ANNEX 8

REVISED SPECIFIC GUIDELINES FOR ASSESSMENT OF PLATFORMS OR OTHER MAN-MADE STRUCTURES AT SEA

1 INTRODUCTION

1.1 The *Specific guidelines for assessment of platforms or other man-made structures at sea* 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 Protocol and when applicable the London Convention. The use of either generic or specific guidelines complements but does not replace the requirements described in annex 2 of the London Protocol.

1.2 Some national authorities already have established permitting procedures applicable to decommissioning of platforms in accordance with domestic legislation. The recommendations and suggested considerations in these Guidelines are in some cases drawn from examples of such national authorities, but otherwise do only recommend and suggest considerations; these Guidelines are not intended to establish binding international norms.

1.3 The London Protocol 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 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, 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.

1.4 The Guidelines elaborate on the operational components of annex 2 of the London Protocol and are structured as follows:

.1 introduction;

.2 waste prevention audit (Guidelines, section 2);

.3 waste management options (Guidelines, section 3);

.4 chemical, biological and physical properties (Guidelines, section 4; waste characterization);

.5 action list (Guidelines, section 5; best environmental practices);

.6 dumpsite selection (Guidelines, section 6; identify and characterize dumpsite);

.7 impact assessment (Guidelines, section 7; assessment of potential effects determination potential impacts and prepare impact hypothesis(es));

.8 issuance of permits (Guidelines, section 8, permit and permit conditions); and

.9 monitoring (Guidelines, section 9; field monitoring and assessment).

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. 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.

