OCEAN DUMPING: A TIME TO REAPPRAISE?

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ISSUE DEFINITION

By adopting the Ocean Dumping Act in 1972, Congress strictly limited or prohibited most ocean dumping practices. Recognizing that little was known of the ocean's assimilative capacity, Congress gave the oceans special protective consideration, stressed alternative land and air disposal, and urged that the oceans be used for waste disposal only as a last resort.

Now, over ten years later, a reappraisal of the original "strictly limit or prohibit" policy may be necessary due to problems associated with two substances which comprise the bulk of ocean-disposed materials: sewage sludge and dredge spoils. The December 1981 phaseout date for harmful municipal sewage sludges was not met by a number of East Coast municipalities, accounting for almost 50% of the sludges now ocean disposed. According to EPA, 8.3 million tons of sewage sludges were ocean disposed in 1983, almost twice the amount disposed in 1973. The volume of ocean-dumped dredge spoils, representing approximately 90% of all substances ocean-disposed, has not been significantly decreased in the ten years since the Ocean Dumping Act was adopted.

On Apr. 24, 1984, EPA designated a new sludge dumping site, 106 miles off the coast, essentially ending sewage sludge disposal at the historical 12 mile New York Bight site, in use since 1924. Dredge spoil dumping will continue at the 12 mile site, however.

Equally significant is the current heightened public awareness of, and sometimes opposition to, the siting of alternative land disposal facilities, including sludge and dredge dump sites. Major increases in land acquisition and facility construction costs, coupled with public resistance to land disposal, have made ocean disposal even more attractive than in the early 1970s.

But, almost a decade of research on the fate and effects of ocean-dumped pollutants has not offered congressional and Administrative policymakers cohesive data upon which to evaluate current and proposed ocean dumping policies. The lack of sound and clearly interpretable information is crucial to this entire issue.

Of immediate significance to the Congress are the proposed FY85 cuts in the National Oceanic and Atmospheric Administration's (NOAA) ocean dumping research and monitoring program. The proposed FY85 level is almost half the current funding. Coupled with this is the elimination of the Sea Grant Program, a program which has fostered considerable university research on ocean dumping and the effects of marine pollution. Coincidentally, one of the very few program increases in the Environmental Protection Agency's (EPA) FY85 budget is for a cross media assessment of waste disposal to determine for which wastes ocean dumping might be more environmentally beneficial.

For the 98th Congress, the main issue will be to reappraise current policy with options of either continuing efforts towards phaseout or reductions, or completely revamping policy in light of phase-out and land disposal problems. Since the foundation of future policy will have to rest on sound data, research results and needs will clearly have to be ascertained.

BACKGROUND AND POLICY ANALYSIS

Congress adopted the Ocean Dumping Act, the first two titles of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1401-1444, P.L. 95-532), partly in response to the Executive recommendations contained in a Council on Environmental Quality report, "Ocean Dumping, 1970." The Act itself banned the dumping of radiological, chemical, and biological warfare agents, and high-level radioactive wastes. The decision on whether other substances were harmful and should be banned was left to the Administrator of the Environmental Protection Agency. The Act was signed the same week as the Federal Water Pollution Control Act (33 U.S.C. 1251 et seq.), which established a multi-billion dollar sewage treatment construction program. The relationship between more advanced treatment of sewage and greater amounts of sewage sludge for ocean disposal was recognized early on. The Ocean Dumping Act viewed ocean disposal as the "last resort" method of disposal, after other alternatives had been evaluated.

Through the establishment of an Environmental Protection Agency permit program, the transportation of most materials for ocean disposal was regulated. Certain specific materials, including most nuclear and chemical warfare agents, were totally banned. EPA was to regulate all materials, except dredged materials, which remained under the Corps of Engineers (COE). However, EPA had to review all dredge disposal sites including ocean, inland, and wetland sites.

Research on the effects of ocean disposal was addressed by the second Title, giving the National Oceanic and Atmospheric Administration (NOAA) authority over effects-research and monitoring the pollutants. Research on alternatives to ocean dumping rested first with NOAA but was later transferred to EPA.

