



SUB-COMMITTEE ON DANGEROUS
GOODS, SOLID CARGOES AND
CONTAINERS
15th session
Agenda item 3

DSC 15/3
18 January 2010
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**AMENDMENTS TO THE IMDG CODE AND SUPPLEMENTS, INCLUDING
HARMONIZATION OF THE IMDG CODE WITH THE UN RECOMMENDATIONS
ON THE TRANSPORT OF DANGEROUS GOODS**

Report of the Editorial and Technical Group

SUMMARY

<i>Executive summary:</i>	This document contains the outcome of the Editorial and Technical (E&T) Group meeting held from 28 September to 2 October 2009. During the meeting the group finalized draft errata and corrigenda to the IMDG Code (34-08) and draft amendment (35-10) to the IMDG Code, taking into consideration the relevant decisions of the Committee and DSC 14.
<i>Strategic direction:</i>	1.1
<i>High-level action:</i>	1.1.2
<i>Planned output:</i>	1.1.2.3
<i>Action to be taken:</i>	Paragraph 6.1
<i>Related documents:</i>	DSC 14/22; MSC 87/10/1, MSC 87/10/2 and Circular letter No.2999

1 GENERAL

1.1 The Editorial and Technical Group met from 28 September to 2 October 2009 at IMO Headquarters, under the chairmanship of Mrs. Olga P. Lefèvre (France).

1.2 The group was attended by delegations from the following Member States:

BELGIUM
CHILE
CHINA
FINLAND
FRANCE
GERMANY
ITALY
JAPAN

MARSHALL ISLANDS
NETHERLANDS
NORWAY
SPAIN
SWEDEN
UNITED KINGDOM
UNITED STATES

and observers from the following United Nations Commission:

UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE (UNECE)

1.3 The meeting was also attended by observers from the following non-governmental organizations in consultative status:

DANGEROUS GOODS ADVISORY COUNCIL (DGAC)
INTERNATIONAL VESSEL OPERATORS HAZARDOUS MATERIALS ASSOCIATION
(VOHMA)
WORLD NUCLEAR TRANSPORT INSTITUTE (WNTI)

Adoption of the agenda

1.4 The agenda of the session, as adopted by the group, is set out in annex 1.

1.5 The list of participants is set out in annex 2.

1.6 The group proceeded with the consideration of the issues as detailed in the following paragraphs.

2 FINALIZATION OF ERRATA AND CORRIGENDA TO THE IMDG CODE AMENDMENT (34-08)

2.1 The group considered the proposal by DGAC (DSC 14/3/4) on revising the Special Provision 188 in order to exempt lithium button cell batteries contained in equipment from provisions to mark the outside package, consistent with the decision taken by UNSCOE 36, and agreed to insert in subparagraph .6 of SP188 “button cell batteries installed in equipment (including circuit boards), or”, after “Except for packages containing”.

2.2 The group also considered the proposal by the United States (DSC 13/6/13) regarding prohibition of underdeck stowage of UN 1913, UN 1951, UN 1963, UN 1970, UN 2087, UN 2201 and UN 2591, and, as agreed by the Sub-Committee, incorporated it in the errata and corrigenda.

2.3 The group, based on the relevant decisions of DSC 14 (DSC 14/22, paragraph 3.11), finalized the errata and corrigenda, as set out in annex 3, and recalled the request of the Sub-Committee that the Secretariat should issue it before 1 January 2010, the date from which amendment (34-08) of the IMDG Code would attain mandatory status.

Additional errata and corrigenda to the French version of the IMDG Code amendment (34-08)

2.4 The group noted that the Chairman, in consultation with interested parties, had finalized the additional errata and corrigenda applicable to the French version of the IMDG Code amendment (34-08) only, as set out in annex 4, and recalled the request of the Sub-Committee that the Secretariat should also issue it before 1 January 2010, the date from which amendment 34-08 of the IMDG Code would attain mandatory status.

3 FINALIZATION OF DRAFT AMENDMENTS TO THE IMDG CODE AMENDMENT (35-10)

3.1 The group considered draft amendments to the Code (DSC 14/3, annex 6), which were prepared by the group, at its June 2009 session, on the basis of amendments to the UN Recommendations on the transport of dangerous goods, as adopted by the UN Committee of Experts on the transport of dangerous goods and the globally harmonized system of classification and labelling of chemicals (UNSCOE) in December 2008, and in the light of the submissions to DSC 13 and DSC 14 and decisions taken thereon, and finalized draft amendment (35-10) to the Code (Circular letter No.2999), for consideration by MSC 87 with a view to adoption.

Preamble

3.2 The group noted that the existing preamble would be updated and simplified, taking into account the new amendment and requested the Secretariat to act accordingly.

Mixtures or solutions

3.3 As endorsed by the Sub-Committee (DSC 14/22, paragraph 3.14), the group added the following additional text to paragraphs 3.1.3.4 and 2.0.2.10 “meeting the classification criteria of this Code” after “a mixture or solution”. In addition, the group was of the view that this text should also be added to 2.0.2.5 and to 3.1.3.2 and that the last sentence of 2.0.2.5 should be added to 3.1.3.2. The group invited the UNSCOE to note the view of the group and to take action as appropriate.

UN 1471

3.4 When preparing the new entry against UN 1471 for PG III, the group noted that the existing proper shipping name against the entry for PG II in the IMDG Code, amendment (34-08), is not the same as the one in the UN Recommendations on the transport of dangerous goods and agreed to align it with that in the UN Recommendations for the sake of harmonization; however, the group was of the view that the corresponding proper shipping name in the UN Recommendations need to be reviewed and invited the UNSCOE to decide if it is appropriate to add “DRY with more than 39% available chlorine (8.8% available oxygen)” after “MIXTURE”.

UN 1486, UN 1498 and UN 1499

3.5 As instructed by the Sub-Committee, the group considered the proposals by Chile (DSC 14/3/11, DSC 14/3/12 and DSC 14/3/13) on exemptions from the provisions of the IMDG Code for the transport substances assigned UN 1486, UN 1498 and UN 1499 when it has been formed to a specific shape.

3.6 After an extensive debate on the proposal regarding particle size, the group was of the view that, on the basis of the information provided by Chile regarding particle size, it was not possible to define the limits of the particle size which would be subject to such an exemption; therefore, the group decided to have the same approach taken in the assignment of SP 925 to UN 1361 and UN 1362 and agreed to assign the new SP 964 to UN 1486, UN 1498 and UN 1499:

“964 This substance is not subject to the provisions of this Code when transported in non friable prills or granules form and if it passes the test for oxidizing solid substances as reflected in the United Nations *Manual of Test and Criteria*

(see 34.4.1) and is accompanied by a certificate from a laboratory accredited by a competent authority, stating that the product has been correctly sampled by trained staff from the laboratory and that the sample was correctly tested and has passed the test.”

and requested the Secretariat to forward this information to the UNSCOE for action, as appropriate.

3.7 In the above context, the group emphasized that the exemption provided in SP 964 applies to UN 1486, UN 1498 and UN 1499 in packaged form only. The group also noted that the matter should be further considered by DSC 15 in the context of the preparation of a possible corresponding amendment 01-11 to the IMSBC Code and invited interested delegation to submit proposals to DSC 15 for consideration.

UN 1707

3.8 The group noted the omission of SP 274 in column 6 of the dangerous goods list against the entry for UN 1707, agreed to insert it in order to be consistent with the criteria for assigning SP 274 to class 6.1 n.o.s entries and invited the UNSCOE to note the action taken by the group.

UN 1977

3.9 The group, while in the process of preparing amendment (35-10), noted that the text in column 17 of the entry against UN 1977 could benefit from improvement and, having further noted that an associated item (transport of coolant/condition units) is on the agenda of UNSCOE, agreed to defer the further consideration of the issue after the relevant outcome of UNSCOE is available.

UN 3485, UN 3486 and UN 3487

3.10 The group, while finalizing amendments to new entries against UN 3485, UN 3486 and UN 3487, noted that, in special packing provision B13 in the UN Recommendations on the transport of dangerous goods, the aforementioned three UN numbers are missing and invited the UNECE Secretariat to note the omission and to take action as appropriate. Furthermore, the group invited the UNSCOE to note that UN 3487, PG III, will not be allowed in IBCs for transport by sea and to assign B13 to this entry.

3.11 In order to be consistent with the assignment of packing instruction to UN 2208 in the IMDG Code, the group decided not to assign LP02 to UN 3486, PG III, and invited the UNSCOE to note the decision of the group.

UN 3496

3.12 As instructed by the Sub-Committee the group considered the proposal by France, Germany and VOHMA (DSC 14/3/6) and, taking into account the results of the discussions on this matter by the UNSCOE (DSC 14/3/1), agreed with the proposal and decided to assign a new special provision 963 for nickel-metal hydride batteries as follows:

“963 Nickel-metal hydride button cells or nickel-metal hydride cells or batteries packed with or contained in equipment are not subject to the provisions of this Code.

All other nickel-metal hydride cells or batteries shall be securely packed and protected from short circuit. They are not subject to other provisions of this Code provided that they are loaded in a cargo transport unit in a total quantity of less than 100 Kg gross mass. When loaded in a cargo transport unit in a total quantity of 100 Kg gross mass or more, they are not subject to other provisions of this Code except those of 5.4.1, 5.4.3 and column (16) of the dangerous good list in Chapter 3.2.”

3.13 In this context, the delegation of China reiterated its position, which was stated at UNSCOE 35 and at DSC 14, regarding its disagreement on the classification of nickel-metal hydride batteries as dangerous goods that has been done on the basis of lack of clear grounds and insufficient scientific study. The delegation further stated that on the basis of past experience in the carriage of this type of cargo and on the basis of the results of tests carried out according to the IEC criteria, nickel-metal hydride batteries should not be classified as dangerous goods.

SP 188

3.14 The group, having considered the proposal of DGAC (DSC 14/3/5) and taking into account the associated decisions and instructions of the Sub-Committee (DSC 14/22, paragraphs 3.54 to 3.56), agreed to add “, except those manufactured before 1 January 2009” at the end of the second sentence in subparagraph .2, after “case”, of the current special provision 188.

Assignment of packing provisions (PP)

3.15 The group observed that PP85 in the IMDG Code is not the same as the one in the UN Recommendations and agreed that this packing provision along with other packing provisions which are not the same as the corresponding ones in the UN Recommendations would need to be renumbered to reflect that those are packing provisions associated with the IMDG Code; however, due to time constraints, the group decided to defer the consideration of this issue at a future session of the group and invited the Sub-Committee to endorse the opinion of the group.

Radioactive materials in excepted packages

3.16 As instructed by the Sub-Committee (DSC 14/22, paragraph 3.50), the group incorporated, in 5.1.5.4.2, the proposal that the names and addresses of the consignor and of the consignee shall be included in the documentation related to excepted packages of radioactive material.

Orientation arrows

3.17 When considering the addition of new (f) in 5.2.1.7.1, the group noted that the provisions in paragraph 5.2.1.7.1(a) to (f) could benefit from improvement as it is unclear from the existing text whether the orientation arrows are not required on outer packagings or not required on the packages containing the outer packagings and invited the UNSCOE to note the issue and to take action as appropriate.

Dangerous goods transport information

3.18 Noting the decision of DSC 14 to delete 5.4.1.1.2 regarding the introduction of the term “initial carrier” from this provision, the group invited the UNSCOE to note the decision of the Sub-Committee.

Fumigated cargo transport unit

3.19 The group agreed to introduce new paragraph 5.5.2.1.4 to effect that the provisions of 3.2 and 5.4.3 apply to all fumigated cargo transport units (UN 3359) and invited the UNSCOE to note the aforementioned decision.

Stowage of goods of class 5.2

3.20 The group, having considered the proposal of CEFIC (DSC 14/3/9) and, taking into account the associated decisions and instructions of the Sub-Committee (DSC 14/22, paragraph 3.59), agreed to add “or flooding of the container with water.” at the end of 7.1.12.5.

Index

3.21 The group requested the Secretariat to update the index in IMDG database in the context of amendment (35-10). Additionally, the Secretariat was requested to prepare an initial list of amendments to the index based on the remarks received by the following participants:

Delegation	Page numbers	
Belgium	1-15	Electronic
France	16-30	Document
Germany	31-45	Electronic
Japan	46-60	Electronic
Netherlands	61-75	Document
United Kingdom	76-90	Electronic
United States	91-105	Electronic
Finland	106-115	Electronic

for consideration at DSC 15 and inclusion in amendment (36-10).

4 FINALIZATION OF DRAFT AMENDMENTS TO IMDG CODE SUPPLEMENT

Amendments to the Emergency Response procedures for Ships carrying Dangerous Goods (EmS Guide) (MSC/Circ.1025, as amended by MSC.1/Circ.1025/Add.1 and MSC.1/Circ.1262)

4.1 As instructed by the Sub-Committee, the group considered document DSC 14/WP.3 and finalized the draft amendments to the revised emergency response procedures for ships carrying dangerous goods and the associated MSC circular, for approval by MSC 87, set out in document MSC 87/10/1.

4.2 While considering the above-mentioned amendments, the group was of the view that the text in the guide relating to direction of the wind in relation to personnel exposed to the risks associated with spillage needed further consideration and invited the Sub-Committee to endorse the view of the group and decide accordingly.

Revision of recommendations on the safe use of pesticides in ships applicable to the fumigation of cargo transport unit

4.3 The group, as instructed by DSC 14, considered document DSC 14/WP.6 (paragraph 9 and annex 2) and finalized revised recommendations on the safe use of pesticides in ships applicable to the fumigation of cargo transport units and the associated MSC circular, for approval by MSC 87, as set out in document MSC 87/10/2.