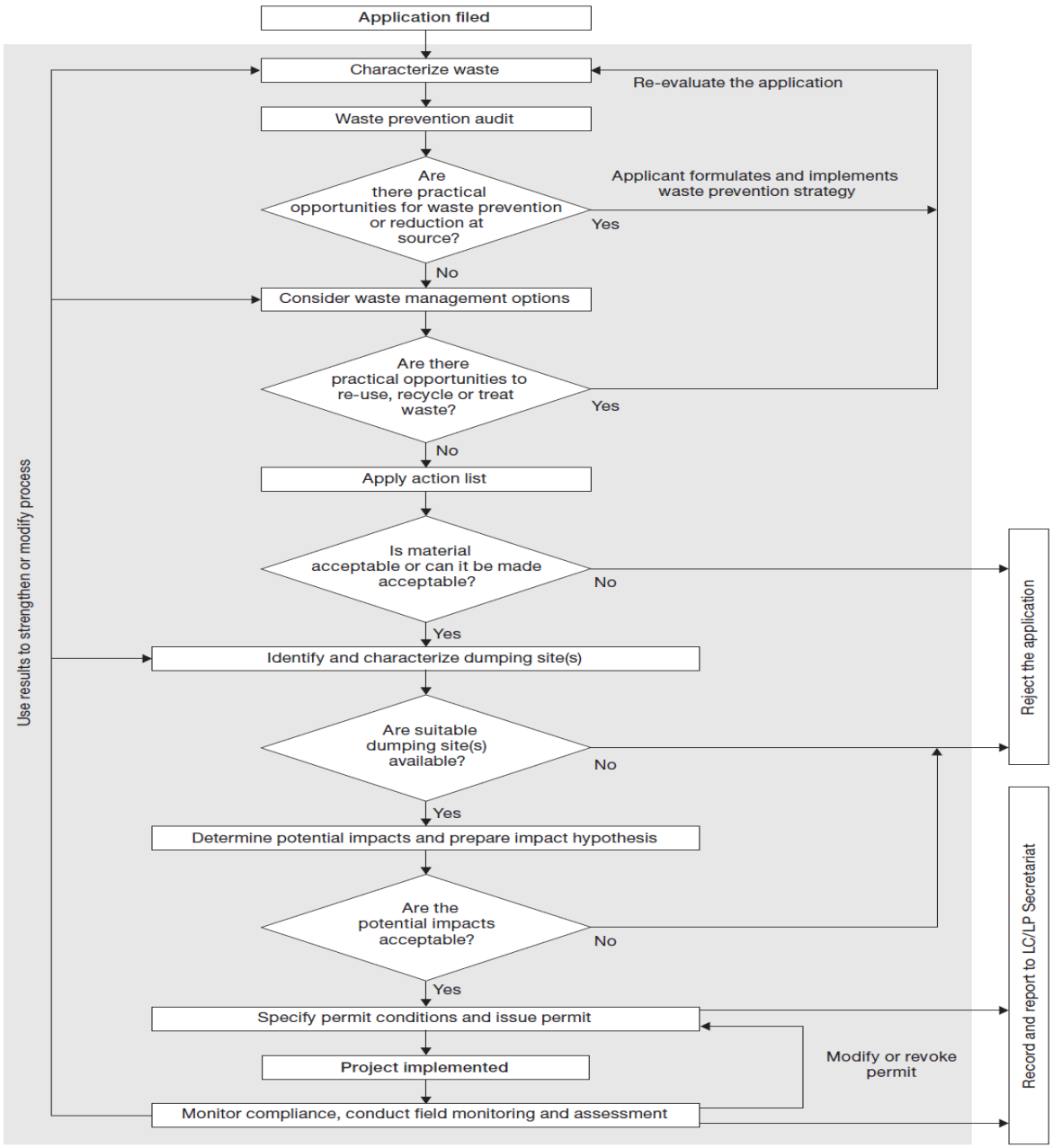

Figure 1 – Assessment framework

1.5 These Guidelines are specific to deliberate disposal including abandonment or toppling at site of platforms or other man-made structures at sea. Adherence to the following is intended to provide additional clarification to enable compliance with annex 2 of the London Protocol, and represents neither a more restrictive nor a less restrictive regime than annex 2 to the Protocol.

1.6 In the context of the London Protocol and the London Convention, removal to another location in the marine environment other than as a temporary placement is considered a "disposal at sea" that should be subject to these Guidelines. Removal to land would not be subject to these Guidelines.

1.7 It is noted that Article 60 of the United Nations Convention on the Law of the Sea prescribes that "…any installations or structures which are abandoned or disused shall be removed to ensure safety of navigation, taking into account any generally accepted international standards established in this regard by the competent International organization, and that such removal shall also have due regard to fishing, the protection of the marine environment and the rights and duties of other States".[1]

1.8 These Guidelines set out the factors to be addressed when considering disposal of platforms or other man-made structures at sea including abandonment or toppling at site, with particular emphasis on the need to evaluate alternatives to sea disposal. Re-using or recycling at appropriate facilities onshore are preferred alternatives to disposal at sea. For the purposes of these Guidelines, appropriate facilities would be those that:

.1 are compatible and do not conflict with the requirements set out in the Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships and its implementation guidelines;[2] or

.2 are operating pursuant to national requirements and standards ensuring safe and environmentally sound handling.

1.9 For purposes of these Guidelines, "platforms" are defined as facilities designed and operated for the purpose of producing, processing, storing or supporting the production of mineral resources. This includes the topside and associated foundation structure.

1.10 The category of "other man-made structures at sea" is not defined under the London Protocol nor under the London Convention, but could refer to other structures for which the Contracting Party requires a permitting procedure to abandon or dispose of, in accordance with domestic legislation or other relevant international obligations, and taking into account the objectives of LP/LC in article 2 and articles I and II, respectively.

1.11 The assessment of vessels at sea is covered in the *Revised specific guidelines for the assessment of vessels* (LC 38/16, annex 7).

2 Waste prevention audit

2.1 The initial stages in assessing alternatives to dumping of wastes and other matter that may be considered for dumping under the London Protocol or the London Convention should, as appropriate, include an evaluation of the types, amounts and relative hazards of wastes generated (see section 4 below).

