

THE PROTECTION OF SPECIFIC SEA AREAS AGAINST MARINE DEBRIS

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ABSTRACT

The problems associated with debris in the marine environment are being given increased attention. At the international level this attention is reflected in a number of international agreements. Most of the relevant international regulations aim at reduction of debris-associated pollution at the source. In addition to policies aimed at source control, efforts are also made to develop protective measures for specific sea areas. This paper discusses efforts currently under way within the framework of the International Maritime Organization.

In the mid-1980's, the International Maritime Organization decided to develop guidelines for the designation of "special areas" and the identification of "particularly sensitive areas." These guidelines should assist national authorities in developing measures to provide specific areas with additional protection from environmental damage caused by shipping activities. The Baltic Sea became a special area as of 1 October 1989. The United States has announced a proposal to designate the Gulf of Mexico as an Annex V special area as well. The Governments of the North Sea States have formally proposed to do the same for the North Sea. Another major option to protect specific sea areas is the designation "area to be avoided by ships." The Northwestern Hawaiian Islands are an example of such an area.

INTRODUCTION

Several years ago, a photograph of a dead albatross spread out on a beach together with a systematic display of the plastics found in the bird's stomach brought home to me the point that there was more to pollution of the seas than oil or chemicals. Photographs like this one of

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birds and sea mammals entangled in or killed by plastics and other persistent materials have helped to increase attention for the problems associated with debris in the marine environment worldwide.

My first real encounter with debris-associated pollution was on board a Greek passenger ferry in the Mediterranean. Passengers freely threw plastic bags and other garbage overboard. It emphasized the importance of shipping as a source of this type of pollution.

My second important encounter with debris-associated pollution involved an invitation by an artisanal fisherman in one of the Southeast Asian countries to come and see how plastics rather than fish filled his nets. He took me to the source of these plastics. The waste dump of the town he lived in was located on a waterfront. One of the ironies of this was that waste from this dump would not only fill the fisherman's nets, but would also wash up at the town's beaches. These beaches were cleaned regularly, and the collected waste brought to this waste dump. It reminded me that there were more sources of debris-associated pollution than ships.

Increased attention to the problem has now led to increased attention to measures to control pollution from land-based sources as well as from ships on both national and international levels. This paper concentrates on international measures.

SOURCES OF DEBRIS-ASSOCIATED POLLUTION AND INTERNATIONAL AGREEMENTS FOR POLLUTION CONTROL

Land-Based Pollution

Although the international dimension of debris-associated land-based pollution appears to be limited, there are some important international agreements in this respect. The Convention for the Protection of the Mediterranean Sea Against Pollution and its related protocols (1976) is one of these. "Persistent synthetic materials which may float, sink or remain in suspension and which may interfere with any legitimate use of the sea" are on the Annex I list of the Protocol for the Protection of the Mediterranean Sea Against Pollution from Land-Based Sources (1980); "substances which, though of a non-toxic nature, may become harmful to the marine environment or may interfere with any legitimate use of the sea owing to the quantities in which they are discharged" are on the Annex II list of this protocol. Pollution by Annex I substances should be eliminated (Art. 5 of the protocol); pollution by Annex II substances should be strictly limited (Art. 6 of the protocol). Similar regulations have been included in other international agreements regarding land-based pollution such as the Convention for the Protection of the Marine Environment and Coastal Area of the Southeast Pacific and its Supplementary Agreements (1981, 1983), and the Paris Convention for the Prevention of Marine Pollution from Land-Based Sources (Northwestern Europe 1974).

If effectively implemented, these regulations should provide a basis for sufficient control of debris-associated land-based pollution in the areas where these regulations apply.

