



SUB-COMMITTEE ON DANGEROUS  
GOODS, SOLID CARGOES AND  
CONTAINERS  
9th session  
Agenda item 15

DSC 9/15  
11 October 2004  
Original: ENGLISH

## REPORT TO THE MARITIME SAFETY COMMITTEE

### Summary of decisions

#### Table of contents

Agenda item	Paragraph Nos.	Page Nos.
1 GENERAL	1.1-1.7	4
2 DECISIONS OF OTHER IMO BODIES	2.1-2.5	7
3 AMENDMENTS TO THE IMDG CODE AND SUPPLEMENTS, INCLUDING HARMONIZATION OF THE IMDG CODE WITH THE UN RECOMMENDATIONS ON THE TRANSPORT OF DANGEROUS GOODS	3.1-3.36	8
4 REVIEW OF THE BC CODE, INCLUDING EVALUATION OF PROPERTIES OF SOLID BULK CARGOES	4.1-4.12	14
5 CARGO SECURING MANUAL	5.1-5.3	18
6 CASUALTY AND INCIDENT REPORTS AND ANALYSIS	6.1-6.9	18
7 DEVELOPMENT OF A MANUAL ON LOADING AND UNLOADING OF SOLID BULK CARGOES FOR TERMINAL REPRESENTATIVES	7.1-7.5	19
8 GUIDANCE ON SERIOUS STRUCTURAL DEFICIENCIES IN CONTAINERS	8.1-8.3	21
9 MEASURES TO ENHANCE MARITIME SECURITY	9.1-9.5	21
10 DOCUMENT OF COMPLIANCE RQUIRED BY SOLAS REGULATION II-2/19	10.1-10.2	23
11 AMENDMENTS TO THE CSS CODE	11.1-11.2	24

For reasons of economy, this document is printed in a limited number. Delegates are kindly asked to bring their copies to meetings and not to request additional copies.

<b>Agenda item</b>	<b>Paragraph Nos.</b>	<b>Page Nos.</b>
12 WORK PROGRAMME AND AGENDA FOR DSC 10	12.1-12.7	25
13 ELECTION OF CHAIRMAN AND VICE-CHAIRMAN FOR 2005	13.1	26
14 ANY OTHER BUSINESS	14.1-14.5	26
15 ACTION REQUESTED OF THE COMMITTEES	15.1-15.3	27

### LIST OF ANNEXES

ANNEX 1	ENVISAGED SEQUENCE OF EVENTS LEADING TO THE MANDATORY APPLICATION OF THE BC COE
ANNEX 2	DRAFT MSC CIRCULAR ON LISTS OF SOLID BULK CARGOES FOR WHICH A FIXED GAS FIRE-EXTINGUISHING SYSTEM MAY BE EXEMPTED OR FOR WHICH A FIXED GAS FIRE-EXTINGUISHING SYSTEM IS INEFFECTIVE
ANNEX 3	DRAFT MSC RESOLUTION ON ADOPTION OF THE CODE OF SAFE PRACTICE FOR SOLID BULK CARGOES, 2004
ANNEX 4	DRAFT MSC CIRCULAR ON QUESTIONNAIRE ON INSPECTIONS OF CONTAINERS/VEHICLES CARRYING PACKAGED DANGEROUS GOODS
ANNEX 5	DRAFT MSC CIRCULAR ON MANUAL ON LOADING AND UNLOADING OF SOLID BULK CARGOES FOR TERMINAL REPRESENTATIVES
ANNEX 6	DRAFT CSC CIRCULAR ON GUIDANCE ON SERIOUS STRUCTURAL DEFICIENCIES IN CONTAINERS
ANNEX 7	DRAFT REVISED RECOMMENDATIONS ON THE SAFE TRANSPORT OF DANGEROUS CARGOES AND RELATED ACTIVITIES IN PORT AREAS
ANNEX 8	DRAFT MSC CIRCULAR ON ISSUING AND RENEWAL OF DOCUMENT OF COMPLIANCE WITH THE SPECIAL REQUIREMENTS APPLICABLE TO SHIPS CARRYING DANGEROUS GOODS

ANNEX 9	DRAFT TERMS OF REFERENCE FOR THE SUB-COMMITTEE
ANNEX 10	PROPOSED REVISED WORK PROGRAMME OF THE SUB-COMMITTEE AND PROVISIONAL AGENDA FOR THE TENTH SESSION OF THE SUB-COMMITTEE
ANNEX 11	STATEMENT BY THE DELEGATION OF THE NETHERLANDS
ANNEX 12	STATEMENT BY THE DELEGATION OF THE MARSHALL ISLANDS
ANNEX 13	STATEMENT BY THE DELEGATION OF THE ISLAMIC REPUBLIC OF IRAN

## 1 INTRODUCTION - ADOPTION OF THE AGENDA

### General

1.1 The Sub-Committee on Dangerous Goods, Solid Cargoes and Containers (DSC) held its ninth session from 27 September to 1 October 2004 under the chairmanship of Mrs. Olga Pestel Lefèvre (France). The Vice-Chairman, Mr. Juan P. Heusser (Chile), was also present.

1.2 The session was attended by delegations from the following Member Governments:

ALGERIA	LATVIA
ARGENTINA	LEBANON
AUSTRALIA	LIBERIA
BAHAMAS	MARSHALL ISLANDS
BANGLADESH	MEXICO
BELGIUM	MOROCCO
BRAZIL	NETHERLANDS
CANADA	NIGERIA
CHILE	NORWAY
CHINA	PANAMA
CÔTE D'IVOIRE	PERU
CYPRUS	PHILIPPINES
DEMOCRATIC PEOPLE'S	POLAND
REPUBLIC OF KOREA	REPUBLIC OF KOREA
DEMOCRATIC REPUBLIC OF	ROMANIA
THE CONGO	RUSSIAN FEDERATION
DENMARK	SAUDI ARABIA
ECUADOR	SPAIN
EGYPT	SWEDEN
ESTONIA	SWITZERLAND
FINLAND	THAILAND
FRANCE	TURKEY
GERMANY	TUVALU
GREECE	UKRAINE
INDONESIA	UNITED KINGDOM
IRAN (ISLAMIC REPUBLIC OF)	UNITED STATES
ISRAEL	URUGUAY
ITALY	VENEZUELA
JAPAN	

and IMO's Associate Member:

HONG KONG, CHINA

1.3 The session was also attended by observers from the following intergovernmental organizations:

EUROPEAN COMMISSION (EC)  
MARITIME ORGANIZATION FOR WEST AND CENTRAL AFRICA (MOWCA)

and by observers from the following non-governmental organizations in consultative status:

INTERNATIONAL CHAMBER OF SHIPPING (ICS)  
INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)  
INTERNATIONAL CONFEDERATION OF FREE TRADE UNIONS (ICFTU)  
INTERNATIONAL RADIO MARITIME COMMITTEE (CIRM)  
INTERNATIONAL ASSOCIATION OF PORTS AND HARBORS (IAPH)  
BIMCO  
INTERNATIONAL ASSOCIATION OF CLASSIFICATION SOCIETIES (IACS)  
ICHCA INTERNATIONAL LIMITED  
EUROPEAN CHEMICAL INDUSTRY COUNCIL (CEFIC)  
OIL COMPANIES INTERNATIONAL MARINE FORUM (OCIMF)  
INSTITUTE OF INTERNATIONAL CONTAINER LESSORS (IICL)  
INTERNATIONAL FEDERATION OF SHIPMASTERS' ASSOCIATIONS (IFSMA)  
INTERNATIONAL ROAD TRANSPORT UNION (IRU)  
DANGEROUS GOODS ADVISORY COUNCIL (DGAC)  
INTERNATIONAL ASSOCIATION OF DRY CARGO SHIPOWNERS  
(INTERCARGO)  
WORLD WIDE FUND FOR NATURE (WWF)  
THE INTERNATIONAL MARINE CONTRACTORS ASSOCIATION (IMCA)  
WORLD NUCLEAR TRANSPORT INSTITUTE (WNTI)  
INTERNATIONAL BULK TERMINALS ASSOCIATION (IBTA)  
INTERNATIONAL VESSEL OPERATORS HAZARDOUS MATERIALS  
ASSOCIATION, INC. (VOHMA)

### **Secretary-General's opening address**

1.4 After welcoming the participants, the Secretary-General referred to the terrorist atrocities committed in Beslan, Russian Federation and Jakarta, Indonesia and emphasized that, when confronted with such atrocities, we should resolve to strengthen our determination to work harder than ever before to build a resilient defence to protect ourselves and the shipping industry.

In appreciating the Sub-Committee's contribution to maritime security and, in particular, the inclusion of a new chapter on security provisions in the amendments to the IMDG Code scheduled to enter into force on 1 January 2006, the Secretary-General noted that inclusion of the new chapter on security would complement the existing provisions of the ISPS Code and encouraged Member Governments to consider early compliance with these new provisions.

He then recognized the importance of the ship/shore interface in all safety- and security-related matters, particularly the importance of safe transport of dangerous cargoes and ancillary activities in port areas. He observed that the revision of the recommendations in MSC/Circ.675 would ensure harmonization of the rules within port areas and ships and contribute to smooth and efficient operations relating to dangerous goods.

Noting with satisfaction the smooth adoption of the 2004 amendments to the IMDG Code at MSC 78, the Secretary-General expressed his appreciation of the thorough and effective work of the Sub-Committee and its E&T group which progressed all the relevant issues in a productive manner.

On the matter of issues related to the delay and denials of shipments of class 7 radioactive materials, particularly Cobalt-60, referring to the request of FAL 31 to the Sub-Committee to consider confirming that shipments of consignments of Cobalt-60 should not be denied on grounds of safety, the Secretary-General expressed the view that, while considering the request

of the FAL Committee, the Sub-Committee may wish to look deeper into the matter and confirm whether, when all relevant provisions of IMO and IAEA are complied with, it will be safe not only to transport Cobalt-60 but all class 7 radioactive materials by sea.

Turning to the review of the BC Code, the Secretary-General recalled the relevant decisions of MSC 78 on making the BC Code mandatory, in whole or in part, and the preparation of any necessary amendments to SOLAS chapters VI and VII. He felt confident that lessons learnt from the successful mandatory application of the IMDG Code would facilitate responses to any issues which arose during the consideration of matters related to the BC Code and emphasized that enhanced standards and uniform global implementation through a mandatory BC Code and a revised SOLAS chapter XII would be in the interests of maritime safety and should be welcomed by all who have the safety of those who serve on bulk carriers at heart.

The Secretary-General noted with satisfaction the progress made by the correspondence group on the Manual on loading and unloading of solid bulk cargoes for terminal representatives which, once finalized, would be an important adjunct to the BLU Code as one of a number of measures to enhance operational and structural safety of bulk carriers through the provision of detailed guidance to terminal representatives and others involved in the handling of solid bulk cargoes.

On the matter of guidance on detecting serious structural deficiencies in containers, the Secretary-General appreciated the results of the correspondence group which would provide authorized officers with information and guidance they needed in order to assess the integrity of structurally sensitive components of containers and help them to decide whether a container is safe to continue in transport or whether it should be stopped until remedial action has been taken.

### **Chairman's remarks**

1.5 The Chairman, in thanking the Secretary-General, stated that the Sub-Committee would give his words of encouragement, as well as the advice given and requests made, every consideration. On behalf of the Sub-Committee, she expressed sympathy and condolences to the families and friends of those who had lost their loved ones in the terrorist atrocities committed in Beslan, Russian Federation and Jakarta, Indonesia and in other parts of the world.

### **Adoption of the agenda and related matters**

Documents: DSC 9/1/Rev.1 (Secretariat); DSC 9/1/1 (Secretariat)

1.6 The Sub-Committee adopted the agenda (DSC 9/1/Rev.1) and a provisional timetable for guidance during the session (DSC 9/1/1, annex). The agenda, as adopted, with a list of documents considered under each agenda item, are set out in document DSC 9/INF.6.

1.7 The Sub-Committee's decisions on the establishment of working and drafting groups are reflected under sections of this report covering corresponding agenda items.

## **2 DECISIONS OF OTHER IMO BODIES**

Documents: DSC 9/2 (Secretariat); DSC 9/2/1 (Secretariat); DSC 9/2/2 (Secretariat); DSC 9/2/3 (Secretariat); DSC 9/2/4 (Secretariat); DSC 9/2/5 (Secretariat); DSC 9/2/6 (Canada)

2.1 The Sub-Committee noted the decisions pertaining to its work made by C/ES.22, MEPC 51, LEG 88, MSC 78, C 92, FAL 31 and comments by Canada on the outcome of FAL 31

relating to the denial and delays of shipments of class 7 radioactive material and took them into account in its deliberations when dealing with the relevant agenda items.

### **Request for news media to attend IMO meetings**

2.2 The Sub-Committee noted that C 92, in considering the issue of the news media attendance at IMO meetings:

- .1 approved the Guidelines for media access to meetings of committees and their subsidiary bodies, set out in the annex to document DSC 9/2/4;
- .2 instructed IMO bodies to follow the agreed Guidelines when applying their Rules of Procedure on requests from the news media to attend their meetings; and
- .3 noted that an accreditation system would be established to allow automatic access to IMO meetings to representatives of the specialist maritime media; and requested the Secretary-General, when proceeding with the establishment of such a system, to take into account similar systems applying elsewhere, e.g. in the United Nations.

### **Trial reporting system**

2.3 The Sub-Committee noted that C 92, in considering matters related to the trial reporting system and having noted that MSC 78 had postponed the consideration of the issue of the new reporting procedure due to a lack of time, decided that NAV 50 should also try that procedure and authorized MSC 79, taking into account the views of MEPC 52, to make appropriate decisions on the future of the new procedure for implementation by sub-committees meeting during the first half of 2005; and to report to C 94 seeking endorsement of its action.

2.4 The Sub-Committee noted that the aims of trial reporting system mainly aimed at enabling the established working and drafting groups to devote maximum time to consider technical and specialized matters as instructed by the Sub-Committee.

### **Distribution of IMO documents**

2.5 The Sub-Committee noted that C 92, having considered matters related to the distribution of IMO documents, had decided:

- .1 that the distribution of hard copies of meeting documents to IMO Member States be limited to one copy per delegation, as from 1 July 2004 and, for the time being, subject to some flexibility in recognition of the fact that some Member States may have difficulties in accessing the documents on the IMODOCS website; and
- .2 that non-governmental organizations would not receive meeting documents in hard copy as from 1 July 2004.

### **3 AMENDMENTS TO THE IMDG CODE AND SUPPLEMENTS, INCLUDING HARMONIZATION OF THE IMDG CODE WITH THE UNITED NATIONS RECOMMENDATIONS ON THE TRANSPORT OF DANGEROUS GOODS**

Document: DSC 9/2/3 (Secretariat)

3.1 The Sub-Committee noted that MSC 78 had adopted amendment 32-04 to the IMDG Code by resolution MSC.157(78) and that the Committee had encouraged Contracting Governments to the 1974 SOLAS Convention to apply the aforementioned amendments in whole or in part on a voluntary basis as from 1 January 2005.

#### **CONSIDERATION OF THE REPORT OF THE E&T GROUP**

Document: DSC 9/3 (Report of the E&T Group)

3.2 The Sub-Committee approved, in general, the report of the Editorial and Technical Group on its session, which was held from 29 September to 3 October 2003, and noted the actions taken by that group, as itemized in document DSC 9/3 (paragraphs 18.1 to 18.6).

3.3 The Sub-Committee concurred with the view of the group that section 7.9.3 of the IMDG Code should only contain co-ordinates of the main designated national competent authorities' concerned (DSC 9/3, paragraph 18.7).

3.4 The Sub-Committee, having considered the need to revoke or revise MSC.2/Circ.36 regarding implementation of codes and recommendations adopted by the Assembly (DSC 9/3, paragraph 18.8), agreed that in the light of the mandatory status of the IMDG Code it would be appropriate to revise MSC.2/Circ.36. In this context, the Sub-Committee, noting that the amended section 7.9.3 of the IMDG Code would only contain co-ordinates of the main designated national competent authorities concerned, decided to include additional contact addresses of the offices of the designated national competent authorities and requested the E&T Group to undertake this exercise and prepare a revised MSC circular for consideration at DSC 10.

#### **HARMONIZATION OF THE IMDG CODE WITH THE UN RECOMMENDATIONS ON THE TRANSPORT OF DANGEROUS GOODS**

##### **Dangerous goods in limited quantities**

Document: DSC 9/2/3 (Secretariat)

3.5 The Sub-Committee noted that MSC 78 had concurred with the views of the Sub-Committee that issues related to limited quantities should be considered in the context of facilitating multimodal transport and had further agreed that issues related to the need for identification of, and documentation for, dangerous goods in limited quantities would require detailed consideration in the context of maritime transport. MSC 78 had also agreed that consolidation of dangerous goods in limited quantities could lead to a situation whereby considerable quantities of dangerous goods would be packed in one cargo transport unit and the consequences of such a development would require in-depth study before a firm decision was taken.

Documents: DSC 9/3/11 (United Kingdom); DSC 9/INF.5 (United Kingdom)

3.6 The Sub-Committee, having considered the above submissions by the United Kingdom which informed the Sub-Committee of the developments at the UNSCOE 25 regarding the transport of dangerous goods in limited quantities, excepted quantities and consumer commodities, and noting that improvements at an inter-modal interface level were though desirable, agreed that the existing system, as governed by the relevant provisions of the IMDG Code, was working well and it did not have any shortcomings.

3.7 With regard to the concept of dangerous goods in excepted quantities, the Sub-Committee did not have a firm position on the matter; however, a significant number of delegations opined that, at this stage, there was no need for the inclusion of such a concept in the IMDG Code. Several delegations supported this concept for inclusion in the IMDG Code.

3.8 Considering the concept of dangerous goods as consumer quantities, the Sub-Committee decided that this concept already existed in part 3 of the IMDG Code and it would not be prudent, in the context of maritime mode, to permit any further relaxation.

3.9 The Sub-Committee agreed that in the interest of safety, the requirement for dangerous goods, transported in any quantities, to be documented was extremely important and any relaxation would not be suitable.

3.10 Regarding the labelling and marking of packagings and cargo transport units, containing dangerous goods in any quantities, the Sub-Committee opined that the existing provisions in the IMDG Code were appropriate with regards to the maritime mode and it would not be prudent to permit any relaxations.

3.11 The Sub-Committee, noting that issues relating to the carriage of dangerous goods in limited quantities, excepted quantities and consumer commodities would be further considered by the UNSCOE in the next biennium, invited Member Governments and international organizations to submit proposals on the issue for consideration at DSC 10 so that, if necessary, a firmer position of the Sub-Committee could be forwarded to the UNSCOE.

#### **AMENDMENT 33-06 TO THE IMDG CODE AND SUPPLEMENTS**

##### **Miscellaneous amendments to the IMDG Code**

Document: DSC 9/3/3 (Sweden)

3.12 The Sub-Committee considered the above submission by Sweden which provided a list of water-reactive substances to which, according to the provisions of the EmS Guide (F-G), water should not be used in enclosed cargo spaces, and noting that there was merit in the proposal, invited Sweden to submit a definitive version of the proposal, which should take into account the comments made in the plenary, for consideration at DSC 10. In this context, the Sub-Committee noted the association of this proposal with SOLAS regulation II/2-19 and the possible involvement of the FP Sub-Committee in resolving the issue.

Document: DSC 9/3/9 (France)

3.13 The Sub-Committee, having considered the submission by France (DSC 9/3/9) which proposed to amend paragraph 3.4.4.1 of the IMDG Code to make it possible for dangerous goods

in packing group III transported in limited quantities to be packed in the same outer packaging, agreed with the proposal in principle and requested the E&T Group to consider it with a view to incorporating it in the amendments to the IMDG Code. The Sub-Committee, noting that there might be merit in expanding the proposal beyond its existing limits, invited Member Governments and organizations to submit proposals on the subject for consideration at DSC 10.

Documents: DSC 9/3/2 (CEFIC); DSC 9/3/8 (Germany); DSC 9/3/10 (Republic of Korea); DSC 9/3/12 (Germany); DSC 9/INF.3 (CEFIC)

3.14 The Sub-Committee considered the submissions by CEFIC (DSC 9/3/2 and DSC 9/INF.3), as amended, which proposed to remove the requirement in section 7.2.1.16 of the IMDG Code to segregate certain groups of substances which do not react dangerously when in contact with each other, and agreed with the proposal in principle.

3.15 The Sub-Committee considered the submission by Germany (DSC 9/3/8) which proposed to amend sections 7.4.4 and 7.7.3 of the IMDG Code such as to provide guidance under which conditions flammable liquids, for which temperature control is required for commercial reasons, may be transported in reefer containers not fitted with explosion proof equipment, and agreed with the proposal in principle.

3.16 The Sub-Committee considered the submission by the Republic of Korea (DSC 9/3/10) which proposed that packing group for explosives should appear on dangerous goods transport document in order to avoid user's confusion, and did not agree with the proposal. In this context, the Sub-Committee noted that, by deleting sections 2.4.2.3.3.3 and 2.5.3.3.3 from the IMDG Code, the concern highlighted by the Republic of Korea might be addressed.

3.17 The Sub-Committee considered the submission by Germany (DSC 9/3/12) which proposed to add a remark in the dangerous goods list clarifying the use of tanks, which have been approved in accordance with amendment 29-98 of the IMDG Code, for transport of UN 1040 until 2010, and agreed with the proposal in principle. In this context, the Sub-Committee noted that the development of an appropriate SP or TP might be a solution to the concern highlighted by Germany.

3.18 Following consideration of the above documents, the Sub-Committee requested the E&T Group to consider the aforementioned proposals with a view to incorporating them in amendments to the IMDG Code.

Document: DSC 9/3/4 (Argentina)

3.19 The Sub-Committee considered the above submission by Argentina which proposed to amend gas-specific provision *l* of packing instruction P200 as applied to Ethylene Oxide, noting that the proposal had merit and that the proposal had been accepted by the UNSCOE on the transport of dangerous goods, and, having agreed with the proposal in principle, requested the E&T Group to finalize it, along the lines of that accepted by the UNSCOE for incorporation in amendments to the IMDG Code.

Documents: DSC 9/3/5 (Argentina); DSC 9/3/6 (Argentina); DSC 9/3/7 (Argentina)

3.20 With regard to the proposals made in the above submissions by Argentina, the Sub-Committee agreed that the proposals had merit and, noting that as the proposals had an impact on the multimodal transport of dangerous goods, opined that it would be appropriate if Argentina took appropriate measures for these proposals to be first referred to the

UN Sub-Committee of Experts on the transport of dangerous goods, for consideration as possible amendments to the UN Recommendations on the transport of dangerous goods.

3.21 The Sub-Committee, having noted the proposal outlined in paragraph 4 of document DSC 9/3/7, to amend paragraph 6.5.4.9.5 of the IMDG Code by adding the text “The IBC shall not exhibit any damage liable to affect safety during transport”, was of the view that development of provisions for amendments to the UN Recommendations and to the IMDG Code should be clear, precise and easy to understand, and requested the Secretariat to convey these comments of the Sub-Committee to the UNCOE.

Document: DSC 9/3/13 (Germany)

3.22 The Sub-Committee considered the submission by Germany (DSC 9/3/13) which proposed to amend paragraph 7.1.4.3 of the IMDG Code in such a way that it would provide better protection of the sea against the loss of marine pollutants, and, having shared the concern highlighted, invited Germany to submit a definitive version of the proposal for consideration at DSC 10.

Document: DSC 9/3/14 (Germany)

3.23 Having debated the submission by Germany (DSC 9/3/14) which proposed to improve the wordings of paragraph 7.1.9.3 and section 7.1.13.2 of the IMDG Code, whereby an attempt is made to clarify the status of the term “shaded from radiant heat”, the Sub-Committee decided not to pursue the proposal further.

### **Denial and delays of shipments of class 7 radioactive material**

Documents: DSC 9/2/5 (Secretariat); DSC 9/2/6 (Canada); DSC 9/3/17 (WNTI); DSC 9/3/18 (IAEA)

3.24 The Sub-Committee, having considered the specific requests of FAL 31 (DSC 9/2/5) concerning shipments of Cobalt-60, UN 2916, which emits high-energy gamma rays that are used to eliminate harmful micro-organisms, bacteria and pathogens from a variety of products, and related submissions by Canada, WNTI and IAEA, took decisions as detailed in the ensuing paragraphs.

3.25 The Sub-Committee, after a detailed consideration of the issue, confirmed that all shipments of class 7 radioactive material when in compliance with the relevant provisions of SOLAS chapter VII and of the IMDG Code should not be denied on grounds of safety.

3.26 Having considered the request of FAL 31 that the Sub-Committee might wish to review the existing provisions of the IMDG Code in the light of any recent developments on the matter within the framework of the IAEA or the UN Committee of Experts on the transport of dangerous goods and on the globally harmonized system of classification and labelling of chemicals (UNCOE), the Sub-Committee agreed that, as the IMDG Code is amended every two years and as these amendments take into account the relevant developments which take place at the IAEA and the UNCOE, this particular request of the FAL 31 was adequately addressed.

3.27 The Sub-Committee, took note of the actions requested of the Sub-Committee by IAEA (DSC 9/3/18).

3.28 While on the issue of denial and delays of shipments of class 7 radioactive material, the Sub-Committee was of the view that the reasons for such denial and delays included the involvement of numerous competent authorities, the need for carrier radiation protection programmes when carrying such cargoes, the need to travel through areas which have been declared as nuclear free zones, prohibitions on docking for ships carrying class 7 cargoes, high insurance and thus commercial costs, and public apprehensions. In this context, the Sub-Committee opined that training and awareness programmes among relevant authorities, carriers and public would help in alleviating some of the apprehensions and requested the Organization to take steps towards conducting relevant activities through its technical co-operation programmes. The Secretariat was instructed to inform the TC Committee accordingly.

### **REVIEW OF ANNEX III TO MARPOL 73/78**

Documents: DSC 9/2/1 (Secretariat); DSC 9/2/2 (Secretariat); DSC 9/3/16 (Secretariat)

3.29 The Sub-Committee noted the relevant decisions of LEG 88, MEPC 51 and UNSCOE 25 and took them into account when dealing with this agenda item.

3.30 The Sub-Committee noted, in particular, that MEPC 51 (DSC 9/2/1) had agreed:

- .1 that the criteria adopted by the UNCOE should also be adopted under MARPOL Annex III and reflected in the IMDG Code to define substances as hazardous to the marine environment;
- .2 that until issues associated with making appropriate amendments to the IMDG Code were resolved, it would be inappropriate to make recommendations for the associated amendments to MARPOL Annex III;
- .3 that there would be no need to identify severe marine pollutants once the criteria adopted by the UNCOE have also been adopted in the relevant IMO instruments;
- .4 that there was no role for GESAMP/EHS to act as an advisory body when disagreements arose under self-classification system; and
- .5 to consider consequential amendments to other IMO instruments once the IMDG Code amendments had been finalized.

Documents: DSC 9/3/1 (Germany); DSC 9/3/15 (Germany)

3.31 The Sub-Committee, having considered the above submissions which proposed draft texts of chapters 2.9 and 2.10 of the IMDG Code and a draft revised MARPOL Annex III and, noting in particular, that UNSCOE 25 did not agree to develop a new chapter 2.10 in the UN Recommendations on the transport of dangerous goods, for substances hazardous to the aquatic environment, agreed to:

- .1 merge the text of chapter 2.10 of the IMDG Code with that of chapter 2.9; and
- .2 harmonize the terminology with the UN Recommendations and to use the term "Aquatic pollutant" instead of the term "Marine pollutant", provided that the former is adopted by the UNCOE as an amendment to the UN Recommendations on the transport of dangerous goods.

### **Establishment of a working group**

3.32 The Sub-Committee established a working group under the chairmanship of Mr. T. Hofer (Germany), and instructed the group, taking into account the comments and decisions made in the plenary and documents DSC 8/WP.6, DSC 9/2/1, DSC 9/3/1, DSC 9/3/15 and DSC 9/3/16, to:

- .1 prepare draft amendments to the IMDG Code having regard to the outcome of the UNSCOE (DSC 9/3/1 and DSC 9/3/16);
- .2 prepare draft revised text of Annex III of MARPOL 73/78 (DSC 9/3/15);
- .3 consider the proposal by UNSCOE for re-naming of Marine Pollutants and advise the Sub-Committee accordingly (DSC 9/3/16);
- .4 consider issues relating to existing regulatory listing and self-classification and advise the Sub-Committee accordingly (DSC 9/3/16);
- .5 identify consequential amendments to other IMO instruments based on amendments to the IMDG Code; and
- .6 revise the provisional timetable for the revision of Annex III to MARPOL 73/78 and the IMDG Code (DSC 9/2/1).

### **Report of the working group**

3.33 Having received the report of the working group (DSC 9/WP.4), the Sub-Committee approved the report in general and, in particular (with reference to paragraphs and sections of, and annexes to, document DSC 9/WP.4):

- .1 noted the revised text of chapter 2.9 of the IMDG Code, which might be subject to review based on the amendments to be adopted by the UNSCOE in December 2004, to the UN Recommendations on the transport of dangerous goods (annex 1);
- .2 noted the revised text of several paragraphs of the IMDG Code which might be subject to review based on the amendments, to be adopted by the UNSCOE in December 2004, to the UN Recommendations on the transport of dangerous goods (annex 2);
- .3 noted the view of the group regarding the concept of the identification of Aquatic Pollutants by keeping an indicative list of products, identified as harmful to the aquatic environment as well as allowing self-classification of substances not listed in the Dangerous Goods List or Index of the Code and, having debated the issue, invited Member Governments and international organizations to submit proposals to DSC 10 (section 3);

- .4 noted that not all current marine pollutants may fall within the new classification criteria and that this procedure is in line with the United Nations principle of not changing the classification of current entries when classification criteria are revised (paragraph 3.6);
- .5 noted the view of the group whether to allow or not the transport of substances as aquatic pollutants when there is suspicion that such substances meet the criteria for aquatic pollutants and, having debated the issue, invited Member Governments and international organizations to submit proposals to DSC 10 (paragraph 3.8);
- .6 instructed the Secretariat to inform the relevant outcome of this meeting to the UNSCOE at its December 2004 meeting accordingly; and
- .7 requested the E&T Group to prepare the consequential amendments to other IMDG Code paragraphs and to bring them to the attention of DSC 10.

