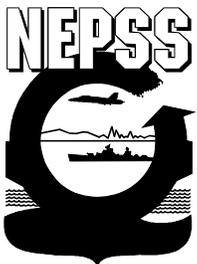




Marine Environmental Update



Navy Revising NEPA Implementation Regulations

The Department of the Navy (DON) is revising its regulations which establish the responsibilities and procedures for complying with the National Environmental Policy Act (NEPA). This revision clarifies when certain Department of the Navy actions must be studied to determine their effect on the human environment and what types of activities are excluded from the NEPA documentation requirements. Significant changes that this new rule brings about include:

1. Revision of and addition to the DON list of approved categories of actions excluded (CATEXed) from further documentation under NEPA;
2. Revised criteria for disallowing the application of listed CATEXs; and
3. Assignment of responsibilities to the Assistant Secretary of the Navy (Research, Development, and Acquisition), the General Counsel of the Navy, and the Judge Advocate General of the Navy.

New additions to the existing DON list are broken up into two groups. Group I consists of actions which clearly do not have the potential for causing significant impacts on the human environment and consequently do not meet the basic definition of major federal action in the context of NEPA. Group I exclusions include:

1. Routine fiscal, administrative, and recreation/welfare activities, including administration of contracts;
2. Routine law and order activities performed by military personnel, military police, or other security personnel, including physical plant protection and security;
3. Routine use and operation of existing facilities, laboratories, and equipment;

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4. Administrative studies, surveys, and data collection;
5. Issuance or modification of administrative procedures, regulations, directives, manuals, or policy;
6. Military ceremonies;
7. Routine procurement of goods and services;
8. Routine repair and maintenance of buildings, facilities, vessels, aircraft and equipment associated with existing operations and activities (*e.g.*, localized pest management activities, minor erosion control measures, painting, refitting);
9. Training of an administrative or classroom nature;
10. Routine personnel actions;
11. Routine movement of mobile assets (such as ships and aircraft) for homeport reassignments, for repair/overhaul, or to train/perform as operational groups where no new support facilities are required; and
12. Routine procurement, management, storage, handling, installation, and disposal of commercial items, where the items are used and handled in accordance with applicable regulations (*e.g.*, consumables, electronic components, computer equipment, pumps).

Group II exclusions consist of actions which have the potential for causing significant impacts on the human environment, but which, through experience, studies, or prior NEPA analysis, have been shown not to have significant environmental impacts. Group II exclusions include:

1. Actions to conform or provide conforming use specifically required by new or existing applicable legislation or regulations, (*e.g.*, hush houses for aircraft engines, scrubbers for air emissions, improvements to storm water, and sanitary and industrial wastewater collection and treatment systems, and installation of fire fighting equipment);
2. The modification of existing systems or equipment when the environmental effects will remain substantially the same, and the use is consistent with applicable regulations;
3. Movement, handling and distribution of materials, including hazardous materials/wastes that when moved, handled, or distributed are in accordance with applicable regulations;
4. New activities conducted at established laboratories and plants, (including contractor-operated laboratories and plants) where all airborne emissions, waterborne effluent, external ionizing and non-ionizing radiation levels, outdoor noise, and solid and bulk waste disposal practices are in compliance with existing applicable federal, state, and local laws and regulations;
5. Studies, data, and information gathering that involve no permanent physical change to the environment, (*e.g.*, topographic surveys, wetlands mapping, surveys for evaluating environmental damage, and engineering efforts to support environmental analyses);
6. Temporary placement and use of simulated target fields (*e.g.*, inert mines, simulated mines, or passive hydrophones) in fresh, estuarine, and marine waters for the purpose of military training exercises or research, development, test and evaluation; elements of facilities listed or eligible for listing on the National Register of Historic Places which will result in no adverse effect;



