SPECIFIC GUIDELINES FOR ASSESSMENT OF *VESSELS*

1 INTRODUCTION

1.1 The Guidelines for the Assessment of Wastes or Other Matter that May be Considered for Dumping[1], referred to in short as the "Generic Guidelines", as well as the Specific Guidelines for Assessment of Vessels addressed in this document are intended for use by national authorities responsible for regulating dumping of wastes and embody a mechanism to guide national authorities in evaluating applications for dumping of wastes in a manner consistent with the provisions of the London Convention 1972 or the 1996 Protocol thereto. Annex 2 to the 1996 Protocol places emphasis on progressively reducing the need to use the sea for dumping of wastes. Furthermore, it recognizes that avoidance of pollution demands rigorous controls on the emission and dispersion of contaminating substances and the use of scientifically based procedures for selecting appropriate options for waste disposal. When applying these Guidelines uncertainties in relation to assessments of impacts on the marine environment will need to be considered and a precautionary approach applied in addressing these uncertainties. They should be applied with a view that acceptance of dumping under certain circumstances does not remove the obligation to make further attempts to reduce the necessity for dumping.

1.2 The 1996 Protocol to the London Convention 1972 follows an approach under which dumping of wastes or other matter is prohibited except for those materials specifically enumerated in Annex I, and in the context of that Protocol, these Guidelines would apply to the materials listed in that Annex. The London Convention 1972 prohibits the dumping of certain wastes or other matter specified therein and in the context of that Convention these Guidelines meet the requirements of its Annexes for wastes not prohibited for dumping at sea. When applying these Guidelines under the London Convention 1972, they should not be viewed as a tool for the reconsideration of dumping of wastes or other matter in contravention of Annex I to the London Convention 1972.

1.3 The schematic shown in Figure 1 provides a clear indication of the stages in the application of the Guidelines where important decisions should be made and is not designed as a conventional "decision tree". In general, national authorities should use the schematic in an iterative manner ensuring that all steps receive consideration before a decision is made to issue a permit. Figure 1 illustrates the relationship between the operational components of Annex 2 of the 1996 Protocol and contains the following elements:

.1 Waste Prevention Audit (Chapter 2)
.2 Vessels: Waste Management Options (Chapter 3)
.3 Waste Characterization: Chemical/Physical Properties (Chapter 4)

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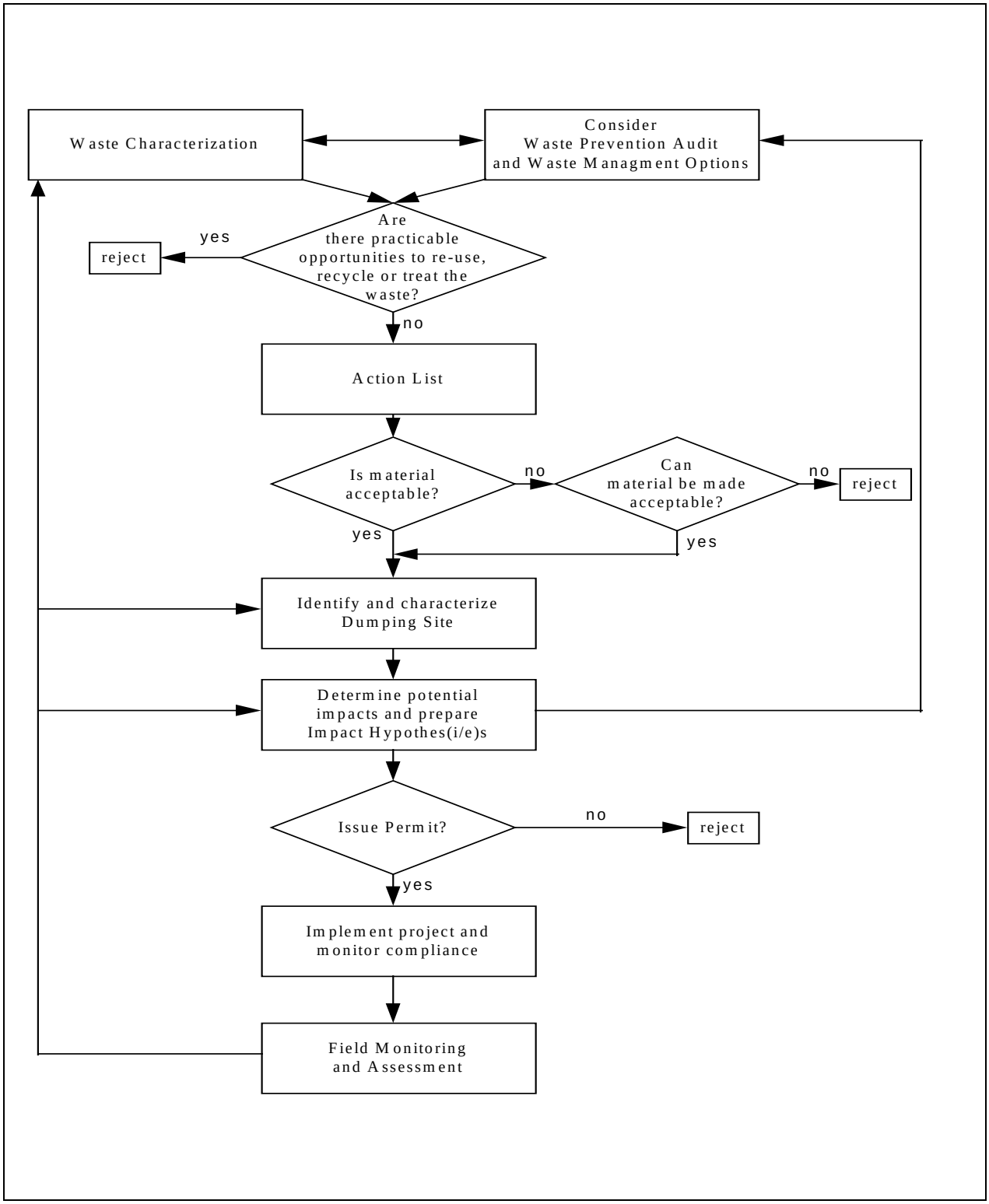
[1] The Nineteenth Consultative Meeting of Contracting Parties to the London Convention 1972 adopted these Guidelines in 1997.