Dumping of Wastes at Sea

Another source of debris-associated pollution is the dumping of wastes at sea. On a global as well as on a regional level, international agreements have been developed to regulate the dumping of wastes at sea. The global Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (the so-called London Dumping Convention of 1972) has addressed the dumping of plastics and other types of debris by putting "persistent plastics and other persistent synthetic materials, for example, netting and ropes, which may float or remain in suspension in the sea in such a manner as to interfere materially with fishing, navigation or other legitimate uses of the sea" on its Annex I. The dumping of Annex I substances at sea is prohibited (Art. IV.1.a). "Containers, scrap metals or other bulky wastes liable to sink to the sea bottom which may represent a serious obstacle to fishing or navigation" and "substances which, though of a nontoxic nature, may become harmful due to the quantities in which they are dumped, or which are liable to seriously reduce amenities" were put on Annex II, thus requiring a prior special permit if dumping is to take place (Art. IV.1.b).

Guidelines have been developed for the identification of discharge or dump sites. These guidelines include consideration of such factors as the capacity of the receiving marine environment to receive wastes without undesirable effects and the ecological condition of the area.

Effective implementation of the London Dumping Convention (which, in early 1989, had been ratified by 63 states) could be the basis for controlling this source of pollution.

Operational Pollution From Ships

Research into the origin of plastics and other marine debris suggests that a substantial part of these substances originates from ships at sea (e.g., Dixon and Dixon 1981). A recent report about the German Bight (Schrey 1987) estimates that 95% of the refuse found on beaches of the German Bight can be attributed to shipping.

Any effort to control this source of debris-associated pollution from ships must have an international dimension since most of the world's seas and oceans are international waters. Ships traveling these waters are flying the flags of many nations. International regulations affecting these ships are developed by the International Maritime Organization (IMO), a United Nations agency which as of April 1989 had 133 member states and which consequently is well placed to effectively develop such international regulations.

Operational pollution from ships has been regulated by the IMO in the International Convention for the Prevention of Pollution from Ships (the so-called MARPOL Convention of 1973/78). This convention is now under constant review by IMO's Marine Environment Protection Committee (MEPC). The MARPOL Convention includes regulations to control operational pollution from ships with oil (Annex I), noxious liquid substances in bulk (Annex

II), harmful substances in packaged forms (Annex III), sewage (Annex IV), and garbage (Annex V). Marine debris falls within the scope of Annex V of the MARPOL Convention.

It is important to properly appreciate the MARPOL Convention. This convention was concluded in 1973 and, at that time, already included very strict rules with regard to the disposal of plastics at sea. Yet, its Annex V, the plastic and garbage regulations, did not enter into force until more than 15 years later, on 31 December 1988.

THE EFFECTIVENESS OF EXISTING INTERNATIONAL MEASURES WITH RESPECT TO MARINE DEBRIS

International regulations for control at the source of the introduction of marine debris into the marine environment do exist. The important question, however, is whether they are effective.

As regards land-based pollution, there is only one global international instrument, the so-called Montreal Guidelines. Their effectiveness is limited because they are not binding. Most of the regional international regulations are no more than one or two general articles in a general convention on environmental protection. There are only a few exceptions where special protocols or specific conventions with regard to land-based pollution were developed. The effectiveness of the existing regulations is limited because there is no worldwide coverage of international regulations; many regions do not have such regulations.

There is some doubt about the effectiveness of regional international regulations where these have been developed up to a level of specialized protocols or even specific conventions. One example may illustrate this. With respect to synthetic materials (a blacklisted substance in the Paris Convention), no action at all appears to have been taken by the Commission of the Paris Convention in the first 10 years of its existence (Oslo and Paris Commission 1984; Paris Commission 1987).

As for the dumping of wastes, the London Dumping Convention seems to be an effective instrument. Nevertheless, in at least one instance the convention failed for lack of enforcement.

In April 1988, the car-carrier *Reijin*, with more than 5,000 new cars on board, capsized close to the Portuguese coast. After considering the various salvage options, it was decided to dump two-thirds of the cars from the ship into water 2,000 m deep. The wreckage of the ship together with the remaining cars were then to be sunk in deep water as well (MEPC 1989a). In effect this would mean the dumping at sea of a number of substances from Annex I of the London Dumping Convention for which dumping at sea is prohibited. Plastics and other persistent materials used in the cars were among these Annex I substances. During the 1988 Consultative Meeting of Contracting Parties to the London Dumping Convention, the delegation of Denmark as well as observers from the environmental organizations Greenpeace and Friends of the Earth International raised the issue as being at odds with the regulations and spirit of the London Dumping Convention. The

consultative meeting took no action (pers. observ.). Dumping of cars at sea did start but was stopped after a time.

