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REVISED RECOMMENDATIONS ON THE SAFE TRANSPORT OF DANGEROUS CARGOES AND RELATED ACTIVITIES IN PORT AREAS

1 The Maritime Safety Committee, at its sixty-fourth session (5 to 9 December 1994), adopted Recommendations on the safe transport of dangerous cargoes and related activities in port areas, which were disseminated by means of MSC/Circ.675.

2 The Committee, at its eighty-second session (29 November to 8 December 2006), recognizing the need to align the relevant provisions of the Recommendations with those of the IMDG Code, as amended, and with the ISPS Code concerning security provisions, approved the Revised Recommendations on the safe transport of dangerous cargoes and related activities in port areas, set out in the annex.

3 Member Governments are invited to bring the annexed Revised Recommendations to the attention of the appropriate authorities, shipowners, ship and berth operators, relevant cargo interests, emergency services and all others concerned.

4 This circular revokes the aforementioned MSC/Circ.675.

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ANNEX

REVISED RECOMMENDATIONS ON THE SAFE TRANSPORT OF DANGEROUS CARGOES AND RELATED ACTIVITIES IN PORT AREAS

FOREWORD

A Recommendation on Safe Practice on Dangerous Goods in Ports and Harbours was first circulated by the Organization in November 1973.

The subsequent development of new techniques in shore and ship operations, as well as the desirability of having more comprehensive recommendations which included dangerous goods in packaged form, liquid and solid dangerous substances and liquefied gas carried in bulk, made it necessary to revise and update the Recommendation.

The Recommendation which was originally adopted as resolution A.289 (VIII), has been revised on several occasions and circulated as MSC/Circ.299 (12 February 1981), MSC/Circ.299/Add.1 (8 July 1983) and MSC/Circ.675 (30 January 1995).

The 1995 edition of the Recommendations included necessary updates and some novel features, the most important of which was guidance for the implementation of the Recommendations by those Member States which were in the process of developing the regulation of the transport of dangerous goods and related activities in their ports.

In 1996, the Maritime Safety Committee agreed that the IMDG Code should be reformatted in a style consistent with the format of the UN Model Regulations with the intention of enhancing user-friendliness, compliance with the regulations and the safe transport of dangerous goods.

At its seventy-fifth session in May 2002, the Maritime Safety Committee confirmed its earlier decision to make the IMDG Code mandatory in international law. Thus, IMDG Code Amendment 31 became mandatory on 1 January 2004 without any transitional period under the umbrella of chapters VI and VII of SOLAS 74, as amended.

The Recommendations are aligned with relevant IMO codes and the IMDG Code in particular. It is considered essential to harmonize the rules within the port area with the ship in order to ensure smooth operations and to avoid misunderstandings between ship and shore.

The Recommendations make a distinction between keeping and storage. Dangerous cargoes temporarily in the port area as part of the transport chain are not considered as being stored as their presence is solely concerned with awaiting loading onto and further onward movement by another mode of transport. Because this is an operation covered by the Recommendations, the term "keeping" is included in the overall definition of handling. Storage, which involves the holding of substances for an indeterminate period not directly involved with the transportation process, is considered to be outside the scope of these Recommendations and has been excluded from the definitions. Regulatory authorities may wish to regulate the storage of such substances but that would be achieved by other regulations unconnected with the transportation process.

For the purpose of these Recommendations the term "cargo interests" refers to those organizations which can be involved with the dangerous cargoes even before such cargoes reach the port area and a ship, and also includes consignors (shippers), packers, those concerned with documentation, consolidators and forwarding agents. Experience has shown that this group has a crucial role to play in the safe transport of dangerous cargoes and that the Recommendations should also apply to them.

It is important to draw to the attention of the users of these Recommendations that the term "dangerous cargo" comprises oils, noxious liquid chemicals and gases carried in bulk, solid bulk materials possessing chemical hazards, solid bulk materials hazardous only in bulk, harmful substances in packaged form (covered by Annex III of MARPOL 73/78) as well as dangerous goods in packaged form (covered by the IMDG Code).

Throughout the Recommendations the terms defined in chapter 2 have been highlighted in bold italic type.

A non-exhaustive glossary of relevance to the handling of dangerous cargoes is given in appendix 1 to this document.

CONTENTS

1 INTRODUCTION

1.1 The entry and presence of ***dangerous cargoes*** in ***port areas*** and any consequential ***handling*** should be controlled to ensure the general safety and security of the area, the containment of the cargoes, the safety of all persons in or near the ***port area***, and the protection of the environment.

1.2 The safety of life at sea and the safety and security of a ***ship***, its cargo and its crew in a ***port area*** are directly related to the care which is taken with ***dangerous cargoes*** prior to loading or unloading, and during their ***handling***.

1.3 These Recommendations are confined to ***dangerous cargoes*** which are in a ***port area*** as part of the transport chain. These Recommendations do not apply to dangerous substances which are used in a ***port area*** or are for general storage in the ***port area*****,** but Governments may wish to control such use and storage by national legal requirements. Should a substance covered by either of these exclusions subsequently be shipped, these Recommendations should then be applied, even though the substance is already in the ***port area***.

1.4 An essential pre-requisite for the safe ***transport*** and ***handling*** of ***dangerous cargoes*** is their proper identification, containment, packaging, packing, securing, marking, labelling, placarding and documentation. This applies whether the operation takes place in a ***port area*** or at premises away from a ***port area***.

1.5 Whilst the total transport chain includes inland, port and marine elements, it is essential that every care is taken by those responsible for the matters in 1.4 and that all relevant information is passed to those involved in the transport chain and to the final consignee. Attention should be paid to the possible differing requirements for different modes of ***transport***.

1.6 The safe transport and handling of ***dangerous cargoes*** is based on correct and accurate application of regulations for transport and handling of such cargoes and depends on appreciation by all persons concerned of the risks involved and on the full and detailed understanding of the regulations. This can only be achieved by properly planned and carried out training and retraining of persons concerned.

1.7 Surveys carried out by ***regulatory authorities*** of many countries have indicated the need for greater training activities. Therefore, chapter 4 has been updated in response to those needs based on the provisions set out in chapter 1.3 of the reformatted IMDG Code.

1.8 Chapter 5 is addressed to the ***regulatory authority***, ***port authority***, ***berth operator*** and ***cargo interests*** and describes their roles in the transport chain of ***dangerous cargoes*** and activities in ***port areas*** in respect of such cargoes.

1.9 These Recommendations are intended to set out a standard framework within which legal requirements can be prepared by Governments, whether for the first time or as a revision, to ensure the safe ***transport*** and ***handling*** of ***dangerous cargoes*** in ***port areas***. These Recommendations are not intended to specify standards of construction and equipment.

1.10 The IMO has adopted over the years a number of internationally recognized codes and guides, which are of direct relevance to the safe and secure ***transport*** and ***handling*** of ***dangerous cargoes*** in ***port areas*****,** and which may serve as valuable sources of information in the development of national legal requirements. Appendix 2 is a bibliography which lists the relevant IMO requirements and other relevant publications.

1.11 The codes and guides are under continuous review and are regularly revised. It is essential that only the most up-to-date editions are used. The contents of these codes and guides have been repeated in these Recommendations only to the extent necessary.

1.12 Governments should ensure that national legal requirements concerning the ***transport*** and ***handling*** of ***dangerous cargoes*** are to the greatest extent possible compatible with the relevant codes and guides (see operative paragraph 2 of IMO resolution A.717(17) which: "STRONGLY URGES Governments to co-ordinate their work in the different organizations to prevent conflicts with established rules and regulations relating to the maritime transport of dangerous, hazardous and harmful cargoes, including environmentally hazardous substances (marine pollutants) and wastes").

1.13 Governments may consider pursuing co-operative programmes or agreements, between Member Governments and private industry, to establish integrated supply chain safety and security standards in the ***transport*** and ***handling*** of ***dangerous cargoes***.

2 APPLICATION AND DEFINITIONS

2.1 Application

These Recommendations apply to the entry and presence of ***dangerous cargoes*** in ***port areas*** both on ship and on shore. It is intended that they should be made applicable to any ***ship*** visiting a port irrespective of its flag. They should not apply to ***ships' stores*** and equipment or to troopships and warships.

2.1 The purpose of this section is to assist those drafting national legal requirements to ensure that such requirements are as effective as possible, by covering all possible circumstances in which dangerous cargoes are present in port areas, but do not apply in circumstances which should be excluded.

It is recommended that the definitions are carefully studied and used so as to prevent misunderstandings.

2.2 Definitions

For the purpose of these Recommendations, the following definitions apply:

Berth means any dock, pier, jetty, quay, wharf, marine terminal or similar structure (whether floating or not) at which a ship may tie up. It includes any plant or premises, other than a ship, used for purposes ancillary or incidental to the loading or unloading of dangerous cargoes.

Berth operator means any person or body of persons who has for the time being the day-to-day control of the operation of a berth.

Bulk means cargoes which are intended to be carried without any intermediate form of containment in a cargo space which is a structural part of a ship or in a tank permanently fixed in or on a ship.

Cargo interests means a consignor (shipper), carrier, forwarder, consolidator, packing centre or any person, company or institution involved in any of the following activities: identification, containment, packaging, packing, securing, marking, labelling, placarding or documentation, as appropriate, of dangerous cargoes for receipt by a port and transport by sea and having control over the cargo at any time.

Certificate of Fitness means a certificate issued by or on behalf of an Administration in accordance with the relevant codes for the construction and equipment of a type of ship certifying that the construction and equipment of the ship are such that certain specified dangerous cargoes may be carried in that ship.

Dangerous cargoes means any of the following cargoes, whether packaged, carried in bulk packagings or in bulk within the scope of the following instruments:

- oils covered by Annex I of MARPOL 73/78;
- gases covered by the Codes for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk;
- noxious liquid substances/chemicals, including wastes, covered by the Codes for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk and Annex II of MARPOL 73/78;
- solid bulk materials possessing chemical hazards and solid bulk materials hazardous only in bulk (MHBs), including wastes, covered by group B schedules in the Code of Safe Practice for Solid Bulk Cargoes (BC Code);
- harmful substances in packaged form (covered by Annex III of MARPOL 73/78); and
- dangerous goods, whether substances, materials or articles (covered by the IMDG Code).

The term *dangerous cargoes* includes any empty uncleaned packagings (such as tank-containers, receptacles, intermediate bulk containers (IBCs), bulk packagings, portable tanks or tank vehicles) which previously contained dangerous cargoes, unless the packagings have been sufficiently cleaned of residue of the dangerous cargoes and purged of vapours so as to nullify any hazard or has been filled with a substance not classified as being dangerous.

Document of Compliance means a document issued by or on behalf of an Administration to a ship carrying dangerous goods in packaged form or in solid form in bulk under SOLAS regulation II-2/19.4 as evidence of compliance of construction and equipment with the requirements of that regulation.

Flexible pipe means a flexible hose and its end fittings, which may include means of sealing the ends, used for the purpose of transferring dangerous cargoes.

Handling means the operation of loading or unloading of a ship, railway wagon, vehicle, freight container or other means of transport, transfer to, from or within a warehouse or terminal area or within a ship or transhipment between ships or other modes of transport and includes intermediate keeping, i.e. the temporary storage of dangerous cargoes in the port area during their transport from the point of origin to their destination for the purpose of changing the modes or means of transport and movement within the port which is part of the transport supply chain for those cargoes.

This term has been very widely drawn so as to cover all of the many operations which relate to dangerous cargoes in a port area.

Hot work means the use of open fires and flames, power tools or hot rivets, grinding, soldering, burning, cutting, welding or any other repair work involving heat or creating sparks which may lead to a hazard because of the presence or proximity of dangerous cargoes.

Loading arm means an articulated hard pipe system and its associated equipment, which may include quick release couplings, emergency release systems or hydraulic power pack, used for the purpose of transferring dangerous cargoes.

The term includes articulated pipes and hardarms.

Master means the person having command of a ship.

It does not include a pilot or watchman.

Packing means the packing, loading or filling of dangerous cargoes into receptacles, intermediate bulk containers (IBCs), freight containers, tank containers, portable tanks, railway wagons, bulk containers, vehicles, ship borne barges or other cargo transport units.

Pipeline means all pipes, connections, valves and other ancillary plant, apparatus and appliances in a port provided or used for, or in connection with, the handling of dangerous cargoes, but does not include a flexible pipe, loading arm or any part of a ship's pipes, apparatus or equipment other than the termination of those parts of the ship's pipes, apparatus or equipment to which a flexible pipe is connected.

Port area means the land and sea area established by legislation.

Note: Some port areas may overlap and legal requirements should take account of this possibility.
In establishing the definition of port area in national legislation, careful thought needs to be given to ensuring that the laws apply to all of the various premises which might be involved.

Port authority means any person or body of persons empowered to exercise effective control in a port area.

It should be recognized that in some countries the effective control referred to is exercised by more than one authority, which may not necessarily include the port authority in the common sense of that phrase e.g., Captain of the Port. The control should encompass safety, security and environmental protection.

Regulatory authority means the national, regional or local authority empowered to make legal requirements in respect of a port area and having powers to enforce the legal requirements.

Responsible person means a person appointed by a shore side employer or by the master of a ship who is empowered to take all decisions relating to a specific task, having the necessary current knowledge and experience for that purpose and, where required, is suitably certificated or otherwise recognized by the regulatory authority.

Ship means any seagoing or non-seagoing water craft, including those used on inland waters, used for the transport of dangerous cargoes.

Ships' stores means materials which are on board a ship for the upkeep, maintenance, safety, operation or navigation of the ship (except for fuel and compressed air used for the ship's primary propulsion machinery or for fixed auxiliary equipment) or for the safety or comfort of the ship's passengers or crew. Materials which are intended for use in commercial operations by a ship are not to be considered as ships' stores (e.g., materials used for diving, surveying and salvage operations).

Ships' stores have been defined to include those substances which a ship would normally need to carry for its normal running, including for the comfort of passengers and crew, but does not extend to substances which it might carry for purposes of carrying out specialist functions of a ship, e.g., explosives carried on a deep sea salvage ship or dangerous substances used by a well stimulation ship.

Skilled person means any person having the current knowledge, experience and competence to perform a certain duty.

Stowage means the positioning of packages, intermediate bulk containers (IBCs), freight containers, tank containers, portable tanks, bulk containers, vehicles, ship borne barges, other cargo transport units and bulk cargoes on board ships, in warehouses, sheds or other areas.

Transport means the movement by one or more modes of transport in port areas.

Unstable substance means a substance which, by nature of its chemical make-up, tends to polymerize or otherwise react in a dangerous manner under certain conditions of temperature or in contact with a catalyst. Mitigation of this tendency can be carried out by special transport conditions or by introducing adequate amounts of chemical inhibitors or stabilizers into the product.

2.3 Security-related terms

Security-related terms not otherwise defined in the present document have the meaning assigned to them in SOLAS chapter XI-2 and in the ISPS Code.

3 WAREHOUSES, TERMINAL AREAS AND INFRASTRUCTURE

3.1 General

3.1.1 This chapter relates to jetties, ***pipelines***, cargo sheds, container stacking areas, warehouses and terminal areas for ***dangerous cargoes***, access and transport roads, rail links and waterways in ***port areas***.

3.1.2 The ***regulatory authority*** should take every care that, in defining the ***port area***, it covers only areas where ***dangerous cargoes*** are transported, handled or kept for the purpose of changing the mode or means of ***transport***. Refineries, chemical plants, factories, etc., should not be included in the ***port area*** except for jetties or wharves relating to those activities.

3.1.2 All dangerous cargoes moving by road, rail, barge or ship are governed by transport legal requirements covering such matters as packing, marking, labelling or placarding, documentation and segregation. Worldwide, the transport legal requirements should be adequate to protect the population and the environment along the transport chain, including handling at the beginning or the end of the transport chain and during changes of the mode of transport. This applies to all dangerous cargoes.

As ports are places where there is an interchange between the modes of transport, the transport legal requirements to all the relevant modes of transport will apply in ports.

However, in many industrialized countries there are specific legal requirements and standards for the design, construction and operation of refineries, chemical plants, tank farms, factories, storage and distribution centres or similar installations. They may include legislation relating to labour, environment, pollution prevention, water protection or explosives.

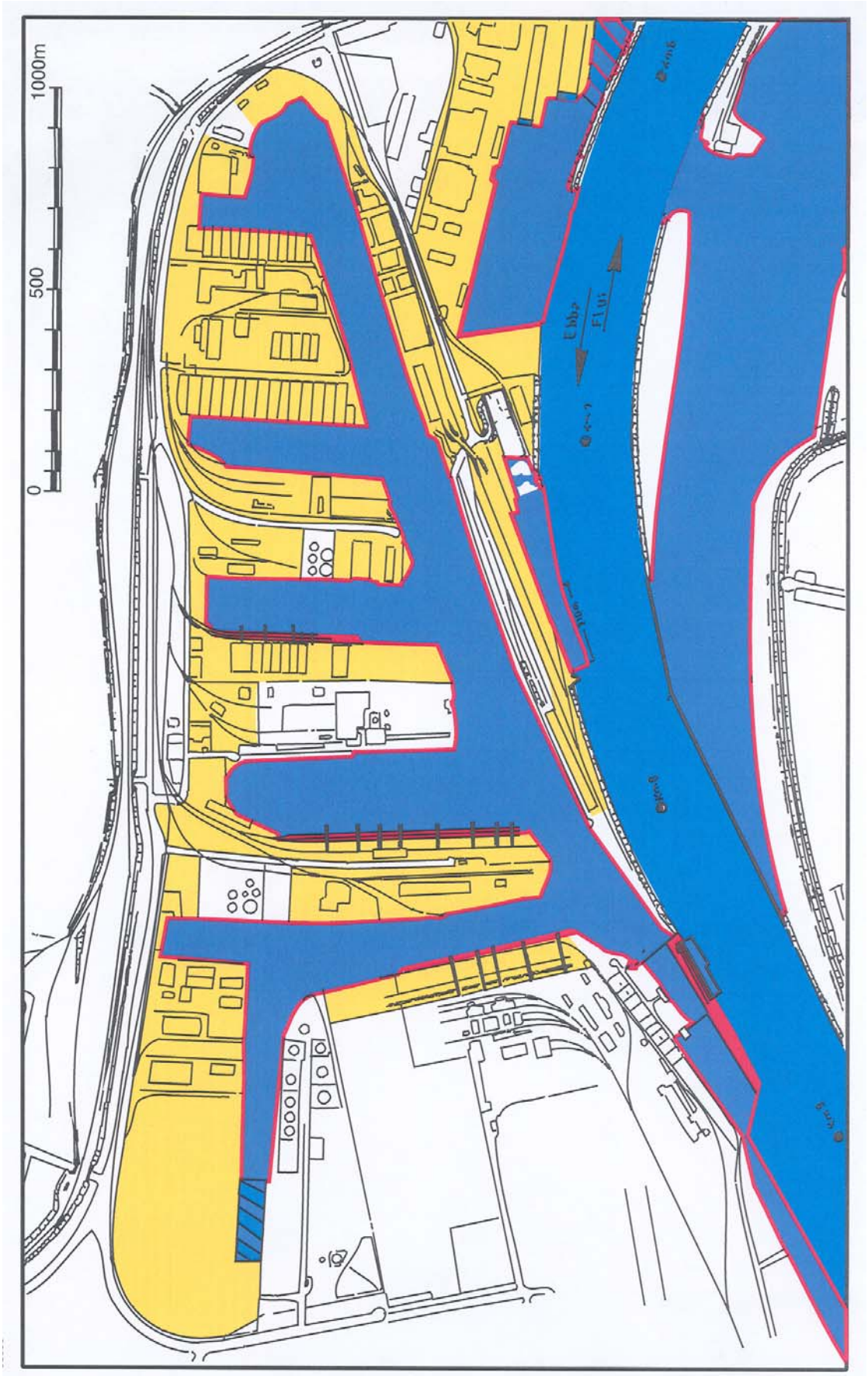
These specific legal requirements and standards sometimes differ considerably from the legal requirements based on these Recommendations. To avoid conflict between the different legal requirements and the authorities responsible for their implementation, the Recommendations should not be applied to areas within or near a port that are not directly related to or involved in the transport of dangerous cargoes. The Recommendations may also be applied to marine terminals not situated in port areas.

Example 1

One way of defining areas to which legal requirements based on the Recommendations apply is to attach a plan to the port laws or port by-laws, showing the various areas in different colours, e.g., (see figure 1):

Blue =water areas to which the legal requirements apply;
Red =ship/shore interface areas (berth, jetties, wharves) to which the legal requirements apply;
Yellow =shore areas to which the legal requirements apply; and
White =shore areas to which the legal requirements do not apply.

Figure 1 – *Plan of Port area*



3.1.3 The ***regulatory authority*** should establish general legal requirements to be met for new facilities or for extensions or major changes to existing facilities.

3.1.3 The legal requirements and standards should cover, e.g.:

.1 public works planning procedures;

.2 zoning;

.3 planning/project approval procedures;

.4 environmental impact assessment;

.5 planning laws for towns and country;

.6 building, including standards for static and building materials and the carrying out of construction work;

.7 fire protection;

.8 environment protection, including protection from noxious substances, water pollution, explosives, ground pollution;

.9 factories; and

.10 labour safety.

For most of the above subjects, international conventions, guidelines or recommendations are available.

3.1.4 The ***regulatory authority*** should also encourage the upgrading of existing facilities to meet such requirements.

3.1.5 When establishing such requirements the ***regulatory authority*** should make every effort to prevent conflicts with established legal requirements relating to the ***transport*** of ***dangerous cargoes*** including environmentally hazardous substances and wastes.

3.1.5 Operative paragraph 2 of IMO resolution A.717(17) states: "Strongly urges Governments to co-ordinate their work in the different organizations to prevent conflicts with the established rules and regulations relating to the maritime transport of dangerous, hazardous and harmful cargoes, including environmentally hazardous substances (marine pollutants) and wastes."

3.2 Land use planning

3.2.1 When planning new facilities or upgrading of existing facilities in a ***port area*** the following factors should be considered:

.1 the protection of safety, health and security of persons, property and the environment;

.2 the ***dangerous cargoes*** to be transported or handled;

.3 other hazardous installations in the vicinity;

.4 population density in the area under consideration including the vulnerability of the population;

.5 ease of evacuation or other measures which may need to be taken in the event of an accident;

.6 emergency services and procedures available;

.7 possibility and probability of an accident occurring and the effects on health, property and the environment, depending on the ***dangerous cargoes*** to be transported or handled;

.8 the provision of repair and cleaning facilities for ***ships*** and cargo transport units; and

.9 the requirements of MARPOL 73/78 with respect to reception facilities.

3.2.1.7 In order to prevent flooding and fire and to provide protection against water pollution, additional precautions may be necessary.

Example 2

The following points should be considered:

.1 the location of facilities on areas which are safe from flooding or are adequately protected from it by means such as dykes or walls;

.2 ensuring unrestricted access/egress of the emergency services such as fire brigade or ambulance;

.3 the limitation of size of areas where dangerous cargoes are kept;

.4 the use of non-flammable construction materials;

.5 the provision of lightning protection equipment;

.6 the installation of smoke- and heat-extraction equipment;

.7 ensuring an adequate supply of fire-extinguishing water and, if necessary, other extinguishing agents;

.8 the provision of automatic fire detection equipment and, if necessary, automatic fire extinguishing installations and other fire-fighting equipment;

.9 the provision of facilities to retain contaminated fire-extinguishing and cooling water; and

.10 the provision of sealed areas and absorption equipment facilities for retaining spilled substances harmful to the aquatic environment.

3.2.2 Land use planning decisions should take into account the cumulative risk of all hazardous installations and substances in the vicinity of ports.

3.2.2 Centres of population and other factories, refineries or chemical plants in the vicinity should be taken into account when planning port facilities.

The cumulative risk of all hazardous installations and substances in the vicinity of the port, the population in the vicinity, the standard of the facilities and the emergency services available should be considered in determining limitations for classes of cargo to be handled, kept or transported in a port or which will remain on board a ship in transit.

3.2.3 Land use planning decisions should always take into account international guidelines, experience and recommendations available from the various international bodies.

3.2.3 When planning port facilities consideration should be given to the need for repair or cleaning facilities for ships and/or cargo transport units such as shipyards, lay-by berths, tank cleaning stations or workshops. Depending on the size of the port and the number and types of ships and cargoes, it may be necessary to provide all or at least some of these facilities.

3.3 Considerations for specific dangerous cargoes

3.3.1 *Substances harmful to the aquatic environment*

3.3.1.1 Where practicable, wherever such substances are present in the ***port area*****,** suitable means should be used to prevent these substances entering into the soil, water areas or drainage systems. This also applies to pipe and conveyor bridges.

3.3.1.1 It may be impracticable to seal the complete port area to prevent substances harmful to the aquatic environment entering the soil.

However, if there are areas where only specific types of cargo, e.g., bulk liquids, are handled or kept, the ground should be sealed. This may not be practicable in existing ports. In other areas other means, such as absorbents, should be available for use in case of an accidental spillage. To prevent harmful substances entering into the drainage systems, drain openings should be closed by means of special covers during the handling of such cargoes.

3.3.1.2 Whenever practicable, drainage systems should be furnished with shut-off valves, sumps or basins and shore discharge facilities for contaminated water.

3.3.1.3 Whenever practicable, such areas should be separated by containment walls, bunds or sills.

3.3.2 *Explosives*

3.3.2.1 Explosives should not be permitted to enter the ***port area*** unless the ***regulatory authority*** has granted permission to handle explosives. This should include explosives in transit.

3.3.2.1 Class-1 cargoes other than division 1.4S should only be allowed to enter the port area for direct transport to or from ships (import and export). However, situations may arise where, despite all the precautions taken, these cargoes have to be kept in the port area for several hours. In such situations a special site should be available for such short-term keeping.

Example 3

An example of such a special facility might be a bunker like structure which:

.1 consists of an area surrounded on three sides by a double steel pile wall, filled with sand;

.2 has on its fourth side a double locked steel door;

.3 is without a roof;

.4 is accessible by road and rail;

.5 has a sprinkler system installed;

.6 has a storage tank underneath with sufficient capacity of collecting contaminated water; and

.7 has an office container next to it with communication facilities provided for the watchmen, who should be present around the clock when cargo is inside the bunker.

Example 4

Another example would be to take the cargo to an isolated place which is secure.

3.3.2.2 Where necessary and permitted by the ***regulatory authority*** a special site with suitable protection and with access by road and rail should be provided for the yard placement or storage location of explosives.

3.3.2.3 Any such site should be fenced off to prevent the entry of unauthorized persons and should have facilities for watchmen, including adequate means of communications.

3.3.2.4 Items for consideration by the ***regulatory authority*** in connection with the ***handling*** of explosives in ports are set out in annex 2.

3.3.3 *Temperature-controlled dangerous cargoes*

3.3.3.1 Where necessary, special areas, with shore facilities for connecting temperature-controlled cargo transport units to shore utilities should be provided. The facilities should include back-up systems.

3.3.3.1 Certain dangerous cargoes such as self-reactive substances (class 4.1), organic peroxides (class 5.2) and related substances need to be transported and handled under temperature control provisions specified in chapters 2.4, 2.5 and 7.7 of the IMDG Code. These chapters provide information on their control temperature and emergency temperature and methods of temperature control. Some infectious substances (class 6.2) shall also be transported and handled under special temperature control provisions which are required for their safe and successful delivery from a consignor to a consignee.

This provides guidance to port authorities/berth operators if such cargoes have to be kept for short periods in a port area.

Some dangerous cargoes are transported under controlled temperature or are stabilized by temperature control for quality assurance purposes rather than for safety purposes.

It is recommended that direct delivery for loading or discharging of such cargoes should be arranged particularly if they are in cargo transport units. Where this is not possible, ports should designate special areas or sheds where these cargoes can be kept. These areas or sheds should have facilities, including back-up systems, for connecting temperature controlled cargo transport units to shore power supplies.