.4 Disposal at Sea: Best Environmental Practices (Chapter 5) – (Action List)
.5 Identify and Characterize Dump-site (Chapter 6) (Dump-site Selection)
.6 Determine Potential Impacts and Prepare Impact Hypothesis(es) (Chapter 7) (Assessment of Potential Effects)
.7 Issue Permit (Chapter 9) (Permit and Permit Conditions)
.8 Implement Project and Monitor Compliance (Chapter 8) (Monitoring)
.9 Field Monitoring and Assessment (Chapter 8) (Monitoring).

Figure 1



1.4 These Guidelines[2] refer to "vessels at sea" as specified in Annex I (11)(d) to the London Convention 1972 and in Annex 1(1.4) to the 1996 Protocol. Adherence to the following represents neither a more restrictive nor a less restrictive regime than that of the generic Guidelines of 1997. For purposes of these Guidelines, vessels are defined as any waterborne or airborne craft of any type whatsoever. This includes submersibles, air-cushioned craft and floating craft whether self-propelled or not. The assessment of platforms or other man-made structures at sea is covered in separate specific Guidelines.

1.5 These Guidelines set out the factors to be addressed when considering disposal of vessels at sea, with particular emphasis on the need to evaluate alternatives to sea disposal prior to sea disposal being determined the preferred alternative.

1.6 There are a large number of different types of vessels, which may be considered for disposal in the ocean. Permitting authorities should determine the minimum size vessel to which these Guidelines apply.

2 WASTE PREVENTION AUDIT

2.1 The initial stages in assessing alternatives to dumping should, as appropriate, include an evaluation of the types, amounts and relative hazards of wastes generated (See also Chapter 4 below).

2.2 In general terms, if the required audit reveals that opportunities exist for waste prevention at source, an applicant is expected to formulate and implement a waste prevention strategy in collaboration with relevant local and national agencies which includes specific waste reduction targets and provision for further waste prevention audits to ensure that these targets are being met. Permit issuance or renewal decisions shall assure compliance with any resulting waste reduction and prevention requirements. *(Note: This paragraph is not directly pertinent to the disposal of vessels at sea. However, it is important to acknowledge the obligation to take steps to prevent waste arising thereby reducing the need for disposal at sea.)*

3 VESSELS: WASTE MANAGEMENT OPTIONS

3.1 When vessels are no longer needed, there are several options for their disposition, ranging from re-use of the vessel or parts of the vessel, to recycling or scrapping, to final disposal on land or at sea. A comprehensive evaluation of alternatives including engineering/safety, economic, and environmental analyses should be carried out as follows:

.1 re-use of the vessel, or re-use of parts removed from the vessel (e.g., generators, machines, pumps, cranes, and furniture);

.2 recycling (such as use for scrap (e.g., ferrous or non-ferrous metals – copper/aluminium/nickel scrap metals), assuming that proper ship-breaking is taking place under controlled conditions, in a harbour and wharf where de-construction and the collection and disposal of hazardous constituents, such as

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[2] The Twenty-second Consultative Meeting of Contracting Parties to the London Convention 1972 adopted these specific Guidelines in 2000.

oils, sludges and other materials, can be managed in an environmentally sound manner);

.3 destruction of hazardous constituents using environmentally sound techniques (e.g., in certain cases, on-shore incineration of liquid wastes from the vessel or wastes generated during the cleaning of the vessel);

.4 cleaning of the vessel or its components, removal of components, or treatment in order to reduce or remove the hazardous constituents (such as removal of transformers and storage tanks) and treatment of hazardous constituents, such as oils, sludges and other materials, in an environmentally sound manner; and

.5 disposal on land and into water.

3.2 A permit to dump wastes or other matter shall be refused if the permitting authority determines that appropriate opportunities exist to re-use, recycle or treat the waste without undue risks to human health or the environment or disproportionate costs. The practical availability of other means of disposal should be considered in the light of a comparative risk assessment involving both dumping and the alternatives.

3.3 The comparative risk assessment should take into account factors such as the following:

.1 Potential impact upon the environment:

- effect upon marine habitats and marine communities;
- effects upon other legitimate uses of the sea;
- effect of on-shore re-use, recycling, or disposal, including potential impacts upon land, surface and ground water, and air pollution; and
- effect of energy and materials usage (including overall assessment of energy and materials use and savings) of each of the re-use recycling or disposal options including transportation and resultant impacts to the environment (i.e., secondary impacts);

.2 Potential impact upon human health:

- identification of routes of exposure and analysis of potential impacts upon human health of sea and land re-use, recycling, and disposal options including potential secondary impacts of energy usage; and
- quantification and evaluation of safety risks associated with re-use, recycling and disposal;

.3 Technical and practical feasibility:

- evaluation of the technical and practical feasibility (e.g., evaluation of engineering aspects per specific types and sizes of vessels) for re-use or for ship-breaking and recycling.

.4 Economic considerations:

- analysis of the full cost of vessel re-use, recycling, or disposal alternatives, including secondary impacts; and
- review of costs in view of benefits, such as resource conservation and economic benefits of steel recycling.

4 WASTE CHARACTERIZATION: CHEMICAL/PHYSICAL PROPERTIES

4.1 A pollution prevention plan should be developed that includes specific actions regarding identification of potential sources of pollution. The purpose of this plan is to assure that wastes (or other matter and materials capable of creating floating debris) potentially contributing to pollution of the marine environment have been removed to the maximum extent.

4.2 A detailed description and characterization of the potential sources of contamination (including chemical and biological) is an essential precondition for a decision as to whether a permit may be issued for disposal at sea of a vessel. Characterization by biological or chemical testing is not needed if the required pollution prevention plans are developed and implemented as well as the best environmental practices described below in paragraph 5.2.

4.3 An analysis of the potential for adverse effects to the marine environment from vessels proposed for disposal at sea should take into account characterization of the dump-site including ecological resources and oceanographic characteristics (see Chapter 6 of these Guidelines, Dump-site Selection).

4.4 The pollution prevention plan should consider the following:

.1 details of the vessel's operational equipment and potential sources, amounts and relative hazards of potential contaminants (including chemical and biological) that may be released to the marine environment; and

.2 feasibility of the following pollution prevention/reduction techniques:

- cleaning of pipes, tanks, and components of the vessel (including environmentally sound management of resultant wastes); and

- re-use/recycling/disposal of all or some vessel components. Besides ferrous scrap materials, there may be high value components available, such as non-ferrous metals, (e.g., copper, aluminium, nickel) and re-usable equipment such as generators, machines, pumps and cranes. Removal from the vessel for re-use should be based on a balance between their age, condition, demand, and cost of removal.