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1 IMO adopted the *1989 Guidelines and standards for the removal of offshore installations and structures on the continental shelf and in the exclusive economic zone* in 1989 (IMO Assembly resolution A.672(16)). These Guidelines relate to Article 60 of the United Nations Convention on the Law of the Sea and should be observed when making decisions regarding the disposal of disused offshore installations and structures.

2 The Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships (the Hong Kong Convention) is aimed at ensuring that ships, when being recycled after reaching the end of their operational lives, do not pose any unnecessary risk to human health and safety or to the environment. As of (….) the Hong Kong Convention, adopted on 15 May 2009, is not yet in force, but its guidelines have been adopted. Also, the *2012 Guidelines for safe and environmentally sound ship recycling* (resolution MEPC.210(63) may provide useful guidance for the decommissioning of platforms and other man-made structures at sea.

2.2 In general terms, if the London Protocol 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.

2.3 It is important to acknowledge the obligation to take steps to prevent the creation of waste, thereby reducing the need for disposal at sea (including abandonment or toppling in situ). For platforms and other man-made structures at sea, this includes design and construction to enhance the feasibility of entire removal of any new platform or man-made structure at sea upon permanent disuse.

3 Platforms or other man-made structures at sea: waste management options

3.1 When platforms or other man-made structures at sea are no longer needed, there are several options for their disposition, ranging from reuse at sea, or on shore, to recycling or scrapping, to final disposal on land or at sea. Multiple options may also be considered; for example, situations where partial removal and reuse is undertaken, and partial disposal of remaining items can be justified.

3.2 Applications to dump wastes and other matter under the London Protocol including disposal at sea of platforms or other man-made structures shall demonstrate that appropriate consideration has been given to the following hierarchy of waste management options under the London Protocol, annex 2, paragraph 5:

.1 reuse of the platform or the other man-made structure or parts thereof, e.g. generators, motors, process equipment, cranes, tanks and furniture;

.2 recycling (such as use for scrap, e.g. ferrous or non-ferrous metals) at appropriate facilities[3] and under controlled conditions where collection and disposal of hazardous constituents, such as oils, sludges and other materials, can be managed in an environmentally sound manner;

.3 disposal on land after removal to shore; and

.4 disposal into water (including abandonment or toppling in situ).

3.3 In cases in which there are scientifically and technically sound reasons for the construction or placement of an artificial reef and the construction is not used as a mechanism to circumvent the provisions of the London Protocol or London Convention, platforms or other man-made structures at sea may be considered for re-use in such construction or placement activities if they satisfy relevant criteria as detailed in the *Guidelines for the placement of artificial reefs*.[4]

[3] Cf article 1.5.

[4] London Convention and Protocol/UNEP (2009). London Convention and Protocol/UNEP Guidelines for the Placement of Artificial Reefs. London, UK, 100 pp.

3.4 To facilitate the above waste management options for platforms or other man-made structures at sea, the following actions may be necessary:

.1 in the case of a platform or man-made structure at sea, the repairs or other measures should be conducted to the extent necessary to ensure that the platform/man-made structure does not sink unexpectedly while being assessed, prepared for disposal or transported to the disposal at sea location; and

.2 cleaning of the platform or the man-made structure at sea 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. Waste containing oil or other hazardous constituents should be brought ashore for treatment or destruction.

3.5 It should be noted that waste management actions for platforms or other man-made structures at sea can be very complex to carry out and frequently require highly specialized knowledge and experience depending on the platform/man-made structure. Parties should consider this complexity and the potential expertise and resources that will be needed when considering the preparation for a platform (or man-made structure) for disposal at sea. Parties are encouraged to seek support and advice from organizations or countries that have experience with the preparation, sinking and post-disposal monitoring of platforms or other man-made structures at sea.

3.6 National authorities should bear in mind the importance of worker safety during clean-up operations at platforms and other man-made structures at sea to which these guidelines apply, because preparing platforms and other man-made structures at sea for environmentally safe disposal at sea is likely to involve removal of hazardous materials and this will often have to be done in challenging offshore working conditions with confined spaces and sub-sea structures. The Hong Kong Convention[5] addresses issues around ship recycling and provides guidance which may also be relevant for avoiding risk to human health and to the environment, in addition to the provisions under the London Protocol and London Convention.