Implementing an ocean dumping policy, for which scientific information was scarce, proved difficult. Regulations on ocean dumping criteria took considerable time to develop and were based on controversial bioassay and bioaccumulation tests of specific marine organisms. The major problem has centered on municipal sewage sludge, growing in volume and degree of pollutants due to more advanced treatment. Several East Coast municipalities were simply not ready to halt sewage sludge disposal because of extreme difficulties in designing facilities and obtaining sites. EPA initially issued "interim" permits and finally mandated December 1981 as a phaseout date for all municipal sewage sludge which unreasonably degraded the environment -- that is, did not meet EPA criteria. In P.L. 95-153, Congress statutorily adopted this phaseout date. Actually, the amount of sewage sludge ocean disposed -- in the New York Bight -- grew by 1.6 million tons or 24% between 1981 and 1983.

Dredge spoils high in contaminants have jeopardized several major dredging projects and many more minor ones, due to the fact that the spoils were unacceptable for ocean disposal. The Corps of Engineers must use an EPA designated and approved dumpsite for dredge spoils. In-place contaminants such as polychlorinated biphenyls (PCBs) and toxic heavy metals in the Hudson River and other areas still make future dredging decisions uncertain.

Some of the major problems associated with the Ocean Dumping Act are the 1981 phaseout date for municipal sewage sludge, ocean disposal of highly

contaminated dredged spoils -- particularly from New York Harbor -- and development of alternatives, as well as the status of effects and alternatives research. A sleeper of an issue concerns the nuclear wastes dumped into the ocean between 1946 and the mid-1960s. Concern exists over exactly how much material was dumped, the locations of the dump sites, and the condition of the dumped cannisters.

Phasing Out Sewage Sludge Dumping

Most East Coast municipalities dumped the sludge from their municipal treatment plants into ocean waters because it was economical and convenient. Population growth and more advanced treatment resulted not only in more sludge but a sludge which, due to advanced treatment, contained higher degrees of contaminants. Sludges vary from municipality to municipality. For instance, industrialized areas such as Philadelphia and New York produce sludges high in mercury and cadmium, while the Washington, D.C., area produces sludges low in contaminants. The former presents problems for both land and ocean disposal, while the latter avails itself to the alternatives of composting, dewatering, and incineration.

While many municipalities have phased out their ocean dumping activities, a GAO study ("Some Communities May Not Be Able to Meet the December 31, 1981 Ocean Dumping Phase Out Deadline for Municipal Sewage Sludge," CED 79-119) expressed doubt that New York, Westchester, and Middlesex Counties, which account for 50% of ocean-disposed sewage sludge, would be able to meet the deadline. According to EPA, only New York was able to decrease the amount of sewage sludge ocean disposed (-6%) between 1981 and 1983, while Westchester County's amount has increased 113% and Middlesex County's 1% in the same period. Showing the greatest increase is Passaic Valley, whose contribution has increased 267% and now accounts for 26% of all ocean disposed sewage sludges. Further, GAO noted that communities that will or might meet the deadline face problems such as public opposition, and difficulties in obtaining dewatering equipment and storage sites. Under pressure to cease ocean dumping and in the face of resistance to facility siting, many municipalities have chosen interim alternatives such as landfilling, composting, or storage. GAO noted that these interim measures were not only more expensive than ocean dumping but they "pose certain environmental and practical problems which may only transfer problems from the ocean to other disposal media, such as land and air."

A few communities cited in the 1979 GAO study have made progress toward meeting the phaseout date. These include several counties in New Jersey. However, the Court recently ordered that New York's Westchester County continue dumping until April 1984 pending completion of a resource recovery plant. A Federal Court Judge ruled on Apr. 14, 1981 (City of New York v. EPA, 80-Cir-1677), that EPA had misconstrued the purpose of the phaseout mandate by including sludges that may not be harmful. On Nov. 2, 1981, the District Court Judge (U.S. District Court for the Southern District of New York) approved a final agreement between New York and EPA. The agreement allows the December 1981 deadline for the phasing out of sewage sludge to remain in effect, but only for ocean dumping which may "unreasonably degrade the environment at a particular ocean dumpsite." The current regulations on ocean dumping were remanded to EPA for revision -- a revision that "may not establish a conclusive presumption of unreasonable degradation of the environment based solely upon a finding that a permit applicant's sludge violates the environmental impact criteria," according to the Court's ruling. While progress toward phasing out continues, activities representing 50% of

all municipal sewage sludges continued after the December 1981 phaseout date. But the large and unaddressed question is the adequacy of facilities to handle future sewage sludge growth. GAO recently found that sewage treatment plants had serious operating problems.