3.34 The delegation of the Netherlands made a statement, the text of which is reproduced in annex 11.

3.35 The Sub-Committee realizing that there might be different options for revising Annex III of MARPOL 73/78, resulting from amendments to the IMDG Code, and, noting that those options could have legal and policy implications, requested the MEPC and the Legal Committee to consider the issue and guide the Sub-Committee accordingly.

#### **FUTURE SESSIONS OF THE E&T GROUP**

3.36 The Sub-Committee noted that this issue would be dealt with under agenda item 12 (Work programme and agenda for DSC 10).

### **4 REVIEW OF THE BC CODE, INCLUDING EVALUATION OF PROPERTIES OF SOLID BULK CARGOES**

Document: DSC 9/2/3, paragraph 9 (Secretariat)

4.1 The Sub-Committee noted that MSC 78 had concurred with the relevant decisions of the Sub-Committee regarding the revision of the schedules of the draft revised BC Code and noted that, following approval by DSC 8, the Secretariat, as instructed by the Sub-Committee, had issued a DSC circular on Incident involving Ilmenite Clay (DSC/Circ.13).

#### **Report of the working group established at DSC 8**

Documents: DSC 9/4 and Add.1 to 4 (Report of the working group)

4.2 Following consideration of the report of the working group, the Sub-Committee approved it in general and took specific actions as follows:

- .1 concurred with the decision of the working group to include a paragraph in the Foreword of the draft revised BC Code informing the users of the Code that its provisions were intended for safety and not for commercial purposes;

- .2 endorsed the view of the working group and the action taken on the revision of schedules for lead ore, vanadium and white quartz, that the information provided was not sufficient to merit revision of those schedules;
- .3 endorsed the view of the working group to reconsider document DSC 8/4/2 (France) and noted that, based on the relevant decision of DSC 8 (DSC 8/15, paragraph 4.8), DSC/Circ.14 on Compliance with the provisions of the BC Code had been issued. While considering the second issue referenced in document DSC 8/4/2, which requested the Sub-Committee to review the provisions relating to ammonium nitrate based fertilizers in DSC 8/4 and the addenda, the Sub-Committee referred the matter to the working group, established at this session, for detailed consideration and advice to the Sub-Committee; and
- .4 took note of the finalized texts of the draft revised BC Code, which it had agreed to at its earlier sessions (DSC 9/4, paragraph 7, and addenda 1 to 3).

### **Miscellaneous comments on the draft revised BC Code**

Documents: DSC 9/4/2 (Japan); DSC 9/4/3 (Canada and Sweden); DSC 9/4/4 (Italy); DSC 9/4/5 (Italy); DSC 9/4/6 (Italy); DSC 9/4/8 (Japan); DSC 9/4/9 (Canada); DSC 9/4/10 (BIMCO); DSC 9/6/1 (Secretariat); DSC 9/INF.2 (Secretariat)

4.3 The Sub-Committee, having considered the submission by Japan (DSC 9/4/2) which made proposals to facilitate the finalization of the draft revised BC Code, agreed, in principle, with the proposals in paragraph 2.1 and section 4 of the annex to the document and requested the working group to finalize the proposals with the view to incorporating it in the draft revised BC Code. Regarding other proposals in the submission, the Sub-Committee invited the delegation of Japan to submit a definitive version of the same for consideration at DSC 10.

4.4 The Sub-Committee, having considered the submissions by:

- .1 Italy (DSC 9/4/4) which proposed to include a new entry for Chopped Electrical Wires Plastic and Rubber Insulation in Appendix C of the draft revised BC Code;
- .2 Italy (DSC 9/4/5) which proposed to include a new entry for Chopped Tyres in Appendix C of the draft revised BC Code;
- .3 Italy (DSC 9/4/6) which, following accidents involving three ships carrying Zinc Ingots, proposed to include a new entry for Zinc Ingots in Appendix C of the draft revised BC Code;
- .4 Canada (DSC 9/4/9) on how to correctly assess the need for a vessel fitted with a fixed fire extinguishing system for certain types of cargoes and the need to revise MSC/Circ.671 regarding carriage of mineral concentrates and metal sulphide concentrates,

agreed with the proposals in principle and requested the working group to finalize the proposals with a view to incorporating them in the draft revised BC Code.

4.5 The Sub-Committee, having considered the proposals by Canada and Sweden (DSC 9/4/3) and Japan (DSC 9/4/8) regarding the carriage of wood pellets in accordance with the provisions of the BC Code:

- .1 agreed that the entry relating to Woodchips should remain in MSC/Circ.671;
- .2 requested the working group to give advice to the Sub-Committee on the need to retain the entries relating to Wood Pulp Pellets; and
- .3 requested the working group to advise the Sub-Committee on the need to add an entry relating to Wood Pellets in MSC/Circ.671.

4.6 The Sub-Committee considered the submission by BIMCO (DSC 9/4/10) on the need to provide clarification on the classification of seed cake in the BC Code and, having agreed that there was merit in the proposal, decided to refer it to the working group for detailed consideration and advice to the Sub-Committee. The Sub-Committee agreed that, subject to relevant advice from the working group, it might be appropriate for the E&T Group to consider the proposal and advise the Sub-Committee accordingly.

Documents: DSC 9/6/1 (Secretariat); DSC 9/INF.2 (Secretariat)

4.7 The Sub-Committee, having noted that the casualty report of m.v. **Sierksdorf**, although having an impact on the ongoing review of the BC Code, would be considered in detail under agenda item 6 (see also paragraph 6.1), agreed to forward the above documents to the working group for consideration with the view to drafting appropriate amendments to the BC Code.

#### **Mandatory application of the BC Code**

Documents: DSC 9/4/1 (Secretariat); DSC 9/4/7 (Japan); DSC 9/4/11 (Brazil)

4.8 The Sub-Committee noted that MSC 78 had concurred with the view of the Sub-Committee on the feasibility of making the BC Code mandatory and requested the Sub-Committee to prepare a revised text of the BC Code, identifying the mandatory and recommendatory parts of the Code, and draft amendments to the SOLAS Convention to make the Code mandatory.

4.9 Based on the proposal by Japan (DSC 9/4/7) and comments made in plenary, the Sub-Committee finalized the timetable on the sequence of events leading to the mandatory application of the BC Code set out in annex 1, which could be subject to revision depending upon the progress made over the years.

4.10 The Sub-Committee invited Member Governments and international organizations to submit proposals on the subject to DSC 10 and noted that, in the light of relevant decisions of the Committee and until decided otherwise, future work on the mandatory application of the BC Code would include:

- .1 identification of mandatory and recommendatory parts of the BC Code, including consequential amendments; and
- .2 preparation of draft amendments to SOLAS chapters VI and VII on making the BC Code mandatory.

### **Establishment of the Working Group**

4.11 The Sub-Committee established the Working Group on the Review of the BC Code, under the chairmanship of Captain J.D. Troyat (France) and instructed the group, taking into account the comments made and decisions taken in the plenary and relevant documents, to:

- .1 finalize the draft revised BC Code using document DSC 9/4 and the addenda as basic documents (DSC 8/4/2, DSC9/4/2 (paragraph 2.1 and section 4 of the annex), DSC 9/4/3, DSC 9/4/4, DSC 9/4/5, DSC 9/4/6, DSC 9/4/9, DSC 9/4/10, DSC 9/6/1 and DSC 9/INF.2);
- .2 review MSC/Circ.671 (DSC 9/4/3, DSC 9/4/8 and DSC 9/4/9);
- .3 provide clarification on the classification of seed cake in the BC Code (DSC 9/4/10); and
- .4 prepare draft MSC resolution on the adoption of the draft revised BC Code.

### **Report of the working group**

4.12 Having received the report of the working group (DSC 9/WP.2 and Adds.1 to 4), the Sub-Committee approved the report in general and, in particular (with reference to paragraphs of, and annexes to, document DSC 9/WP.2 and Adds.1 to 4):

- .1 endorsed the decision of the group not to introduce, for the time being, Chopped electrical wires plastic and rubber insulation and Chopped tyres as new entries into the draft revised BC Code (paragraphs 3 and 4);
- .2 endorsed the decision of the group on the introduction of Wood Pellets as a new entry into the draft revised BC Code (paragraph 5);
- .3 endorsed the decision of the group not to introduce, for the time being, zinc ingots as a new entry but instead agreed to DSC/Circ.26 on Incidents involving transport of zinc ingots and, having instructed the Secretariat to issue the circular, invited MSC 79 to endorse the issue thereof (paragraphs 6 and annex 1);
- .4 endorsed the recommendation of the group on the inclusion of the Recommendations on safe use of pesticides in ships, as appendix 8 in the draft revised BC Code (paragraph 8);
- .5 endorsed the decision of the group to include MSC/Circ.671, as amended (see .6 below), as appendix 5 of the draft revised BC Code (paragraph 9);
- .6 agreed to the draft MSC circular on Lists of solid bulk cargoes for which a fixed gas fire-extinguishing system may be exempted or for which a fixed gas fire-extinguishing system is ineffective, set out in annex 2, for submission to MSC 79 for approval;

- .7 agreed to the draft revised Code of Safe Practice for Solid Bulk Cargoes, 2004 and associated draft MSC resolution on the adoption of the Code, set out in annex 3, for submission to MSC 79 for adoption (paragraphs 11 and 12 and annexes 2 and 3);
- .8 agreed to DSC/Circ.27 on Explosion in a cargo hold loaded with recycled aluminium and, having instructed the Secretariat to issue the circular, invited MSC 79 to endorse the issue thereof (paragraph 13 and annex 4); and
- .9 reconsider the clarification on the classification of Seed Cake at DSC 10 (paragraph 14).

## **5 CARGO SECURING MANUAL**

### **Regional seminar on safe packing of cargoes in cargo transport units**

Documents: DSC 9/5 and addendum (Secretariat)

5.1 The Sub-Committee noted that a regional seminar on safe packing of cargoes in cargo transport units took place in Tema, Ghana, from 19 to 23 July 2004 and that thirty-one participants from Cameroon, Côte d'Ivoire, Gambia, Ghana, Nigeria, Senegal and Sierra Leone benefited from the seminar. Details of the overall objectives of the seminar, list of lectures delivered and activities carried out, conclusions and the recommended follow-up action are given in DSC 9/5/Add.1.

5.2 The Sub-Committee requested the Secretariat to conduct seminars/workshops, on the subject matter, at national and regional levels and keep the Sub-Committee informed of the progress made.

### **Loss of containers at sea**

Document: DSC 9/5/1 (Friends of the Earth International (FOEI))

5.3 As the observer from FOEI was not present to introduce the submission, the Sub-Committee decided not to consider the proposal.

## **6 CASUALTY AND INCIDENT REPORTS AND ANALYSIS**

### **Incident reports**

Documents: DSC 9/6/1 (Secretariat); DSC 9/ INF.2 (Secretariat)

6.1 Having considered the casualty report of m.v. **Sierksdorf**\* on an explosion in the cargo hold of the ship which blew off the hatch covers, the Sub-Committee agreed to alert Administrations and parties concerned by means of a circular and instructed the Secretariat to issue DSC/Circ.27. The Committee was invited to endorse the issue of the circular.

---

\* Report prepared by the Division for Investigation of Maritime Accidents, Danish Maritime Authority.

6.2 The Sub-Committee invited Member Governments to continue to submit such reports involving dangerous cargoes and urged those Member Governments who had not done so, so far, to consider submitting such reports in the future.

6.3 On the subject of incident reports, the delegation of the Marshall Islands made a statement, the text of which is reproduced in annex 12.

### **Container inspection programmes**

Documents: DSC 9/6 (China); DSC 9/6/2 (Sweden); DSC 9/6/3 (Belgium); DSC 9/6/4 (Netherlands); DSC 9/6/5 (ICHCA International and IAPH); DSC 9/6/6 (Republic of Korea); DSC 9/6/7 (Secretariat)

6.4 The Sub-Committee noted the results of the consolidated report on the container inspection programmes, which was based on the submissions by China, Sweden, Belgium, the Netherlands and the Republic of Korea.

6.5 The Sub-Committee noted that a total of 8,677 cargo transport units were inspected over a period of one year of which 1,792 were found with 3,234 deficiencies, that is 21% of cargo transport units inspected had deficiencies with a deficiency rate of 37.3%.

6.6 The Sub-Committee expressed its appreciation to those Member Governments who had submitted results of container inspection programmes and its concern about the high rate of deficiencies and the lack of adherence to the provisions of the IMDG Code and the CSC especially in the areas of placarding and marking, and documentation.

6.7 The Sub-Committee urged Member Governments, who had not yet carried out container inspection programmes, to do so and submit the relevant information to the Sub-Committee in accordance with MSC/Circ.859.

6.8 On the subject of container inspection programmes, the delegation of the Islamic Republic of Iran made a statement, the text of which is set out in annex 13.

### **Questionnaire on inspections of containers/vehicles carrying packaged dangerous goods**

Document: DSC 9/6/5 (ICHCA International and IAPH)

6.9 The Sub-Committee, based on a joint proposal by ICHCA International and IAPH, agreed to a Questionnaire on inspections of containers/vehicles carrying packaged dangerous goods and an associated draft MSC circular, as set out in annex 4, for submission to MSC 79 for approval.

## **7 DEVELOPMENT OF A MANUAL ON LOADING AND UNLOADING OF SOLID BULK CARGOES FOR TERMINAL REPRESENTATIVES**

### **Draft Manual on loading and unloading of solid bulk cargoes for terminal representatives**

Document: DSC 9/7 (United States)

7.1 The Sub-Committee, having briefly considered the draft Manual on loading and unloading of solid bulk cargoes for terminal representatives, prepared by an intersessional correspondence group, under the co-ordination of the United States (DSC 9/7), referred it to the working group for finalization.

7.2 The Sub-Committee agreed that it would be appropriate to align the definitions in the draft Manual with those in other related IMO instruments.

### **Annotations to the Cargo loading manual**

Document: DSC 9/2/3, paragraph 18 (Secretariat)

7.3 The Sub-Committee, noting that MSC 78, at the request of DE 47, instructed the Sub-Committee to consider whether any restrictions applied under draft SOLAS regulation XII/14 (which will be considered by MSC 79 with a view to adoption) should be annotated in the Cargo loading manual, referred the issue to the working group for detailed consideration and advice to the Sub-Committee. In this context, the Sub-Committee decided that reference to the Cargo loading manual was to the ship's booklet as required by SOLAS regulation VI/7.2.

### **Establishment of a working group**

7.4 The Sub-Committee established a Working Group on Development of a Manual on Loading and Unloading of Solid Bulk Cargoes for Terminal Representatives under the chairmanship of Mr. J. Cotter (United States), and instructed the group, taking into account the comments made during the plenary and documents DSC 9/2/3, paragraph 18; DSC 9/7 and DE 47/25, to:

- .1 finalize the draft Manual on loading and unloading of solid bulk cargoes for terminal representatives;
- .2 prepare an associated draft MSC circular; and
- .3 consider whether any restrictions applied under draft SOLAS regulation XII/14 should be annotated in the ship's booklet as required by SOLAS regulation VI/7.2, and whether any reference to such restrictions is necessary in the BLU Code.

### **Report of the working group**

7.5 Having received the report of the working group (DSC 9/WP.3), the Sub-Committee approved the report in general and, in particular (with reference to paragraphs of, and annexes to, document DSC 9/WP.3):

- .1 agreed to the draft MSC circular on the Manual on loading and unloading of solid bulk cargoes for terminal representatives, set out in annex 5, for submission to MSC 80 for approval (paragraphs 4 and 7 and annexes 1 and 2);
- .2 noted that the group identified some areas within the BLU Code which should be changed and invited Member Governments and international organizations to submit relevant proposals to the Committee in accordance with the Guidelines on the organization and method of work (paragraph 6); and
- .3 agreed that the restrictions under draft SOLAS regulation XII/14 should be annotated in the ship's booklet of relevant ships but should not be referenced to in the BLU Code (paragraphs 8 and 9).

## **8 GUIDANCE ON SERIOUS STRUCTURAL DEFICIENCIES IN CONTAINERS**

Documents: DSC 9/8 (Report of the drafting group); DSC 9/8/1 (Report of the correspondence group)

8.1 The Sub-Committee, noting that the views of the correspondence group differed on the need for a separate reporting procedure through which reports of serious structural deficiencies found in inspections may be collected, collated and disseminated, agreed that, as a matter of priority, the draft Guidance should be finalized and thereafter examination of the possibility of a simple reporting procedure should be continued.

### **Establishment of a drafting group**

8.2 The Sub-Committee established a drafting group on Guidance and serious structural deficiencies in containers under the chairmanship of Captain M. Ahmed (Bangladesh) and instructed the group, taking into account the comments made and decisions taken in plenary and document DSC 9/8/1, to:

- .1 finalize the draft Guidance on serious structural deficiencies in containers, using DSC 9/8/1 as a basic document;
- .2 prepare an associated draft CSC circular; and
- .3 examine the possibility of having a simple reporting programme through which reports of serious structural deficiencies found in inspections may be collected, collated and disseminated.

### **Report of the drafting group**

8.3 Having received the report of the drafting group (DSC 9/WP.6 and Corr.1), the Sub-Committee approved the report in general and, in particular (with reference to paragraphs of, and the annex to, document DSC 9/WP.6 and Corr.1):

- .1 agreed to the draft CSC circular on Guidance on serious structural deficiencies in containers, set out in annex 6, for submission to MSC 80 for approval (paragraph 8 and annex); and
- .2 with regard to reporting procedure on serious structural deficiencies, agreed with the group's view that the most effective way was to amend MSC/Circ.859, at DSC 10, and invited the Committee to extend the target completion date of the item to 2005 (paragraphs 9 to 11).

## **9 MEASURES TO ENHANCE MARITIME SECURITY**

Document: DSC 9/9 (Secretariat)

9.1 The Sub-Committee, having been informed of the decisions of MSC 78 (DSC 9/9) relevant to this agenda item, noted in particular, that the Committee had instructed the various sub-committees, under their existing work programme and agenda item on "Measures to enhance maritime security", to identify the various instruments under their responsibility, which may need to be reviewed and amended so as to include appropriate security-related provisions. In this

respect, the sub-committees should bear in mind the functional requirements of the ISPS Code and, in particular, those relating to access control and handling of cargo. The sub-committees should expand on the need to amend each of the instruments which they will be identifying; to prioritize the work they will be suggesting; and to indicate, bearing in mind their other workload and priorities, the time (number of sessions) needed to amend each of the instruments.

Document: DSC 9/9/1 (United Kingdom)

9.2 Having considered the draft revised Recommendations on the safe transport of dangerous cargoes and related activities in port areas (DSC 9/9/1), prepared by an intersessional correspondence group, the Sub-Committee referred it to the drafting group for finalization. In this context the Sub-Committee agreed that it would not be appropriate to incorporate the definitions referred to in the ISPS Code in the draft revised Recommendations as references to those definitions would suffice.

9.3 The Sub-Committee, having noted that certain parts of the Recommendations have relevance to the work of the BLG Sub-Committee, requested that Sub-Committee to review the relevant parts of the draft revised Recommendations and to provide comments thereon. The Committee was invited to note the above course of action. See also paragraph 9.5.2.

#### **Establishment of a drafting group**

9.4 The Sub-Committee established a drafting group on Measures to enhance maritime security under the chairmanship of Mr. K. Bradley (United Kingdom) and instructed the group, taking into account the comments made and decisions taken in plenary and documents DSC 9/9 and DSC 9/9/1, to:

- .1 finalize the draft revised Recommendations on the safe transport of dangerous cargoes and related activities in port areas, using DSC 9/9/1 as a basic document;
- .2 prepare an associated draft MSC circular;
- .3 identify the various instruments, which may need to be reviewed and amended so as to include appropriate security-related provisions; and
- .4 expand on the need to amend each of the instruments identified in .3 above, prioritize the work suggested and indicate the time (number of sessions) needed to amend each of the instruments.

#### **Report of the drafting group**

9.5 Having received the report of the drafting group (DSC 9/WP.5), the Sub-Committee approved the report in general and, in particular (with reference to paragraphs of, and annexes to, document DSC 9/WP.5):

- .1 agreed to the draft revised Recommendations prepared by the group (paragraphs 4 and 5 and the annex to document DSC 9/9/1 as amended by annex 1 to DSC 9/WP.5), set out in annex 7 and authorized the Secretariat, when preparing the report of the Sub-Committee to which the draft revised Recommendations will be annexed, to review the text of the draft Recommendations from the editorial and stylistic point of view (paragraph 12 and annex 1);

- .2 invited the Committee to refer the draft revised Recommendations, as agreed by the Sub-Committee, to the MEPC and to the BLG and STW Sub-Committees for consideration of those aspects of the Recommendations which fall within the scope of instruments under their respective purview, with a request to refrain, to the extent possible, from making changes to the text of the definitions which are already provided in the draft revised Recommendations; and in this respect, also invited the Committee to designate the DSC Sub-Committee as the co-ordinating Sub-Committee on the development of the draft revised Recommendations (paragraphs 6 to 9);
- .3 agreed with the view of the group that the Sub-Committee would need to review the draft revised Recommendations and in particular section 10 (Solid bulk dangerous cargoes) thereof, when the manual on loading and unloading of solid bulk cargoes for terminal representatives, which is currently under preparation, is completed (paragraph 10);
- .4 agreed with the recommendation of the group relating to the deletion of appendices 2 and 3 of annex 6 to the draft revised Recommendations (paragraph 11);
- .5 authorized the Secretariat to review the text of the Foreword and of the Table of contents of the draft revised Recommendations, once the contributions of the MEPC and the BLG and STW Sub-Committees are available and to prepare appropriate amendments thereto, if necessary, for the consideration of the Sub-Committee (paragraph 13);
- .6 agreed with the view of the group that the MSC circular, under cover of which the draft revised Recommendations will be circulated, should be prepared when the MEPC and the BLG and STW Sub-Committees have completed the consideration of the issues (see also subparagraph .2 above) (paragraph 14);
- .7 invited the Committee to extend the target completion date of this work programme item to 2006; and
- .8 agreed with the conclusions of the group in relation to the instruments which are under the purview of the Sub-Committee and which need to be reviewed and amended so as to include appropriate security-related provisions and instructed the Secretariat to inform MSC 79 accordingly (paragraphs 16 to 24 and annex 2).

## **10 DOCUMENT OF COMPLIANCE REQUIRED BY SOLAS REGULATION II-2/19**

Document: DSC 9/10 (France)

10.1 The Sub-Committee, having noted the proposal by France (DSC 9/10) that there was a need to resolve certain difficulties which currently arise in connection with the issuing, control and renewal of the document of compliance required by SOLAS regulation II-2/19, agreed to a draft MSC circular on the Issuing and renewal of document of compliance with the special requirements applicable to ships carrying dangerous goods, set out in annex 8, for submission to MSC 79 for approval.

Document: DSC 9/INF.4 (Japan)

10.2 The Sub-Committee noted that Japan (DSC 9/INF.4) had submitted a document to MSC 79 proposing to include a new item on “Guidelines for partially weathertight hatchway covers on board containerhips” in the work programme of the Sub-Committee, with a view to drawing up draft amendments to MSC/Circ.1087.

## 11 AMENDMENTS TO THE CSS CODE

Documents: DSC 9/11 (Secretariat); MSC 78/13/1 (Russian Federation)

11.1 As requested by MSC 78, the Sub-Committee considered the submission by the Russian Federation (MSC 78/13/1) proposing the following amendments to the Code of safe practice for cargo stowage and securing (CSS) Code:

- .1 draft new Annex 14 which, in order to completely take into account transport characteristics and properties of non-standardized (structurizing) cargoes, contains the *Form of cargo information*;
- .2 draft new Annex 15 which, in order to completely take into account seaworthiness of the loaded ship as well as the transport characteristics and properties of non-standardized (structurizing) cargoes, provided in cargo information, contains the *Method of calculation of non-shift criterion for structurizing cargoes*;
- .3 draft new Annex 16 which contains the *Form for certificate of the safe stowage and securing of cargo*, confirming that the requirements specified in the ship's Cargo Securing Manual are, in fact, complied with in every voyage.

11.2 Having discussed the various aspects of the proposals, the Sub-Committee decided that there was no need for the draft new Annex 16, Form for Certificate of Safe Stowage and Securing of Cargo. With respect to draft new Annexes 14 and 15, the Sub-Committee agreed that further study would be necessary to determine whether or not those proposals had merit and established a correspondence group under the co-ordination of the Russian Federation\*, with the following terms of reference:

- .1 review the proposals for the draft new Annex 14 and draft new Annex 15 contained in document MSC 78/13/1 to determine whether or not those proposals had concepts and/or content that merited inclusion in either the CSS Code in some manner or in some other instrument such as a circular; and
- .2 submit a report including draft text, if any, for consideration to DSC 10.

---

\* Mr. Evgeniy KARPOVICH,  
Doctor of Science,  
Cargo Securing Laboratory,  
Central Marine Research & Design Institute (CNIIMF),  
6, ul. Kavalergardskaya,  
Saint-Petersburg,  
191015, Russian Federation

Tel.: +7 812 327-2638  
Fax: +7 812 274-3864  
Email: karpovich@cniimf.ru

11.3 The Sub-Committee invited Member Governments and international organizations, with the requisite expertise, to participate in the work of the correspondence group.

## **12 WORK PROGRAMME AND AGENDA FOR DSC 10**

### **Method of work related to new work programme items**

12.1 The Sub-Committee noted that MSC 78 (DSC 9/2/3) had agreed that a decision to include a new item in a sub-committee's work programme did not mean that the Committee agreed with the technical aspects of the proposal. If it was decided to include the item in a sub-committee's work programme, detailed consideration of the technical aspects of the proposal and the development of appropriate requirements and recommendations should be left to the sub-committee concerned. MSC 78 also noted that a number of submissions by Member Governments supporting proposals for new work items made by other Member Governments often expanded the scope of the original proposal. The Committee decided that, in order to facilitate proper consideration of the proposals, these submissions should also include a justification for this expanded scope, as appropriate, in accordance with paragraphs 2.9 to 2.20 of the Guidelines on the organization and method of work (MSC/Circ.1099).

### **Draft terms of reference of the Sub-Committee**

12.2 The Sub-Committee agreed to draft terms of reference, set out in annex 9, for submission to MSC 79 for consideration and action as appropriate.

### **Work programme and agenda for DSC 10**

12.3 Taking into account the progress made at this session and the provisions of the agenda management procedure contained in paragraphs 3.11 to 3.23 of the Guidelines on the organization and method of work (MSC/Circ.1099), the Sub-Committee revised its work programme (DSC 9/WP.1) based on that approved by MSC 78 (DSC 9/2/3, annex), and invited the Committee to approve the proposed revised Sub-Committee's work programme and provisional agenda for DSC 10, set out in annex 10.

### **Arrangements for the next session**

12.4 The Sub-Committee envisaged, at its next session, amongst others, the establishment of working groups on:

- .1 Amendments to and mandatory application of the BC Code; and
- .2 Review of Annex III of MARPOL 73/78.

### **Date of next session**

12.5 The Sub-Committee noted that its tenth session had been tentatively scheduled to take place from 26 to 30 September 2005.

### **Future sessions of the Editorial and Technical (E&T) Group**

12.6 The Sub-Committee, noting that the UNCOE on the Transport of dangerous goods, at its December 2004 meeting, will adopt amendments to the UN Recommendations on the transport of dangerous goods, which would serve as a basis for Amendment 33-06 to the IMDG Code to be submitted to DSC 10 in 2005 for consideration with a view to adoption at MSC 81 in 2006, agreed that two E&T Group meetings should be held in 2005, each of one-week duration, one before and one after DSC 10, to prepare and finalize respectively, draft Amendment 33-06, and invited the Committee to approve two one-week sessions of the E&T Group in 2005.

12.7 The Sub-Committee noted that the E&T Group meetings are tentatively scheduled from 25 to 29 April 2005 and from 3 to 7 October 2005.

### **13 ELECTION OF CHAIRMAN AND VICE-CHAIRMAN FOR 2005**

13.1 In accordance with the Rules of Procedure of the Maritime Safety Committee, the Sub-Committee unanimously re-elected Mrs. Olga Pestel Lefèvre (France) as Chairman and Captain Juan P. Heusser (Chile) as Vice-Chairman, both for the year 2005.

### **14 ANY OTHER BUSINESS**

#### **Courses on the implementation of the IMDG Code**

Document: DSC 9/14 (Secretariat)

14.1 The Sub-Committee noted that, under the Organization's programme on enhancement of maritime safety, the total number of courses delivered during the period April 2002 to March 2004 had amounted to 10 regional and 6 national and that some 523 participants from 99 countries had benefited from these events.

#### **Guidelines on a shipboard occupational health and safety programme**

Document: DSC 9/14/1 (Secretariat)

14.2 The Sub-Committee favourably welcomed the development of draft Guidelines on the basic elements of a shipboard occupational health and safety programme (BLG 8/WP.4) prepared by BLG 8, and agreed that no modifications to the draft Guidelines were necessary from this Sub-Committee's point of view. The Secretariat was instructed to inform BLG 9 accordingly.