3.7 A permit for disposal at sea for a platform or other man-made structures shall be refused if the permitting authority determines that appropriate opportunities exist to reuse, recycle or dispose of the platform/man-made structure on land without undue risks to human health or the environment, or disproportionate costs (London Protocol, annex 2, paragraph 6). The practical availability of other means of disposal should be considered in light of a comparative risk assessment involving both dumping and the alternatives, taking into account the general obligation to apply a precautionary approach to dumping and the objective of protecting the marine environment from all sources of pollution.

[5] The Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships (the Hong Kong Convention) is aimed at ensuring that ships, when being recycled after reaching the end of their operational lives, do not pose any unnecessary risk to human health and safety or to the environment. As of (…) the Hong Kong Convention, adopted on 15 May 2009, is not yet in force, but its guidelines have been adopted. Also, the *2012 Guidelines for safe and environmentally sound ship recycling* (resolution MEPC.210(63) may provide useful guidance for the decommissioning of platforms and other man-made structures at sea.

3.8 The comparative risk assessment should be based on the specific location for the disposal at sea alternative (see section 6 of these Guidelines) and take into account factors such as the following:

.1 Potential environmental impact, including cumulative and future impact and benefits, such as:

.1 effects upon marine habitats and marine communities (such as the rate of deterioration of any deposited material and the potential for future pollution and the risk that the material will shift from its position in the future);

.2 effects of onshore reuse, recycling or disposal, including potential impacts upon land, surface and groundwater, and air pollution; and

.3 effects of energy and materials usage (including overall assessment of energy and materials use and savings) of each of the reuse, recycling or disposal options including transportation and resultant impacts to the environment (i.e. secondary impacts).

.2 Potential impact upon human health and safety, such as:

.1 identification of routes of exposure and analysis of potential impacts of sea and land reuse, recycling and disposal options including potential secondary impacts of energy usage; and

.2 quantification and evaluation of safety risks associated with decommissioning, removal, reuse, recycling and/or disposal (including disposal at sea).

.3 Technical and practical feasibility, such as:

.1 evaluation of engineering capabilities per specific types, sizes and weights of platforms/man-made structures at sea; and

.2 identification of practical limitations of disposal alternatives considering the location and characteristics of the platform/man-made structure at sea and oceanographic considerations.

.4 Economic considerations, such as:

.1 analysis of the full cost of the platform man-made structure at sea reuse, recycling or disposal alternatives, including secondary impacts; any potential ongoing management and monitoring necessary to ensure the protection of the environment and human health; and

.2 review of costs in view of benefits, such as resource conservation and economic benefits of steel recycling.

.5 Potential impact on other users and society, such as:

.1 effects upon other legitimate uses of the sea; including fisheries, shipping/navigation,[6] indigenous rights/claims, potential for future development safety of surface or subsurface navigation; and

.2 where appropriate, effects on cultural and societal values.

.6 Potential effects of the environment on a disposed platform or other man-made structure at sea, including:

.1 analysis of the potential for disposal site conditions, such as storms, currents or ice, to accelerate deterioration of the disposed platform/man-made structure at sea, resulting in marine pollution in the form of floating debris or movement to an area where the waste threatens safety or navigation.

4 Waste characterization: chemical, biological and 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) contributing to pollution of the marine environment will be removed to the maximum extent prior to disposal at sea, including abandonment or toppling in situ. The appendix provides further guidance on the development of the pollution prevention plan.

4.2 A detailed description and characterization of the platform or other-man-made structure at sea to be disposed of, including potential sources of contamination, is an essential precondition for the consideration of alternatives and the basis for a decision as to whether waste (in this case, the platform or other man-made structure at sea) may be disposed of at sea included abandoned or toppling it situ (London Protocol, annex 2, paragraph 7).