Finally, with respect to operational discharges by ships, not enough time has elapsed since the entry into force of Annex V of the MARPOL Convention to judge its effectiveness. Doubts have been raised, however, in this regard. Many consider control and enforcement of the provisions of the annex to be extremely difficult. Guidelines for its implementation were completed by MEPC in September 1988 (MEPC 1988f), less than 4 months before its entry into force. It is doubtful whether the necessary reception facilities are available in all ports.

THE PROTECTION OF SENSITIVE SEA AREAS AGAINST DAMAGE BY SHIPPING ACTIVITIES: BACKGROUND

Considering the problems encountered in controlling the discharge of marine debris at the source, one wonders whether a complementary approach of giving special protection to specific sensitive areas might be useful. Within the IMO, efforts are now under way to assess the opportunities such an approach might offer with respect to marine pollution caused by ships.

The IMO has several options for providing additional environmental protection to specific sensitive sea areas. These include the designation of areas as "special areas" under the MARPOL Convention, the designation of areas as "areas to be avoided," or the use of other ship's routing measures such as traffic separation schemes and deep-water routes. With respect to debris-associated pollution, the first two options are especially relevant.

Special areas will normally be larger sea areas. To provide some protection for sea areas which would not qualify as special areas, the International Conference on Tanker Safety and Pollution Prevention in 1978 adopted a resolution which invited the IMO:

"to initiate. . . studies, in collaboration with other relevant international organizations and expert bodies, with a view to making an inventory of sea areas. . . which are in special need of protection against marine pollution from ships and dumping. . . ; assessing. . . the extent of the need of protection, as well as the measures which might be appropriate. . . ; to consider. . . what action will be needed. . . ; to take action. . . within the framework of the relevant conventions. . . ."

In 1985, the IMO started to work on this issue of particularly sensitive sea areas and put it on the agenda of the twenty-third session of the MEPC, which was to take place in 1986. Discussion of the issue at this meeting (MEPC 1986) resulted in the decision to send out a circular letter to IMO member states inviting these states to provide information on the following:

- Criteria which have been used in designating existing marine areas under national jurisdiction which are particularly sensitive with respect to their renewable natural resources

or their importance for scientific purposes, and for which special protection measures are in force.

- National protection measures and restrictions affecting the use of such areas by ships and related maritime activities, and the specific purpose of the restrictions imposed.
- The geographical location of those marine areas which are already protected and of those areas considered for future protection, the seaward limits of which extend beyond the territorial seas established in accordance with international law.

On the basis of the responses to this circular letter, the MEPC developed criteria for the designation of particularly sensitive sea areas and also started work on developing criteria for the designation of special areas. At the twentieth-sixth session of MEPC, a proposal was put before the MEPC on how to proceed and how to make the concept of particularly sensitive sea areas operational (MEPC 1988d).

The proposal did not aim at developing new legal instruments, but at making better use of existing international regulations (such as the designation of special areas) for the protection of specific sea areas against damage caused by shipping activities. The MEPC adopted this proposal (MEPC 1988f) and decided to develop a manual for the designation of particularly sensitive sea areas and special areas. Since the adoption of this proposal some changes have been made to the concept of the manual, including its title, which now is "Guidelines for the designation of special areas and the identification of particularly sensitive areas" (MEPC 1990). The basic concept of providing guidance for better use of existing international regulations is still the same.

GUIDELINES FOR THE DESIGNATION OF SPECIAL AREAS AND THE IDENTIFICATION OF PARTICULARLY SENSITIVE AREAS

The main objective of the guidelines is to provide governments or government departments having limited experience in developing proposals to the IMO with detailed guidance on how to prepare such proposals for environmental protection of specific sea areas. It will also set standards which proposals for the designation of special areas will have to meet if they are to be accepted.