#### **Proposed changes to the report of the Sub-Committee**

14.3 The Sub-Committee's attention was drawn to the Organization's current practice of attaching the agenda and the list of documents as annex 1 to the reports of the sub-committees, while also issuing, after the session, a separate information document containing exactly the same information. The Sub-Committee was informed that, in an effort to avoid unnecessary duplication of work and secure savings in reproduction and mailing costs, the agenda and list of documents would no longer be included as annex to the reports of the sub-committees and that, instead, only the information document would be retained for distribution.

## **Expressions of appreciation**

14.4 The Sub-Committee expressed appreciation to the following delegates and Member of the IMO Secretariat, who had recently relinquished their duties, retired or were transferred to other duties or were about to, for their invaluable contribution to its work and wished them a long and happy retirement or, as the case might be, every success in their new duties:

- Mr. Antonio Nastrucci (Italy) (on return home);
- Mr. Hyung-Taek Jung (Republic of Korea) (on return home);
- Capt. Salvador Gómez Meillon (Mexico) (on return home); and
- Miss M. Moghaddam (Secretariat) (on retirement).

## **Expression of condolences**

14.5 The Sub-Committee, being informed of the untimely and unexpected passing of Mr. Magnus Fagerstrom (Finland), who had contributed significantly to the work of the Sub-Committee, expressed its deep condolences to the delegation of Finland and requested that they be passed to the family and colleagues of Mr. Magnus Fagerstrom.

## **15 ACTION REQUESTED OF THE COMMITTEES**

### **Action requested of the Maritime Safety Committee**

15.1 The Maritime Safety Committee, at its seventy-ninth session, is invited to:

- .1 endorse the timetable on the envisaged sequence of events leading to the mandatory application of the BC Code, which could be subject to revision depending upon the progress made over the years (paragraph 4.9 and annex 1);
- .2 endorse the issue of DSC/Circ.26 on Incidents involving transport of zinc ingots (paragraph 4.12.3);
- .3 approve the draft MSC circular on Lists of solid bulk cargoes for which a fixed gas fire-extinguishing system may be exempted or for which a fixed gas fire-extinguishing system is ineffective, to supersede MSC/Circ.671 (paragraph 4.12.6 and annex 2);
- .4 consider the draft Code of Safe Practice for Solid Bulk Cargoes, 2004 with a view to adoption by an MSC resolution (paragraph 4.12.7, annex 3);
- .5 endorse the issue of DSC/Circ.27 on Explosion in a cargo hold loaded with recycled aluminium (paragraphs 4.12.8 and 6.1);
- .6 approve the draft MSC circular on Questionnaire on inspections of containers/vehicles carrying packaged dangerous goods (paragraph 6.9 and annex 4);

- .7 note the progress made and the course of action taken on the development of the draft revised Recommendations on the Safe transport of dangerous cargoes and related activities in port areas and refer it to the MEPC and the BLG and STW Sub-Committees for consideration of those aspects of the Recommendations which fall within the scope of instruments under their respective purview, and, in this context, designate the DSC Sub-Committee as the co-ordinating sub-committee on the development of the draft revised Recommendations (paragraph 9.5 and annex 7);
- .8 agree with the conclusions of the Sub-Committee in relation to the instruments which are under the purview of the Sub-Committee and which need to be reviewed and amended so as to include appropriate security-related provisions (paragraph 9.5.8);
- .9 approve the draft MSC circular on Issuing and renewal of document of compliance with the special requirements applicable to ships carrying dangerous goods (paragraph 10.1 and annex 8);
- .10 consider the draft terms of reference for the Sub-Committee and take action as appropriate (paragraph 12.2 and annex 9);
- .11 approve the proposed revised Sub-Committee's work programme and provisional agenda for DSC 10 (paragraph 12.3 and annex 10); and
- .12 approve the holding of two one-week E&T Group meetings in 2005 (paragraph 12.7).

15.2 The Maritime Safety Committee, at its eightieth session, is invited to:

- .1 endorse the decisions of the Sub-Committee regarding the transport of dangerous goods in limited quantities, excepted quantities, excepted quantities and consumer commodities (paragraphs 3.6 to 3.11);
- .2 endorse the confirmation of the Sub-Committee that all shipments of class 7 radioactive material when in compliance with the relevant provisions of SOLAS chapter VII and that of the IMDG Code should not be denied on grounds of safety (paragraph 3.25);
- .3 approve the draft MSC circular on Manual on loading and unloading of solid bulk cargoes for terminal representatives (paragraph 7.5.1 and annex 5);
- .4 consider the opinion of the Sub-Committee that the restrictions under SOLAS regulation XII/14 should be annotated in the ship's booklet of relevant ships but should not be referenced to in the BLU Code and take action as appropriate (paragraph 7.5.3);
- .5 approve the draft CSC circular on Guidance on serious structural deficiencies in containers (paragraph 8.3 and annex 6); and

- .6 endorse the course of action taken with regard to the development of amendments to the Code of safe practice for cargo stowage and securing (CSS Code) (paragraph 11.2).

**Action requested of the Marine Environment Protection Committee**

15.3 The Marine Environment Protection Committee, at its fifty-third session, is invited to:

- .1 agree, for substances hazardous to the environment, to harmonize the terminology with the UN Recommendations and to use the term “Aquatic pollutant” instead of the term “Marine pollutant”, provided the former is adopted by the UNCOE as an amendment to the UN Recommendations on the transport of dangerous goods (paragraph 3.31); and
- .2 consider the opinion of the Sub-Committee that there might be different options for revising Annex III of MARPOL 73/78, resulting from amendments to the IMDG Code, which could have legal and policy implications, consider the issue and provide guidance to the Sub-Committee accordingly (paragraph 3.35).

\*\*\*



## ANNEX 1

**ENVISAGED SEQUENCE OF EVENTS LEADING TO  
THE MANDATORY APPLICATION OF THE BC CODE**

<b>No.</b>	<b>Event</b>	<b>Meeting</b>	<b>Date</b>
1	Preparation of the revised and reformatted recommendatory BC Code	DSC 9	September 2004
2	Adoption of the revised and reformatted recommendatory BC Code	MSC 79	December 2004
3	Preparation of the draft amendment to SOLAS chapters VI and VII for making the BC Code mandatory	DSC 10 to DSC 12	2005 to 2007
4	Preparation of the draft mandatory BC Code	DSC 10 to DSC 12	2005 to 2007
5	Approval of the draft amendments to SOLAS chapters VI and VII for making the BC Code mandatory and request to the Secretary-General to circulate them under six-month rule with the view to adoption at MSC 85	MSC 84	May 2008
6	Adoption of the draft mandatory BC Code	MSC 85	December 2008
7	Adoption of draft amendment to SOLAS chapters VI and VII	MSC 85	December 2008
8	Entry into force of the amendments to SOLAS Convention (mandatory BC Code)		1 January 2011

\*\*\*



**ANNEX 2****DRAFT MSC CIRCULAR****LISTS OF SOLID BULK CARGOES FOR WHICH A FIXED GAS FIRE-EXTINGUISHING SYSTEM MAY BE EXEMPTED OR FOR WHICH A FIXED GAS FIRE-EXTINGUISHING SYSTEM IS INEFFECTIVE**

1 The Maritime Safety Committee, at its sixty-fourth session (5 to 9 December 1994), agreed there was a need to provide Administrations with guidelines regarding the provisions of SOLAS regulation II-2/10 concerning exemptions from the requirements for fire-extinguishing systems.

2 The Committee also agreed the annexed table 1 providing a list of solid bulk cargoes, for which a fixed gas fire-extinguishing system may be exempted and recommended Member Governments to take into account the information contained in that table when granting exemptions under the provisions of SOLAS regulation II-2/10.7.1.4.

3 The Committee further agreed the annexed table 2 providing a list of solid bulk cargoes for which a fixed gas fire-extinguishing system is ineffective, and recommended that cargo spaces in a ship engaged in the carriage of cargoes listed in table 2 be provided with a fire-extinguishing system which provides equivalent protection. The Committee agreed that Administrations should take account of the provisions of SOLAS regulation II-2/19.3.1 when determining suitable requirements for an equivalent fire-extinguishing system.

4 The annexed tables will be reviewed periodically by the Maritime Safety Committee. Member Governments are requested to provide the Organization, when granting exemptions to ships for the carriage of cargoes not included in table 1, with data on the non-combustibility or fire risk properties of such cargoes. Member Governments are also requested to provide the Organization, when equivalent fire-extinguishing systems are required for the agreed carriage of cargoes not included in table 2, with data on the inefficiency of fixed gas fire-extinguishing systems for such cargoes.

5 The Maritime Safety Committee at its seventy-ninth session (1 to 10 December 2004) reviewed the above-mentioned tables as set out in the annex.

6 The purpose of this circular is to provide guidance to Administrations. It should not, however, be considered as precluding Administrations of their right to grant exemptions for cargoes not included in table 1 or to impose any conditions when granting such exemptions under the provisions of SOLAS regulation II-2/10.7.1.4.

7 This circular supersedes MSC/Circ.671.

ANNEX

**Table 1**

*List of solid bulk cargoes for which a fixed gas fire-extinguishing system may be exempted*

**Cargoes including but not limited to those listed in regulation II-2/10**

Ore  
Coal (COAL and BROWN COAL BRIQUETTES)  
Grain  
Unseasoned timber

Cargoes listed in the Code of Safe Practice for Solid Bulk Cargoes (BC Code), which are not combustible or constitute a low fire risk.

**All cargoes not categorized into Group B in the BC Code**

The following cargoes categorized into Group B in the BC Code:

ALUMINIUM SMELTING BY-PRODUCTS, UN 3170  
ALUMINIUM FERROSILICON POWDER (including briquettes), UN 1395  
ALUMINIUM SILICON POWDER, UNCOATED, UN 1398  
CALCINED PYRITES (Pyritic ash)  
DIRECT REDUCED IRON Briquettes, hot moulded  
FERROPHOSPHORUS (including briquettes)  
FERROSILICON, with more than 30% but less than 90% silicon (including briquettes), UN 1408  
FERROSILICON with 25% to 30% silicon, or 90% or more silicon (including briquettes)  
FLUORSPAR (calcium fluoride)  
LIME (UNSLAKED)  
MAGNESIA (UNSLAKED)  
PEAT MOSS  
PETROLEUM COKE\*  
PITCH PRILL  
RADIOACTIVE MATERIAL, LOW SPECIFIC ACTIVITY MATERIAL (LSA-1), UN 2912  
RADIOACTIVE MATERIAL, SURFACE CONTAMINATED OBJECT (S) (SCO-1), UN 2913  
SILICOMANGANESE  
SULPHUR (lump and coarse-grained powder), UN 1350  
VANADIUM ORE  
WOODCHIPS, with moisture content of 15% or more  
WOOD PULP PELLETS, with moisture content of 15% or more  
ZINC ASHES, UN 1435

---

\* When loaded and transported under the provisions of the BC Code.

**Table 2**

*List of Solid Bulk Cargoes for which a fixed gas fire-extinguishing system is ineffective and for which a fire-extinguishing system giving equivalent protection shall be available*

The following cargoes categorized into Group B of the BC Code:

ALUMINIUM NITRATE, UN 1438

AMMONIUM NITRATE, UN 1942

AMMONIUM NITRATE BASED FERTILIZERS UN 2067

AMMONIUM NITRATE BASED FERTILIZERS, UN 2071

BARIUM NITRATE, UN 1446

CALCIUM NITRATE, UN 1454

LEAD NITRATE, UN 1469

MAGNESIUM NITRATE, UN 1474

POTASSIUM NITRATE, UN 1486

SODIUM NITRATE, UN 1498

SODIUM NITRATE AND POTASSIUM NITRATE, MIXTURE, UN 1499

\*\*\*



**ANNEX 3**

**DRAFT MSC RESOLUTION ON THE ADOPTION OF THE CODE OF SAFE  
PRACTICE FOR SOLID BULK CARGOES, 2004**

(The text of this annex has been issued as an addendum to DSC 9/15)

\*\*\*



**ANNEX 4****DRAFT MSC CIRCULAR****QUESTIONNAIRE ON INSPECTIONS OF CONTAINERS/VEHICLES CARRYING PACKAGED DANGEROUS GOODS**

1 The Sub-Committee on Dangerous Goods, Solid Cargoes and Containers (DSC), at its ninth session (27 September to 1 October 2004), in recalling the provisions of MSC/Circ.859, whereby Member Governments are invited to submit reports to the Organization on the results of inspection on the compliance with the International Maritime Dangerous Goods (IMDG) Code of cargo transport units carrying dangerous goods, supported proposals that, in order to obtain an accurate reflection of the degree of such inspections taking place, it would be appropriate to carry out a survey to ascertain the full extent of such inspections.

2 The Maritime Safety Committee, at its [seventy-ninth session (1 to 10 December 2004)], concurred with the approach taken by the Sub-Committee and instructed the Secretariat to collate the information received, in response to the questionnaire, and to report the results to DSC 10.

3 Member Governments are requested to provide the information requested in the questionnaire set out in the annex and to forward completed questionnaires to the Secretariat by 1 June 2005.

ANNEX

**IMO SURVEY - INSPECTIONS OF CONTAINERS/VEHICLES CARRYING  
PACKAGED DANGEROUS GOODS**

- 1 What specific arrangements do you have in place to accord with MSC/Circ.859 to carry out inspections of freight containers/vehicles carrying packaged dangerous goods in relation to compliance with the IMDG Code?
- 2 How frequently are the above arrangements carried out?
- 3 If no arrangements are in place, do you propose to institute inspections and when will they be instituted?
- 4 When did you last send in a report of the findings of inspections to the IMO?
- 5 What did your last report of inspections indicate as a level of compliance?
- 6 What initiatives to raise awareness of the requirements of the IMDG Code do you have in place?
- 7 What enforcement actions have been taken in the past 12 months as a result of your inspections?
- 8 The IMDG Code is mandatory. What activities in relation to the shipment of packaged dangerous goods are envisaged by your organization because of its mandatory nature?

Please complete the above questionnaire as fully as possible and return this form by 1 June 2005.

*Co-ordinates of responding Member Government to include complete address, telephone and facsimile numbers and, if possible, an email address.*

\*\*\*

**ANNEX 5****DRAFT MSC CIRCULAR****MANUAL ON LOADING AND UNLOADING OF SOLID BULK CARGOES FOR  
TERMINAL REPRESENTATIVES**

1 The Maritime Safety Committee (MSC), at its seventy-sixth session, in considering the Report of the Working Group on Bulk Carrier Safety concerning the issue of the risk control options for the improvement of the ship/terminal interface for bulk carriers noted the need to harmonize training programmes for terminal personnel worldwide.

2 The Maritime Safety Committee, at its seventy-sixth session, further noted that the above concern could be addressed by the application of the Code of Practice for the Safe Loading and Unloading of Bulk Carriers (BLU Code) and that the risk control options in the Manual on loading and unloading of solid bulk cargoes for terminal representatives under development would address the concerns referred to above.

3 The Maritime Safety Committee, at its seventy-eighth session (12 to 21 May 2004), agreed that the application of the BLU Code would address the concerns on risk control options above and urges Member Governments, shipowners, ship operators and terminals to apply the guidance contained therein.

4 The Maritime Safety Committee, at its seventy-eighth session (12 to 21 May 2004), agreed to continue the development of the Manual on loading and unloading of solid bulk cargoes for terminal representatives, taking into account the guidance in the IBTA guidelines for terminal representatives at ship/shore interface, when finalizing the Manual.

5 The Maritime Safety Committee, at its [eightieth session [ ] to [ ] May 2005], approved the Manual on loading and unloading of solid bulk cargoes for terminal representatives set out in the annex and agreed that the application of the guidance contained therein would address the concerns on risk control options and urged Member Governments, shipowners, ship operators and terminals to apply the guidance contained therein.

6 Member Governments are invited to implement the BLU Code and to bring the annexed Manual on loading and unloading of solid bulk cargoes for terminal representatives, to the attention of terminals, shipowners, ship operators, shipmasters, shippers, receivers and other parties concerned.

ANNEX

**1 CONTENTS**

<b>Foreword</b>		<b>Page</b>
Introduction		4
Section 1	Definitions	6
Section 2	Suitability of ships and terminals	7
Section 3	Procedures between the ship and the terminal prior to the ship's arrival.	13
Section 4	Procedures between the ship and the terminal prior to cargo loading/unloading	19
Section 5	Cargo loading and handling of ballast	24
Section 6	Unloading cargo and handling of ballast	27

Annex 1	Pre-Arrival Ship/Shore Exchange of Information	35
Annex 2	Avoidance of damage during cargo handling	39
Annex 3	Repair of damage incurred during loading and unloading	43
Annex 4	Training of Terminal Personnel involved in loading and/or unloading Bulk Carriers	45
Annex 5	Hazards	47
Annex 6	Emergency Procedures	50

## MANUAL ON LOADING AND UNLOADING OF SOLID BULK CARGOES FOR TERMINAL REPRESENTATIVES

### 2 FOREWORD

- .1 In response to the continuing loss of ships carrying solid bulk cargoes – sometimes without trace and with heavy loss of life - The Code of Safe Practice for the Safe Loading and Unloading of Bulk Carriers (BLU Code) was developed by IMO as one of a number of measures to enhance the operational and structural safety of bulk carriers. It was adopted as a recommendatory instrument by the International Maritime Organization at its twentieth Assembly in November 1997.
- .2 Possible stress and damage imposed by cargo handling throughout the life of a ship was considered to be a possible contributory cause of structural failure of bulk carriers leading to casualties and losses. The purpose of the BLU Code, therefore, is to provide guidance to ship masters of bulk carriers, terminal operators and other parties for the safe handling, loading and unloading of solid bulk cargoes.
- .3 To augment the BLU Code the Manual on Loading and Unloading of Solid Bulk Cargoes for Terminal Representatives (BLU Manual) is intended to provide more detailed guidance to Terminal Representatives (as defined in the BLU Code) and others involved in the handling of solid bulk cargoes; including those responsible for the training of personnel.
- .4 It should be noted that in this Manual, a reference to an appendix is a reference to an appendix in the BLU Code and a reference to an annex is to an annex in this Manual.
- .5 Further guidance on the safe loading and unloading of solid bulk cargoes is contained in the following publications: "Bulk carriers, Handle with Care", IACS Ltd. 1998, 36 Broadway, London SW1H 0BH, UK, Tel: +44 (0)207 976 0660, Fax +44 (0)207 808 1100, Email: [permsec@iacs.org.uk](mailto:permsec@iacs.org.uk), Website: [www.iacs.org.uk](http://www.iacs.org.uk); "The Loading and Unloading of Solid Bulk Cargoes, ICHCA International Ltd., Suite 2, 85 Western Road, Romford, Essex, RM1 3LS, UK, Tel: +44 (0)1708 735 295, Fax: +44 (0)1708 735 225, Email: [info@ichcainternational.co.uk](mailto:info@ichcainternational.co.uk).

### 3 INTRODUCTION

- .1 The BLU Code applies to the loading and unloading of solid bulk cargoes, to or from bulk carriers of more than 500 gross tonnage. **The BLU Code does not apply to:** Ships which are not bulk carriers, by definition, ships which are loading, carrying or unloading grain and ships which are being loaded or unloaded using shipboard equipment only.
- .2 The guidance in this Manual is intended to complement the BLU Code by providing guidance on good practice, regardless of ship size, terminal capacity or cargo quantity. This should assist terminal representatives to implement the Code.
- .3 Although this Manual is written primarily in the context of the operation of major bulk terminals operating ship loaders and unloaders, smaller bulk facilities and non specialist terminals may also load and/or unload solid bulk cargoes by grabs, conveyors, chutes or even directly from vehicles etc. Not all the guidance in the Manual may be appropriate to such smaller terminals and facilities and the ships they serve but the general principles should still apply and be followed.
- .4 The guidance in this Manual is intended primarily to assist Terminal Representatives to understand the key issues to be dealt with at the interface between the ship and the terminal. It should also assist relevant ships personnel to understand the issues involved from the terminal's perspective.
- .5 It should be noted that in this Manual, a reference to an appendix is a reference to an appendix in the BLU Code and a reference to an annex is to an annex in this Manual.

## 4 LAYOUT OF GUIDELINES

The Guidelines have been written so that the left hand column contains the specific language of the BLU Code, and the right hand column contains the guidelines for the Terminal Representative. These guidelines are further expanded as necessary in the attached annex.

### DEFINITIONS

*Definitions contained in the **BLU Code** are on page 6. In addition, the following definitions refer to a number of other expressions used in these Guidelines.*

- “**BLU Code**” means the Code of Practice for the Safe Loading and Unloading of Bulk Carriers, as contained in the annex to IMO Assembly resolution A.862(20) of 27 November 1997.
- “**Bulk carrier**” means a ship which is constructed generally with single deck, top-side tanks and hopper side tanks in cargo spaces, and is intended primarily to carry dry cargo in bulk, and includes such types as ore carriers and combination carriers\*.
- “**Cargo Air Draught**” means the distance from the surface of the water to the lowest point of the loader or unloader when in a fully raised position.
- “**Dry or Solid Bulk Cargo**” means any material, other than liquid or gas, consisting of a combination of particles, granules, or any larger pieces of material, generally uniform in composition, which is loaded directly into the cargo spaces of a ship without any intermediate form of containment.
- “**Terminal**” means any fixed, floating or mobile facility equipped and used for the loading and/or unloading of bulk cargo. The term includes that part of a dock, pier, berth, jetty, quay, wharf or similar structure at which a ship may tie up.
- “**Shipper/receiver**” means any person in whose name or on whose behalf a contract of carriage of goods by sea has been concluded, or on whose behalf the goods are delivered to or received from the ship in relation to the contract of carriage by sea.
- “**Stowage Factor**” is the number of cubic metres which one tonne of the material will occupy.

---

\* Refer to resolution MSC.79(70) relating to interpretation of provision of SOLAS chapter XII on additional safety measures for bulk carriers.

**Section 1 – Definitions**

<b>BLU Code</b>	<b>Guidelines</b>
1.1 <i>Air draught</i> means the vertical distance from the surface of the water to the highest point of mast or aerial.	1.1
1.2 <i>Combination carriers (OBO or O/O)</i> means a ship whose design is similar to a conventional bulk carrier but is equipped with pipelines, pumps and inert gas plant so as to enable the carriage of oil cargoes in designated spaces.	1.2
1.3 <i>Conveyor system</i> means the entire system for delivering cargo from the shore stockpile or receiving point to the ship.	1.3
1.4 <i>Hot work</i> 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 flammable atmosphere.	1.4
1.5 <i>List indication lights</i> means lights, visible from the deck, which light up to show that a ship is listing.	1.5
1.6 <i>Master</i> means the master of the ship or a ship's officer designated by the master.	1.6 Standard shipping industry practise is that the Chief Officer (First Mate) is the designated officer in charge of cargo operations, and is the person with whom the <b><i>Terminal Representative</i></b> will normally liaise.
1.7 <i>Pour</i> means the quantity of cargo poured through one hatch opening as one step in the loading plan, i.e. from the time the spout is positioned over a hatch opening until it is moved to another hatch opening.	1.7
1.8 <i>Terminal representative</i> means a person appointed by the terminal or other facility where the ship is loading or unloading, who has responsibility for operations conducted by that terminal or facility with regard to the particular ship.	1.8 For reasons of practicality it is accepted that the role of Terminal Representative cannot be limited to one person throughout the entire loading or unloading period, and that provision must be made for shift patterns and compliance with hours of work agreements and regulations.

1.9 <i>Trimming</i> (loading cargo) is the partial or total levelling of the cargo within the holds, by means of loading spouts or chutes, portable machinery, equipment or manual labour.	1.9
1.10 <i>Trimming</i> (unloading cargo) is the shovelling or sweeping up of smaller quantities of the cargo in the holds by mechanical means (such as bulldozers) or other means to place them in a convenient position for discharge.	1.10
1.11 <i>Trimming</i> (ship) is the adding, removal or shifting of weight in a ship to achieve the required forward and aft draughts.	1.11

## Section 2 – Suitability of Ships and Terminals

<b>2.1 General</b>	<b>2.1</b>
2.1.1 All ships nominated for loading should hold the appropriate valid statutory certification including, if required, the document of compliance* for ships carrying solid dangerous goods in bulk. It is recommended that the period of validity of the ship's certificates be sufficient to remain valid during loading, voyage and unloading times, plus a reserve to allow for delays in berthing, inclement weather or both.	2.1.1
2.1.2 The ship owner, manager or operator, when offering a ship for a particular cargo or service, should ensure that the ship: <ul style="list-style-type: none"> <li>- is maintained in a sound, seaworthy condition;</li> <li>- has on board a competent crew;</li> <li>- has on board at least one officer proficient in the languages used at both the loading and unloading ports, or has an officer available who is proficient in the English language; and</li> <li>- is free of defects that may prejudice the ship's safe navigation, loading or unloading.</li> </ul>	2.1.2 Terminals should determine the suitability of a ship for compatibility with both loading and/or unloading terminal infrastructure as appropriate.

\* Applicable to ships constructed on or after 1 September 1984.

<p>2.1.3 It is essential that a ship selected to transport a solid bulk cargo be suitable for its intended purpose taking into account the terminals at which it will load or unload.</p>	<p>2.1.3 It is important that the terminal operator keeps its relevant customers informed of current terminal standards, limitations and operating conditions in terms of any changes to relevant navigational conditions, water depths, loading/unloading equipment and rates.</p>
<p>2.1.4 The charterer and shipper when accepting a ship for a particular cargo or service should ensure that the ship:</p> <ul style="list-style-type: none"> <li>- is suitable for access to the planned loading or unloading facilities; and</li> <li>- does not have cargo handling equipment which would inhibit the safety of the loading and unloading operations.</li> </ul>	<p>2.1.4 In addition to the checks carried out by the charterer and/or shipper and/or receiver, the terminal operator should take reasonable steps to assure that all bulk carriers nominated for loading/unloading at the terminal are operationally suitable in all respects for the purpose.</p> <p style="text-align: center;">The following checks are examples of the type of checks that may be carried out:</p> <ul style="list-style-type: none"> <li>.1 Check appropriate sources of information to confirm that ship meets berth maximum and minimum size limits. <ul style="list-style-type: none"> <li>- Length overall/Beam/Draft.</li> <li>- Number of holds.</li> <li>- Hatch lengths and widths. Compare dimensions with the most suitable hatch openings on the basis of the terminal's own experience. If hatches are less than the preferred size, loader/unloader operators should be informed and appropriate precautions taken.</li> <li>- Gearless/Geared/Gear Type. Location of gear.</li> <li>- Working length from forward end No.1 hold to aft end aft hold.</li> <li>- Any equipment, design details or performance limitations that could affect the safety or efficiency of the operation.</li> </ul> </li> <li>.2 The ship's owner, master or agent and the Terminal Representative should exchange Pre-arrival Ship/Shore Information, as per the examples in annex 1.</li> </ul>
<p><b>2.2 Ships</b></p>	<p><b>2.2</b></p>
<p>2.2.1 Ships nominated for bulk loading should be suitable for the intended cargo. Suitable ships should be:</p> <ul style="list-style-type: none"> <li>.1 weather tight, and efficient in all respects for the normal perils of the sea and the intended voyage;</li> </ul>	<p>2.2.1 The ship should ensure the hatches are adequately identified.</p>

- .2 provided with an approved stability and loading booklet written in a language understood by the ship's officers concerned and using standard expressions and abbreviations. If the language is neither English, nor French, nor Spanish, a translation into one of these languages should be included;
- .3 provided with hatch openings of sufficient size to enable the cargo to be loaded, stowed and unloaded satisfactorily; and
- .4 provided with the hatch identification numbers used in the loading manual and loading or unloading plan. The location, size and colour of these numbers should be chosen so that they are clearly visible to the operator of the loading or unloading equipment.

2.2.2 It is recommended that all ships which are required to carry out stress calculations should have on board an approved loading instrument for the rapid calculation of such stresses.

2.2.3 All propulsion and auxiliary machinery should be in good functional order. Deck equipment related to mooring and berthing operations, including anchors, cables, mooring lines, hawsers and winches, should be operable and in good order and condition.

2.2.4 All hatches, hatch operating systems and safety devices should be in good functional order, and used only for their intended purpose.

2.2.5 List indication lights, if fitted, should be tested prior to loading or unloading and proved operational.

2.2.6 Ship's own cargo-handling equipment should be properly certificated and maintained, and used only under the general supervision of suitably qualified ship's personnel.