4.3 The detailed description of the platform, including its age, use and maintenance history, can be very helpful in identifying the hazards and pollution sources that should be considered further and the degree to which they pose a potential for concern.

4.4 However, if a platform and its constituents or other man-made structure at sea are so poorly characterized that proper assessment cannot be made of its potential impacts on human health, safety and the environment, that platform or man-made structure at sea shall not be dumped (London Protocol, annex 2, paragraph 7).

4.5. For developing the detailed description and characterizations required in 4.2, it may be useful to consider the process described in section 3 and 4 and appendices 1, 2, 4 and 5 of the *2015 Guidelines for the development of the inventory of hazardous materials*, developed for the Hong Kong Convention.

[6] The *1989 Guidelines and standards for the removal of offshore installations and structures on the continental shelf and in the exclusive economic zone* (IMO resolution A.672(16)).

4.6 Characterization of potential hazardous materials on a platform or other man-made structure at sea and their constituents should, in accordance with London Protocol, annex 2, paragraph 8,[7] take into account:

.1 origin, total amount (volume and concentration), form and average composition;

.2 properties: physical, chemical, biochemical and biological;

.3 toxicity, including, where appropriate, additive, synergistic or antagonistic effects among constituents of the waste;

.4 persistence: physical, chemical and biological; and

.5 accumulation and biotransformation in biological materials or sediments.

5 Disposal at sea: Best environmental practice and pollution prevention plan (action list)

5.1 Contaminants that may cause a risk to the marine environment should be removed from the platforms or other man-made structures at sea prior to disposal including abandonment or toppling in situ at sea, in accordance with best environmental practices and the pollution prevention plan, cf. appendix.

5.2 Action levels for platforms and other man-made structures at sea are met through the implementation of the pollution prevention plan and the best environmental practices to ensure the platforms or other man-made structures at sea have been cleaned to the maximum extent possible.

5.3 It should be noted that the considerations outlined in regard to best practices can be very complex and frequently require highly specialized knowledge and experience depending on the platform/man-made structure at sea. Parties should consider the potential expertise and resources needed in consideration of such complexity.

6 Dumpsite selection

General site selection considerations

6.1 Proper selection of a dumpsite at sea for the reception of waste is of paramount importance.

6.2 Information required to select a dumpsite shall include:

.1 physical and biological characteristics of the seabed and surrounding area, including the potential for providing environmental benefits, and oceanographic characteristics of the general area in which the site is to be located;

.2 consideration of the potential cumulative and long-term impacts of the platform or structure presence on the environment, amenities, values and other uses of the sea in the area under consideration;

[7] Similar considerations are described in the LC, annex III .A and .C required by LC, article 4, paragraph 2.

.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 (London Protocol, annex 2, paragraph 11).[8]

6.3 Detailed guidance for procedures to be followed in dumpsite 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.*[9]

6.4 Similar information would be required for assessment of the site if considering abandonment or toppling in situ. In the case of platforms, consideration of any drill cuttings or other wastes resulting from the drilling and production operations may need particular attention as they could represent a significant pollution source.

6.5 When assessing a dump site for waste disposal at sea, including abandonment or toppling in situ, it is essential that data is available on the oceanographic characteristics of the area in which the site is located. Generally, required information includes:

.1 the nature of the seabed, including its topography, geochemical and geological characteristics, its ecological composition (i.e. habitats and communities) prior dumping activities affecting the area;

.2 evaluation of the dumpsite to ensure environmental protection (e.g. geophysics and geological surveys to ensure that no chemosynthetic communities, deep water coral reefs, shipwrecks or other environmental/cultural resource may be harmed by dumping);

.3 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

.4 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.

6.6 Some of the important amenities, biological features and uses of the sea to be considered in determining the specific location of the dumpsite are:

.1 the shoreline and bathing beaches;

.2 areas of beauty and significant social, cultural or historical importance;

.3 areas of special scientific or biological importance, such as sanctuaries;

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8 Similar considerations are described in LC, Annex III .B and .C required by LC, article 4, paragraph 2.

