DATA AND INFORMATION NETWORK SERVICES
FOR MARINE POLLUTION DECISION MAKERS

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ABSTRACT

An authoritative list of the issues that marine pollution decision makers will face is provided by the National Marine Pollution Plan and related national publications and supporting automated systems. The Ocean Pollution Data and Information Network (OPDIN) provides services keyed to these issue lists. The Network maintains inventories and bibliographies and access to major inventories, bibliographies, data and information bases useful to the marine pollution decision maker. Network access and referral capabilities are designed to provide a comprehensive overview of available resources. The Network's services are documented and analyzed periodically to insure optimum service capabilities and develop new initiatives to improve services.

OPDIN SATISFIES DECISION MAKERS' NEEDS

Since 1981, the Ocean Pollution Data and Information Network (OPDIN) has provided access to the data, information and expertise appropriate to marine pollution issues faced by the decision maker. This effort is in response to the OPDIN mandate from the Ocean Pollution Planning Act of 1978 (PL 95-273, Sec.8) to "... ensure that the results, findings, and information regarding ocean pollution research and development and monitoring programs conducted or sponsored by the Federal Government be disseminated in a timely manner, and in useful forms, to relevant departments, agencies, and instrumentalities of the Federal Government, and to other persons having an interest in ocean pollution research, development and monitoring."

One of the decision maker's primary needs is a national perspective, to frame the issue he faces. The National Marine Pollution Program Office (NMPPPO), through which the CCRO arranges for mutually agreed upon funding and tasks,

provides such a perspective on marine pollution issues by triennially publishing the Federal Plan for Ocean Pollution Research, Development & Monitoring. The Plan identifies, discusses, prioritizes and sets goals for current and anticipated marine pollution issues. Table 1 is the National Issue priority list from the 1985-89 Plan (NMPPPO, 1985a). Each Plan revises the National Issue List and sets new goals to suit current and perceived needs.

ASSESSMENT & ORDERING OF NATIONAL ISSUES

High Priority National Problems

Nonpoint Source Pollution
Habitat Loss and Modification
Municipal Waste Disposal
Industrial Waste Disposal

Medium Priority National Problems

Oil and Gas Extraction
Accidental Discharges
Radioactive Waste Disposal
Dredged Material Disposal

Low Priority National Problems

Marine Transportation
Marine Energy
Deep Seabed Mining
Sand, Gravel, and Shell Mining
Strategic Petroleum Reserve Brine

Priority National Needs

Monitoring Environmental Status
Coordination w/Fundamental Research
Development of Measurement Methods
Information Dissemination
Quality Assurance

Table 1. National Issue Priority List

NMPPPO also publishes a Catalog of Federal Projects, which annually reports the status of each marine pollution issue identified in the Plan. Figure 1 illustrates how the successive catalogs and plans are used to compare the status of any one issue to its goals in

successive fiscal years. Using the status and goals reported in the plans as a base axis for any one issue, the catalog (C) provides a comparison to the actual status of the issue.

FIGURE 1. Issue Status Reported in Annual Catalogs vs. Goals in Plans.

In addition to the national perspective, the OPDIN is structured to provide a regional perspective on issues in marine pollution. The Network consists of a Central Coordination and Referral Office (CCRO) in Washington, DC and Regional Coordination and Referral Offices (RCRO's) in Anchorage, AK, La Jolla, CA, Miami, FL, Seattle, WA, and Woods Hole, MA (Audet, 1983).

Once an issue is defined, the decision maker needs a complete inventory of information, data and expertise relevant to his problem. He needs to know its source, availability, cost and access timeliness. Since 1981, the Network has helped provide the marine pollution community with such a service. The OPDIN staff constantly endeavors to improve these services and products according to the needs of both a changing community and changing issues. As new products and services are developed, they are keyed to the issues stated in the current Plan, thus insuring continuity and completeness of information provided to each customer.

DIRECTORIES

The Plan assures the decision maker that he is not alone in his problem. What he needs is a directory of projects and personnel addressing the issue facing him. The Catalog is generated from the National Marine Pollution Information System (NMPIS), a micro-computer data

base containing the names, addresses, funding levels and activity descriptions of personnel involved in federally-funded marine pollution related activities. OPDIN can provide NMPIS catalogs and analyses customized to fit any marine pollution issue. Figure 2 displays the major NMPIS selection categories and some of the products built from them.