5 PROPOSALS FOR CONSIDERATION AT DSC 15

Amendments to 2.9.3 – Environmentally hazardous substances (aquatic environment)

5.1 As instructed by the Sub-Committee (DSC 14/22, paragraph 3.15), the group harmonized the text of 2.9.3 with that of the UN Recommendations (16th revised edition) for incorporation in amendment (36-12), as set out in annex 5.

5.2 The group observed that, with the revision of MARPOL Annex III, there will be a need for consequential amendments to be introduced in amendment (36-12) and invited the Sub-Committee to take action as appropriate.

Amendments to 5.4.3 and 5.4.4 to the IMDG Code

5.3 As requested by the Sub-Committee, the group considered the proposal in document DSC 14/3, paragraph 3.1.19 on provisions in 5.4.3 concerning documentation required on board the ship and in 5.4.4 on other required information and documentation. In this context the group drafted amendments to 5.4.3 which clarified the intent of the provisions for further consideration by DSC 15, as set out in annex 6, and was of the view that the provisions in 5.4.4 were clear and that no modifications are required. The group invited the Sub-Committee to endorse the view of the group.

Consideration of provisions which prohibit transport of certain substances by sea (SP 900)

5.4 The group considered the matter regarding substances subject to SP 900 which are prohibited for transport by sea and, as contained in chapter 3.3 of the IMDG Code, incorporating amendment (34-08), and as instructed by the Sub-Committee, prepared amendments to column 17 of the dangerous goods list to improve clarity and user-friendliness of provisions which prohibit transport of certain substances by sea, as set out in annex 7. The group was of the view that further work is needed to finalize the text and invited the Sub-Committee to take action as appropriate.

Amendments to the IMO/ILO/UNECE Guidelines for packing of cargo transport units

5.5 The group considered document DSC 13/WP.7 and, on the basis of comments made at DSC 14, prepared draft amendments to the guidelines for packing of cargo transport units for consideration at DSC 15, as set out in annex 8, and invited the Sub-Committee to agree to them, subject to endorsement by ILO and UNECE.

6 ACTION REQUESTED OF THE SUB-COMMITTEE

6.1 The Sub-Committee is invited to:

- .1 endorse the decisions and action taken by the group for the finalization of the errata and corrigenda (34-08) to the IMDG Code (paragraphs 2.1, 2.2 and 2.3 and annex 3);
- .2 endorse the decision and action taken by the group for the finalization of the additional errata and corrigenda (34-08) applicable to the French version of the IMDG Code (paragraph 2.4 and annex 4);

- .3 agree in principle and in general to the decisions and action taken by the group for the finalization and circulation of the draft amendments to the IMDG Code amendment (35-10) (paragraphs 3.1 to 3.21);
- .4 agree with the view of the group on the updating and simplification of the existing Preamble of the Code taking into account the new amendment (35-10) (paragraph 3.2);
- .5 endorse the action of the group on adding additional text to paragraphs 3.1.3.4 and 2.0.2.10 regarding mixtures or solutions (paragraph 3.3);
- .6 agree with the decision of the group on aligning existing proper shipping name against the entry for UN PG II in the IMDG Code, amendment (34-08) with that in the UN Recommendations and to advise UNSCOE to decide if it is appropriate to add “DRY with more than 39% available chlorine (8.8% available oxygen)” after “MIXTURE” (paragraph 3.4);
- .7 endorse the decision of the group to assign a new SP 964 to UN 1486, UN 1498 and UN 1499 and to forward this information to the UNSCOE for action, as appropriate (paragraphs 3.5 to 3.7);
- .8 endorse the decision of the group to insert SP 274 in column 6 of the dangerous goods list against the entry for UN 1707 in order to be consistent with the criteria for assigning SP 274 to class 6.1 n.o.s entries and to inform the UNSCOE accordingly (paragraph 3.8);
- .9 agree with the view of the group that the text in column 17 of the entry against UN 1977 could benefit from improvement and to inform the UNSCOE accordingly (paragraph 3.9);
- .10 agree with the decision of the group on not to assign LP02 to UN 3486, PG III in order to be consistent with the assignment of packing instruction to UN 2208 in the IMDG Code and to invite the UNSCOE to note the analysis of the group regarding special packing provision B13 in the UN Recommendations (paragraphs 3.10 and 3.11);
- .11 endorse the decision of the group to assign a new SP 963 to UN 1486, UN 1498 and UN 1499 (nickel-metal hydride batteries) and to forward this information to the UNSCOE for action, as appropriate (paragraphs 3.12 and 3.13);
- .12 endorse the decision of the group to add “, except those manufactured before 1 January 2009” at the end of the second sentence in subparagraph .2, after “case”, of the current special provision 188 (paragraph 3.14);
- .13 endorse the opinion of the group to defer the consideration of assignment of packing provision (PP85) at a future session of the group (paragraph 3.15);
- .14 endorse the action taken by the group to incorporate, in 5.1.5.4.2, the names and addresses of the consignor and of the consignee within the documentation related to excepted packages of radioactive material (paragraph 3.16);

- .15 endorse the view of the group to improve the provisions in paragraph 5.2.1.7.1(a) to (f) regarding the orientation arrows and to invited the UNSCOE to note the issue and to take action as appropriate (paragraph 3.17);
- .16 agree with the decision of the group to invite the UNSCOE to note the decision of the Sub-Committee to delete 5.4.1.1.2 regarding the introduction of the term “initial carrier” from this provision (paragraph 3.18);
- .17 endorse the decision of the group to introduce a new paragraph 5.5.2.1.4 to effect that the provisions of 3.2 and 5.4.3 apply to all fumigated cargo transport units (UN 3359) and to invite the UNSCOE to note this decision (paragraph 3.19);
- .18 note the action of the group on adding “or flooding of the container with water.” at the end of provision 7.1.12.5 (paragraph 3.20);
- .19 endorse the request of the group to the Secretariat to update the index in IMDG data base in the context of amendment (35-10) and to prepare an initial list of amendments to the index based on the remarks received during the last session of the group (paragraph 3.21);
- .20 note the draft amendments to the revised emergency response procedures for ships carrying dangerous goods and the associated draft MSC circular, for approval by MSC 87 (paragraphs 4.1 and 4.21 and document MSC 87/10/1);
- .21 note the revised recommendations on the safe use of pesticides in ships applicable to the fumigation of cargo transport units and the associated draft MSC circular, for approval by MSC 87 (paragraph 4.3 and document MSC 87/10/2);
- .22 endorse the action taken by the group on harmonizing the text of 2.9.3 with that of the UN Recommendations (16th revised edition) for incorporation in amendment (36-12), and the group observation on the consequential amendments that will be required in MARPOL Annex III (paragraphs 5.1 and 5.2 and annex 5);
- .23 agree to the draft amendment of provision 5.4.3 concerning documentation required on board the ship and endorse the opinion of the group for not amending 5.4.4 on other required information and documentation (paragraph 5.3 and annex 6);
- .24 note the progress made by the group on amending column 17 of the dangerous goods list regarding substances subject to SP 900 which are prohibited for transport by sea and as contained in chapter 3.3 of the IMDG Code, and finalize the draft text (paragraph 5.4 and annex 7);
- .25 agree to the draft amendments (subject to endorsement by ILO and UNECE) to the guidelines for packing of cargo transport units (paragraph 5.5 and annex 8); and
- .26 approve the report in general.

ANNEX 1

AGENDA

Fourteenth meeting of the Editorial and Technical Group of the Sub-Committee on Dangerous Goods, Solid Cargoes and Containers held at the IMO Headquarters, 4 Albert Embankment, London SE1 7SR from Monday, 28 September to Friday, 2 October 2009

Opening of the meeting

- 1 Adoption of the agenda
- 2 Finalization of draft errata and corrigenda to the IMDG Code (amendment 34-08)
- 3 Finalization of draft amendments to the IMDG Code (amendment 35-10)
- 4 Finalization of draft amendments to IMDG Code supplement:
 - .1 Amendments to the Emergency Response procedures for Ships carrying Dangerous Goods (EmS Guide)
 - .2 Revision of Recommendations on the safe use of pesticides in ships applicable to the fumigation of cargo transport unit
- 5 Proposals for consideration at DSC 15
 - .1 Amendments to 2.9.3 to the IMDG Code
 - .2 Amendments to 5.4.3 and 5.4.4 to the IMDG Code
 - .3 Consideration of provisions which prohibit transport of certain substances by sea (SP 900)
 - .4 Amendments to the IMO/ILO/UNECE Guidelines
- 6 Any other business
- 7 Report to the Sub-Committee

ANNEX 2

List of participants

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ANNEX 3

ERRATA AND CORRIGENDA TO THE IMDG CODE AMENDMENT (34-08)

PART 2 – CLASSIFICATION

Chapter 2.6

Assignment of packing groups to toxic substances

2.6.2.2.4.2 At the end of the NOTE, the reference “2.8.2.2” should be replaced with “2.8.2.3”. And move the note to 2.6.2.2.4.1.

2.6.3.6.2 Amend to read: “Animal material affected by pathogens of category A or which would be assigned to category A in cultures only, shall be assigned to UN 2814 or UN 2900 as appropriate. Animal material affected by pathogens of category B other than those which would be assigned to category A if they were in cultures shall be assigned to UN 3373”.

Chapter 2.7

Classification as Surface contaminated object (SCO)

2.7.2.4.3 The reference “2.7.2.3.2.1” is replaced with “2.7.2.3.2”.

Chapter 2.9

Environmentally hazardous substances (aquatic environment)

General definitions

2.9.3.1.1 The definition of “Substance” is replaced with the following:

“Substance means chemical elements and their compounds in the natural state or obtained by any production process, including any additive necessary to preserve the stability of the product and any impurities deriving from the process used, but excluding any solvent which may be separated without affecting the stability of the substance or changing its composition.”

Definitions and data requirements

2.9.3.2.2 In the second sentence, before the word “freshwater”, insert the words “it has been agreed that”.

2.9.3.2.3 Replace second and third sentences with the following:

“These species are considered as surrogate for all aquatic organisms and data on other species, such as Lemna, may also be considered if the test methodology is suitable”.

2.9.3.2.5 In the third sentence, delete the word “aquatic”.

2.9.3.2.5 The fourth sentence is replaced with the following:

“These are fresh water tests and thus the use of the results from OECD Test Guideline 306, which is more suitable for marine environments, has also been included.”

Mixtures classification categories and criteria

2.9.3.4.3.2 In the first paragraph, the last sentence is replaced with the following:

“When chronic (long term) toxicity data (NOEC) are also available, they shall be used as well.”

2.9.3.4.4.1 In the first sentence, replace the words “this data” with “these data”^{*}.

Bridging principles

2.9.3.4.5.1 In the first sentence, the words “classification of its ingredients” are replaced with “concentrations of its classified ingredients”.

2.9.3.4.5.2 The first sentence is replaced with the following:

“Mixtures may be made of a combination of both ingredients that are classified (as Acute 1 and/or Chronic 1, 2) and those for which adequate test data are available.”

and in the second sentence replace “toxicity data is available” with “toxicity data are available”^{*}.

Summation method

2.9.3.4.6.1.1 In the last sentence, the words “and it is not necessary therefore to undergo the further classification procedure” are replaced with “; therefore, it is not necessary to pursue the classification procedure further”.

Mixture with highly toxic ingredients

2.9.3.4.6.4.1 The first sentence is replaced with the following:

“Category Acute 1 ingredients with toxicities well below 1 mg/l may influence the toxicity of the mixture and are given increased weight in applying the summation method.”

* This amendment does not apply to the IMDG Code Publication, only to the electronic version and to document DSC 13/INF.3.

and the second sentence is replaced with the following:

“When a mixture contains ingredients classified as Acute 1 or Chronic 1, the tiered approach described in 2.9.3.4.6.2 and 2.9.3.4.6.3 shall be applied using a weighted sum by multiplying the concentrations of Acute 1 ingredients by a factor, instead of merely adding up the percentages.”

PART 3 – DANGEROUS GOODS LIST, SPECIAL PROVISIONS AND EXCEPTIONS

Chapter 3.2

UN Entries

For UN 1913, Replace “Category B” with “Category D” in column (16)

For UN 1951, Replace “Category B” with “Category D” in column (16)

For UN 1963, Replace “Category B” with “Category D” in column (16)

For UN 1970, Replace “Category B” with “Category D” in column (16)

For UN 2187, Replace “Category B” with “Category D” in column (16)

For UN 2201, Replace “Category B” with “Category D” in column (16)

For UN 2591, Replace “Category B” with “Category D” in column (16)

For UN 2687 Delete the entry for Desensitized explosive N.O.S.*

For UN 2949 Insert “,” after HYDROSULPHIDE” in column (2).

For UN 3126 (PGII), 3127 (PGII), 3128 (PGII), 3131 (PGII) and 3132 (PGII) insert “T3” in column (13) and “TP33” in column (14).

For UN 3126 (PGIII), 3127 (PGIII), 3128 (PGIII), 3131 (PGIII) and 3132 (PGIII) insert “T1” in column (13) and “TP33” in column (14).

Dangerous goods list

Chapter 3.3

Special provisions applicable to certain substances, materials or articles

SP 172 Amend to read as follows:

“SP 172 Radioactive material with a subsidiary risk shall:

- (a) be labelled with subsidiary risks labels corresponding to each subsidiary risk exhibited by the material; corresponding placard shall be affixed to transport units in accordance with the relevant provisions of 5.3.1;

- (b) be allocated to packing group I, II or III, as and if appropriate, by application of the grouping criteria provided in Part 2 corresponding to the nature of the predominant subsidiary risk.

The description required in 5.4.1.5.7.1.2 shall include a description of these subsidiary risks (e.g., “Subsidiary risk: 3, 6.1”), the name of the constituents which most predominantly contribute to this (these) subsidiary risk(s), and where applicable, the packing group.”

SP 188 At the beginning of subparagraph .6, after “Except for packages containing”, insert “button cell batteries installed in equipment (including circuit boards), or”.