Certain dangerous cargoes may be transported in cargo transport units of a type refrigerated by liquid or solid refrigerants, such as solid carbon dioxide (dry ice) or liquid nitrogen. In such cases sufficient refrigerant, with a margin for reasonable delays, should be carried in or with the cargo transport unit. Neither liquid oxygen nor liquid air should be used as a refrigerant. In the case of carbon dioxide, the cargo transport unit shall be marked in accordance with the relevant special provision in the IMDG Code.

Temperature-controlled dangerous cargoes, being loaded in insulated, refrigerated and mechanically refrigerated vehicles, may be transported by ships if these vehicles conform to the provisions of sections 7.7.3, 7.7.4 and 7.7.5, as appropriate, of chapter 7.7 of the IMDG Code.

Less stringent means of temperature control may be used or artificial refrigeration may be dispensed with by the written approval of the competent authority, during the transport and handling of such dangerous cargoes at low ambient temperatures or during short international voyages.

Because of the properties of this type of dangerous cargo (some may require explosive subsidiary risk labelling), it is necessary to control the temperature of any cargo transport unit to determine if dual refrigerating units may be required. It may be necessary to implement emergency procedures (e.g., disposal of packages) if the specified temperature of the unit, the emergency temperature, is reached. This is particularly important for ports in tropical zones in which the need for an open-sided shed for the keeping of such units should be considered.

3.3.4 *Radioactive material*

3.3.4.1 Where necessary, special areas, which include buildings built in accordance with international safety standards, should be provided for radioactive material.

3.3.4.1 Normally radioactive material (dangerous goods of class 7 covered by chapter 2.7 of the IMDG Code) should only be allowed to enter the port for direct transhipment. If they have to be kept in the port area for several hours special facilities should be provided. An additional high fence at an adequate distance could provide additional safety and security.

3.3.4.2 Any such areas should be secured to prevent the entry of unauthorized persons.

3.4 Specific considerations for warehouses and terminal areas

3.4.1 *Dangerous cargo areas*

3.4.1.1 Dangerous cargo areas should have separate areas with all necessary facilities appropriate to the hazards emanating from the cargoes to be kept. Where appropriate these facilities should include separate ventilation, drainage, fire resisting walls, ceilings, etc.

3.4.1.1 The quantity and type of dangerous cargo areas will vary from port to port and depend on the volume and types of cargo handled in it. In some ports it may be sufficient to have dedicated open areas which are either fenced off or clearly marked. More sensitive dangerous cargoes may need to be kept in purpose built dangerous goods boxes, permanently stationed containers, magazines in general cargo sheds or dedicated and clearly marked areas in such sheds. Other cargoes may require to be kept in an area that is covered by a roof but open on all sides. Consideration should also be given to the maximum amount of cargo to be kept in area, and the maximum height of the stowage of such cargo.

Example 5

Figures 2 and 3 show how one port, handling about 400,000 tons of packaged dangerous cargoes of all classes annually, has dealt with it.

Figure 2 – *Plan showing dangerous goods areas*

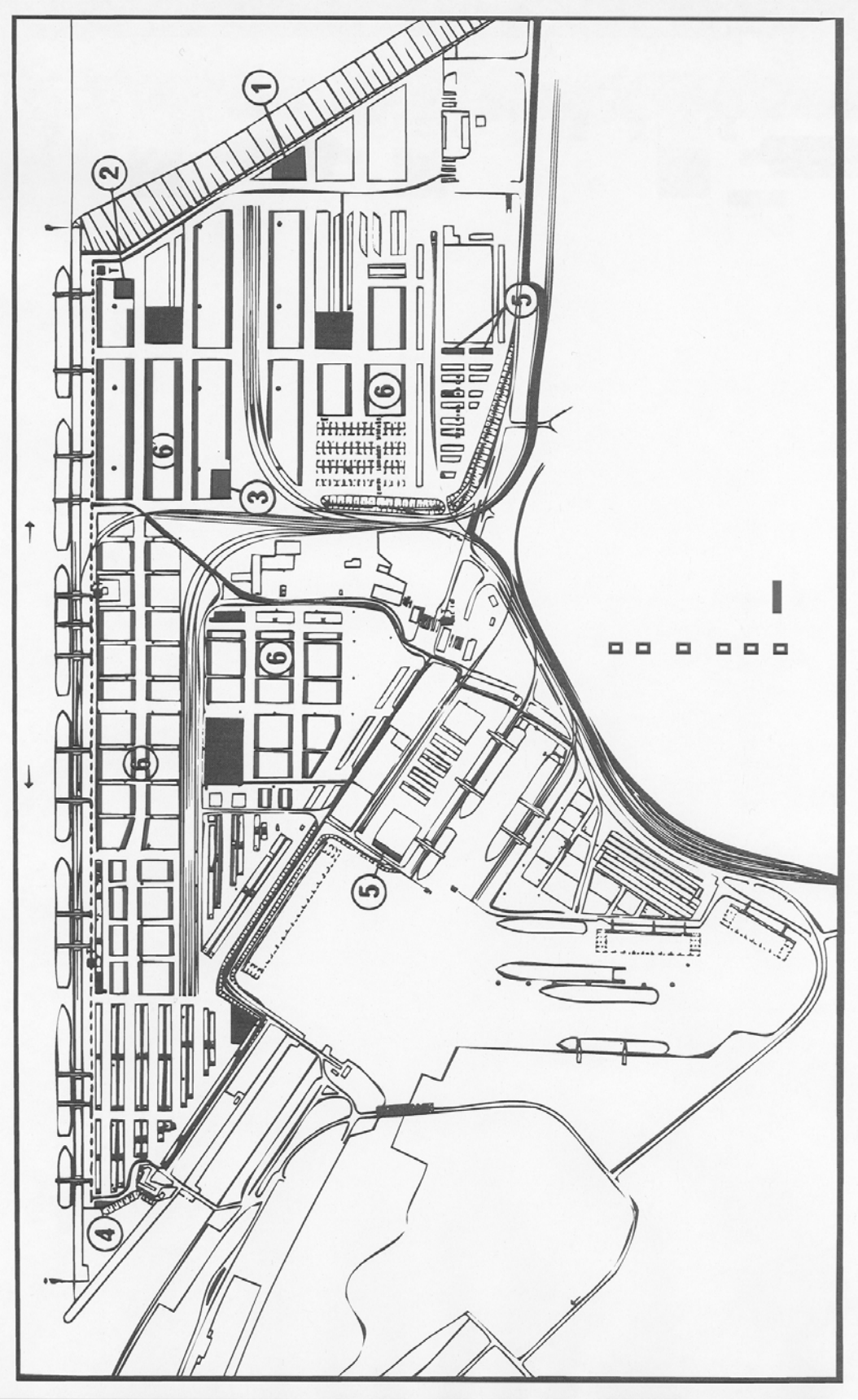
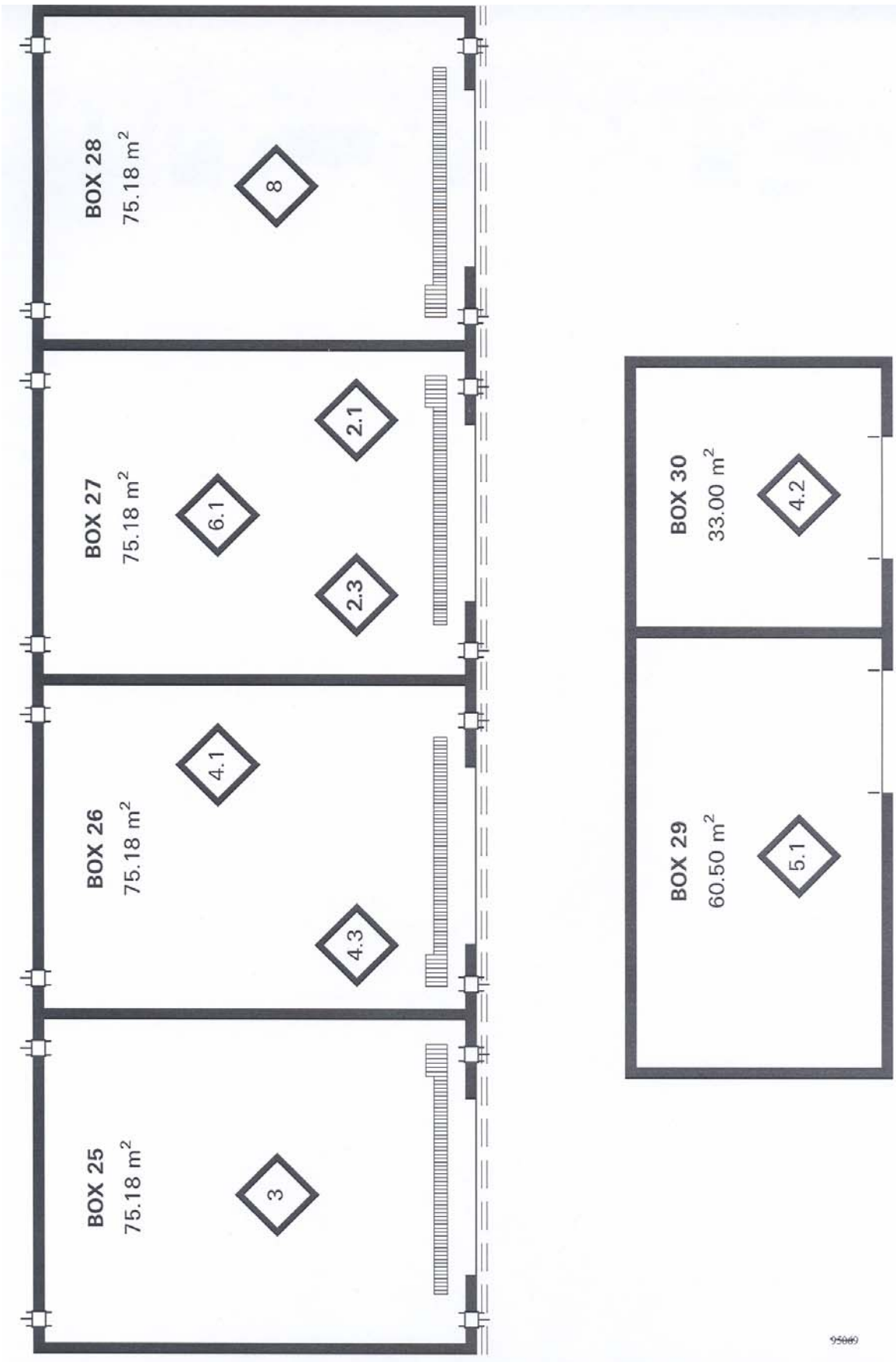


Figure 3 – *Dangerous goods boxes*



3.4.1.2 Dangerous cargo areas should, where possible, be located so that management and/or security personnel may keep them under continuous observation. Otherwise, an alarm system may be provided or the spaces inspected at frequent intervals.

3.4.1.3 The spaces should enable an adequate segregation of dangerous cargoes in accordance with the legal requirements of the ***regulatory authority***.

3.4.2 *Container stacking areas/rail sidings/lorry parking areas*

3.4.2.1 Separate areas may be designated for specific ***dangerous cargoes***.

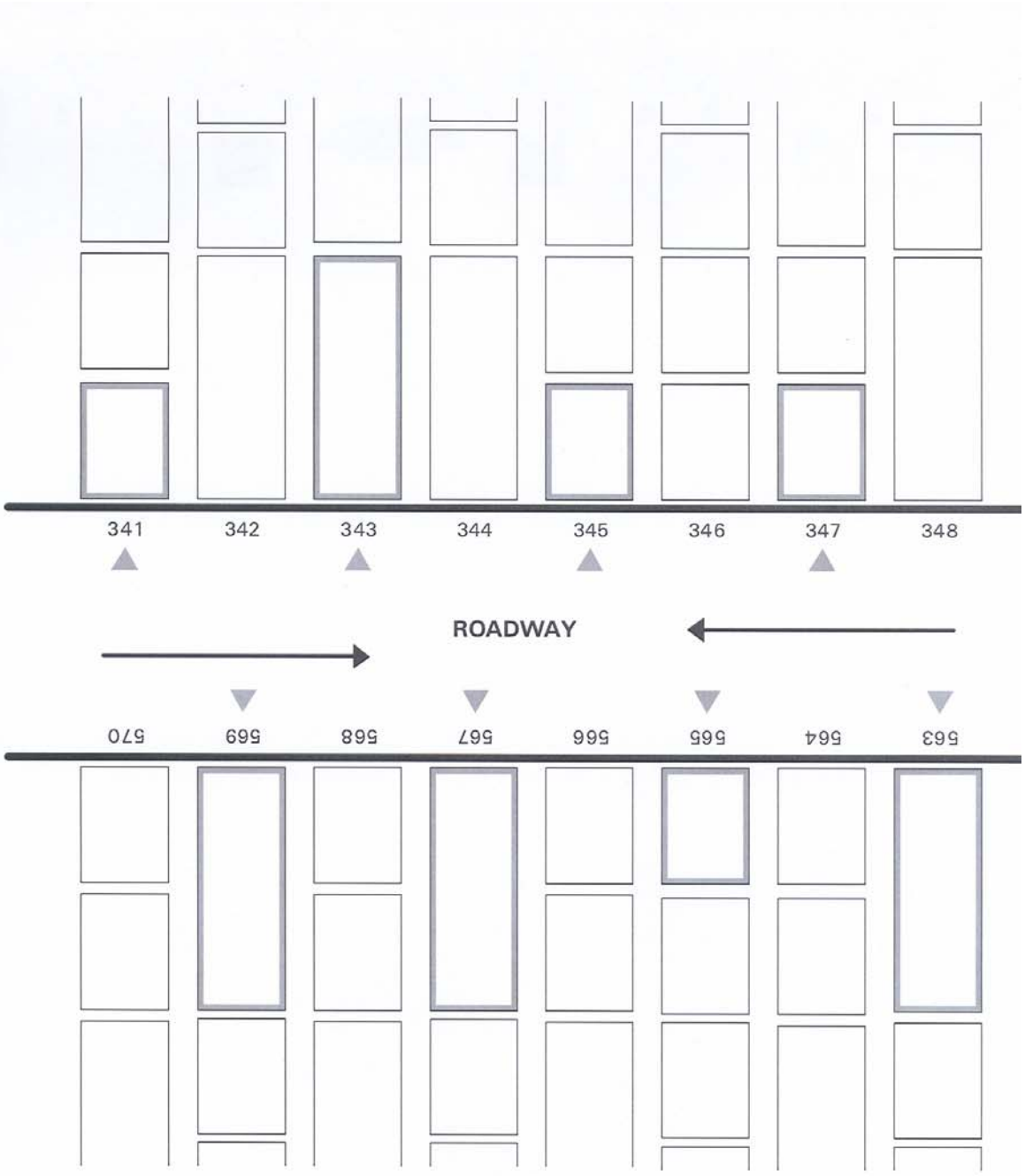
3.4.2.1 In addition to providing sufficient space for segregation, the layout of the dangerous cargo area should provide adequate access to the dangerous cargoes kept in that area and access lanes for handling equipment such as lift trucks.

3.4.2.2 Segregation requirements of the ***regulatory authority*** should be met when designating areas.

3.4.2.3 Care should be taken that, in case of an emergency, adequate access is provided for handling equipment, emergency services, etc.

3.4.2.3 The following illustrates how one port with straddle carrier operations has dealt with it (see also figure 4).

Figure 4 – *Container storage area*



In the container storage area every first position of the odd-numbered lanes is dedicated for the storage of a DG container. The lanes are marked with striking red triangles. The containers are always placed with their doors to the roadway and never stacked on top of each other.

Example 6

One hundred and eighty-five lanes out of a total of three hundred and seventy (every odd numbered lane) are designated for containers carrying dangerous cargoes. Each such lane is marked with a red triangle. Only the first container positioned in a lane may contain dangerous cargoes to allow opening of the door for easy access in case of an emergency. The segregation requirements for the containers are in accordance with the IMDG Code requirements for "on deck" stowage, which are set out in chapter 7.1 of the Code. However, in this case stacking of dangerous goods containers is prohibited. For containers requiring temperature control, lanes with shore power connection stations are available.

3.4.2.4 Adequate emergency facilities should be provided. These should be appropriate to the hazards of the ***dangerous cargoes*** to be handled.

3.4.3 *Fumigation areas*

3.4.3.1 Separate areas should be provided or designated for ***ships*** and/or cargo transport units to be fumigated.

3.4.3.2 Whenever practicable, these areas should be fenced off to prevent the entry of unauthorized persons and should have facilities for watchmen. The facilities should include adequate means of communication.

3.4.3.3 A guide to fumigation operations is set out in annex 7.

3.4.4 *Special areas for damaged dangerous cargoes and wastes contaminated with dangerous cargoes*

3.4.4.1 Special areas for damaged dangerous cargoes and wastes contaminated with dangerous cargoes should be provided, where damaged dangerous cargoes may be kept and repacked or contaminated wastes separated and kept until their disposal.

3.4.4.1 The following describes how one port has dealt with it:

Example 7

The facility consists of an area surrounded by a high fence which is easily accessible by road and rail. Inside there are two buildings. One is for the personnel required to work there and contains all controls for the drainage system, means of communication and emergency equipment.

The second is a shed where damaged cargo can be kept safely. The shed is divided into three sections, each of which can accommodate one 40 foot container. The floor is sloped to allow the containment of 30 m^3 of contaminated liquids within shed. The floor is made of concrete and has a double barrier-layer sheet underneath which seals it from the ground. The barrier-layer sheet has a drain system which enables the user to immediately detect any damage (leakage) by means of a vacuum pump. The handling area in front of the shed is also made of concrete and sealed.

The drainage system has been especially designed and is resistant to approximately 95% of all dangerous substances handled in the port. All pipes are made of PE-HD (high density polyethylene) while all valves are coated with PTFE (polytetrafluoroethylene). Three storage basins are available, two small ones of 2 m^3 capacity each and a large one with a capacity of 80 m^3. All basins are coated.

Normally, all valves are kept in an open position to allow direct drainage into the harbour. When damaged cargo or contaminated waste is handled, the valves are closed. Only when no spillages have occurred during the handling are the valves opened again.

3.4.4.2 Such areas should, where appropriate, be covered, have a sealed floor or ground, separate drainage systems with shut-off valves, sumps or basins and means to discharge contaminated water to special facilities in order to safeguard the ***port area*** and the environment.

3.4.4.3 Such areas should be fenced off to prevent the entry of unauthorized persons and should have facilities for watchmen. The facilities should include adequate means of communication.

3.4.5 *Repairing/cleaning facilities*

3.4.5.1 Where repair or cleaning facilities for ***ships*** or cargo transport units are provided, they should be situated well away from any area where dangerous cargoes are transported or handled. This should not preclude the carrying out of minor voyage repairs on ships at cargo handling ***berths*** or cleaning of cargo tanks at tanker terminals.

3.4.5.2 Cleaning facilities should be designated and constructed to protect the environment when environmentally hazardous substances are used or are otherwise involved, in the cleaning process.

3.4.6 *Reception facilities*

3.4.6.1 Facilities should be provided for the reception and disposal of bilge water, wastes, ballast and slops, contaminated with ***dangerous cargoes***, as appropriate.

3.4.7 *Tank storage and pipelines*

3.4.7.1 Permanent installations for the storage of liquid ***dangerous cargoes***, including ***pipelines***, in the ***port area*** should be designated, constructed and maintained in accordance with the ***regulatory authority***'s legal requirements, taking into account temperature, the development of pressure, compatibility of substances and the need to ensure harmonization with the requirements laid down for ***ships***.

4 TRAINING

4.1 Regulatory authorities

4.1.1 The ***regulatory authority*** should establish minimum requirements for training and, where appropriate, qualifications for each person involved, directly or indirectly, in the ***transport*** or ***handling*** of ***dangerous cargoes***.

4.1.2 ***Regulatory authorities*** involved in the development or enforcement of legal requirements relating to the supervision of ***transport*** or ***handling*** of ***dangerous cargoes*** should ensure that their personnel are adequately trained, commensurate with their responsibilities.

4.2 Management

4.2.1 Management should ensure that all shipboard and shore personnel involved in the ***transport*** or ***handling*** of ***dangerous cargoes*** or in the supervision thereof are adequately trained, commensurate with their responsibilities within their organization.

4.2.2 Management at all levels should exercise day-to-day responsibility for health and safety.

4.2.2 Whilst duties to comply with legal requirements cannot be delegated by management, responsibilities within undertakings to implement safe operational procedures on a day to day basis may be delegated, as appropriate, to all levels of management and should be exercised by them.

4.2.3 In order to draw up safe operational procedures for the transport and handling of dangerous cargoes, management should carry out an assessment of the risks involved. In certain cases a quantified risk assessment may be necessary.

4.2.3 It is generally accepted that the majority of all accidents are linked to the human element, for example attitude, communication problems or fatigue. It is essential, therefore, that operating procedures take the human factor into account.

4.3 Personnel (cargo interests, berth operators and ships)

4.3.1 Every person engaged in the ***transport*** or handling of ***dangerous cargoes*** should receive training on the safe ***transport*** and ***handling*** of ***dangerous cargoes*****,** commensurate with his responsibilities.

4.3.2 Shore-based personnel should receive general awareness/familiarization training, function-specific training and safety training. Such persons may be those who:

.1 classify dangerous goods and identify Proper Shipping Names of dangerous goods;

.2 pack dangerous goods in packages;

.3 mark, label or placard dangerous goods;

.4 pack/unpack cargo transport units;

.5 prepare transport documents for dangerous goods;

.6 offer dangerous goods for transport;

.7 accept or receive dangerous goods for transport;

.8 handle dangerous goods in transport;

.9 prepare dangerous goods loading/stowage plans;

.10 load/unload dangerous goods into/from ships;

.11 carry dangerous goods in transport;

.12 inert cargo tanks;

.13 measure and sample cargo tanks;

.14 wash cargo tanks under the approved procedures and arrangements;

.15 enforce, survey or inspect for compliance with applicable legal requirements and rules and regulations; or

.16 are otherwise involved in the transport of dangerous goods as determined by the Competent Authority.

4.4 Training content

4.4.1 *General awareness/familiarization training*

4.4.1.1 Every person should receive training on the safe ***transport*** and ***handling*** of ***dangerous cargoes***, commensurate with his duties. The training should be designed to provide familiarity with the general hazards of relevant ***dangerous cargoes*** and the legal requirements. Such training should include a description of the types and classes of ***dangerous cargoes***; marking, labelling and placarding, packing, segregation and compatibility requirements; a description of the purpose and content of the transport documents; and a description of available emergency response documents.

4.4.2 *Function-specific training*

4.4.2.1 Every person should receive detailed training concerning specific requirements for the ***transport*** and ***handling*** of ***dangerous cargoes*** which are applicable to the function that he performs.

4.4.3 *Safety training*

4.4.3.1 Each person should receive training commensurate with the risks in the event of a release of ***dangerous cargoes*** and the functions he performs, on:

.1 methods and procedures for accident avoidance, such as proper use of package-handling equipment and appropriate methods of ***stowage*** and ***segregation*** of ***dangerous cargoes***;

.2 necessary emergency response information and how to use it;

.3 general dangers of the various types and classes of ***dangerous cargoes*** and how to prevent exposure to their hazards including, if appropriate, the use of personal protective clothing and equipment; and

.4 immediate procedures to be followed in the event of an unintentional release of ***dangerous cargoes***, including any emergency procedures for which the person is responsible and the personal protection procedures to be followed.

4.4.3.2 Such training should be provided or verified upon employment in a position involving the ***transport*** or ***handling*** of ***dangerous cargoes*** and should be periodically supplemented with retraining, as deemed appropriate by the ***regulatory authority***.

4.4.3.3 Records of all safety training undertaken should be kept by the employer and made available to the employee if requested.

4.4.3.3 Detailed description of recommended training for shore-side personnel involved in the transport and handling of dangerous cargoes are given in section 1.3.1 of chapter 1.3 of the IMDG Code.

4.4.4 *Security training* (see also section 5)

4.4.4.1 Security training for personnel having duties in relation to the handling and transport of dangerous cargoes should be appropriate with their responsibilities and duties under the provisions of the port facility security plan (section A/2.1.5 of the ISPS Code). In addition, the training requirements specific to security of dangerous goods given in chapter 1.4 of the IMDG Code should also be addressed.

5 SECURITY PROVISIONS

5.1 The special measures to enhance maritime security are contained in SOLAS chapter XI-2 and in the ISPS Code. The requirements form the international framework through which ships and port facilities can co-operate to detect and deter acts which threaten security in the international maritime transport sector.

5.2 In addition, explicit security provisions for personnel, involved in the transport of dangerous goods by sea and shore-based personnel involved in handling IMDG Code classified dangerous cargoes in ports, have been included in the IMDG Code since Amendment 32-04.

5.3 Notwithstanding the provisions of section 2.1 on application, because of the importance of detecting and preventing possible security threats and breaches in security, when IMDG Code classified dangerous cargoes might be involved, attention is drawn to the requirements of chapter 1.4 (Security provisions) of the IMDG Code.

5.4 Competent Authorities should consider developing appropriate security-related provisions, based on the philosophy on which chapter 1.4 of the IMDG Code is based, for the non packaged ***dangerous cargoes***.

6 RESPONSIBILITIES

6.1 Role of regulatory authorities

6.1.1 The ***regulatory authority*** should ensure that appropriate legal requirements, based upon these Recommendations are made and reviewed regularly.

6.1.1 The regulatory authority responsible for port safety varies from country to country. More than one authority is frequently involved with different authorities, being responsible for different aspects, e.g. for marine and inland transport safety and the safety of ships' crew and passengers, shore side safety and the safety of shore employees, land use planning or environmental matters. In some countries the regulatory authority or authorities may be national or federal bodies, whilst in others the authorities may be the state, regional or local authorities or a combination of some or all of these.

It is possible that different sections of the Recommendations will be incorporated in separate legal requirements or legal requirements which are the responsibility of two or more regulatory authorities. In such cases it is essential that there is effective liaison between the authorities to ensure that the legal requirements are consistent and that gaps are not left between them.

In some cases it may be necessary for legal requirements made by different regulatory authorities to overlap. An example could be requirements applying to shore side organizations working on ships and ships' crew. Again it is essential that there is effective liaison between the authorities to ensure that the legal requirements are harmonized.

6.1.2 The ***regulatory authority*** should make arrangements for appropriate enforcement action to be taken to ensure compliance with the legal requirements.

6.1.2 To be effective it is essential that the legal requirements are enforced consistently in accordance with a country's legal system. Enforcement ensures that those with duties under the legal requirements are aware of the likelihood of penalties being imposed on them if they fail to comply with the legal requirements.

Regulatory authorities should, therefore, consider by what body the legal requirements should be enforced and ensure that the officers concerned are adequately trained and instructed.

Regulatory authorities' enforcement strategy should include random checks.

6.1.3 As some of the matters covered by these Recommendations are better dealt with by the people on the spot, the ***regulatory authority*** should consider whether some of the legal requirements should be enforced by the ***port authority***.

6.1.3 Regulatory authorities should consider if any of the legal requirements need to be dealt with on a day-to-day basis by persons on the spot. If regulatory authorities decide this is so and it is permitted by the legal system of the country or State concerned, they should consider whether particular legal requirements should be enforced by the port authority rather than by themselves.

6.1.4 Where appropriate, national legal requirements should permit purely local matters to be regulated by local rules (by-laws), enforced by the ***port authority.*** Such local rules should not duplicate nor be contrary to any of the national legal requirements.

6.1.4 The regulatory authority should make provision for port authorities to make local rules or by-laws. Potential confusion due to differences between the local rules or by-laws in different ports can be minimized by the development by regulatory authorities of model by-laws to harmonize the requirements of by-laws that are found to be necessary in many ports.

6.1.5 The ***regulatory authority*** should take steps to ensure that appropriate advice is made available to all those who have duties under the legal requirements.