<p><b>2.3 Terminals</b></p>	<p><b>2.3</b></p>
<p>2.3.1 Terminal operators should ensure that they only accept ships that can safely berth alongside their installation, taking into consideration issues such as:</p> <ul style="list-style-type: none"> <li>.1 water depth at the berth;</li> <li>.2 maximum size of the ship;</li> <li>.3 mooring arrangements;</li> <li>.4 fendering;</li> <li>.5 safe access; and</li> <li>.6 obstructions to loading/unloading operations.</li> </ul>	<p>2.3.1.1 Terminal Representatives should ensure the following matters are considered:</p> <ul style="list-style-type: none"> <li>.1 Tidal situation for the period concerned.</li> <li>.2 Weather forecasts.</li> <li>.3 Whether ship will berth port or starboard side-to.</li> <li>.4 Tug and line boat requirements.</li> <li>.5 Mooring requirements taking into account:           <ul style="list-style-type: none"> <li>.1 The size and type of ship;</li> <li>.2 Local tidal conditions and foreseeable weather conditions;</li> <li>.3 The nature of the cargo and ballasting operations;</li> </ul> </li> <li>.6 Any obstructions to berthing/unberthing operations.</li> <li>.7 The terminal operator should assure an unobstructed and safe passage between the ship's gangway and the entrance (gate) of the terminal.</li> </ul> <p>2.3.1.2 Pre-Arrival Ship/Shore Exchange of Information should clarify:</p> <ul style="list-style-type: none"> <li>.1 Whether ship or terminal will provide the gangway. Responsibility for providing safety net, lighting and care of gangway. Generally the master is responsible for ensuring that there is safe access to and from the ship. Normally the ship provides the gangway and master and Terminal Representative jointly confirm that it is safe and suitable. Where the ship's own gangway is not suitable the terminal may provide one. However, the master is still obliged to ensure that it is maintained in a safe condition at all times.</li> </ul>

	<ul style="list-style-type: none"> <li>.2 If ship is geared, the ship/charterer should provide a plan of the ship giving the positions of the derricks or cranes, and the distances between them. The Terminal Representative should check the validity of test reports and certificates for cranes.</li> <li>.3 Loader/unloader booms should be raised clear of berth in good time when a ship is berthing/unberthing.</li> <li>.4 Loaders/unloaders should be parked clear of the normal angle of approach of a berthing ship, in case the bow overshoots the jetty.</li> </ul>
<p>2.3.2 Terminal equipment should be properly certificated and maintained in accordance with the relevant national regulations and/or standards, and only operated by duly qualified and, if appropriate, certificated personnel.</p> <p>2.3.2.1 Where automatic weighing equipment is provided, this should be calibrated at regular intervals.</p>	<p>2.3.2 Maintenance refers not just to running repairs and upkeep of equipment, but to the planned and systematic inspection and maintenance of equipment at periodic intervals. This is normally carried out in accordance with manufacturer's recommendations, national requirements, and industry codes of practice.</p> <p>2.3.2.1 Examination and testing means the thorough examination of the crane or equipment at regular intervals, in accordance with relevant legislation and insurance requirements. Items needing particular attention include:</p> <ul style="list-style-type: none"> <li>.1 Lifting equipment.</li> <li>.2 Rotating equipment.</li> <li>.3 Access equipment.</li> <li>.4 Safety devices – alarms, anemometers, limit switches and controls, emergency stops, emergency escape and fire control equipment.</li> <li>.5 Structural steelwork for corrosion, fatigue or cracking.</li> <li>.6 Travel drive motors and braking systems, inc. storm anchoring arrangements.</li> </ul>

	<p>.7 Lubrication – adequate and regular application of correct lubricants.</p> <p>2.3.2.2 Good housekeeping means that the entire terminal area and all the equipment on it should be:</p> <ul style="list-style-type: none"> <li>.1 Kept in a clean and tidy manner, with everything in its place and a place for everything</li> <li>.2 Maintained to a high standard of safety and safety awareness.</li> <li>.3 Kept to a high standard of mechanical, electrical and structural maintenance.</li> </ul>
<p>2.3.3 Terminal personnel should be trained in all aspects of safe loading and unloading of bulk carriers, commensurate with their responsibilities.</p>	<p>2.3.3 Commensurate with their responsibilities, terminal personnel should be able to:</p> <ul style="list-style-type: none"> <li>.1 Understand the basic principles of bulk carrier construction.</li> <li>.2 Understand how loading/unloading operations can over stress and damage a ship and know why and how this must be avoided.</li> <li>.3 Understand the roles and responsibilities, as required under the BLU Code, of:           <ul style="list-style-type: none"> <li>.1 The Terminal Representative.</li> <li>.2 The ship loader/unloader operator, as applicable.</li> <li>.3 Ship’s master, chief officer and crew.</li> </ul> </li> <li>.4 Know the standard procedures and plans by which bulk carriers are loaded and unloaded.</li> <li>.5 Know the ship/shore communications and emergency procedures applicable.</li> <li>.6 Know how to access and work safely on board a bulk carrier.</li> <li>.7 Understand and know how to safely start up, operate and shut down the ship</li> </ul>

	<p>loading/unloading equipment on the terminal for which they are responsible. (See annex 4).</p> <p>.8 Terminal personnel should be knowledgeable of their responsibilities under other relevant codes for example the ISPS Code (International Ship and Port Facility Security Code), IMO/ILO Code of Practice on Security in Ports and the ILO Code of Practice on Safety and Health in Ports.</p>
<p>2.3.4 Terminal operators should ensure that personnel involved in the loading and unloading operations are duly rested to avoid fatigue.</p>	<p>2.3.4 In addition to assuring terminal personnel are duly rested, terminal personnel involved in cargo handling work should be provided with personal protective equipment such as safety helmets, safety footwear, high visibility jackets, gloves, hearing and respiratory protection, as required.</p>

### Section 3 – Procedures between ship and shore prior to ship’s arrival

<p><b>3.1 Information exchange: General</b></p>	<p><b>3.1</b></p>
<p>3.1.1 It is important that the ship be provided with information about a terminal so the loading or unloading can be planned. Similarly, the terminal will need information about the ship to enable preparations to be made to load or unload the ship. It is important that the information be exchanged in sufficient time to allow preparations to be made.</p>	<p>3.1.1 (See annex 1)</p>
<p>3.1.2 Before loading commences there should be an agreement between the master and the terminal representative as to the rate of loading and order in which the cargo is to be distributed so as to achieve the final loading plan. In general, this agreement should be based on one or more of the following options:</p> <ul style="list-style-type: none"> <li>.1 the limitations or restrictions on loading procedures, if such are specified in the ship's Loading Manual or Trim and Stability Booklet, or both;</li> <li>.2 if the restrictions mentioned in .1 do not exist, and the ship has a loading instrument which has been approved, the loading plan should be prepared on</li> </ul>	<p>3.1.2 The master should forward the proposed loading/unloading plan to the terminal before the ship arrives:</p> <ul style="list-style-type: none"> <li>.1 The Terminal Representative should check the plan and ensure it corresponds to its expectations. If it does not the terminal may revert to the ship requesting a review of the proposed plan.</li> <li>.2 By giving the ship adequate time to prepare an alternative plan, in compliance with the ship’s stability booklet and loading manual or instrument, it should be possible to identify a mutually acceptable loading sequence.</li> </ul>

<p>the instrument and there should be a protocol in place so that the loading remains, at all times, within the approved stress limits of the ship; and/or</p> <p>.3 if neither .1 or .2 can be satisfied, then a conservative procedure should be followed.</p>	<p>.3 However, even where the load plan is not the terminal's preferred option, the Terminal Representative should co-ordinate and agree to a plan before starting operations. Operations should not start until agreement has been obtained.</p>
<p>3.1.3 Details should be provided of any necessary repairs which may delay berthing, the commencement of loading or unloading, or may delay the ship sailing on completion of loading or unloading.</p>	<p>3.1.3 The terminal should be informed if any proposed visits by ship repair contractors or service personnel, or if cranes or other equipment are required on the jetty.</p>
<p>3.1.4 The master should ensure he receives from the shipper of the intended cargo details of the nature of the cargo required by chapter VI of SOLAS 1974, as amended*. Where additional details, such as trimming or continuous measurement of the water in the cargo, etc., are required, the master should inform the terminal accordingly.</p>	<p>3.1.4 Before commencement of loading of a solid bulk cargo, the shipper must provide the master with the characteristics and properties of the cargo, including:</p> <ul style="list-style-type: none"> <li>.1 Stowage factor, angle of repose, trimming procedures, and likelihood of shifting.</li> <li>.2 The Transportable Moisture Limit and Average Moisture Content where Appendix A of the BC Code (Code of Safe Practice for Solid Bulk Cargoes) applies.</li> <li>.3 Flammability, toxicity, corrosiveness, chemical, oxygen depletion and any other hazards of the cargo, as applicable.</li> </ul> <p>3.1.5 The Terminal Representative should verify that the master has received the relevant Cargo Declaration Form information, as applicable, in good time. (see BLU Code - Appendix 5)</p> <p>3.1.6 The master should inform the Terminal Representative of any particular precautions to be taken with the loading or unloading of the cargo.</p>

---

\* Refer to MSC/Circ.663 and to the form for cargo information, which is set out in appendix 5 to the BLU Code.  
I:\DSC\9\15.DOC

<p><b>3.2 Information given by the ship to the terminal</b></p>	<p><b>3.2</b></p>
<p>3.2.1 In order to plan the proper disposition and availability of the cargo so as to meet the ship's loading plan, the loading terminal should be given the following information:</p> <p>.1 The ship's estimated time of arrival (ETA) off the port as early as possible. This advice should be updated as appropriate.</p> <p>.2 At the time of initial ETA advice, the ship should also provide details of the following:</p> <p>.2.1 name, call sign, IMO Number of the ship, its flag State and port of registry;</p> <p>.2.2 a loading plan stating the quantity of cargo required, stowage by hatches, loading order and the quantity to be loaded in each pour, provided the ship has sufficient information to be able to prepare such a plan;</p> <p>.2.3 time required for de-ballasting;</p> <p>.2.4 the ship's length overall, beam, and length of the cargo area from the forward coaming of the forward-most hatch to the after coaming of the aft-most hatch into which cargo is to be loaded or from which cargo is to be removed;</p> <p>.2.5 distance from the water line to the first hatch to be loaded or unloaded and the distance from the ship's side to the hatch opening;</p> <p>.2.6 the location of the ship's accommodation ladder;</p> <p>.2.7 air draught;</p>	<p>3.2.1 See example of Pre-Arrival Exchange of Information Checklist (Annex 1)</p> <p>.1 It is important that the terminal receives updated ETAs.</p> <p>.2 Notifying the terminal of the proposed load or unload plan well in advance of arrival gives the terminal the opportunity to check that the information on which it is based is correct. For example, a plan may be based on a terminal having two loaders/unloaders where there is actually only one available. It also allows the terminal to check the plan against its preferred rotation, and to request a modification.</p> <p>.3 The master then has the opportunity to re-calculate the plan and clarify any questions so that a safe, correct and mutually acceptable plan is agreed preferably before the ship berths.</p> <p>.4 If the terminal's suggested plan is unsuitable for the ship, and does not meet its stability and hull stress criteria, then the Terminal Representative and master should co-ordinate and agree on a plan before operations begin.</p> <p>.5 Other items of information requested by the terminal may include:</p> <p>.5.1 Confirmation that ballast water is clean sea water ballast.</p> <p>.5.2 Any ship defects which could affect operations.</p> <p>.5.3 Ship's operational and navigational equipment safety status.</p> <p>.5.4 Details of any planned bunkering and storing operations, or repairs to be carried out.</p> <p>.5.5 Ballast handling rates.</p>

<p>.2.8 details and capacities of ship's cargo handling gear;</p> <p>.2.9 number and type of mooring lines; and</p> <p>.2.10 any other item related to the ship requested by the terminal.</p> <p>.3 Similar information in respect of ETA, unloading plan and details of the ship are required by unloading terminals.</p>	<p>.6 Terminals should require both a cargo stowage plan and a plan indicating the order of loading/unloading and the quantity to be loaded/unloaded into/from each hold.</p>
<p>3.2.2 Ships arriving at loading or unloading terminals in a part loaded condition should also advise:</p> <p>.1 berthing displacement and draughts.</p> <p>.2 previous loading or unloading port.</p> <p>.3 nature and stowage of cargo already on board and, when dangerous goods in bulk are on board, the name of the material, IMO Class and UN Number or BC Number.</p> <p>.4 distribution of cargo on board, indicating that to be unloaded and that to remain on board.</p>	<p>3.2.2 Ship should provide the terminal with a load or unloading plan stating the cargo distribution plan for the cargo to be loaded/unloaded, the hold rotation and quantities to be loaded/unloaded per run.</p>
<p>3.2.3 Combination carriers (OBO or O/O) should advise of the following additional information:</p> <p>.1 nature of the preceding three cargoes;</p> <p>.2 date and place at which the last oil cargo was discharged;</p> <p>.3 advice as to content of slop tanks and whether fully inerted and sealed; and</p> <p>.4 date, place and name of authority that issued the last gas free certificate which includes pipelines and pumps.</p>	<p>3.2.3 During the unloading of dry bulk cargo it may be necessary to ballast one or more holds to reduce the Cargo Air Draught of the ship. This is unlikely to introduce hazards if the pipeline system has been well washed. However if a pump or pipeline has not been adequately washed, the ballasting operation may discharge residual oil into the hold. Atmospheric tests in the hold should therefore be made before any hot work is carried out in, adjacent to, or above a ballasted hold.</p>
<p>3.2.4 As soon as possible the ship should confirm that all holds into which cargo is to be loaded are clean, and free from previous cargo</p>	<p>3.2.4</p>

<p>residues which in combination with the cargo to be loaded could create a hazard.</p>	
<p>3.2.5 Information on the loading or unloading plan and on intended arrival and departure draughts should be progressively updated, and passed to the terminal as circumstances change.</p>	<p>3.2.5</p>
<p><b>3.3 Information given by the terminal to the ship</b></p>	<p><b>3.3</b></p>
<p>3.3.1 On receipt of the ship's initial notification of its ETA, the terminal should give the ship the following information as soon as possible:</p> <ul style="list-style-type: none"> <li>.1 the name of the berth at which loading or unloading will take place and the estimated times for berthing and completion of loading or unloading;</li> <li>.2 characteristics of the loading or unloading equipment, including the terminal's nominal loading or unloading rate and the number of loading or unloading heads to be used;</li> <li>.3 features of the berth or jetty the master may need to be aware of, including the position of fixed and mobile obstructions, fenders, bollards and mooring arrangements;</li> <li>.4 minimum depth of water alongside the berth and in approach or departure channels;</li> <li>.5 water density at the berth;</li> <li>.6 the maximum distance between the water line and the top of cargo hatch covers or coamings, whichever is relevant to the loading operation, and the maximum air draft;</li> <li>.7 arrangements for gangways and access;</li> <li>.8 which side of the ship is to be alongside the berth;</li> </ul>	<p>3.3.1 The Terminal should furnish as applicable: (See example of Pre Arrival Exchange of information Annex 1)</p> <ul style="list-style-type: none"> <li>.1 The expected maximum and average loading/unloading rates may be discussed and clarified during completion of the Ship/Shore Checklist at the arrival meeting between the Terminal Representative and the Master.</li> <li>.2 Information regarding draught survey requirements where applicable.</li> <li>.3 Information regarding any draught surveys to be carried out, usually requesting ballast tanks to be either full or empty, containing clean seawater ballast where possible.</li> <li>.4 Usual anchorage and pilot embarkation area.</li> <li>.5 Whether ships may berth/depart at any time, or if it is necessary to wait for certain tidal conditions.</li> <li>.6 If ship or shore gangway is to be used, clarification of responsibility for ensuring that it is maintained in a safe manner throughout the ship's stay in port.</li> <li>.7 Information on precautions regarding strong tides or currents, swell, "stand-off" effect at piled jetties, passing traffic, or high winds.</li> <li>.8 Arrangements for immobilisation of ship's engines alongside.</li> </ul>

<p>.9 maximum allowable speed of approach to the jetty and availability of tugs, their type and bollard pull;</p> <p>.10 the loading sequence for different parcels of cargo, and any other restrictions if it is not possible to take the cargo in any order or any hold to suit the ship;</p> <p>.11 any properties of the cargo to be loaded which may present a hazard when placed in contact with cargo or residues on board;</p> <p>.12 advance information on the proposed cargo handling operations or changes to existing plans for cargo handling;</p> <p>.13 if the terminal's loading or unloading equipment is fixed, or has any limits to its movement;</p> <p>.14 mooring lines required;</p> <p>.15 warning of unusual mooring arrangements;</p> <p>.16 any restrictions on de-ballasting;</p> <p>.17 maximum sailing draught permitted by the port authority; and</p> <p>.18 any other items related to the terminal requested by the master.</p>	<p>.9 Information on the characteristics and properties of the cargo to be loaded.</p>
<p>3.3.2 Information on estimated times for berthing and departure and on minimum water depth at the berth should be progressively updated and passed to the master on receipt of successive ETA advices.</p>	<p>3.3.2</p>
<p>3.3.3 The terminal representative should be satisfied that the ship has been advised as early as possible of the information contained in the cargo declaration as required by chapter VI of SOLAS 1974, as amended.</p>	<p>3.3.3 The shipper of the cargo is responsible for ensuring that this information is provided to the master in good time.</p>

## Section 4 – Procedures between the Ship and the Terminal prior to Cargo Loading/Unloading

4.1 Principles	4.1
<p>4.1.1 The master is responsible at all times for the safe loading and unloading of the ship, the details of which should be confirmed to the terminal representative in the form of a loading or unloading plan. In addition, the master should:</p> <ol style="list-style-type: none"> <li>.1 ensure that the check list in appendix 3 is completed in consultation with the terminal before loading or unloading is commenced;</li> <li>.2 ensure that the loading or unloading of cargo and the discharge or intake of ballast water is under the control of the ship's officer in charge;</li> <li>.3 ensure that the disposition of cargo and ballast water is monitored throughout the loading or unloading process to ensure that the ship's structure is not overstressed;</li> <li>.4 ensure that the terminal representative is made aware of the requirements for harmonization between deballasting and cargo loading rates for his ship;</li> <li>.5 ensure that ballast water is discharged at rates which conform to the agreed loading plan and do not result in flooding of the quay or of adjacent craft;</li> <li>.6 retain on board sufficient officers and crew to attend to the adjustment of mooring lines or for any normal or emergency situation, having regard to the need of the crew to have sufficient rest periods to avoid fatigue;</li> <li>.7 ensure the loading or unloading plans have been passed to and agreed with the terminal representative;</li> </ol>	<p>4.1.1 The loading/unloading plan should preferably be agreed in principle prior to the arrival of the ship.</p> <ol style="list-style-type: none"> <li>.1 The Terminal Representative should ensure the loader/unloader operators and/or terminal control room personnel receive a copy of the agreed load/unload plan. They should also be immediately notified of any subsequently agreed changes. Copies should be retained in the terminal's file for that ship.</li> <li>.2 The total quantity to be kept for trimming should be clearly stated in the loading plan.</li> <li>.3 The quantity remaining on the belt should be accurately known, or else the belts should run off before trimming commences.</li> <li>.4 Where loading terminals insert empty gaps into the flow of material to allow for changing hatches, these gaps should be adequate and there should be good communications between loader and stockyard to ensure the loader can move safely.</li> <li>.5 For multi-unloader or loader operations the terminal should inform the master of its procedures for preventing collisions between the loaders/unloaders. The cargo plans should normally ensure that the machines will be separated by at least one unworked hatch.</li> <li>.6 The actual quantities to be trimmed should be determined by the master in good time as loading completes, and the distribution clearly specified to the Terminal Representative and to the loader operator.</li> </ol>

<p>.8 ensure that the terminal representative is made aware of the cargo trimming requirements;</p> <p>.9 ensure that appropriate information about the cargo to be loaded (appendix 5) has been received to enable safe stowage and carriage to be achieved;</p> <p>.10 ensure that there is agreement between ship and shore as to the action to be taken in the event of rain, or other change in the weather, when the nature of the cargo would pose a hazard in the event of such a change; and</p> <p>.11 ensure that no hot work is carried out on board the ship while the ship is alongside the berth except with the permission of the terminal representative and in accordance with any requirements of the port administration.</p>	<p>.7 Due allowance should be made for the belt run off on completion.</p> <p>.8 Where load/unload plans are programmed into the computerised control system of loader/unloaders, the operator should monitor these carefully, keep the programme updated as the operation progresses, double check if doubt, and be able to revert to a manual tally in event of any problems with the computer programme.</p> <p>.9 The Terminal Representative should notify the master when cargo conditions have changed due to weather.</p>
<p>4.1.2 The terminal representative is responsible for loading or unloading cargo in accordance with the hatch sequence and tonnages stated on the ship's loading or unloading plan. In addition, the terminal representative should:</p> <p>.1 complete the check list in appendix 3 in consultation with the master before loading or unloading is commenced;</p> <p>.2 not deviate from the loading or unloading plan unless by prior consultation and agreement with the master;</p> <p>.3 trim the cargo, when loading or unloading, to the master's requirements;</p> <p>.4 maintain a record of the weight and disposition of the cargo loaded or unloaded and ensure that the weights in the hold do not deviate from the plan;</p>	<p>4.1.2 The Terminal Representative responsible for loading or unloading cargo should:</p> <p>.1 Inform the ship of all relevant information regarding:</p> <p>.1.1 Cargo operations.</p> <p>.1.2 Ship and terminal safety issues and regulations.</p> <p>.1.3 Arrangements for safe access to/from the ship.</p> <p>.1.4 Arrangements for access for crewmembers through the terminal premises.</p> <p>.1.5 Weather and tidal conditions.</p> <p>.1.6 Mooring management recommendations.</p> <p>.2 Understand and respond to the information provided by the master regarding particular safety and operational</p>

<p>.5 provide the master with the names and procedures for contacting the terminal personnel or shipper's agent who will have responsibility for the loading or unloading operation and with whom the master will have contact;</p> <p>.6 avoid damage to the ship by the loading or unloading equipment and inform the master, if damage occurs;</p> <p>.7 ensure that no hot work is carried out on board or in the vicinity of the ship while the ship is alongside the berth except with the permission of the master and in accordance with any requirements of the port administration; and</p> <p>.8 ensure that there is agreement between the master and the terminal representative at all stages and in relation to all aspects of the loading or unloading operation.</p>	<p>issues of concern to the ship.</p> <p>.3 Have sufficient personnel available to deal with any emergencies likely to affect the safety of its personnel and facilities.</p> <p>.4 Have details to be specified in the Ship/Shore Checklist, and should also be provided with the terminal's Regulations and Information Booklet.</p> <p>.5 Have a procedure for checking the origin, nature and extent of damage whether notified by terminal or ship personnel.</p> <p>.6 Have knowledge of Hot Work procedures to identify any risks, and be familiar with the control measures and precautions required, noting that it may be necessary to ballast one or more holds to reduce the Cargo Air Draught of the ship. With combination carriers, this is unlikely to introduce hazards if the pipeline system has been well washed. However if a pump or pipeline has not been adequately washed, the ballasting operation may discharge residual oil into the hold. Atmospheric tests in the hold should therefore be made before any Hot Work is carried out in, adjacent to, or above a ballasted hold.</p>
<p><b>4.2 Procedures</b></p>	<p><b>4.2</b></p>
<p>4.2.1 The following are considered important procedures in respect of cargo loading:</p> <p>.1 the master and terminal representative should indicate agreement to the loading plan before commencement of loading by signing the plan in the spaces provided;</p> <p>.2 the master should state on the agreed loading plan, the order in which the holds are to be loaded, the weight of each pour, the total weight in each hold and the amount of cargo for vessel trimming purposes, if required;</p>	<p>4.2.1 It is the master's responsibility to ensure the loading plan is prepared in accordance with the ship's loading manual.</p> <p>.1 For each step of the loading operation the loading plan should also show the amount of ballast and the tanks to be deballasted, the ship's draught and trim, and the calculated shear stress and bending moments.</p> <p>.2 The master should carry out draft checks at regular intervals during the loading, and particularly when between about 75-90% of the cargo is loaded. The tonnage loaded should be compared with the terminal's weight figure, and adjustments to the final trimming figures determined and agreed</p>

<p>.3 the terminal representative, on receipt of the ship's initial loading plan (see 3.2.1), should advise the master of the nominal loading rate at which the ship may expect to receive the cargo and the estimated time required to complete each pour;</p> <p>.4 where it is not practical for the ship to completely discharge its ballast water prior to reaching the trimming stage in the loading process, the master and the terminal representative should agree on the times at which loading may need to be suspended and the duration of such suspensions;</p> <p>.5 the loading plan should be prepared so as to ensure that all ballast pumping rates and loading rates are considered carefully to avoid overstressing the hull;</p> <p>.6 the quantities of cargo required to achieve the departure draft and trim should allow for all cargo on the terminal's conveyor systems to be run off and empty on completion of a loading. The terminal representative should advise the master of the nominal tonnage contained on its conveyor system and any requirements for clearing the conveyor system on completion of loading; and</p> <p>.7 communication arrangements between the ship and terminal should be capable of responding to requests for information on the loading process and of prompt compliance in the event that the master or terminal representative orders loading to be suspended. Consideration should be given to the disposition of cargo on the conveyor systems and to the response time in the event of an emergency stop.</p>	<p>accordingly.</p> <p>.3 Any changes to the loading plan required by either terminal or ship should be made known as soon as possible and agreed by the Master and Terminal Representative. Stresses resulting from any changes must remain within the ship's hull stress limitations.</p> <p>.4 High impact cargo drops and exceeding maximum load limits on tanks tops should be avoided.</p> <p>.5 To avoid over-stressing the ship:</p> <p>.5.1 Cargo should be distributed evenly within each hold and trimmed to the boundaries of the cargo space to minimize the risk of it shifting at sea.</p> <p>.5.2 Cargo should not be loaded high against one hold bulkhead or one side, and low against the other.</p> <p>.5.3 Each hold should be loaded using at least two separate pours per hold.</p> <p>.5.4 The terminal should maintain an accurate record of the tonnages loaded in each pour into each hold.</p> <p>.5.5 Sudden increases in the loading rates causing significant overloading should be avoided.</p> <p>.6 The amount of cargo remaining on the belts depends on the loading rate at the time. This should be known by the loader operator and the Terminal Representative</p> <p>.7 Ship/Shore Communications arrangements should be confirmed when completing the Ship/Shore Safety Checklist, giving all necessary details and contact details for both ship and terminal including:</p> <p>.7.1 Language and terminology to be used.</p>
--	---

	<p>.7.2 Location of telephones and terminal offices, normal communications procedures and telephone numbers.</p> <p>.7.3 Emergency communications procedures and telephone numbers.</p> <p>.7.4 Designated port VHF Channels</p> <p>.8 Clarify procedures for providing the duty officer with the tonnage loaded and the loading rate as required.</p> <p>.9 Clarify arrangements for stops to carry out draught checks.</p> <p>.10 Clarify arrangements for reporting ship damage by stevedores.</p>
<p>4.2.2 The following are considered important procedures in respect of cargo unloading:</p> <p>.1 the terminal representative, when proposing or accepting the initial unloading plan, should advise the master of the nominal unloading rate and the estimated time required for each stage of the discharge;</p> <p>.2 the master should advise the hold order and the weight to be unloaded in each stage of the discharge;</p> <p>.3 the terminal representative should give the ship the maximum warning when it is intended to increase, or to reduce, the number of unloading heads used; and</p> <p>.4 communication arrangements between ship and terminal should be capable of responding to requests for information on the unloading process, and of prompt compliance in the event that the master orders unloading to be suspended.</p>	<p>4.2.2 The ship should provide the terminal with its proposed unloading plan in advance of the ship's arrival.</p> <p>4.2.3 The <b>Terminal Representative</b> should co-ordinate with the master and agree upon a plan before operations begin.</p> <p>4.2.4 Agreeing the unloading plan prior to arrival simplifies matters for all concerned when the ship does arrive, as there usually is little time for the Master to re-calculate the unloading plan after the ship has arrived and is ready to commence unloading.</p> <p>.1 Master should ensure that the <b>Terminal Representative</b> is provided with accurate information in good time so as the loader/unloader operator can be notified of the ship's requirements.</p>

<p><b>4.3 Implementation</b></p>	<p><b>4.3</b></p>
<p>4.3.1 The loading or unloading plan should be prepared in a form such as that shown in appendix 2. Worked examples of this form are also shown in appendix 2. A different form may be used provided it contains the essential information to meet the requirements of this Code. The minimum information for this purpose is that enclosed in the heavy line box on the sample form.</p> <p>4.3.2 The loading or unloading plan should only be changed when a revised plan has been prepared, accepted and signed by both parties. Loading plans should be kept by the ship and terminal for a period of six months.</p> <p>4.3.3 A copy of the agreed loading or unloading plan and any subsequent amendments to it should be lodged with the appropriate authority of the port State.</p>	<p>4.3.3 Records should be maintained in accordance with any national requirements.</p>

**Section 5 – Cargo Loading and Handling of Ballast**

<p><b>5.1 General</b></p>	<p><b>5.1</b></p>
<p>5.1.1 When the cargo loading plan is agreed, the master and terminal representative should confirm the method of cargo operations so as to ensure no excessive stresses on the hull, tank top and associated structures, and exchange information to avoid any structural damage to the ship by cargo handling equipment.</p>	<p>5.1.1 For guidance for avoidance of damage during cargo handling, see annex 2.</p>
<p>5.1.2 The terminal representative should alert the master, when the cargo is heavy, or when the individual grab loads are large, that there may be high, localized impact loads on the ship's structure until the tank top is completely covered by cargo, especially when high free-fall drops are permitted. As such impacts have the potential for causing structural damage, special care should be taken at the start of the loading operation in each cargo hold.</p>	<p>5.1.2 Special care needs to be taken with heavy cargoes such as iron ore, scrap iron, lead and other concentrates.</p> <p>.1 The loader chute, spout or grab should be kept as close to the tank top as possible and loading should be started at a low rate until the tank top in the loading area is covered with a layer of cargo. As the pile builds up on that area the cargo will roll down the pile and slowly spread over the rest of the tank top without any heavy impact.</p>