SP 310 In the first sentence the word “lithium” is deleted.

Chapter 3.5

Dangerous goods packed in excepted quantities

Tests of packages

3.5.3.1.2 In the last paragraph delete the word “drop”.

PART 4 – PACKING AND TANK PROVISIONS

Chapter 4.1

4.1.4.1 – P001 Delete “*” in the PG I column against the authorized maximum capacity (250 l) specified for 6HA1 and 6HB1 composite packagings.

4.1.4.1 – P402 In PP 31, insert “3148,” after “1422,”.

4.1.4.1 – P804(1) The existing paragraph in the table is replaced with the following:

“(1) Combination packagings with a maximum gross mass of 25 kg, consisting of one or more glass inner packaging(s) with a maximum capacity of 1.3 litres each and filled to no more than 90% of their capacity; the closure(s) of which shall be physically held in place by any means capable of preventing back-off or loosening by impact or vibration during transport, individually placed in:

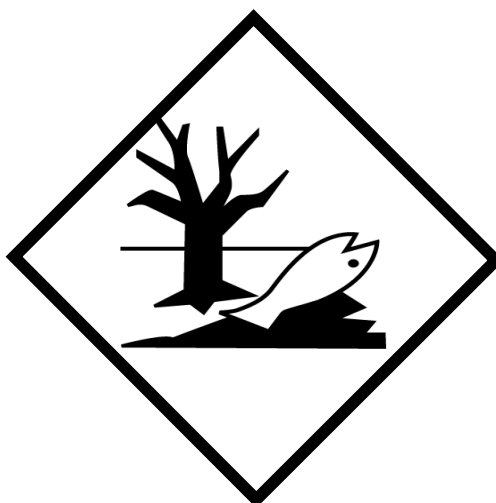
- metal receptacles together with cushioning and absorbent material sufficient to absorb the entire contents of the glass inner packaging(s), further packed in;
- 1A2, 1B2, 1N2, 1H2, 1D, 1G, 4A, 4B, 4C1, 4C2, 4D, 4F, 4G, or 4H2 outer packagings.”

PART 5 – CONSIGNMENTS PROCEDURES

Chapter 5.2

Special marking provisions for marine pollutants

5.2.1.6.3 The marine pollutant mark is amended as follows*:



Provisions for labels

5.2.2.2.1.3 In the first sentence, after the words “exception of”, insert the words “labels for”. And in the last sentence after the words “from the other” insert the word “required”.

Chapter 5.3

Placarding and marking of cargo transport units

5.3.1.2.1.1 At the end of the second sentence after the words “bottom corner” delete the “.” and insert a semi-colon “;”.

Chapter 5.4

Special provisions for segregation

5.4.1.5.11.1 In the last sentence, after “Phosphoric acid”, insert “, acetic acid”.

* The symbol should be also amended on the cover sheets of the IMDG Code accordingly.

PART 6 – CONSTRUCTION AND TESTING OF PACKAGINGS, INTERMEDIATE BULK CONTAINERS (IBCs), LARGE PACKINGS, PORTABLE TANKS, MULTIPLE-ELEMENT GAS CONTAINERS (MEGCs) AND ROAD TANK VEHICLES

Chapter 6.2

Materials

6.2.1.2.1 After the word “intended”, insert the words “to be transported”.

Chapter 6.4

6.4.10.2 Replace references “6.4.8.7.2” and “6.4.8.11” with “6.4.8.8.2” and “6.4.8.12”.

Chapter 6.5

Marking

6.5.2.1.1.7 In the footnote replace the existing reference “6.5.4.6.4” with “6.5.6.6.4”.

6.5.4.5.5 Renumber as “6.5.4.4.4”.

Method of testing and pressure to be applied

6.5.6.7.3 The second sentence is replaced with the following:

“The airtightness of the IBC shall be determined by a suitable method such as air-pressure differential test or by immersing the IBC in water, or for metal IBCs, by coating the seams and joints with a soap solution.”

Chapter 6.6

Test provisions for large packagings

6.6.5.1.3 Replace “6.6.5.2.3” with “6.6.5.2.4”.

Chapter 6.7

6.7.2 Provisions for the design, construction, inspection and testing of portable tanks intended for the transport of substances of class 1 and classes 3 to 9

6.7.2.1 Definitions

6.7.2.1 In the definition of “Portable tank”, delete the word “transport” in the last but one sentence.

Inspection and testing

6.7.4.14.4 In the first sentence the words “inspection and test” are replaced with “inspections and tests”*. And the second sentence is replaced with the following:

“In the case of non-vacuum insulated tanks, the jacket and insulation shall be removed during the 2.5-year and the 5-year periodic inspections and tests, but only to the extent necessary for a reliable appraisal.”

General design and construction provisions

6.7.5.2.1 In the last sentence the words “cargo transport unit” are replaced by the word “vehicle”.

PART 7 – PROVISIONS CONCERNING TRANSPORT OPERATIONS

Chapter 7.1

7.1.1.5 Replace “6.5.4.6.4” with “6.5.6.6.4”.

Appendix A – Class 4.1

For UN 3344 In column “Proper Shipping Name”, add “(PENTAERYTHRITOL TETRANITRATE; PETN) before “MIXTURE”.

Alphabetical index

In the entry for “Fuze combination, percussion or time”, insert “or FUZES, IGNITING” after “DETONATING”.

For SODIUM HYDROSULPHIDE (UN 2949), in the column “Substance, material article”, insert “HYDRATED” after “HYDROSULPHIDE”**.

For SODIUM HYDROSULPHIDE HYDRATED (UN 2949) in the column “Substance, material article” insert “,” after “HYDROSULPHIDE”***.

* This amendment does not apply to the IMDG Code Publication, only to the electronic version and document DSC 13/INF.3.

** For the published version only.

*** For the index in document DSC 13/INF.3/Add.3 only.

ANNEX 4

**ADDITIONAL ERRATA AND CORRIGENDA TO THE FRENCH VERSION
OF THE IMDG CODE ONLY**

The Sub-Committee is invited to note that, for reasons of economy and as the amendments are related to the French version of the Code only, the annex has not been attached to the English and Spanish documents.

ANNEX 5

**PROPOSED AMENDMENTS TO 2.9.3 TO THE IMDG CODE
FOR INCORPORATION IN AMENDMENT (36-12)**

2.9.3 Amend the text as follows:

“2.9.3 Environmentally hazardous substances (aquatic environment)

2.9.3.1 *General definitions*

2.9.3.1.1 Environmentally hazardous substances include, *inter alia*, liquid or solid substances pollutant to the aquatic environment and solutions and mixtures of such substances (such as preparations and wastes).

For the purposes of this section,

“Substance” means chemical elements and their compounds in the natural state or obtained by any production process, including any additive necessary to preserve the stability of the product and any impurities deriving from the process used, but excluding any solvent which may be separated without affecting the stability of the substance or changing its composition.

2.9.3.1.2 The aquatic environment may be considered in terms of the aquatic organisms that live in the water, and the aquatic ecosystem of which they are part¹. The basis, therefore, of the identification of hazard is the aquatic toxicity of the substance or mixture, although this may be modified by further information on the degradation and bioaccumulation behaviour.

2.9.3.1.3 While the following classification procedure is intended to apply to all substances and mixtures, it is recognized that in some cases, e.g., metals or poorly soluble inorganic compounds, special guidance will be necessary².

2.9.3.1.4 The following definitions apply for acronyms or terms used in this section:

- BCF: Bioconcentration Factor;
- BOD: Biochemical Oxygen Demand;
- COD: Chemical Oxygen Demand;
- GLP: Good Laboratory Practices;
- EC_x: the concentration associated with x% response;
- EC₅₀: the effective concentration of substance that causes 50% of the maximum response;

¹ This does not address aquatic pollutants for which there may be a need to consider effects beyond the aquatic environment such as the impacts on human health, etc.

² This can be found in annex 10 of the GHS.

- ErC₅₀: EC₅₀ in terms of reduction of growth;
- K_{ow}: octanol/water partition coefficient;
- LC₅₀: (50% lethal concentration): the concentration of a substance in water which causes the death of 50% (one half) in a group of test animals;
- L(E)C₅₀: LC₅₀ or EC₅₀;
- NOEC (No Observed Effect Concentration): the test concentration immediately below the lowest tested concentration with statistically significant adverse effect. The NOEC has no statistically significant adverse effect compared to the control;
- OECD Test Guidelines: Test guidelines published by the Organization for Economic Cooperation and Development (OECD).

2.9.3.2 *Definitions and data requirements*

2.9.3.2.1 The basic elements for classification of environmentally hazardous substances (aquatic environment) are:

- (a) Acute aquatic toxicity;
- (b) Chronic aquatic toxicity;
- (c) Potential for or actual bioaccumulation; and
- (d) Degradation (biotic or abiotic) for organic chemicals.

2.9.3.2.2 While data from internationally harmonized test methods are preferred, in practice, data from national methods may also be used where they are considered as equivalent. In general, it has been agreed that freshwater and marine species toxicity data can be considered as equivalent data and are preferably to be derived using OECD Test Guidelines or equivalent according to the principles of Good Laboratory Practices (GLP). Where such data are not available, classification shall be based on the best available data.

2.9.3.2.3 *Acute aquatic toxicity* means the intrinsic property of a substance to be injurious to an organism in a short-term aquatic exposure to that substance.

Acute (short-term) hazard, for classification purposes, means the hazard of a chemical caused by its acute toxicity to an organism during short-term aquatic exposure to that chemical.

Acute aquatic toxicity shall normally be determined using a fish 96 hour LC₅₀ (OECD Test Guideline 203 or equivalent), a crustacea species 48 hour EC₅₀ (OECD Test Guideline 202 or equivalent) and/or an algal species 72 or 96 hour EC₅₀ (OECD Test Guideline 201 or equivalent). These species are considered as surrogate for all aquatic organisms and data on other species such as Lemna may also be considered if the test methodology is suitable.

2.9.3.2.4 *Chronic aquatic toxicity* means the intrinsic property of a substance to cause adverse effects to aquatic organisms during aquatic exposures which are determined in relation to the life-cycle of the organism.

Long-term hazard, for classification purposes, means the hazard of a chemical caused by its chronic toxicity following long-term exposure in the aquatic environment.

Chronic toxicity data are less available than acute data and the range of testing procedures less standardized. Data generated according to the OECD Test Guidelines 210 (Fish Early Life Stage) or 211 (Daphnia Reproduction) and 201 (Algal Growth Inhibition) may be accepted. Other validated and internationally accepted tests may also be used. The NOECs or other equivalent EC_x shall be used.

2.9.3.2.5 *Bioaccumulation* means net result of uptake, transformation and elimination of a substance in an organism due to all routes of exposure (i.e. air, water, sediment/soil and food).

The potential for bioaccumulation shall normally be determined by using the octanol/water partition coefficient, usually reported as a $\log K_{ow}$ determined according to OECD Test Guideline 107 or 117. While this represents a potential to bioaccumulate, an experimentally determined Bioconcentration Factor (BCF) provides a better measure and shall be used in preference when available. A BCF shall be determined according to OECD Test Guideline 305.

2.9.3.2.6 *Degradation* means the decomposition of organic molecules to smaller molecules and eventually to carbon dioxide, water and salts.

Environmental degradation may be biotic or abiotic (e.g., hydrolysis) and the criteria used reflect this fact. Ready biodegradation is most easily defined using the biodegradability tests (A-F) of OECD Test Guideline 301. A pass level in these tests may be considered as indicative of rapid degradation in most environments. These are freshwater tests and thus the use of the results from OECD Test Guideline 306, which is more suitable for marine environments, has also been included. Where such data are not available, a BOD(5 days)/COD ratio ≥ 0.5 is considered as indicative of rapid degradation. Abiotic degradation such as hydrolysis, primary degradation, both abiotic and biotic, degradation in non-aquatic media and proven rapid degradation in the environment may all be considered in defining rapid degradability³.

Substances are considered rapidly degradable in the environment if the following criteria are met:

- (a) In 28-day ready biodegradation studies, the following levels of degradation are achieved:
 - (i) Tests based on dissolved organic carbon: 70%;
 - (ii) Tests based on oxygen depletion or carbon dioxide generation: 60% of theoretical maxima.

These levels of biodegradation shall be achieved within 10 days of the start of degradation which point is taken as the time when 10% of the substance has been degraded, unless the substance is identified as a complex, multi-component substance with structurally similar constituents. In this

³ Special guidance on data interpretation is provided in chapter 4.1 and annex 9 of the GHS.

case, and where there is sufficient justification, the 10-day window condition may be waived and the pass level applied at 28 days⁴;

- (b) In those cases where only BOD and COD data are available, when the ratio of BOD₅/COD is ≥ 0.5 ; or
- (c) If other convincing scientific evidence is available to demonstrate that the substance or mixture can be degraded (biotically and/or abiotically) in the aquatic environment to a level above 70% within a 28-day period.

2.9.3.3 Substance classification categories and criteria

2.9.3.3.1 Substances shall be classified as “environmentally hazardous substances (aquatic environment)”, if they satisfy the criteria for Acute 1, Chronic 1 or Chronic 2, according to Table 2.9.1. These criteria describe in detail the classification categories. They are diagrammatically summarized in Table 2.9.2.