6.1.5 Persons with duties under the legal requirements often need advice or guidance on how to comply with them. Regulatory authorities should take steps to ensure that such advice is available. This may take the form of internationally recognized codes or guidance, such as certain chapters and sections of the IMDG Code and its Supplement which remain recommendatory, while the IMDG Code is a mandatory IMO instrument, or the *International Safety Guide for Oil Tankers and Terminals (ISGOTT)*, the ILO Code of Practice Safety and Health in Ports, national guidance published by the regulatory authority or guidance published by other reputable bodies such as industry organizations. In addition, the regulatory authority should be prepared to give advice about the legal requirements when appropriate.

6.2 Role of port authorities

6.2.1 The ***port authority*** should exercise control over the movement of shipping through the ***port area*** and should establish systems for the receipt of prior notification and the conditions under which ***dangerous cargoes*** may enter the ***port area***.

6.2.1 The port authority should make known any limitations on the classes or quantities of dangerous cargoes that may be handled in the port area. In determining any such limits, the port authority should take into account any relevant requirements of the regulatory authority (e.g., limits specified in an explosives licence), land use planning restrictions and sensitive nearby premises such as schools, hospitals, special-needs housing etc. Special consideration should be given to the needs of ships to enter the port area under stress of weather or other emergency. In some cases it may not be appropriate to permit a ship to enter the port owing to the potential risks to other ships and shore premises.

The port authority should make arrangements to regulate the presence or handling of any cargo which gives rise to a risk to the health or safety of any person, whether or not within the port area, due to the condition of the dangerous cargo itself or the condition of a freight container, portable tank or other receptacle containing the cargo or of any ship or vehicle carrying it. The condition referred to does not relate to the inherent properties of the cargo, e.g., the corrosiveness of an acid.

6.2.2 The ***port authority*** should exercise control over the shore side entry of ***dangerous cargoes*** into the ***port area*** and should establish systems for the receipt of prior notification and the conditions under which ***dangerous cargoes*** may enter the ***port area***.

6.2.2 The international nature of shipping means that ships are likely to call at many ports in many countries. Significant differences in the legal requirements relating to dangerous cargoes in transit between different ports and countries could cause confusion and misunderstandings which could possibly lead to dangerous situations. So far as possible, therefore, the legal requirements of ports within a country and of ports of different countries should be harmonized. This is best done by basing the necessary legal requirements on these Recommendations.

6.2.3 The ***port authority***, where it has been empowered to do so, should make provisions to enforce the relevant part of the national legal requirements.

6.2.3 The port authority should make arrangements for suitably trained personnel to enforce any national legal requirements that the regulatory authority requires it to enforce.

6.2.4 Where appropriate, the ***port authority*** should develop and enforce local port rules (by-laws) covering ***dangerous cargoes*** in the ***port area***.

6.2.4 Any local rules or by-laws should be kept to the minimum and should deal only with local matters specific to the port. They should nor duplicate or be inconsistent with the national legal requirements. Such by-laws may include navigational requirements relating to the circumstances of a particular port. The port authority should make arrangements for any such local rules or by-laws to be enforced by suitably trained personnel.

6.2.5 The ***port authority*** should, when it is within the scope of its responsibility, develop, maintain, publicize and practice, as appropriate, plans for any foreseeable emergency concerning ***dangerous cargoes*** in the ***port area***.

6.2.5 The port authority should prepare and keep up to date an emergency plan for dealing with any emergencies that may arise. This should include emergencies which involve, or could involve, dangerous cargoes in the port area. The emergency plan should be compatible with any local emergency plan and emergency plans of any nearby premises with which it may overlap and any other body, for example, other responsible authorities, that may be involved in such an emergency.

The emergency plan should cater for all emergencies that are likely to occur. In addition to considering the emergencies that are likely to occur during the normal operation of the port, the port authority should consider external emergencies that could affect dangerous cargoes whilst in the port area. These may include the entry of ships in distress carrying dangerous cargoes not normally handled in the port, emergencies in nearby premises and emergencies involving bridges in the port area or aircraft.

6.3 Role of berth operators and cargo interests

6.3.1 The ***berth operator*** and ***cargo interests*** have the prime responsibility for carrying out the ***transport*** and ***handling*** of ***dangerous cargoes*** in a manner which safeguards the health and safety of their employees and others who may be affected by the operations, including the general public.

6.3.1 In many cases particularly at intermodal transfer points such as ports, the activities of two or more undertakings will overlap. In such cases the duties will also overlap and co-operation between the managements of the undertakings will be essential to ensure that the necessity standards of health and safety are maintained.

6.3.2 The ***berth operator*** and ***cargo interests*** should consider the risks associated with such activities in ***port areas*** and take them into account when devising safe operational procedures. The procedures should ensure compliance with relevant legal requirements.

6.3.3 The ***berth operator*** and **cargo** ***interests*** should provide appropriate information, instruction, training and supervision to their employees to ensure that the safe operational procedures are followed in practice. Such supervision should include procedures to verify that ***dangerous cargoes*** comply with the relevant legal requirements and can be accepted for onward ***transport***.

6.3.3 Health and safety in relation to the transport and handling of dangerous cargoes is only achieved by positive action. It needs to be managed in the same way as any other resources. A framework for achieving successful management of health and safety involves:

.1 setting up a clear policy for health and safety which fully complies with the minimum standards laid down in national and local legal requirements, as appropriate;

.2 drawing up realistic and safe operational procedures and standards;

.3 organizing staff to implement the procedures;

.4 routine checking of actual practices against the procedures; and

.5 periodic audit and review of the arrangements as a whole.

6.3.4 The ***berth operator*** should ensure that appropriate plans are made to deal with foreseeable emergencies. Such plans should be co-ordinated with the port emergency plan and relate to incidents and their consequences in the area they control within the ***port area*** and in adjacent areas or premises.

6.3.5 The ***berth operator*** should ensure that all accidents and other emergencies, including those involving property, are properly investigated to identify their causes, reported as required by national and local legal requirements, and that any remedial action necessary to correct any deficiencies and prevent any recurrence is taken promptly.

6.3.6 The ***berth operator*** and ***cargo interests*** should ensure that the safety of all aspects of the ***transport*** and ***handling*** of ***dangerous cargoes*** is regularly reviewed.

6.3.6 Management should periodically undertake a review of all aspects of the management of health and safety in connection with the transport and handling of dangerous cargoes, so as to ensure that proper procedures are being implemented, that they remain appropriate for the risks they are intended to control, that operational and accident experience is taken into account and that complacency is avoided.

6.3.7 ***Cargo interests*** should also ensure that ***dangerous cargoes*** they forward for ***transport*** by sea comply with the relevant legal requirements.

6.3.7 In many ways the management of cargo interests holds the key to the health and safety of all those further along the transport chain. Often only they will have control over the correct packing, segregation and securing of the contents of cargo transport units. In many cases the packer of a cargo transport unit will be the last person who sees the inside of it until it reaches its final destination and will, therefore, have the prime responsibility for ensuring it is correctly and securely packed. Cargo interests should ensure that all cargo transport units for transport by sea are suitable for the purpose in accordance with the Container Safety Convention (CSC), 1972, where relevant and are correctly packed, placarded, marked and documented in accordance with the requirements of the IMDG Code and other relevant codes and are loaded in accordance with the IMO/ILO/UN ECE Guidelines for packing of cargo transport units before passing them on along the transport chain.

6.4 Awareness

6.1.1 All persons involved with the ***transport*** or ***handling*** of ***dangerous cargoes*** should be appropriately trained to ensure that they are aware of the hazards associated with such cargoes and the precautions that should be taken.

6.4.1 It is essential that every person in any undertaking involved with the transport or handling of dangerous cargoes has an appropriate degree of training and awareness of the hazards and risks associated with such dangerous cargoes and of the procedures and precautions that should be followed. Lack of such knowledge can result in injury to themselves and others. This is equally applicable to all employees.

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7 GENERAL RECOMMENDATIONS FOR REGULATORY AUTHORITIES, PORT AUTHORITIES, SHIPS, BERTH OPERATORS AND CARGO INTERESTS

7.1 Regulatory authorities and port authorities

7.1.1 *Acceptability of dangerous cargoes in port areas*

7.1.1.1 The ***regulatory authority*** should determine the classes and quantities of ***dangerous cargoes*** which may be permitted to transit or to enter a ***port area*** by any mode of ***transport*** and the conditions under which they are to be handled, having regard to the facilities available for the reception and keeping of ***dangerous cargoes*** and the location of the ***port area*** in relation to nearby installations and centres of population. The ***regulatory authority*** should make such information available in the national and, where appropriate, English languages.

7.1.1.1 Restrictions on the type and quantity of dangerous cargoes allowed to stay within the port area may be necessary, depending on nearby housing areas, other hazardous installations such as tank farms or chemical plants and special environmental protection areas.

When establishing quantity limitations or other restrictions, the considerations should be given to the expertise and the equipment available within the organizations responsible for emergency response (e.g., fire brigade, hospitals, and ambulance).

It is very important that those who are involved in the transport of dangerous cargoes by sea are informed about any restrictions by means of official publications (e.g., port by-laws) to avoid such dangerous cargoes arriving by ship or other means of transport and having to be rejected because of restrictions. As English is internationally accepted as the maritime language, the use of that language is recommended.

7.1.1.2 The ***port authority*** should be empowered to refuse ***dangerous cargoes*** intended for keeping within, or transit through, the ***port area***, if it is considered that their presence would endanger life or property because of their condition, the condition of their consignment, the condition of their mode of conveyance, or the conditions in the ***port area***. Notwithstanding this provision all reasonable effort should be made to aid a ***ship*** in distress, particularly when the lives of its crew are in danger.

7.1.1.3 If any ***dangerous cargo*** within the ***port area*** constitutes an unacceptable hazard, the ***port authority*** should be able to remove, or order the removal of, any such cargo or any ***ship***, package, freight container, tank-container, portable tank, vehicle or other cargo transport unit containing it.

7.1.1.4 An ***unstable substance*** should not be accepted unless all conditions necessary to ensure its safe ***transport*** and ***handling*** have been specified and met.

7.1.1.5 Competent Authority approvals or exemptions should accompany all shipments when operational and/or transport requirements different to the IMDG Code have been permitted by a Competent Authority (MSC/Circ.1075).

7.1.2 *Advance notification*

7.1.2.1 The ***regulatory authority*** should establish a system whereby the ***port authority*** is notified in good time, but generally not less than 24 hours in advance of the arrival of ***dangerous cargoes*** in the ***port area***. The ***regulatory authority*** should establish and make information on the various categories and minimum quantities of such categories of ***dangerous cargoes*** for which prior notification of arrival is required. The system may enable special arrangements to be made or exemptions to be

granted as appropriate for certain categories and/or quantities of ***dangerous cargoes***, for certain modes of ***transport*** and for short voyages. This will include ***ships*** carrying ***dangerous cargoes*** which intend to transit through the ***port area***. Where possible all dangerous goods should be manifested on FAL Form 7 as amended.

7.1.2.1 The notification serves the purpose of allowing the port authority to check if the cargoes to be handled or in transit can be accommodated without jeopardizing the port's safety at the intended date and time, taking into account the type and quantity of cargo involved and any quantity limitations in force.

Furthermore, it allows the port authority to verify the details (such as classification, quantity, type, packing group) and to arrange any necessary corrections in advance. It may also be used to inform the emergency services well in advance of the type and quantities expected, so that they will be able to take the necessary precautions in case of a specific risk from such cargoes.

All port authorities should know where their dangerous cargoes and related documents are located. In many ports the individual advance notifications are used to create an overview of all the dangerous cargoes in the port, that is, which cargoes are located where and in what quantities. The use of electronic data processing (E.D.P.) will facilitate the keeping of such records but requires a standardized notification format.

7.1.2.2 Advance notification should also be given when a ***ship*** or a cargo transport unit arrives under fumigation. The notification should contain the name of the fumigant and the date of application.

7.1.2.2 Reference is made to the "Recommendations on the Safe Use of Pesticides in Ships" in the Supplement to the IMDG Code. In many cases additional national health regulations have to be observed.

7.1.2.3 The advance notification should also include any deficiency of the ***ship***, its equipment and/or the containment of ***dangerous cargoes*** which may affect the safety in the ***port area*** or the ***ship***.

7.1.2.4 The ***regulatory authority*** should establish a system whereby the ***port authority*** of the port of departure is notified, in good time but generally not less than 3 hours prior to the departure of a ship, of the ***dangerous cargoes*** on board.

7.1.2.5 The advance arrival and departure notification should be given by letter, telex, telefax, or electronic data interchange (EDI) transmission techniques such as the international forwarding and transport of dangerous goods notification (IFTDGN) or any other means acceptable to the ***port authority***.

7.1.2.5 In accordance with the requirements of chapter VII part A regulation 4 of the SOLAS Convention and the requirements of Annex III of the MARPOL 73/78 Convention, ships shall make available, to the port State authority, a detailed stowage plan or a list of all dangerous cargoes with their stowage position on board prior to leaving the port. This serves to ensure the availability of information on dangerous cargoes on board in cases where the relevant cargo documents cannot be obtained or communication is impossible due to an accident involving the ship. It can also be used to ensure advance notification to the next port of call.

7.1.2.6 The information which should be given is set out at annex 1.

7.1.2.7 For ***dangerous cargoes*** arriving by sea the notification should be given by the ***master*** of the ship, the shipowner, or his agent. For ***dangerous cargoes*** arriving by road, rail or inland watercraft, advance notification should be given by the ***cargo interests***.

7.1.3 *Berthing*

7.1.3.1 The ***port authority*** should be empowered to:

.1 direct when and where a ship, having any ***dangerous cargoes*** on board, should anchor, moor, ***berth*** or remain within the ***port area***, taking into consideration relevant matters such as the quantity and nature of the ***dangerous cargoes*** involved, the environment, the population, the weather conditions;

.2 direct, in an emergency, a ***ship*** having any ***dangerous cargoes*** on board to be moved within the ***port area***, or to be removed from the port area having due regard to the safety of the ***ship*** and its crew; and

.3 attach such requirements to any such directions as are appropriate to local circumstances and the quantity and nature of the ***dangerous cargoes*** involved.

7.1.3.2 The ***regulatory authority*** should require that adequate safe means of access are provided between the ***ship*** and the shore.

7.1.4 *Emergency procedures*

7.1.4.1 The ***regulatory authority*** should require that appropriate emergency arrangements (plans and procedures) are made, brought to the attention of all concerned and ensure their training is appropriate and commensurate with their responsibilities. These arrangements should include:

.1 the provision of appropriate emergency response alarm operating points;

.2 procedures for notification of an incident or emergency to the appropriate emergency response services within and outside the ***port area***;

.3 procedures for notification of an incident or emergency to the ***port area*** users both on land and water;

.4 the provision of emergency equipment appropriate to the hazards of the ***dangerous cargoes*** to be handled;

.5 the formation of a local emergency response team to co-ordinate action in the case of a major emergency and to deal with any day-to-day untoward incidents such as a minor leak or spillage of ***dangerous cargoes***;

.6 co-ordinated arrangements for the release of a ship in case of an emergency; and

.7 arrangements to ensure adequate access/egress at all times.

7.1.4.1 Berth emergency plans should be harmonized with the port emergency plan and the emergency plans of any other relevant nearly premises. The plans should include agreed arrangements for alerting the port authority and other premises as appropriate.

The emergency plan should set out clearly how it is to be initiated, the steps to be taken to put it into practice and identify the facilities and equipment that would be available in the event of an emergency.

It is essential to ensure that communications can be maintained with the emergency services at all times during an emergency. It is therefore necessary to ensure that facilities for dealing with the media and the public are kept separate from those used to control the emergency.

The emergency plan should be distributed to all organizations and to all bodies who may be involved with it in the event of an emergency.

Port authority personnel who may be involved in putting the emergency plan into effect should be suitably instructed and trained in its operation.

Persons who may be involved in clean up measures should be aware of the limitations of their knowledge and capabilities and have clear instructions as to when to call on external sources of help.

The emergency plan should be exercised at regular intervals, e.g., at least once per year. Whilst full-scale exercises are desirable, they may only be practicable infrequently. In such circumstances, table-top exercises should be carried out at more frequent intervals.

The emergency plan should be reviewed periodically on a routine basis, as well as after each occasion that it has to be put into effect or is exercised and when changes are made in the port. Any lesson that can be learned should be incorporated in a revision of the plan.

7.1.4.2 The ***regulatory authority*** should require the preparation and maintenance of records of the ***dangerous cargoes*** which are present in the ***port area*** for use in emergency.

7.1.4.2 The records may be prepared from the notifications required by 7.1.2.1 and 7.1.2.4, together with details of arrival and departure. The records should show the type, quantity and location of the dangerous cargoes in the port area.

The records should include:

.1 intermediate keeping within the port area for the purpose of changing the mode of transport;

.2 dangerous cargoes remaining on board in transit (see 7.2.5.1.1); and

.3 dangerous cargoes to be loaded and discharged in the port (see 7.2.5.1.2/3).

The use of electronic data processing (EDP) has the advantage of having the possibility to provide other authorities like fire brigade, port police or port health or other authorities with the same information through electronic data interchange (EDI).

Provided that the system is constantly updated and functions without disturbance, it can provide instant information to the emergency services about the type and quantities of dangerous cargoes that may be involved in an incident, immediately after the receipt of the notification. It will enable the emergency services to plan manpower and equipment deployment already on their way to the location of the incident and take all necessary precautions right away (e.g., evacuation of people, etc.) especially when the system is connected to a dangerous substances database.

The records can also be maintained manually. In such cases each shed, warehouse or area where dangerous cargoes are kept, should have a designated place (e.g., a red box) where all relevant documents of each dangerous cargo kept within the premises are placed. The location should be chosen in close co-operation with

the emergency services and should be well known to them. The person responsible for the shed, warehouse or area will also be responsible for ensuring that only documents of cargoes still within the premises are kept in the designated place.

In addition to the designated places for documents a detailed plan of each shed, warehouse or area should be prepared by the port authority in close co-operation with the emergency services and the berth operator, specifying the exact location within the shed, warehouse or area where dangerous cargoes may be kept. This should specify the class(es) and the maximum quantities that may be kept there. When specifying the class(es) and quantities, due consideration should be given to the construction and the emergency equipment installed. All parties concerned should have a copy of the plans.

7.1.4.3 The ***regulatory authority*** should require that emergency response information is available where ***dangerous cargoes*** are handled and that it is accessible at all time.

7.1.4.3 The information is intended to give the berth operator's personnel some guidance on the first aid and first steps to be taken to limit the extent of injuries in case of an incident until the arrival of the emergency services.

The use of electronic data banks can be of great assistance, provided the authorities and operators have direct access to the information in them.

7.1.5 *Fire precautions*

7.1.5.1 The ***regulatory authority*** should require that areas where certain ***dangerous cargoes*** are handled are designated as areas where smoking and other sources of ignition are prohibited and where only electrical equipment of a type safe for use in a flammable or explosive atmosphere is used.

7.1.5.1 Attention is drawn to the relevant recommendations published by the International Electrotechnical Commission.

When considering the dangers of fire and explosion that may result from the carriage of dangerous cargoes, it should be appreciated that nominally empty holds and cargo transport units may still contain residues and flammable vapours and may remain hazardous.

7.1.5.2 The carrying out of ***hot work*** and the use of any equipment or activity which may lead to a fire or explosion hazard should be prohibited in areas where certain ***dangerous cargoes*** are handled, unless authorized by the ***port authority***.

7.1.5.3 In areas or spaces where a flammable or explosive atmosphere may exist or develop, electrical equipment and gas measuring equipment should be of a type safe for use in that environment.

7.1.5.4 Fire precautions applying to individual classes of dangerous goods, and where necessary to individual substances, are recommended in sections 7.3.2, 7.3.5 to 7.3.9 and the Dangerous Goods List of the IMDG Code.

7.1.6 *Environmental precautions*

7.1.6.1 The ***regulatory authority*** should require that special areas for the holding and repacking of damaged ***dangerous cargoes*** and wastes contaminated with ***dangerous cargoes*** are provided wherever necessary.

7.1.6.1 An example of a possible facility is given in the Guidance to 3.4.4.1.

Safe reserve packagings (e.g., oversize drums) as well as absorbing or binding agents, cleaning equipment, equipment for limiting the spread of liquids (e.g., drain covers, oil booms) should be readily available.

Personnel should be regularly trained in the correct and safe use of this equipment.

7.1.6.2 The ***port authority*** should ensure that damaged packages, unit loads or cargo transport units are immediately and safely moved to the special area mentioned in 7.1.6.1. They should ensure that damaged packages, unit loads or cargo transport units do not leave the special area unless the ***dangerous cargoes*** have been properly repacked in appropriate salvage packagings and are in all respects fit and safe for further ***transport*** and ***handling***.

7.1.7 *Reporting of incidents (including security incidents)*

7.1.7.1 Any person having charge of ***dangerous cargoes*** should inform the ***port authority*** immediately of any incident relevant to such cargo that occurs within the ***port area*** which may endanger the safety or security of persons, of the ship or of other ships within the port, of the port or of any other property or the environment.

7.1.7.1 To ensure a prompt and effective response, treatment of injured personnel and mitigation of damage, it is essential that a concise and accurate description of the incident is available to the emergency response centre as quickly as possible. If immediately available, the description should include such details as:

.1 nature and time of the incident;

.2 precise location;

.3 type, quantity and condition of cargo involved;

.4 particular hazards present/marine pollutant;

.5 details of marks and labels;

.6 if an IMDG Code classified cargo, Proper Shipping Name, class (when assigned, the division of the goods and the compatibility group letter for class 1), UN number, and packing group;

.7 name of manufacturer of the cargo;

.8 extent of damage/pollution;

.9 sequence of events leading to the incident;

.10 number and types of injuries/fatalities; and

.11 emergency response taken.

The information contained in the notification referred to in 7.1.2.1 or kept in the places mentioned in 7.2.5.1 and in the guidance to 7.1.4.2 may be of assistance.

7.1.8 *Inspections*

7.1.8.1 The ***port authority*** should make regular inspections to ensure the implementation of the safety precautions in the ***port area*** and the safe ***transport*** and ***handling*** of ***dangerous cargoes***. They should be empowered to:

.1 inspect documents and certificates concerning the safe ***transport, handling, packing, stowage*** and ***segregation*** (when appropriate) of ***dangerous cargoes*** in the ***port area***;

.2 inspect packages, unit loads and cargo transport units containing ***dangerous cargoes*** to verify that they are packed, marked, labelled or placarded in accordance with the provisions of the IMDG Code or the appropriate national or international standards applicable for the mode of **transport**; that unnecessary labels, placards and marks have been removed; and that the cargo transport units have been loaded, packed and secured in accordance with the IMO/ILO UN ECE Guidelines for packing of cargo transport units;

.3 inspect freight containers, tank-containers, portable tanks and vehicles containing ***dangerous cargoes*** to ensure that they have a current safety approval plate in accordance with the International Convention for Safe Containers (CSC), 1972, as amended, when applicable, and are in compliance with the applicable provisions of part 4 and part 6 of the IMDG Code; and

.4 check, by external examination, the physical condition of each freight container, tank-container, portable tank or vehicle containing ***dangerous cargoes*** for obvious damage affecting its strength or packaging integrity and for the presence of any sign of leakage of contents.

7.1.8.1 For ships carrying bulk liquids reference should be made to 9.1.1.3.

The regular inspections should be carried out by especially trained personnel of the port authority. When selecting cargoes for inspection, the ones most likely to pose a risk (for example consolidated containers) should be chosen, unless there is a special action programme aimed at specific cargoes.

When carrying out inspections, care should be taken to ensure minimum disturbance of operations. Delays due to inspections should be avoided unless cargoes or cargo transport units are detained for safety or security reasons.

It is recommended that the berth operator and the cargo interests are informed about the intended inspections and that the latter be requested to participate in the inspections. This ensures that no claims of pilferage or damage to cargo can be levied against the inspection team.

It also gives the cargo interests the possibility to see at first hand any deficiency and enables them to report the findings to the originator, who in turn will then be able to check and rectify his procedures to avoid future deficiencies.

7.1.8.2 If any of the inspections or checks mentioned above reveal deficiencies which may affect the safe ***transport*** or ***handling*** of ***dangerous cargoes***, the ***port authority*** should immediately advise all parties concerned and request them to rectify all deficiencies prior to any further ***transport*** or ***handling*** of the ***dangerous cargoes***.

Such inspections may also be carried out by the ***berth operator*** (see 7.3.12.1).

7.1.9 *Hot work and other repair or maintenance work*

7.1.9.1 The ***port authority*** should require that it is notified of any person's intention to carry out ***hot work*** or any other repair or maintenance work, either on board a ***ship*** or ashore, which may constitute a hazard because of the presence of ***dangerous cargoes***, and such work is authorized only when it can be carried out without creating such a hazard.

7.1.9.1 The requirement for an authorization and advance notice of the intended period of hot work enables all emergency response institutions, such as the fire brigade, to be given adequate notice so they can voice objections or advise additional precautionary measures.

In special cases, such as hot work in holds of tankers or in or nearby enclosed spaces, a thorough inspection of the area should be conducted by specialists who can determine whether specific safety measures are required.

7.1.9.2 In the case of ***hot work*** in or near tanks, a gas-free certificate, issued by a chemist or other suitably qualified person approved by the ***port authority*** should be pre-requisite. This certificate should be renewed if circumstances alter and at least every 24 hours.

7.1.9.3 ***Hot work*** should only be carried out by persons approved by the ***port authority*** and only after being authorized as required in 7.1.5.2. When carrying out such work all necessary precautions should be taken.

7.1.9.4 Minimum safety requirements for carrying out ***hot work*** are set out in annex 4.

7.1.10 *Entry into confined or enclosed spaces*

7.1.10.1 The ***port authority*** should require the ***master*** of a ***ship*** and the ***berth operator*** within their respective areas of responsibility to ensure that before any personnel enter any confined or enclosed space, appropriate precautions are taken against the possible presence of dangerous vapours or oxygen depletion.