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7. Installation and operation of passive scientific measurement devices (*e.g.*, antenna, tide gauges, weighted hydrophones, salinity measurement devices, and water quality measurement devices) where use will not result in changes in operations tempo and is consistent with applicable regulations;
8. Short term increases in air operations up to 50 percent of the typical operation rate, or increases of 50 operations per day, whichever is less;
9. Decommissioning, disposal, or transfer of Navy vessels, aircraft, vehicles, and equipment when conducted in accordance with applicable regulations, including those regulations applying to removal of hazardous materials;
10. Non-routine repair, renovation, and donation or other transfer of structures, vessels, aircraft, vehicles, landscapes or other contributing elements of facilities listed or eligible for listing on the National Register of Historic Places which will result in no adverse effect; existing facilities and land wherein use does not change significantly (*e.g.*, leasing of federally-owned or privately-owned housing or office space, and agricultural out-leases);
11. Hosting or participating in public events (*e.g.*, air shows, open houses, Earth Day events, and athletic events) where no permanent changes to existing infrastructure (*e.g.*, road systems, parking and sanitation systems) are required to accommodate all aspects of the event;
12. Military training conducted on or over nonmilitary land or water areas, where such training is consistent with the type and tempo of existing non-military airspace, land, and water use (*e.g.*, night compass training, forced marches along trails, roads and highways, use of permanently established ranges, use of public waterways, or use of civilian airfields);
13. Transfer of real property from DON to another military department or to another federal agency;
14. Receipt of property from another federal agency when there is no substantial change in land use;
15. Minor land acquisitions or disposals where anticipated or proposed land use is consistent with existing land use and zoning, both in type and intensity;
16. Disposal of excess easement interests to the underlying fee owner;
17. Renewals and minor amendments of existing real estate grants for use of government-owned real property where no significant change in land use is anticipated;
18. Land withdrawal continuances or extensions which merely establish time periods and where there is no significant change in land use;
19. Renewals and/or initial real estate in grants and out grants involving cantonment area with associated discharges/runoff within existing handling capacities;
20. Demolition, disposal, or improvements involving buildings or structures not on or eligible for listing on the National Register of Historic Places and when in accordance with applicable regulations including those regulations applying to removal of asbestos, PCBs, and other hazardous materials;



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21. Acquisition, installation, and operation of utility (*e.g.*, water, sewer, electrical) and communication systems, (*e.g.*, data processing cable and similar electronic equipment) which use existing rights of way, easements, distribution systems, and/or facilities;
22. Decisions to close facilities, decommission equipment, and/or temporarily discontinue use of facilities or equipment, where the facility or equipment is not used to prevent/ control environmental impacts);
23. Maintenance dredging and debris disposal where no new depths are required, applicable permits are secured, and disposal will be at an approved disposal site;
24. Relocation of personnel into existing federally owned or commercially-leased space that does not involve a substantial change affecting the supporting infrastructure (*e.g.*, no increase in vehicular traffic beyond the capacity of the supporting road network to accommodate such an increase);
25. Pre-lease exploration activities for oil, gas or geothermal reserves, (*e.g.*, geophysical surveys);
26. Natural resources management actions where underlying natural resources management decisions have been analyzed in an EA or EIS;
27. Installation of devices to protect human or animal life, (*e.g.*, raptor electrocution prevention devices, fencing to restrict wildlife movement onto airfields, and fencing and grating to prevent accidental entry to hazardous areas);
28. Reintroduction of endemic or native species (other than endangered or threatened species) into their historic habitat when no substantial site preparation is involved;
29. Temporary closure of public access to DON property in order to protect human or animal life;
30. Actions similar in type, intensity and setting (including physical location and, where pertinent, time of year) to other actions for which it has been determined, in a DON EA or EIS, that there were no significant environmental impacts; and
31. Actions which require the concurrence or approval of another federal agency where the action is a categorical exclusion of the other federal agency.

Comments must be received by April 26, 1999. For further information, contact Mr. Lew Shotten, Office of the Assistant Secretary of the Navy (Installations and Environment), 2000 Navy Pentagon, Washington, D.C. 20350; (703) 588-6671.

Federal Register, Volume 64, Number 37, February 25, 1999, pp. 9286-9289.

EPA Issues First Round of Criteria for 157 Pollutants

The Environmental Protection Agency has published a compilation of water quality criteria for 157 pollutants, developed pursuant to section 304(a) of the Clean Water Act. This is the first time that the EPA has put recommended water quality criteria into one document. These water quality criteria provide guidance for States and Tribes in adopting water quality standards under section 303(c) of the Clean



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Water Act. The standards are then the basis for permitting discharges to U.S. waters. Once new or revised criteria are issued by the EPA, the states and tribes are expected to adopt them into their water quality standards within five years.

The compilation is presented as:

- a summary table showing criteria that are unchanged;
- criteria that have been recalculated from earlier criteria, and
- newly calculated criteria based on peer-review assessments, methodologies, and data.