National Marine Pollution Information System	
Selection Categories	Products
Pollution Cause	Published Catalogs
Project Purpose	Directories
Pollutant	Analyses
Region	Reports
State	Referrals
Zone	Mailing Labels
Agency/Program	
Scientist	

Figure 2 -- NMPIS as an OPDIN service

Similar information is being obtained for non-Federal marine pollution activities (state and local governments, academic and private institutions) on a regional basis. This information has been collected and published for the Southeastern, Northeastern and Great Lakes regions of the United States. (NMPPPO, 1984; NMPPPO, 1985b and NMPPPO, 1985c) (The Great Lakes are considered within the purview of ocean pollution under PL 95-273).

BIBLIOGRAPHIES & INVENTORIES

An essential ingredient of any research effort is the library search. OPDIN can supplement the results of a standard library search with searches of a marine pollution oriented 'grey literature' data base and the CCRO resource file. The 'grey literature' data base contains descriptions primarily of documents from Federally supported studies that generally are not available in the commercial and refereed scientific and technical literature. The grey literature file includes a field for the National Technical Information Service reference number for those reports that have been submitted to NTIS. Each item described in the file is keyed to the NMPIS categories of the current Plan, which enhances the more traditional subject and keyword indices, and helps identify reports related to user needs for marine pollution information. The principal service to the user is a referral to a specific author, project or agency in reference to identified grey literature reports.

Additional referrals are available from the CCRO resource files. These files contain reports, manuscripts, maps, data listings, and other materials that have been collected over the years while serving customers. Some materials are available to requestors as copies or on a loan-basis. The Regional Coordination and Referral Office (RCRO) files are those resources held by each of the five regional offices (NODC Liaison Offices) which vary in content, size, accessibility, etc. The Liaison Offices often provide a major source of data and information for requests of a regional or local nature. These regional marine pollution sources are planned to be incorporated in the CCRO resource file.

DATA & INFORMATION

One of the early tasks of the CCRO was to identify and describe existing systems and services within the Federal agencies that could help provide needed information to the marine pollution community. To date, over 70 national and regional systems from nine Federal agencies have been identified. Initial communications with most of these systems have been by telephone or computer-accessed message systems. Efforts are continuing to establish more sophisticated communication links to directly access data and information from many of these systems. Brief descriptions of each system are included in a recent Handbook (CCRO, 1985a) prepared by the CCRO. Systems are summarized in terms of principal contact name and address, name of system, type and quantity of data, scope of service, type of products, cost for retrieval, expected response time, and hardware and software capabilities.

An effort is underway by the CCRO staff to identify and locate those marine pollution-related data collected by the projects and programs identified in annual Catalogs. This is an attempt to close the information gap between those who are conducting marine pollution-related field investigations and the ultimate location where those data reside for subsequent access, retrieval and analysis by Network users. An interim report has identified almost 20% of the 5300 projects for the fiscal years 1978 through 1983 as potential data collectors. A more detailed report will be presented to NMPPPO later this year summarizing the results of this task.

DIRECT ACCESS

Some of the systems described in the Handbook have been useful in preparing products for customers in the past. The CCRO staff has developed regular access to a number of them. None of these systems and their files are designed to reflect NMPIS parameters, although many of the parameters can be identified in these systems. The NODC environmental data base system, for example, includes both inventory information and access to marine pollution digital data files containing data on specific pollutants, primarily along the coastal areas and the outer continental shelf of the US. The National Environmental Data Retrieval Service (NEDRES) provides an extensive referral system to environmental data bases; information from a specific data base or file can be retrieved (through commercial systems) on the basis of specific parameters including pollutant, geographic position or area, project or institute. The National Technical Information Service (NTIS), another example of a parameter-driven system, operates extensive bibliographic and related services to identify Federal data and information sources and also provides copies of reports and other material upon request. The NTIS also is commercially accessible.

The Network often serves that group of managers and planners who are somewhere between those individuals with expertise for accessing and manipulating large environmental data bases and those with ready access to extensive referral and library services. For many of these customers, a comprehensive product may require access to a variety of data and information sources. The CCRO often serves as a link between such sources in preparing a product package that meets each customer's needs. It should be noted that costs for retrieving data and information from some Federal systems may need to be recovered from the requestor, whereas costs associated with retrievals from CCRO/OPDIN resource files and data bases generally are absorbed by the CCRO under the PL 95-273 mandate for providing such services.

