of intertidal and subtidal sediments showed that exposed habitats exhibited an advanced weathering stage; whereas, the moderately exposed and sheltered habitats were typically less weathered. The most severely impacted areas were marsh land/algal mat complexes and mud flats at the heads of sheltered bays. The consequence of extreme oil penetration into burrows and other habitats caused gradual deterioration rates of oil in comparison to normal conditions.

Other studies include: "Chemical Characterization of Sediments from the Gulf Area after the 1991 Oil Spill," "Hydrocarbon Source Identification and Weathering Characterization of Intertidal and Subtidal Sediments Along the Saudi Arabian Coast after the Gulf War Oil Spill," "Distribution and Weathering of Shoreline Oil One Year After the Gulf War Oil Spill," "Broad Scale Changes in Coastal Ecosystems of the Western Gulf following the 1991 Gulf War," "Petroleum Hydrocarbons and Trace Metals in Nearshore Gulf Sediments and Biota Before and After the 1991 War: An Assessment of Temporal and Spatial Trends," "Concentration of Heavy Metals in Marine Organisms Around Qatar Before and After the Gulf War Oil Spill," "Hydrocarbons and Related Photo-oxidation Products in Saudi Arabian Gulf Coastal Waters and Hydrocarbons in Underlying Sediments and Bioindicator Bivalves," and "Polycyclic Aromatic Hydrocarbons in Edible Tissue of Fish from the Gulf After the 1991 Oil Spill."

--*Marine Pollution Bulletin,* Vol 27, pp. 97-142, 1993.

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## STATE REGULATORY HIGHLIGHTS

**New Jersey:** Criteria to limit discharges of contaminants into rivers, lakes, and streams went into effect on December 6, 1993 under New Jersey's new quality of surface water standards. Published in the New Jersey Register (25 NJR 5569), the 20 original cited standards will expand to over 115 toxic substances in order to develop discharge limits. In addition, the state Department of Environmental Protection and Energy (DEPE) stated that it will use a new approach in establishing discharge limits with consideration of the level of plant, animal, and human exposure to a pollutant and the pollutant's impact on human health and the environment.

DEPE said it will propose additional rules within six months to implement practical discharge levels for regulating discharges to surface waters when regulatory limits are lower than limits that can be accurately measured and routinely quantified. Use of these practical discharge levels would allow the agency to set standards that could be tightened as measurement technology improves.

**California:** On December 15, 1994, four federal agencies proposed water quality standards for the protection of the San Francisco Bay-Delta Estuary. The proposal would entail 750,000 acre feet to 1.8 million acre feet of additional flowing water through the West Coast's largest estuary. The EPA, Bureau of Reclamation, Fish and Wildlife Service and the National Marine Fisheries Service worked in conjunction to reach an agreement on the proposal. The agencies used a combination of the Clean Water Act, the Endangered Species Act, and the Central Valley Project Improvement Act to enlist proper mandates. Authority is limited to federal and state water projects.

Included in the proposal is an estimated 800,000 acre feet of water per year which will be set aside for the protection and restoration of fish and wildlife. The water quality standards will be finalized following a public review process. According to Harry Seraydarian, water management division director for EPA Region IX, it is unlikely that the standards will be finalized within the next 90 days as required by the Clean Water Act.

--*Environment Reporter*, Vol. 24, No. 34, December 24, 1993, p. 1547.

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## NRAD RESEARCH UPDATE

**Cascade Slurry Biodegradation in Bay Sediments Assists in the Remediation of PAHs.**

Work is currently being carried out at NRaD to encourage natural microorganisms within marine sediment to consume toxic polycyclic aromatic hydrocarbons (PAHs). The objective of this program is to investigate the utility of cascade slurry bioremediation of PAHs in fuel-contaminated sediments. This project builds on a multi-year effort on the development of optimized slurry bioreactor treatment of Navy fuel-contaminated soils. Bacterial degradation procedures for fuels in highly contaminated, weathered soils have been developed using a cascade approach in which different bacterial populations are optimized for different steps in the hydrocarbon degradation. Contaminated soils are biodegraded to a certain degree and then transferred to the next step in the cascade with a different "microbial soup" which has been optimized to degrade the next class of hydrocarbons. This "biological chemostat" has been demonstrated for the degradation of total petroleum hydrocarbons (TPH) in jet fuel contaminated soils from Miramar Naval Air Station.