Table 2.9.1: Categories for substances hazardous to the aquatic environment (see Note 1)

(a) Acute (short-term) aquatic hazard

Category Acute 1: (see Note 2)		
96 hr LC ₅₀ (for fish)		≤ 1 mg/l and/or
48 hr EC ₅₀ (for crustacea)		≤ 1 mg/l and/or
72 or 96hr ErC ₅₀ (for algae or other aquatic plants)		≤ 1 mg/l (see Note 3)

(b) Long-term aquatic hazard (see also Figure 2.9.1)

(i) Non-rapidly degradable substances (see Note 4) for which there are adequate chronic toxicity data available

Category Chronic 1: (see Note 2)		
Chronic NOEC or EC _x (for fish)		≤ 0.1 mg/l and/or
Chronic NOEC or EC _x (for crustacea)		≤ 0.1 mg/l and/or
Chronic NOEC or EC _x (for algae or other aquatic plants)		≤ 0.1 mg/l
Category Chronic 2:		
Chronic NOEC or EC _x (for fish)		≤ 1 mg/l and/or
Chronic NOEC or EC _x (for crustacea)		≤ 1 mg/l and/or
Chronic NOEC or EC _x (for algae or other aquatic plants)		≤ 1 mg/l

⁴ See chapter 4.1 and annex 9, paragraph A9.4.2.2.3 of the GHS.

(ii) Rapidly degradable substances for which there are adequate chronic toxicity data available

Category Chronic 1: (see Note 2)	
Chronic NOEC or EC _x (for fish)	≤ 0.01 mg/l and/or
Chronic NOEC or EC _x (for crustacea)	≤ 0.01 mg/l and/or
Chronic NOEC or EC _x (for algae or other aquatic plants)	≤ 0.01 mg/l
Category Chronic 2:	
Chronic NOEC or EC _x (for fish)	≤ 0.1 mg/l and/or
Chronic NOEC or EC _x (for crustacea)	≤ 0.1 mg/l and/or
Chronic NOEC or EC _x (for algae or other aquatic plants)	≤ 0.1 mg/l

(iii) Substances for which adequate chronic toxicity data are not available

Category Chronic 1: (see Note 2)	
96 hr LC ₅₀ (for fish)	≤ 1 mg/l and/or
48 hr EC ₅₀ (for crustacea)	≤ 1 mg/l and/or
72 or 96hr ErC ₅₀ (for algae or other aquatic plants)	≤ 1 mg/l (see Note 3)
and the substance is not rapidly degradable and/or the experimentally determined BCF is ≥ 500 (or, if absent the log K _{ow} ≥ 4) (see Notes 4 and 5).	
Category Chronic 2:	
96 hr LC ₅₀ (for fish)	>1 but ≤ 10 mg/l and/or
48 hr EC ₅₀ (for crustacea)	>1 but ≤ 10 mg/l and/or
72 or 96hr ErC ₅₀ (for algae or other aquatic plants)	>1 but ≤ 10 mg/l (see Note 3)
and the substance is not rapidly degradable and/or the experimentally determined BCF is ≥ 500 (or, if absent the log K _{ow} ≥ 4) (see Notes 4 and 5).	

NOTE 1: The organisms fish, crustacea and algae are tested as surrogate species covering a range of trophic levels and taxa, and the test methods are highly standardized. Data on other organisms may also be considered, however, provided they represent equivalent species and test endpoints.

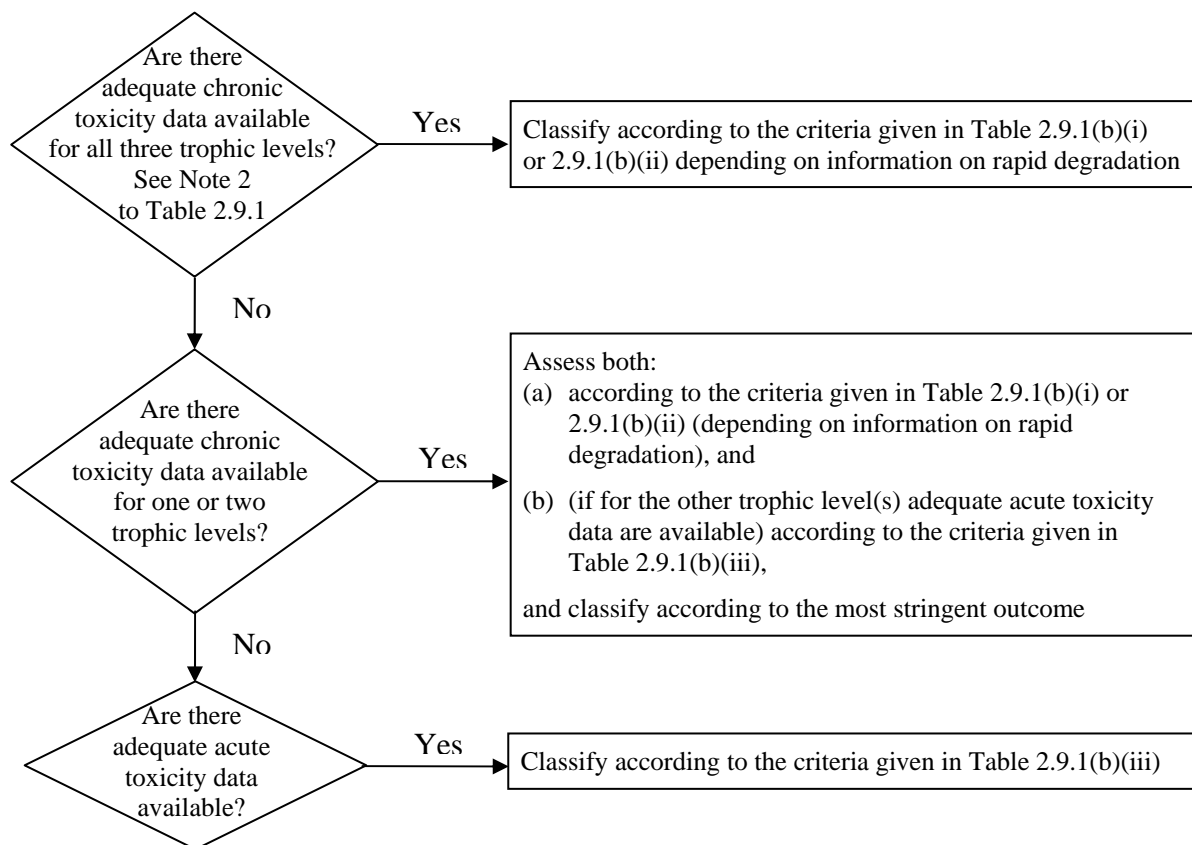
NOTE 2: When classifying substances as Acute 1 and/or Chronic 1 it is necessary at the same time to indicate an appropriate M factor (see 2.9.3.4.6.4) to apply the summation method.

NOTE 3: Where the algal toxicity ErC₅₀ (= EC₅₀(growth rate)) falls more than 100 times below the next most sensitive species and results in a classification based solely on this effect, consideration shall be given to whether this toxicity is representative of the toxicity to aquatic plants. Where it can be shown that this is not the case, professional judgment shall be used in deciding if classification shall be applied. Classification shall be based on the ErC₅₀. In circumstances where the basis of the EC₅₀ is not specified and no ErC₅₀ is recorded, classification shall be based on the lowest EC₅₀ available.

NOTE 4: Lack of rapid degradability is based on either a lack of ready biodegradability or other evidence of lack of rapid degradation. When no useful data on degradability are available, either experimentally determined or estimated data, the substance shall be regarded as not rapidly degradable.

NOTE 5: Potential to bioaccumulate, based on an experimentally derived BCF ≥ 500 or, if absent, a $\log K_{ow} \geq 4$ provided $\log K_{ow}$ is an appropriate descriptor for the bioaccumulation potential of the substance. Measured $\log K_{ow}$ values take precedence over estimated values and measured BCF values take precedence over $\log K_{ow}$ values.

Figure 2.9.1: Categories for substances long-term hazardous to the aquatic environment



2.9.3.3.2 The classification scheme in Table 2.9.2 below summarizes the classification criteria for substances.

Table 2.9.2: Classification scheme for substances hazardous to the aquatic environment

Classification categories			
Acute hazard (see Note 1)	Long-term hazard (see Note 2)		
	Adequate chronic toxicity data available		Adequate chronic toxicity data not available (see Note 1)
	Non-rapidly degradable substances (see Note 3)	Rapidly degradable substances (see Note 3)	
Category: Acute 1	Category: Chronic 1	Category: Chronic 1	Category: Chronic 1
$L(E)C_{50} \leq 1.00$	$NOEC \text{ or } EC_x \leq 0.1$	$NOEC \text{ or } EC_x \leq 0.01$	$L(E)C_{50} \leq 1.00$ and lack of rapid degradability and/or $BCF \geq 500$ or, if absent $\log K_{ow} \geq 4$
	Category: Chronic 2	Category: Chronic 2	Category: Chronic 2
	$0.1 < NOEC \text{ or } EC_x \leq 1$	$0.01 < NOEC \text{ or } EC_x \leq 0.1$	$1.00 < L(E)C_{50} \leq 10.0$ and lack of rapid degradability and/or $BCF \geq 500$ or, if absent $\log K_{ow} \geq 4$

NOTE 1: Acute toxicity band based on $L(E)C_{50}$ values in mg/l for fish, crustacea and/or algae or other aquatic plants (or Quantitative Structure Activity Relationships (QSAR) estimation if no experimental data⁵).

NOTE 2: Substances are classified in the various chronic categories unless there are adequate chronic toxicity data available for all three trophic levels above the water solubility or above 1 mg/l. (“Adequate” means that the data sufficiently cover the endpoint of concern. Generally this would mean measured test data, but in order to avoid unnecessary testing it can on a case-by-case basis also be estimated data, e.g., (Q)SAR, or for obvious cases expert judgment).

NOTE 3: Chronic toxicity band based on NOEC or equivalent EC_x values in mg/l for fish or crustacea or other recognized measures for chronic toxicity.

2.9.3.4 Mixture classification categories and criteria

2.9.3.4.1 The classification system for mixtures covers the classification categories which are used for substances, meaning categories Acute 1 and Chronic 1 and 2. In order to make use of all available data for purposes of classifying the aquatic environmental hazards of the mixture, the following assumption is made and is applied where appropriate:

The “relevant ingredients” of a mixture are those which are present in a concentration equal to or greater than 0.1% (by mass) for ingredients classified as Acute and/or Chronic 1 and equal to or greater than 1% for other ingredients, unless there is a presumption (e.g., in the case of highly toxic ingredients) that an ingredient present at less than 0.1% can still be relevant for classifying the mixture for aquatic environmental hazards.

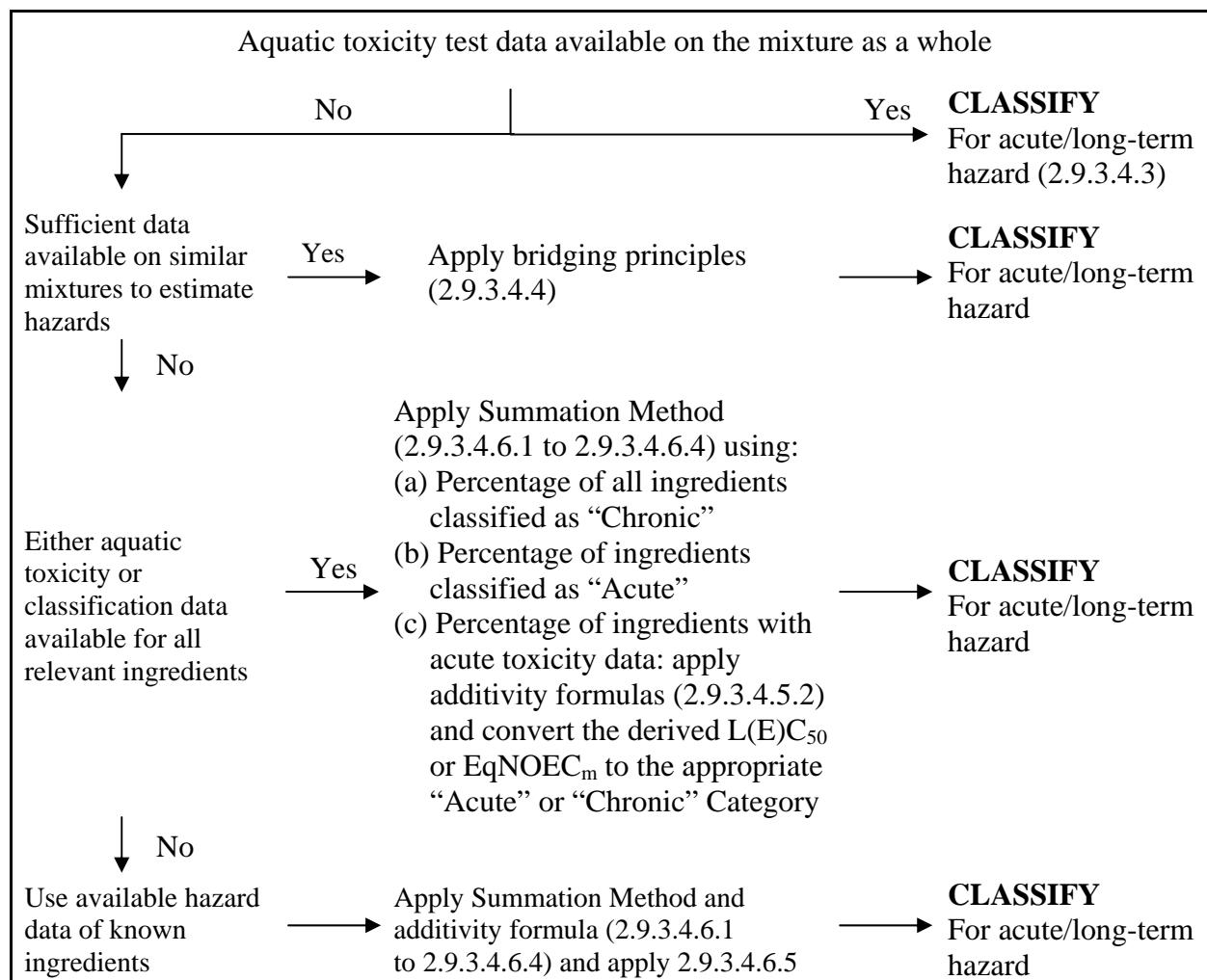
2.9.3.4.2 The approach for classification of aquatic environmental hazards is tiered, and is dependent upon the type of information available for the mixture itself and for its ingredients. Elements of the tiered approach include:

- (a) Classification based on tested mixtures;
- (b) Classification based on bridging principles;
- (c) The use of “summation of classified ingredients” and/or an “additivity formula”.