7.1.11 *Cargoes and cargo transport units under fumigation*

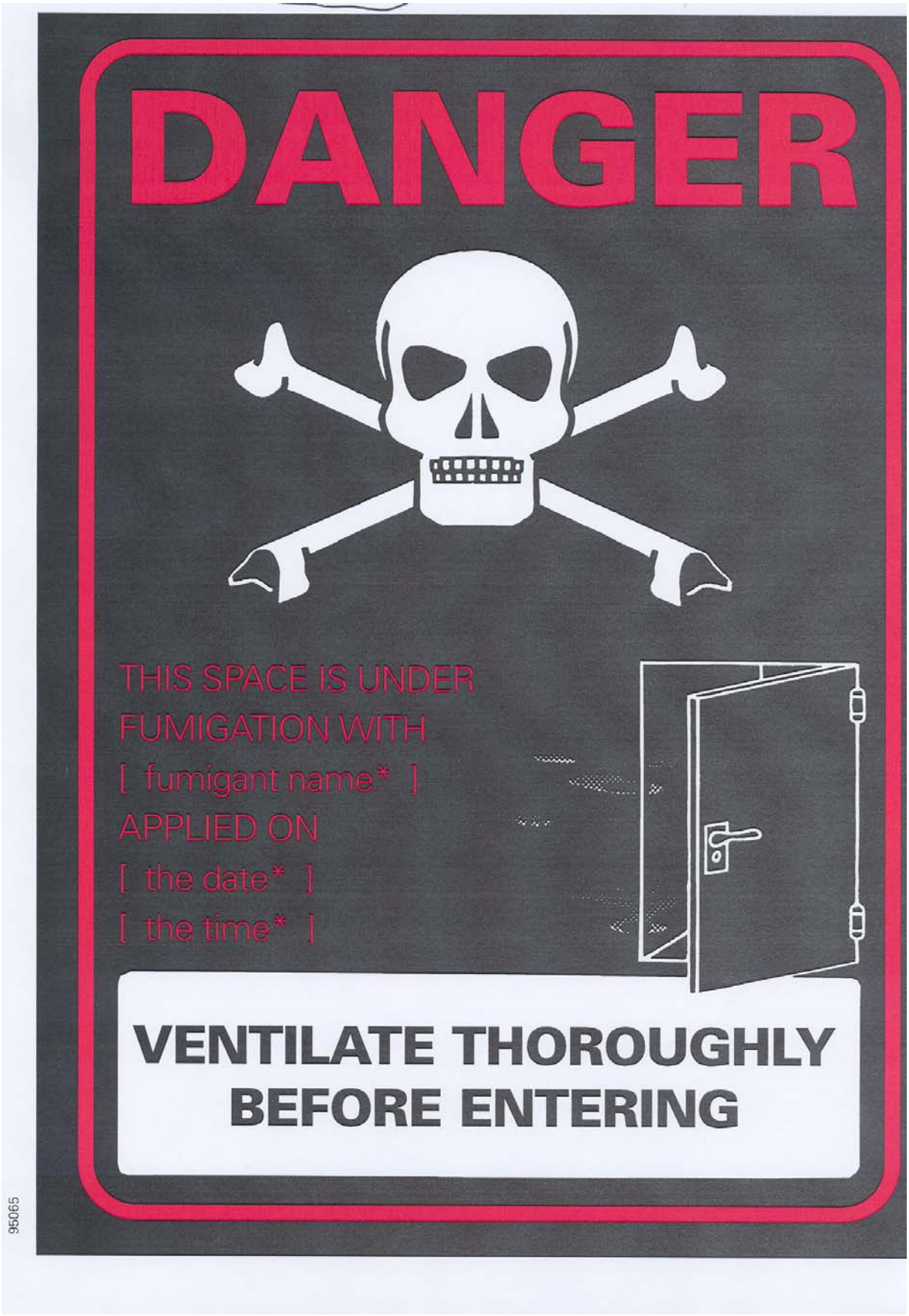
7.1.11.1 The ***port authority*** should designate specific areas for ***ships*** or cargo transport units which arrive under fumigation or are to be fumigated. Entry into such areas should be restricted. Appropriate signs (preferably pictograms similar to that shown in figure 5) should be displayed in such areas ashore.

7.1.11.1 For containers under fumigation, reference should be made to the Recommendations on the Safe Use of Pesticides in Ships and IMO/ILO/UN ECE Guidelines for Packing of Cargo Transport Units (CTUs) in the Supplement to the IMDG Code. Such containers shall also carry the fumigation warning sign. In many cases additional national legal requirements relating to health should be observed.

Annex 3 of the Recommendations on the Safe Use of Pesticides in Ships shows a warning sign to be used for ships, ships' compartments, freight containers, barges and cargo transport units under fumigation. A similar label is shown in annex 2 of the IMO/ILO/UN ECE Guidelines for Packing of Cargo Transport Units (CTUs).

Figure 5 of these Recommendations shows an example of a pictorial warning sign suitable for cargo sheds, other spaces ashore which are fumigated or about to be fumigated or in which cargo transport units under fumigation are kept. The sign should be of an appropriate size to be clearly seen.

Figure 5 – *Fumigation warning sign*



7.1.11.2 No unauthorized persons should be allowed access to ships, warehouses, sheds or cargo transport units until all parts of such ships, warehouses, sheds or cargo transport units have been determined gas-free, fumigation warning signs have been removed and a clearance certificate issued by a ***responsible person***.

7.1.11.3 Prior to giving permission for access to ships, warehouses, sheds or cargo transport units under fumigation, the port authority should require a clearance certificate from a responsible person that it is safe to do so.

7.1.11.4 No person should fumigate the contents of a freight container, barge or cargo transport unit once it has been loaded on board a ship.

7.1.11.5 A Guide to fumigation operations is set out in annex 7.

7.1.12 *Reception facilities for contaminated bilge water, wastes, ballast and slops*

7.1.12.1 The ***regulatory authority*** should make the necessary legal requirements to ensure that, where necessary, contaminated bilge water and hazardous wastes are removed from the ***ship*** prior to leaving the ***port area***.

7.1.12.1 Reference should be made to the MARPOL 73/78 Convention and the IMO Comprehensive Manual on Port Reception Facilities for additional information and guidance.

7.1.12.2 The ***regulatory authority*** should ensure that adequate reception facilities are provided for the reception and disposal of bilge water, wastes, ballast and slops contaminated with ***dangerous cargoes***, as appropriate.

7.1.12.3 The ***regulatory authority*** should ensure that the legal requirements for bunkering (7.1.14) are also applied to reception operations.

7.1.13 *Safe transport and handling*

7.1.13.1 The ***regulatory authority*** should establish guidelines for measures to be taken to ensure the safe ***transport*** and ***handling*** of ***dangerous cargoes***, especially the packing, stowage and segregation of incompatible cargoes in compliance with the requirements of part 4 and part 7 of the IMDG Code.

7.1.13.2 Where the handling of dangerous cargoes involves the temporary keeping of the cargoes in the port area for the purpose of changing the mode of transport, requirements similar to those described in chapter 7.1 and 7.2 of the IMDG Code should be adopted for the stowage and segregation in the port area.

7.1.13.2 An example of general guidance on stowage and segregation of dangerous cargoes is shown in table 1 however, divergence from these guidelines may be appropriate. In a remote area, less stringent regulations may be acceptable. If a port is sited in the vicinity of housing areas, chemical plants or tank farms for example, it may be necessary to impose more stringent stowage and segregation requirements.

In all cases, all interested parties should be informed of the required standard by port by-laws and other publications to avoid any problems in day-to-day operation.

7.1.14 *Bunkering*

7.1.14.1 The ***regulatory authority*** and ***port authority*** should include legal requirements for bunkering in port laws or port by-laws which should include the use of a bunkering checklist reflecting local circumstances. Bunkering of ***ships*** should normally only be allowed at designated installations or by using bunker vessels. Bunkering precautions including a bunkering checklist are set out in annex 5.

7.1.14.2 Where bunkering is carried out simultaneously with the ***handling*** of ***dangerous cargoes***, gas freeing, purging or tank cleaning, the ***port authority*** may consider the need for special permission to be given and special precautions to be taken to avoid damage to connecting ***pipelines*** or ***flexible pipes*** or any other damage. The permission should only be given when all the questions contained in the bunkering checklist have been answered affirmatively.

7.1.14.3 Dangerous cargoes of class 1 (except those in division 1.4S) and bulk cargoes of class 5.1 should not be loaded or unloaded when bunkering is in progress unless permission has been granted by the port authority and under conditions prescribed by the **port authority**.

TABLE 1 – *SEGREGATION TABLE FOR DANGEROUS CARGOES IN PORT AREAS*

Classes		**2.1**	**2.2**	**2.3**	**3**	**4.1**	**4.2**	**4.3**	**5.1**	**5.2**	**6.1**	**8**	**9**
Flammable gases	**2.1**	0	0	0	s	a	s	0	s	s	0	a	0
Non-toxic, non-flammable gases	**2.2**	0	0	0	a	0	a	0	0	a	0	0	0
Toxic gases	**2.3**	0	0	0	s	0	s	0	0	s	0	0	0
Flammable liquids	**3**	s	a	s	0	0	s	a	s	s	0	0	0
Flammable solids, self-reactive substances and desensitized explosives	**4.1**	a	0	0	0	0	a	0	a	s	0	a	0
Spontaneously combustible substances	**4.2**	s	a	s	s	a	0	a	s	s	a	a	0
Substances which, in contact with water, emit flammable gases	**4.3**	0	0	0	a	0	a	0	s	s	0	a	0
Oxidizing substances	**5.1**	s	0	0	s	a	s	s	0	s	a	s	0
Organic peroxides	**5.2**	s	a	s	s	s	s	s	s	0	a	s	0
Toxic substances (liquid and solids)	**6.1**	0	0	0	0	0	a	0	a	a	0	0	0
Corrosives (liquid and solids)	**8**	a	0	0	0	a	a	a	s	s	0	0	0
Miscellaneous dangerous substances and articles	**9**	0	0	0	0	0	0	0	0	0	0	0	0

Note for the segregation table

Cargoes of classes 1 (except division 1.4S), 6.2 and 7 should normally be allowed into the port area for direct shipment or delivery only. These classes have not been included in the table. However, if, through unforeseen circumstances, these cargoes have to be temporarily kept, it should be in designated areas. Segregation requirements of the individual class as stipulated in the IMDG Code should be considered by the port authority when establishing specific requirements.

NOTE TO TABLE 1

SEGREGATION ADVICE FOR THE TEMPORARY KEEPING OF DANGEROUS CARGOES IN PORT AREAS

1 The reception and keeping of dangerous cargoes of classes 1 (other than division 1.4S), 6.2 and 7 should be subject to special rules for each port as the handling facilities at each terminal or berth vary considerably. The rules should be agreed with the authorities responsible for the safety of the port.

2 All dangerous cargoes delivered to the port area should be marked, documented, packaged, labelled or placarded in accordance with the IMDG Code.

3 The segregation of dangerous cargoes should be in accordance with chapter 7.2 of the IMDG Code as follows:

3.1 Packages/IBCs/trailers/flat racks or platform containers

0 = no segregation necessary unless required by the individual schedules
a = away from – minimum 3 m separation required
s = separated from – in open areas, minimum 6 m separation required in sheds or warehouses, minimum 12 m separation required unless separated by an approved fire wall

3.2 Closed containers/portable tanks/closed road vehicles

0 = no segregation necessary
a = away from – no segregation necessary
s = separated from – in open areas, longitudinally and laterally, minimum 3 m separation required, in sheds or warehouses longitudinally and laterally, minimum 6 m separation required unless separated by an approved fire wall

3.3 Open road vehicles/railway freight wagons/open-top containers

0 = no segregation necessary
a = away from – minimum 3 m separation required
s = separated from – in open areas, longitudinally and laterally, minimum 6 m separation required, in sheds or warehouses longitudinally and laterally, minimum 12 m separation required unless separated by an approved fire wall

Notes:

1 For freight containers, portable tanks, lorries, flat racks or platform containers or rail wagons a distance of 3 m is equal to the width of a standard 20-foot container, or one rail track, one trailer lane or, in the case of successive rail wagons, the longitudinal buffer space.

2 The segregation table shown uses “0” to indicate that no general segregation is required but those individual requirements of the Dangerous Goods List of the IMDG Code shall be consulted. The IMDG Code’s general segregation table (7.2.1.16), however, uses an “X” instead of the “0” used in these Recommendations. The difference is intentional, to emphasize the difference in the use of the segregation tables.

3 “Closed type unit” means a unit in which dangerous goods are totally enclosed by sufficiently strong boundaries, such as a freight container, a tank or a vehicle. Units with fabric sides or tops are not closed type units.

4 General

4.1 For dangerous cargoes with a secondary hazard, the segregation requirement for the secondary hazard should be applied when it is the more stringent. For cargo transport units containing dangerous cargoes of more than one class, the most stringent segregation requirement should be applied.

4.2 Dangerous cargoes in packaged non-containerized form, belonging to different classes, should not be stowed directly above each other. This applies to packaged dangerous cargoes belonging to one class but having different secondary hazards and also to certain cargoes of class 8.

4.3 Containers, tank-containers and portable tanks containing dangerous cargoes, where practicable, should not be stowed directly above each other or overlap. Exemptions should only be allowed for containers which contain dangerous cargoes of the same class. This does not apply to containers with different cargoes of class 8. Where applicable, containers should be stowed in such a manner as to allow, when applicable, access to the doors and both sides at all times.

4.4 Dangerous cargoes with toxic (poisonous) labels or placards should be separated from foodstuffs and animal feeds.

4.5 The segregation requirements only apply to dangerous cargoes in storage areas and on vehicles in the port areas.

4.6 All dangerous cargoes, except for individual packages, should, where applicable, be separated by a minimum distance of 1 m in order to permit access.

7.1.15 *Explosives*

7.1.15.1 ***Dangerous cargoes*** of class 1 other than division 1.4S should only be permitted to enter the ***port area*** for direct shipment to or from ***ships***, unless permitted by the ***regulatory authority***.

7.1.15.2 The ***regulatory authority*** should establish specific requirements for the ***transport*** and ***handling*** of ***explosives***, having regard to the hazards involved and the population density in the vicinity of the ***port area*** and any other relevant circumstances.

7.1.15.3 The ***regulatory authority*** establishing these specific requirements should highlight the fact that the classification of explosive substances and articles, together with the compatibility group assignment and the Proper Shipping Name, under which the substance or article is to be transported, shall have approval by the competent authority of the country of manufacture prior to ***transport*** in compliance with the provisions of chapter 2.1 of the IMDG Code.

7.1.15.4 The following precautions during loading and unloading of explosives should be taken into account:

.1 Artificial lighting
Electric lights, except arc lights, are the only form of artificial lighting permitted during cargo operations involving dangerous goods of class 1 (requirements for electrical equipment and cables are set out in chapter 7.1 of the IMDG Code);

.2 Radio and radar
During loading or unloading of cargoes of class 1 (except those in division 1.4), no radio or radar transmitters should be used on the ship, in cranes or elsewhere in the vicinity, except for VHF transmitters with a power output that does not exceed 25 W and no part of their aerial systems passes within the minimum safe distance of 2 metres from the explosives.

Some articles of class 1 contain initiation systems which are sensitive to electromagnetic radiation from external sources such as radio or radar transmitters. Therefore all such equipment should be de-energized by opening the main switches controlling the equipment and tagging them to ensure that the devices are not energized until loading or unloading has ceased.

.3 Mechanical aids to stowage
All mechanical aids to stowage, whether power-driven or not, should be properly maintained and inspected before use to ensure that they are in a good working condition, comply with an appropriate recognized standard and are serviced in accordance with the manufacturer's maintenance recommendations.

.4 Defective packages
Any damaged, leaking, affected by moisture or otherwise defective package should not be accepted for shipment. No repair of defective or damaged packages should be permitted on board the ship.

.5 Protections against weather
Packages containing dangerous goods of class 1 should be prevented from becoming wetted since, the danger may, in some cases, be aggravated by wetting.

.6 Security
To ensure the security of dangerous goods of class 1, a responsible person should be present at all times whilst the hatches are open. Unauthorized persons should never be allowed access to compartments where goods of class 1 are stowed.

7.1.15.5 Basic items for consideration by the ***regulatory authority*** are set out at annex 2.

7.1.16 *Radioactive material*

7.1.16.1 Radioactive material, assigned to class 7 of the IMDG Code and described in chapter 2.7 of the Code, should only be permitted to enter the ***port area*** for direct shipment or delivery if permitted by the ***regulatory authority***.

7.1.16.1 When radioactive material cannot directly go to or from a ship for unforeseen reasons it should only be kept in port areas with the permission of the **regulatory authority**.

7.1.16.2 Packaged radioactive material should not be brought into the ***port area*** unless it is in conformity with the International Atomic Energy Agency's (IAEA) Regulations for the Safe Transport of Radioactive Materials, and the requirements of the IMDG Code or similar national legal requirements.

7.1.16.3 Packages containing radioactive material should be stowed and segregated in compliance with the detailed requirements of sections 7.1.14 and 7.2.9 of the IMDG Code. Guidance on segregation distances required on shore is set out in annex 3.

7.1.16.4 In the event of any accident involving radioactive material or packages of radioactive materials or any theft or loss of any such materials or packages, the ***port authority*** and relevant national authorities should be notified immediately. If there is any possibility of loss of containment of radioactive material, the area should be isolated and the appropriate contingency plans put into operation.

7.1.17 *Infectious substances*

7.1.17.1 Infectious substances (class 6.2 of the IMDG Code) should only be permitted to enter the ***port area*** for direct shipment or delivery if permitted by the ***regulatory authority.***

7.1.17.1 When infectious substances cannot directly go to or from a ship for unforeseen reasons they should only be kept in port areas with the permission of the regulatory authorities.

7.1.17.2 The ***regulatory authority*** should establish specific requirements for the ***handling*** of infectious substances, including but not limited to:

.1 areas for ***handling***;

.2 stringent supervision; and

.3 additional equipment for the containment of such substances.

7.1.18 *Signals*

7.1.18.1 The ***regulatory authority*** should decide if and when a ***ship*** engaged in the ***transport*** or ***handling*** of certain specified ***dangerous cargoes*** in the ***port area***, should exhibit by day or by night any special visual signals.

7.1.18.2 The specified ***dangerous cargoes*** referred to in 7.1.18.1 should include:

.1 ***bulk*** liquids with a flashpoint below 60ºC closed cup;

.2 ***bulk*** flammable and/or toxic gases; and

.3 explosives (other than division 1.4S), liquid desensitized explosives assigned to class 3 and solid desensitized explosives assigned to class 4.1; to the degree specified by the ***regulatory authority***.

7.1.18.2 The reason for exhibiting a day or night signal is to advise maritime traffic and personnel within the port area about an increased hazard created by the presence of the dangerous cargoes listed in 7.1.18.2. Vessels exhibiting such signals may be subject to the special requirements and special instructions of the port authority.

7.1.18.3 The following four scenarios should be considered:

.1 the ***ship*** is moored or at anchor by day;

.2 the ***ship*** is moored or at anchor at night;

.3 the ***ship*** is under way by day; or

.4 the ***ship*** is under way at night.

7.1.18.3 When practicable, a dedicated anchorage or berth should be provided for vessels carrying dangerous cargoes listed in 7.1.18.2 requiring the exhibition of such signals. Special restrictions may be applied to:

.1 access to the vessels;

.2 radio and radar transmissions;

.3 transiting the anchorage; and

.4 passing of ships moored or anchored.

Port authorities should give consideration to the separation of ships under way exhibiting the signals required by 7.1.18.1. The port authority may also impose specific separation distances and regulate the movement of vessels to avoid the passing of such ships in narrow channels or at bends.

7.1.18.4 Where signals are to be exhibited, they should be:

.1 by day flag "B" of the International Code of Signals; and

.2 by night an all-round fixed red light.

7.1.19 *Communications*

7.1.19.1 The ***port authority*** should ensure that every ***ship*** engaged in the ***transport*** of ***dangerous cargoes*** can maintain effective communications with the ***port authority***. When appropriate and practicable such communications should be carried out by VHF in accordance with the provisions of SOLAS regulation IV/7 and complying with the performance standards set out in IMO Assembly resolution A.609(15) and the requirements of the ***regulatory authority***.

7.1.19.1 Effective communications are a prerequisite for the safety of the ship and its crew as well as for the port, its employees, installations and the environment. They are necessary for the exchange of the important information, such as the safety of navigation, waiting and berthing orders, and notification or reporting of incidents.

For ships entering and leaving the port, reporting locations should be established. Furthermore, ships should be requested to maintain constant watch on pre-assigned radio channels while within the port area. The reporting points and listening channels should be published in the port by-laws, port or terminal information books and hydrographical publications, for example the World Vessel Traffic Service Guide.

It may also be necessary to require ships carrying certain dangerous cargoes to take a suitable telephone on board while alongside (see Guidance to 7.2.1.2.1).

7.1.20 *Pilotage and tug assistance*

7.1.20.1 The ***port authority*** should decide if and when a ***ship*** engaged in the ***transport*** of ***dangerous cargoes*** should take a pilot on board and/or tug assistance while entering, leaving or moving in the ***port area***.

7.1.20.2 In making such decision consideration should be given to:

.1 the type of ***ship*** and its manoeuvrability;

.2 the traffic situation;

.3 the layout of the ***port area***;

.4 the tidal and weather situation; and

.5 the categories (classes) and quantities of ***dangerous cargoes*** carried.

7.1.21 *Unmanned barges*

7.1.21.1 The ***regulatory authority*** should establish specific rules for unmanned barges carrying ***dangerous cargoes***, including but not limited to:

.1 handling of such barges;

.2 waiting areas;

.3 watchkeeping; and

.4 fire precautions and fire-fighting arrangements.

7.1.21.1 Unmanned barges carrying dangerous cargoes should be moored in designated areas where adequate access to emergency facilities such as fire-fighting monitors, fire-fighting boats or tug assistance is available. A shore-based watchman should safeguard the barges. He should be provided with adequate means of communication.

7.1.22 *Exemptions*

7.1.22.1 The ***regulatory authority*** should take account of the varying degrees of hazards presented by ***dangerous cargoes*** and provide for exemptions from the provisions of these Recommendations, as appropriate. Exemptions should take account of nature, class and amount of the ***dangerous cargoes*** involved and the specific circumstances of the ***port area***. In all cases it should be ensured that the exemption will not give rise to a significant risk to persons.

7.1.23 *Knowledge of rules and regulations*

7.1.23.1 The ***port authority*** should appoint at least one ***responsible person*** who has adequate knowledge of the current national and international legal requirements concerning the ***transport*** and ***handling*** of ***dangerous cargoes***.

7.1.24 *References*

7.1.24.1 The ***port authority*** and terminal operators should ensure that all relevant national and international legal requirements, guidelines, recommendations or other documents governing, referring or relating to:

.1 the ***transport*** of ***dangerous cargoes***;

.2 ships carrying such cargoes; and

.3 installations ***handling***, transporting, producing or otherwise using such cargoes;

which have to be consulted within the ***port area***, are readily available at the ***port authority*** for reference and are updated as appropriate.

7.2 Ships carrying dangerous cargoes

7.2.1 *Entering the port area*

7.2.1.1 Prior to entering a ***port area***, the ***master*** of a ***ship*** having ***dangerous cargoes*** on board should:

.1 familiarize himself and the crew, as appropriate, with the legal requirements relating to ***ships*** carrying or handling ***dangerous cargoes*** in the ***port area***;

.2 check the condition of the ***ship***, its machinery, equipment and appliances, as appropriate;

.3 check wherever possible, the ***dangerous cargoes*** and their containments for any damage or leakage; and

.4 inform the ***port authority*** of any relevant deficiency of the ***ship***, its machinery, equipment or appliances or any damage or leakage of ***dangerous cargoes*** or failure of containment system which may endanger life, property or the environment.

7.2.1.1 Shipowners should ensure that the master is provided with all relevant information in the working language of the ship (see also 7.1.1.1).

7.2.1.2 Unless exempted by the ***port authority***, the **master** of a ***ship*** should ensure that upon entering the ***port area***:

.1 proper communications are maintained with the ***port authority***; and

.2 when required, the signals referred to in 7.1.18.1 are displayed.

7.2.1.2.1 Effective communications are a prerequisite for the safety of the ship and its crew as well as for the port, its employees, installations and the environment. They are necessary for the exchange of the important information, such as the safety of navigation, waiting and berthing orders, and notification or reporting of incidents.

For the safety of the ship and its crew, the master of a ship carrying dangerous cargoes may need to take a suitable telephone on board while alongside, even when it is not specifically required by port regulations.

7.2.2 *Watchkeeping*

7.2.2.1 The ***master*** of a ***ship*** should ensure that a safe deck watch and a safe engine watch are maintained at all times. The ***master*** should ensure that at all times there are sufficient crew available to operate the appropriate shipboard appliances in the case of an emergency.

7.2.2.2 The ***master*** of a ***ship*** should, in organizing safe watchkeeping arrangements, take full account of the nature, quantity, ***packing*** and ***stowage*** of the ***dangerous cargoes*** and of any special conditions required.

7.2.2.3 In organizing the watches, full account should also be taken of the requirements of sections A-VIII/2, part 4-1 and A-VIII/2, part 4-5 of the STCW Code.

7.2.3 *Berthing*

7.2.3.1 The ***master*** of a ***ship*** should ensure that the moorings used in securing the ship are of an appropriate type, and of sufficient strength and number for the size of the ship and the local conditions.

7.2.3.2 Unless exempted by the ***port authority***, the ***master*** of a ***ship*** which has to display the signals referred to in 7.1.18.1 should, at all times, while it is berthed in the ***port area***:

.1 provide towing wires (otherwise referred to in some places as "fire wires") of adequate size at the bow and the stern ready for immediate use. The towing eye should be passed outboard and kept at about the water level by means of a rope stopper which will break under stress and release an adequate length of towing wire, stowed on deck for immediate use. The end of the wire should be properly secured to mooring bitts; and

.2 ensure that the mooring arrangements are such that the ***ship*** can be released quickly in an emergency.

7.2.3.3 The ***master*** of a ***ship*** should ensure that machinery necessary for the safety of the ship or the ***handling*** of cargo or ballast is properly maintained, attended and always ready for use and that funnel uptakes and boiler tubes are not blown without the permission of the ***port authority***.

7.2.3.4 The ***master*** of a ***ship*** should ensure that adequate safe means of access are provided between the ***ship*** and the shore.

7.2.4 *Emergency procedures*

7.2.4.1 The ***master*** of a ***ship*** should, as appropriate, make himself, his officers and his crew familiar with the emergency response procedures established in the ***port area*** and the facilities available at the ***berth***.

7.2.4.2 The ***master*** of a ***ship*** should consider the necessity for arrangements for a safe and quick emergency escape, taking into account the nature of the ***dangerous cargoes*** and any special conditions on board.

7.2.4.3 The ***master*** of a ***ship*** should establish emergency response procedures on board the ***ship*** to deal with incidents involving ***dangerous cargoes*** carried or to be carried on board and should ensure that the officers and crew are properly trained in carrying out such procedures.

7.2.5 *Emergency information*

7.2.5.1 The ***master*** of a ***ship*** carrying ***dangerous cargoes*** should ensure that in addition to the information to be provided in accordance with SOLAS regulation II-2/15.2.4.2, the following information is kept at the same place:

.1 a list of all ***dangerous cargoes*** on board in transit;

.2 a list of all ***dangerous cargoes*** to be unloaded in the ***port area***; and

.3 a list of all ***dangerous cargoes*** to be loaded in the ***port area*** and the intended ***stowage*** and loading arrangement on board the ***ship***.

7.2.5.2 The ***master*** of a ***ship*** should ensure that the officer on duty has the necessary information on measures to be taken to deal with incidents involving ***dangerous cargoes*** and that it is available for use in emergencies.

7.2.5.3 The ***master*** should ensure that, in addition to the emergency response procedures required for dangerous cargoes, any appropriate security provisions are readily accessible. Such information includes for example the Emergency Response Procedures for Ships Carrying Dangerous Goods (EmS Guide) for use in conjunction with the transport document, the Medical First Aid Guide for Use in Accidents involving Dangerous Goods (MFAG) (included in the IMDG Code Supplement) and safety data sheets.

7.2.5.4 The ***master*** of a ***ship*** should ensure that the duty officer is always aware of the crew members or passengers and/or visitors on board or on shore leave.

7.2.5.4 This can be achieved by ensuring all crew members/passengers/visitors, etc. report to the duty officers when they leave the ship. A record should be kept by the duty officer.

The purpose of this requirement is the need for the emergency services to know, in case of an incident, if all persons have left the ship or if any is still on board, e.g. trapped inside the accommodation.

7.2.6 *Fire Precautions*

7.2.6.1 The ***master*** of a ***ship*** should ensure that:

.1 places where smoking is prohibited are designated; and

.2 notices in a pictogram form prohibiting smoking are clearly visible at all locations and at a safe distance from places where smoking would constitute a hazard.

7.2.6.1 When considering the dangers of fire and explosion that may result from the carriage of dangerous cargoes, it should be appreciated that nominally empty holds and cargo transport units may still contain residues and flammable vapours and may remain hazardous.

7.2.6.2 The ***master*** of a ***ship*** should ensure that tools or equipment that are used in an area or space where a flammable or explosive atmosphere may exist or may develop, are used in such a manner that no fire or explosion can be caused.

7.2.6.3 The ***master*** of a ***ship*** should ensure that, in areas or spaces in which a flammable atmosphere may occur, only portable electrical equipment, including any used for sampling or ullaging, of a type safe for use in a flammable atmosphere is used.