<p>5.1.3 Monitoring of the cargo handling operation, and effective communication between the terminal and ship, must be maintained at all times, and especially during final trimming of the ship.</p>	<p>5.1.3 Communications may be maintained by all or any of the following:</p> <ul style="list-style-type: none"> <li>.1 Direct verbal contact between the designated ship's officer and the <b><i>Terminal Representative</i></b>.</li> <li>.2 Portable radio communication between designated officer, <b><i>Terminal Representative</i></b> and/ or loader operator.</li> <li>.3 Telephone and/or easily accessible Talk – Back speakers on loader structure to allow surveyor/designated ship's officer/<b><i>Terminal Representative</i></b> speak directly with loader operator during trimming operations.</li> </ul>
<p>5.1.4 Any requirement for cargo trimming should be in accordance with the procedures of the IMO Code of Safe Practice for Solid Bulk Cargoes (BC Code).</p>	<p>5.1.4 The Master, the <b><i>Terminal Representative</i></b> and the loader operators at the load port should bear the unloading of the cargo in mind while they are loading the ship. They should, where possible, avoid trimming cargo on to beams or ledges from where it will be difficult or unsafe to remove.</p>
<p>5.1.5 In order to effectively monitor the progress of the cargo loading operation it is essential for both the master and terminal representative to have readily accessible information on the total quantity loaded, as well as the quantities per pour.</p>	<p>5.1.5 Trimming pours:</p> <ul style="list-style-type: none"> <li>.1 The loading belts should be run empty before the 90% survey if there is any doubt about the quantity of cargo remaining on them.</li> <li>.2 Where applicable scale weights should be checked against the draught survey estimates of cargo loaded and cargo remaining to be loaded, and allowances made for the balance to be loaded.</li> <li>.3 The quantity of cargo to be trimmed into the fore and aft holds should be delivered exactly as required to ensure the ship finishes with the required fore and aft draughts and trim. This will ensure it will be able to depart from the load port and proceed to and arrive at its unloading port safely and with the required under keel clearance.</li> </ul>

<p>5.1.6 On completion of loading, the master and the terminal representative should agree in writing that the ship has been loaded in accordance with the loading plan, including any agreed variations.</p>	<p>5.1.6 The ship's agent should assist in preparing the necessary documentation on completion of loading.</p>
<p><b>5.2 Ship duties</b></p>	<p><b>5.2</b></p>
<p>5.2.1 The master should advise the terminal representative of any deviation from the deballasting plan or any other matter which may affect cargo loading.</p>	<p>5.2.1 If the ship cannot deballast at the rate agreed in the Loading Plan, or if deballasting is causing the ship to list or trim incorrectly, the Terminal Representative should be informed in good time and arrangements made for the suspension of loading until the ship has resolved the problem.</p>
<p>5.2.2 The ship should be kept upright or, if a list is required for operational reasons, it should be kept as small as possible.</p>	<p>5.2.2</p>
<p>5.2.3 The master should ensure close supervision of the loading operation and of the ship during final stages of loading. The master should advise the terminal representative when final trimming of the ship has to commence in order to allow for the conveyor system run-off.</p>	<p>5.2.3 It is prudent that a draught survey is carried out with about 90% of the cargo loaded.</p>
<p><b>5.3 Terminal duties</b></p>	<p><b>5.3</b></p>
<p>5.3.1 The terminal representative should advise the master on any change to the agreed loading rate and, at the completion of each pour, the terminal representative should advise the master of the weight loaded and that cargo loading continues in accordance with the agreed cargo plan.</p>	<p>5.3.1 The weight of the cargo being loaded should be harmonised with the ballast water being pumped out, so that both remain in step.</p> <ul style="list-style-type: none"> <li>.1 The rate of loading into the holds should be maintained at a steady flow. The ship should be informed of any changes.</li> <li>.2 The load plan is normally designed to maintain the ship with a slight trim by the stern in order to strip out the ballast.</li> </ul>
<p>5.3.2 The ship should be kept upright with the cargo distributed so as to eliminate any twisting of the ship's structure.</p>	<p>5.3.2 The ship should also ensure that the ballast is discharged in accordance with loading/unloading plan.</p>
<p>5.3.3 The terminal should use weight-meters which are well maintained and provide an accuracy to within 1% of the rated quantity required over the normal range of loading rates. The terminal should frequently monitor the weight of cargo that is being loaded and inform the ship so that it can be compared with the</p>	<p>5.3.3 A one per cent error on a 70,000 tonne cargo is 700 tonnes.</p> <ul style="list-style-type: none"> <li>.1 If the weigh scale is reading lower than the actual tonnage loaded, then the scale will be reading 69,300 tonnes when there is 70,000 tonnes on board. If no allowance is</li> </ul>

<p>cargo loading plan and the ship's calculation by draught marks.</p>	<p>made for this then it may not be possible to complete the trimming of the ship as per cargo plan.</p> <p>.2 The terminal should co-operate with the master in carrying out the 90% draught survey and determining any weight meter error. Due allowance should then be made when loading the remaining balance of cargo.</p>
--	---

## Section 6 – Unloading Cargo and Handling of Ballast

<p><b>6.1 General</b></p>	<p><b>6.1</b></p>
<p>6.1.1 When the cargo unloading plan is agreed, the master and terminal representative must confirm the method of cargo operations so as to ensure no excessive stresses on the hull, tank top and associated structures, including any measures to reduce and eliminate any structural damage to the ship by cargo handling equipment.</p>	<p>6.1.1 In addition to the avoidance of structural damage to the ship, the health and safety of ship and shore personnel should not be compromised by the adoption of any unloading practice.</p> <p>.1 If the ship cannot be unloaded safely by the normal unloading methods due to design features of the particular ship or the way in which the cargo was loaded, then the Master and Terminal Representative should carry out a risk assessment to identify a safe system of work.</p> <p>.2 <b><u>Safety issues to be considered include:</u></b></p> <p>.2.1 Safe access for shore personnel; gangways should be secure with safety net fitted, adequately illuminated and with safe access from top of gangway to the deck.</p> <p>.2.2 Access on deck to be confined to the outboard side only. There should be no access for anyone on the inboard side of the ship where unloading equipment is working overhead.</p> <p>.2.3 Hold access ladders should be safe, secure and in good condition.</p>

	<ul style="list-style-type: none"><li>.2.4 Hold access trunks should be adequately lit.</li><li>.2.5 Adequate hold lighting. Holds cannot be cleaned properly and personnel cannot work safely if the lighting provided by the ship is inadequate.</li><li>.2.6 Adequate ventilation of holds.</li><li>.2.7 The risk of overhanging cargo that could fall on personnel working underneath.</li><li>.2.8 Provision of safe access to cargo residue requires manual removal from ship's frames, pipes and structures.</li><li>.2.9 Arrangements regarding ship's crew entering holds, or lowering clean-up tools/equipment into holds while shore personnel are still working there.</li><li>.2.10 Arrangements for safe access to and erection of guard railings around hatch covers, where shore personnel have to remove spillage from top of hatch covers.</li><li>.2.11 Ship's crew to ensure that hatch covers are fully opened clear of the line of the hatch coaming and secured in position, so that grab ropes/shackles cannot catch on overhanging lips.</li><li>.2.12 Geared ships to have gear swung outboard and lowered as much as possible below the unloader gantry.</li><li>.2.13 Hold manhole covers and bilge cover plates should be secured flush with the tank top. Paint marks on the bulkhead indicating their position are useful to machine drivers.</li></ul>
--	--

	<p>.2.14 All personnel should keep well clear of the area where the unloader is working.</p> <p>.2.15 Respiratory protection should be worn by both ship and shore personnel when handling dusty cargo.</p> <p>.2.16 Reporting of defects – any apparent deficiency or hazard that could affect the safety of unloading operations should in the first instance be reported to the Master.</p> <p>.2.17 All lifting appliances and lifting gear – whether provided by ship or terminal, should be used in a safe and proper manner, and have current test and examination certificates.</p>
<p>6.1.2 Monitoring and effective communication between the terminal and ship must be maintained at all times</p>	<p>6.1.2 Contact details and procedures should be agreed and noted in the <i>Ship/Shore Safety Checklist</i>.</p>
<p>6.1.3 On completion of unloading, the master and the terminal representative should agree in writing that the ship has been unloaded in accordance with the agreed unloading plan, with the holds emptied and cleaned to the master's requirements, and should record any detected damage suffered by the ship.</p>	<p>6.1.3 Hold cleaning requirements are normally specified in the relevant charter party or contract of affreightment. The holds should be cleaned to the master's satisfaction in accordance with the contractual requirements.</p> <p>.1 Where the ship's crew members have commenced cleaning the holds as the terminal completes unloading in each one; the terminal, when appropriate and in conformance with national regulations, should assist the ship in removing hold sweepings and unloading all the available cargo residue ashore.</p>
<p>6.1.4 In order to maintain an effective monitoring of the progress of the cargo unloading plan, it is essential for both the master and the terminal representative to have readily accessible information on the total unloaded quantity as well as on the quantities unloaded per hatch.</p>	<p>6.1.4</p>

<p>6.1.5 When ballasting one or more holds, master and terminal operator should take account of the possibility of the discharge of flammable vapours from the holds. Suitable precautions* should be taken before any hot work is permitted adjacent to or above that space.</p>	<p>6.1.5 This applies to Combination Carriers, where holds must be adequately ventilated to ensure that the atmosphere contains no flammable or noxious vapours, and is safe for personnel and heavy machinery to work. Ref: ISGOTT (International Safety Guide for Oil Tankers and Terminals) (Ch.12)</p> <p>6.1.6 During the unloading of dry bulk cargo it may be necessary to ballast one or more holds to reduce the Cargo Air Draught of the ship. This is unlikely to introduce hazards if the pipeline system has been well washed. However if a pump or pipeline has not been adequately washed, the ballasting operation may discharge residual oil into the hold. Atmospheric tests in the hold should therefore be made before any Hot Work is carried out in, adjacent to, or above a ballasted hold.</p>
<p><b>6.2 Ship duties</b></p>	<p><b>6.2</b></p>
<p>6.2.1 The master will advise the terminal representative of any deviation from the ballasting plan or any other matter which may effect cargo unloading.</p>	<p>6.2.1</p>
<p>6.2.2 At the start and during all stages of unloading cargo, the master should ensure that frequent checks are made so that:</p> <ul style="list-style-type: none"> <li>.1 cargo spaces and other enclosed spaces are well ventilated, and persons are allowed to enter them only after they have been declared safe for entry in accordance with the guidelines developed by the Organization;</li> <li>.2 the cargo is being unloaded from each hold in accordance with the agree unloading plan;</li> <li>.3 the ballasting operation is proceeding in accordance with the agreed unloading plan;</li> <li>.4 the ship is securely moored, and that weather conditions are being</li> </ul>	<p>6.2.2 Further guidance is contained in IMO Assembly resolution A.864(20), Recommendations for entering enclosed spaces aboard ships.</p> <p>Special precautions should be taken and <i>Enclosed Space Entry Procedures</i> observed where there is a risk of an unsafe atmosphere in ship's holds, particularly where:</p> <ul style="list-style-type: none"> <li>.1 The cargo has been fumigated en passage.</li> <li>.2 The cargo has oxygen depleting characteristics.</li> <li>.3 The cargo is liable to give off flammable or toxic vapours.</li> </ul> <p>The <b><i>Terminal Representative</i></b> should be familiar with the BC Code (Code of Safe</p>

\* Refer to the section on the operation of combination carriers in the *International Safety Guide for Oil Tankers and Terminals (ISGOTT)*.

<p>monitored and local weather forecasts obtained;</p> <p>.5 the ship's draught is read regularly to monitor the progress of the unloading;</p> <p>.6 the Terminal Representative is warned immediately if the unloading process has caused damage, has created a hazardous situation, or is likely to do so;</p> <p>.7 the ship is kept upright, or, if a list is required for operational reasons, it is kept as small as possible; and</p> <p>.8 the unloading of the port side closely matches that of the starboard side in the same hold to avoid twisting the ship.</p>	<p>Practice for Solid Bulk Cargoes) recommendations for the specific cargoes that the Terminal handles, and also with the Material Safety Data Sheets (MSDS) for those materials.</p> <p>The <b>Terminal Representative</b> should ensure the master is made aware of:</p> <ol style="list-style-type: none"> <li>.1 Any local tidal or current conditions at the berth that could affect the safe mooring of the ship.</li> <li>.2 Details of any prevailing wind conditions that could affect the safety of operations.</li> <li>.3 Any forecasts of extreme wind conditions.</li> <li>.4 Limiting wind or tidal conditions for berthing/unberthing.</li> <li>.5 Limiting wind conditions for loader/unloader operation.</li> <li>.6 Other conditions affecting operations such as wave or swell conditions, visibility, electrical storms.</li> <li>.7 The effects of either heavy rainfall or drought conditions on the berth or approach channels.</li> </ol> <p>Appropriate safety precautions should be taken while reading ship's draughts, including:</p> <ol style="list-style-type: none"> <li>.1 Safe access along jetty edge.</li> <li>.2 Wearing appropriate personnel protective equipment (including but not limited to life jacket, safety helmet, safety boots, high visibility clothing, respiratory protection, as necessary).</li> </ol> <p>Hold inspections should be carried out as soon as unloading of a hold is completed and it is safe to enter.</p> <p>Any Stevedore Damage Reports should be presented to the <b>Terminal Representative</b></p>
--	--

	<p>immediately to allow the claim to be verified and agreement reached with the master concerning the arrangements to be made for its repair.</p> <p>The <i>Terminal Representative</i> should be informed if the ship is being listed due to the distribution of ballast, or if there are problems on board with pumping ballast.</p>
<p>6.2.3 The master should ensure close supervision of the final stages of the unloading, to ensure that all cargo is unloaded.</p>	<p>6.2.3 The master should also ensure that:</p> <ul style="list-style-type: none"> <li>.1 Adequate and proper hold lighting is provided.</li> <li>.2 Bilge cover plates are properly secured so that they cannot be accidentally dislodged during hold cleaning.</li> </ul>
<p><b>6.3 Terminal duties</b></p>	<p><b>6.3</b></p>
<p>6.3.1 The terminal representative should follow the agreed unloading plan and should consult with the master if there is a need to amend the plan.</p>	<p>6.3.1 See Annex 5: Guidelines for unloading from the holds so as to minimize listing, twisting, stressing as a result of cargo handling.</p>
<p>6.3.2 The ship is to be kept upright or, if a list is required for operational reasons, it is to be kept as small as possible.</p>	<p>6.3.2 The cargo should be removed in a methodical pattern across the hold so that any listing to one side and then the other is kept small and is constantly being corrected.</p>
<p>6.3.3 The unloading of the port side closely matches that of the starboard side in the same hold, to avoid twisting the ship.</p>	<p>6.3.3 Where grab operations are carried out in automatic or semi-automatic mode the unloader operator should:</p> <ul style="list-style-type: none"> <li>.1 Ensure the limits are set correctly for every hold.</li> <li>.2 That both ship and unloader are monitored constantly for any deviation</li> </ul>

	<p>from these limits.</p> <p>.3 That the pattern followed by the grab is systematic and even across the hold.</p>
<p>6.3.4 Unloading rates and sequences should not be altered by the terminal unless by prior consultation and agreement between the master and the terminal representative.</p>	<p>6.3.4 Where there is significant and unavoidable delays to the unloading, or a reduction in the expected rates due to breakdowns or problems with the terminal materials handling system, the master should be informed and the plan amended as necessary.</p>
<p>6.3.5 The terminal representative should advise the master when unloading is considered to be completed from each hold.</p>	<p>6.3.5</p>
<p>6.3.6 The terminal should make every effort to avoid damage to the ship when using unloading or hold cleaning equipment. If damage does occur, it should be reported to the master and, if necessary, repaired. If the damage could impair the structural capability or watertight integrity of the hull, or the ship's essential engineering systems, the Administration or an organization recognized by it and the appropriate authority of the port State should be informed, so that they can decide whether immediate repair is necessary or whether it can be deferred. In either case, the action taken, whether to carry out the repair or defer it, should be to the satisfaction of the Administration or an organization recognized by it and the appropriate authority of the port State. Where immediate repair is considered necessary, it should be carried out to the satisfaction of the master before the ship leaves the port.</p>	<p>6.3.6 The master should inspect each hold as soon as possible after the completion of unloading of cargo from the hold. Any damage found should be reported to the Terminal Representative immediately.</p>
<p>6.3.7 The terminal representative should monitor the weather conditions and provide the master with the forecast of any local adverse weather condition.</p>	<p>6.3.7</p>

**Annex 1 – Pre-Arrival Ship/Shore Exchange of Information**

**AN EXAMPLE OF A BULK CARRIER SHIP/SHORE EXCHANGE OF INFORMATION**

The table below indicates only an example and format for the exchange of information. Terminal may require additional information, especially in the case of part-loaded ships and combination carriers (further details of information to be exchanged may be found in section 3 of the BLU Code). The table may be modified as appropriate by individual terminals

Information to be provided by the **Master to the Terminal** in accordance with relevant IMO guidelines regarding the *Safe Loading and Unloading of Bulk Carriers*.

	INFORMATION	RESPONSE
1	<i>Ship Name Call Sign /IMO Number / Flag Port of Registry</i>	Name..... Call Sign..... IMO No..... Flag..... Port of Registry.....
2	<i>ETA Sea Pilots</i>	Date ..... Time.....
3	<i>Unloading Plan/Cargo Distribution or Loading Plan</i>	<b>Please attach proposed plan.</b>
4	<i>Arrival draughts and proposed departure draughts</i>	Arrival: Forward...../Aft..... Departure: Forward...../Aft.....
5	<i>Time required for ballasting/deballasting</i>	
6	<i>Ship's LOA / Beam /Displacement Working length from forward coaming of No.1 hatch to aft coaming of aft hatch</i>	LOA.....metres Beam.....metres Displacement..... tonnes Working length.....metres
7	<i>Gangway If shore gangway is provided, can ship provide secure landing place, safety net and bulwark ladder?</i>	
8	<i>Distance from waterline to hatch coaming</i>	
9	<i>Number and kind of mooring lines Number of enclosed fairleads foreward and aft</i>	
10	<i>Trimming requirements</i>	

<i>Example of Checklist to Show Suitability for Loading/Unloading Solid Bulk Cargoes</i>		
		<i>Master's Comments</i>
1	<i>Cargo holds and hatch openings are suitable for cargo operations</i>	
2	<i>Holds are clearly numbered on hatch covers/coamings</i>	
3	<i>Hatch covers, hatch operating systems and safety devices are in good operational condition</i>	
4	<i>List indication lights, if fitted, have been tested prior to arrival and are operational</i>	
5	<i>If applicable, loading instrument is certified and operational</i>	
6	<i>Propulsion/auxiliary machinery is in good operational order</i>	
7	<i>Mooring equipment is in good functional order</i>	
	<i>Signed: Master</i>	<i>Date:</i>

Example of information to be provided by the **TERMINAL TO THE MASTER** in accordance with relevant IMO guidelines regarding the *Safe Loading and Unloading of Bulk Carriers*. This may be modified as appropriate by individual terminals.

	INFORMATION	RESPONSE
1.0	<i>Name of Berth to be used</i> <i>Which side alongside</i>	No.1 Berth No.2 Berth
1.1	<i>Estimated time of berthing</i>	1. Berthing time.....
1.2	<i>Estimated time of completion</i>	2. Estimated completion time.....
2.0	<i>Unloading Equipment</i>	1. Number of unloaders..... 2. Nominal Rate..... 3. Estimated times for each stage of unloading to be agreed on arrival. 4. Cargo Air Draught of Unloaders.....
2.1	<i>Loading Equipment</i>	1. Number of Loaders 2. Expected Rate No.1 Berth: 3. Expected Rate No.2 Berth: 4. Estimated times for each stage of loading to be agreed on arrival. 5. Cargo Air Draught of Loaders...
3.0	<i>Minimum depth of Water alongside</i>	No.1 Berth : .....m No.2 Berth : .....m Ships arriving on max. draughts to plan unloading so ship raises on even keel for first 12 hours .
3.1	<i>Water Density</i>	Depending on tide and weather.
4.0	<i>Depths in Approach and Departure Channels</i>	Adequate at all times for all ships. Berthing times restricted as follows: No.1 Berth..... No.2 Berth.....
4.1	<i>Maximum allowable docking speed</i>	m/sec
5.0	<i>Pilotage Anchorage (Pilot Station VHF)</i>	Pilots normally board at..... Ships awaiting a berth normally proceed direct to the..... Anchorage.
6.0	<i>Maximum distance from waterline to top of hatch coaming</i>	Ships loading : .....metres Ships unloading: .....metres
7.0	<i>Arrangements for gangways and access</i>	
8.0	<i>Tugs:</i>	Number available:..... Number normally required:..... Type
8.1	<i>Line Boat Available</i>	Yes/No
9.0	<i>Main Engine Immobilisation alongside</i>	<b>No.1 Berth:</b> Immobilisation permitted/not permitted <b>No.2 Berth:</b> Immobilisation permitted/not permitted

10.0	<i>Grades of cargo to be loaded</i>	<p><b>Product A:</b> .....tonnes Stowage Factor on loading.....</p> <p><b>Product B:</b>.....tonnes Stowage factor:.....</p> <p>Etc. etc.</p>
11.0	<i>Any advance information on proposed loading/unloading operations</i>	<p><b>Draught Survey:</b> Ships arriving to load should preferably have ballast tanks either fully pressed up or empty.</p> <p><b>Slow Deballasting:</b> loading continues at normal rate until ship requests loading stop.</p> <p>1. The Terminal's preferred options are:</p>
11.1	<p><b>1. Loading Plan</b> <b>2. Unloading Plan</b></p>	
12.0	<i>Travel limits of Terminal equipment</i>	<p>Maximum working distance from foreward end No.1 hatch to aft end of aft hatch:</p> <p>No.1 Berth Unloader:..... metres No.1 Berth Loader: ..... metres No.1 Berth Unloader: ..... metres No.1 Berth Loader: ..... metres</p>
13.0	<b>Mooring Arrangements:</b>	Number of headlines or sternlines/breasts/springs:
14.0	<i>Unusual mooring requirements</i>	
	<b>Signed: Terminal Representative</b>	Date:

## Annex 2 - Avoidance of damage during cargo handling

The traditional design and configuration of single-side skin bulk carriers presents obstacles to safe and efficient cargo handling, especially discharge with grabs.

The usual types of damage that occur during grab discharge operations are grab and payloader damage in the holds, damage to hatch coamings and covers, and damage to deck fittings and equipment.

Grab damage in the holds can be classified into three categories:

1. Damage to ladders or coamings during free digging.
2. Damage to frames and hopper side during the second phase of digging.
3. Damage to the tank top during the third phase of digging.

	Procedure	Keypoint
1	<p><b>Prevention of damage to ladders</b></p> <p>.1 When free digging the Operator should:</p> <p>.1.1 Check for the location of sloping ladders with intermediate platforms extending into the hold space, check if it is going to the outboard or inboard side, and check for the location of platforms.</p> <p>.1.2 Check location of vertical ladders and look out for intermediate platforms.</p> <p>.1.3 Work carefully across each end of the hold in turn, keeping clear of the ladders until the cargo falls away and the handrails and intermediate platforms can be seen.</p>	<ul style="list-style-type: none"> <li>• Ladder may be buried under the cargo with only the top section visible.</li> <li>• Grab may topple over and strike the ladder, so make due allowances.</li> </ul>
2	<p><b>Prevention of damage to hoppers and sides frames during 2nd phase</b></p> <p>.1 Grab evenly over the full area of the hold to avoid development of steep banks in the wings.</p> <p>.2 Do not pendulum swing the grab into the wings so that it could strike the ship's side shell frames.</p> <p>.3 Keep the grab straight and parallel to the ship's side.</p>	<ul style="list-style-type: none"> <li>• Grab from the highest point of the cargo at all times.</li> <li>• Any damage to the frames may affect the seaworthiness of the ship, and has to be reported to the Master.</li> <li>• Avoid swinging the grab in at an angle, as the corner of the grab may strike the hopper tank first. This will cause heavy indents or puncture holes in the tank plate. (see <i>Figs. A &amp; B</i>)</li> </ul>

	<p>.4 Do not land the grab on the hopper side where bare steel is visible.</p> <p>.5 Do not attempt to land the grab close to the foreward and after bulkheads, as there may be an outward sloping stool plate under the cargo.</p>	
3	<p><b>Prevention of damage to inner bottom plating (tanktop) - 3rd phase</b></p> <p>.1 Lower the grab carefully and evenly on to the tank top. Never drop the grab at speed.</p>	<p>Be particularly careful where there are mounds of cargo on the tank top. One side of the grab will land safely on the cargo but the other side may drop corner first on to bare steel. If it lands heavily it can puncture the tank top.</p>
4	<p><b>Prevention of damage to hatch coamings and covers</b></p> <p>.1 The operator should always check along the line of hatches that the covers are completely opened clear of the coaming.</p> <p>.2 The travel of the grab into the hold should be controlled so that the grab and the grab trolley are in line as the grab is moving out and down into the hold. This will ensure that the swing is under control at all times.</p> <p>.3 When working in the wings the grab trolley should be positioned so that the grab ropes and the grab itself are raised clear of the coaming.</p>	<p>This is caused by grab or rope contact with the coamings or covers. Ship's crew may:</p> <ul style="list-style-type: none"> <li>• Leave covers slightly closed over the top of the coaming to prevent spillage getting into the drain channels.</li> <li>• Fail to secure the open covers in place, which can allow them to roll closed.</li> <li>• Always be aware that the ship can move in or out, fore and aft, and up and down due to wind, tide, movement of cargo and ballast, or crew adjusting mooring ropes.</li> <li>• Raising or lowering the grab close to the coaming may result in the grab or the grab rope shackles catching on the lips of the hatch cover. This will result in the cover being lifted and dropped heavily, causing major damage to the coaming, the cover and the cover drive mechanism.</li> <li>• Damage to the cross-joint sealing arrangement could also occur.</li> </ul>
5	<p><b>Prevention of damage by payloader to bottoms of ladders, stool plates and bulkheads – 4th phase</b></p> <p>In co-ordination with the Master, the operator should be informed of:</p> <p>.1 Location of the bottoms of ladders.</p>	<p>Payloader drivers should:</p> <ul style="list-style-type: none"> <li>• Operate carefully around ladders and projections. Remove material manually where necessary.</li> <li>• Avoid grinding the corners of the payloader bucket along the bottom of the bulkheads and hopper tanks, as this</li> </ul>

	<p>.2 Location of any pipes or pipe guards. .3 Location of bilge covers plates.</p>	<p>kind of heavy pressure can cause unseen damage.</p> <ul style="list-style-type: none"> <li>• The Master should point out the position of any obstructions on the tank top. On some ships the locations of bilge cover plates are marked by a line of paint on the bulkhead.</li> </ul>
<p>6</p>	<p><b>Prevention of damage to deck fittings and equipment</b></p> <p>Before travelling the unloader to a new location.</p> <p>.1 Check that the grab is well clear of all deck fittings and equipment before moving.</p> <p>.2 Check that it is clear for the unloader to long travel.</p> <p>.3 When working close to the bridge front or foremast make due allowances for aerials and other obstructions to the unloader boom and keep well clear.</p>	<p><u>Geared Ships:</u></p> <ul style="list-style-type: none"> <li>• Derrick and crane jibs not in use should be lowered below the level of the unloader boom.</li> <li>• As the ship rises up as the cargo is unloaded, the unloader operator should always check that there is safe clearance over all obstructions before attempting to move the unloader. The unloader boom should always be raised before moving if there is any doubt.</li> </ul>
<p>7</p>	<p><b>Error inducing conditions</b></p> <p>The following conditions may lead to operator error or misjudgement:</p> <p>.1 Overfilled or unevenly filled holds having ladders and platforms buried under the cargo.</p> <p>.2 Environmental conditions – poor lighting, dust, glare, fog.</p> <p>.3 Mechanical or control problems on the unloader – faulty grab controls, slipping winch brakes, slipping long travel brakes.</p> <p>.4 Poor working conditions such as poor conditions in the operator cab, faulty indicators, inadequate means of communications with ship and/or co-workers, faulty seat, dirty windows.</p>	<ul style="list-style-type: none"> <li>• Never grab from the forward and aft ends of the holds without being sure of where the ladders are.</li> <li>• Do not work unless the cargo in the hold is clearly visible.</li> <li>• All equipment faults should be reported to the Terminal Representative or relevant maintenance person immediately.</li> <li>• Unloader operation is a demanding job that requires concentration and care. Deficiencies and problems that distract the operator should be rectified immediately.</li> </ul>

Fig. A (Section view)

**Fig. A**  
Sides of grab “across” ship increases risk of point impact damage to hopper and tank top.

This is more likely to happen if grab is at an angle with the ship as it impacts with the hopper.