REFERRALS

Many of the services and products needed by an OPDIN customer can be provided faster, cheaper and more directly by people outside the OPDIN staff. Referrals are made to the individuals that

can best satisfy the requestor's needs in the most timely manner. If appropriate, the Network will contact the individual and have him call the requestor.

The CCRO deals with all levels of managers, planners and decision makers in the marine community through its committee memberships, agency relationships and customer services. The contacts achieved through these activities provide the CCRO and its regional functions with unique and rather comprehensive referral capabilities.

Referrals have a double benefit. They provide the customer with the fastest, cheapest and most efficient services. In addition, they allow the OPDIN staff to remain lean and operate with a low budget while serving a broad community of customers. The main disadvantage of referrals is that they may not always provide the customer with the needed products on a one-stop basis.

DATA MANAGEMENT

Once the customer has selected the files that are applicable to his problem, accessible and within budget, how can they be combined and converted into useful products? The OPDIN staff has extensive experience with the large data bases connected with program, regional, national, international and discipline specific data systems. This experience can provide a valuable service to customers converting data into useful products.

Personal computer (PC) systems and their software have grown increasingly more powerful and popular for storage and manipulation of data and information both independently and through communication links to minicomputer and main frame systems. The CCRO has joined this trend in providing customers with PC-generated products from a variety of marine pollution data and information sources. All of the automated services described above are provided via PCs. Some are provided through data base management systems (DBMS) and files residing on the PC. Others are provided by main frame computer DBMSs and files accessed by PC modems and commercial phone lines.

The PC DBMS capabilities might best be demonstrated with the OPDIN-supported Coastal Information System (CIS) developed by the Marine Sciences Research Center of the State University of New York at Stony Brook. This PC-based system combines graphics with spreadsheet techniques for data handling and

display. The CIS incorporates regional or site-specific multidisciplinary information (e.g., environmental, geographic, political, historical and social data) concerning marine environmental issues from a wide variety of sources into one set of spreadsheets which can be manipulated with English-like commands. Once the proper mix of data is achieved, mapping and graphics are available to develop the best presentation of that data. The CIS provides the user with true capability to generate issue-related information in a user-friendly and timely manner. The OPDIN staff has two prototype packages to demonstrate. They are built for the areas around the Hudson-Raritan estuary (CCRO, 1985b) and the approaches to the Port of New Orleans. This package reduces the drudgery of data management and expands flexibility to the point where the user can experiment with combinations and presentations of data to achieve the best summary information concerning coastal activities and environmental conditions.

CUSTOMER SERVICE REPORTING SYSTEM

In 1982, the first year the OPDIN was responding to customer service requests on a routine basis, less than 100 requests were processed. Statistics characterizing basic request characteristics could easily be compiled by hand. Each year since 1982 OPDIN requests have nearly doubled. By 1985, automation of the 'Customer Service Reporting System' had become a priority.

This PC-driven system was designed and implemented to meet three basic requirements: compatibility with the NODC User Request System; reporting requirements of the National Marine Pollution Program Office; and a need to characterize OPDIN's user community needs and measure the CCRO efficiency in meeting those needs.

A 'Customer Service Report Form' was designed which contains attribute fields that can be searched on, and when applicable, statistically analyzed. These fields include:

- * customer name
- * address
- * customer class
- * contact type
- * expected use
- * type of products
- * output media
- * area of concern
- * pollutants considered
- * files referenced
- * cost information
- * response time

These fields are completed at the time of request servicing; each month all completed request information is entered into the data base.

Quarterly statistics characterizing the customer service user community are compiled and interpretation of these results are reported annually. A number of observations have been drawn from these statistics concerning the source of requests, location of requestors, regional areas of concern, types of requests, CCRO response time and priority marine pollution concerns.

Requests from NOAA sources, which are to date more aware of OPDIN operations, have been a major source of requests. The least number of requests have come from state and local governments. During 1985, the percentage of requests from NOAA activities has decreased while other Federal and state sources have increased -- a trend that is expected to continue.