Some think that the answer to the sewage sludge issue lies in the development of sound, economical, and environmentally acceptable alternatives. Composting and incineration are the most viable ones. Many sludges have value for soil enrichment, although capital investment and transportation costs make this an expensive proposition. Incineration has proven very effective but problems with air pollution and facility siting are involved. Others argue that perhaps ocean dumping of some sewage sludges is better than more expensive and sometimes environmentally degrading land disposal.

Dredged Spoils

Dredged spoils comprise the great bulk -- almost 90% -- of ocean-disposed materials and pose certain unique problems in relation to criteria development and disposal methodology. Actual dredging operations are under the jurisdiction of the Federal Water Pollution Control Act (33 U.S.C. 1251, P.L. 92-500, section 404). Likewise, disposal within the territorial limits is covered by the FWPCA, while the Ocean Dumping Act covers the material when transported to the high seas for dumping purposes. EPA must concur in the COE's choice of sites and materials for disposal. Disposal is governed by a EPA/COE developed manual ("Ecological Evaluation of Proposed Discharge of Dredge Material Into Ocean Waters") and the material must be evaluated using EPA criteria contained in 40 CFR pts. 220-228. The evaluation of samples, bioassays, biaccumulation tests, elutriate tests, and initial mixing are covered by this manual.

Dredged spoils from highly urbanized areas often contain cadmium, mercury, and heavy metals from runoff and other nonpoint/untreated sources. Maintenance dredging is not an option but a regular necessity for most ports in the United States. It continues to be cheaper to ocean dispose most dredged spoils than to fill near-shore areas or land sites. In heavily urban areas it is grossly cheaper to barge the wet spoils to ocean sites. New York alone dumps 10 million cubic yards per year and the viability of the New York/New Jersey ports ($40 billion in trade per year) and hinterlands depends on regular dredging. New York, however, is now the center of a controversy. Due to the presence of PCBs in the upper Hudson River, the spoil from New York harbor and berthing areas is unusually high in PCB contaminants. A $20 million effort is underway to clean up 40 hot spots in the upper river, but this will not totally solve the lower river problem. In 1980, permits for crucial dredging were delayed because PCB-contaminated material did not meet ocean dumping criteria. In an eleventh hour decision, the Corps of Engineers and the Environmental Protection Agency adopted an "interim decision matrix" using marine worms for bioassays. While section 115 of the Federal Water Pollution Control Act provides the EPA and the Corps of Engineers the authority to clean up in-place toxic pollutants like PCBs, no funding has been granted for specific projects except for a $1.5 million PCB removal effort in the Waukegan, Illinois, Harbor. Looking to the future, these persistent problems will undoubtedly continue, and new ones may be on the horizon if dredging plans of several potential coal ports, including Baltimore, Hampton Roads, and the lower Mississippi, are undertaken. The environmental problems associated with the acts of both dredging and ocean dumping will undoubtedly be critical to the final decisions on these

projects.

Land Disposal, Incineration, and Other Alternatives

A key to the resolution of the ocean dumping problem rests with developing the alternatives of land disposal or incineration which have their own problems. Composting treated sewage sludge has not become a generally accepted alternative. It involves high capital costs, usually partially funded through the Federal Water Pollution Control Act (FWPCA). Dewatering of the sludge is necessary before land application. Public resistance, resulting from growing public fear due to hazardous chemical waste sites, is fast becoming the major factor related to this alternative. The other major alternative, incineration, requires less land but is also capitally intensive. The Tri-State Sanitary Commission, representing New York, New Jersey, and Connecticut, adopted this as the most viable alternative.

For dredged spoils, the alternatives are near-shore, onshore, and sometimes diked disposal sites. Baltimore, now facing the need for a major dredging project, proposed a dike in Chesapeake Bay -- a proposal facing considerable public and environmental opposition. Los Angeles, after 16 years of planning, is only now beginning a $61 million dredging project, landfilling 191 acres with the fill. One of the major holdups for this project was the environmental concern over nearby wildlife.

Other types of chemicals normally dumped have been significantly diminished due to recovery by industry. And a viable alternative for chemical dumping is ocean based incineration. EPA announced Apr. 23, 1984, that it recommended delaying the issuance of permits for commercial permits for burning 79.7 million gallons of toxics in the Gulf of Mexico until regulations are promulgated in December 1984. EPA also recommended that research permits be granted now for 3.3 million gallons.