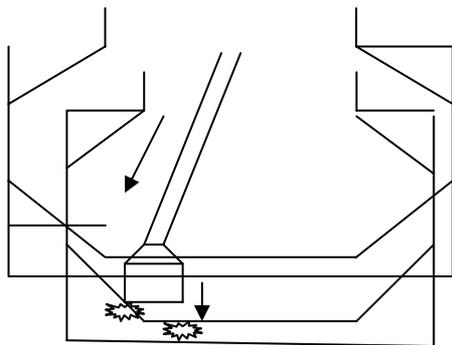
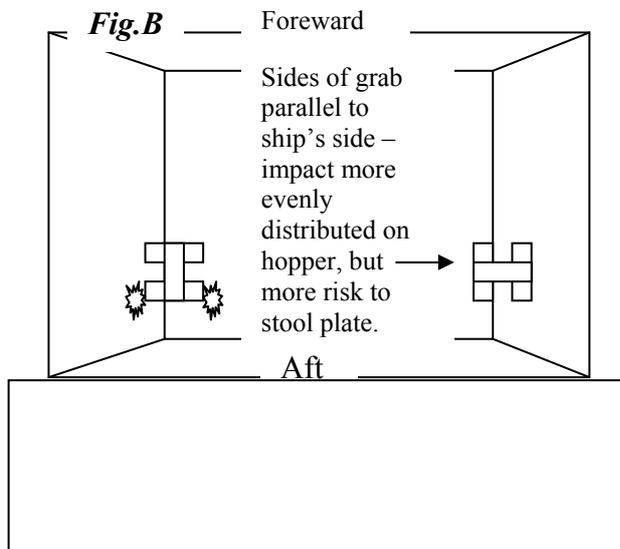


Fig. B (Plan view)



### Annex 3 – Repair of damage incurred during loading and unloading

#### Guidelines for Terminal Representatives in responding to damage incidents

	PROCEDURE	KEY POINT
1	<p><u>Reporting</u></p> <p>In consultation with the Master, report the damage to the relevant authorities as described in the BLU Code.</p>	
2	<p><u>Inspection Procedure</u></p> <ol style="list-style-type: none"> <li>1) Inspect damaged area together with Master.</li> <li>2) Look for signs of fresh metal or freshly broken welds in the impact area.</li> <li>3) Measure/estimate the damaged area, and length and depth of any indents.</li> <li>4) Check for signs of previous damage i.e. rusted broken welds or rusted indents.</li> </ol>	Equipment required: notebook, torch, camera, measuring tape.
3	<p><u>Minor Scrapes and Indents</u></p> <ol style="list-style-type: none"> <li>1) Photograph the required repair and estimate the cost.</li> <li>2) Arrange for repairs if necessary, safe and practicable.</li> </ol>	Alternatively agree a mutually acceptable means of resolving the issue with the ship's Master. Ensure that such agreement is fully documented
4	<p><u>Damage to ladders, handrails, steps which cause safety problems</u></p> <p>In consultation with Master and attending representative from the relevant authority, arrange for repairs to be carried out by a competent contractor.</p>	
5	<p><u>Serious Damage</u></p> <p>This includes holes in tank tops or wing tanks, hatch coaming or hatch cover damage, or damage to decks or fittings essential to maintaining the seaworthiness of the ship. Repairs will have to be carried out in accordance with the requirements of the relevant authorities.</p>	Normally the ship's Classification Society surveyor will be called in.
6	<p><u>Requirements/Procedure</u></p> <p>In order to avoid or minimize any delays to the ship, the terminal or the specialist repair contractor should have:</p> <ol style="list-style-type: none"> <li>1) Steel plate of suitable grade and size for ship repair available:</li> <li>2) A list of qualified welders, with certificates available.</li> </ol>	Plates of 12, 16 mm, 18mm, or 20mm grade 50D (or BS 4360/43 D or E) steel, complete with relevant mill certificates will meet most requirements. Have a list of the type of welding rods used.

7	<p><u>Work Method</u></p> <p>Carry out the repair in accordance with the procedure and method specified by the surveyor. The following key points will normally have to be observed:</p> <ol style="list-style-type: none"> <li>1) Ensure appropriate confined space entry and hot work procedures are followed before personnel begin any activities</li> <li>2) Where repair to a hatch cover is required, it should be positively secured in position, and the edges of the hatch cover cordoned off.</li> </ol>	<p>Have a competent person carry out an atmosphere test on the tank for explosive vapours/oxygen deficiency before doing any welding/burning or tank entry. Ensure gas detector is properly calibrated.</p>
8	<p><u>Signing Damage Report Forms</u></p> <p>All damage reports should be signed and acknowledged.</p> <ol style="list-style-type: none"> <li>1) Where the damage is repaired, ensure the Master provides appropriate documentation acknowledging that the repair was completed to his satisfaction.</li> <li>2) If damage cannot be repaired duly note estimated cost on the form, and attach signed notes of the agreement reached with the Master for the completion of the repairs at another port or ship repair facility</li> </ol>	<p>In event of claims for damage which did not occur at this terminal: Record in terms such as “in dispute, old damage, did not occur at this terminal”. Acknowledge for “receipt only”.</p> <p>Where major damage is concerned the Terminal should appoint a competent independent surveyor to act on its behalf.</p>

#### **Annex 4 - Training of Terminal Personnel involved in Loading and/or Unloading Bulk Carriers**

**Loader/Unloader Operator Training** should include:

1. The general hazards of loading and/or unloading Bulk Carriers (ref. ***BLU Code (Code of Practice for the Safe Loading and Unloading of Bulk Carriers) and BC Code (Code of Safe Practice for Solid Bulk Cargoes)***)
2. The dangerous effect improper loading and/or unloading can have on a ship.

Practical aspects to be included in the training should include:

- The BLU Code so that they understand and appreciate both the obligations it places on their terminal, and the limitations of the ships the terminal personnel are loading and/or unloading.
- The correct operating instructions for the ship loader or unloader they are operating.
- A basic understanding of the mechanical and electrical components of the loader and/or unloader such as travel drives, braking arrangements, ropes and rope care, grab/trolley winches, conveyors, operating and wind limits, storm anchoring.
- Emergency procedures such as fire on ship, terminal, or loader and/or unloader; mooring incidents, emergency stops.
- The correct techniques and patterns to be used to load or unload a ship, depending on the type of and number of loaders or unloaders being used.

#### **To Load a Ship:**

Loader operators should have an appropriate understanding of how to:

- Distribute the cargo in each hold in accordance with the agreed cargo plan to ensure the ship remains upright, and is neither stressed nor twisted.
- Ensure no hold is overloaded or overfilled, and that the ship can be safely trimmed on completion.
- Ensure loading efficiency is maximised, as per the agreed loading/deballasting plan.
- Ensure safety and environmental protection procedures are followed.
- Ensure that good communications are maintained between the loader operator and the designated ship's officer, and between Master and ***Terminal Representative***.

### **To Unload a Ship:**

Unloader operators should have an appropriate understanding of how to:

- Unload the cargo from each hold in accordance with the agreed unloading plan to ensure that the ship remains upright and is not stressed or twisted.
- Remove the cargo from the holds by either grab or continuous unloader in a manner that minimizes the risk of damage to the ship's structure.
- Ensure that good communications are maintained between the unloader operator and the designated ship's officer, and between Master and *Terminal Representative*.
- Assess the risks arising from cargo sticking in frames and on hopper sides and facilitate, if possible, its safe removal without risk to the safety of terminal personnel and ship's crew members, or risk of damage to ship.

### **Terminal Representative Training**

The Terminal Representative should:

1. Have a thorough understanding of the underlying principles related to the loading and/or unloading of Bulk Carriers as described in the BLU Code.
2. Know how to implement all aspects of the BLU Code.
3. Understand and manage the ship/shore interface in relation to the operations and limitations of the terminal, its cargo handling equipment and procedures, the planning, control and monitoring of cargoes, relevant properties of the cargoes being handled, berthing/mooring operations and emergency procedures.

The training, assessment and certification of trainees should be carried out by competent persons within the framework of existing training standards and national health and safety legislation.

## Annex 5 – Hazards

Terminal Representatives should be aware that the following hazards may be encountered at the ship/shore interface during the loading and/or unloading of Solid Bulk Cargoes.

HAZARD	POSSIBLE SOURCES OR CAUSES
Fall from heights	<ul style="list-style-type: none"> <li>• Gangways – typical Bulk Carrier gangways are unsuitable and unsafe for use at many bulk terminals.</li> <li>• Inadequate fencing of open holds and dangerous edges.</li> <li>• Accessing/egressing ship's holds.</li> <li>• Removing cargo from stairs, ladders and side frames in ship's holds.</li> <li>• Working on top of hatch covers.</li> <li>• Weather conditions and tidal movements.</li> </ul>
Moving equipment and vehicles	<ul style="list-style-type: none"> <li>• Movement of ship loaders and/or unloaders.</li> <li>• Movement of mobile plant on terminal:               <ul style="list-style-type: none"> <li>- Payloaders, skid steer loaders, tractors and trailers</li> <li>- Cars, trucks and lorries</li> <li>- Cranes and lift trucks.</li> </ul> </li> <li>• Operation of mobile plant in ships' holds.</li> <li>• Inadequate barriers at terminal edges where mobile plant is operating.</li> </ul>
Falling objects	<ul style="list-style-type: none"> <li>• Lifting and suspension of grabs.</li> <li>• Material falling from grabs.</li> <li>• Personnel on deck walking under the grab.</li> <li>• Lifting and suspension of mobile plant from terminal to ship and from hold to hold.</li> <li>• Lifting and suspension of loading chutes, spouts and arms.</li> <li>• Lifting and suspension of welding and other equipment into hold to carry out damage repairs.</li> <li>• Cargoes falling from ships' hold structures, frames, beams, ledges and ladders.</li> <li>• Personnel lowering or raising equipment in and out of holds with personnel still at work underneath.</li> <li>• Personnel monitoring cargo operations standing too close to where grab is working, and at risk of being struck by grab, or by a breaking grab rope.</li> </ul>
Slips, trips and falls	<ul style="list-style-type: none"> <li>• Wet or slippery surface from ice, cargo or oil spillage on ship or terminal.</li> <li>• Badly stowed ropes, hoses and equipment on ship or terminal.</li> <li>• Unmarked obstacles on ship's decks such as manhole covers, securing eyes, safety stanchion sockets.</li> <li>• Climbing and working on and around loose and unstable material in ship's holds.</li> <li>• Personnel handling ship's stores on terminal edge.</li> </ul>

HAZARD	POSSIBLE SOURCES OR CAUSES
Fire or explosion	<ul style="list-style-type: none"> <li>• Dust created by certain cargoes may constitute an explosion hazard.</li> <li>• Flammable gases emitted by certain bulk cargoes may give rise to a fire or explosion hazard.</li> <li>• Incompatible materials which may react dangerously.</li> <li>• Materials liable to spontaneous combustion.</li> <li>• Bunkering operations.</li> <li>• The use and refuelling of mobile plant in ships' holds.</li> <li>• Smoking and the use of naked flames.</li> <li>• Hot work.</li> <li>• Combination carriers including holds, pumps and pipelines not gas free when unloading dry bulk, or with slop tanks or wing tanks not inerted.</li> </ul>
Hazardous substances	<ul style="list-style-type: none"> <li>• Dangerous goods.</li> <li>• Cargoes liable to oxidation, oxygen reduction and emission of toxic fumes, particularly when wet.</li> <li>• Cargoes corrosive to skin and eyes, and to ships structures, particularly when wet.</li> <li>• Cargoes liable to cause oxygen depletion e.g. metals, vegetable/fruit products, forest products.</li> <li>• Accumulation of dangerous gases in cargo spaces or in adjacent spaces. Failure to observe <i>Confined Space Entry and Atmospheric Testing</i> procedures.</li> </ul>
Health hazards due to dust	<ul style="list-style-type: none"> <li>• Dusty cargoes.</li> <li>• Spillage from loading and/or unloading equipment.</li> <li>• Incorrectly operated and/or maintained loading and/or unloading equipment causing excessive dusting.</li> <li>• Tipping and storage of cargo on terminal.</li> </ul>
Strains and sprains	<ul style="list-style-type: none"> <li>• Manual handling such as shovelling, scraping of cargo in ship's holds.</li> <li>• Operating mobile plant in ship's holds.</li> <li>• Operating grab unloaders and similar equipment.</li> <li>• Handling mooring lines.</li> </ul>
Tidal movements and wind conditions	<ul style="list-style-type: none"> <li>• Gangway becoming unsafe.</li> <li>• Collision between loader and/or unloader and ship's structure or gear.</li> <li>• Failure of unloader and/or loader braking system in high winds, leading to collision with ship.</li> <li>• Runaway of loader and/or unloader and/or transporter cranes in high winds.</li> </ul>
Berthing and moving ships	<ul style="list-style-type: none"> <li>• Collision between berthing ship and loader and/or unloader on terminal.</li> <li>• Breaking mooring lines – risk to personnel on ship and terminal from “snap-back” effect.</li> <li>• Passing ships.</li> </ul>

<b>HAZARD</b>	<b>POSSIBLE SOURCES OR CAUSES</b>
Inadequately trained personnel	<ul style="list-style-type: none"><li>• Terminal, contractor or temporary employees assigned to work in terminal or on ship without adequate induction or job specific training.</li><li>• Ship's personnel unfamiliar with the ship, or with the ship's operations.</li></ul>
Other activities that can occur on an around any terminal	<ul style="list-style-type: none"><li>• Failure of persons or organizations controlling different operations to co-operate in ensuring a safe place of work. For example, inadequate control of the activities of personnel, contractors, hauliers, visitors, other ships and port users.</li></ul>

## Annex 6 – Emergency Procedures

Every terminal should always have written procedures for dealing with emergency situations. These should be summarised in the terminal's information and regulation booklet, and should be discussed by the Terminal Representative and the Master of each ship on arrival.

Emergency situations that could occur should be assessed for each terminal, but typically should include:

1. Fire on board ship.
2. Fire on the terminal.
3. Oil spillage and pollution.
4. Injuries.

The emergency plans should include:

1. Alarm signals for terminal and for ship.
2. Notifying the emergency services, including necessary contact points and list of contact numbers.
3. Location of Muster Points.
4. Evacuation procedures.
5. First Aid procedures.
6. Actions to be taken by both terminal and by ship in the event of:
  - .1 Fire or explosion on own ship, on another ship or terminal.
  - .2 Oil spillage.
  - .3 Ship breaking moorings.
  - .4 The necessity to rescue persons from holds, cranes or other plant.
  - .5 Other emergency.
7. Emergency Communications Procedures.
8. **BC Code** emergency schedules (EmS) or material safety data sheets (MSDS) or for any materials possessing chemical hazards which are to be loaded or unloaded.

\*\*\*



**ANNEX 6****DRAFT CSC CIRCULAR****INTERNATIONAL CONVENTION FOR SAFE CONTAINERS (CSC),  
1972 AS AMENDED****Guidance on serious structural deficiencies in containers**

1 The International Convention for Safe Containers (CSC), 1972, article VI stipulates that every container which has been approved under article III shall be subject to control in the territory of the Contracting Parties by officers duly authorized by such Contracting Parties. This control shall be limited to verifying that the container carries a valid Safety Approval Plate as required by the Convention, unless there is significant evidence for believing that the condition of the container is such as to create an obvious risk to safety.

2 The Recommendations on harmonized interpretation and implementation of the Convention, approved by the Maritime Safety Committee at its sixty-second session (24 to 28 May 1993) and circulated as CSC/Circ. 100, paragraph 9.4 – Unsafe containers (article VI, paragraph 1, third sentence), stipulates that where a container is found by the authority exercising control to have a defect which could place a person in danger, then the container should be stopped. However, if the container can be safely moved (e.g. to a place where it can be restored to a safe condition, or to its destination) the officer exercising control may permit such movement on such conditions as the officer may specify with the proviso that the container shall be repaired as expeditiously as may be practicable and not reloaded before this has been done.

3 The Maritime Safety Committee, at its [eightieth session ([ ] to [ ] May 2005)], recognizing the need for guidance to the officer exercising control under the provisions of article VI of the Convention, approved the Guidance on serious structural deficiencies in containers set out in the annex, prepared by the Sub-Committee on Dangerous Goods, Solid Cargoes and Containers (DSC Sub-Committee), at its ninth session (27 September to 1 October 2004).

4 Administrations are urged to widely disseminate the annexed Guidance so as to encourage its use by the officer exercising control in the promotion of container safety. Administrations are further encouraged to provide training in the use of this Guidance to the appropriate enforcement elements within their Administration, so as to promote its use, enhance safety in container operations, and to avoid unnecessary concerns and enforcement actions with regard to containers that are damaged but none-the-less structurally sound and capable of safely continuing in transportation.

## ANNEX

### GUIDANCE ON SERIOUS STRUCTURAL DEFICIENCIES IN CONTAINERS

#### 1 PREAMBLE

1.1 The International Convention for Safe Containers (CSC) 1972, as amended contains provisions whereby containers used in international transport are maintained in a sound and safe condition.

1.2 Article VI of the CSC refers to the control measures that may be taken by Contracting Parties.

1.3 Such control should be limited to verifying that the container carries a valid Safety Approval Plate unless there is significant evidence for believing that the condition of the container is such as to create an obvious risk to safety.

#### 2 SCOPE

2.1 This Guidance is provided to enable authorized officers to assess the integrity of structurally sensitive components of containers (defined in article II of the Convention) as provided for by article VI of the CSC and paragraph 9.4 of the Recommendations on harmonized interpretation and implementation of the CSC (CSC/Circ.100) (hereafter "the Supplement to the Convention") and to help them decide whether a container is safe to continue in transportation or whether it should be stopped until remedial action has been taken.

2.2 The criteria given in annex 1 is to be used to make immediate out of service determinations and is to be considered as a safety standard and should not be used as repair and inservice criteria under a CSC ACEP or a periodic examination scheme.

#### 3 DEFINITIONS

3.1 For the purposes of this guidance the following definitions are used:

- "*Depot*" means a repair or storage facility or location.
- "*Structurally sensitive components*" means those described in annex 1 and shown in annex 3. These are significant in allowing the container to safely be used in transportation.

#### 4 SERIOUS STRUCTURAL DEFICIENCIES AND CONTROL MEASURES

4.1 Authorized officers should consider the following:

- .1 control should be exercised on those containers that create an obvious risk to safety. Authorized officers should notify the container owner and/or bailee whenever a container is placed under control;
- .2 attention should be directed to deficiencies as described in annex 1;

- .3 it should be noted that the guidance given in annex 1 is not exhaustive for all types of containers or all possible deficiencies or combination of deficiencies;
- .4 annex 2 provides a safety flow chart that may be used to assess appropriate control measures;
- .5 it should be borne in mind that damage to a container may appear serious without creating an obvious risk to safety. Many damages such as holes may infringe customs requirements but may not be structurally significant; and
- .6 major damages may be the result of significant impact which could be caused by improper handling of the container or other containers, or significant movement of the cargo within the container. Therefore, special attention should be given to signs of recent impact damage.

## **5 TRAINING OF AUTHORIZED OFFICERS**

5.1 The Contracting Party exercising control should ensure that authorized officers tasked to carry out these assessments and control measures receive the necessary training. This training should involve both theoretical and practical instruction.

ANNEX 1

**SERIOUS STRUCTURAL DEFICIENCIES IN CONTAINERS**

1 The following components are structurally sensitive and should be examined for serious deficiencies. The criteria given is to be used to make immediate out of service determinations. *It is to be considered as a safety standard and should not be used as repair and inservice criteria under a CSC ACEP or a periodic examination scheme.*

<b>COMPONENT</b>	<b>SERIOUS STRUCTURAL DEFICIENCY</b>
Top Rails	Local deformation to a rail in excess of 60 mm or separation or cracks or tears in the rail material in excess of 45 mm in length
Bottom Rails	Local deformation to a rail in excess of 100 mm or separation or cracks or tears in the rail's material in excess of 75 mm in length
Headers	Local deformation to a header in excess of 80 mm or cracks or tears in excess of 80 mm in length
Sills	Local deformation to a sill in excess of 100 mm or cracks or tears in excess of 100 mm in length
Corner Posts	Local deformation to a post exceeding 50 mm or tears or cracks in excess of 50 mm in length
Corner and Intermediate Fittings (Castings)	Missing corner fittings or cracks in excess of 25 mm to the fittings, weld separation of adjoining components to the fittings in excess of 50 mm in length
Understructure	Two or more adjacent cross members missing or detached from the bottom rails*
Locking Rod Assemblies**	One or more inner locking rod assemblies are non-functional

2 Loaded containers with damages equal to, or in excess of, the above criteria are deemed to place a person in danger and under paragraph 9.4 of the Supplement to the Convention, the authorized officer should stop those containers. However, the authorized officer may permit the onward movement of the container if it is to be moved to its ultimate destination without lifting from the current means of transport.

3 The safety flow chart, shown in annex 2, provides additional guidance on the decision process for allowing onward movement.

4 Empty containers are typically repositioned for repair at an owner-selected depot provided they can be safely moved; this can involve either a domestic or an international move under paragraph 9.5 of the Supplement to the Convention. Any damaged container being repositioned should be handled and transported with due regard to its structural deficiency.

---

\* For continuing transportation, detached cross members must be precluded from falling free.

\*\* Some containers are designed and approved (and so recorded on the CSC Plate) to operate with one door open or removed.

5 The effect of two or more incidents of damage in the same structurally sensitive component, even though each is less than in the above table, could be equal to or greater than the effect of this single damage noted in the table. In such circumstances the authorized officer may stop the container and seek further guidance from the Contracting Party.

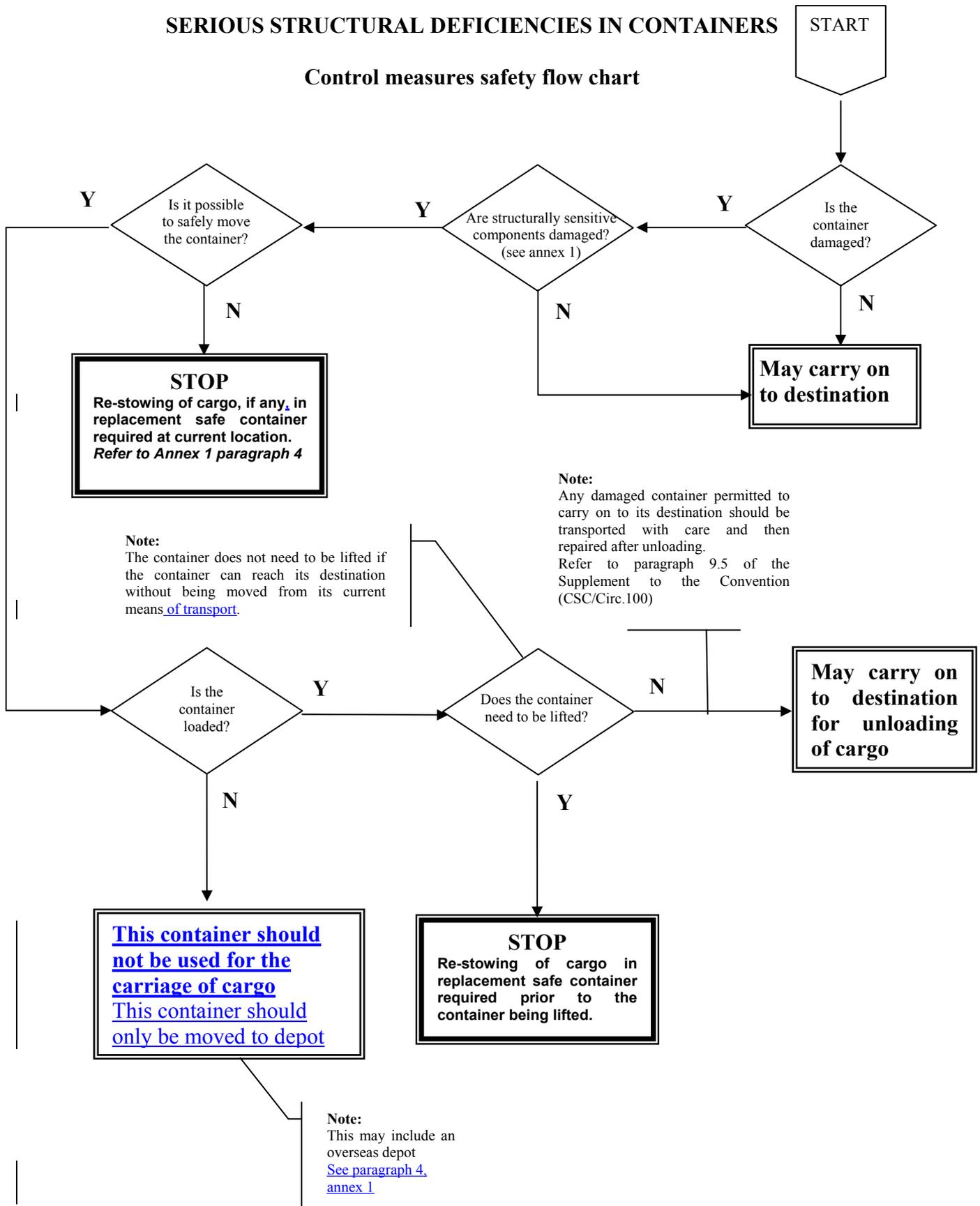
6 For tank containers the attachment of the vessel to the container frame shall also be assessed for any readily visible damage comparable to that noted in the table. If such damage is found in these components the container may be stopped and further instructions obtained from the Contracting Party.

7 For platform containers with folding end frames, the end frame locking mechanism and the hinge pins about which the end frame rotates are structurally sensitive and should also be inspected for damage.

ANNEX 2

**SERIOUS STRUCTURAL DEFICIENCIES IN CONTAINERS**

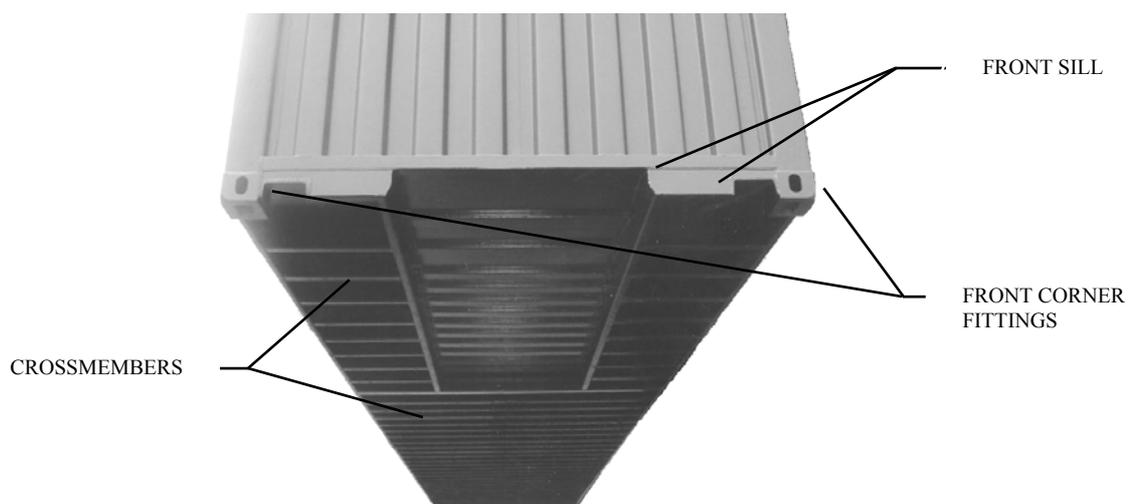
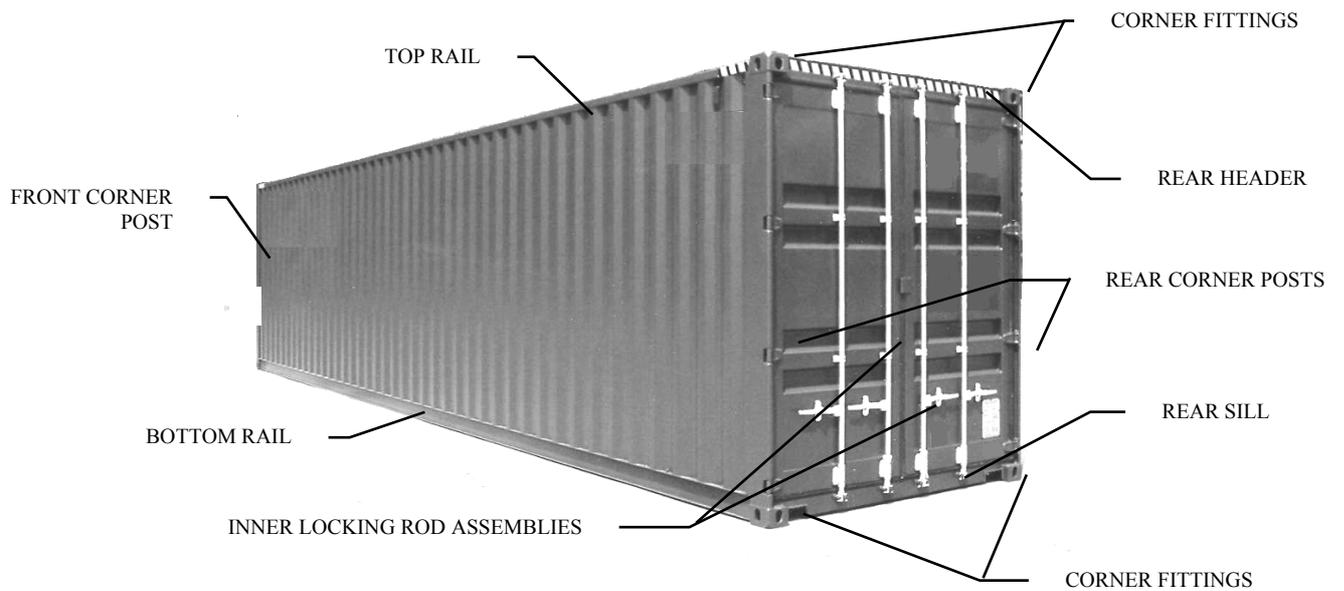
**Control measures safety flow chart**



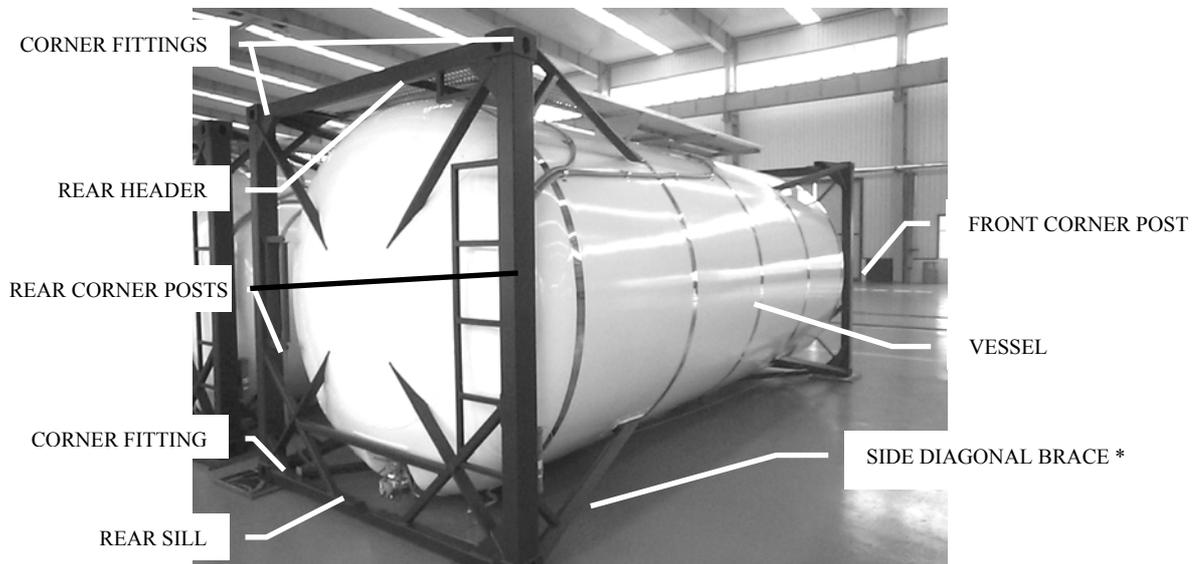
ANNEX 3

DIAGRAMS OF STRUCTURALLY SENSITIVE COMPONENTS

I. General Purpose Container



## II. Tank Container



\* Treat same as corner post

\*\*\*

**ANNEX 7**

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

## FOREWORD

A Recommendation on the Safe Practice of 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, 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 Recommendations of edition 1995 comprised 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.