4.5 The principal components of a vessel (e.g., steel/iron/aluminium) are not an overriding concern from the standpoint of marine pollution. However, there are a number of potential sources of pollution that should be addressed when considering management options. These may include:

.1 fuel, lubricants, and coolants;
.2 electrical equipment;

.3 stored paints, solvents, and other chemical stocks;
.4 floatable materials (e.g., plastics, styrofoam insulation);
.5 sludges;
.6 cargo; and
.7 harmful aquatic organisms.

4.6 Items on vessels that potentially contain substances of concern include:

.1 electrical equipment (e.g., trans-formers, batteries, accumulators);
.2 coolers;
.3 scrubbers;
.4 separators;
.5 heat exchangers;
.6 tanks;
.7 storage facilities for production and other chemicals;
.8 diesel tanks including bulk storage tanks;
.9 paints;
.10 sacrificial anodes;
.11 fire extinguishing/fighting equipment;
.12 piping;
.13 pumps;
.14 engines;
.15 generators;
.16 oil sumps;
.17 tanks;
.18 hydraulic systems;
.19 piping, valves and fittings;
.20 compressors;
.21 light fittings/fixtures; and
.22 cables.

4.7 Materials remaining in tanks, piping, or holds should be removed from the vessel to the maximum extent possible (including, for example, fuel, lubricating oils, hydraulic fluids, cargoes and their residues, and grease). All drummed, tanked, or canned liquids or gaseous materials should be removed from the vessel. All materials removed should be managed on land in an environmentally sound manner (e.g., recycling and, in certain cases, on-shore incineration). Removal of equipment containing liquid PCBs should be a priority.

4.8 As far as practicable, consideration should be given to avoiding the transfer of harmful aquatic organisms, on or in ballast water on board the vessel.

4.9 The standard requirement to characterize wastes and their constituents is not directly pertinent to the disposal of vessels at sea because the general characterization of chemical, physical, and biological properties can be accomplished for vessels without actual chemical or biological testing (see paragraphs 4.1 to 4.7 above and Chapter 5 below).

5 DISPOSAL AT SEA: BEST ENVIRONMENTAL PRACTICES (ACTION LIST)

5.1 Contaminants that are likely to cause harm to the marine environment should be removed from vessels prior to disposal at sea. Because vessels disposed at sea should have contaminants removed prior to disposal, action limits for vessels are to be met through the implementation of the pollution prevention plan (see Chapter 4) and the best environmental practices (paragraph 5.2), in order to ensure that it has been cleaned to the maximum extent possible. The best environmental practices, specifically identified for vessels in the next paragraph, should be followed.

5.2 The pollution prevention and cleanup techniques described below should be implemented for vessels that are to be disposed at sea. Within technical and economic feasibility and taking into consideration the safety of workers, to the maximum extent, (1) vessels shall be cleaned of potential sources of pollution as described in paragraphs 4.5 - 4.8 above, and of fuel or other substances that are likely to cause harm to the marine environment, and (2) materials capable of creating floating debris shall be removed, as described below. Resulting wastes or materials should be re-used, recycled or disposed on land in an environmentally sound manner, among other measures:

.1 floatable materials that could adversely impact safety, human health, or the ecological or aesthetic value of the marine environment are to be removed;

.2 fuels, stocks of industrial or commercial chemicals, or wastes that may pose an adverse risk to the marine environment are to be removed (including consideration of harmful aquatic organisms);

.3 remove any capacitors and transformers containing dielectric fluid from the vessel to the maximum extent possible;

.4 if any part of the vessel was used for storage of fuel or chemical stocks such as in tanks, these areas shall be flushed, cleaned, and, as appropriate, sealed or plugged; and

.5 to prevent release of substances that could cause harm to the marine environment, cleaning of tanks, pipes and other vessel equipment and surfaces shall be accomplished in an environmentally sound manner prior to disposal using appropriate techniques, such as high pressure washing techniques with detergents. The resulting wash water should be handled in an environmentally sound manner consistent with national or regional standards to address potential pollutants.

6 DUMP-SITE SELECTION

Site selection considerations

6.1 Proper selection of a dump-site at sea for the reception of waste is of paramount importance.

6.2 Information required to select a dump-site shall include:

.1 physical and biological characteristics of the seabed and surrounding area, and oceanographic characteristics of the general area in which the site is to be located;
.2 consideration of the potential implications of the vessel's presence on amenities, values and other uses of the sea in the area of consideration;
.3 assessment of the constituent fluxes associated with dumping in relation to existing fluxes of substances in the marine environment; and
.4 economic and operational feasibility.