Nuclear Disposal in the Ocean

While nuclear ocean disposal was stopped in the 1960s, interest in the exact locations and well-being of the nuclear cannisters continues. The Ocean Dumping Act prohibits only the dumping of high-level nuclear wastes, not low-level wastes, which have been prohibited by EPA regulations. Low-level wastes were disposed of in deepwater sites near the Pacific's Farallon Islands and in the 2800 meter location off the Delaware Coast. During the 96th Congress, the House Committee on Science and Technology heard testimony casting doubt on the condition of disposed cannisters, the exact location and volumes of previously disposed nuclear agents, and questioning the role of the Department of Defense. No precise accounting of past activities has yet been assembled.

European nations, including Belgium, the Netherlands, Switzerland, and Great Britain regularly dump low-level wastes in the North Atlantic. With increased opposition to land-based nuclear disposal sites, some interest in U.S. investigation of nuclear ocean disposal has been suggested. Therefore, monitoring of cannisters already dumped and of the European experience could be worthwhile if the current Administration ban on all nuclear disposal is to be upheld or reassessed.

Two major Federal projects demonstrate that the idea of utilizing the oceans as a depository for nuclear waste is not a dead issue. The Navy

recently announced its intention to begin preliminary studies on the feasibility of scuttling approximately 100 decommissioned nuclear submarines over the next three decades. The Department of Energy is engaged in a multi-million dollar study of the feasibility of deep seabed emplacement of high-level waste cannisters.

Effects Research -- the Heart of the Issue

Congress clearly recognized the data gap existing in our knowledge of the effects of ocean dumping activities. To a great degree, that gap still exists, leaving congressional policymakers without clearly interpretable data upon which to direct or assess current ocean dumping policy.

Possible effects of ocean disposal include the introduction of pathogens, toxic heavy metals, and chlorinated organic chemicals into the marine environment where they might affect humans and marine life. The introduction of harmful substances and the physical alteration of the ocean environment can harm marine life and fauna, jeopardizing commercial shellfish and fish. Other potential effects include purely physical changes in water columns, sediments, and the formation of unsightly slicks and fouling of beaches.

The dynamics of the marine environment and the great differences among dumpsites make assessment of these possible effects difficult. Some tests have been developed, to assist administrative decisionmaking, to assess the immediate biological effects as well as any accumulated effects on marine life.

Disposal methodologies and site characteristics are as important as the relationship between substances and marine life. Mixing and dispersion, which can alter the toxicity of substances, vary from site to site. Only a few sites have been investigated to any degree to determine their acceptability for waste disposal.

Part of the failure of research to arrive at useful data is attributable to the Federal policy of phasing out or reducing most ocean dumping. This phaseout policy has not encouraged funding for research.

The danger of infective and toxic agents, contained in sewage sludges and dredged spoils, has not been precisely gauged. Until these potentialities are more clearly addressed and outlined for Congress, it will remain difficult to arrive at a well-defined ocean dumping policy to protect human health and the marine environment.

Issues for Congress

Within the framework of the ocean dumping problems discussed here, there are several issues that might be of interest to the 98th Congress. There appear to be seven policy areas, and several major questions worth addressing:

(1) The prime issue of deciding whether to continue the "strictly limit or prohibit" policy or to reassess this policy in light of social, economic, and environmental problems associated with land and air disposal alternatives and with implementing current policies.

(2) What will be the effect of the major reductions in NOAA's research and monitoring budget, and the elimination of the Sea Grant Program?

(3) Does Congress want to insist on the phaseout policy, allow waivers, or adopt a completely new approach to sewage sludge disposal?

(4) In relation to sewage sludge, what is the future for the funding of facilities that are viewed as crucial to phasing out the ocean dumping of sewage sludge? Will this redirection affect ocean dumping, perhaps making ocean disposal even more inviting?

(5) Dredged spoils and what to do with them is another issue for Congress. With the amounts of spoils likely to increase, new disposal activity will be necessary. What is the effect of ocean dumping regulation on proposed energy-related dredging projects?