However, in 1996, the Maritime Safety Committee agreed that the IMDG Code shall be reformatted in a style consistent with the format of the UN Model Regulations with the intention to enhance 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 Amendment 31 mandatory in the international law. Thus, the IMDG Code Amendment 31 had become 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. This means that the particular provisions of those codes will, where relevant, apply in the port area, e.g. the limited quantities provisions in the IMDG Code. 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 substance 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 the Recommendations should also apply to them.

It is notably 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) and dangerous goods in packaged form (covered by the IMDG Code).

## CONTENTS\*

- 1 Introduction
- 2 Application and definitions
  - 2.1 Application
  - 2.2 Definitions
- 3 Warehouses, terminal areas and infrastructure
  - 3.1 General
  - 3.2 Land use planning
  - 3.3 Consideration for specific dangerous cargoes
  - 3.4 Specific considerations for warehouses and terminal areas
- 4 Training
  - 4.1 Regulatory authorities
  - 4.2 Management
  - 4.3 Personnel (cargo interests, berth operators and ships)
  - 4.4 Training content
- 5 Security provisions
- 6 Responsibilities
  - 6.1 Role of regulatory authority
  - 6.2 Role of port authority
  - 6.3 Role of berth operator and cargo interests
  - 6.4 Awareness
- 7 General recommendations for regulatory authorities, port authorities, shops, berth operators and cargo interests
  - 7.1 Regulatory authorities and port authorities
  - 7.2 Ships carrying dangerous cargoes
  - 7.3 Shore installations
  - 7.4 Cargo interests
- 8 Dangerous cargoes in packaged form
  - 8.1 Documentation
  - 8.2 Supervision
  - 8.3 Information for operational and emergency purposes
  - 8.4 General handling precautions
- 9 Liquid bulk dangerous cargoes (including liquefied gas)
  - 9.1 General
  - 9.2 Ships carrying liquid bulk dangerous cargoes
  - 9.3 Shore installations
  - 9.4 Handling

---

\* The Foreword and the Table of Contents of the Recommendations will be reviewed once the contributions of the MEPC, the BLG and the STW Sub-Committees are known.

- 9.5 Special categories
- 9.6 Combination carriers
  
- 10 Solid bulk dangerous cargoes
  - 10.1 Documentation
  - 10.2 Responsibility for compliance
  - 10.3 Emission of harmful dusts
  - 10.4 Emission of dangerous vapours/oxygen deficiency
  - 10.5 Emission of explosive dusts
  - 10.6 Spontaneously combustible substances that react with water
  - 10.7 Oxidizing substances
  - 10.8 Incompatible materials
  
- Annex 1 Advance notification
- Annex 2 Transport and handling of explosives of class 1
- Annex 3 Segregation for radioactive materials on shore
- Annex 4 Minimum safety requirements for carrying out hot works
- Annex 5 Bunkering precautions, including bunkering checklist
- Annex 6 Alphabetical index of cross-references between recommendations in sections 3 and 6
- Appendix General information on convention requirements relating to ships carrying dangerous cargoes
- Annex 7 Ancillary Dictionary of Chemical Terms for Users of the IMDG Code
- Annex 8 Guide to fumigation

## 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 the 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.

Regulatory authorities of many countries indicate the need for greater training activities. Therefore, chapter 4 has been updated in response to those needs. Updates are based on the provisions set out in chapter 1.3 of the reformatted IMDG Code, Amendment 31-02.

1.7 Section 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.

1.8 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.

1.9 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 1 of Annex 6 is a bibliography which lists the relevant IMO requirements and other relevant publications.

1.10 General information on seaborne dangerous cargoes and convention requirements relating to ships carrying dangerous cargoes is given in Appendices 2 and 3.

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 to pursue co-operative programmes or agreements, between Member Governments and private industry, to establish integrated supply chain 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 **ship's stores** and equipment nor to troopships and warships.

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 regulations:
- 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 Appendix B of 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 are substances, materials and 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 this 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 transshipment between ships or other modes of transport and includes movement within the port which is part of the transport supply chain for those goods. 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 (regulation I/1.1.3 of the STCW 78 as amended).
- 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, shipborne 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. This encompasses 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 his 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.

**Ship's 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 ships' 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 ship's stores (e.g. materials used for diving, surveying and salvage operations). This has 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.

<b>Stowage</b>	means the positioning of packages, intermediate bulk containers (IBCs), freight containers, tank containers, portable tanks, bulk containers, vehicles, shipborne barges, other cargo transport units and bulk cargoes on board ships, in warehouses, sheds or other areas.
<b>Transport</b>	means the movement by one or more modes of transport in port areas.
<b>Unstable substance</b>	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 to the product.

2.3 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.

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 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 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 law or port by-law, showing the various areas in different colours, e.g. (see figure 1 on page ...):

- 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\*

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.

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.

---

\* To be inserted.

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.

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 health, 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.

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.

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.

It would 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 floor should be impermeable. This may not be practicable in existing ports, but would be desirable for new 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.

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 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.

### 3.3.3 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.

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 special provision 297 of 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 competent authority approval, 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 such material.

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 transshipment. 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.

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.

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 provide for inspection of the spaces at frequent intervals.

### 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\*

Figure 3\*

---

\* To be inserted.

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**.

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

Figure 4\*

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.

3.4.4 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.

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<sup>3</sup> 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<sup>3</sup> capacity each and a large one with a capacity of 80 m<sup>3</sup>. 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 berth 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.

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.

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.

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 Each 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 inerting of cargo tanks;
- .13 measuring and sampling of cargo tanks;
- .14 washing of cargo tanks under the approved procedures and arrangements;
- .15 enforce or survey or inspect for compliance with applicable 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 Each person should receive training on the safe **transport** and **handling** of **dangerous cargoes**, commensurate with his duties. The training should be designated 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 Each 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**.

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

Detailed description of recommended training for shore-side personnel involved in the transport and handling of dangerous cargoes are given in section 1.3.1.4 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 elaborated and included in the IMDG Code as 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, the text of this chapter of the IMDG Code is given in full in these Recommendations. When reading chapter 1.4 of the IMDG Code those aspects which are inconsistent with the scope of application of these Recommendations should be ignored:

#### “Chapter 1.4

##### Introductory note

This chapter provides provisions intended to address the security of dangerous goods in transport by sea. National competent authorities may apply additional security provisions, which should be considered when offering or transporting dangerous goods. The provisions of this chapter remain recommendatory except 1.4.1.1 (see section 1.1.1.5 of the IMDG Code).

#### **1.4.1 General provisions for companies, ships and port facilities**

1.4.1.1 The relevant provisions of chapter XI-2 of SOLAS 74, as amended, and of part A of the International Ship and Port Facility Security (ISPS) Code apply to companies, ships and port facilities engaged in the transport of dangerous goods and to which regulation XI-2 of SOLAS 74, as amended, apply taking into account the guidance given in part B of the ISPS Code.

1.4.1.2 For cargo ships of less than 500 gross tonnage engaged in the transport of dangerous goods, it is recommended that Contracting Governments to SOLAS 74, as amended, consider security provisions for these cargo ships.

1.4.1.3 Any shore-based company personnel, ship based personnel and port facility personnel engaged in the transport of dangerous goods should be aware of the security requirements for such goods, in addition to those specified in the ISPS Code, and commensurate with their responsibilities.

1.4.1.4 The training of the company security officer, shore-based company personnel having specific security duties, port facility security officer and port facility personnel having specific duties, engaged in the transport of dangerous goods, should also include elements of security awareness related to those goods.

1.4.1.5 All shipboard personnel and port facility personnel which are not mentioned in 1.4.1.4 and are engaged in the transport of dangerous goods should be familiar with the provisions of the relevant security plans related to those goods, commensurate with their responsibilities.

#### **1.4.2 General provisions for shore-side personnel**

1.4.2.1 For the purpose of this subsection, *Shore-side personnel* covers individuals mentioned in 1.3.1.2. However, the provisions of 1.4.2 do not apply to:

- the company security officer and appropriate shore-based company personnel mentioned in 13.1 of part A of the ISPS Code,
- the ship security officer and the shipboard personnel mentioned in 13.2 and 13.3 of part A of the ISPS Code,
- the port facility security officer, the appropriate port facility security personnel and the port facility personnel having specific security duties mentioned in 18.1 and 18.2 of part A of the ISPS Code.

For the training of those officers and personnel, refer to the International Ship and Port Facility Security (ISPS) Code.

1.4.2.2 Shore-side personnel engaged in transport by sea of dangerous goods should consider security provisions for the transport of dangerous goods commensurate with their responsibilities.

#### 1.4.2.3 Security training

1.4.2.3.1 The training of shore-side personnel, as specified in chapter 1.3, shall also include elements of security awareness.

1.4.2.3.2 Security awareness training should address the nature of security risks, recognizing security risks, methods to address and reduce risks and actions to be taken in the event of a security breach. It should include awareness of security plans (if appropriate, refer to 1.4.3) commensurate with the responsibilities of individuals and their part in implementing security plans.

1.4.2.3.3 Such training should be provided or verified upon employment in a position involving dangerous goods transport and should be periodically supplemented with retraining.

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

### **1.4.3 Provisions for high consequence dangerous goods**

1.4.3.1 For the purpose of this subsection, high consequence dangerous goods are those which have the potential for misuse in a terrorist incident and which may, as a result, produce serious consequences such as mass casualties or mass destruction. The following is an indicative list of high consequence dangerous goods:

Class 1        Division 1.1 explosives

Class 1        Division 1.2 explosives

Class 1        Division 1.3 compatibility group C explosives

Class 1        Division 1.5 explosives

Class 2.1      Flammable gases in quantities greater than 3,000 l in a road tank vehicle, a railway tank wagon or a portable tank

**Class 2.3 Toxic gases**

- Class 3 Flammable liquids of packing groups I and II in quantities greater than 3,000 l in a road tank vehicle, a railway tank wagon or a portable tank
- Class 3 Desensitized liquid explosives
- Class 4.1 Desensitized solid explosives
- Class 4.2 Goods of packing group I in quantities greater than 3,000 kg or 3,000 l in a road tank vehicle, a railway tank wagon, a portable tank or a bulk container
- Class 4.3 Goods of packing group I in quantities greater than 3,000 kg or 3,000 l in a road tank vehicle, a railway tank wagon, a portable tank or a bulk container
- Class 5.1 Oxidizing liquids of packing group I in quantities greater than 3000 l in a road tank vehicle, a railway tank wagon or a portable tank
- Class 5.1 Perchlorates, ammonium nitrate and ammonium nitrate fertilisers in quantities greater than 3000 kg or 3000 l in a road tank vehicle, a railway tank wagon, a portable tank or a bulk container**
- Class 6.1 Toxic substances of packing group I
- Class 6.2 Infectious substances of category A
- Class 7 Radioactive material in quantities<sup>1</sup> greater than 3,000 A1 (special form) or 3,000 A2, as applicable, in type B or type C packages
- Class 8 Corrosive substances of packing group I in quantities greater than 3,000 kg or 3,000 l in a road tank vehicle, a railway tank wagon, a portable tank or a bulk container

For purposes of non-proliferation of nuclear material, the Convention on Physical Protection of Nuclear material applies to international transport, supported by IAEA INFCIRC/225 (Rev.4).

1.4.3.2 The provisions of this section do not apply to ships and to port facilities (see the ISPS Code for ship security plan and for port facility security plan).

1.4.3.3 Consignors and others engaged in the transport of high consequence dangerous goods should adopt, implement and comply with a security plan that addresses at least the elements specified in 1.4.3.4.

1.4.3.4 The security plan should comprise at least the following elements:

- .1 specific allocation of responsibilities for security to competent and qualified persons with appropriate authority to carry out their responsibilities;

---

<sup>1</sup> As the IAEA is in the process of reviewing these figures the current edition of the IMDG Code should be consulted to confirm the values.

- .2 records of dangerous goods or types of dangerous goods transported;
- .3 review of current operations and assessment of vulnerabilities, including intermodal transfer, temporary transit storage, handling and distribution, as appropriate;
- .4 clear statements of measures, including training, policies (including response to higher threat conditions, new employee/employment verification, etc.), operating practices (e.g. choice/use of routes where known, access to dangerous goods in temporary storage, proximity to vulnerable infrastructure, etc.), equipment and resources that are to be used to reduce security risks;
- .5 effective and up to date procedures for reporting and dealing with security threats, breaches of security or security incidents;
- .6 procedures for the evaluation and testing of security plans and procedures for periodic review and update of the plans;
- .7 measures to ensure the security of transport information contained in the plan; and
- .8 measures to ensure that the distribution of transport information is limited as far as possible. (Such measures shall not preclude provision of transport documentation required by chapter 5.4 of the 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 IMDG Code classified dangerous cargoes.

## 6 RESPONSIBILITIES

### 6.1 Role of regulatory authority

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

The **regulatory authority** responsible for port safety vary 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, shoreside 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 shoreside 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.

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**.

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.

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.

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,<sup>edit</sup> or the International Safety Guide for Oil Tankers and Terminals (ISGOTT), 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 the port authority

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**.

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 of 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 shoreside 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**.

The international nature of shipping means that ships are likely to call at many ports in many countries. Significant differences in the legislation 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 legislation 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.

The **port authority** should make arrangements for suitably trained personnel to enforce any national 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**.

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 not 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**.

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, legal 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 operator 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.

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 on the undertakings will be essential to ensure that the necessary 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**.

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.

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.

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 well, 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 before passing them on along the transport chain.

## 6.4 Awareness

6.4.1 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.

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.

## 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.

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, 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. Competent Authority approvals or exemptions must accompany all such 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.

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 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.

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**.

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.

Berth emergency plans should be harmonized with the port emergency plan and the emergency plans of any other relevant nearby 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.

The records may be prepared from the notifications required by 7.1.2.1 and 7.1.2.4 of the Recommendations, 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 (7.2.5.1.1 of the Recommendations); and
- .3 dangerous cargoes to be loaded and discharged in the port (7.2.5.1.2/3 of the Recommendations).

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 function without disturbance, they 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 systems are 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 cargoes 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 at that 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.

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 rated safe for use in a flammable atmosphere is used.

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 works** 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 rated 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.

An example of a possible facility is given in the Guidelines to 3.4.4.1 of the Recommendations.

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.

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 of the Recommendations or kept in the places mentioned in 7.2.5.1 of the Recommendations and in the Guidelines 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 Guidelines for Packing Cargo in Freight Containers or Vehicles;
- .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.

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 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 of the Recommendations).

#### 7.1.9 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 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.

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 void 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

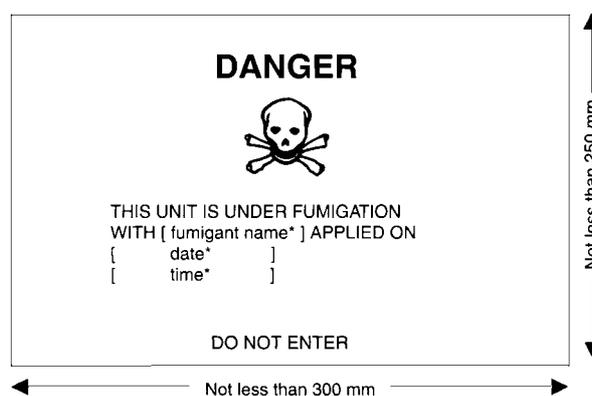
7.1.11.1 The **port authority** should designate specific areas for **ships** or cargo transport units which arrive under fumigation or are to be fumigated. Entry into such areas should be restricted. Appropriate signs (preferably pictograms such as shown in figure 5 should be displayed in such areas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

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 should also have a 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.

Figure 5



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** (fumigator-in-charge) that it is safe to do so.

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 are removed and clearance certificate issued by the fumigator-in-charge.

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

7.1.12 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**.

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 (6.1.14) 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 part 7 of the IMDG Code should be adopted for the stowage and segregation in the port area.

An example of general guidance on stowage and segregation of dangerous cargoes is shown in figure 6, 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.

Figure 6 [to be added]

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 class 5 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.

#### 7.1.15 Explosives

7.1.15.1 Dangerous goods 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 this 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  
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 is ceased.

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

- .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 of the content.
- .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 Additional 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 unless permitted by the **regulatory authority**.

When radioactive material 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 authority**.

7.1.16.2 Packaged radioactive material should not be brought into the **port area** unless they are in conformity with the International 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 unless permitted by the **regulatory authorities**.

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 authorities** should establish specific requirements for the **handling** of such 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 61°C 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**.

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 of the Recommendations in the port area. 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.

When practicable, a dedicated anchorage or berth should be provided for vessels carrying dangerous cargoes listed in 7.1.18.2 of the Recommendations 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 ship under way exhibiting the signals required by 7.1.18.1 of the Recommendations. The port authority may also impose specific separation distances and regulate the movement of vessels to avoid the passing of such ships referred to in narrow channels or 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**.

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 channels while within the port area. The reporting points and listening channels should be published in the port by-laws 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.

Unmanned barges carrying **dangerous cargoes** could 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** 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 his crew, as appropriate, with the legal requirements relating to **ships** carrying or handling **dangerous cargoes** in the **port area**;
- .2 check the condition of his **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.

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 of the Recommendations).

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.

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 “Recommendation on Principles and Operational Guidance for Deck Officers in charge of a Watch in Port” (resolution 3) and the “Recommendation on Principles and Operational Guidance for Engineer Officers in charge of an Engineering Watch in Port” (resolution 4) adopted by the International Conference on Training and Certification of Seafarers, 1978.

### 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 wire") 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 bits; 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-2/20.2, 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) (in the IMDG Code Supplement), 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.

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.

For 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.

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, when 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.

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.

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

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.

**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 and recording 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**.

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 of the Recommendations.

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 of the Recommendations 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 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**.

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 for example 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 has been authorized by a **responsible person** trained in the use of the relevant equipment and sufficiently knowledgeable to interpret correctly the results obtained. This **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 signs 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.

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** (fumigator-in-charge) has determined that it is safe to enter and issued a clearance certificate. Where pertinent all Confined Space Entry Procedures shall be complied with.

#### 7.2.13 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 must 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. 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 unnecessary, 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 Such 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 any 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.

Notifications in accordance with 7.1.2.1 of the Recommendations 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 this 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 6.3.6.1 to 6.3.6.3, electronic or other automatic data processing or transmission techniques may be used.

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 of 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 to supply water to the ship's fire-fighting equipment in accordance with the requirements of regulation II-2/19 (applicable to passenger ships and to cargo ships constructed on or after 1 July 2002) and regulation II-2/54 of SOLAS (applicable to passenger ships and to cargo ships of 500 gross tonnage or over constructed on or after 1 September 1984 but before 1 July 2002, and to cargo ships of less than 500 gross tonnage constructed on or after 1 February 1992 but before 1 July 2002) (see regulation II-2/1,2 of SOLAS);
- .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 area where **dangerous cargoes** are present on the **berth** is of a type safe for use in a flammable or explosive atmosphere. 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.

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. 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.

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

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**. 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**.

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 of the Recommendations.

The information contained in the notification referred to in 7.1.2.1 of the Recommendations or kept in the places mentioned in 7.3.6 of the Recommendations 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 containers, tank-containers, portable tanks or vehicles 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 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**.

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.

7.3.13.2 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.

7.3.13.3 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.

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.

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** (fumigator-in-charge) has determined that it is safe to enter and issued a clearance certificate.

#### 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 must 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. 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** 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/UNECE 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**.

7.4.3.3 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 transshipped 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 mentioned above 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.

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 interest 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** furthermore provides information on the classes of dangerous goods that may be carried on deck and in each compartment.

8.1.3 On board a **ship** carrying **dangerous cargoes** in package form 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.

8.1.3.1 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.

8.1.4 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 maintains any necessary contact with the **master** and the **berth operator**.

Communication between persons, especially between the responsible persons, who are involved in **handling of dangerous cargoes**, is very important. This is why it must 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. 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 must be available for the dangerous cargoes to be loaded and for the dangerous cargoes in transit on board the ship;
- .2 details of special equipment needed for the safe **handling** of a particular **dangerous cargo**. When special equipment is needed for the **handling** of **dangerous cargoes**, information and any relevant test and examination certificates about this equipment must be immediately available to the **master**, the **berth operator** and the **responsible persons**; and
- .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. 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.

8.3.2.1 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.

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).

#### 8.4 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. 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.

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 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

Comprehensive guidance on the Recommendations of this section is provided in the documents listed in the bibliography set out in appendix 1. Particular attention is drawn to:

ICS/OCIMF/IAPH: International Safety Guide for Oil Tankers and Terminals (ISGOTT)  
– Fourth edition 1996;

ICS/OCIMF/SIGTTO: A Guide to Contingency Planning for Gas Carrier Alongside and Within Port Limits – 1999; A Guide to Contingency Planning for Marine Terminals Handling Liquefied Gases in Bulk – 2001;

OCIMF/SIGTTO: Inspection Guidelines for Ships Carrying Liquefied Gases in Bulk – 1990;

OCIMF: Safety Guide for Terminals Handling Ships Carrying Liquefied Gases in Bulk – 1993; Guide on Marine Terminal Fire Protection and Emergency Evacuation – 1987; Inspection Guidelines for Bulk Oil Carriers – 1994 (under revision);

SIGTTO: Liquefied Gas Handling Principles on Ships and in Terminals – 1986 (under revision); 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; and
- .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.

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 is reason to believe that the **ship** may not comply.

#### 9.1.2 Vapour emission control

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.

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

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 correct technical 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;
  - countermeasures 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.

**Note:** SOLAS regulation II-2/59 applies to tankers built on or after 1 July 1986 and is much more stringent than the above regarding venting arrangements.

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.

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 and 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 a 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 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 8.3.4.1.3;
- .2 the insulating and earthing systems referred to in 8.3.4.1.3 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 incendive sparking where a flammable atmosphere may be present.

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 must 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 shut-down 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 pressure 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.

#### 9.4.4 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 responsible 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.

Attention is drawn to the International Safety Guide for Oil Tankers and Terminals (ISGOTT) and the OCIMF checklist.

### 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 60°C c.c. as a cargo, should be subject to Section 8 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.

9.6.3 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.

9.6.4 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.

9.6.5 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.

## 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** furthermore provides information on the classes of **dangerous cargoes** that may be carried on deck and in each compartment.

10.1.3 Also, on board a **ship** carrying **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 **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 following recommendations are complied with and in accordance with BC Code where applicable.

## 10.3 Emission of harmful dusts

10.3.1 Where the **transport, handling or stowage** of a **solid bulk dangerous cargo** 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 from contact with such dusts.

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 Emissions of dangerous vapour/oxygen deficiency

10.4.1 Where the **transport or handling** of a **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 a **solid bulk dangerous cargoes** 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 cargoes** 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. In accordance with confined space entry procedures, if entry is necessary during an emergency, a person who enters the space should wear appropriate self-contained air breathing apparatus (see 7.2.11.2).

## 10.5 Emission of explosive dusts

10.5.1 Where the **transport or handling** of a **solid bulk dangerous cargoes** may give rise to the emission of dust that is liable to explode or 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 than sweeping.

## **10.6 Spontaneously combustible substances and substances that react with water**

10.6.1 A **solid bulk dangerous cargoes** which, 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 A **solid bulk dangerous cargoes** 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)

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 flashpoints range (as appropriate), the quantity and additional information as required by the chapter 5.4 of the IMDG Code. 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. 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. 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 with 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 paragraphs B/4.37 to B/4.40 of the ISPS Code. Other examples of information which are required by the regulatory authorities in relation to packaged dangerous cargoes:

- .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 than 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 flashpoints 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 flashpoints 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 (7.1.15.4)**

Additional 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 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 6.2.15 and 6.3.18 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 should be 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 microSv/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 spend 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 legislation 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 exceeded 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 must 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 by the port authority, before starting any the 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 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 insure 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; and
  - .2 the questions on the attached bunkering check list 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 insure that the connection 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 .....	Name of Vessel taking Bunker .....
Licence Plate .....	Master's Name .....
Master's/Driver's Name .....	Date of Transshipment .....
Time of Transshipment .....	Place of Transshipment .....

Bunker barge/truck	Vessel taking bunker															
<p>1. How much bunker oil will be transshipped:</p> <p>Fuel ..... tonnes actual ..... m<sup>3</sup>            Gas oil ..... tonnes actual ..... m<sup>3</sup>            Lub oil ..... tonnes actual ..... m<sup>3</sup></p> <p>2. What are the means of communication between the barge/truck and the vessel taking bunkers:            .....</p> <p>3. Who is responsible for communications with the vessel taking bunkers:</p> <p>Name .....            Position .....</p> <p>4. Who is in charge of supervising the operation and taking immediate action in case of malfunction:</p> <p>Name .....            Position .....</p> <p>5. (a) Is there an emergency stop facility:</p> <p>Yes/No            Where .....</p> <p>(b) Has the emergency stopping procedure been discussed and agreed with the vessel taking bunkers:</p> <p>Yes/No</p>	<p>1. Who measured the contents of the bunker tanks:</p> <p>Name .....            Position .....</p> <p>2. The measures were:</p> <table style="width: 100%; border: none;"> <tr> <td>Tank .....</td> <td>Actual contents .....</td> <td>Free space (up to 98% filling)</td> </tr> <tr> <td>No. ....</td> <td>tonnes .....</td> <td>m<sup>3</sup> .....</td> </tr> </table> <p>3. How often will the contents of the bunker tanks be checked during the bunker operations:</p> <p>Every ..... minutes</p> <p>4. Who is responsible for taking the measurements referred to in point 3:</p> <p>Name .....            Position .....</p> <p>5. How much bunker oil will be transshipped:</p> <p>Fuel ..... tonnes actual ..... m<sup>3</sup>            Gas oil ..... tonnes actual ..... m<sup>3</sup>            Lub oil ..... tonnes actual ..... m<sup>3</sup></p> <p>6. What are the means of communication between the barge/truck and the vessel taking bunkers:            .....</p> <p>7. Who is responsible for communications with the bunker barge/truck:</p> <p>Name .....            Position .....</p>	Tank .....	Actual contents .....	Free space (up to 98% filling)	No. ....	tonnes .....	m <sup>3</sup> .....	No. ....	tonnes .....	m <sup>3</sup> .....	No. ....	tonnes .....	m <sup>3</sup> .....	No. ....	tonnes .....	m <sup>3</sup> .....
Tank .....	Actual contents .....	Free space (up to 98% filling)														
No. ....	tonnes .....	m <sup>3</sup> .....														
No. ....	tonnes .....	m <sup>3</sup> .....														
No. ....	tonnes .....	m <sup>3</sup> .....														
No. ....	tonnes .....	m <sup>3</sup> .....														