The document lists all priority toxic pollutants and some non priority toxic pollutants, and both human health (carcinogenicity risk) and organoleptic effect (*e.g.*, taste, odor, *etc.*) criteria issued pursuant to Clean Water Act Section 304(a). The EPA has derived two concentrations, the CMC and CCC. The Criteria Maximum Concentration (CMC), is an estimate of the highest concentration of a material in surface water to which an aquatic community can be exposed briefly without resulting in an unacceptable effect. The Criterion Continuous Concentration (CCC) is an estimate of the highest concentration of a material in surface water to which an aquatic community can be exposed indefinitely without resulting in an unacceptable effect. For each set of criteria, the EPA cites the pertinent *Federal Register* notice, an EPA document number, or an Integrated Risk Information System (IRIS) entry.

The document also describes changes in the EPA's process for deriving new and revised 303(a) criteria. When deriving new criteria, or when initiating a major reassessment of initial criteria, the EPA will take the following steps:

1. The EPA shall undertake a comprehensive review of available data and information.
2. The EPA shall then publish a notice in the *Federal Register* and on the Internet announcing its assessment/reassessment of the pollutant and will then solicit any pertinent data that may be useful in deriving/revising criteria.
3. After public input is received and evaluated and all literature reviews are completed, the EPA will develop draft recommended water quality criteria.
4. The EPA will then initiate a peer review of the draft criteria. Also at this time, the EPA shall publish a notice in the *Federal Register* and on the Internet of the availability of the draft water quality criteria and solicit views from the public.
5. The EPA shall then evaluate the peer review, and prepare a response concurrent with the EPA's *Peer Review Handbook* while considering the views posed by the public.
6. The EPA will then revise the draft criteria as necessary and announce the availability of the final criteria in the *Federal Register* and on the Internet.

Federal Register, Volume 63, Number 237, December 10, 1998, pp. 68353-68364.

EPA Proposes Reporting Thresholds for PBT Chemicals

The Environmental Protection Agency is proposing to lower the reporting thresholds for certain persistent bioaccumulative toxic chemicals that are subject to reporting under Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (EPCRA) and Section 6607 of the Pollution Prevention Act of 1990 (PPA). The EPA is also proposing lower thresholds for dioxin and dioxin-like compounds, which were previously proposed for addition to the EPCRA Section 313 list of toxic chemicals.

Additions to the Section 313 list were chosen on their ability to, and/or possibility to, have adverse effects on human health. The proposed additions are:

1. Benzo(g,h,i)perylene;
2. Benzo(j,k)fluorene;
3. 3-Methylcholanthrene;
4. Octachlorostyrene;
5. Pentachlorobenzene;
6. Tetrabromobisphenol; and
7. Vanadium and Vanadium compounds

Before deciding to lower the reporting threshold values for dioxin and dioxin-like compounds, the EPA considered not only their persistence and bioaccumulation, but also the potential burden that might be imposed on the regulated community. The following table summarizes their proposed threshold reductions:

Chemical Name or Category	CASRN	Proposed Section 313 Reporting Threshold
Aldrin	309-00-2	100 lbs.
Benzo(g,h,i)perylene	191-24-2	10 lbs.
Chlordane	57-74-9	10 lbs.
Dicofol	115-32-2	10 lbs.
Dioxin and dioxin-like compounds category (manufacture only)	NA	0.1 g
Heptachlor	76-44-8	10 lbs.
Hexachlorobenzene	118-74-1	10 lbs.
Isodrin	465-73-6	10 lbs.
Methoxychlor	72-43-5	100 lbs.
Octachlorostyrene	29082-74-4	10 lbs.



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Chemical Name or Category	CASRN	Proposed Section 313 Reporting Threshold
Pendimethalin	40487-42-1	100 lbs.
Pentachlorobenzene	608-93-5	10 lbs.
Polycyclic aromatic compounds category	NA	10 lbs.
Polychlorinated biphenyl (PCBs)	1336-36-3	10 lbs.
Tetrabromobisphenol A	79-94-7	100 lbs.
Toxaphene	8001-35-2	10 lbs.
Trifluralin	1582-09-8	100 lbs.
Mercury	7439-97-6	10 lbs.
Mercury compounds	NA	10 lbs.

The comment period is scheduled to close on April 7, 1999. Written comments must be received by the EPA on or before April 7, 1999. Comments may be submitted by mail, electronically, or in person. For further information, contact Daniel R. Bushman, Petitions Coordinator, (202) 260-3882, e-mail: bushman.daniel@epamail.epa.gov.