Figure 2.9.2 below outlines the process to be followed.

⁵ Special guidance is provided in chapter 4.1, paragraph 4.1.2.13 and annex 9, section A9.6 of the GHS.

Figure 2.9.2: Tiered approach to classification of mixtures for acute and long-term aquatic environmental hazards



2.9.3.4.3 Classification of mixtures when toxicity data are available for the complete mixture

2.9.3.4.3.1 When the mixture as a whole has been tested to determine its aquatic toxicity, this information shall be used for classifying the mixture according to the criteria that have been agreed for substances. The classification is normally based on the data for fish, crustacea and algae/plants (see 2.9.3.2.3 and 2.9.3.2.4). When adequate acute or chronic data for the mixture as a whole are lacking, “bridging principles” or “summation method” shall be applied (see 2.9.3.4.4 to 2.9.3.4.6).

2.9.3.4.3.2 The long-term hazard classification of mixtures requires additional information on degradability and in certain cases bioaccumulation. There are no degradability and bioaccumulation data for mixtures as a whole. Degradability and bioaccumulation tests for mixtures are not used as they are usually difficult to interpret, and such tests may be meaningful only for single substances.

2.9.3.4.3.3 Classification for category Acute 1

- (a) When there are adequate acute toxicity test data (LC₅₀ or EC₅₀) available for the mixture as a whole showing L(E)C₅₀ ≤ 1 mg/l:

Classify the mixture as Acute 1 in accordance with Table 2.9.1 (a);

- (b) When there are acute toxicity test data ($LC_{50}(s)$ or $EC_{50}(s)$) available for the mixture as a whole showing $L(E)C_{50}(s) > 1$ mg/l, or above the water solubility:

No need to classify for acute hazard under these Regulations.

2.9.3.4.3.4 Classification for categories Chronic 1 and 2

- (a) When there are adequate chronic toxicity data (EC_x or NOEC) available for the mixture as a whole showing EC_x or NOEC of the tested mixture 1 mg/l:
- (i) classify the mixture as Chronic 1 or 2 in accordance with Table 2.9.1 (b)(ii) (rapidly degradable) if the available information allows the conclusion that all relevant ingredients of the mixture are rapidly degradable;
 - (ii) classify the mixture as Chronic 1 or 2 in all other cases in accordance with Table 2.9.1 (b)(i) (non-rapidly degradable);
- (b) When there are adequate chronic toxicity data (EC_x or NOEC) available for the mixture as a whole showing $EC_x(s)$ or NOEC(s) of the tested mixture > 1 mg/l or above the water solubility:

No need to classify for long-term hazard under these Regulations.

2.9.3.4.4 *Classification of mixtures when toxicity data are not available for the complete mixture: bridging principles*

2.9.3.4.4.1 Where the mixture itself has not been tested to determine its aquatic environmental hazard, but there are sufficient data on the individual ingredients and similar tested mixtures to adequately characterize the hazards of the mixture, these data shall be used in accordance with the following agreed bridging rules. This ensures that the classification process uses the available data to the greatest extent possible in characterizing the hazards of the mixture without the necessity for additional testing in animals.

2.9.3.4.4.2 Dilution

2.9.3.4.4.2.1 Where a new mixture is formed by diluting a tested mixture or a substance with a diluent which has an equivalent or lower aquatic hazard classification than the least toxic original ingredient and which is not expected to affect the aquatic hazards of other ingredients, then the resulting mixture shall be classified as equivalent to the original tested mixture or substance. Alternatively, the method explained in 2.9.3.4.5 may be applied.

2.9.3.4.4.2.2 If a mixture is formed by diluting another classified mixture or a substance with water or other totally non-toxic material, the toxicity of the mixture shall be calculated from the original mixture or substance.

2.9.3.4.4.3 Batching

2.9.3.4.4.3.1 The aquatic hazard classification of a tested production batch of a mixture shall be assumed to be substantially equivalent to that of another untested production batch of the same commercial product when produced by or under the control of the same manufacturer, unless there is reason to believe there is significant variation such that the aquatic hazard classification of the untested batch has changed. If the latter occurs, new classification is necessary.

2.9.3.4.4.4 Concentration of mixtures which are classified with the most severe classification categories (Chronic 1 and Acute 1)

2.9.3.4.4.4.1 If a tested mixture is classified as Chronic 1 and/or Acute 1, and the ingredients of the mixture which are classified as Chronic 1 and/or Acute 1 are further concentrated, the more concentrated untested mixture shall be classified with the same classification category as the original tested mixture without additional testing.

2.9.3.4.4.5 Interpolation within one toxicity category

2.9.3.4.4.5.1 For three mixtures (A, B and C) with identical ingredients, where mixtures A and B have been tested and are in the same toxicity category, and where untested mixture C has the same toxicologically active ingredients as mixtures A and B but has concentrations of toxicologically active ingredients intermediate to the concentrations in mixtures A and B, then mixture C is assumed to be in the same category as A and B.

2.9.3.4.4.6 Substantially similar mixtures

2.9.3.4.4.6.1 Given the following:

- (a) Two mixtures:
 - (i) A + B
 - (ii) C + B;
- (b) The concentration of ingredient B is essentially the same in both mixtures;
- (c) The concentration of ingredient A in mixture (i) equals that of ingredient C in mixture (ii);
- (d) Data on aquatic hazards for A and C are available and are substantially equivalent, i.e. they are in the same hazard category and are not expected to affect the aquatic toxicity of B.

If mixture (i) or (ii) is already classified based on test data, then the other mixture can be assigned the same hazard category.

2.9.3.4.5 Classification of mixtures when toxicity data are available for all ingredients or only for some ingredients of the mixture

2.9.3.4.5.1 The classification of a mixture shall be based on summation of the concentrations of its classified ingredients. The percentage of ingredients classified as “Acute” or “Chronic” will feed straight into the summation method. Details of the summation method are described in 2.9.3.4.6.1 to 2.9.3.4.6.4.1.

2.9.3.4.5.2 Mixtures may be made of a combination of both ingredients that are classified (as Acute 1 and/or Chronic 1, 2) and those for which adequate toxicity test data are available. When adequate toxicity data are available for more than one ingredient in the mixture, the combined toxicity of those ingredients shall be calculated using the following additivity formulas (a) or (b), depending on the nature of the toxicity data:

- (a) Based on acute aquatic toxicity:

$$\frac{\sum C_i}{L(E)C_{50m}} = \sum_n \frac{C_i}{L(E)C_{50i}}$$

where:

- C_i = concentration of ingredient i (mass percentage);
 $L(E)C_{50i}$ = LC_{50} or EC_{50} for ingredient i (mg/l);
 n = number of ingredients, and i is running from 1 to n;
 $L(E)C_{50m}$ = $L(E)C_{50}$ of the part of the mixture with test data

The calculated toxicity shall be used to assign that portion of the mixture an acute hazard category which is then subsequently used in applying the summation method;

- (b) Based on chronic aquatic toxicity:

$$\frac{\sum C_i + \sum C_j}{EqNOEC_m} = \sum_n \frac{C_i}{NOEC_i} + \sum_n \frac{C_j}{0.1 \times NOEC_j}$$

where:

- C_i = concentration of ingredient i (mass percentage) covering the rapidly degradable ingredients;
 C_j = concentration of ingredient j (mass percentage) covering the non-rapidly degradable ingredients;
 $NOEC_i$ = NOEC (or other recognized measures for chronic toxicity) for ingredient i covering the rapidly degradable ingredients, in mg/l;
 $NOEC_j$ = NOEC (or other recognized measures for chronic toxicity) for ingredient j covering the non-rapidly degradable ingredients, in mg/l;
 n = number of ingredients, and i and j are running from 1 to n;
 $EqNOEC_m$ = equivalent NOEC of the part of the mixture with test data;

The equivalent toxicity thus reflects the fact that non-rapidly degrading substances are classified one hazard category level more “severe” than rapidly degrading substances.

The calculated equivalent toxicity shall be used to assign that portion of the mixture a long-term hazard category, in accordance with the criteria for rapidly degradable substances (Table 2.9.1 (b)(ii)), which is then subsequently used in applying the summation method.

2.9.3.4.5.3 When applying the additivity formula for part of the mixture, it is preferable to calculate the toxicity of this part of the mixture using for each ingredient toxicity values that relate to the same taxonomic group (i.e. fish, crustacea or algae) and then to use the highest toxicity (lowest value) obtained (i.e. use the most sensitive of the three groups). However, when toxicity data for each ingredient are not available in the same taxonomic group, the toxicity value of each ingredient shall be selected in the same manner that toxicity values are selected for the classification of substances, i.e. the higher toxicity (from the most sensitive test organism) is used. The calculated acute and chronic toxicity shall then be used to classify this part of the mixture as Acute 1 and/or Chronic 1 or 2 using the same criteria described for substances.

2.9.3.4.5.4 If a mixture is classified in more than one way, the method yielding the more conservative result shall be used.

2.9.3.4.6 Summation method

2.9.3.4.6.1 Classification procedure

2.9.3.4.6.1.1 In general a more severe classification for mixtures overrides a less severe classification, e.g., a classification with Chronic 1 overrides a classification with Chronic 2. As a consequence the classification procedure is already completed if the results of the classification is Chronic 1. A more severe classification than Chronic 1 is not possible; therefore, it is not necessary to pursue the classification procedure further.

2.9.3.4.6.2 Classification for category Acute 1

2.9.3.4.6.2.1 First, all ingredients classified as Acute 1 are considered. If the sum of the concentrations (in %) of these ingredients is greater than or equal to 25% the whole mixture shall be classified as Acute 1. If the result of the calculation is a classification of the mixture as Acute 1, the classification process is completed.

2.9.3.4.6.2.2 The classification of mixtures for acute hazards based on this summation of the concentrations of classified ingredients is summarized in Table 2.9.3 below.

Table 2.9.3: Classification of a mixture for acute hazards based on summation of the concentrations of classified ingredients

Sum of the concentrations (in %) of ingredients classified as:	Mixture classified as:
Acute 1 × M ^a ≥ 25%	Acute 1

^a For explanation of the M factor, see 2.9.3.4.6.4.

2.9.3.4.6.3 Classification for categories Chronic 1 and 2

2.9.3.4.6.3.1 First, all ingredients classified as Chronic 1 are considered. If the sum of the concentrations (in %) of these ingredients is greater than or equal to 25% the mixture shall be classified as Chronic 1. If the result of the calculation is a classification of the mixture as Chronic 1 the classification procedure is completed.

2.9.3.4.6.3.2 In cases where the mixture is not classified as Chronic 1, classification of the mixture as Chronic 2 is considered. A mixture shall be classified as Chronic 2 if 10 times the sum of the concentrations (in %) of all ingredients classified as Chronic 1 plus the sum of the concentrations (in %) of all ingredients classified as Chronic 2 is greater than or equal to 25%. If the result of the calculation is classification of the mixture as Chronic 2, the classification process is completed.

2.9.3.4.6.3.3 The classification of mixtures for long-term hazards based on this summation of the concentrations of classified ingredients is summarized in Table 2.9.4 below.

Table 2.9.4: Classification of a mixture for long-term hazards based on summation of the concentrations of classified ingredients

Sum of the concentrations (in %) of ingredients classified as:	Mixture classified as:
Chronic 1 × M ^a ≥ 25%	Chronic 1
(M × 10 × Chronic 1) + Chronic 2 ≥ 25%	Chronic 2

^a For explanation of the M factor, see 2.9.3.4.6.4.

2.9.3.4.6.4 Mixtures with highly toxic ingredients

2.9.3.4.6.4.1 Acute 1 or Chronic 1 ingredients with acute toxicities well below 1 mg/l and/or chronic toxicities well below 0.1 mg/l (if non-rapidly degradable) and 0.01 mg/l (if rapidly degradable) may influence the toxicity of the mixture and are given increased weight in applying the summation method. When a mixture contains ingredients classified as Acute 1 or Chronic 1, the tiered approach described in 2.9.3.4.6.2 and 2.9.3.4.6.3 shall be applied using a weighted sum by multiplying the concentrations of Acute 1 and Chronic 1 ingredients by a factor, instead of merely adding up the percentages. This means that the concentration of “Acute 1” in the left column of Table 2.9.3 and the concentration of “Chronic 1” in the left column of Table 2.9.4 are multiplied by the appropriate multiplying factor. The multiplying factors to be applied to these ingredients are defined using the toxicity value, as summarized in Table 2.9.5 below. Therefore, in order to classify a mixture containing Acute 1 and/or Chronic 1 ingredients, the classifier needs to be informed of the value of the M factor in order to apply the summation method. Alternatively, the additivity formula (2.9.3.4.5.2) may be used when toxicity data are available for all highly toxic ingredients in the mixture and there is convincing evidence that all other ingredients, including those for which specific acute and/or chronic toxicity data are not available, are of low or no toxicity and do not significantly contribute to the environmental hazard of the mixture.