9 http://www.gesamp.org/publications/publicationdisplaypages/rs16

.4 fishing areas, including subsistence (traditional) fishing/whaling areas;

.5 spawning, nursery and recruitment areas;

.6 migration routes;

.7 seasonal and critical habitats;

.8 shipping lanes;

.9 offshore wind farms or other conventional and alternative energy structures or areas;

.10 historic preservation sites (e.g. shipwrecks and other archaeological sites) and sites designated as culturally and/or spiritually significant to native tribes;

.11 military exclusion zones; and

.12 engineering uses of the sea floor, including mining, undersea cables, desalination or energy conversion sites.

Size of the dumpsite

6.7 Size of the dumpsite is an important consideration for anticipating the possible disposal of more than one platform or other man-made structures at sea 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.

Dumpsite capacity

6.8 In order to assess the capacity of a dumping site and potential for cumulative impact, the following should be taken into consideration:

.1 the anticipated number of platforms or other man-made structures at sea to be sunk at the site;

.2 whether or not the expected maximum currents at the site may move platforms/structures resting on the sea bottom; and

.3 the allowable reduction in water depth over the site because of mounding of material, cf. IMO's guidelines and standards for the removal of offshore installations and structures on the continental shelf and in the exclusive economic zone.[10]

[10] IMO's *1989 Guidelines and standards for the removal of offshore installations and structures on the continental shelf and in the exclusive economic zone*, which were adopted in 1989 (IMO Assembly resolution A.672(16)).

Evaluation of potential impacts as part of dumpsite selection

6.9 An important consideration in determining the suitability for disposal, including abandonment or toppling in situ, of platforms or other man-made structures at sea 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), including cumulative and future impacts.

6.10 The presence of natural substances and the ubiquitous occurrence of contaminants means that there will always be some pre-existing exposure of organisms to all substances contained in any waste that might be dumped. Concerns about exposure to hazardous substances thus relate to additional exposure 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 and whether the additional inputs would have a significant adverse impact.

6.11 Accordingly, due consideration needs to be given to the specific composition and relative magnitude of the input fluxes in the local and regional area surrounding the dump site. In cases where it is predicted that the dumping will substantially increase existing input fluxes to the extent that there could be a significant adverse impact, dumping at the site under consideration should be deemed inadvisable.

6.12 In the case of synthetic substances, the relationship between fluxes associated with the dumping and any pre-existing fluxes in the vicinity of the site may not provide a suitable basis for decisions if there is the potential for a significant adverse impact.

6.13 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

6.14 When considering the exposure to hazardous substances the factors that may determine mobility should be taken into account. Among these factors 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, including future and cumulative effects on the marine habitats and their communities, 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 the platform/man-made structure at sea characteristics and conditions at the proposed dumpsite, specify the economic and technical feasibilities of the options being considered and evaluate the potential effects on human health, safety, living resources, amenities and values, social impact and other legitimate uses of the sea and the environment in general.

7.3 For platforms or other man-made structures at sea, this assessment should be based on the underlying premise that implementation of best environmental practices and the pollution prevention plan (appendix) will result in any adverse impacts on the environment from contaminants being minimized and the impacts likely to be limited to those resulting from the physical presence of the steel or concrete platform or structure on the sea floor.

7.4 Nevertheless, the assessment should also take into account any remaining equipment, chemical residues or other wastes that are not possible to remove or clean, and although the steel and concrete structures are expected to degrade in the long term, structural weaknesses could lead in the shorter term to collapses of steel or concrete structures, potentially leading to potential releases of hazardous substances contained within or on top of them to the surrounding environment.

7.5 The assessment should be as comprehensive as possible. The primary potential impacts should be identified during the dumpsite 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.

7.6 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.

7.7 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 dumpsite. It is important to identify the sources and consequences of uncertainty.