In these experiments, the cascade approach was shown to be much more effective than batch biodegradation (in which the microbial population must constantly adapt to a depleting and more recalcitrant carbon source) both in terms of the rate and degree of degradation. Pilot-scale studies have demonstrated the feasibility of the cascade biotreatment approach in off-the-shelf commercial bioreactors. Current work is applying the lessons learned in this project to contaminated marine sediments from San Diego Bay, which are contaminated with PAHs at much lower levels than are the soils (10s of ppm vs. 100s of ppm). PAH degrading microorganisms in the sediment are being cultured and identified, and biodegradation conditions are being optimized.

Because PAHs comprise the most potentially toxic fraction of many petroleum fuels, they have merited much attention in recent years. It has been demonstrated that soils and sediments exposed to fuel contamination often contain PAH degrading organisms, and that under favorable conditions, PAH degradation can occur at a measurable rate. The more toxic, multi-ring compounds, however, are often subject to slow or negligible degradation rates due to their chemical complexity, and tendency to partition to the solid substrate. Surfactants may increase the bioavailability of these more hydrophobic PAHs.

Cascade biodegradation, with and without the use of surfactants, is being used to accelerate PAH degradation rates. In a cascade system, the microbial consortia are optimized to consume organic components of a certain complexity.

In the early steps, simple components (*e.g.*, n-alkanes) are easily degraded. Later steps in the cascade are optimized for the more recalcitrant components such as multi-ring PAHs. The microbes are stimulated to generate biosurfactants which will aid in biodegrading the residual contaminants. It is this cascade process which is being enhanced and studied. As has been demonstrated for TPH contamination, it is anticipated that the cascade approach will result in much more rapid and effective biodegradation of the recalcitrant PAHs.

To gain a thorough picture of what is happening to the different PAH and TPH components over time, analyses will be carried out utilizing several complimentary methods -- GC-FID, GC-MS, HPLC and fluorescence spectroscopy. The approach for this project will continue to focus primarily on field-collected, contaminated sediments, with occasional experiments using simpler, laboratory-spiked samples for clarification of some factors.

Related work is being carried out to address issues of metal contamination in the sediments, and to determine the mechanisms of contaminant-sediment interaction.

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## R/V ECOS PARTICIPATES IN COASTAL AWARENESS DAY

To foster public awareness, the Tall Ship Society of San Diego, along with the City of Chula Vista, the Nautical Heritage Society, and the California Yacht Marina, sponsored Coastal Awareness Day on February 24, 1994. The program, which had the theme "Forging the Chain of Environmental Awareness," was held to promote awareness of the environment through the history of the land and ocean; public support and education; cooperation among ecological organizations and agencies; and building a working coalition which will move beyond public awareness into action programs.

NRaD's research vessel *ECOS* was on display to give the general public a perspective on Navy efforts to protect the marine environment. The Marine Environmental Survey Capability (MESC) incorporated into the vessel provides rapid continuous measurement and mapping of chemical, physical and biological parameters in estuarine and marine systems to support hazard assessment, global marine compliance, and environmental restoration requirements. The R/V *ECOS* is a specially-designed

40-foot craft that can be trucked or flown to any study area. NRaD personnel were present in order to explain operations and answer questions. This was the *ECOS'* third consecutive participation in Coastal Awareness day. Vessels from other several other public service agencies also participated.

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**ABOUT THE MARINE ENVIRONMENTAL UPDATE**

This newsletter is produced by the Marine Environmental Support Office (MESO) and is dedicated specifically to inform the Navy about marine environmental issues that may influence how the Navy conducts its operations. MESO is located at the Naval Command, Control and Ocean Surveillance Center's Research, Development, Test and Evaluation Division (NRaD) in San Diego, California. The mission of MESO is to provide Navy-wide technical and scientific support on marine environmental science, protection and compliance issues. This support covers a broad spectrum of activities, including routine requests for data and information, technical review and consultation, laboratory and field studies, comprehensive environmental assessments, and technology transfer. Significant developments in marine law, policy, and scientific advancements will be included in the newsletter, along with references and points of contact for further information. Articles or news items readers would like to share with each other in future issues, and any comments, may be sent to:

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