Table 2.9.5: Multiplying factors for highly toxic ingredients of mixtures

Acute toxicity	M factor	Chronic toxicity	M factor	
L(E)C₅₀ value		NOEC value	NRD^a ingredients	RD^b ingredients
0.1 < L(E)C ₅₀ ≤ 1	1	0.01 < NOEC ≤ 0.1	1	-
0.01 < L(E)C ₅₀ ≤ 0.1	10	0.001 < NOEC ≤ 0.01	10	1
0.001 < L(E)C ₅₀ ≤ 0.01	100	0.0001 < NOEC ≤ 0.001	100	10
0.0001 < L(E)C ₅₀ ≤ 0.001	1 000	0.00001 < NOEC ≤ 0.0001	1 000	100
0.00001 < L(E)C ₅₀ ≤ 0.0001	10 000	0.000001 < NOEC ≤ 0.00001	10 000	1 000
(continue in factor 10 intervals)		(continue in factor 10 intervals)		

^a *Non-rapidly degradable.*

^b *Rapidly degradable.*

2.9.3.4.6.5 Classification of mixtures with ingredients without any useable information

2.9.3.4.6.5.1 In the event that no useable information on acute and/or chronic aquatic toxicity is available for one or more relevant ingredients, it is concluded that the mixture cannot be attributed (a) definitive hazard category(ies). In this situation the mixture shall be classified based on the known ingredients only with the additional statement that: “× percent of the mixture consists of ingredient(s) of unknown hazards to the aquatic environment.”.

ANNEX 6**PROPOSED AMENDMENTS TO 5.4.3 TO THE IMDG CODE
FOR INCORPORATION IN AMENDMENT (36-12)****5.4.3 Documentation required aboard the ship**

Amend 5.4.3.1 as follows:

“5.4.3.1 Each ship carrying dangerous goods and marine pollutants shall have a special list, manifest[‡] or stowage plan setting out, [in accordance with regulation VII/ 4.2 of SOLAS 1974, as amended], and [with regulation 4.2 of Annex III of MARPOL 73/78], the dangerous goods and marine pollutants and the location thereof. [This special list or manifest shall be based on the documentation and certification required in this Code and shall at least contain in addition to the information in 5.4.1.4, 5.4.1.5 and, for UN 3359, in 5.5.2.4.1.1, the stowage location and the total quantity of dangerous good and marine pollutants.] A detailed stowage plan, which identifies by class and sets out the location of all dangerous goods and marine pollutants, may be used in place of such special list or manifest. A copy of one of these documents shall be made available before departure to the person or organization designated by the port State authority.”

[‡] FAL.2/Circ.52/Rev.1 may be used for this purpose.

ANNEX 7

**PROPOSED AMENDMENTS TO 3.2 TO THE IMDG CODE
FOR INCORPORATION IN AMENDMENT (36-12)****Chapter 3.2 – Dangerous Goods List**

For UN 1194, add in column (17) **“Transport of ETHYL NITRITE pure is prohibited.”**

For UN 1347, add in column (17) **“Transport of SILVER PICRATE, dry or wetted with less than 30% water, by mass is prohibited.”**

For UN 1450, add in column (17) **“Transport of ammonium chlorate and mixtures of a chlorate with an ammonium salt is prohibited.”**

For UN 1461, add in column (17) **“Transport of ammonium chlorate and mixtures of a chlorate with an ammonium salt is prohibited.”**

For UN 1462, add in column (17) **“Transport of ammonium chlorite and mixtures of a chlorite with an ammonium salt is prohibited.”**

[For UN 1479, add in column (17)]

For UN 1482, add in column (17) **“Transport of ammonium permanganate and mixtures of a permanganate with an ammonium salt is prohibited.”**

For UN 1512, add in column (17) **“Transport is prohibited.”**

For UN 1613, add in column (17) the following:

- “.1 Transport of HYDROCYANIC ACID, AQUEOUS SOLUTION, with more than 20% hydrogen cyanide, by mass is prohibited.
- .2 Transport of HYDROGEN CYANIDE, AQUEOUS SOLUTION with more than 20% hydrogen cyanide is prohibited.”

For UN 1642, replace **“The transport of the substance in its pure form is prohibited.”** With **“Transport of MERCURY OXYCYANIDE pure is prohibited.”**

For UN 1873, add in column (17) **“Transport of PERCHLORIC ACID with more than 72% acid, by mass is prohibited.”**

[For UN 2067, add in column (17) **“Transport of AMMONIUM NITRATE liable to self-heating sufficient to initiate decomposition is prohibited.”**]

For UN 2186, add in column (17) **“Transport is prohibited.”**

For UN 2455, add in column (17) **“Transport is prohibited.”**

For UN 2626, replace “The carriage of chloric acid solution with a concentration exceeding 10% is prohibited.” with **“Transport of CHLORIC ACID, AQUEOUS SOLUTION with more than 10% chloric acid is prohibited.”**

For UN 2627, replace “The carriage of AMMONIUM NITRITE or mixtures of an INORGANIC NITRITE with an AMMONIUM SALT is **prohibited.**” with **“Transport of AMMONIUM NITRITES and mixtures of an inorganic nitrite with an ammonium salt is prohibited.”**

For UN 3210, add in column (17) **“Transport of ammonium chlorate, aqueous solution is prohibited.”**

[For UN 3212, add in column (17) **“Transport of ammonium hypochlorite and mixtures of a hypochlorite with an ammonium salt is prohibited.”**]

For UN 3213, add in column (17) **“Transport of ammonium bromate, aqueous solution is prohibited.”**

For UN 3214, add in column (17) **“Transport of ammonium permanganate, aqueous solution is prohibited.”**

For UN 3219, add in column (17) **“Transport of ammonium nitrites, aqueous solution is prohibited.”**

For UN 3294, add in column (17) **“Transport of HYDROGEN CYANIDE, SOLUTION IN ALCOHOL with more than 45% hydrogen cyanide is prohibited.”**

ANNEX 8

**DRAFT AMENDMENTS TO THE GUIDELINES FOR PACKING OF
CARGO TRANSPORT UNITS****SCOPE**

- 1 The existing text of the section is replaced by the following:

“These Guidelines are essential to the safe packing of cargo transport units by those responsible for the packing and securing of the cargo and by those whose task it is to train people to pack such units. However, they are not exhaustive and other sources of information may be relevant. Training is essential if safety standards are to be maintained. These Guidelines detail practical measures to ensure the safe packing of cargo onto or into cargo transport units. As such they are concerned with issues of safety and are not intended to address practical measures to enhance security, *per se*.

These Guidelines are not intended to conflict with, or to replace or supersede, any existing regulations or recommendations which may concern the carriage of cargo in cargo transport units. They do not cover the filling or emptying of tank containers, portable tanks or road tank vehicles, or the transport of any cargo in bulk packagings containers.

Guidance on the security aspects of the movement of cargo transport units intended for carriage by sea may be found in a variety of documents including the International Convention for the Safety of Life at Sea, 1974, as amended; the International Ship and Port Facility Security Code; the ILO/IMO Code of Practice on Security in Ports; and the Standards and the Publicly Available Specifications developed or being developed by the International Standards Organization (ISO) to address cargo security management and other aspects of supply chain security. Furthermore, the World Customs Organization (WCO) has developed a SAFE Framework of standards to secure and facilitate global trade.

However, it is important to bear in mind that all personnel involved in the transport chain have a significant role to play enhancing safety and security, not only in the prevention of unlawful acts. Significant financial losses are incurred through theft of cargo and the costs must ultimately be borne by customers and end users through increased insurance and transport costs. The trafficking of illicit drugs has a detrimental effect on society. The movement of weapons in contravention of national laws and internationally agreed arms embargoes; the illegal migration and human trafficking; the smuggling of nuclear materials and precursors for weapons of mass destruction; protection of national revenues; environmental and cultural concerns, and the need to deprive terrorist organizations of funding are all issues of relevance to the transport of cargo transport units. Furthermore, cargo handlers' and transporters' lives are lost and environments are damaged through the transport of undeclared, improperly described and unsafely packed dangerous goods.

It is therefore extremely important that all personnel involved in the packing, security sealing, handling, transport and processing of cargo should be made aware of the need for vigilance and the diligent application of practical procedures to enhance security, in accordance with national legislation and international agreements.”

4 ADDITIONAL ADVICE ON THE PACKING AND SECURING OF DANGEROUS CARGOES

2 The existing title and the text of the section are replaced by the following:

“4 ADVICE ON THE PACKING AND SECURING OF DANGEROUS GOODS

4.1 General

4.1.1 The advice of this section applies to cargo transport units in which dangerous ~~eargoes~~goods are packed. It should be followed in addition to the advice given elsewhere in these Guidelines.

4.1.2 International (and often national) transport of dangerous ~~eargoes~~goods may be subject to several dangerous ~~eargoes~~goods transport regulations, depending on the origin, final destination and the modes of transport used.

4.1.3 For ~~combined~~intermodal transport, involving several modes of transport other than by sea, the rules and regulations applicable depend on whether it is a national movement or international transport or transport within a political or economic union or trading zone ~~such as the European Union~~.

4.1.4 Transport of dangerous ~~eargoes~~goods by road, rail or inland waterways may be subject to ~~the following Agreements in Europe~~: various regulations and agreements. Examples are:

- European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR);
- Regulations concerning the International Carriage of Dangerous Goods by Rail (RID); and
- ~~Regulations for the Carriage of Dangerous Substances on the Rhine (ADNR) based on the provisions contained in the European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (ADN)~~. Title 49 of the Code of Federal Regulations of the United States.

4.1.5 ~~The provisions of ADR, RID, ADNR and ADN are harmonized~~. Most national and international regulations are based on the United Nations Recommendations on the Transport of Dangerous Goods (Orange Book). However, national rules, applicable to domestic transport, may differ from international regulations.

4.1.6 For maritime transport, the provisions of the International Maritime Dangerous Goods (IMDG)¹ Code apply. The IMDG Code provides detailed ~~guidance~~provisions on all aspects of the transport of packaged dangerous goods by sea. Special attention is drawn to the following ~~section~~chapters of the ~~General Introduction to the~~ IMDG Code:

¹ International Maritime Dangerous Goods (IMDG) Code, Amendment (35-10), published by the International Maritime Organization (IMO).

~~Section 7 — Identification, marking, labelling and placarding of dangerous goods;~~

~~Section 8 — Labels, placards, marks and signs;~~

~~Section 9 — Documentation of dangerous goods shipments;~~

~~Section 12 — Container traffic;~~

~~Section 14 — Stowage;~~

~~Section 15 — Segregation; and~~

~~Section 17 — Carriage of dangerous goods on roll-on-roll-off ships.~~

- 1.3 Training
- 1.4 Security provisions
- 5.1 General provisions for consignment procedures
- 5.2 Marking and labelling of packages
- 5.3 Placarding and marking of cargo transport units
- 5.4 Documentation
- 7.1 Stowage
- 7.2 Segregation
- 7.4 Transport of cargo transport units on board ships
- 7.5 Packing of cargo transport units
- 7.7 Temperature control provisions

4.1.7 Dangerous goods are classified as stated below. Some of these classes are subdivided into divisions. The shipper is responsible that packages with dangerous goods bear the appropriate labels and marks.

Class 1 - Explosives

Division 1.1: Substances and articles which have a mass explosion hazard

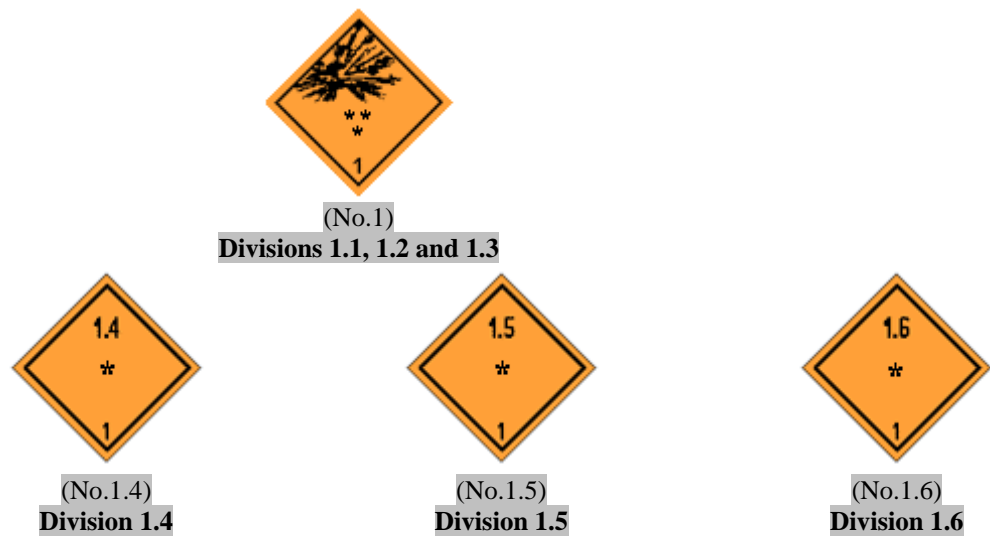
Division 1.2: Substances and articles which have a projection hazard but not a mass explosion hazard

Division 1.3: Substances and articles which have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard

Division 1.4: Substances and articles which present no significant hazard

Division 1.5: Very insensitive substances which have a mass explosion hazard

Division 1.6: Extremely insensitive articles which do not have a mass explosion hazard



** Place for division – to be left blank if explosive is the subsidiary risk.
* Place for compatibility group – to be left blank if explosive is the subsidiary risk.

- Class 2 - Gases: compressed, liquefied or dissolved under pressure
- Class 2.1 - Flammable² gases
- Class 2.2 - Non-flammable, non-toxic gases
- Class 2.3 - Toxic³ gases



(No.2.1)
Class 2.1
Flammable gases



(No.2.2)
Class 2.2.
Non-flammable, non-toxic gases



(No.2.3)
Class 2.3
Toxic gases

Class 3 - Flammable liquids

² “inflammable” has the same meaning as “flammable”.

³ “poisonous” has the same meaning as “toxic”.