The guidelines will present a range of existing international regulations which could be used better or more frequently for environmental protection purposes. They will be restricted to damage from ships in or in the direct vicinity of an area, and will not address land-based pollution or the dumping of wastes at sea.

They will consist of three parts: (1) a general introduction, (2) criteria and procedures for the designation of special areas as well as some examples of special areas already designated, and (3) criteria for the identification of particularly sensitive areas, criteria and procedures to

provide such areas with additional protection in accordance with IMO regulations, and some examples of areas which have already been given such additional protection.

Guidelines: General Introduction

This first chapter of the guidelines will review their history and background as well as the role the IMO can play in the protection of sensitive sea areas. Attention will also be given to the types of damage ships can cause to sensitive sea areas. One of these will be the discharge of marine debris, including plastics.

The list will, however, not be limited to discharges of the "traditional" substances such as oil or chemicals; it will also include the discharge of ballast water contaminated with "alien" organisms (which has already caused problems near Tasmania, Australia, and in the Great Lakes, Canada, and the United States), the "discharge" of TBT paints from the hull of ships into the marine environment, and even the "discharge" of noise.

Neither will it be limited to damage caused by discharges; physical damage to marine ecosystems (such as the damage to coral reefs caused by the grounding of the *Wellwood* off Key Largo, Florida, United States, in 1984) will also be discussed.

Guidelines: Special Areas

The second chapter of the guidelines will address the designation of special areas. Annex V of the MARPOL Convention defines a special area as "a sea area where for recognized technical reasons in relation to its oceanographic and ecological condition and to the particular character of its traffic the adoption of special mandatory methods for the prevention of sea pollution by garbage is required" (Annex V, Reg. 1.3). The disposal of all plastics, including but not limited to synthetic ropes, synthetic fishing nets, and plastic garbage bags, and of all other garbage, including paper products, rags, glass, metal, bottles, crockery, dunnage, lining, and packing materials is prohibited in special areas. Food wastes can only be disposed of as far as practicable from land but in any case not less than 12 nmi from the nearest land (Annex V, Reg. 5.2).

A word of caution is appropriate with respect to the potential merits of the stricter discharge regime of an Annex V special area: The disposal into the sea of all plastics is prohibited everywhere in the world's seas and oceans. The designation of an area as an Annex V special area will not give any additional protection against plastics pollution beyond that. The merit in this respect would be the increased pressure in such areas to provide the necessary port reception facilities for plastics and other garbage. The disposal into the sea of other types of garbage (e.g., dunnage, lining) would be further limited by a designation as an Annex V special area provided the area is large enough to include areas which are more than, respectively, 25 or 12 nmi from the nearest land. If not, discharge regulations similar to those for a special area will apply anyway within 25 nmi from the nearest land for dunnage, lining, and packing

materials which will float, and within 12 nmi from the nearest land for food wastes and all other garbage.

Five sea areas (the Mediterranean Sea, the Baltic Sea, the Black Sea, the Red Sea, and the "Gulfs Area" (Annex V, Reg. 5.1)) have each been designated as Annex V special areas, but this designation is effective only for the Baltic Sea. For the other sea areas, the special area status will enter into force as soon as there are sufficient reception facilities for garbage in the area (Annex V, Reg. 5.4). In October 1989, the decision was made to designate the North Sea as an Annex V special area. A proposal to designate the Gulf of Mexico as an Annex V special area has been discussed by MEPC but no decision to do so has been made.

Criteria for the designation of special areas were developed during MEPC's twenty-sixth session (MEPC 1988a) and were amended in March 1990 during MEPC's twenty-ninth session (MEPC 1990). They include oceanographic conditions (e.g., particular circulation patterns, long residence times, extreme ice states or adverse ice conditions), ecological conditions (e.g., depleted, endangered, or threatened species; areas of high natural productivity; spawning, breeding, and nursery areas; rare or fragile ecosystems or critical habitats), and vessel traffic characteristics. A special area should also be an area of such a size that, were it not a special area, discharges of garbage could be made in the area in accordance with the discharge criteria of Annex V established for open sea areas.