Federal Register, Volume 64, Number 2, January 5, 1999, pp. 687-729.

EPA Press Release, Friday, February 26, 1999.

Washington State Revises Sediment Management Standards

In 1991, the Washington State Department of Ecology adopted Sediment Management Standards, Chapter 173-204 Washington Administrative Code (WAC), to identify and designate sediments that have adverse effects on aquatic organisms or pose significant health risk to humans. The standards established a sediment quality goal for Washington State. The standards also include the requirements for how the standards are applied in source control and cleanup actions. The current regulation addresses ecological effects of Puget Sound marine sediment quality, with sediment criteria for human health, freshwater, and other marine areas to be addressed on a site-specific, case-by-case basis.

The proposed action consists of amending the Sediment Management Standards, Chapter 173-204 WAC. Revisions are proposed to the chemical and biological criteria, and the cleanup implementation procedures and definition. The proposal is responding to annual review comments by the public and will clarify requirements, reduce duplication with other Ecology rules and update methods and criteria to accurately reflect the latest scientific knowledge.

The areas of revision include:

- Adding sediment criteria for the protection of human health. The goal is to reduce and ultimately eliminate significant health threats to humans via the ingestion of fish and shellfish contaminated by toxic bioaccumulative compounds found in sediment. The proposal includes methods for applying human health sediment standards in source control and cleanup actions.
- Updating the marine sediment chemical criteria to include recalculated criteria values. The recalculated values may result in the lowering of some individual chemical criteria and the raising of other individual chemical criteria.
- Applying the marine sediment chemical and biological criteria to other marine areas in the state, *e.g.*, Grays Harbor and Willapa Bay.
- Adding sediment biological test criteria for freshwater sediments. Numeric chemical criteria will not be proposed at this time.
- Revision of the methodology for identifying and defining sediment cleanup sites.
- Adding requirements for accreditation by laboratory conducting analysis under the Sediment Management Standards.
- Updating the sediment sampling and analysis planning and reporting requirements.

The Draft Sediment Management Standards and the Scoping Notice of the Supplemental Environmental Impact Statement (SEIS) are available at <http://www.wa.gov/ecology/sea/smu/ic/revision-sms.htm>. Comments on the probable significant adverse impacts of the proposal and alternatives to the proposal for analysis in the SEIS are welcome. Responses to the comments will be included in the Concise Explanatory Statement prepared for the final revisions to the Sediment Management Standards (target release date of July 1999).

For further information: Brenden McFarland, Sediment Management Unit, Department of Ecology, PO Box 47600, Olympia WA 98504-7600; telephone: (360) 407-6913, FAX (360) 407-6904, TDD (360) 407-6006; e-mail: bmcf461@ecy.wa.gov; internet: <http://www.wa.gov/ecology/sea/smu/sediment.html>.

Washington State Department of Ecology (<http://www.wa.gov/ecology/sea/smu/ic/scope.htm>).

President Signs Executive Order on Invasive Species

On February 3, 1999, President Clinton issued Executive Order 13112, which concerns the prevention of invasive species; control of such species; and minimization of their economical, ecological, and human health impacts that invasive species cause. The content of this order deals specifically with the duties of both Federal Agencies and a newly established Invasive Species Council, which are summarized below.



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Federal Agencies

Each Federal agency whose actions may affect the status of invasive species shall, to the extent practicable and permitted by law,

1. Identify such actions;
2. Subject to the availability of appropriations, and within Administration budgetary limits, use relevant programs and authorities to:
 - (a) prevent the introduction of invasive species;
 - (b) detect and respond rapidly to and control populations of such species in a cost-effective and environmentally sound manner;
 - (c) monitor invasive species populations accurately and reliably;
 - (d) provide for restoration of native species and habitat conditions in ecosystems that have been invaded;
 - (e) conduct research on invasive species and develop technologies to prevent introduction and provide for environmentally sound control of invasive species; and
 - (f) promote public education on invasive species and the means to address them; and
3. Not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere unless, pursuant to guidelines that it has pre-scribed, the agency has determined and made public its determination that the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the actions.

Federal agencies shall pursue the duties set forth in this section in consultation with the Invasive Species Council, consistent with the Invasive Species Management Plan and in cooperation with stakeholders, as appropriate, and, as approved by the Department of State, when Federal agencies are working with international organizations and foreign nations.