(No.3)

- Class 4 - Flammable solids; substances liable to spontaneous combustion; substances which, in contact with water, emit flammable gases
- Class 4.1 - Flammable solids, self-reactive substances and solid desensitized explosives
- Class 4.2 - Substances liable to spontaneous combustion
- Class 4.3 - Substances which, in contact with water, emit flammable gases



(No.4.1)

Class 4.1

Flammable solids



(No.4.2)

Class 4.2

Substances liable to spontaneous combustion



(No.4.3)

Class 4.3

Substances which, in contact with water, emit flammable gases

- Class 5 - Oxidizing substances(~~agents~~) and organic peroxides
- Class 5.1 - Oxidizing substances(~~agents~~)
- Class 5.2 - Organic peroxides



(No.5.1)

Class 5.1

Oxidizing substances



(No.5.2(a)⁴)

Class 5.2

Organic peroxides

⁴ May be used until 1 January 2011.



(No.5.2(b))
Class 5.2
Organic peroxides

- Class 6 - Toxic and infectious substances
- Class 6.1 - Toxic substances
- Class 6.2 - Infectious substances



(No.6.1)
Class 6.1
Toxic substances



(No.6.2)
Class 6.2
Infectious substances

- Class 7 - Radioactive materials



(No.7A)
Category I – White



(No.7B)
Category II – Yellow



(No.7C)
Category III – Yellow



(No.7E)
Class 7
Fissile material

Class 8 - Corrosives



(No.8)

Class 9 - Miscellaneous dangerous substances and articles and environmentally hazardous substances

- ~~.1 substances and articles not covered by other classes which experience has shown, or may show, to be of such a dangerous character that the provisions of part A of chapter VII of SOLAS, 1974, as amended, shall apply; these include substances that are transported or offered for transport at temperatures equal to, or exceeding, 100°C, in a liquid state, and solids that are transported or offered for transport at temperatures equal to or exceeding 240°C; and~~
- ~~.2 substances not subject to the provisions of part A of chapter VII of SOLAS 1974, as amended, but to which the regulations of Annex III of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78), apply.~~



(No.9)

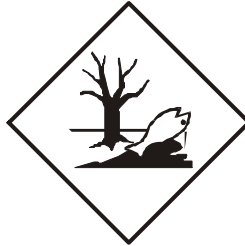
Subsidiary Risks

Some substances or articles can exhibit more than one hazard. In these cases additional label(s) for the subsidiary risks are required, e.g., class 6.1 with subsidiary risk 8



Environmentally Hazardous Substances (Aquatic Environment)

For maritime transport these substances are known as marine pollutants and subject to the provisions of Annex III of MARPOL 73/78, as amended



4.1.8 Limited quantities and excepted quantities

Under certain conditions the IMDG Code provides exemptions from some requirements if the dangerous goods are transported in “limited quantities” or “excepted quantities”. Packages to which these exemptions apply, are marked as follows:

[Illustrations of LQ and EQ mark to be inserted]

4.1.9 There may be other marks in addition to 4.1.7 and 4.1.8 of these Guidelines as required by the IMDG Code.

4.2 Before packing

4.2.1 The IMDG Code and other international and national regulations require that the shipper provides transport information on each dangerous substance, material or article. This information shall include at least the following basic item: Information should be provided by the shipper about the properties of the dangerous cargoes/goods to be handled and their quantities. The basic items of information necessary for each dangerous substance, material or article to be transported by any mode of transport are the following:

- the Proper Shipping Name (correct technical name);
- the class and/or division (and the compatibility group letter for cargo of class 1);
- the UN Number and the packing/packaging group; and
- the total quantity of dangerous cargoes (by volume or mass, and for explosives the net explosive content).

- the UN Number;
- the Proper Shipping Name (including the technical name, as applicable);
- the class and/or division (and the compatibility group letter for goods of class 1);
- subsidiary risks when assigned;
- the packing group when assigned;
- the total quantity of dangerous goods (by volume or mass, and for explosives the net explosive content); and
- the number and kind of packages.

Other items of information may be required, depending on the mode of transport and the classification of the goods (e.g., flashpoint for transport by sea), ~~instructions to be followed in case of incident for road transport under the ADR regime, special certificates, e.g., for radioactive materials, etc.~~ The various items of information required under each regulation and applicable during ~~combined~~ intermodal transport operations should be provided so that appropriate documentation may be prepared for each shipment.

- 4.2.2 The shipper should also ensure that dangerous ~~cargoes~~ goods are classified, packaged, packed, marked, labelled, placarded and provided with the required signs, in accordance with the applicable regulations. A declaration by the shipper that this has been carried out is normally required. Such a declaration may be included with the required transport information.
- 4.2.3 The shipper should also ensure that the ~~cargoes~~ goods to be transported are authorized for transport by the modes to be used during the transport operation. For example, self-reacting substances and organic peroxides requiring temperature control are not authorized for transport by rail under the RID regime. Certain types of dangerous ~~cargoes~~ goods are not authorized to be transported on board passenger ships and therefore the requirements of the IMDG Code should be carefully studied, ~~particularly before the consolidation of several shipments of dangerous cargoes in a CARGO TRANSPORT UNIT which may need to be segregated "away from" each other. These shipments may only be carried in the same unit with the approval of the competent authority concerned.~~
- 4.2.4 Current versions of all applicable regulations (~~IMDG Code, ADR, RID, AND and ADNR~~) should be easily accessible ~~and referred to~~ during packing to ensure ~~appropriate checking~~ compliance.
- 4.2.5 Dangerous ~~cargoes~~ goods should only be handled, packed and secured ~~under the direct and identifiable~~ by trained personnel. Supervision ~~of a~~ by a responsible person who is familiar with the legal ~~requirements~~ provisions and, the risks involved and ~~who knows~~ the measures that should be taken in an emergency ~~is required~~.
- 4.2.6 Suitable measures to prevent fires should be taken, including the prohibition of smoking in the vicinity of dangerous goods.
- 4.2.7 Packages of dangerous ~~cargoes~~ goods should be examined and any found to be damaged, leaking or sifting should not be packed ~~into a CARGO TRANSPORT UNIT~~. Packages showing evidence of staining, etc., should not be packed without first determining that it is safe and acceptable to do so. Water, snow, ice or other matter adhering to packages should be removed before packing. ~~Liquids~~ Substances that have accumulated on drum heads should initially be treated with caution in case they are the result of leakage ~~or sifting~~ of contents. If pallets have been contaminated by spilt dangerous ~~cargoes~~ goods they should be destroyed by appropriate disposal methods to prevent use at a later date.
- 4.2.8 If dangerous ~~cargoes~~ goods are palletized or otherwise unitized they should be compacted so as to be regularly shaped, with approximately vertical sides and level at the top. They should be secured in a manner unlikely to damage the individual packages comprising the unit load. The materials used to bond a unit

load together should be compatible with the substances unitized and retain their efficiency when exposed to moisture, extremes of temperature and sunlight.

4.2.9 An overpack and unit load should be marked with the Proper Shipping Name and the UN Number and marked and labelled, as required for packages, for each item of dangerous goods contained in the overpack or unit load unless markings and labels representative of all dangerous goods in the overpack or unit load are clearly visible. An overpack, in addition, should be marked with the word "OVERPACK" unless markings and labels representatives of all dangerous goods as required for packages in to overpack are visible.

4.2.9-10 The stowage and method of securing of dangerous ~~eargoes~~goods in a cargo transport unit should be planned before packing is commenced.

4.3 Packing and securing

4.3.1 Special care should be taken during handling to avoid damage to packages. However, if a package containing dangerous ~~eargoes~~goods is damaged during handling so that the contents leak out, the immediate area should be evacuated until the hazard potential can be assessed. The damaged package should not be shipped. It should be moved to a safe place in accordance with instructions given by a responsible person who is familiar with the risks involved and knows the measures that should be taken⁵ in an emergency.

4.3.2 If a leakage of dangerous goods presents safety or health hazards such as explosion, spontaneous combustion, poisoning or similar danger, personnel should immediately be moved to a safe place and the Emergency Response Organization notified.

4.3.3 Dangerous ~~eargoes~~goods should not be packed in the same cargo transport unit with incompatible ~~eargoes~~goods. In some instances even goods of the same class are incompatible with each other and should not be packed in the same unit, e.g., acids and alkalis of class 8. The requirements of the IMDG Code concerning the segregation of dangerous goods inside cargo transport units are usually more stringent than those for road and rail transport. Whenever a ~~combined an intermodal~~ transport operation does not include transport by sea, compliance with the respective inland transport regulations, ~~such as ADR, RID, ADN and ADNR,~~ may be sufficient. However, ~~if it cannot be guaranteed that no part of the transport operation will be by sea,~~ if there is any possibility that a part of the transport operation will be by sea, the segregation requirements of the IMDG Code should be strictly complied with.

4.3.4 When dangerous ~~eargoes~~goods are being handled, ~~smoking~~ or the consumption of food and drink should be prohibited.

⁵ The Emergency ~~Response~~ Procedures for Ships Carrying Dangerous Goods (EmS) and the Medical First Aid Guide for Use in Accidents Involving Dangerous Goods (MFAG) in the Supplement of the IMDG Code give further useful advice, but it should be borne in mind that the former may not be appropriate for use on land; emergency response handbooks, giving emergency response information cross-referenced to the United Nations identification number (UN Number) of the substance are usually available at the national level. ~~More information for emergency response action can be found in the appropriate Safety Data Sheet (SDS) which should be available.~~

- 4.3.5 Packages marked with orientation arrows should be packed with the arrows pointing upwards. Vented packages should be packed with the vents in an upright position and in such a way that the vents will not be blocked.
- 4.3.6 Drums containing dangerous cargoes/goods should always be stowed in an upright position unless otherwise authorized by the competent authority.
- 4.3.7 Dangerous cargoes/goods consignments which form only part of the load of a cargo transport unit should, whenever possible, be packed adjacent to the doors with markings and labels visible. Particular attention is drawn to 3.3.1 concerning the securing of cargo by the doors of a unit.
- 4.3.8 The number of packages containing dangerous goods in excepted quantities in any cargo transport unit is limited to a maximum of 1,000.

4.4 On completion of packing

4.4.1 Placarding

- 4.4.1.1 Placards (enlarged labels and marks) as shown in 4.1.7 (minimum size 250 mm x 250 mm) and, if applicable for maritime transport, "MARINE POLLUTANT" marks (minimum size of a side 250 mm x 250 mm) and other signs should be affixed to the exterior surfaces of a cargo transport unit or unit load or over pack to provide a warning that the contents of the unit are dangerous cargoes and present risks, unless the labels, marks or signs affixed to the packages are clearly visible from the exterior of the unit. The placards, labels, marks or signs on the outside of the CARGO TRANSPORT UNIT, as far as is practicable, should not be obscured when the CARGO TRANSPORT UNIT is open.
- 4.4.1.2 Cargo transport units containing dangerous cargoes/goods or residues of dangerous cargoes/goods should clearly display placards and if applicable for maritime transport "MARINE POLLUTANT" marks or other signs as follows:
- ~~.1 a container, one on each side and, in addition for maritime transport, one on each end of the unit;~~
 - .1 a freight container or semi trailer, one on each side and one on each end of the unit;
 - .2 a railway wagon, at least one on each side; and
 - .3 any other cargo transport unit, at least one on both sides and on the back of the unit and, in addition for a semi-trailer, one on the front of the unit, unless otherwise specified in the applicable transport regulations.

~~Placards on the sides of a CARGO TRANSPORT UNIT should be affixed in such a position that they are not obscured when the unit doors are opened (for international road transport under the ADR regime, the display of enlarged labels on vehicles is only required for transport in bulk).~~

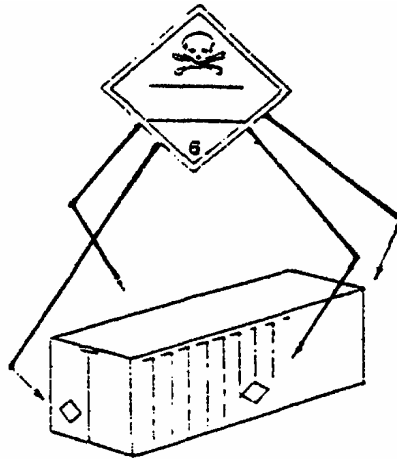


Figure 37 - Placards on a container

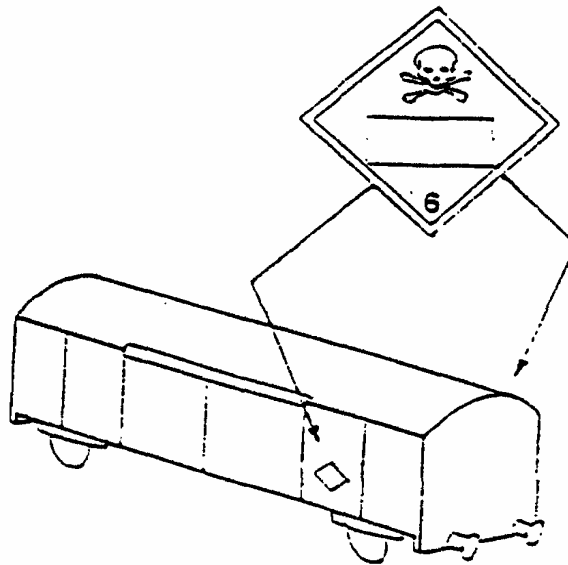


Figure 38 - Placards on a railway wagon

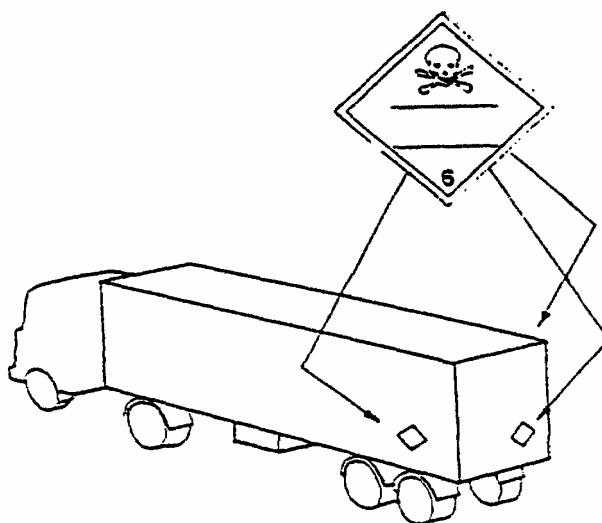


Figure 39 - Placards on a trailer

[The description to be amended to “Placards on a road vehicle” and an additional figure displaying the placards on a semi-trailer to be included by the E&T Group]