7.2.6.3 Attention is drawn to the relevant recommendations published by the International Electrotechnical Commission.

7.2.6.4 The ***master*** of a ***ship*** should ensure that electrical equipment on a wandering electrical lead is not used in areas or spaces where a flammable atmosphere may occur.

7.2.6.5 The ***master*** of a ***ship*** should ensure that adequate and properly tested fire-fighting facilities, appropriate to the dangerous cargoes on board, are readily available and that the crew is trained and practised in the use of the tested fire-fighting equipment.

7.2.7 *Environmental precautions*

7.2.7.1 The ***master*** of a ***ship*** carrying ***dangerous cargoes*** on board should ensure that all necessary measures are taken to avoid accidental release of such cargoes into the environment.

7.2.7.1 Masters should ensure that all scuppers are well plugged and that absorbing and neutralizing materials are readily available and used properly, taking into account the safety of the crew and of the ship. Care should be taken, when cleaning spilled areas that only means suitable for the type of cargo spilled are used.

To avoid accidental release of dangerous cargoes into the environment, it is of utmost importance that only well qualified and trained personnel, with adequate knowledge of the risks emanating from the dangerous cargoes involved, are used in dealing with dangerous cargoes accidents, so as to ensure correct and safe handling procedures. Personnel should be trained regularly in the correct and safe use of equipment.

7.2.8 *Reporting of incidents*

7.2.8.1 The ***master*** of a ***ship***, within his area of responsibility, should ensure that, if an incident occurs during the ***handling*** of dangerous cargoes which may endanger the safety or security of persons, of the ship or of other ships within the port, of the port or of any other property or the environment, the person having charge of the ***handling*** immediately causes the operation to be stopped, if it is safe to do so, and prevents it being resumed until adequate safety measures have been taken. The ***master*** of a ***ship*** should impose upon each member of his crew the obligation of reporting the incident, to the person having charge of the operation and to the appropriate authorities, of any such incident occurring during the ***handling*** of ***dangerous cargoes***.

7.2.8.1 To ensure a prompt and effective response, treatment of injured personnel and mitigation of damage, it is essential that a concise and accurate description of the incident is available to the emergency response centre as quickly as possible. This description should include such details as shown in the Guidance to 7.1.7.1.

The information contained in the notification referred to in 7.1.2.1 of the Recommendations or kept in the places mentioned in 7.2.5.1 and in the Guidance to 7.1.4.2 may be of assistance.

7.2.8.2 The ***master*** of a ***ship*** should ensure that any incident which may affect the safety or security of the ***port area***, the population or the environment, is immediately reported to the ***port authority***. These may include incidents involving the ship, its crew, machinery, equipment or appliances, or to the ***dangerous cargoes*** or their containments which occur while in the ***port area***, or after notification in accordance with 7.1.2 has been given.

7.2.8.3 The ***master*** of a ***ship*** should ensure that any damaged or leaking package, unit load or cargo transport unit containing ***dangerous cargoes*** on board the ***ship*** is reported immediately to the ***berth operator*** and the ***port authority*** and that suitable remedial action is taken in accordance with 7.1.6.2.

7.2.9 *Inspections*

7.2.9.1 The ***master*** of a ***ship*** should ensure that, where practicable, regular inspections are carried out by the crew on the condition of the ***dangerous cargoes*** or their containments while on board the ***ship*** in the ***port area***.

7.2.9.2 The ***master*** of a ***ship*** should ensure that all necessary support is given to the ***port authority*** when an inspection of ***dangerous cargoes*** and/or their containments on board the ***ship*** is carried out by them.

7.2.10 *Hot work and other repair or maintenance work*

7.2.10.1 The ***master*** of a ***ship***, after having consulted the ***berth operator***, where appropriate, should ensure that no repair or maintenance work resulting in the immobilization of the ***ship***, its cargo handling equipment or the non-functioning of its safety appliances is carried out without prior permission of the ***port authority***.

7.2.10.2 The ***master*** of a ***ship*** and persons carrying out the repair or maintenance work, after having consulting the ***berth operator***, should ensure that they are in possession of a permit to proceed issued by the ***port authority*** before any such work involving ***hot work*** and any other repair or maintenance work which may lead to a hazard because of the presence of ***dangerous cargoes***, is carried out on a ***ship***.

7.2.10.2 The requirement for a permit and advance notice of the intended period of hot work enables all emergency response institutions, such as the fire brigade, to be given adequate notice so they can voice objections and advise additional precautionary measures.

In special cases, such as hot work in holds of tankers or in or nearby enclosed spaces, a thorough inspection of the area should be conducted by specialists who can determine whether specific safety measures are required.

7.2.10.3 Minimum safety requirements for carrying out ***hot work*** are set out in annex 4.

7.2.11 *Entry into confined or enclosed spaces*

7.2.11.1 The ***master*** of a ***ship*** should ensure that no person enters any enclosed space, such as a cargo space, cargo tank, void space around such tank, cargo handling space, ballast tank or other confined or enclosed space which has contained or may contain dangerous vapours or oxygen-depleting cargoes, unless the space is free of dangerous vapours, is not deficient in oxygen, and that entry has been authorized by a ***responsible person***. The ***responsible person*** should be trained in the use of the relevant equipment to test the space and sufficiently knowledgeable to interpret correctly the results obtained. The ***responsible person*** should record the measurements taken.

7.2.11.2 Where it is necessary for operational purposes to enter a space which cannot be freed of dangerous vapours within a reasonable time or it is unlikely that the space will remain free of dangerous vapours, then entry should only be made by personnel wearing self-contained breathing apparatus, and any other necessary protective equipment and clothing. The entire operation should be carried out under the direct supervision of the ***responsible person*** who should be provided with self-contained breathing apparatus, protective equipment and rescue harness. The breathing apparatus, protective and rescue equipment should not be of a type that could introduce a source of ignition into the space.

7.2.11.3 The ***master*** of a ***ship*** should ensure that entry into a space mentioned in 7.2.11.1 follows the carefully established procedures contained in international codes and guides.

7.2.12 *Fumigation of ships, cargo spaces or cargo transport units*

7.2.12.1 The ***master*** of a ***ship*** under fumigation or which has compartments under fumigation or fumigated cargo transport units on board should ensure, that appropriate warning signs (see 7.1.11.1) are displayed at a clearly visible position at the gangway or entrance to the compartment or cargo transport unit. The signs should state the hazard to anyone entering the ***ship***, compartment or cargo transport unit.

7.2.12.1 Reference should be made to the Recommendations on the Safe Use of Pesticides in Ships and IMO/ILO/UN ECE Guidelines for Packing of Cargo Transport Units (CTUs) in the Supplement to the IMDG Code. In many cases additional national legal requirements relating to health should be observed.

7.2.12.2 The ***master*** of a ***ship*** should ensure that no person enters the ***ship***, compartment or cargo transport unit which has been fumigated unless it has been thoroughly ventilated, determined gas-free, fumigation warning signs removed and a ***responsible person*** has determined that it is safe to enter and issued a clearance certificate. Where pertinent, all confined space entry procedures shall be complied with.

7.2.12.4 A guide to fumigation operations is set out in annex 7.

7.2.13 *Contaminated bilge water, wastes, ballast or slops*

7.2.13.1 The ***master*** of a ***ship*** should ensure that bilge water, wastes, ballast or slops contaminated with ***dangerous cargoes*** are collected and kept on board whilst in the ***port area*** either in the cargo space, or other designated spaces, or watertight receptacles to avoid accidental spillage.

7.2.13.2 The ***master*** of a ***ship*** having bilge water, wastes, ballast or slops contaminated with ***dangerous cargoes*** on board should ensure that such contaminated bilge water, wastes, ballast or slops are removed from the ***ship*** in accordance with the requirements of the ***regulatory authority*** prior to the ***ship*** leaving the ***port area***.

7.2.14 *Alcohol and drug abuse*

7.2.14.1 The ***master*** of a ***ship***, within his area of responsibility, should ensure that no person under the influence of alcohol or drugs is allowed to participate in any operation involving the ***handling*** of ***dangerous cargoes***. Any such persons should be kept clear of the immediate areas where ***dangerous cargoes*** are being transported or handled.

7.2.15 *Weather conditions*

7.2.15.1 The ***master*** of a ***ship***, within his area of responsibility, should not permit ***dangerous cargoes*** to be handled in weather conditions which may seriously increase the risk.

7.2.15.1 As an example, no explosives or liquid bulk dangerous cargoes should be handled during thunderstorms nor should unprotected cargoes, which react dangerously when in contact with water, be handled during rain.

7.2.16 *Lighting*

7.2.16.1 The ***master*** of a ***ship***, within his area of responsibility, should ensure that the areas where ***dangerous cargoes*** are handled or where preparations are being made for the ***handling*** of ***dangerous cargoes*** and access to such areas are adequately illuminated.

7.2.17 *Handling equipment*

7.2.17.1 The ***master*** of a ***ship***, within his area of responsibility, should ensure that all ship's equipment, including cargo-securing equipment, used in the ***handling*** of ***dangerous cargoes*** is suitable for such use and used only by ***skilled persons***.

7.2.17.2 The ***master*** of a ***ship***, within his area of responsibility, should ensure that all ship's cargo handling equipment is of an approved type, properly maintained, and tested in accordance with national and international legal requirements.

7.2.18 *Protective equipment*

7.2.18.1 The ***master*** of a ***ship***, within his area of responsibility, should, when necessary, provide a sufficient quantity of appropriate protective equipment and clothing for the ***ship's*** personnel involved in the ***handling*** of ***dangerous cargoes***.

7.2.18.2 The protective equipment and clothing should provide adequate protection against the hazards specific to the ***dangerous cargoes*** handled and should, where appropriate, be of an approved type or made in conformity with an approved standard.

7.2.19 *Security procedures*

7.2.19.1 The master of the ship should familiarize himself with the security requirements of the port.

7.3 Shore installations

7.3.1 *Berthing*

7.3.1.1 The ***berth operator*** should ensure that:

.1 adequate and safe mooring facilities are provided; and

.2 adequate safe access is provided between the ***ship*** and the shore.

7.3.2 *Supervision*

7.3.2.1 The ***berth operator*** should ensure that areas where packages or cargo transport units are kept are properly supervised and packages or cargo transport units are regularly inspected for leakage or damage. Any leaking package or cargo transport units should only be handled under the supervision of a ***responsible person***.

7.3.2.2 The ***berth operator*** should ensure that no person, without reasonable cause, opens or otherwise interferes with any freight container, tank-container, portable tank or vehicle containing ***dangerous cargoes***. When a freight container, tank-container, portable tank or vehicle is opened by a person authorized to examine its contents, the ***berth operator*** should ensure that the person concerned is aware of the possible hazards arising from the presence of the ***dangerous cargoes***.

7.3.3 *Identification, packing, marking, labelling or placarding and certification*

7.3.3.1 The ***berth operator*** should ensure that ***dangerous cargoes*** entering his premises have been duly certified or declared by the ***cargo interests*** as being properly identified, packed, marked, labelled or placarded so as to comply with the appropriate provisions of the IMDG Code or, alternatively, with appropriate national or international legal requirements applicable to the relevant mode of ***transport***.

7.3.4 *Safe handling and segregation*

7.3.4.1 A ***berth operator*** transporting or handling ***dangerous cargoes*** should appoint at least one ***responsible person*** who has adequate knowledge of the national or international legal requirements concerning the ***transport*** and ***handling*** of ***dangerous cargoes***, including the segregation of incompatible cargoes.

7.3.5 *Emergency procedures*

7.3.5.1 The ***berth operator*** should ensure that appropriate emergency arrangements are made and brought to the attention of all concerned. These arrangements should include:

.1 the provision of appropriate emergency alarm operating points;

.2 procedures for notification of an incident or emergency to the appropriate emergency services within and outside the ***port area***;

.3 procedures for notification of an incident or emergency to the ***port authority*** and ***port area*** users both on land and water;

.4 the provision of emergency equipment appropriate to the hazards of the ***dangerous cargoes*** to be handled;

.5 co-ordinated arrangements for the release of a ***ship*** in the case of an emergency; and

.6 arrangements to ensure adequate access/egress at all times.

7.3.5.2 The ***berth operator*** should consider the necessity of arrangements for a safe and quick emergency escape, taking into account the nature of the ***dangerous cargoes*** and any special conditions.

7.3.6 *Emergency information*

7.3.6.1 The ***berth operator*** should ensure that a list of all ***dangerous cargoes*** in the warehouses, sheds or other areas, including the quantities, and if appropriate Proper Shipping Names, correct technical names (if applicable), UN numbers, classes or, when assigned, the division of the goods,

including for class 1, the compatibility group letter, subsidiary hazard classes (if assigned), packing group (where assigned) and exact location is held readily available for the emergency services.

7.3.6.1 Notifications in accordance with 7.1.2.1 could be used for preparing the comprehensive record of all dangerous cargoes present in the port area at any given time (see also Guidance to 7.1.4.2).

7.3.6.2 The ***berth operator*** should ensure that the ***responsible person*** for a warehouse, shed or area, where ***dangerous cargoes*** are handled, is as far as possible aware of the status of occupancy with the ***dangerous cargoes*** in his area and is available in case of emergencies.

7.3.6.3 The ***berth operator*** should ensure that the person responsible for cargo handling operations involving ***dangerous cargoes*** has the necessary information on measures to be taken to deal with incidents involving ***dangerous cargoes*** and that it is available for use in emergencies.

7.3.6.4 To ensure the availability of the information referred to in 7.3.6.1 to 7.3.6.3, electronic or other automatic data processing or transmission techniques should be used.

7.3.6.4 Dangerous substances data sheets are normally available from manufacturers of chemicals. Electronic databases with emergency response information are also available and should be used when direct access to the data can be ensured.

7.3.6.5 The ***berth operator*** should ensure that the port or ***berth*** emergency response procedures and port or ***berth*** emergency telephone numbers are placed at prominent locations within or at warehouses, sheds or areas where ***dangerous cargoes*** are transported or handled.

7.3.6.6 The ***berth operator*** should ensure that fire-fighting and pollution-combating equipment and installations are clearly marked as such and notices drawing attention to them are clearly visible at all appropriate locations.

7.3.6.7 The ***berth operator*** should inform the ***master*** of any ***ship*** carrying or **handling** ***dangerous cargoes*** of the emergency procedures in force and the services available at the ***berth***.

7.3.7 *Fire precautions*

7.3.7.1 The ***berth operator*** should ensure that:

.1 all parts of the ***berth*** and any ***ship*** moored to it are at all times accessible to emergency services;

.2 audible or visual alarms for emergency use are installed in the area or other means of rapid communication with emergency services are available;

.3 the ***berth*** is fitted with an international ship/shore connection that complies with the requirements of regulation II/2/10.2.1.7 to supply water to the ship's fire-fighting equipment for ships of 500 gross tonnage and upwards regardless of the year of build;

.4 all areas used for the ***handling*** of ***dangerous cargoes*** are kept clean and tidy;

.5 before ***dangerous cargoes*** are handled, the ***master*** of a ***ship*** is informed of the location of the nearest means of summoning emergency services; and

.6 the lighting and other electrical equipment in areas where ***dangerous cargoes*** are present on the ***berth*** is of a type safe for use in a flammable or explosive atmosphere.

7.3.7.1.6 Attention is drawn to the relevant recommendations published by the International Electrotechnical Commission.

7.3.7.2 The ***berth operator*** should ensure that:

.1 places where smoking is prohibited are designated; and

.2 notices in a pictogram form prohibiting smoking are clearly visible at all locations and at a safe distance from places where smoking would constitute a hazard.

7.3.7.3 The ***berth operator*** should ensure that equipment used in an area or space where a flammable or explosive atmosphere may exist or develop, is of a type safe for use in a flammable or explosive atmosphere and used in such a manner that no fire or explosion can be caused.

7.3.7.3 When considering the dangers of fire and explosion that may result from the carriage of dangerous cargoes, it should be appreciated that nominally empty holds and cargo transport units may still contain residues and flammable or explosive vapours and may remain hazardous.

7.3.7.4 The ***berth operator*** should ensure that only portable electrical equipment of a type safe for use in a flammable atmosphere is used in an area or space in which a flammable atmosphere may occur.

7.3.7.4 Attention is drawn to the relevant recommendations published by the International Electrotechnical Commission.

7.3.7.5 The ***berth operator*** should ensure that electrical equipment on a wandering lead is not used in areas or spaces where a flammable atmosphere may occur.

7.3.8 *Fire fighting*

7.3.8.1 The ***berth operator*** should ensure that adequate and properly tested fire-fighting equipment and facilities are provided and readily available in accordance with the requirements of the ***regulatory authority*** in areas where ***dangerous cargoes*** are transported or handled.

7.3.8.2 The ***berth operator*** should ensure that personnel involved in the ***handling*** or ***transport*** of ***dangerous cargoes*** are trained and practised in the use of fire-fighting equipment in accordance with the requirements of the ***regulatory authority***.

7.3.9 *Environmental precautions*

7.3.9.1 The ***berth operator*** should ensure that ***dangerous cargoes*** are only handled in areas which comply with the requirements of the ***regulatory authority***.

7.3.9.2 The ***berth operator*** should ensure that any damaged package, unit load or cargo transport unit containing ***dangerous cargoes*** is dealt with in accordance with the requirements of the ***regulatory authority*** and is not transported or handled unless the ***dangerous cargoes*** have been properly repacked and are in all respects fit and safe for further ***transport*** and ***handling***.

7.3.9.3 The ***berth operator*** should ensure that, if necessary, any damaged package, unit load or cargo transport unit containing ***dangerous cargoes*** is removed to a designated area for such cargoes.

7.3.9.3 An example of a facility is given in the Guidance to 3.4.4.1.

To avoid accidental release of dangerous cargoes into the environment, it is of utmost importance that only well qualified and trained personnel, with adequate knowledge of the risks emanating from the dangerous cargoes involved, deal with dangerous cargoes accidents, so as to ensure correct and safe handling procedures.

Safe reserve packagings (e.g., oversize drums) as well as absorbing or binding agents, cleaning equipment and equipment limiting the spread of liquids (e.g., drain covers, oil booms) should be readily available.

Personnel should be trained regularly in the correct and safe use of equipment.

7.3.10 *Pollution combating*

7.3.10.1 The ***berth operator*** should ensure that adequate equipment is available to minimize the damage in case of a spillage of ***dangerous cargoes***.

7.3.10.1 Equipment should include oil booms, drain covers, absorbing and neutralizing agents, as well as cleaning materials and portable collection basins.

7.3.10.2 The ***berth operator*** should ensure that personnel involved in the ***transport*** and ***handling*** of ***dangerous cargoes*** are trained and practised in the use of pollution combating equipment and facilities in accordance with the requirements of the ***regulatory authority***.

7.3.11 *Reporting of incidents*

7.3.11.1 The ***berth operator***, within his area of responsibility, should ensure that, if an incident occurs during the ***handling*** of ***dangerous cargoes*** which may endanger the safety or security of persons, of ships within the port, of the port or of any other property, or the environment, the person having charge of the ***handling*** immediately causes the operation to be stopped, if it is safe to do so, and prevents it being resumed until appropriate safety measures have been taken. The ***berth operator*** should require every member of his personnel to report, to the person having charge of the operation, any such incident they see to occur during the ***handling*** of ***dangerous cargoes***.

7.3.11.1 To ensure a prompt and effective response, treatment of injured personnel and mitigation of damage, it is essential that a concise and accurate description of the incident is available to the emergency response centre as quickly as possible. This description should include such details as shown in the Guidance to 7.1.7.1.

The information contained in the notification referred to in 7.1.2.1 or kept in the places mentioned in 7.3.6 and in the Guidance to 7.1.4.2 may be of assistance.

7.3.11.2 The ***berth operator*** should ensure that any incident involving ***dangerous cargoes*** which may endanger the safety or security of persons, or of ships within the port or of the port or of any other property or the environment is reported immediately to the ***port authority***.

7.3.11.3 The ***berth operator*** should ensure that any damaged or leaking package, unit load or cargo transport unit containing ***dangerous cargoes*** is reported immediately to the ***port authority*** and that suitable remedial action is taken in accordance with 6.1.6.2.

7.3.12 *Inspections*

7.3.12.1 The ***berth operator***, where appropriate, should:

.1 check documents and certificates concerning the safe ***transport***, ***handling***, ***packing*** and ***stowage*** of ***dangerous cargoes*** in the ***port area*** at the time of receipt;

.2 check, where practicable, packages, unit loads and cargo transport units containing ***dangerous cargoes*** to verify that they are marked, labelled or placarded in accordance with the provisions of the IMDG Code and the appropriate national or international legal requirements applicable for the mode of transport and that unnecessary labels, placards and marks have been removed and that the cargo transport units have been loaded, packed and secured in accordance with the IMO/ILO/UN ECE Guidelines for Packing of Cargo Transport Units (CTUs);

.3 check freight containers, tank-containers, portable tanks and vehicles containing ***dangerous cargoes*** to ensure that they have a current safety approval plate in accordance with the International Convention for Safe Containers (CSC), 1972, as amended, when applicable, or have been approved in accordance with the relevant provisions of the IMDG Code or by a certification or approval system of an appropriate authority; and

.4 check, by external examination, the physical condition of each freight container, tank-container, portable tank or vehicle containing ***dangerous cargoes*** for obvious damage affecting its strength or packaging integrity and for the presence of any sign of leakage of contents.

7.3.12.2 The ***berth operator*** should make such checks regularly to ensure implementation of the safety precautions in the ***port area*** and the safety of ***transport***.

7.3.12.3 If any of the checks mentioned above reveal deficiencies which may affect the safe ***transport*** or ***handling*** of ***dangerous cargoes*** the ***berth operator*** should immediately advise all parties concerned and request them to rectify all deficiencies prior to any further ***transport*** or ***handling*** of ***dangerous cargoes***.

7.3.12.4 The ***berth operator*** should ensure that every necessary support will be given to the ***port authority*** or any other person or institution entitled to carry out inspections when they intend to carry out an inspection of ***dangerous cargoes***.

7.3.13 *Hot work and other repair or maintenance work*

7.3.13.1 The ***berth operator*** should ensure that no repair or maintenance work resulting in non-availability of the emergency/fire equipment required by these Recommendations is carried out at the ***berth*** without prior permission of the ***port authority***.

7.3.13.2 The ***berth operator*** and the company carrying out the repairs, after having consulted the ***master*** of a ***ship***, where appropriate, should ensure that they are in possession of a permit to proceed issued by the ***port authority*** before any repair or maintenance work involving ***hot work***, or any other such work which may lead to a hazard because of the presence of ***dangerous cargoes***, is carried out.

7.3.13.2 The requirement for a permit and advance notice of the intended period of hot work or non-availability of equipment enables all emergency response institutions, such as the fire brigade, to be given adequate notice so they can voice objections and advise additional precautionary measures.

In special cases, such as hot work in holds of tankers or in or nearby enclosed spaces, a thorough inspection of the area should be conducted by specialists who can determine whether specific safety measures are required.

7.3.13.3 Minimum safety requirements for carrying out ***hot work*** are set out in annex 4.

7.3.14 *Entry into confined or enclosed spaces*

7.3.14.1 The ***berth operator*** should ensure that no person enters any enclosed space such as, for example, a cargo space, cargo tank, void space around such tank, cargo handling space, or other confined or enclosed space which has contained or may contain dangerous vapour or oxygen depleting cargoes, unless the space is free of dangerous vapour and not deficient in oxygen, and is certified to that effect by a ***responsible person*** trained in the use of the relevant equipment and sufficiently knowledgeable to interpret correctly the results obtained. The ***responsible person*** should record the measurements taken.

7.3.14.2 Where it is necessary for operational purposes to enter a space which cannot be freed of dangerous vapour within a reasonable time and which, therefore, can not be certified as provided in 7.3.14.1, or it is unlikely that the space will remain free of dangerous vapour, then entry should only be made by persons wearing a self-contained breathing apparatus and any other necessary protective equipment and clothing. The entire operation should be carried out under the direct supervision of a ***responsible person*** who should be provided with self-contained breathing apparatus, protective equipment and rescue harness. The breathing apparatus, protective and rescue equipment should not be of a type that could introduce a source of ignition into the space.

7.3.14.3 The ***berth operator*** should ensure that entry into a space mentioned in 7.3.14.1 follows carefully established procedures which are contained in international codes and guides.

7.3.15 *Fumigation of warehouses, sheds or cargo transport units*

7.3.15.1 The ***berth operator*** should ensure that fumigation of warehouses, sheds or cargo transport units is carried out in accordance with the requirements of the ***regulatory authority***. Reference should be made to the Recommendations on the Safe Use of Pesticides in Ships in the Supplement to the IMDG Code.

7.3.15.2 The ***berth operator*** should ensure that fumigation of cargo transport units is carried out only in areas designated by the ***port authority*** for this purpose.

7.3.15.3 The ***berth operator*** should ensure that fumigated warehouses, sheds or cargo transport units are conspicuously marked, informing anyone approaching them of the hazard involved.

7.3.15.3 Annex 3 of the Recommendations on the Safe Use of Pesticides in Ships shows a warning sign to be used for ships, ships' compartments, freight containers, barges and cargo transport units under fumigation. A similar label is shown in annex 2 of the IMO/ILO/UN ECE Guidelines for Packing of Cargo Transport Units (CTUs).

Fumigation warning sign

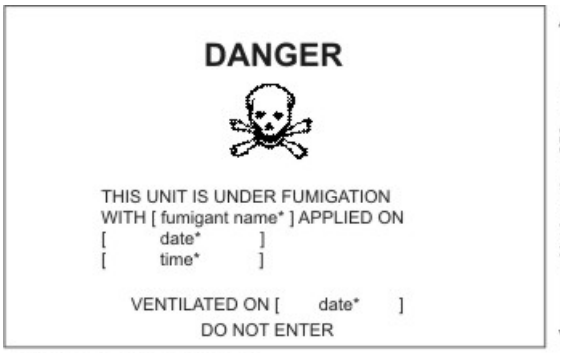


Figure 5 of these Recommendations shows an example of a pictorial warning sign suitable for cargo sheds, other spaces ashore which are fumigated or about to be fumigated or in which cargo transport units under fumigation are kept.

7.3.15.4 The ***berth operator*** should ensure that no person enters a warehouse, shed or cargo transport unit unless it has been properly ventilated, determined gas-free, fumigation warning signs have been removed and a ***responsible person*** has determined that it is safe to enter and issued a clearance certificate.

7.3.15.5 A Guide to fumigation operations is set out in annex 7.

7.3.16 *Contaminated wastes*

7.3.16.1 The ***berth operator*** should ensure that wastes contaminated with ***dangerous cargoes*** are immediately collected and disposed of in accordance with the requirements of the ***regulatory authority***.

7.3.17 *Alcohol and drug abuse*

7.3.17.1 The ***berth operator***, within his area of responsibility, should ensure that no person under the influence of alcohol or drugs is allowed to participate in any operation involving the ***handling*** of

dangerous cargoes. Any such persons should always be kept clear of the immediate areas where ***dangerous cargoes*** are being transported or handled.

7.3.18 *Weather conditions*

7.3.18.1 The ***berth operator***, within his area of responsibility, should not permit ***dangerous cargoes*** to be handled in weather conditions which may seriously increase the risk.

7.3.18.1 As an example, no explosives or liquid bulk dangerous cargoes should be handled during thunderstorms nor should unprotected cargoes which react dangerously, when in contact with water, be handled during rain.

7.3.19 *Lighting*

7.3.19.1 The ***berth operator***, within his area of responsibility, should ensure that areas where ***dangerous cargoes*** are handled or where preparations are being made to handle ***dangerous cargoes*** and access to such areas are adequately illuminated.

7.3.20 *Handling equipment*

7.3.20.1 The ***berth operator***, within his area of responsibility, should ensure that all equipment used in the ***handling*** of ***dangerous cargoes*** is suitable for such use and used only by ***skilled persons***.