7.8 The expected (potentially both negative and positive) 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 could be expected.

7.9 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.

7.10 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 activities in the area, both existing or planned and in combination with natural stressors in the area.

7.11 An analysis of each disposal option should be included in the comparative assessment as set out in paragraph 3.8. 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 until the missing information has been provided. If the interpretation of the comparative assessment shows the dumping option to be less preferable, a permit for dumping should not be given.

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

7.13 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 Permit and permit conditions

8.1 A decision to issue a permit to dump a platform or man-made structure at sea or parts thereof, including abandoning or toppling in situ, should only be made if the permitting authority determines that the impact evaluations are complete and that appropriate opportunities do not exist to reuse, recycle or dispose of the platform/man-made structure at sea on land without undue risks to human health or the environment, or disproportionate costs, and the monitoring requirements are determined. The practical availability of other means of disposal should be considered in light of a comparative risk assessment involving both dumping and the alternatives. The provisions of the permit shall ensure, as far as practicable, that environmental disturbance and detriment are minimized.

8.2 It is recommended that opportunities be provided for public review and participation in the permitting process. In granting a permit, the hypothesized impacts occurring within the boundaries of the dumpsite, such as alterations to the physical, chemical and biological compartments of the local environment, are accepted by the permitting authority and the mitigation requirements to ensure protection of the environment, e.g. cleaning and removal of contaminants prior to dumping should be described.

8.3 Any permit issued should contain data and information specifying:

.1 name, (IMO number if relevant), type and tonnage of the platform or other man-made structures;

.2 the location of the dumpsite(s), for example using specific coordinates or requirements for siting (i.e. depth, distance from shore);

.3 method of dumping;

.4 method of transport to the dumpsite(s);

.5 necessary provisions related to the dumping operation, e.g. mitigation of marine sound;

.6 monitoring and reporting requirements (section 9);

.7 post-decommissioning site-clearance requirements to ensure that the seafloor is cleared from debris that may have resulted from the decommissioning activities;

.8 requirements for size of exclusion zone around any environmental/cultural resources near the dumping site; and

.9 reference to relevant provisions of the provided pollution prevention plan, and requirements to provide documentation verifying that the plan has been fully implemented and has resulted in risk of environmental impact being minimized.

8.4 Permits for disposal operations should be reviewed at regular intervals, taking into account the results of monitoring and the objectives of monitoring programmes, cf. 9.6.

9 Monitoring

9.1 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 monitoring programmes developed for platforms or other man-made structures at sea disposed of at sea have clearly defined objectives based on expectations that can be adjusted to reflect potentially challenging conditions.

9.2 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? and

.3 How should the data be managed and interpreted?

9.3 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 permitting authority will require additional information before any final decision on the permit application is made.

9.4 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.

9.5 When there is reason to believe that the clean-up processes applied to a platform/structure before disposal could have been improved, the potential impacts of contaminants remaining on the platform/structure should be addressed through monitoring. Measurements should be designed to determine the extent of change that occurs as a result of the sinking of the platform/man-made structure at sea, including its presence thereafter. The extent of change is evaluated relative to the baseline state of the environment or potential growth of organisms on the platform/structure itself. This baseline state should be either based on the newly selected dumpsite prior to its use in the case of a new dumpsite, or on a nearby zone where historical dumping has not induced changes to the environment. Frequently, these measurements will be based on a null hypothesis, i.e. that no significant change can be detected. Measurements should also take into account those physical, chemical and biological characteristics identified during the waste characterization phase.

9.6 Monitoring results provides an important feedback mechanism for the protection of human health and the marine environment. 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 dumpsite; and

.4 modify the basis on which applications to dump wastes are assessed (including the processes used to ensure that all contaminants have been removed from the platforms/structures prior to disposal).