<p>6. Nominated volume to be transhipped:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">Grade .....</td> <td style="width: 40%;">Volume</td> </tr> <tr> <td>Marine Gas Oil .....</td> <td>tonnes ..... m<sup>3</sup></td> </tr> <tr> <td>LFO .....</td> <td>tonnes ..... m<sup>3</sup></td> </tr> <tr> <td>LFO .....</td> <td>tonnes ..... m<sup>3</sup></td> </tr> <tr> <td>LFO .....</td> <td>tonnes ..... m<sup>3</sup></td> </tr> <tr> <td>Lub oil .....</td> <td>tonnes ..... m<sup>3</sup></td> </tr> </table> <p>7. Agreed maximum pumping rates and line pressures:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">grade</td> <td style="width: 40%;">pumping rate in tonnes/hr.</td> <td style="width: 45%;">line pressure in psi/bar*</td> </tr> <tr><td>.....</td><td>.....</td><td>.....</td></tr> <tr><td>.....</td><td>.....</td><td>.....</td></tr> <tr><td>.....</td><td>.....</td><td>.....</td></tr> <tr><td>.....</td><td>.....</td><td>.....</td></tr> </table> <p>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.</p> <hr style="border: 1px solid black; margin: 10px 0;"/> <p style="text-align: center;"><b>Barge Master/Truck driver</b></p> <p>* if applicable</p>	Grade .....	Volume	Marine Gas Oil .....	tonnes ..... m <sup>3</sup>	LFO .....	tonnes ..... m <sup>3</sup>	LFO .....	tonnes ..... m <sup>3</sup>	LFO .....	tonnes ..... m <sup>3</sup>	Lub oil .....	tonnes ..... m <sup>3</sup>	grade	pumping rate in tonnes/hr.	line pressure in psi/bar*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	<p>8. Who is in charge of supervising the operation and taking immediate action in case of malfunction:</p> <p>Name .....</p> <p>Position .....</p> <p>9. Accepted volume to be transhipped:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">Grade .....</td> <td style="width: 40%;">Volume</td> </tr> <tr> <td>Marine Gas Oil .....</td> <td>tonnes ..... m<sup>3</sup></td> </tr> <tr> <td>LFO .....</td> <td>tonnes ..... m<sup>3</sup></td> </tr> <tr> <td>LFO .....</td> <td>tonnes ..... m<sup>3</sup></td> </tr> <tr> <td>LFO .....</td> <td>tonnes ..... m<sup>3</sup></td> </tr> <tr> <td>Lub oil .....</td> <td>tonnes ..... m<sup>3</sup></td> </tr> </table> <p>10. Agreed maximum pumping rates and line pressures:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">grade</td> <td style="width: 40%;">pumping rate in tonnes/hr.</td> <td style="width: 45%;">line pressure in psi/bar*</td> </tr> <tr><td>.....</td><td>.....</td><td>.....</td></tr> <tr><td>.....</td><td>.....</td><td>.....</td></tr> <tr><td>.....</td><td>.....</td><td>.....</td></tr> <tr><td>.....</td><td>.....</td><td>.....</td></tr> </table> <p>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.</p> <hr style="border: 1px solid black; margin: 10px 0;"/> <p>Master/Chief Engineer*</p> <p>* if applicable</p>	Grade .....	Volume	Marine Gas Oil .....	tonnes ..... m <sup>3</sup>	LFO .....	tonnes ..... m <sup>3</sup>	LFO .....	tonnes ..... m <sup>3</sup>	LFO .....	tonnes ..... m <sup>3</sup>	Lub oil .....	tonnes ..... m <sup>3</sup>	grade	pumping rate in tonnes/hr.	line pressure in psi/bar*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Grade .....	Volume																																																						
Marine Gas Oil .....	tonnes ..... m <sup>3</sup>																																																						
LFO .....	tonnes ..... m <sup>3</sup>																																																						
LFO .....	tonnes ..... m <sup>3</sup>																																																						
LFO .....	tonnes ..... m <sup>3</sup>																																																						
Lub oil .....	tonnes ..... m <sup>3</sup>																																																						
grade	pumping rate in tonnes/hr.	line pressure in psi/bar*																																																					
.....	.....	.....																																																					
.....	.....	.....																																																					
.....	.....	.....																																																					
.....	.....	.....																																																					
Grade .....	Volume																																																						
Marine Gas Oil .....	tonnes ..... m <sup>3</sup>																																																						
LFO .....	tonnes ..... m <sup>3</sup>																																																						
LFO .....	tonnes ..... m <sup>3</sup>																																																						
LFO .....	tonnes ..... m <sup>3</sup>																																																						
Lub oil .....	tonnes ..... m <sup>3</sup>																																																						
grade	pumping rate in tonnes/hr.	line pressure in psi/bar*																																																					
.....	.....	.....																																																					
.....	.....	.....																																																					
.....	.....	.....																																																					
.....	.....	.....																																																					

ANNEX 6

**ALPHABETICAL INDEX OF AND CROSS-REFERENCES BETWEEN  
RECOMMENDATIONS IN SECTIONS 3 AND 6**

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		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		7.2.17	7.3.20	
Handling equipment					
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				
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		
Repair or maintenance work	3.4.5	7.1.9	7.2.10	7.3.13
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

APPENDIX

SELECTED BIBLIOGRAPHY LIST OF INTERNATIONALLY RECOGNIZED CODES AND GUIDES RELEVANT TO THE TRANSPORT AND HANDLING OF DANGEROUS CARGOES IN PORT AREAS

PIANC	Dangerous Goods in Ports: Recommendations for port designers and port operators
UNEP	APELL: Awareness and preparedness for emergencies at local level
ILO	Code of Practice on Safety and Health in Dock Work Guide to Safety and Health in Dock Work, revised in 2004
ICS/OCIMF/IAPH	International Safety Guide for Oil Tankers and Terminals (ISGOTT) – fourth edition, 1996
ICS/OCIMF	Ship-to-Ship Transfer Guide (Liquefied Gases) – 1995 Prevention of Oil Spillages through Cargo Pumproom Sea Valves – 1991 Ship-to-Ship Transfer Guide (Petroleum) – 1988 (under revision)
ICS/OCIMF/SIGTTO	A Guide to Contingency Planning for the Gas Carrier Alongside and Within Port Limits – 1999 A Guide to Contingency Planning for Marine Terminals Handling Liquefied Gases in Bulk – 2001
OCIMF/SIGTTO	Inspection Guidelines for Ships Carrying Liquefied Gases in Bulk – 1990
ICS	Tanker Safety Guide (Chemicals), Second edition Tanker Safety Guide (Liquefied Gas), Second edition
OCIMF	Safety Guide for Terminals Handling Ships Carrying Liquefied Gases in Bulk – 1993 Effective Mooring – 1989 Guide on Marine Fire Protection and Emergency Evacuation – 1987 Inspection Guidelines for Bulk Oil Carriers – 1994 (under revision) Marine and Terminal Operations Survey – 1983 Marine Terminal Survey Guidelines – 1995 Mooring Equipment Guidelines – 1992 Recommendations for Equipment Employed in the Mooring of Ships at Single Point Mooring – 1993 Recommendations for Oil Tanker Manifolds and Associated Equipment – 1991 Ship Information Questionnaire for Bulk Oil Carriers – 1989 Recommendations for Manifolds for Refrigerated Liquefied Gas Carriers for Cargoes from 0°C to minus 104°C – 1987 Recommendations for Manifolds for Refrigerated Liquefied Natural Gas Carriers (LNG) – 1994
SIGTTO	Guidelines for Hazard Analysis as an Aid to Management of Safe Operations – 1992 Safe Havens for Disabled Gas Carriers – 1982 Liquefied Gas Handling Principles on Ships and in Terminals – 1986 (under revision)
OECD	Guiding Principles for Chemical Accident Prevention, Preparedness and Response – 1992
ICHCA	Safety Panel Briefing Pamphlet No.6 – Guidance on the Preparation of Emergency Plans – 1994
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”.

ADDITIONAL MATERIAL FOR INCLUSION IN THE RECOMMENDATIONS  
(PARAGRAPH REFERENCES ARE INCLUDED)

CONTENTS

- Figure 1: Plan of port area (3.1.2)
- Figure 2: Plan showing dangerous goods areas (3.4.1)
- Figure 3: Dangerous goods boxes (3.4.1)
- Figure 4: Container storage area (3.4.2.3)
- Figure 5: Fumigation warning sign (7.1.11, 7.3.15)
- Figure 6: Segregation tables for port areas (7.1)

**FIGURE 6**

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

<b>Classes</b>	<b>2.1</b>	<b>2.2</b>	<b>2.3</b>	<b>3</b>	<b>4.1</b>	<b>4.2</b>	<b>4.3</b>	<b>5.1</b>	<b>5.2</b>	<b>6.1</b>	<b>8</b>	<b>9</b>	
<b>Flammable gases</b>	2.1	0	0	0	s	a	s	0	s	s	0	a	0
<b>Non-toxic, non-flammable gases</b>	2.2	0	0	0	a	0	a	0	0	a	0	0	0
<b>Toxic gases</b>	2.3	0	0	0	s	0	s	0	0	s	0	0	0
<b>Flammable liquids</b>	3	s	A	s	0	0	s	a	s	s	0	0	0
<b>Flammable solids, self-reactive substances and desensitized explosives</b>	4.1	a	0	0	0	0	a	0	a	s	0	a	0
<b>Spontaneously combustible substances</b>	4.2	s	A	s	s	a	0	a	s	s	a	a	0
<b>Substances which, in contact with water, emit flammable gases</b>	4.3	0	0	0	a	0	a	0	s	s	0	a	0
<b>Oxidizing substances</b>	5.1	s	0	0	s	a	s	s	0	s	a	s	0
<b>Organic peroxides</b>	5.2	s	A	s	s	s	s	s	s	0	a	s	0
<b>Toxic substances (liquid and solids)</b>	6.1	0	0	0	0	0	a	0	a	a	0	0	0
<b>Corrosives (liquid and solids)</b>	8	a	0	0	0	a	a	a	s	s	0	0	0
<b>Miscellaneous dangerous substances and articles</b>	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 FIGURE 6

### 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 must 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.

## RELEVANT IMO REQUIREMENTS

- International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended, and earlier SOLAS Conventions where applicable;
- 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 Aide 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 and II;
- 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;
- 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;
- Recommendations on Principles and Operational Guidance for Deck Officers in Charge of a Watch in Port adopted by the International Conference on Training and Certification of Seafarers, 1978;
- 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.

## ANNEX 7

### ANCILLARY DICTIONARY OF CHEMICAL TERMS FOR USERS OF THE IMDG CODE

#### 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, ionisation (splitting of the molecule) occurs. Acids are referred to as **strong** or **weak** according to the concentration of hydrogen ion that results from ionisation.

##### **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 for methyl to butyl are mobile liquids. Those from  $C_5$  to  $C_{11}$  are only 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 the 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 kind of bonds have complicated orbits, and are extremely sensitive to additional input of external energy, which makes them capable to break the existing bonds. The break of the bonds affect 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<sub>2</sub>-NH-NH<sub>2</sub>). Electrons involved in such kind of bonds have notably complicated orbits, and are extremely sensitive to additional input of external energy, which makes them capable to break the existing bonds. The break of the bonds affect the whole molecule which undergoes spontaneous decomposition.

### **Azide**

Any of a group of compounds having the characteristic formula R(N<sub>3</sub>)<sub>x</sub>. 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 kind of bonds have complicated orbits, and are extremely sensitive to additional input of external energy, which makes them capable to break the existing bonds. The break 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 1000 to 9000 meters per second. Detonation may be initiated by mechanical impact, friction or heat.

**Diazonium salts**

Compounds which have a structure  $(-\text{CN}_2^+\text{Z}^-)$ , where  $\text{Z}^-$  is a radical with the negative charge. Electrons involved in such kind of bonds have complicated orbits, and are extremely sensitive to additional input of external energy, which makes them capable to break the existing bonds. The break 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 origin 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**

Metal of density 5 and over.

### **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.

Example:

- are inert gaseous elements; and
- carbon dioxide is an inert gaseous compound.

### **Inert gas**

Helium, neon, argon, krypton, xenon and radon are inert gases, so called noble gases. Krypton, xenon and radon have radioactive isotopes and nuclides.

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.

### **Inertization**

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 polymerisation.

### **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 ( $-\text{CO}_3$ ), i.e., 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 on one or more extra neutrons in the molecule.

## K

### **Ketone**

A class of liquid organic compounds in which the carbonyl group,  $\text{C}=\text{O}$ , is attached to two carbon atoms. The electronic bonds in the carbonyl group,  $\text{C}=\text{O}$ , are quite weak. Ketones are used primarily as solvents.

## L

### LC<sub>50</sub>

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<sub>3</sub>). Users 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<sub>6</sub>H<sub>7</sub>O<sub>2</sub>(ONO<sub>2</sub>)<sub>3</sub>. 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 kind of bonds have complicated orbits, and are extremely sensitive to additional input of external energy, which makes them capable to break the existing bonds. The break 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).

**Organic compounds (substances), see hydrocarbons**

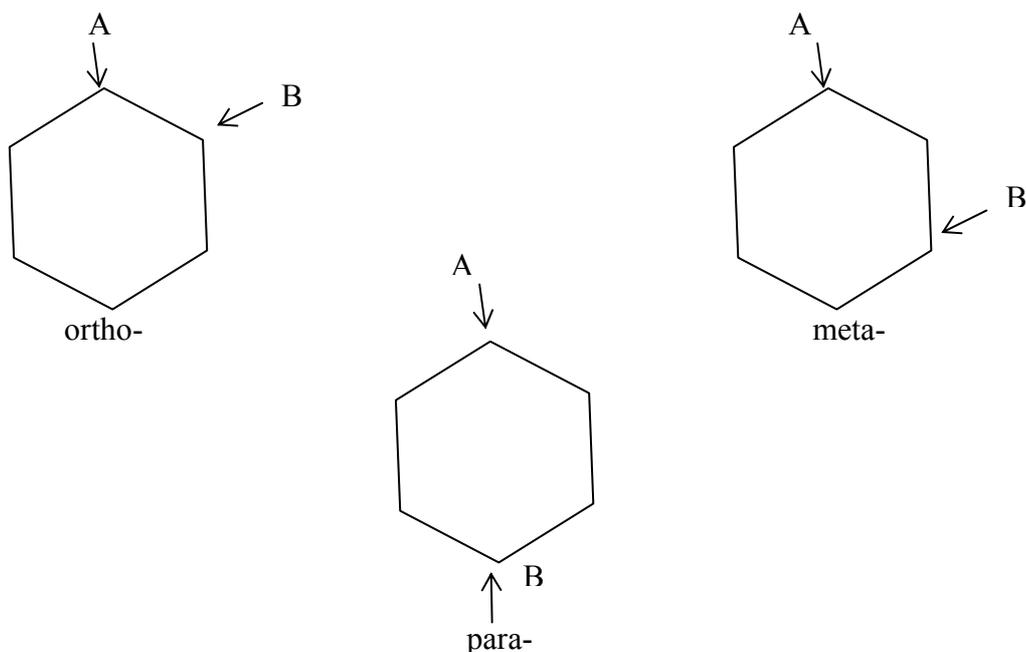
### Organometallic compound (substance)

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 have a tendency to react with some other substances or form oxygen as a gas (O<sub>2</sub>). 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 ( $\alpha$ ), beta ( $\beta$ ) or gamma ( $\gamma$ ) 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  $\text{NH}_4^+$  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,  $\text{R}_1\text{R}_2\text{R}_3\text{C}-$ , 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 20°C 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.

## ANNEX 8

### GUIDE TO FUMIGATION

1 The port and other relevant authorities should be notified, as required by local regulations, in advance of the impending arrival of 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.

5 When a CTU or a cargo space has been sufficiently ventilated, a clearance certificate should be issued, by an accredited body, for the purpose of documenting that the CTU or the cargo space is safe for further use.

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 local regulations.

8 Fumigation activities should be carried out away from public or other work areas as required by local regulations.

\*\*\*

**ANNEX 8****DRAFT MSC CIRCULAR****CARRIAGE OF DANGEROUS GOODS****Issuing and renewal of document of compliance with the special requirements applicable to ships carrying dangerous goods**

1 At its seventy-fifth session (15-24 May 2002) the Maritime Safety Committee considered and approved a standard format for the document of compliance required by regulation II-2/19.4 of the 1974 SOLAS Convention, as amended, applicable as from 1 July 2002. This format is reproduced in circular MSC/Circ.1027.

2 Recognizing the need to take into account the amendments to table 19.3 of SOLAS regulation II-2/19 which the Committee had adopted by resolution MSC.134(76), the Maritime Safety Committee, at its seventy-ninth session (1-10 December 2004), decided that it was necessary to highlight the prohibition on stowage of class 5.2 dangerous goods under deck or in enclosed ro-ro spaces in documents of compliance required by regulation II-2/19 of the SOLAS Convention, as amended, for any ship built on or after 1 July 2004 when issuing or renewing the said documents.

3 Recognizing also that this prohibition on stowage under the IMDG Code is also applicable to all ships built before 1 July 2004 and subject to regulation II-2/19 (or II-2/54) of the SOLAS Convention, as amended, the Maritime Safety Committee also decided that the prohibition on stowage would have to be taken into account when renewing documents of compliance for:

- any passenger ship built on or after 1 September 1984 and before 1 July 2004,
- any cargo ship of 500 gross tonnage or above built on or after 1 September 1984 and before 1 July 2004, and
- any cargo ship of less than 500 gross tonnage built on or after 1 February 1992 and before 1 July 2004.

4 In addition, at the same session, the Maritime Safety Committee recalled that the standard document of compliance format set out in circular MSC/Circ.1027 should be used when renewing documents of ships subject to SOLAS regulation II-2/54 applicable before 1 July 2002, and that in such cases the references to regulations II-2/19 and II-2/19.4 appearing in the standard format should be replaced by references to regulations II-2/54 and II-2/54.3 respectively.

5 Member Governments are invited to draw this circular to the attention of authorities responsible for issuing and renewing documents of compliance, bodies acting on behalf of these governments, and shipowners, ship operators and masters, with a view to harmonizing the practices of the various administrations.

6 Member Governments are also invited to draw this circular to the attention of authorities tasked by the port State with carrying out inspections of ships, and to recommend them to take the above into account when discharging their responsibilities.

\*\*\*

**ANNEX 9****DRAFT TERMS OF REFERENCE FOR THE DSC SUB-COMMITTEE**

1 The Sub-Committee, under the direction of the Maritime Safety and, as necessary, the Marine Environment Protection Committees, should:

- .1 assist the Committees for the effective implementation of the relevant conventions, codes and other instruments, mandatory or recommendatory, as appropriate, dealing with dry cargo operations, which include dangerous goods, solid bulk cargoes and containers;
- .2 enhance further the safety and security culture, and environmental consciousness in all dry cargo operations;
- .3 work in conjunction with other relevant UN bodies, IGO's and NGO's on international standards related to dry cargo operations; and
- .4 act on any other issues referred to it by the Committees and their subsidiary bodies.

2 Under the directions of the Maritime Safety Committee and, as necessary, the Marine Environment Protection Committee, develop new instruments related to dry cargo operations and prepare amendments to the relevant mandatory and non-mandatory instruments, including guidelines and recommendations, which include, as a minimum:

- .1 SOLAS 74 Convention\* (chapters VI and VII and other relevant parts, as appropriate);
- .2 MARPOL 73/78\* (Annex III and other relevant parts, as appropriate);
- .3 International Maritime Dangerous Goods (IMDG) Code\*;
- .4 International Code for the Safe Carriage of Packaged Irradiated Nuclear Fuel, Plutonium and High-Level Radioactive Wastes onboard Ships (INF Code)\*;
- .5 International Convention for Safe Containers (CSC)\*;
- .6 Code of Safe Practice for Solid Bulk Cargoes (BC Code);
- .7 International Code for the Safe Carriage of Grain in Bulk;
- .8 Code of Safe Practice for Ships Carrying Timber Deck Cargoes;
- .9 Code Safe Practice for the Safe Loading and Unloading of Bulk Carriers (BLU Code);

---

\* Mandatory instrument.

- .10 Recommendations on the Safe Transport of Dangerous Cargoes and related Activities in Port Areas;
- .11 Code of Safe Practice for Cargo Stowage and Securing (CSS Code);
- .12 Guidelines for the Preparation of the Cargo Securing Manual;
- .13 Emergency Response Procedures for Ships Carrying Dangerous Goods (EmS Guide);
- .14 Medical First Aid Guide for Use in Accidents Involving Dangerous Goods (MFAG);
- .15 Reporting procedures, including Inspection programmes for cargo transport units carrying dangerous goods; Reporting of incidents involving harmful substances and/or marine pollutants; Reporting of casualties involving dangerous cargoes;
- .16 IMO/ILO/UN ECE Guidelines for Packing Cargo Transport Units; and
- .17 Recommendations on the Safe Use of Pesticides in Ships.

\*\*\*

## ANNEX 10

## PROPOSED REVISED WORK PROGRAMME OF THE SUB-COMMITTEE

		<b>Target completion date/number of sessions needed for completion</b>	<b>Reference</b>
1	<b>Harmonization of the IMDG Code with the UN Recommendations on the Transport of Dangerous Goods</b>	Continuous	MSC 63/23, paragraph 10.6; DSC 9/15, section 3
2	<b>Reports on incidents involving dangerous goods or marine pollutants in packaged form on board ships or in port areas</b>	Continuous	CDG 45/22, section 11 and paragraph 20.2; DSC 9/15, section 6
3	<b>Amendments to the BC Code, including evaluation of properties of solid bulk cargoes</b>	Continuous	BC 34/17, section 3; DSC 9/15, section 4
4	<b>Casualty analysis (co-ordinated by FSI)</b>	Continuous	MSC 70/23, paragraphs 9.17 and 20.4; DSC 9/15, section 6
H.1	<b>Amendment (33-06) to the IMDG Code and supplements</b>	2005	DSC 3/15, paragraph 12.6; DSC 9/15, section 3
H.2	<b>Review of Annex III of MARPOL 73/78</b>	2005	DSC 3/15, paragraph 12.6; DSC 6/15, paragraph 12.2; MEPC 48/21, paragraph 18.3.1; DSC 9/15, section 3

- 
- Notes:**
- "H" means a high priority item and "L" means a low priority item. However, within the high and low priority groups, items have not been listed in any order of priority.
  - The struck-out text indicates proposed deletions and the shaded text shows proposed additions or changes.
  - Items printed in bold letters have been selected for the provisional agenda for DSC 10.

		<b>Target completion date/number of sessions needed for completion</b>	<b>Reference</b>
H.3	<b>Cargo securing manual</b>	2004	DSC 5/13, paragraph 10.5; MSC 73/21, paragraph 18.8; DSC 8/15, section 5
H.4 H.3	<b>Review Mandatory application of the BC Code</b>	2004 2007	DSC 3/15, paragraph 12.7; MSC 76/23, paragraph 20.12; MSC 78/25, paragraph 13.7; DSC 9/15, section 4
H.5	<b>Development of a manual on loading and unloading of solid bulk cargoes for terminal representatives</b>	2004	MSC 72/23, paragraph 21.17; DSC 7/15, section 9; MSC 76/23, paragraph 20.10; DSC 8/15, section 7
H.6 H.4	<b>Measures to enhance maritime security</b>	2004 2006	MSC 75/24, paragraph 22.9; DSC 9/15, section 9
H.7 H.5	<b>Guidance on serious structural deficiencies in containers: reporting procedure on serious structural deficiencies</b>	2004 2005	MSC 75/24, paragraph 22.15; DSC 9/15, section 8
H.8 H.6	Review of the SPS Code (co-ordinated by DE)	2 sessions	MSC 78/26, paragraph 24.9

		<b>Target completion date/number of sessions needed for completion</b>	<b>Reference</b>
H.9	<b>Document of compliance required by SOLAS regulation II-2/19</b>	2004	DSC 8/15, section 14; MSC 78/26, paragraph 24.15.2
H.10 H.7	<b>Amendments to the CSS Code</b>	2005	DSC 8/15, section 5; MSC 78/26, paragraph 24.15.3

**PROVISIONAL AGENDA FOR THE TENTH SESSION OF THE SUB-COMMITTEE\***

- Opening of the session
- 1 Adoption of the agenda
  - 2 Decisions of other IMO bodies
  - 3 Amendments to the IMDG Code and supplements, including harmonization of the IMDG Code with the UN Recommendations on the Transport of Dangerous Goods
    - .1 harmonization of the IMDG Code with the UN Recommendations on the transport of dangerous goods
    - .2 amendment (33-06) to the IMDG Code and supplements
    - .3 review of Annex III of MARPOL 73/78
  - 4 Amendments to the BC Code, including evaluation of properties of solid bulk cargoes
  - 5 Mandatory application of the BC Code
    - .1 identification of mandatory and recommendatory parts of the BC Code, including consequential amendments
    - .2 amendments to SOLAS chapters VI and VII on making the BC Code mandatory
  - 6 Casualty and incident reports and analysis
  - 7 Amendments to the CSS Code
  - 8 Guidance on serious structural deficiencies in containers: reporting procedure on serious structural deficiencies
  - 9 Measures to enhance maritime security
  - 10 Work programme and agenda for DSC 11
  - 11 Election of Chairman and Vice-Chairman for 2006
  - 12 Any other business
  - 13 Report to the Maritime Safety Committee

\*\*\*

---

\* Agenda item numbers do not necessarily indicate priority.

**ANNEX 11****STATEMENT BY THE DELEGATION OF THE NETHERLANDS**

The Netherlands would like to reserve its position on some of the items mentioned in DSC 9/WP.4.

1. Self-classification

It is our interpretation that the self-classification described in the GHS means that the classification of environmentally hazardous substances should be done by the industry. In some regions the system of self-classification has already proven to work well.

The decision of the WG to retain the current Marine Pollutant Identification in the Dangerous Goods List and the Index is contrary to this self-classification system and therefore contradictory to the GHS. In addition, it will not fit in with the self-classification schemes in other modes of transport, supply and use and storage.

2. Changing Marine Pollutants into Aquatic Pollutants

There are two issues to be addressed.

Firstly, the changing of the name Marine Pollutants into Aquatic Pollutants: the Netherlands can support this decision.

Secondly, saying that all substances identified as Marine Pollutants are automatically Aquatic Pollutants without taking into account of their properties. This means that substances not falling within the GHS criteria for Aquatic Pollutants will be identified as Aquatic Pollutants.

From the Chairman of the GESAMP EHS Group we were informed that similarities exist between Marine Pollutants and Aquatic Pollutants, but that the criteria for both groups of substances do fundamentally differ (it was his estimation that only approximately 70% of current Marine Pollutants will also be identified as Aquatic Pollutants).

Therefore, simply classifying all Marine Pollutants as Aquatic Pollutants will create intermodal transport difficulties and will be contrary to the UN Recommendations on the transport of dangerous goods, and the GHS.

Moreover, substances will be identified in the mandatory IMDG Code while they do not fall within the criteria of GHS, which will be included in the IMDG Code and will become mandatory under MARPOL Annex III.

Concluding:

The Netherlands are of the opinion that the list of Aquatic Pollutants should not be included in the new IMDG Code.

\*\*\*



**ANNEX 12****STATEMENT BY THE DELEGATION OF THE MARSHALL ISLANDS****Explosion and sinking of the m.s. Ythan**

In February of this year, the m.s. **Ythan**, port of registry Majuro, Republic of the Marshall Islands, loaded a cargo of hot briquetted iron/direct reduced iron (HBI/DRI) fines in the Orinoco River, Venezuela, intended for discharge in China.

The vessel experienced as a series of explosions in four of the five cargo holds on 28 February 2004, whilst in a location approximately 30 miles north of Santa Martha, Colombia, en-route to the Panama Canal. The explosion resulted in the death of the master, 5 engine-room staff and the subsequent sinking of the vessel.

The cargo that the vessel was carrying, DRI/HBI fines with some lumps, does not appear in the BC/IMDG Code. The only direct Reduced Iron entries in the BC Code are BC No.015, DRI in lumps, pellets and cold moulded briquettes; and No. 016, DRI briquetted, hot moulded sometimes referred to as HBI, both cargoes having less than 5% fines.

DRI is produced by de-oxidizing iron ore. DRI will, when exposed, slowly re-oxidize, which produces heat. When in contact with water it may emit hydrogen.

We are additionally aware of similar instances, which in addition, with the **Ythan** casualty, give us great concerns about the carriage of this cargo in ships.

Whilst still under investigation, an information paper, providing preliminary information on the **Ythan** casualty, has been submitted to MSC 79, in the hope that it may be considered at a future meeting and result in the initiation of a recommendation to enter additional "DRI bulk cargoes subject to marine transport" in the BC/IMDG Code, listing their dangers and the precautions to be taken for their safe marine handling and transport.

Thank you for your attention to this serious matter.

\*\*\*



**ANNEX 13****STATEMENT BY THE DELEGATION OF THE ISLAMIC REPUBLIC OF IRAN****Some technical points on MSC/Circ. 859 – Inspection programmes for cargo transport units (CTUs) carrying dangerous goods**

1 With reference to MSC/Circ.859 on Inspection programmes for cargo transport units (CTUs) carrying dangerous goods, in which Member Governments are recommended to observe the inspection programmes for CTUs carrying dangerous goods and also giving due consideration to the reports given by the Netherlands, China, Sweden and Belgium, it seems that a high percentage of deficiencies in this regard come from the labels of the dangerous goods.

2 Due to the significance and sensitivity of the issue, the Iranian delegation attending this session proposes that serious consideration should be given to this issue.

3 Moreover, as a large number of dangerous cargoes are being moved and carried in freight containers, it would be very important and crucial if the DSC Sub-Committee could pay due attention to the following points which are mainly focused on the labels presently used on the containers:

- .1 due to the previously installed labels not being removed from the containers, sometimes, it can be seen that a number of labels remain on the containers;
- .2 as it is not possible to perfectly clean the surface under the label, the labels are, therefore, not being stuck too well;
- .3 there is no defined and standard place for attachment of labels on containers and this may cause confusion and difficulties for the labour force concerned;
- .4 due to diverse and different colours of the containers which are being used as the background colour of the labels, some labels cannot be seen well; and
- .5 as the RTG and gantry cranes operators cannot easily see or access the sides/around the containers, they, therefore, cannot act carefully while loading and discharging the containers.

**Proposal**

4 To eliminate the problems described above, it would be required to: recommend shipping companies and carriers to install a metallic or aluminium tag of the same size as the labels on the top corner of the two sides, back and on the top surface of the containers in order that the labels are solely attached to/put on the said tags.

5 The advantages of this method are numerous and will rectify the deficiencies as stated previously.

6 The non-availability of standard procedures for detaching stickers, and the different methods being used at ports which may cause some damage to the container surfaces could be rectified by practicing the above method.

7 In view of the above, we would suggest that the points mentioned above be further dealt with and considered in depth in a relevant working group designated by the MSC. Hopefully, the items given above and the remarks made hereto may be taken into consideration by the Maritime Safety Committee and, if required, all the human factors involved in the container and cargo handling operations be recommended to apply and to be observed for the sake of safer and more efficient handling of dangerous cargoes in ports worldwide as well as for the purpose of more secure carriage of these cargoes by sea.

---