6.3 Guidance for procedures to be followed in dump-site selection can be found in a report of the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP Reports and Studies No. 16 - Scientific Criteria for the Selection of Waste Disposal Sites at Sea). Prior to selecting a dump-site, it is essential that data be available on the oceanographic characteristics of the general area in which the site is to be located. This information can be obtained from the literature but fieldwork should be undertaken to fill the gaps. The information requirements for the selection of a site for disposal of vessels are much less rigorous in terms of oceanographic characteristics but do include that information found in paragraph 6.4. Generally, required information includes:

.1 the nature of the seabed, including its topography, geo-chemical and geological characteristics, its biological composition and activity, identification of hard or soft bottom habitats, and prior dumping activities affecting the area;

.2 the physical nature of the water column, including temperature, depth, possible existence of a thermocline/pycnocline and how it varies in depth with season and weather conditions, tidal period and orientation of the tidal ellipse, mean direction and velocity of the surface and bottom drifts, velocities of storm-wave induced bottom currents, general wind and wave characteristics, and the average number of storm days per year, suspended matter; and

.3 the chemical and biological nature of the water column, including pH, salinity, dissolved oxygen at surface and bottom, chemical and biochemical oxygen demand, nutrients and their various forms and primary productivity.

6.4 Some of the important amenities, biological features and uses of the sea to be considered in determining the specific location of the dump-site are:

.1 the shoreline and bathing beaches;
.2 areas of beauty or significant cultural or historical importance;
.3 areas of special scientific or biological importance, such as sanctuaries;
.4 fishing areas;
.5 spawning, nursery and recruitment areas;
.6 migration routes;
.7 seasonal and critical habitats;
.8 shipping lanes;
.9 military exclusion zones; and
.10 engineering uses of the seafloor, including mining, undersea cables, desalination or energy conversion sites.

Size of the dump-site

6.5 Size of the dump-site is an important consideration for anticipating the possible disposal of more than one vessel at the site:

.1 it should be large enough to have the bulk of the material remain either within the site limits or within a predicted area of impact after dumping;

.2 it should be large enough in relation to anticipated volumes for dumping so that it would serve its function for many years; and

.3 it should not be so large that monitoring would require undue expenditure of time and money.

Site capacity

6.6 In order to assess the capacity of a site, especially for solid wastes, the following should be taken into consideration:

.1 the anticipated loading rates per day, week, month or year;
.2 whether or not it is a dispersive site; and
.3 the allowable reduction in water depth over the site because of mounding of material.

Evaluation of potential impacts

6.7 An important consideration in determining the suitability for sea disposal of vessels at a specific site is to predict the extent to which there may be impacts on existing and adjacent habitats and marine communities (e.g., coral reefs and soft bottom communities).

(Note: Paragraphs 6.8 to 6.13 below are concerns about impacts, but if the pollution prevention plan (see Chapter 4) and the best environmental practices (see paragraph 5.2 above) are followed, these paragraphs are not directly pertinent.)

6.8 The extent of adverse effects of a substance is a function of the exposures of organisms (including humans). Exposure, in turn, is a function, *inter alia*, of input flux and the physical, chemical and biological processes that control the transport, behaviour, fate and distribution of a substance.

6.9 The presence of natural substances and the ubiquitous occurrence of contaminants means that there will always be some pre-existing exposures of organisms to all substances contained in any waste that might be dumped. Concerns about exposures to hazardous substances thus relate to additional exposures as a consequence of dumping. This, in turn, can be translated back to the relative magnitude of the input fluxes of substances from dumping compared with existing input fluxes from other sources.

6.10 Accordingly, due consideration needs to be given to the relative magnitude of the substance fluxes associated with dumping in the local and regional area surrounding the dump-site. In cases where it is predicted that dumping will substantially augment existing fluxes associated with natural processes, dumping at the site under consideration should be deemed inadvisable.

6.11 In the case of synthetic substances, the relationship between fluxes associated with dumping and pre-existing fluxes in the vicinity of the site may not provide a suitable basis for decisions.