7.3.20.2 The ***berth operator***, within his area of responsibility, should ensure that all cargo handling equipment is of an approved type where appropriate, properly maintained and tested in accordance with national and international legal requirements.

7.3.21 *Protective equipment*

7.3.21.1 The ***berth operator***, within his area of responsibility, should ensure, when necessary, that a sufficient quantity of appropriate protective equipment is available to all personnel involved in the ***handling*** of ***dangerous cargoes***.

7.3.21.2 Such equipment should provide adequate protection against the hazards specific to the ***dangerous cargoes*** handled and should be of an approved type or made in conformity with an approved standard.

7.4 Cargo interests

7.4.1 *Documents and certificates*

7.4.1.1 The ***cargo interests*** should ensure that all documents and certificates concerning ***dangerous cargoes*** are issued in accordance with the IMDG Code and national or international legal requirements applicable to the relevant modes of ***transport***. Required shipping papers with the related certificates, where applicable, should always be with the party having the ***dangerous cargo***, at each stage while in the ***port area***.

7.4.2 *Identification, packing, marking, labelling or placarding and certification*

7.4.2.1 The ***cargo interests*** should ensure that ***dangerous cargoes*** are properly identified, packed, marked, labelled or placarded so as to comply with the appropriate provisions of part 5 of the IMDG Code and with appropriate national or international legal requirements applicable to the relevant modes of ***transport*** and that unnecessary, placards, marks and labels have been removed.

7.4.3 *Freight containers, tank-containers, portable tanks and vehicles*

7.4.3.1 The ***cargo interests*** should ensure that freight containers, tank-containers, portable tanks and vehicles used for carrying ***dangerous cargoes*** are safe for use and have a current safety approval plate in accordance with the International Convention for Safe Containers (CSC), 1972, as amended, when appropriate, and have been approved in accordance with the relevant provisions of part 6 of the IMDG Code, or by a certification or approval system of an appropriate authority.

7.4.3.2 The ***cargo interests*** should ensure that cargo transport units are packed with ***dangerous cargoes*** in accordance with the IMO/ILO/UN ECE Guidelines for Packing of Cargo Transport Units (CTUs) or any other national or international legal requirements applicable to the mode of ***transport*** so as to ensure the safe ***transport*** and ***handling*** of such units in the ***port area***.

7.4.3.2 To ensure safe transport by sea, road, rail or barge, it is of utmost importance that, prior to leaving the premises of the originator, freight containers and other cargo transport units are packed and stowed in accordance with the IMO/ILO/UN ECE Guidelines for Packing of Cargo Transport Units (CTUs). Corrections along the transport chain are not usually possible as deficiencies are unlikely to be detected prior to damage occurring. If they are possible they are likely to be costly and to result in delays. It is, therefore, essential that the cargo interests ensure compliance with the IMO/ILO/UN ECE Guidelines at the place of packing the cargo transport units. It should be noted that safe packing and stowage also has commercial advantages, as customers will always prefer intact goods and insurance claims should drop considerably.

7.4.4 *Inspections*

7.4.4.1 The ***cargo interests*** should appoint a ***responsible person*** when ***dangerous cargoes*** are handled or transhipped who should prior to and during the transport chain, check that the provisions set out in 7.4.1 to 7.4.3 are complied with.

7.4.4.2 The ***responsible person*** of the ***cargo interests*** should check, by visual examination, the physical condition of each freight container, tank-container, portable tank or vehicle for obvious damage affecting its strength or packaging integrity and for the presence of any sign of leakage of contents.

7.4.4.3 The ***responsible person*** of the ***cargo interests*** should make such checks regularly to ensure implementation of the safety precautions in the transport chain to the ***port area***.

7.4.4.4 If any of the checks in 7.4.1 to 7.4.3 reveal deficiencies which may affect the safe ***transport*** or ***handling*** of ***dangerous cargoes*** the ***responsible person*** of the ***cargo interests*** should advise all parties concerned immediately and request them to rectify all deficiencies prior to any further ***transport*** or ***handling*** of ***dangerous cargoes***.

7.4.4.5 The ***responsible person*** of the ***cargo interests*** should ensure that every necessary support will be given to the ***port authority*** or the ***berth operator*** when an inspection of the ***dangerous cargoes*** is carried out by them.

7.4.4.5 The cargo interests should consider appointing an agent or forwarder in the port of loading or discharging who could participate in the inspections carried out by the regulatory or port authorities (see also Guidance to 7.1.8.1). This is to ensure that their interests are met during the inspection and actions can be taken to avoid future mistakes and deficiencies.

7.4.4.6 The ***cargo interests*** should, commensurate with their responsibilities, ensure that the security provisions concerning ***dangerous cargoes*** in accordance with the relevant IMO Codes and national or international legal requirements applicable to the relevant modes of transport are implemented.

8 DANGEROUS CARGOES IN PACKAGED FORM

8.1 Documentation

8.1.1 Passenger ships and cargo ships of 500 gross tonnage or over constructed on or after 1 September 1984 and carrying dangerous goods**,** shall comply with the requirements of regulation II-2/19 of SOLAS 1974. In this connection, such ships are required to carry on board a ***Document of Compliance*** in accordance with SOLAS 1974, regulation II-2/19.4 as evidence that the ***ship*** complies with the special requirements for ships carrying dangerous goods stipulated in SOLAS regulation II-2/19. Cargo ships of less than 500 gross tonnage constructed on or after 1 February 1992 shall comply with the requirements of regulation II-2/19 of SOLAS 1974, unless Administrations have reduced the requirements and this has been recorded in the ***Document of Compliance***.

8.1.2 The ***Document of Compliance*** provides information on the classes of dangerous goods that may be carried on deck and in each compartment of the ship.

8.1.3 On board a ***ship*** carrying packaged ***dangerous cargoes*** a special list or manifest setting out the dangerous goods and marine pollutants and their location is required. A detailed stowage plan, which identifies by class and sets out the location of all dangerous goods and marine pollutants on board, may be used in place of such a special list or manifest. IMO FAL form 7 provides a format for such a manifest.

8.1.4 The dangerous goods and/or marine pollutants list or manifest shall be based on the documentation and certification required by chapter 5.4 of the IMDG Code and contain the stowage location and the total quantity of dangerous goods and/or marine pollutants on board.

8.1.5 The ***regulatory authority*** should establish appropriate arrangements for the inspection of the ***ship***, to ensure, where appropriate, that the dangerous goods have been loaded and stowed in accordance with the ***Document of Compliance***.

8.2 Supervision

8.2.1 As soon as practicable after the berthing of the ***ship***, the ***master*** and the ***berth operator***, within their respective areas of responsibility, should ensure that a ***responsible person*** is appointed to supervise the ***handling*** of ***dangerous cargoes***. The ***responsible person*** should be aware of the risks involved and the steps to be taken in an emergency and who will maintain any necessary contact with the ***master*** and the ***berth operator***.

8.2.1 Communication between persons, especially between the responsible persons who are involved in handling of dangerous cargoes, is very important. This is why it has to be clear to all parties who is the responsible person on the ship and at the berth. Both the master of the ship concerned and the berth operator should ensure that a responsible person is appointed who will supervise, within their respective areas of responsibility, the handling of dangerous cargoes. For the ship the responsible person will usually be the chief officer or cargo officer. On the berth the responsible person, in most cases, will be supervisor on duty responsible for the loading/unloading operations.

8.3 Information for operational and emergency purposes

8.3.1 The ***master*** of a ***ship*** and the ***berth operator***, within their respective areas of responsibility, should have the following information with respect to all ***dangerous cargoes*** transported or handled immediately available:

.1 the description of ***dangerous cargoes*** in accordance with chapter 5.4 of the IMDG Code;

8.3.1.1 The information is not only necessary for emergency procedures such as fire, spillage, leakage or accidental contact, but also for loading/unloading operations and stowage and segregation requirements. The necessary information consists of documentation of dangerous goods shipments as described in chapter 5.4 of the IMDG Code (e.g., dangerous goods transport document including dangerous goods declaration (multimodal dangerous goods declaration form may be used) and container/vehicle packing certificate. These documents shall be available for the dangerous cargoes to be loaded.

.2 details of special equipment needed for the safe ***handling*** of a particular ***dangerous cargo***; and

8.3.1.2 When special equipment is needed for the handling of dangerous cargoes, information and any relevant test and examination certificates about this equipment shall be immediately available to the master, the berth operator and the responsible persons.

.3 the emergency procedures, including action to be taken in the event of a spillage or leakage, counter measures against accidental contact, fire-fighting procedures and suitable fire-fighting media.

8.3.1.3 Information in respect of emergency procedures should be immediately available to the master, the berth operator and the responsible persons. The information should be placed in a location immediately accessible to the persons concerned, e.g., aboard ship in the cargo office, at the berth in the terminal operations office, etc.

For the ship this information consists, among other things, of the Emergency Response Procedures for Ships Carrying Dangerous Goods (EmS Guide), the Medical First Aid Guide for Use in Accidents Involving Dangerous Goods (MFAG) and the emergency and fire plan of the ship.

The information at the berth should include the emergency procedures on the berth, fire and emergency arrangements on the berth and the telephone numbers of the fire service, ambulance, police and the authorities to be informed in case of an incident concerning dangerous cargoes. It is furthermore recommended that all concerned are informed about the emergency procedures which apply to the ship and the berth.

If a telephone can be placed on the ship, this is recommended, together with the telephone number of the responsible person of the berth and the emergency telephone number to be dialled in case of an incident concerning dangerous cargoes.

8.3.2 The ***master*** of a ***ship*** and the ***berth operator***, within their respective areas of responsibility, should each appoint a ***responsible person*** who should maintain records of ***dangerous cargoes*** loaded and/or unloaded**.** The ***responsible person*** and records should be available to assist in emergencies. The ***responsible person*** is not automatically the same ***responsible person*** who is supervising the ***handling*** of dangerous cargoes. If the responsible persons are not the same, this should be made clear to the parties involved. The reason that only one person should be responsible for these records is so that all documents concerned are kept in one record system and handled by one person, to avoid the records becoming incomplete. This should not mean that the records become inaccessible to other parties. The records should be kept in an immediately accessible place (e.g., the ship's cargo office or the terminal-operations office of the berth).

8.3.3 A copy of a dangerous goods and/or marine pollutants list or manifest shall be made available before departure to the person(s) or organization(s) designated by the port State authority.

8.4 General handling precautions

8.4.1 The ***master*** of a ***ship*** and the ***berth operator***, within their respective areas of responsibility, should ensure that:

.1 every person engaged in the ***handling*** of ***dangerous cargoes*** exercises reasonable care to avoid damage to packages, unit loads and cargo transport units.

8.4.1.1 This can be achieved by making all persons handling dangerous cargoes aware of the dangers which can occur during loading and unloading dangerous cargoes. Persons handling dangerous cargoes should also know how to handle the equipment they use and be aware of the limits of the equipment.

.2 whilst ***dangerous cargoes*** are being *handled*, precautions are taken to prevent unauthorized access to handling areas.

8.4.1.2 Unauthorized persons who enter areas where dangerous cargoes are handled can cause dangerous situations, not only to themselves but also to authorized persons working in these areas. To prevent such situations, access to the entrance to the handling area should be controlled. When persons who are not directly involved in the handling of dangerous cargoes have to pass through the area, they should **only** do so via designated walkways.

.3 if there is any loss of containment of ***dangerous cargo***, every practical step is taken to minimize risks to persons and adverse effects to the environment.

9 LIQUID BULK DANGEROUS CARGOES (INCLUDING LIQUIFIED GAS)

9.1 General

9.1 Comprehensive guidance on the Recommendations of this section is provided in the documents listed in the bibliography set out in appendix 2. Particular attention is drawn to:

ICS/OCIMF/IAPH: International Safety Guide for Oil Tankers and Terminals (ISGOTT) – Fifth edition, 2006;

ICS/OCIMF/SIGTTO: Guide to Contingency Planning for Gas Carrier Alongside and Within Port Limits – Second edition, 1999;

SIGTTO: Guide to Contingency Planning for Marine Terminals Handling Liquefied Gases in Bulk – First edition, 2001;

OCIMF/SIGTTO: Inspection Guidelines for Ships Carrying Liquefied Gases in Bulk – Second edition 1998;

OCIMF: Vessel Inspection Questionnaire for Oil Tankers, Combination Carriers, Shuttle Tankers, Chemical Carriers and Gas Carriers, Barges, Towing Vessels Utilized for Handling Barges and Vessels Carrying Packaged Cargoes (VIQ) – Third edition, 2005;

OCIMF: Harmonized Vessel Particulars Questionnaire (VPQ) ;

SIGTTO: Liquefied Gas Handling Principles on Ships and in Terminals – Third edition, 2000; and

OECD: Guiding Principles for Chemical Accident Prevention, Preparedness and Response – 1992.

9.1.1 *International certificates*

9.1.1.1 The following international certificates may be relevant:

.1 International Oil Pollution Prevention Certificate (IOPP Certificate);

.2 International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk (NLS Certificate);

.3 International Certificate of Fitness for the Carriage of Liquefied Gases in Bulk, or the Certificate of Fitness for the Carriage of Liquefied Gases in Bulk, whichever is appropriate;

.4 International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk, or the Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk, whichever is appropriate; and

.5 Certificate of Fitness issued under the Provisions of the Guidelines for the Transport and Handling of Limited Amounts of Hazardous and Noxious Liquid Substances in Bulk on Offshore Support Vessels (LHNS Certificate).

9.1.1.2 The ***port authority*** should, in accordance with the legal requirements of the ***regulatory authority***, be able to prohibit:

.1 the entry into the ***port area*** of a ***ship*** carrying ***bulk*** oil, unless the ***master*** is in possession of a valid IOPP Certificate, supplemented with form B – Record of Construction and Equipment for Oil Tankers;

.2 the entry into the ***port area*** of a ***ship*** carrying liquid ***bulk dangerous cargoes*** to which the Codes for the Construction and Equipment of Ships Carrying Dangerous Chemicals or Liquefied Gases in Bulk are applicable, unless the ***master*** is in possession of a valid ***Certificate of Fitness***;

.3 the entry into the ***port area*** of a ***ship*** carrying liquid ***bulk dangerous cargoes*** to which the Codes for the Construction and Equipment of Ships Carrying Dangerous Chemicals or Liquefied Gases in Bulk are not applicable, unless the ***master*** is in possession of a valid NLS Certificate; and

.4 the loading and unloading of liquid ***bulk dangerous cargoes*** into or from ***ships*** referred to in 9.1.1.2.1 to 9.1.1.2.3 unless the ***master*** is in possession of a valid IOPP Certificate, ***Certificate of Fitness*** or NLS Certificate, as appropriate, for the ***ship*** and those ***dangerous cargoes***.

9.1.1.3 The ***regulatory authority*** should establish appropriate arrangements for the inspection of a ***ship***, to ensure that it complies with any certificate, referred to in 9.1.1.1, where there is reason to believe that the ***ship*** may not comply.

9.1.2 *Vapour emission control*

9.1.2.1 Subject to the requirements of the ***regulatory authority***, the ***port authority*** may require that whenever certain liquid ***bulk dangerous cargoes*** are handled, suitable and safe measures are taken to prevent or control the emission of vapour into the atmosphere. Attention is drawn to IMO Circular MSC/Circ.585 on Standards for Vapour Emission Control Systems.

9.1.2 This is a complex matter and under continuous development by experts. Local environmental conditions and legal requirements should be taken into account in deciding whether to require any vapour-return line or vapour-disposal system. If such a system should be required, due attention should be given to avoiding additional hazards.

9.1.3 *Information for operational and emergency purposes*

9.1.3.1 The ***master*** of a ***ship*** and the ***berth operator***, within their respective areas of responsibility, should have immediately available the following information with respect to each ***dangerous cargo transported*** or ***handled***:

.1 the product name of the cargo, the UN number (where available) and a description of the relevant physical and chemical properties (including reactivity) necessary for the safe containment and ***handling*** of the cargo;

.2 procedures for the cargo transfer, slop transfer, gas-freeing, inerting, ballasting, de-ballasting and tank cleaning;

.3 special equipment needed for the safe ***handling*** of a particular cargo; and

.4 appropriate emergency response procedures, including the:

– action to be taken in the event of a spillage or leak;
– counter-measures against accidental contact; and
– fire-fighting procedures and the suitable fire-fighting media.

9.2 Ships carrying liquid bulk dangerous cargoes

9.2.1 *Compatibility*

9.2.1.1 The ***master*** of a ***ship*** should in co-operation with the ***port authority*** and ***berth operator***, where appropriate, ensure that during the ***handling*** of liquid ***bulk dangerous cargoes***, which may react in a hazardous manner (physically or chemically) with any other cargo carried or handled, every precaution is taken to prevent such hazard by selecting non-adjacent tanks with separate venting systems for their carriage and using separate pumping and piping systems for their ***handling***.

9.2.1.2 The ***master*** of a ***ship*** should ensure that no liquid ***bulk dangerous cargoes*** comes into contact with any tank, pipe, valve or any other equipment in the ***ship*** which may cause a hazard by weakening, chemical reaction or any other means. He should also be aware of the hazard associated with solidification of cargo in ships' vent lines, substances which react with water and oxidizing agents.

9.2.2 *Handling*

9.2.2.1 The ***master*** of a ***ship*** should ensure that:

.1 precautions are taken at all times to prevent flammable and/or toxic vapour from entering a service or control station, accommodation or machinery spaces on the ***ship***;

.2 except for vents designed to prevent excess pressure or vacuum within a cargo space, all openings from cargo spaces are kept closed during ***handling*** of flammable and/or toxic cargoes, or ballast water contaminated with such cargoes, except with the permission of the ***port authority*** and ***berth operator***; and

.3 any tools or equipment used, e.g. for sampling or ullaging are used in a manner so as not to cause ignition.

9.2.2.2 In the case of flammable cargoes sighting and ullage ports should be kept closed unless required to be open for operational purposes. If, for design reasons, they are required to be open, the openings should be protected by a flame screen which may be removed for a short period during ullaging, sighting, sounding and sampling. The flame screens should be a good fit and be kept clean and in good condition.

9.2.2.3 The ***master*** of a ***ship*** should ensure that, if an incident occurs during the handling of liquid ***bulk dangerous cargoes*** or ballast water contaminated with liquid ***bulk dangerous cargoes*** which necessitates a repair to the cargo piping system or connections, or which interferes in any way with the uninterrupted flow of liquid ***bulk dangerous cargoes*** or ballast water, such ***handling*** is stopped and not resumed until adequate safety measures have been taken with the approval of the ***port authority*** and, where appropriate, the ***berth operator***.

9.2.3 *Gas-freeing, tank cleaning and inerting*

9.2.3.1 The ***master*** of a ***ship*** carrying or having carried liquid ***bulk dangerous cargoes*** should ensure that gas-freeing, tank cleaning (including crude oil washing), or purging with inert gas is carried out in accordance with the ***ship's*** operating manuals which lay down the correct procedure to be employed. Such operating manuals should deal comprehensively with the procedure to be employed and should incorporate the recommendations and guidelines of IMO or other organizations where they are appropriate.

9.2.3.1 Ship's operating manuals should be approved by the Administration. The guidelines referred to concern inert gas systems and crude oil washing systems.

9.2.3.2 No gas-freeing, tank cleaning or purging should be carried out without the permission of the ***port authority*** and the ***berth operator***, where appropriate.

9.2.4 *Containment of spillage*

9.2.4.1 The ***master*** of a ***ship*** should ensure that during handling operations all scuppers are kept closed except to the extent that it is necessary to allow water to drain off, and that the scuppers are inspected regularly. Where corrosive liquids or refrigerated gases are being handled, the scuppers may be kept open if permitted by the ***port authority***, provided that an ample supply of water is available at all times in the vicinity of the manifolds. Attention is, however, drawn to the requirements of regulations of Annex I and Annex II of MARPOL 73/78 for provision of shipboard oil pollution emergency plans and marine pollution emergency plans for noxious liquid substances.

9.3 Shore installations

9.3.1 *Warning notices*

9.3.1.1 The ***berth operator*** should ensure that, before handling liquid ***bulk dangerous cargoes*** at any ***berth*** on the shore, appropriate warning notices, preferably pictograms, are placed at all entrances and approaches to the ***berth***.

9.3.2 *Compatibility*

9.3.2.1 The ***berth operator*** should ensure that liquid ***bulk dangerous cargoes*** are handled and kept in such a manner so as to preclude the possibility of a dangerous interaction with incompatible cargoes or materials.

9.3.3 *Communications*

9.3.3.1 The ***berth operator*** should ensure that effective communication has been established between a ***berth*** used for the ***handling*** of liquid ***bulk dangerous cargoes*** and the installation from or into which such ***cargoes*** are being transferred. Communication equipment so used should be of a type safe for use in a flammable atmosphere or explosive atmosphere and be in a good order.

Note: VHF equipment operating on frequencies allocated to the maritime mobile service should only be used for communications between a ship and the shore installations where allowed by the ***regulatory authority*** and where permitted by the ***port authority***.

9.3.4 *Pipelines used for liquid bulk dangerous cargoes*

9.3.4.1 The ***berth operator*** should ensure that a ***pipeline*** or ***flexible pipe***:

.1 is not used for cargoes other than those for which it is suitable, having regard to the temperature and compatibility of such cargoes;

.2 is suitably protected if it is liable to be damaged by impact; and

.3 is electrically continuous except for the inclusion of an insulating flange or non-conductive spool piece when used for the transfer of a flammable liquid. The ***pipeline*** on the seaward side of the insulating section should be electrically continuous to the ***ship***, and that on the landward side should be electrically continuous to the jetty earthing system. The insulating flange should be tested in accordance with chapter 17 of ISGOTT.

9.3.4.1 The use of a ship/shore bonding cable is not only considered to be ineffective but could also be dangerous. Port authorities are urged to adopt the recommendation concerning the use of an insulating flange or a non-conducting hose to ensure electrical discontinuity between the ship and shore.

9.3.4.2 The ***berth operator*** should ensure that:

.1 adequate precautions are taken to prevent a short-circuit of the insulating section referred to in 9.3.4.1.3;

.2 the insulating and earthing systems referred to in 9.3.4.1.3 are inspected and tested at appropriate intervals to ensure their effectiveness; and

.3 any other metallic connections between the ***berth*** and the ***ship*** are protected or arranged so as to ensure that there is no possibility of incentive sparking where a flammable atmosphere may be present.

9.3.4.2 Reference is made to the appropriate checklists in the *International Safety Guide for Oil Tankers and Terminals (ISGOTT)*.

9.3.5 *Sources of ignition*

9.3.5.1 The ***berth operator*** should ensure that the ***master*** of a ***ship*** is notified of any conditions which may require precautions to be taken for avoidance of sources of ignition on the ***ship*** such as galley stoves or cooking appliances with non-immersed elements.

9.3.6 *Containment of spillage*

9.3.6.1 The ***berth operator*** should ensure that all drain holes and pipes and all other drains of any kind on the jetty, where liquid ***bulk dangerous cargoes*** might escape in case of an accident, are closed before ***handling*** commences and are kept closed during the whole of the period of the ***handling*** of liquid ***bulk dangerous cargoes***.

9.3.6.2 In case of a spillage occurring, adequate means of containment and disposal, as required by the ***regulatory authority*** or ***port authority***, should be available at short notice.

9.3.7 *Shore electricity supply*

9.3.7.1 The ***berth operator*** should ensure that any shore communication cables to a ***ship*** are of a type certified safe for use in hazardous areas.

9.3.7.2 The ***berth operator*** should ensure that no shore electrical supply is connected to a ***ship***, except a supply of a type certified safe for use in flammable atmosphere, or in an emergency and with approval of the ***port authority***.

9.3.7.3 The ***berth operator*** should ensure that no connection, cable or electrical supply is used near a ***ship*** carrying flammable cargoes at a ***berth*** where such cargoes are present or where a flammable atmosphere may be present, unless it is certified for use in such places.

9.4 Handling

9.4.1 *Flexible pipes*

9.4.1.1 The ***master*** of a ***ship*** and ***berth operator*** within their respective areas of responsibility should ensure that:

.1 no ***flexible pipe*** is used for cargoes other than those for which it is suitable, having regard to the temperature and compatibility of such cargoes, or at any working pressure for which it is unsuitable;

.2 each type of ***flexible pipe*** complete with end fittings has been prototype tested and a certificate provided to show the bursting pressure. Prototype hoses may not be used in service;

.3 before being placed in service, each ***flexible pipe*** supplied should be hydraulically tested in accordance with the requirements of the ***regulatory authority***;

.4 before being put into use on any day a ***flexible pipe***, other than one being used at a monobuoy or other off-shore facility, is visually inspected. ***Flexible pipes*** used at monobuoys and other off-shore facilities should be inspected at frequent intervals;

.5 a ***flexible pipe*** is permanently and legibly marked, showing the type of hose, its specified maximum working pressure and its month and year of manufacture;

.6 there are adequate electrical insulation flanges;

.7 the length of each ***flexible pipe*** is sufficient to satisfactorily operate within the defined operating envelope without overstressing the terminal connections;

.8 a ***flexible pipe*** rigged for the ***handling*** of liquid ***bulk dangerous cargoes*** is kept under adequate supervision;

.9 there are adequate procedures for the disconnection of the ***flexible pipe*** in the event of an emergency, to protect the environment, personnel safety and equipment; and

.10 any ***flexible pipe*** after use is drained and purged of the liquid ***bulk dangerous cargoes*** and that in cases where this is not possible or has not been carried out, the ***flexible pipe*** is provided at each free end with a suitable means to prevent the escape of vapour or admission of air. Such equipment should always be provided on ***flexible pipes*** used for the ***handling*** of highly toxic liquids or liquefied gas.

9.4.2 *Loading arms*

9.4.2.1 The ***master*** of a ***ship*** and ***berth operator*** within their respective areas of responsibility should ensure that:

.1 there are adequate procedures for the operation, supervision and disconnection of ***loading arms*** in the event of emergency, to protect the environment, personnel safety and equipment;

.2 no ***loading arm*** is used for substances other than those for which it is suitable, having regard to the temperature and compatibility of such substances and the working pressure or flow rate for which it is suitable;

.3 in an emergency there are adequate means for draining the inner and outer arms after normal use and before disconnection;

.4 the operating envelope of the ***loading arms*** is suitable for the ***ship***;

.5 the manifold spacing is satisfactory when more than one ***loading arm*** is connected;

.6 each ***loading arm*** has been periodically maintained and has a current certificate for its fitness for use; and

.7 there are adequate electrical insulation flanges.

9.4.3 *Preliminary precautions*

9.4.3.1 The ***master*** of a ***ship*** and ***berth operator*** within their respective areas of responsibility, should ensure that cargo handling controls, gauging systems, emergency shutdown and alarm systems, where applicable, have been tested and found to be satisfactory before cargo handling operation begins.

9.4.3.2 The ***master*** of a ***ship*** and ***berth operator*** should before liquid ***bulk dangerous cargoes*** are pumped into or out of a ***ship*** from or into a shore installation:

.1 agree in writing on the ***handling*** procedures including the maximum loading or unloading rates taking into account:

.1.1 the arrangement, capacity and maximum allowable pressure of the ***ship***'s cargo lines and the shore ***pipelines***;

.1.2 the arrangement and capacity of the vapour venting system;

.1.3 the possible pressures increase due to emergency shut-down procedures;

.1.4 the possible accumulation of electrostatic charge; and

.1.5 the presence of ***responsible persons*** during start up operations on board ***ship*** and ashore;

.2 complete and sign an appropriate safety check list showing the main safety precautions to be taken before and during such handling operations;

.3 agree in writing the action to be taken and the signals to be used in the event of an emergency during ***handling*** operations; and

.4 ensure appropriate safety equipment and clothing are used.

9.4.3.3 The ***berth operator*** should ensure that master flow and drain valves, and other valves that would permit direct outward flow of a ***bulk*** liquid storage tanks contents to the surface are securely locked in the closed position when in a non-operating or non-standby status.