It was also noted that consideration should be given to the extent to which the condition of a sea area is influenced by nonmaritime sources of pollution. Proposals for the designation of a special area will be strengthened by information on measures that are being or will be taken to prevent, reduce, and control pollution of the marine environment by these other sources of pollution.

The Baltic Sea: The First Annex V Special Area

To date, the Baltic Sea is the only Annex V special area to enter into force. At the twenty-sixth session of the MEPC, the Governments of the Baltic Sea States submitted notification to the IMO that adequate reception facilities had been provided in all ports within the Baltic Sea Area (MEPC 1988e). The MEPC then unanimously decided that the Annex V special area status for the Baltic Sea would take effect on 1 October 1989 (MEPC 1988f).

The North Sea: A New Annex V Special Area

At the same twenty-sixth session of the MEPC, the Governments of the North Sea States submitted a proposal to the MEPC to designate the North Sea as an Annex V special area (MEPC 1988b, 1988c). The proposal was finally adopted in October 1989 at the twenty-eighth session of the MEPC.

The proposal was a result of the second International Conference on the Protection of the North Sea, which was held in London in November 1987. The North Sea States were under considerable pressure from some of their members and environmental organizations to designate the North Sea as a special area for the purposes of Annex I (oil) and Annex II (chemicals in

bulk) of the MARPOL Convention. While no agreement on this could be reached during this conference, they did in the end agree to designate the North Sea as an Annex V special area.

Is this proposal superfluous? No, there is good reason for the designation. Reports on plastics and debris in the North Sea area published about the time of the North Sea Conference (e.g., Schrey 1987) have indicated the seriousness of the situation, a situation underscored during the coffee break that followed the decision on Annex V special area status for the North Sea. As delegates to the twenty-sixth session of the MEPC watched, a rising tide brought an influx of garbage up the Thames. The Annex V special area status will contribute considerably to limiting the input of nonplastic or nonsynthetic garbage into the North Sea.

Guidelines: Particularly Sensitive Areas

Criteria and Options

Criteria for the identification of particularly sensitive areas include ecological criteria (uniqueness, dependency, representativeness, diversity, productivity, naturalness, integrity, vulnerability); social, cultural, and economic criteria (economic benefit, recreation, human dependency); and scientific and educational criteria (research interest, suitable conditions for baseline and monitoring studies, opportunities for educational activities, historic value).

Actions already under way may indicate the need for further protective measures. Consideration should be given to the beneficial effects of such measures, in view of the environmental stress from other sources.

Once an area has been identified by the IMO as a particularly sensitive area, the IMO has several options for providing it with additional protection. These include the introduction of special ships' routing measures to increase safety of navigation in or near the area such as vessel traffic separation schemes, deepwater routes, or even vessel traffic management systems. The most important instrument the IMO can use is the designation "area to be avoided."

Areas to Be Avoided

The guidelines will give substantial information about the designation of a particularly sensitive area as an area to be avoided. It is a ship's routing measure "comprising an area within defined limits in which either navigation is particularly hazardous or it is exceptionally important to avoid casualties and which should be avoided by all ships, or certain classes of ships" (IMO 1984). From a number of existing areas to be avoided, it appears to be accepted practice now that "casualties" are interpreted as environmental damage. Areas which for environmental purposes have been designated as areas to be avoided include waters near Cape Terpeniya (Sakhalin, U.S.S.R.), the waters of Nantucket Shoals (United States), a part of the Great Barrier Reef (Australia), an area near the Bermuda Islands (Great Britain), and the Northwestern Hawaiian Islands (United States) (IMO 1984).

The designation of an area as an area to be avoided is not a measure to limit discharges, yet it is consequential to such a decision that in an area where fewer ships are allowed, ships cannot discharge.