- 4.4.1.3 Whenever dangerous goods present several risks, subsidiary risk placards should be displayed in addition to primary risk placards. However, cargo transport units containing cargoes of more than one class however, need not bear a subsidiary risk placard if the hazard represented is already indicated by the primary risk placard.
- ~~4.4.1.4 Where individual schedules in the IMDG Code indicate that no hazard label or class marking is necessary on individual packages, then no placard or class marking is required on the CARGO TRANSPORT UNIT, provided the UN Number is displayed on the unit in accordance with 4.4.1.6.~~
- ~~4.4.1.5 For maritime cargo, any CARGO TRANSPORT UNIT containing packaged dangerous cargoes of a single commodity which constitute a full load and for which no placard is required should be durably marked with the Proper Shipping Name of the contents.~~
- ~~4.4.1.6 Consignments of packaged dangerous cargoes of a single commodity, other than cargoes of Class 1, which constitute a full load for the CARGO TRANSPORT UNIT, should have the UN Number for the commodity displayed in black digits not less than 65 mm high either against a white background in the lower half of the class placard or on an orange rectangular panel not less than 120 mm high and 300 mm wide, with a 10 mm black border, to be placed immediately adjacent to the placard (see annex 2). In those cases the UN Number should be displayed immediately adjacent to the proper shipping name.~~
- ~~4.4.1.7 For International transport by road under the ADR regime, vehicles carrying dangerous cargoes should display two rectangular, reflective orange coloured plates, 40 cm long and not less than 30 cm high, affixed vertically and with black borders not more than 15 mm wide (see annex 2). One should be affixed~~

~~at the front, the other at the rear of the vehicle, both perpendiculars to the longitudinal axis of the vehicle. They should be clearly visible.~~

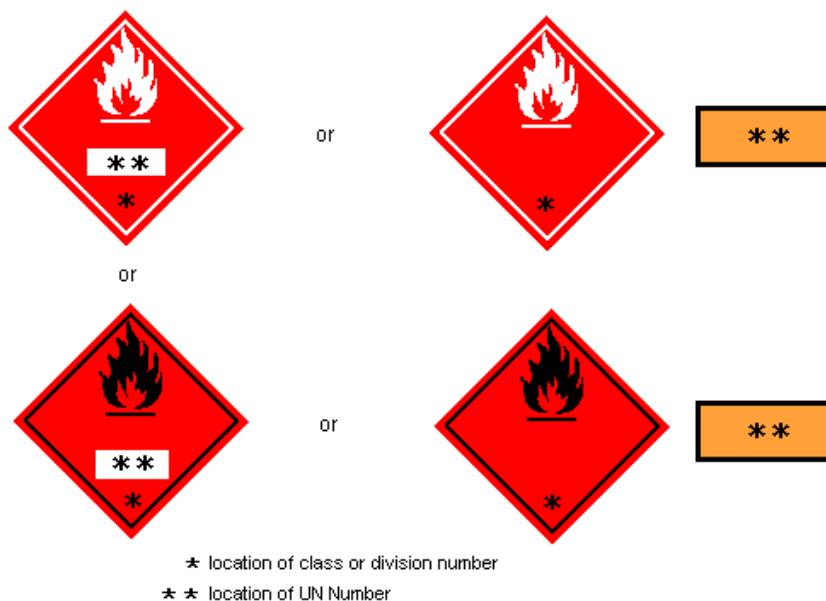
4.4.1.4 The IMDG Code requires that, except for goods of Class 1, the UN Number shall be displayed as required in 4.4.1.5 on consignments of:

- Packaged dangerous goods loaded in excess of 4,000 kg gross mass, to which only one UN Number has been assigned and which are the only dangerous goods in the cargo transport unit;
- Unpackaged LSA-1 or SCO-1 material of class 7 in or on a vehicle or in a freight container;
- Packaged radioactive material with a single UN Number under exclusive use in or on a vehicle, or in a freight container.

4.4.1.5 The UN Number for the goods shall be displayed in black digits not less than 65 mm high, either:

- .1 against a white background in the area below the pictorial symbol and above the class number and the compatibility group letter in a manner that does not obscure or detract from the other required label elements; or
- .2 on an orange rectangular panel not less than 120 mm high and 300 mm wide, with a 10 mm black border, to be placed immediately adjacent to each placard or marine pollutant mark. When no placard or marine pollutant mark is required, the UN Number shall be displayed immediately adjacent to the Proper Shipping Name.

Example



4.4.1.8.6 For radioactive materials special requirements apply (see, for example, section 6.5 of the introduction to class 7 in the IMDG Code).

- 4.4.1.9-7 When solid carbon dioxide (CO₂ – dry ice) or other expendable refrigerant is used for cooling purposes, a warning sign should be affixed to the outside of the doors so that it is clearly visible to any person operating the doors. The sign should warn of the possibility of an asphyxiating atmosphere. An example of such a warning sign is given in annex 2, below.

Warning label for dry ice or other expendable refrigerant used for cooling purposes



Note: The text under "WARNING" should refer to the refrigerant gas used.

- ~~4.4.1.10 As CARGO TRANSPORT UNITS offered for shipment under fumigation may require special precautions, they should only be accepted with the agreement of the carrier and they should be identified to him prior to loading. CARGO TRANSPORT UNITS under fumigation are now included in class 9 of the IMDG Code.~~

- ~~4.4.1.11 When a closed CARGO TRANSPORT UNIT or its contents has been fumigated and is to be shipped under fumigation, a warning sign should be affixed to the outside of the doors so that it is clearly visible to any person operating the doors. An example of such a warning sign is given in annex 2. The sign should state the fumigant, the method of fumigation employed and the date and time when it took place. The sign should only be removed when the unit has been ventilated after fumigation, to ensure that no harmful concentration of gas remains.~~

- 4.4.1.8 When fumigants have been applied to the contents of a container, the marking of the proper shipping name (Fumigated cargo transport unit) and the UN number (UN 3359) are not required. However, if a fumigated unit is loaded with dangerous goods, any label, mark or sign required by the IMDG Code shall be marked on the fumigated cargo transport unit.

- 4.4.1.9 A fumigated cargo transport unit shall be marked with the warning mark, as specified in 4.4.1.10, affixed in a location where it will be easily seen by persons attempting to enter the interior of the unit. The marking, as required by this paragraph, shall remain on the unit until the following provisions are met:

- .1 the fumigated cargo transport unit has been ventilated to remove harmful concentrations of fumigant gas; and
- .2 the fumigated goods or materials have been unloaded.

4.4.1.10 The fumigation warning mark shall be rectangular and shall be not less than 300 mm wide and 250 mm high. The markings shall be in black print on a white background with lettering not less than 25 mm high. The mark should state the fumigant, the method of fumigation employed and the date and time when it took place. An illustration of this mark is given below:



4.4.2 Certification

4.4.2.1 For transport by sea, regulation 4 of chapter VII of SOLAS 1974, as amended, requires that the person responsible for the packing of dangerous cargoes into a container or road vehicle shall provide a signed Container Packing Certificate or Vehicle Declaration stating that the cargo in the unit has been properly packed and secured and that all applicable transport requirements are met.

4.4.2.2 The IMDG Code states the following declaration:

- .1 the vehicle or freight container was clean, dry and apparently fit to receive the cargoes;
- .2 if the consignments include cargoes of class 1, other than division 1.4, the vehicle or freight container is strucargo transport unitrally serviceable in conformity with section 12 of the introduction to class 1 of the IMDG Code;
- .3 no incompatible cargoes have been packed into the vehicle or freight container (unless authorized by the competent authority concerned in accordance with 12.2.1 or 17.6.3.1 of the General Introduction to the IMDG Code);
- .4 all packages have been externally inspected for damage, leakage or sifting, and only sound packages have been packed;
- .5 all packages have been properly packed into the vehicle or freight container and secured;
- .6 drums have been stowed in an upright position, unless otherwise authorized by the competent authority;

~~.7 — the vehicle or freight container and the packages therein are properly marked, labelled and placarded;~~

~~.8 — when solid carbon dioxide (CO₂ — dry ice) is used for cooling purposes, the container/vehicle is externally marked or labelled in a conspicuous place, such as, at the door end, with the words:~~

~~“DANGEROUS CO₂ — (DRY ICE) INSIDE.
VENTILATE THOROUGHLY BEFORE ENTERING”;~~ and

~~.9 — A dangerous goods declaration required in subsection 9.4 of the General Introduction to the IMDG Code has been received for each dangerous cargoes consignment packed in the vehicle or freight container.~~

~~4.4.2.3 — A Container Packing Certificate/Vehicle Declaration is not required under the RID, ADR, ADN or ADNR regimes, even though they may be required for inland domestic transport in certain countries. However, such certificates will be needed if the transport operation includes sea voyages. They will then need to be provided prior to loading, as port authorities, berth operators and shipmasters may wish to sight them (or a copy) before accepting containers or vehicles packed with dangerous cargoes into their premises or aboard their ship.~~

~~4.4.2.4 — For international road transport under the ADR regime, when several items of dangerous cargoes are packed together in a single CARGO TRANSPORT UNIT, the shipper should declare that such mixed packing is not prohibited.~~

~~4.4.2.5 — The functions of the dangerous goods declaration (see 4.2.2) and of the Container Packing Certificate/Vehicle Declaration may be incorporated into a single document; if not, these documents should be attached one to the other. If these functions are incorporated into a single document, e.g., a Dangerous Goods Declaration, a shipping note, etc., the inclusion of a phrase such as “it is declared that the packing of the cargoes into the vehicle or freight container has been carried out in accordance with the applicable provisions” (see section 5.4.2.2 of the IMDG Code). Where both declarations are included in a single document, separate signatures are required for the two declarations.~~

~~4.4.3 — The transport of certain types of dangerous cargoes may require that closed types of CARGO TRANSPORT UNITS be locked and sealed. In such cases the keys should be readily available at the port and placed aboard the ship.~~

~~4.4.4 — Where dangerous cargoes are kept in combined transport terminals in port areas, reference should be made to the IMO Recommendations on the Safe Transport of Dangerous Cargoes and Related Activities in Port Areas.~~

~~4.4.5 — CARGO TRANSPORT UNITS packed with dangerous cargoes should only be collected from terminals by a driver who has been properly trained and instructed. The driver should possess a driver training certificate proving that he is allowed to drive a vehicle carrying dangerous cargoes of the classes contained in the unit. Before departure, he should be provided with all relevant documentation for the dangerous cargoes, as well as with written instructions on the action to be taken in the case of incidents involving the dangerous cargoes.~~

4.4.2 Container/vehicle packing certificate

4.4.2.1 When dangerous goods are packed or loaded into any container or vehicle, the IMDG Code and other transport regulations require that those responsible for packing the container or vehicle shall provide a “container/vehicle packing certificate” specifying the container/vehicle identification number(s) and certifying that the operation has been carried out in accordance with the following conditions:

- .1 The container/vehicle was clean, dry and apparently fit to receive the goods;
- .2 Packages which need to be segregated in accordance with applicable segregation requirements have not been packed together onto or in the container/vehicle (unless approved by the competent authority concerned);
- .3 All packages have been externally inspected for damage, and only sound packages have been loaded;
- .4 Drums have been stowed in an upright position, unless otherwise authorized by the competent authority, and all goods have been properly loaded and, where necessary, adequately braced with securing material to suit the mode(s) of transport for the intended journey;
- .5 For consignments including goods of class 1 other than division 1.4, the container/vehicle is structurally serviceable;
- .6 The container/vehicle and packages are properly marked, labelled and placarded, as appropriate;
- .7 When solid carbon dioxide (CO₂ – dry ice) is used for cooling purposes, the container/vehicle is externally marked or labelled in a conspicuous place, such as, at the door end, with the words: “DANGEROUS CO₂ (DRY ICE) INSIDE. VENTILATE THOROUGHLY BEFORE ENTERING”; and
- .8 A dangerous goods transport document has been received for each dangerous goods consignment loaded in the container/vehicle.

4.4.2.2 The information required in the dangerous goods transport document and the container/vehicle packing certificate may be incorporated into a single document; if not, these documents shall be attached into one another. If the information is incorporated into a single document, the document shall include a signed declaration such as “It is declared that the packing of the goods into the container/vehicle has been carried out in accordance with the applicable provisions”. This declaration shall be dated and the person signing this declaration shall be identified on the document. Facsimile signatures are acceptable where applicable laws and regulations recognize the legal validity of facsimile signatures.

4.4.3 If the doors of a cargo transport unit are locked, the means of locking shall be such that, in cases of emergency, the doors can be opened without delay.”

5 ADVICE ON RECEIPT OF CARGO TRANSPORT UNITS

- 3 In paragraph 5.3, in the first sentence, the word “cargoes” is replaced by the word “goods”.
- 4 In paragraph 5.5, in the third sentence, the word “MARINE POLLUTANT” is replaced by the word “ENVIRONMENTALLY HAZARDOUS SUBSTANCE (AQUATIC ENVIRONMENT”.
- 5 In paragraph 5.7, in the second sentence, the word “cargoes” is replaced with the word “goods”.

ANNEX 2

LABELS, PLACARDS, MARKS AND SIGNS

- 6 Annex 2 of the Guidelines is deleted and annexes 3 to 6 are renumbered as annexes 2 to 5.
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