9.4.3.4 The ***berth operator*** should ensure that starter controls on all ***bulk*** liquid transfer pumps are locked in the "off" position, or located at a site accessible only to authorized personnel.

9.4.3.5 The ***berth operator*** should ensure that loading/unloading connections of pipelines, **loading arms**, or transfer hoses are securely capped or blank-flanged when not in service or in standby service.

9.4.4 *Pumping*

9.4.4.1 The ***master*** of a ***ship*** and ***berth operator*** within their respective areas of responsibility should ensure that:

.1 frequent checks are made to ensure that the agreed back-pressures and loading or unloading rates are not exceeded;

.2 all reasonable care is taken to prevent all relevant ***pipelines***, ***loading arms***, ***flexible pipes*** and associated equipment on board the ***ship*** and ashore from developing a leak, and that they are kept under adequate supervision during the ***handling*** of liquid ***bulk dangerous cargoes***;

.3 effective communication between the ***ship*** and the shore installations is maintained throughout the ***handling*** operations;

.4 the safety check list mentioned in 9.4.3.2.2 is available for inspection throughout the ***handling*** operations;

.5 simultaneous working of ***ships' stores*** with the ***handling*** of ***dangerous cargoes***, gas-freeing, purging or tank cleaning is only carried out when permitted by the ***port authority*** and all practicable precautions are taken to avoid damage to connecting ***loading arms, flexible pipes*** or associated equipment or any other hazards;

.6 during the ***handling*** of liquid ***bulk dangerous cargoes***, arrangements are made for the gauging of ***ships'*** tanks to ensure that no tank is overfilled;

.7 ***responsible persons*** are present during operations on board ***ship*** and ashore; and

.8 appropriate safety equipment and clothing are used.

9.4.5 *Completion of operation*

9.4.5.1 The ***master*** of a ***ship*** and ***berth operator*** within their respective areas of responsibility should ensure that after the completion of every transfer of liquid ***bulk dangerous cargoes*** the valves of the discharging and receiving cargo spaces and tanks are closed and any residual pressure in the relevant ***pipelines***, ***loading arms*** and ***flexible pipes*** is released, unless the same valves are required to be open for normal plant or ***ship*** operations. They should also ensure that:

.1 prior to the disconnection of the shore ***pipelines*** from the ***ship***, the ***loading arms, flexible pipes*** and piping are drained of liquids, the pressure relieved and the piping vented;

.2 all safety precautions are taken, including the blanking off of the ***ship*** manifold connection and the shore ***pipeline***; and

.3 appropriate safety equipment and clothing are used.

9.4.6 *Ship-to-ship transfer*

9.4.6.1 The ***ship***-to-***ship*** transfer of liquid ***bulk dangerous cargoes*** should be subject to the authorization of the ***port authority*** and, where appropriate, the permission of the ***berth operator***. If the ***port authority*** permits ***ship***-to-***ship*** transfer, it should impose conditions such as special safety check lists and control of the place where the operation may be undertaken, taking into account the particular hazards involved.

9.4.6.1 Attention is drawn to the ICS/OCIMF *Ship-to-Ship Transfer Guide (Liquefied Gases)* and *Ship-to-Ship Transfer Guide (Petroleum)*. An example of a checklist is given in annex 5.

9.5 Special categories

9.5.1 *Excess pressure in tanks containing liquefied gas*

9.5.1.1 The ***master*** of a ***ship*** and ***berth operator*** within their respective areas of responsibility should ensure that excess pressure does not develop in the tanks containing liquefied gas under pressure in the ***ship*** or on the ***berth***. Where appropriate, the surroundings should be cooled by whatever means are available, including the use of water spray.

9.5.2 *Refrigerated liquefied gas*

9.5.2.1 The ***master*** of a ***ship***, the ***port authority*** and ***berth operator*** within their respective areas of responsibility should ensure that the loading or unloading of liquefied gas at low temperature is only carried out if:

.1 all relevant shore and ship tanks, ***pipelines, loading arms*** and relevant ***ships***' piping are gradually and evenly cooled to prevent thermal stress;

.2 all automatic controls, gas detectors and other associated instruments are in working order; and

.3 suitable protective equipment and clothing is available and used as appropriate.

9.6 Combination carriers

9.6.1 A combination carrier which has previously carried crude oil or petroleum products having a flashpoint not exceeding 60ºC c.c. as a cargo, should be subject to Section 9 of these Recommendations unless it can be proved that no liquid, solid or gaseous residues of such cargo remain in any of the ***ship***'s tanks, holds, void spaces, cargo or ballast lines, pumps or pump-rooms.

9.6.2 When a combination carrier, referred to in 9.6.1, is moored in a port terminal other than an oil terminal and the ***ship*** is not gas-free:

.1 the area 25 metres around the ship should be regarded as a hazardous area where special precautions against fire should be taken;

.2 the tanks should be inerted;

.3 a ***ship***/shore safety check list should be completed; and

.4 the area should be watched by a special shore safety guard in addition to the ***ship***'s deck watch.

10 SOLID BULK DANGEROUS CARGOES

10.1 Documentation

10.1.1 ***Ships*** of 500 gross tonnage or above constructed on or after 1 September 1984 and carrying dangerous goods**,** shall comply with the requirements of regulation II-2/19 of SOLAS 1974. In this connection, such ***ships*** are required to carry on board a ***Document of Compliance*** in accordance with SOLAS 1974, regulation II-2/19.4 as evidence that the ***ship*** complies with the special requirements for ships carrying ***dangerous cargoes*** stipulated in SOLAS regulation II-2/19. Cargo ***ships*** of less than 500 gross tonnage constructed on or after 1 February 1992 shall comply with the requirements of regulation II-2/19 of SOLAS 1974, unless Administrations have reduced the requirements and this has been recorded in the ***Document of Compliance***.

10.1.2 The ***Document of Compliance*** also provides information on the classes of ***dangerous cargoes*** that may be carried.

10.1.3 Also, on board a ***ship*** carrying solid ***bulk dangerous cargoes***, a list, a manifest or detailed stowage plan detailing the ***dangerous cargo*** and its location on board is required.

10.1.4 The ***regulatory authority*** should establish appropriate arrangements for the inspection of the ***ship***, to ensure, where appropriate, that the solid ***bulk dangerous cargoes*** have been loaded and stowed in accordance with the ***Document of Compliance***.

10.2 Responsibility for compliance

10.2.1 When solid ***bulk dangerous cargoes*** are carried, handled or stowed, the ***master*** of a ***ship*** and ***berth operator*** within their respective areas of responsibility should ensure that the loading and unloading operations are carried out in accordance with the Bulk Cargo (BC) Code and the Code of Practice for the Safe Loading and Unloading of Bulk Carriers (BLU Code), where applicable, and the recommendations in 10.3 to 10.8 and the Manual on Loading and Unloading of Solid Bulk Cargoes for Terminal Representatives.

10.3 Emission of harmful dusts

10.3.1 Where the ***transport, handling*** or ***stowage*** of solid ***bulk dangerous cargoes*** may give rise to the emission of dust, all necessary practicable precautions should be taken to prevent and minimize the emission of such dusts and to protect persons and the environment from them.

10.3.2 The precautions should include the use of appropriate protective clothing, respiratory protection, and barrier creams, when needed; as well as personal washing and hygiene and laundering of clothing.

10.4 Emission of dangerous vapour/oxygen deficiency

10.4.1 Where the ***transport*** or ***handling*** of solid ***bulk dangerous cargoes*** may give rise to the emission of a toxic or flammable vapour, all necessary practicable precautions should be taken to prevent and minimize the emission of such vapours and to protect persons from toxic vapours.

10.4.2 Whenever solid ***bulk dangerous cargo*** which may emit a toxic or flammable vapour is stowed or carried, an appropriate instrument for measuring the concentration of the toxic or flammable vapour should be provided. Enclosed spaces used for such cargoes and adjacent spaces should be provided with effective ventilation.

10.4.3 Except in an emergency, no person should enter an enclosed space in which a solid ***bulk dangerous cargo*** that may emit a toxic or flammable vapour is stowed or is deficient in oxygen unless the atmosphere in the space has been determined not to be hazardous to human health or safety. If entry is necessary during an emergency, a person who enters the space should wear appropriate self-contained air breathing apparatus in accordance with confined space entry procedures (see 7.2.11.2).

10.5 Emission of explosive dusts

10.5.1 Where the ***transport*** or ***handling*** of solid ***bulk dangerous cargoes*** may give rise to the emission of dust that is liable to explode on ignition, all necessary practicable precautions should be taken to prevent such an explosion and to minimize the effects of an explosion if one should occur.

10.5.2 Precautions include ventilating an enclosed space to limit the concentration of dust in the atmosphere, avoiding sources of ignition, minimizing the heights of walls of materials, and hosing down rather that sweeping.

10.6 Spontaneously combustible substances and substances that react with water

10.6.1 Solid ***bulk dangerous cargoes*** that, on contact with water, may evolve flammable or toxic vapours or become liable to spontaneous combustion, should be kept as dry as reasonably practicable. Such cargoes should be handled only during dry weather conditions.

10.7 Oxidizing substances

10.7.1 Solid ***bulk dangerous cargo*** that is an oxidizing substance should be transported, handled and stowed in a manner that prevents in so far as reasonably practicable, contamination with combustible or carbonaceous materials. Oxidizing substances should be kept away from any source of heat or ignition.

10.8 Incompatible materials

10.8.1 Solid ***bulk dangerous cargoes*** should be carried, handled and stowed in a manner that prevents any dangerous interaction with incompatible materials. This should apply between ***bulk dangerous cargoes*** mutually as well as between solid ***bulk dangerous cargoes*** and ***dangerous cargoes*** in packaged form.

ANNEX 1

ADVANCE NOTIFICATION
(7.1.2.6)

The information provided to the port authority before dangerous cargoes are brought into or moved out of a port area should include:

1 ARRIVAL BY WATER

1.1 Packaged dangerous cargoes:

.1 the name of the ship and ship's IMO number, agent and estimated time of arrival (ETA), normally not less than 24 hours before arrival;

.2 a list showing the Proper Shipping Name of the dangerous goods, the UN number, the class or, when assigned the division of the goods, including for class 1, the compatibility group letter, (if applicable), any subsidiary risk, the number and type of packages, packing group, the flashpoint range (as appropriate), the quantity and additional information as required by the chapter 5.4 of the IMDG Code;

1.1.2 Each cargo, consignment or item in the list should be numbered consecutively to enable easy reference.

.3 the precise stowage of the dangerous cargoes on board, indicating those to be unloaded and those to be left on board;

1.1.3 Dangerous cargoes which are to remain on board should be stated with due reference to the number in the list (see above).

.4 the condition of the dangerous cargoes if any undue hazard is likely to arise; and

.5 any known defect which may substantially affect the safety of the port area or the ship.

1.2 Bulk dangerous cargoes (liquid or solid):

.1 the name of the ship and ship's IMO number, agent and estimated time of arrival (ETA), normally not less than 24 hours before arrival;

.2 a list showing the product name of the bulk dangerous cargoes and any other information required by the relevant IMO code;

.3 whether a valid International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk, or a Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk, whichever is appropriate, an International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk (NLS Certificate) and/or an International Oil Pollution Prevention Certificate, as appropriate, are held for the cargo;

.4 location of the dangerous cargoes on board, indicating those to be unloaded and those to be left on board;

1.2.4 Combination carriers entering a dry cargo terminal should state the nature of the last three cargoes and their flashpoints, where applicable, and the present condition of the tanks/cargo holds (i.e. whether they are gas-free).

.5 the condition of the dangerous cargoes and any known defect in the cargo containment and ***handling*** system, equipment or instrumentation related to the cargo carried in bulk which may lead to any undue hazard; and

.6 any known defect which may substantially affect the safety of the port area or the ship.

1.3 Additional information that may be provided to the port authority before dangerous cargoes are brought into or moved out of a port area may be amongst those specified in Part B of the ISPS Code. Other examples of information which are required by the regulatory authorities in relation to packaged dangerous cargoes are:

.1 Container number;

.2 Transport licence number or reference (if IMDG Code class 1 or 7);

.3 Name and contact details of consignee or of the local forwarder (if available).

2 ARRIVAL BY LAND

2.1 Packaged dangerous cargoes and bulk dangerous cargoes (liquid or solid):

.1 name of the consignor (shipper) and date of delivery to the port area, normally not less that 24 hours before arrival;

.2 for packaged dangerous cargoes: the Proper Shipping Names of the dangerous goods, the UN number, the class or, when assigned the division of the goods, including for class 1, the compatibility group letter, (if applicable), any subsidiary risk, the number and type of packages, packing group, the flashpoint range (as appropriate), the quantity and additional information as required by chapter 5.4 of the IMDG Code;

.3 for bulk dangerous cargoes: the product name and any other information required by the relevant IMO code; and

.4 the name of the ship into which the dangerous cargoes are to be loaded (if applicable), the ship's agent and the berth.

3 DEPARTURE BY WATER

3.1 Packaged dangerous cargoes:

.1 the name of the ship and ship's IMO number, agent and estimated time of departure (ETD), as required by the regulatory authorities;

.2 a list showing the Proper Shipping Names of the dangerous goods, the UN number, the class or, when assigned the division of the goods, including for class 1, the compatibility group letter, (if applicable), any subsidiary risk, number and type of packages, packing group, the flashpoint range (as appropriate), the quantity and additional information as required by chapter 5.4 of the IMDG Code; and

.3 the stowage location of the dangerous cargoes on board.

3.2 Bulk dangerous cargoes (liquid or solid):

.1 the name of the ship and ship's IMO number, agent and estimated time of departure (ETD), as required by the regulatory authorities;

.2 a list showing the product names of the bulk dangerous cargoes and any other information required by the relevant IMO code;

.3 whether a valid International Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk, or a Certificate of Fitness for the Carriage of Dangerous Chemicals in Bulk, whichever is appropriate, and/or an International Pollution Prevention Certificate for the Carriage of Noxious Liquid Substances in Bulk (NLS Certificate) and/or, an International Oil Pollution Prevention Certificate, as appropriate, is held by the ship for the cargo; and

.4 the stowage or location of the dangerous cargoes on board.

ANNEX 2

**TRANSPORT AND HANDLING OF EXPLOSIVES OF CLASS 1
(3.3.2.4, 7.1.15.4)**

Basic items for consideration by the Regulatory Authority

1 General

1.1 It should be ensured that relevant instructions are given to control the movement of any means of transport involved in the transport of explosives in the port area.

1.2 It should be ensured that there is at all times a responsible person in charge of any cargo of explosives in the port area.

2 Explosives in compatibility group L

2.1 Explosives in compatibility group L should not be handled in a port area unless the special permission of the port authority has been obtained and any special precautions, required by the port authority, have been taken.

3 Handling of deteriorated explosives

3.1 Because of the sensitivity of many explosives, special conditions should be considered and agreed before any explosives, which for any reason may have deteriorated or undergone a change of condition that may materially increase the hazards attendant upon their transport or handling, are moved in the port area. Such special conditions should be agreed in writing between the port authority, competent authority, where required by national regulations, and the responsible person having charge of explosives.

4 Loading and unloading of explosives

4.1 Other than in exceptional circumstances permitted by the relevant legal authorities, no explosives should be brought to a berth for loading into a ship unless the ship is ready to receive them. No explosives should be unloaded from a ship at a berth, unless the means of transport by which they are to be removed from the port area is ready to receive them. Once the handling of explosives has begun, it should proceed with due diligence.

4.2 The area of the berth where the explosives are being handled should be clearly marked out as a protected area in which the provisions of 3.3.2, 7.2.6.1 and 7.3.7.2 are strictly enforced. The limits of the area should extend at least 10 metres from the immediate handling area.

4.3 The space in the ship or cargo transport unit in which explosives are to be loaded should be carefully cleaned and maintained in a clean condition and particular attention should be paid to the provisions of 7.3.7.1.4.

4.4 Explosives should not be handled during the hours of darkness unless prior consent has been obtained from the port authority which should take into account all relevant considerations, including the standard of illuminations, security, fatigue of workers and weather conditions.

4.5 Equipment for handling explosives should be of an approved type, properly maintained and tested in accordance with national and international standards.

5 Weather conditions

5.1 Because of the nature of explosives, the provisions of 7.2.15 and 7.3.18 with respect to the handling of dangerous cargoes in adverse weather conditions need careful attention, particularly in respect of wet conditions.

6 Additional fire precautions

6.1 No source of ignition should be brought into or near to a place where explosives are being handled. The wearing of shoes or boots with unprotected metal nails, heels or tips of any kind should be prohibited, except where the consignment consists only of articles of class 1, and care taken to ensure that any portable lights and other electrical equipment are of a type safe for use in a flammable atmosphere.

7 Radio or radar transmitting

7.1 During the handling of explosives no radar or radio transmitter should be used within 50 metres of the cargo handling area, except under such conditions, including power output limitations, frequency and other factors, as may be established by the regulatory authority. The regulatory authority should be guided by explosives and radio experts on the minimum distance between the handling of various types of explosives and operational transmitters.

8 Bunkering

8.1 No bunkering should be permitted during the handling of explosives or while the hatches of cargo spaces containing explosives are open, unless the permission of the port authority has been obtained.

9 Damaged packages

9.1 If in the course of handling explosives in the port area any package of explosives, or the seal of any such package, appears to be damaged, that package should be set aside for examination and repair or other safe disposal.

9.2 If any explosives are spilled or escape from a package, the responsible person supervising the handling should ensure that such spillage is immediately collected and safe arrangements are made for its repacking or disposal. Every such incident should be immediately reported to the port authority.

10 Completion of loading

10.1 When loading is completed the loaded ship or vehicle should depart from the port area as soon as is reasonably practicable.

11 Security

11.1 As the safety of the handling of explosives is affected by the degree of security attained, consideration should be given to all security measures necessary to prevent unauthorized access to explosives, including appropriate checks that all packages are received in good order and condition at all stages of the handling operation. Explosives should neither be moved nor handled unless the relevant permits have been issued and such tasks should be undertaken in accordance with the conditions specified in the relevant permits.

12 Explosives in class 1, division 1.4, compatibility group S

12.1 The regulatory authority should grant any exemption necessary from their requirements in the case of explosives in class 1, division 1.4, compatibility group S in accordance with the IMDG Code.

ANNEX 3

SEGREGATION OF RADIOACTIVE MATERIALS ON SHORE (7.1.16.3)

1 Application

1.1 Any material referred to in table 2.7.7.2.1 of the IMDG Code on Basic radionuclide values should be declared as a radioactive material.

2 Segregation from persons

2.1 Limitation of the radiation exposure of persons should be based on keeping doses as low as reasonably practicable within the current maximum annual dose – equivalent limit recommended by the International Commission on Radiological Protection (ICRP) for members of the public and workers.

2.2 The ICRP recommended dose limits are revised from time to time. The 1990 recommendations are for a maximum annual dose – equivalent limit of 20 mSv averaged over 5 years with 50 mSv in any one year for occupationally exposed workers and 1 mSv for members of the general public.

2.3 Members of the general public should normally not have access to or near areas of ports where radioactive materials are kept.

2.4 Category II or III (yellow label) packages, overpacks, freight containers or tanks containing radioactive materials which are not taken directly to or from a ship should be kept in areas or stores separated from any place regularly frequented by workers by at least the distances given in the table below, unless measurements taken by using an appropriate instrument show clearly that the radiation level at all points inside that place is less than 7.5 mSv/h. Where members of the general public necessarily require access to the vicinity of such areas or stores it should be for short periods only.

TABLE

Segregation of category II or III packages, overpacks, freight containers or tanks from workers.

Sum of transport indices	Minimum segregation distances in metres
Up to 5	4
Over 5 to 10	6
Over 10 to 20	8
Over 20 to 30	10
Over 30 to 40	12
Over 40 to 50	13
Over 50 to 100*	18
Over 100 to 150*	22
Over 150 to 200*	26

* For 2 or more stacks of packages, etc., see 4.1.2 below.

The segregation distance should be adhered to regardless of whether walls or ceilings intervene between the storage area and the occupied place.

2.5 Where the package, overpack, freight container or tank is not in a special store, the area covered by applying the table above should be barriered or marked off. Entry into the special store or barriered off area should be for the purpose of essential duties only and the time spent in handling packages, overpacks, freight containers or tanks containing radioactive materials should be kept to the minimum necessary. If the frequency of keeping packages, overpacks, freight containers or tanks of radioactive materials on the premises is such that persons on average over the year sped more than 10 hours per week in the vicinity of the special store or barriered off area where such materials are present, more stringent measures should be adopted, possibly including monitoring of radiation doses received. Guidance on this should be sought from the regulatory authority.

2.6 These criteria should be regarded as minimum standards. In some countries the regulatory authority has made national legal requirements requiring higher standards. In such cases it will be necessary to comply with the provisions of such legislation.

2.7 No person under 18 years of age should be employed in the handling of Category II or III packages, overpacks, freight containers or tanks, or remain in their vicinity for significant periods. The regulatory authority should consider the need for any restriction on the employment of pregnant women.

3 Segregation from undeveloped film

3.1 Radioactive material should be segregated from undeveloped film and mailbags (which should be assumed to contain undeveloped film) by at least the distances given in the table in 2.4 of this annex.

4 General stowage requirements

4.1 Unless authorized under special arrangements by the regulatory authority:

.1 the radiation doses levels likely to be encountered from any package, “overpack”, freight container or tank in a port area should not exceed 2 mSv/h at the external surface or 0.1 mSv/h at 2 metres from the surface of any conveyance used in routine transport; and

.2 the total number of packages, overpacks, freight containers or tanks aboard a single conveyance or a single stack in a port area should be so limited that the total sum of the transport indices does not exceed 50.

4.2 The total sum of the transport indices of any individual group of packages, overpacks, freight containers or tanks stowed in a port area should not exceed 100. An intervening space of at least 6 m should be left between groups. A number of stacks may be included in the same group.

4.3 Stowage of packages, overpacks, freight containers and tanks aboard ships shall be in accordance with the requirements for class 7 set out in chapter 7.1 of the IMDG Code.

4.4 Segregation provisions for packages, overpacks, freight containers and tanks aboard ships shall be in accordance with the requirements of class 7 set out in chapter 7.2 of the IMDG Code.

5 Customs facilities

5.1 Consideration should be given to the need for the provision of appropriately separated areas for any customs examination of packages, overpacks, freight containers or tanks containing radioactive materials that may be necessary in the port area. Any customs officer likely to examine packages, etc., should receive appropriate training in basic radiation protection.

ANNEX 4

MINIMUM SAFETY REQUIREMENTS FOR CARRYING OUT HOT WORK (7.1.9, 7.2.10, 7.3.13)

1 Before starting any hot work, on board a ship or on a berth, the responsible person of the company to carry out the hot work shall be in possession of a written authorization to carry out such hot work issued by the port authority. Such authorization should include details of the specific location of the hot work as well as the safety precautions to be followed.

2 In addition to the safety precautions required be the port authority, before starting any hot work, the responsible person of the company to carry out the hot work together with the responsible person(s) of the ship and/or berth, should add any additional safety precautions required by the ship and/or berth.

These should include:

.1 the examination, and frequency of re-examination of local areas and adjacent areas, including tests, carried out by accredited testing establishments, to ensure the areas are free, and continue to be free, of flammable and/or explosive atmospheres and, where appropriate, are not deficient in oxygen;

.2 the removal of dangerous cargoes and other flammable substances and objects away from the working and adjacent areas. This includes scale, sludge, sediment and other possible flammable material;

.3 efficient protection of flammable structural members, e.g. beams, wooden walls, floors, doors, wall and ceiling coverings against accidental ignition; and

.4 the sealing of open pipes, pipe lead-throughs, valves, joints, gaps and open parts to prevent the transfer of flames, sparks and hot particles from the working areas to adjacent or other areas.

3 A duplicate of the hot work authorization and safety precautions should be posted adjacent to the work area as well as at each entrance to the work area. The authorization and safety precautions should be readily visible to, and clearly understood by, all persons engaged in the hot work.

4 While carrying out hot work it is essential that:

.1 checks are carried out to ensure that conditions have not changed; and

.2 at least one suitable fire extinguisher, or other suitable fire-extinguishing equipment is readily available for immediate use at the location of the hot work.

5 During hot work, on completion and for a sufficient time after completion of such work, an effective fire-watch should be maintained in the area of the hot work as well as adjacent areas where a hazard resulting from the transfer of heat may be created.

6 Reference should also be made to the appropriate publications listed in the bibliography (see appendix 2) where additional valuable guidance on hot work procedures may be found. In particular, the *International Safety Guide for Oil Tankers and Terminals (ISGOTT)* should be consulted.

ANNEX 5

BUNKERING PRECAUTIONS, INCLUDING BUNKERING CHECKLIST (7.1.14)

1 The master of a ship involved in bunkering shall ensure that bunkering will only take place if:

.1 notification of the intention to bunker is given to the port authority well in advance, stating the place, type of bunker oil to be transhipped and the expected time that bunkering will commence;

.2 the relevant Safety Data Sheet has been supplied in accordance with resolution MSC.150(77) on Safety Data Sheets for MARPOL Annex I cargoes and marine fuel oils; and

.3 the questions on the bunkering check list below are answered truthfully and affirmatively.

2 The master of a ship shall not begin bunkering unless he has ensured that:

.1 the scuppers are firmly closed;

.2 bunker pipes which are not in use are well blanked;

.3 the bunker hoses are properly supported;

.4 the bunker hoses have sufficient play;

.5 the bunker connection has been provided with a good seal;

.6 there is a well-tightened bolt in every bolt hole in the bunker pipe connection flanges;

.7 there is a sufficiently large overflow basin under the bunker pipe connection(s); and

.8 any cargo handling operations in progress will not hazard the bunker operations.

3 The master of a bunker vessel shall not begin bunkering unless he has ensured that:

.1 the bunker vessel is securely moored;

.2 the bunker hoses are in good condition;

.3 the bunker hoses have sufficient play;

.4 the bunker connection has been provided with a good seal; and

.5 there is a well-tightened bolt in every bolt hole in the bunker pipe connection flanges.

4 The master of a ship involved in bunkering shall ensure that the conditions described in paragraphs 2 and 3 remain fulfilled during the entire bunkering procedure.

5 Both the master of a ship and the master of a bunker vessel should ensure, that a constant visual watch is maintained throughout the whole transfer operation.

6 Both the master of a ship and the master of a bunker vessel have to ensure that all scuppers are closed and that sufficient absorbing materials are available in case of an accidental spillage.

7 If it cannot be ensured during the whole bunkering operation that the requirements laid down in this annex are fulfilled, the master of a ship and/or the bunker vessel shall cease the bunker operation immediately.

8 In this annex, “bunkering” is taken to mean the transfer of bunker oil that is a flammable liquid intended for the propulsion and or the auxiliary operation of a ship or liquid intended for lubricating the ship’s engine or her other machinery.

PRE-TRANSFER BUNKERING CHECKLIST

Name of Bunkering Barge …….
Licence Plate …….
Master's/Driver's Name ……
Time of Transhipment ……..…

Name of Vessel taking Bunker ……..
Master's Name ……
Date of Transhipment …….……
Place of Transhipment ……

Bunker barge/truck	**Vessel taking bunker**
1. How much bunker oil will be transhipped: Fuel …….. tonnes actual …… m^3 Gas oil …….. tonnes actual …… m^3 Lub oil …….. tonnes actual …… m^3 2. What are the means of communication between the barge/truck and the vessel taking bunkers: …… 3. Who is responsible for communications with the vessel taking bunkers: Name …… Position …… 4. Who is in charge of supervising the operation and taking immediate action in case of malfunction: Name …… Position …… 5. (a) Is there an emergency stop facility: Yes/No Where ……. (b) Has the emergency stopping procedure been discussed and agreed with the vessel taking bunkers: Yes/No	1. Who measured the contents of the bunker tanks: Name …… Position …… 2. The measures were: *Tank* *Actual contents* *Free space (up to 98% filling)* No. …….. tonnes …… m^3 No. …….. tonnes …… m^3 No. …….. tonnes …… m^3 No. …….. tonnes …… m^3 3. How often will the contents of the bunker tanks be checked during the bunker operations: Every …….. minutes 4. Who is responsible for taking the measurements referred to in point 3: Name …… Position …… 5. How much bunker oil will be transhipped: Fuel …….. tonnes actual …… m^3 Gas oil …….. tonnes actual …… m^3 Lub oil …….. tonnes actual …… m^3 6. What are the means of communication between the barge/truck and the vessel taking bunkers: …….... 7. Who is responsible for communications with the bunker barge/truck: Name ……..... Position …….....