APPENDIX

1 Best environmental practice

1.1 It is considered a best practice to consider a plan for the decommissioning and disposal of a platform or other man-made structure at sea before granting authorization for its installation. This should allow implementation of the preferred end-of-use management options (i.e. removal for re-use or recycling).[11]

1.2 It is considered a best environmental practice to include in the comparative assessment of disposal options risk assessment and safety aspects related to the execution of decommissioning activities.

1.3 It is considered a best practice to have in place regulations on the detailed procedure to be followed for an operator or owner of a platform or man-made structure at sea planning to cease production or other uses which means to taking platforms or structure out of active operation.

1.4 Best practice includes ensuring that a full inventory of hazardous materials present at the platform or structure has been made and is updated and available prior to the assessment of disposal alternatives.

1.5 Best practice includes preparing and implementing a pollution prevention plan, cf. section 2.

1.6 Best practice includes managing all wastes according to a waste management plan and using an environmental accounting system to document emissions and discharges and the fate of wastes either removed or dumped, including structure water.

2 The pollution prevention plan

2.1 Within technical and economic feasibility and taking into consideration the safety of workers, platforms or man-made structures to be disposed of at sea, including abandonment or toppling in situ, shall be prepared as described below:

.1 hydrocarbons, stocks of industrial or commercial chemicals, drilling muds, and wastes that may pose an adverse risk to the marine environment shall be removed;

.2 if any part of the structure was used for storage of hydrocarbons or chemical stocks such as in tanks integrated into the legs of the jacket, these areas shall be flushed and cleaned to the extent feasible and, if appropriate, sealed or plugged;

.3 the cleaning of tanks, pipes and other structure equipment and surfaces shall be accomplished in an environmentally sound manner prior to disposal, using appropriate techniques, and the resulting wash water should either be taken ashore for treatment or be treated offshore consistent with national or regional standards;

[11] IMO 1989 Guidelines.

.4 fixed equipment and materials that are likely to contain hazardous substances shall be removed to the extent feasible taking safety aspects into account; and

.5 floatable materials that could adversely impact safety, human health or the ecological or aesthetic value of the marine environment shall be removed.

2.2 The pollution prevention plan should consider the following:

.1 the platform/man-made structure production, processing and transportation facilities in regard to potential sources, amounts and relative potential hazards of wastes; and

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

.1 cleaning of pipes, tanks and structures (including environmentally sound management of resultant wastes); and

.2 reuse, recycling and disposal on land of all or some structure components with special attention to topsides and their components.

2.3 Potential sources of pollution associated with processes and related operations on a platform or man-made structure at sea may include:

.1 hydrocarbons, low specific activity scale, heavy metals including contaminants in process equipment, pipe work and tankage;

.2 stocks of chemicals used in connection with oil and gas production, e.g. corrosion inhibitors, biocides, defoamers, demulsifiers, scale inhibitors and anti-freeze;

.3 lubricants and coolants in platform equipment; and

.4 fuel.

2.4 Items on structures that potentially contain substances of concern may include:

.1 electrical equipment (e.g. transformers, batteries, accumulators, cables/wiring);

.2 coolers;

.3 scrubbers;

.4 separators;

.5 heat exchangers;

.6 tanks for drilling consumables including bulk storage of muds;

.7 storage facilities for production and other chemicals, including cells in concrete gravity bases;

.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 tubing and drill string;

.20 gas dehydrators;

.21 gas-sweetening units;

.22 helicopter fuelling systems;

.23 piping, valves and fittings;

.24 compressors; and

.25 insulations systems.

2.5 A similar evaluation of potential sources of pollution should be undertaken to identify potential pollutant sources for any other man-made structures at sea being considered for disposal.

2.6 The *2015 Guidelines for the development of the inventory of hazardous materials*, developed for the Hong Kong Convention and adopted by IMO's Marine Environment Protection Committee (MEPC) at its sixty-eighth session, may assist the national authorities with the waste characterization process for both protecting worker safety and determining what materials should be removed from the platform/man-made structure to make them suitable for disposal at sea, noting that platforms and other man-made structures may contain different pollutants than those contained on vessels.

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