6.12 Temporal characteristics should be considered to identify potentially critical times of the year (e.g., for marine life) when dumping should not take place. This consideration leaves periods when it is expected that dumping operations will have less impact than at other times. If these restrictions become too burdensome and costly, there should be some opportunity for compromise in which priorities may have to be established concerning species to be left wholly undisturbed. Examples of such biological considerations are:

.1 periods when marine organisms are migrating from one part of the ecosystem to another (e.g., from an estuary to open sea or vice versa) and growing and breeding periods;
.2 periods when marine organisms are hibernating on or are buried in the sediments; and
.3 periods when particularly sensitive and possibly endangered species are exposed.

Contaminant mobility

6.13 Contaminant mobility is dependent upon several factors, among which are:

.1 type of matrix;
.2 form of contaminant;
.3 contaminant partitioning;
.4 physical state of the system, e.g., temperature, water flow, suspended matter;
.5 physico-chemical state of the system;
.6 length of diffusion and advection pathways; and
.7 biological activities e.g., bioturbation.

7 ASSESSMENT OF POTENTIAL EFFECTS

7.1 Assessment of potential effects should lead to a concise statement of the expected consequences of the sea or land disposal options, i.e., the "Impact Hypothesis". It provides a basis for deciding whether to approve or reject the proposed disposal option and for defining environmental monitoring requirements. As far as possible, waste management options causing dispersion and dilution of contaminants in the environment should be avoided and preference given to techniques that prevent the input of the contaminants to the environment.

7.2 The assessment of disposal options should integrate information on vessel characteristics and conditions at the proposed dump-site, specify the economic and technical feasibility of the options being considered, and evaluate the potential effects on human health, living resources, amenities, other legitimate uses of the sea, and the environment in general. For vessels, this assessment should be based upon the underlying premise that with implementation of the pollution prevention plan in Chapter 4 and of best environmental practices in paragraph 5.2, any adverse impacts will be minimized and will primarily be those resulting from the physical presence of the vessel on the sea floor because the disposed vessels will have had contaminants removed to the maximum extent.

7.3 The assessment should be as comprehensive as possible. The primary potential impacts should be identified during the dump-site selection process. These are considered to pose the

most serious threats to human health and the environment. Alterations to the physical environment, risks to human health, devaluation of marine resources and interference with other legitimate uses of the sea are often seen as primary concerns in this regard.

7.4 In constructing an impact hypothesis, particular attention should be given to, but not limited to, potential impacts on amenities (e.g., presence of floatables), sensitive areas (e.g., spawning, nursery or feeding areas), habitat (e.g., biological, chemical and physical modification), migratory patterns and marketability of resources. Consideration should also be given to potential impacts on other uses of the sea including: fishing, navigation, engineering uses, areas of special concern and value, and traditional uses of the sea.

(Note to paragraphs 7.5 to 7.8 below: The disposal of vessels at sea, where the "waste" is a solid, does not present the same types of potential environmental concerns as the disposal of other wastes, such as liquids, where the waste materials can be readily distributed into the environment; and thereby does not necessarily fit the standard paradigm of rigorous biological or chemical monitoring due to contaminants in the waste. Potential sources of pollution as described above in paragraphs 4.5 to 4.8, other substances that are likely to cause harm to the environment, and materials capable of creating floating debris shall be removed to the maximum extent possible prior to disposal. When developing the monitoring plan, these factors should be considered.)

7.5 Even the least complex and most innocuous wastes may have a variety of physical, chemical and biological effects. Impact hypotheses cannot attempt to reflect them all. It must be recognized that even the most comprehensive impact hypotheses may not address all possible scenarios such as unanticipated impacts. It is therefore imperative that the monitoring programme be linked directly to the hypotheses and serve as a feedback mechanism to verify the predictions and review the adequacy of management measures applied to the dumping operation and at the dump-site. It is important to identify the sources and consequences of uncertainty.

7.6 The expected consequences of dumping should be described in terms of affected habitats, processes, species, communities and uses. The precise nature of the predicted effect (e.g., change, response, or interference) should be described. The effect should be quantified in sufficient detail so that there would be no doubt as to the variables to be measured during field monitoring. In the latter context, it would be essential to determine "where" and "when" the impacts can be expected.

7.7 Emphasis should be placed on biological effects and habitat modification as well as physical and chemical change. However, if the potential effect is due to substances, the following factors should be addressed:

.1 estimates of statistically significant increases of the substance in seawater, sediments, or biota in relation to existing conditions and associated effects; and

.2 estimate of the contribution made by the substance to local and regional fluxes and the degree to which existing fluxes pose threats or adverse effects on the marine environment or human health.