(6) Alternatives have included land disposal and incineration, both of which have experienced their own problems. Does moving ocean disposal to land and air really lessen environmental harm or merely complicate it? Is our waste disposal policy balanced or biased in favor of marine protection at the expense of other disposal media?

(7) Where are the disposed nuclear materials and how are they faring? In light of the European experience in dumping low-level nuclear wastes, is this an option for the United States? And, are the oceans an appropriate and environmentally sound alternative for disposal of high-level wastes?

(8) Finally, where are we in respect to effects and fate research? Does Congress have reliable information to make definitive ocean waste disposal policy?

LEGISLATION

H.R. 1547 (Scheuer)

Reauthorizes the Title II research provisions of the Marine Protection, Research and Sanctuaries Act at a level of $12 million for FY84, and FY85. The bill also would require NOAA to define harmful quantities, and the ability of marine waters to assume waste materials. EPA would be required to assess regional waste disposal plans and report to Congress on sludge disposal in the New York area. Introduced Feb. 17, 1983; referred to the House Committees on Merchant Marine and Fisheries, and Science and Technology. Reported from Committee on Merchant Marine and Fisheries (H.Rept. 98-186) May 16, 1983.

H.R. 1761 (D'Amours)

Reauthorizes the Title I permit provisions of the Ocean Dumping Act at $4.2 million for FY83, and FY84. Additionally, it would change some technical definitions, require extensive site study before an area could be

designated for ocean dumping, expand the concept of monitoring and provide a more thorough program of site monitoring. Introduced Mar. 2, 1983; referred to Committee on Merchant Marine and Fisheries. Reported (H.Rept. 98-200) May 16, 1983. Passed House Oct. 31, 1983.

H.R. 4829 (D'Amours)

Reauthorizes Title I ($4.8 million for FY85) of the Marine Protection, Research and Sanctuaries Act to establish permit fees, site selection criteria and end dumping at the New York Bight Apex. Introduced Feb. 9, 1984; referred to Committee on Merchant Marine and Fisheries.

S. 1282 (Chaffee)

Reauthorizes Title I and II of the Marine Protection Research and Sanctuaries Act. Introduced May 16, 1983; referred to Committee on Environment and Public Works. Reported (S.Rept. 98-88), May 16, 1983.

HEARINGS

U.S. Congress. House. Committee on Public Works and Transportation. Ocean dumping. Hearing, 97th Congress, 2nd session, on H.R. 6113. June 16, 1982. Wash., U.S. Govt. Print. Off. 1982 244 p.

U.S. Congress. House. Committee on Science and Technology. Environmental effects of sewage sludge disposal. Hearing, 97th Congress, 1st session. May 27, 1981. Washington, U.S. Govt. Print. Off., 1981. 109 p.

REPORTS AND CONGRESSIONAL DOCUMENTS

U.S. Department of Commerce. National Oceanic and Atmospheric Administration. Assimilative capacity of U.S. coastal waters for pollutants. Boulder, NOAA Environmental Research Laboratories. December 1979. 284 p.

U.S. National Advisory Committee on Oceans and Atmosphere. The role of the ocean in a waste management strategy. Washington, U.S. Govt. Print. Off. January 1981. 103 p. + Append.

CHRONOLOGY OF EVENTS

04/24/84 -- EPA announced designation of 106 mile sludge dumpsite, and closing of 12 mile site for sludge disposal.

03/07/84 -- Subcommittees on Fisheries, Wildlife Conservation and Environment, and on Oceanography approved H.R. 4829.

03/01/84 -- House Committee on Merchant Marine and Fisheries held hearings on ocean dumping of municipal sewage sludge.

12/07/83 -- House Committee on Merchant Marine and Fisheries held hearings on incinerating toxic wastes at sea.

07/21/83 -- House Committee on Public Works held hearings on Ocean Dumping Act Amendments.

05/25/83 -- House Committee on Merchant Marine and Fisheries held hearings on ocean dumping of municipal sewage sludge.

05/12/83 -- House Committee on Merchant Marine and Fisheries conducted hearings on H.R. 1700, Title I reauthorization.

04/21/83 -- House Committee on Merchant Marine and Fisheries held hearings on H.R. 1761, the Ocean Dumping Act Amendments.

03/21/83 -- House Committee on Merchant Marine and Fisheries held hearings on H.R. 1547, Title II reauthorizations, and other marine pollution bills before the Committee.