6. Nominated volume to be transhipped:
Grade *Volume*

Marine Gas Oil …….. tonnes …… m^3
LFO ……... tonnes …… m^3
LFO ……... tonnes …… m^3
LFO ……... tonnes …… m^3
Lub oil ……... tonnes …… m^3

7. Agreed maximum pumping rates and line pressures:

Grade	*Pumping rate in tonnes/hr.*	*Line pressure in psi/bar***
……		
……		
……		
……		

I confirm that I shall not exceed above volumes, pumping rates and line pressures and that my crew will remain on duty close to the hose connection in order to oversee the safe bunker operation and to be able to respond to an emergency throughout the delivery.

Barge Master/Truck driver*

8. Who is in charge of supervising the operation and taking immediate action in case of malfunction:

Name ……
Position ……

9. Accepted volume to be transhipped:
Grade ……. Volume

Marine Gas Oil ……..…. tonnes ……..… m^3
LFO ……... tonnes ……..… m^3
LFO ……... tonnes …….. m^3
LFO ……... tonnes …….. m^3
Lub oil ……... tonnes …….. m^3

10. Agreed maximum pumping rates and line pressures:

Grade	*Pumping rate in tonnes/hr.*	*Line pressure in psi/bar**
……		
……		
……		
……		

I confirm that I am able to receive the above volumes at the pumping rates and line pressures agreed to above, that the ship's engineers in charge of the receiving operation will not close any valve which will restrict the flow of the product without adequate notice to the barge or truck personnel, and that my crew will remain on duty close to the hose connection in order to oversee the safe bunker operation and to be able to respond to an emergency throughout the delivery.

Master/Chief Engineer*

* if applicable

* if applicable

THIS CHECKLIST HAS TO BE COMPLETED PRIOR TO COMMENCEMENT OF BUNKERING OPERATIONS

ANNEX 6

ALPHABETICAL INDEX OF AND CROSS-REFERENCES BETWEEN RECOMMENDATIONS IN SECTIONS 3 AND 7

Section	Infra-structure	Regulatory and port authorities	Ships	Shore installations	Cargo interests
	3	7.1	7.2	7.3	7.4
Acceptability of dangerous cargoes in port areas		7.1.1			
Advance notification		7.1.2			
Alcohol and drug abuse			7.2.14	7.3.17	
Berthing		7.1.3	7.2.3	7.3.1	
Bilge water, waste ballast or slops			7.2.13		
Bunkering		7.1.14			
Communications		7.1.19			
Container areas	3.4				
Contaminated waste				7.3.16	
Dangerous cargo areas	3.4.1				
Documents and certificates					7.4.1
Emergency information			7.2.5	7.3.6	
Emergency procedures		7.1.4	7.2.4	7.3.5	
Entering the port area			7.2.1		
Entry into confined or enclosed spaces		7.1.10	7.2.11	7.3.14	
Environment precautions	3.3.1	7.1.6	7.2.7	7.3.9	
Exemptions		7.1.22			
Explosives	3.3.2	7.1.15			
Freight containers, portable tanks, vehicles					7.4.3
Facilities for damaged cargo	3.4.4				
Fire fighting				7.3.8	
Fire precautions		7.1.5	7.2.6	7.3.7	
Fumigation of ships, sheds, CTUs, etc.	3.4.3	7.1.11	7.2.12	7.3.15	
General	3.1				
Handling equipment			7.2.17	7.3.20	
Hot work and other repair or maintenance work	3.4.5	7.1.9	7.2.10	7.3.13	
Identification, packing, marking, labelling				7.3.3	7.4.2
Infectious substances		7.1.17			
Inspections		7.1.8	7.2.9	7.3.12	7.4.4
Knowledge of rules and regulations		7.1.23			
Land-use planning	3.2				

Section	Infra-structure	Regulatory and port authorities	Ships	Shore installations	Cargo interests
	3	7.1	7.2	7.3	7.4
Lighting			7.2.16	7.3.19	
Pilotage and tug assistance		7.1.20			
Pollution combating				7.3.10	
Protective equipment			7.2.18	7.3.21	
Radioactive materials	3.3.4	7.1.16			
Reception facilities for slops, etc.	3.4.6	7.1.12			
References		7.1.24			
Reporting of incidents		7.1.7	7.2.8	7.3.11	
Safe transport, handling and segregation		7.1.13		7.3.4	
Signals		7.1.18			
Specific areas	3.4				
Specific dangerous cargoes	3.3				
Supervision			7.2.2		
Tank storage and pipelines	3.4.7				
Temperature-controlled dangerous cargoes	3.3.3				
Unmanned barges		7.1.21			
Watchkeeping			7.2.2		
Weather conditions			7.2.15	7.3.18	

ANNEX 7

GUIDE TO FUMIGATION
(3.4.3, 7.1.11, 7.2.12, 7.3.15)

1 The port and other relevant authorities should be notified, as required by the relevant legal requirements, in advance of the impending arrival of cargo transport units (CTUs) and bulk cargoes under fumigation.

2 The notification should at least contain the following information:

.1 Cargo or the material fumigated;

.2 Fumigant;

.3 Quantity and concentration of fumigant; and

.4 Date of application of the fumigant.

3 Persons handling fumigated cargoes or other fumigated materials should receive appropriate training relevant to their duties. Such training should at least include the following elements:

.1 Information in relation to fumigants;

.2 Recognition of characteristics of fumigated containers, other CTUs or cargo spaces;

.3 Procedures for emptying fumigated containers and CTUs and for discharging fumigated bulk cargoes;

.4 Use of personal protection equipment; and

.5 Guidance on the evaluation of potential risk during the handling of fumigated cargoes or materials.

4 Fumigation warning signs should be posted or displayed on the fumigated CTUs and outside cargo spaces containing fumigated cargoes or materials on board ships.

5 When a CTU or a cargo space has been sufficiently ventilated, a clearance certificate should be issued, by a responsible person, for the purpose of documenting that the CTU or the cargo space is safe for entry.

6 Opening of CTUs and bulk cargoes under fumigation should be done by a skilled person holding appropriate documentation issued by the national or local regulatory authorities.

7 Port areas used for fumigation purposes should be clearly identified and fenced. Fumigation warning signs should be displayed as required by the relevant legal requirements.

8 Fumigation activities should be carried out away from public or other work areas as required by the relevant legal requirements.

9 A "fumigator-in-charge" should be designated by the fumigation company, government agency or appropriate authority.

* * *

APPENDIX 1

GLOSSARY OF TERMINOLOGY OF RELEVANCE TO THE HANDLING OF DANGEROUS CARGOES

A

Absorbent
Any material or substance capable to accept into its inner structure another substance.

Acids
One of a large class of chemical substances whose water solutions have one or more of the following properties:

- sour taste;
- ability to make litmus dye turn to red;
- ability to react with and dissolve certain metals to form salts; and
- ability to react with bases or alkalis to form salts.

All acids contain hydrogen. In water, ionization (splitting of the molecule) occurs. Acids are referred to as **strong** or **weak** according to the concentration of hydrogen ion that results from ionization.

Adhesive
Any substance, inorganic or organic, natural or synthetic, that is capable of bonding other substances together by surface attachment.

Alcohol
A class of hydroxyl containing organic compounds. They have a generic formula $C_nH_{2n+1}OH$ (for saturated hydrocarbons), where OH is a hydroxyl group. There are also alcohols for unsaturated hydrocarbons. Alcohols in general are colourless liquids with a wide range of boiling points. Alcohols from methyl to butyl are mobile liquids. Those from C_5 to C_{11} are oily liquids; above C_{12} they are usually solids. The most toxic members of the class are methyl alcohol and allyl alcohol.

Alkaline earth metals
These are calcium, barium, strontium and radium (group II A of the Periodic Table).

Alpha emitter
Radioactive substance (material) or article, which contains radioactive material that spontaneously emits alpha particles (helium nucleus). Alpha particle has atomic mass 4 and the positive charge 2.

Aliphatic azo compounds
Any of a group of organic compounds which have the structure (-C-N=N-C-). Electrons involved in such kinds of bonds have complicated orbits, and are extremely sensitive to additional input of external energy, which makes them capable of breaking the existing bonds. The breaking of the bonds affects the whole molecule which undergoes spontaneous decomposition.

Aliphatic hydrocarbons
One of the major groups of organic compounds characterized by straight-chain arrangements of the constituent carbon atoms.

Anhydrous
Descriptive of an inorganic compound that does not contain water either adsorbed on its surface or combined as water of crystallization.

Aromatic compounds
A major group of unsaturated cyclic hydrocarbons containing one or more rings. Example: benzene group (1 ring), naphthalene group (2 rings) and anthracene group (3 rings).

Aromatic sulphohydrazides
Organic compounds which have in their molecules aromatic radicals bonded with groups with the structure ($-SO_2-NH-NH_2$). Electrons involved in such kinds of bonds have notably complicated orbits, and are extremely sensitive to additional input of external energy, which makes them capable of breaking the existing bonds. The breaking of the bonds affects the whole molecule, which undergoes spontaneous decomposition.

Azide
Any of a group of compounds having the characteristic formula $R(N_3)_x$. R may be almost any metal atom, a hydrogen atom, a halogen atom, the ammonium radical, certain inorganic complexes and organic radical. The azide group has a chain structure N=N=N. Electrons involved in such kinds of bonds have complicated orbits, and are extremely sensitive to additional input of external energy, which makes them capable of breaking the existing bonds. The breaking of the bonds affects the whole molecule which undergoes spontaneous decomposition. All the heavy metal azides, hydrogen azide and most the light metal azides are explosives. Many of the organic azides are explosives.

B

Beta emitter
Radioactive substance (material) or article, which contains radioactive material that spontaneously emits beta particles. Beta particle is a negatively charged particle identical with an electron emitted from a radioactive atomic nucleus. Beta rays (streams of these particles) may cause skin burns and do harm if they enter the body.

C

Catalyst
Any substance of which a fractionally small percentage strongly affects the rate of a chemical reaction.

Cellulose
A natural carbohydrate high polymer consisting of anhydroglucose units joined by an oxygen linkage to form long molecular chains that are essentially linear. Cellulose is a colourless solid, insoluble in water and organic solvents.

cis-, trans-
Prefixes used to describe the structure of geometrical isomers of organic compounds.

Condensation
The change of state of a substance from the vapour to the liquid or solid form.

D

Decomposition
A fundamental type of chemical change. In decomposition, one substance breaks down into two or more simpler substances.

Decontamination (radioactive)
Removal of radioactive poisons from equipment, receptacle, clothing, skin, etc.

Deflagration
A mode of explosion constituting the very rapid autocombustion of particles of explosive as a surface phenomenon. Initiated by contact of a flame or spark, but may be caused by impact or friction.

Detonation
The extremely rapid, self-propagating decomposition of an explosive accompanied by a high-pressure and high-temperature wave that moves at from 1,000 to 9,000 metres per second. Detonation may be initiated by mechanical impact, friction or heat.

Diazonium salts
Compounds which have a structure ($-CN_{2+}Z^-$), where Z^- is a radical with the negative charge. Electrons involved in such kinds of bonds have complicated orbits, and are extremely sensitive to additional input of external energy, which makes them capable of breaking the existing bonds. The breaking of the bonds affect the whole molecule, which undergoes spontaneous decomposition.

Diluent
An ingredient used to reduce the concentration of an active material to achieve a desirable and beneficial effect.

Distillation
A separation process in which a liquid is converted to vapour and the vapour then condensed to a liquid. This condensed liquid is called the distillate. The usual purpose of distillation is purification.

E

Ether
An organic compound in which an oxygen atom is interposed between two carbon atoms of organic radicals in the molecular structure.

Exothermic
A process or chemical reaction which is accompanied by evolution of heat.

Extraction
A process when some components are removed from, e.g., a liquid phase mixture.

F

Fertilizer
A substance or mixture that contains one or more of the primary plant nutrients and sometimes also secondary nutrients or their traces. The primary nutrients are nitrogen, phosphorus and potassium. Secondary nutrients are calcium, magnesium and sulphur.

Fish-meal
Ground dried fish as fertilizer or animal feed. Hazard: strong tendency to spontaneous heating.

Fumigant
A toxic agent in vapour form that destroys rodents, insects and infectious organisms. The process of applications of such agent is called "fumigation".

G

Gamma rays
Electromagnetic radiation of extremely short wavelength and intensively high energy. Gamma rays originate in the atomic nucleus.

H

Halogen
One of the chemically related elements, fluorine, chlorine, bromine, iodine and astatine.

Halogenated hydrocarbons
A hydrocarbon in which one or more atoms of hydrogen is replaced by a halogen or halogens.

Heavy metal

(1) Metal of relative density 5 and over.
(2) A metal of atomic weight greater than sodium (22.9) that forms soaps on reaction with fatty acids, e.g., aluminium, lead, cobalt.

Heavy metal soaps (loosely called metallic soaps) are those formed by metals heavier than sodium (aluminium, calcium, cobalt, lead, and zinc). These soaps are not water-soluble; specific types are used in lubricating greases, gel thickeners, and in paints as driers and flatting agents.

Hydrocarbon gas
A gas composed entirely of hydrocarbons.

Hydrocarbons
Organic compounds consisting exclusively of the elements carbon and hydrogen.

Hydrocarbons, halogenated
Hydrocarbons in which one or more hydrogen atoms have been replaced by fluorine (F), chlorine (Cl), bromine (Br) or iodine (I).

Hydroxides
A large group of compounds consisting of ions of metal or non-metal and ions of oxygen and hydrogen.

I

Inert
A term used in chemistry to indicate complete chemical inactivity of an element or compound. Examples are:

- inert gaseous elements; and
- carbon dioxide is an inert gaseous compound.

Inert gas
(1) Helium, neon, argon, krypton, xenon and radon are inert gases, so called noble gases. Krypton, xenon and radon have radioactive isotopes and nuclides.

(2) In respect of oil tankers, this is a gas or a mixture of gases, such as flue gas, containing insufficient oxygen to support the combustion of hydrocarbons.

Inerting
In respect of oil tankers, this is an introduction of inert gas into a tank with the object of attaining the inert conditions.

Inhibitor
A compound that retards or stops an undesired chemical reaction, such as corrosion, oxidation or polymerization.

Inorganic acids
These are mineral acids: sulphuric, nitric, hydrochloric, phosphoric. Hazard: all mineral acids are highly irritating and corrosive to living tissues.

Inorganic compound
Any chemical compound that does not contain the element carbon (C) with the exception of carbon dioxide, and compounds containing a carbonate radical ($-CO_3$), e.g., calcium carbonate.

Isomer
A molecule having the same number and kind of atoms as another molecule, but differing from it in respect to atomic arrangement and configuration.

Isotope
One two or more forms or species of an element that have the same atomic number, i.e. the same position in the Periodic Table, but different atomic masses. The difference in mass is due to the presence of one or more extra neutrons in the nucleus.

K

Ketone
A class of liquid organic compounds in which the carbonyl group, C=O, is attached to two carbon atoms. The electronic bonds in the carbonyl group, C=O, are quite weak. Ketones are used primarily as solvents.

L

LC_{50}
It means a median lethal dose and characterizes toxicity. It is the statistically derived single dose of a substance which causes death in one half of the animals tested in accordance with the appropriate testing criteria.

M

meta-(m-)*, see *ortho-

Mineral oil
Any liquid product of petroleum within the viscosity range of products commonly called oils.

N

n-
Abbreviation for *normal*. If hydrocarbon molecules are structured as a straight chain of carbon atoms, it is indicated by the abbreviation *n*-.

Nitrates
These are salts of the nitric acid (HNO_3). Uses of nitrates are: manufacture of ammonium nitrate for fertilizer and explosives; organic synthesis (dyes, drugs, explosives, cellulose nitrate, nitrate salts); metallurgy, photoengraving; etching steel; ore flotation; medicine.

Nitrocellulose
Synonyms: cellulose nitrate; nitrocotton; guncotton; pyroxylin. Formula approximately $C_6H_7O_2(ONO_2)_3$. Contains from 10 to 14% nitrogen. Derivation: treatment of cellulose with mixture of nitric and sulphuric acids. Hazard: highly flammable; dangerous fire and explosion risk.

N-nitroso compounds
Compounds which have quite unstable, so called, N-nitroso group in the structure (-N-N=O). Electrons involved in such kinds of bonds have complicated orbits, and are extremely sensitive to additional input of external energy, which makes them capable of breaking the existing bonds. The breaking of the bonds affects the whole molecule, which undergoes spontaneous decomposition.

Nuclide
This is a particular species of atom, characterized by the mass, the charge (number of protons), and the energy content of its nucleus. A radionuclide is a radioactive nuclide.

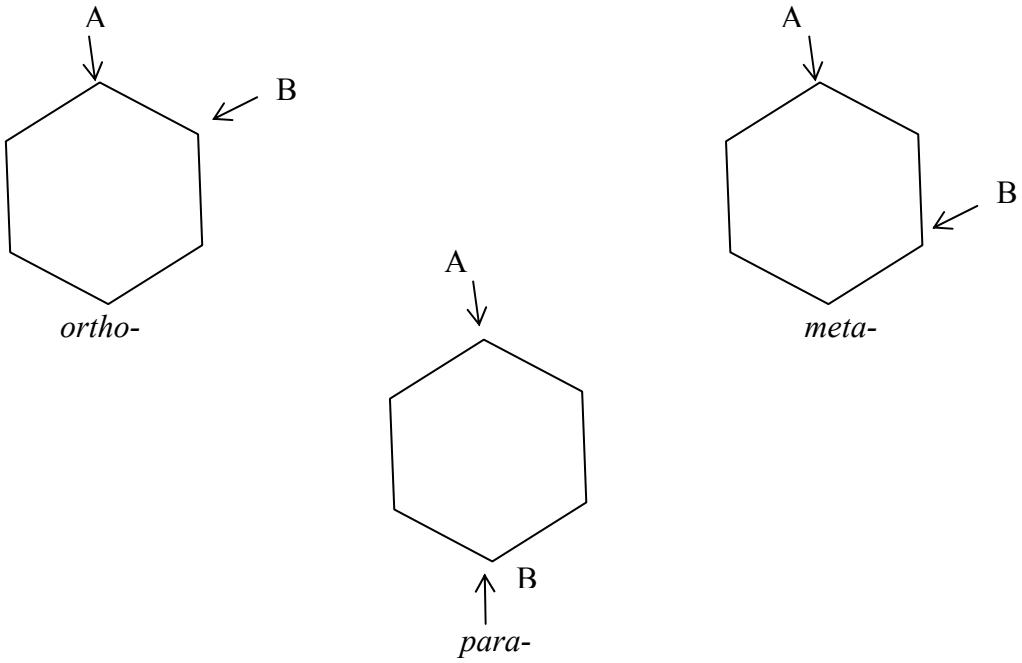
O

Organic acids
Organic compound which contains one or more COOH-group (radical).

Organometallic compound (substance)
A compound comprised of a metal attached directly to the carbon.

ortho- (o-)
A prefix meaning "straight ahead"; *meta-* means "beyond"; *para-* means "opposite". These prefixes are used in organic chemistry in naming disubstitution products derived from benzene in which the substituent atoms or radicals are located in certain definite positions on the benzene ring.

Illustration: A and B are different radicals



Oxygen depleted atmosphere
The oxygen content in the atmosphere is 19% or less.

Oxygen enriched atmosphere
The oxygen content in the atmosphere is 23% or more.

P

Pasty substances
Substances of semisolid consistency and adhesive properties, to some extent.

para (p-)*, see *ortho-

Peroxide
Any compound containing a bivalent O-O group where one of the oxygen atoms is very loosely bound in the molecule and has a tendency to react with some other substances or form oxygen as a gas (O_2). Peroxides are very unstable and may undergo decomposition even at low ambient temperature.

Illustration of the structure:

Hydrogen peroxide	H-O-O-H
Organic peroxide	R-O-O-R, where R symbolize an organic radical.

Pesticide
Any substance, organic or inorganic, used to destroy or inhibit the action of plant or animal pests.

Polymerization
A chemical reaction in which two or more relatively simple molecules (monomers) combine to form a chainlike macromolecule, or polymer.

Pyrophoric
Descriptive of any substance that ignites spontaneously in air.

R

Radioactivity
Spontaneous nuclear transformation. The energy of the process is emitted in the form of alpha (α), beta (β) or gamma (γ) rays.

Refrigerant gas
A substance which, by undergoing a change of phase (e.g., liquid to vapour), lowers the temperature of its environment.

S

Salts
Compounds formed when the hydrogen of an acid is replaced by a metal or its equivalent (e.g., an NH_4^+ radical).

sec-
Abbreviation for *secondary*, as applied to names of organic compounds.

Stowage factor
The stowage factor of bulk cargo is the figure which expresses the number of cubic metres which one tonne of material will occupy.

Strong acid, see Acids

sym-
Abbreviation for symmetrical. A prefix denoting the structure of organic compounds.

T

tert-
Abbreviation for tertiary. Can be considered as a trisubstituted methyl radical, $R_1R_2R_3C$-, in which the central carbon is attached to three other carbons.

Threshold limit value (TLV)
The time-weighted average concentration of a substance to which employees may be repeatedly exposed, for a normal 8-hour workday or 40-hours workweek, day after day, without adverse effect.

trans- **(see *cis-*)**

U

Ullage
Amount by which the full capacity of a receptacle exceeds the volume of the contents.

uns-
Abbreviation for *unsymmetrical*. A prefix denoting the structure of organic compounds.

V

Viscosity
The internal resistance to flow exhibited by a fluid. Water is the primary viscosity standard with an accepted viscosity at 20ºC of 0.01002 poise.

W

Weak acid, see acids

Work permit
A document issued by a responsible person permitting specific work to be done during a specific period in a defined area.

APPENDIX 2

SELECTED BIBLIOGRAPHY LIST OF INTERNATIONALLY RECOGNIZED CODES AND GUIDES RELEVANT TO THE TRANSPORT AND HANDLING OF DANGEROUS CARGOES IN PORT AREAS

[Items in italics not found in on-line catalogues/lists]

IAEA	Regulations for the Safe Transport of Radioactive Materials – 2005
ICHCA	Safety Panel Briefing Pamphlet No.6 – Guidance on the Preparation of Emergency Plans – 1994
ICS	Ship/Shore Safety Checklist for Bulk Carriers – 2000 Tanker Safety Guide (Chemicals) – Third edition, 2002 Tanker Safety Guide (Liquefied Gas) – Second edition, 1995
ICS/OCIMF	Ship-to-Ship Transfer Guide (Liquefied Gases) – Second edition, 1995 Prevention of Oil Spillages through Cargo Pump-room Sea Valves – Second edition, 1991 Ship-to-Ship Transfer Guide (Petroleum) – Fourth edition, 2005
ICS/OCIMF/IAPH	International Safety Guide for Oil Tankers and Terminals (ISGOTT) – Fifth edition, 2006
ICS/OCIMF/SIGTTO	Guide to Contingency Planning for the Gas Carrier Alongside and Within Port Limits – Second edition, 1999
ILO	Code of Practice: Safety and Health in Ports – 2005
IMO/ILO	Code of Practice: Security in Ports – 2004
OCIMF	Effective Mooring – Second edition, 2005 Vessel Inspection Questionnaire for Oil Tankers, Combination Carriers, Shuttle Tankers, Chemical Carriers and Gas Carriers, Barges, Towing Vessels Utilized for Handling Barges and Vessels carrying Packaged Cargoes (VIQ) – Third edition, 2005 Harmonized Vessel Particulars Questionnaire (VPQ) Marine Terminal Baseline Criteria and Assessment Questionnaire – First edition, 2004 Mooring Equipment Guidelines – Second edition, 1997 Recommendations for Equipment Employed in the Mooring of Ships at Single Point Moorings – Third edition, 1993 Recommendations for Oil Tanker Manifolds and Associated Equipment – Fourth edition, 1991 Recommendations for Manifolds for Refrigerated Liquefied Gas Carriers for Cargoes from 0ºC to minus 104ºC – Second edition, 1987 Recommendations for Manifolds for Refrigerated Liquefied Natural Gas Carriers (LNG) – Second edition, 1994
OCIMF/SIGTTO	Inspection Guidelines for Ships Carrying Liquefied Gases in Bulk – Second edition, 1998
OECD	*Guiding Principles for Chemical Accident Prevention, Preparedness and Response – Second edition, 2003* Guidance concerning Chemical Safety in Port Areas (Environment Monograph No.118) – 1996
PIANC	*Dangerous Goods in Ports: Recommendations for port designers and port operators*
SIGTTO	Guidelines for Hazard Analysis – 1992 Safe Havens for Disabled Gas Carriers – 2003 Liquefied Gas Handling Principles on Ships and in Terminals – Third edition, 2000 Guide to Contingency Planning for Marine Terminals Handling Liquefied Gases in Bulk – First edition, 2001
UNEP	*APELL: for Port Areas: Preparedness and Response to Chemical Accidents in Ports*
WCO	*"High Level Guidelines for Co-operative Arrangements Between Members and Private Industry to Increase Supply Chain Security and Facilitate the Flow of International Trade".*

RELEVANT IMO INSTRUMENTS AND GUIDELINES

- International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended, and earlier SOLAS Conventions where applicable;
- Code of Safe Practice for Solid Bulk Cargoes (BC Code);
- International Convention for the Prevention of Pollution from Ships, (MARPOL 73/78), as amended;
- International Maritime Dangerous Goods (IMDG) Code and the Supplement to it (includes EmS Guide, Medical First Aid Guide (MFAG), Reporting Procedures, IMO/ILO/UN ECE Guidelines for Packing of Cargo Transport Units (CTUs), International Code for the Safe Carriage of Packaged Irradiated Nuclear Fuel, Plutonium and High-Level Radioactive Wastes on board Ships (INF Code), Recommendations on the Safe Use of Pesticides in Ships and Resolutions and Circulars referred to in the IMDG Code and the Supplement);
- International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code) and earlier Code (BCH Code) where applicable;
- International Code for the Construction and Equipment of Ships Carrying Liquefied Gases in Bulk (IGC Code) and earlier Codes, the Gas Carrier Code and the Code for Existing Ships Carrying Liquefied Gases in Bulk, where applicable;
- Manual on Oil Pollution, sections I to VI;
- Manual on Chemical Pollution, sections 1 and 2;
- Comprehensive Manual on Port Reception Facilities;
- International Convention on Oil Pollution, Preparedness, Response and Co-operation (OPRC), 1990;
- International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea, 1996 (HNS Convention)
- Inert Gas Systems;
- Crude Oil Washing Systems;
- Facilities in Ports for the Reception of Oily Wastes;
- Graphical Symbols for Fire Control Plans;
- International Convention for Safe Containers (CSC), 1972, as amended;
- Code of Safety for Nuclear Merchant Ships;
- Safety Recommendations on the Use of Ports by Nuclear Merchant Ships;
- Code for Safe Practice for Cargo Stowage and Securing;
- International Code for the Safe Carriage of Grain in Bulk (International Grain Code); and
- International Ship and Port Facility Security Code (ISPS Code).

THE LATEST EDITION OR AMENDMENTS OF PUBLICATIONS
SHOULD BE CONSULTED IN ALL CASES