Geographic location of requestors continues to reflect the location of the Network, with almost 50% of all requestors from the Washington, D.C. metropolitan area. Requestors from the northeast area have increased during 1985, primarily because of heightened interest in the Chesapeake Bay and other northeast estuaries. Greater than 60% of Network requests are concerned with general or all-area marine pollution data and information in contrast to region-specific needs.

Requests for marine pollution data and information products continues to grow each year with over 50% of all request types now in that category. The percentage of referrals has remained relatively constant over the past four years. The average Network response time for all requests decreased significantly between 1982 and 1985 while the total number of requests increased five-fold during the same period.

The continuing effort to monitor the request relationship to priority marine pollution issues, as identified in the FY85-89 Federal Plan (NMPPO, 1985) has met with limited success. This is due in no small part to lack of sufficient information concerning the customers intended use of the data provided. Less than 10% of the requests were identified with specific pollutant concerns. Petroleum and organic pollutant concerns were the two major interests from this limited sample.

The top five OPDIN products provided during 1985 were the Handbook of Federal

Systems and Services (CCRO, 1985a), OPDIN materials (reports, flyers, resource file information), referrals, the Catalog of Federal Projects (NMPPO, 1985d) and information and demonstrations of the 'Coastal Information System'.

CONCLUSIONS

There is a need to broaden regional and Non-Federal awareness of the Network capabilities. NODC Liaison Office support to supplement the limited CCRO staff for answering requests and promoting the Network is one area that will be addressed. A greater utilization of Liaison Office capabilities for responding to requests of a regional nature and a closer tracking of their marine pollution-related requests will be pursued to provide better insight into regional user needs. In an attempt to reach state and local governments as well as industry and academic institutions, a marine pollution data and information products and services flyer has been developed by the CCRO and NMPPO for wide distribution. With increased access to specific Federal Systems, and the Federal data identification effort noted above, the CCRO will be concentrating on new data and information products to satisfy some user needs now responded to only by referrals. A bibliography of the CCRO/RCRO resource files will soon reside on Network personal computer to complement the Federal grey literature files. This will facilitate a more intense and timely search of inhouse data and information holdings. The continued interest by some Federal agencies to employ NODC data formats and codes in their developing data base systems should facilitate new NODC marine pollution data acquisitions and more accessible retrievals from NODC and other systems for future OPDIN requests. A followup questionnaire as part of a request transmittal will be designed to better monitor decision makers' marine pollution concerns and regional interests in the future.

REFERENCES

- Audet, J. 1983. The Ocean Pollution Data and Information Network (OPDIN), Proceedings of Oceans'83, Vol. I, pp. 115-118, September, 1983.
- CCRO. 1985a. Handbook of Federal Systems and Services, for Marine Pollution Data and Information, Central Coordination and Referral Office,

National Oceanographic Data Center,
NOAA, June 1985 (Revised).

CCRO. 1985b. Evaluation of a Prototype Coastal Information System as a Tool for the Ocean Pollution Data and Information Network, Central Coordination and Referral Office, National Oceanographic Data Center, NOAA, June, 1985 (Draft).

NMPPPO. 1984. Inventory of Non-Federally Funded Marine Pollution Research, Development and Monitoring Activities: South Atlantic and Gulf Coastal Region, National Marine Pollution Program Office/National Oceanographic Data Center, NOAA, November 1984.

NMPPPO. 1985a. National Marine Pollution Program: Federal Plan for Ocean Pollution Research, Development, & Monitoring -- Fiscal Years 1985-1989. Prepared by the National Marine Pollution Program Office for the Interagency

Committee for Ocean Pollution Research, Development and Monitoring, September, 1985.

NMPPPO. 1985b. Inventory of Non-Federally Funded Marine Pollution Research, Development and Monitoring Activities: Great Lakes Region, National Marine Pollution Program Office, NOAA, May, 1985.

NMPPPO. 1985c. Inventory of Non-Federally Funded Marine Pollution Research, Development and Monitoring Activities: Northeast and Mid-Atlantic Region, National Marine Pollution Program Office, NOAA, December, 1985.

NMPPPO. 1985d. National Marine Pollution Program: Catalog of Federal Projects -- FY 1984 Update. National Marine Pollution Program Office and National Oceanographic Data Center, June, 1985.