7.8 In the case of repeated or multiple dumping operations, impact hypotheses should take into account the cumulative effects of such operations. It will also be important to consider the possible interactions with other waste dumping practices in the area, both existing or planned.

7.9 An analysis of each disposal option should be considered in light of a comparative assessment of the following concerns: human health risks, environmental costs, hazards (including accidents), economics and exclusion of future uses. If this assessment reveals that adequate information is not available to determine the likely effects of the proposed disposal option, including potential long-term harmful consequences, then this option should not be considered further. In addition, if the interpretation of the comparative assessment shows the dumping option to be less preferable, a permit for dumping should not be given.

7.10 Each assessment should conclude with a statement supporting a decision to issue or refuse a permit for dumping.

7.11 Where monitoring is required, the effects and parameters described in the hypotheses should help to guide field and analytical work so that relevant information can be obtained in the most efficient and cost-effective manner.

8 MONITORING

8.1 Monitoring is used to verify that permit conditions are met - compliance monitoring - and that the assumptions made during the permit review and site selection process were correct and sufficient to protect the environment and human health - field monitoring. It is essential that such monitoring programmes have clearly defined objectives.

8.2 The Impact Hypothesis forms the basis for defining field monitoring. The measurement programme should be designed to ascertain that changes in the receiving environment are within those predicted. The following questions must be answered:

.1 What testable hypotheses can be derived from the Impact Hypothesis?
.2 What measurements (type, location, frequency, performance requirements) are required to test these hypotheses?
.3 How should the data be managed and interpreted?

8.3 It may usually be assumed that suitable specifications of existing (pre-disposal) conditions in the receiving area are already contained in the application for dumping. If the specification of such conditions is inadequate to permit the formulation of an Impact Hypothesis, the licensing authority will require additional information before any final decision on the permit application is made.

8.4 The permitting authority is encouraged to take account of relevant research information in the design and modification of monitoring programmes. The measurements can be divided into two types - those within the zone of predicted impact and those outside.

8.5 Measurements should be designed to determine whether the zone of impact and the extent of change outside the zone of impact differ from those predicted. The former can be answered by designing a sequence of measurements in space and time that ensures that the projected spatial scale of change is not exceeded. The latter can be answered by the acquisition of measurements that provide information on the extent of change that occurs outside the zone of impact as a result of the dumping operation. Frequently, these measurements will be based on a null hypothesis - that no significant change can be detected.

8.6 The results of monitoring (or other related research) should be reviewed at regular intervals in relation to the objectives and can provide a basis to:

.1 modify or terminate the field-monitoring programme;
.2 modify or revoke the permit;
.3 redefine or close the dump-site; and
.4 modify the basis on which applications to dump wastes are assessed.

9 PERMIT AND PERMIT CONDITIONS

9.1 The permitting process should include the following essential elements: (1) a description of the best environmental practices (see paragraph 5.2) for the disposal option selected; (2) cleaning of the vessel; (3) inspection/verification by relevant authorities that adequate cleaning has taken place; and (4) permit issuance. The national permitting authority should ensure that the appropriate hydrographic surveying authority is notified of the longitude and latitude co-ordinates, depth, and dimensions of the dumped vessel on the sea bottom. The national permitting authority should also ensure that advance notice of the dumping is issued to national shipping, fisheries, and hydrographic surveying authorities. Any permit issued shall contain data and information specifying:

.1 name, type, or tonnage of the vessel;
.2 the location of the dump-site(s);
.3 the method of dumping; and
.4 monitoring and reporting requirements.

9.2 If dumping is the selected option, then a permit authorizing dumping must be issued in advance. It is recommended that opportunities be provided for public review and participation in the permitting process. In granting a permit, the hypothesized impact occurring within the boundaries of the dump-site, such as alterations to the physical, chemical and biological compartments of the local environment is accepted by the permitting authority.

9.3 Regulators should strive at all times to enforce procedures that will result in environmental changes as far below the limits of allowable environmental change as practicable, taking into account technological capabilities as well as economic, social and political concerns.

9.4 Permits should be reviewed at regular intervals, taking into account the results of monitoring and the objectives of monitoring programmes. Review of monitoring results will indicate whether field programmes need to be continued, revised or terminated, and will contribute to informed decisions regarding the continuance, modification or revocation of permits. This provides an important feedback mechanism for the protection of human health and the marine environment.