Invasive Species Council

The Invasive Species Council will include the Secretary of State, the Secretary of the Treasury, the Secretary of Defense, the Secretary of the Interior, the Secretary of Agriculture, the Secretary of Commerce, the Secretary of Transportation, and the Administrator of the Environmental Protection Agency. The Invasive Species Council shall provide national leadership regarding invasive species, and shall:

1. Oversee the implementation of this order and see that the Federal agency activities concerning invasive species are coordinated, complementary, cost-efficient, and effective, relying to the extent feasible and appropriate on existing organizations addressing invasive species, such as the Aquatic Nuisance Species Task Force, the Federal Interagency Committee for the Management of Noxious and Exotic Weeds, and the Committee on Environment and Natural Resources;



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2. Encourage planning and action at local, tribal, State, regional, and ecosystem-based levels to achieve the goals and objectives of the Management Plan, in cooperation with stakeholders and existing organizations addressing invasive species;
3. Develop recommendations for international cooperation in addressing invasive species;
4. Develop, in consultation with the Council on Environmental Quality, guidance to Federal agencies pursuant to the National Environmental Policy Act on prevention and control of invasive species, including the procurement, use, and maintenance of native species as they affect invasive species;
5. Facilitate development of a coordinated network among Federal agencies to document, evaluate, and monitor impacts from invasive species on the economy, the environment, and human health;
6. Facilitate establishment of a coordinated, up-to-date information-sharing system that utilizes, to the greatest extent practicable, the Internet; this system shall facilitate access to and exchange of information concerning invasive species, including, but not limited to, information on distribution and abundance of invasive species; life histories of such species and invasive characteristics; economic, environmental, and human health impacts; management techniques, and laws and programs for management, research, and public education; and
7. Prepare and issue a national Invasive Species Management Plan.

The requirements of this order do not affect the obligations of Federal agencies under 16 U.S.C. 4713 with respect to ballast water programs. The requirements of federal agencies to not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species (see item 3 under Federal Agencies, above) shall not apply to any action of the Department of State or Department of Defense if the Secretary of State or the Secretary of Defense finds that exemption from such requirements is necessary for foreign policy or national security reasons.

Federal Register, Volume 64, Number 25, February 8, 1999, pp. 6183-6186.

Copper Loading in Navy Harbors

The Marine Environmental Quality Branch (Code D362), Space and Naval Warfare Systems Center, San Diego, under the sponsorship of Naval Sea Systems Command (00C5), is performing a series of copper mass loading estimates for major harbor areas of the United States that contain a significant U.S. Navy presence. The overall goal of the project is to:

- Provide a list of known or potential copper sources within each harbor;
- Calculate estimates of dissolved copper loading by source; and
- Identify areas where data are non-existent or need improvement.



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Several sources of copper loading into four harbors with a significant Navy presence (Little Creek, VA, Norfolk, VA, Pearl Harbor, HI, and San Diego Bay, CA) were identified. The degree of copper loading, as dissolved copper, was quantified by source within each harbor. Although sources and their respective copper loadings vary between harbors, some similarities were apparent. In Norfolk, Pearl Harbor and Little Creek, Navy hull coating leachate was the principal dissolved copper source. In San Diego Bay Navy hull coatings leachate was the second largest dissolved copper loading source behind civilian hull coatings leachate. Other Navy ship discharges, primarily seawater cooling and fire main discharges, were also seen to be an important loading source.

Although not a significant loading source in Norfolk and Pearl Harbors, civilian hull leachate loading was calculated to be a very important dissolved copper loading source in San Diego Bay and Little Creek. Similarly, civilian ship transit and civilian hull-cleaning were determined to be important copper loading sources. Navy hull-cleaning events were calculated to be contributing less than 1% of the total dissolved copper load for all four harbors under evaluation. Harbors also varied in their total dissolved copper loading in terms of kilograms per year. The degree of loading was largely dependent on the major loading sources.

The complete text of *Copper Loading to U.S. Navy Harbors: Norfolk VA; Pearl Harbor, HI, and San Diego, CA*, SSC San Diego Technical Document 3052, December 1998, can be accessed at <http://www.spawar.navy.mil/sti/publications/pubs/td/3052/td3052.pdf> (3.64 MB PDF file).