The Northwestern Hawaiian Islands (a U.S. wildlife refuge) was established as an area to be avoided after a shipping accident there pointed up the associated risk of pollution. All vessels of more than 1,000 gross tons (GT) carrying cargoes of oil or hazardous materials should avoid the area, which includes the waters within a circle radius of 50 nmi around Pearl and Hermes Reef, Lisianski Island, Laysan Island, Maro Reef, Gardner Pinnacles, French Frigate Shoals, Necker Island, and Nihoa (IMO 1984). There is a substantial area of ocean space beyond 12 and 25 nmi where certain types of garbage can legally be discharged by ships larger than 1,000 GT if these ships can enter the area.

The prevention of discharge of garbage or other marine debris by ships has, of course, not been an objective of this designation. It would nevertheless be interesting to know whether the status of these waters as an area to be avoided has contributed in any way to limit debris-associated pollution.

CONCLUSION

Reduction of discharges at the source on the basis of globally enforced discharge standards should continue to be the first choice when dealing with pollution by marine debris. However, the "guidelines for the designation of special areas and the identification of particularly sensitive areas" can nevertheless provide a useful tool in the protection of specific sea areas against this type of pollution. The designation of special areas in accordance with MARPOL Annex V should, if effectively implemented, prove to be a valuable instrument against marine debris discharged by ships. Measures such as the designation of areas to be avoided could further add to the opportunities to protect specific sea areas against marine debris.

REFERENCES

- Dixon, T. R., and T. J. Dixon.
1981. Marine litter surveillance. *Mar. Pollut. Bull.* 12:289-295.
- International Maritime Organization.
1984. General provisions on ships' routing. *Ships' routing*. 5th ed, International Maritime Organization, London.
- Marine Environment Protection Committee.
1986. Report of the Marine Environment Protection Committee on its twenty-third session. Document MEPC 23/22. International Maritime Organization.
1988a. Annex 10 of the report of the Marine Environment Protection Committee on its twenty-sixth session. Document MEPC 26/25, 28 September 1988, International Maritime Organization.

- 1988b. Consideration of the North Sea as a special area under Annex V, submitted by the United Kingdom. Document MEPC 26/6, 2 June 1988, International Maritime Organization.
- 1988c. Consideration of the North Sea as a special area under Annex V, submitted by the United Kingdom. Document MEPC 26/6/1, 8 July 1988, International Maritime Organization.
- 1988d. Identification of particularly sensitive sea areas, including development of guidelines for designating special areas under Annexes I, II, and V, submitted by Friends of the Earth International (FOEI). Document MEPC 26/INF.20, 5 August 1988, International Maritime Organization.
- 1988e. Notification to IMO concerning the establishment of the Baltic Sea area as a "special area" for the purposes of Annex V of MARPOL 73/78, submitted by Denmark, Finland, the German Democratic Republic, the Federal Republic of Germany, Poland, Sweden and the USSR. Document MEPC 26/10/1, 17 June 1988, International Maritime Organization.
- 1988f. Report of the Marine Environment Protection Committee on its twenty-sixth session. Document MEPC 26/25, 28 September 1988, International Maritime Organization.
- 1989a. Information from an intervention on this issue by the Portuguese delegation during the twenty-ninth session of the Marine Environment Protection Committee of the International Maritime Organization on 16 March 1989.
1990. Report of the working group on particularly sensitive sea areas. Document MEPC 29/WP.16, 15 March 1990, International Maritime Organization.
- Oslo and Paris Commissions.
1984. The Oslo and Paris Commissions, the first decade. International Co-Operation in Protecting our Marine Environment, London.
- Paris Commission.
1987. The Paris Commission. Ninth Annual Report on the Activities of the Paris Commission, London.
- Schrey, E.
1987. Burdening of the German Bight by ship's refuse. Forschungsbericht 102 04 327 UBA-FB 87-041 by Order of Umweltbundesamt, Berlin, November 1987.
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