Pearl Harbor Integrated Sediment Characterization and Demonstration

From February 1-17, 1999, personnel from the Space and naval Warfare Systems Center (SPAWARSYSCEN), San Diego, Environmental Sciences Division carried out a series of integrated sediment assessment and characterization field tests in Middle Loch and at Bishop Point (entrance channel area) in Pearl Harbor, HI. This was the largest integrated demonstration of sediment characterization capabilities to date, encompassing several Navy and DOD-funded Research, Development, Test and Evaluation projects, from SPAWARSYSCEN and Naval Research Laboratory (NRL). Supported by Mobile Diving and Salvage Unit One (MDSU-1), SPAWARSYSCEN personnel demonstrated the Benthic Flux Sampling Device (BFSD), funded by the Environmental Security Technology Certification Program (ESTCP), and tested the Laser *In-Situ* Sediment Scattering Transmissometer (LISST) as an on-site screening tool for grain size distribution in sediments.

The use of UV Fluorescence (UVF) for on-site analysis of PAHs in sediments was demonstrated as part of an ESTCP and Naval Facilities Engineering Command (NAVFACENGCOM)-funded Integrated Field Screening program which also included the demonstration of the QuikSed assay for measuring sediment toxicity and field-portable X-Ray Fluorescence for measuring metals in sediments. Another project being demonstrated on site was the collection of sediments for the NAVFACENGCOM- and Office of Naval



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Research-funded project Advanced Geochemical Characterization. Scientists from NRL's Environmental Sciences Division also demonstrated their capabilities using microbial productivity and PAH degrader activity to examine contaminant impact and fate at the site (funded by the Strategic Environmental Research and Development Program (SERDP)).

On Thursday, February 4, 1999, an open-house on-site demonstration was held for NAVFACENGCOM Pacific Division personnel, State of Hawaii Department of Health regulators, the Army Corps of Engineers, and other interested parties. Approximately 30 people visited the laboratory and field instrument demonstrations for about a two hour period. Many of the visitors expressed interest in the various sediment contamination tools used during this highly successful field screening and Benthic Flux Sampling Device remote site deployment and operation.

For more information, contact Jeff Grovhoug at SPAWARSYSCEN D362, 53475 Strothe Road, San Diego, CA 92152-3610; telephone (619) 553-2773; e-mail: d362@spawar.navy.mil.

Innovative Navy Copper Measurement Technique Helping SDG&E Meet Discharge Permit Requirements

The Environmental Sciences Division at the Space and Naval Warfare Systems Center, San Diego, is conducting copper measurements on the San Diego Gas and Electric Company's (SDG&E) South Bay Power Plant cooling water discharges using an innovative Copper Ion Selective Electrode. As a discharge permit requirement from the Regional Water Quality Control Board (RWQCB), San Diego Region, SDG&E had to measure the increase in copper levels emanating from their South Bay Power Plant. The plant's cooling water system utilizes up to 600 million gallons per day of San Diego Bay water. This water is used as once-through non-contact cooling water to condense steam and to cool auxiliary equipment. Based on condenser tube erosion rates, copper concentration differences between inflow and outflow were estimated to be between 0.1 and 0.5 parts-per-billion (ppb).

SDG&E first utilized standard EPA collection and measurement methods but found that they were not capable of measuring these small differences with a typical background copper concentration of 3 ppb. Upon review of that data, the RWQCB directed SDG&E to identify the most advanced technology available to measure the copper discharges. This led SDG&E to contact the Environmental Sciences Division. The Environmental Sciences Division has been developing, under Office of Naval Research, Naval Facilities Engineering Command, and Environmental Security Technology Certification Program funding, several automated methods of measuring copper levels to a high degree of accuracy. Through a unique contracting agreement, the Environmental Sciences Division has developed and built on site an automated system, which is currently undergoing field trials. Three methods are being used concurrently to measure copper differential concentrations lower than 1 ppb between the inlet and outlet cooling waters. Data analysis has begun and will continue through March. Initial data indicates that intake water copper concentrations varies from 2 to 4 ppb, with discharge fractionally higher. Once the pilot testing is



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verified, a year-long test will begin to examine the effects of tide, temperature, season and plant operating conditions on copper discharge levels.

This system has numerous applications to Navy compliance issues for point and nonpoint source quantification. For more information, contact Mike Putnam, SPAWARSYSCEN D361, 53475 Strothe Road, San Diego, CA 92152; telephone: (619) 553-2794; e-mail: d361@spawar.navy.mil.

About the Marine Environmental Update

This newsletter is produced quarterly 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 Space and Naval Warfare Systems Center, 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 environmental law, policy, and scientific advancements will be included in the newsletter, along with references and points of contact for further information.

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