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**COMMITTEE OF EXPERTS ON THE
TRANSPORT OF DANGEROUS GOODS AND ON THE
GLOBALLY HARMONIZED SYSTEM OF CLASSIFICATION
AND LABELLING OF CHEMICALS**

**REPORT OF THE COMMITTEE OF EXPERTS ON THE TRANSPORT OF
DANGEROUS GOODS AND ON THE GLOBALLY HARMONIZED SYSTEM OF
CLASSIFICATION AND LABELLING OF CHEMICALS ON ITS FOURTH SESSION
(Geneva, 12 December 2008)**

Addendum

Annex I

Amendments to the fifteenth revised edition of the Recommendations on the Transport of
Dangerous Goods, Model Regulations (ST/SG/AC.10/1/Rev.15)

Recommendation 5

Replace existing second and third sentences with the following new sentence:

"Modal transport regulations may occasionally apply other requirements for operational reasons."

PART 1

Chapter 1.1

1.1.1.4 In the first sentence, replace "is assured "with "are assured ".

Chapter 1.2

1.2.1 Under "*Approval*", in the definition of "*Multilateral approval*", delete the last sentence ("The term "through or into" specifically excludes...").

In the definition of "*Pressure receptacle*", insert ", metal hydride storage systems" before "and bundles".

In the definition of "*Repaired IBC*", in the second sentence, replace "manufacturer's specification" with "design type from the same manufacturer".

In the definition of "*Tank*", at the end, replace "substances of Class 2" by "gases as defined in 2.2.1.1".

Add the following new definitions in alphabetical order:

"*Cargo transport unit* means a road transport tank or freight vehicle, a railway transport tank or freight wagon, a multimodal freight container or portable tank, or a MEGC;"

"*Closed cargo transport unit* means a cargo transport unit which totally encloses the contents by permanent structures with complete and rigid surfaces. Cargo transport units with fabric sides or tops are not considered closed cargo transport units;"

Consequential amendments:

Replace "*transport unit*"/"*transport units*" with "*cargo transport unit*"/"*cargo transport units*" where appropriate (applies to recommendations 11 and 12, 2.4.2.3.2.4 (b)(ii), 2.5.3.2.5.1 (b), 3.3 special provisions 172, 216 (twice), 217 (twice), 218 (twice), 232, 297, 299 and 335 (twice), 4.1.1.1 (twice), 4.1.2.3, 4.1.3.8.1 (a) (twice), 4.1.4.1 P002 special packing provisions PP7 and PP12, P410 Note d, P650 (twice), P900, 4.1.4.2 special packing provisions B1 and B2 in IBC04, IBC05, IBC06, IBC07 and IBC08, 5.2.1.6.3, 5.3.1.1.2 (4 times), 5.3.1.1.3, 5.3.1.1.4 (twice), 5.3.2.1.1 (3 times), 5.3.2.2, 5.3.2.3.1, 6.7.5.2.1, 7.1.1.3 (renumbered 7.1.1.4) (twice), 7.1.1.4 (renumbered 7.1.1.5) (3 times), 7.1.1.5 (renumbered 7.1.1.6), 7.1.1.6 (renumbered 7.1.1.7), 7.1.1.7 (renumbered 7.1.1.8) (twice), 7.1.1.9 (renumbered 7.1.1.10) and Note 2, 7.1.3.1.3, 7.1.4.1, 7.1.5.3.2.1, 7.1.5.3.2.2 (twice), 7.1.7.1.1m 7.1.7.1.2 (3 times), 7.1.7.2.3 (3 times) and 7.2.4.4).

"*Fuel cell* means an electrochemical device that converts the chemical energy of a fuel to electrical energy, heat and reaction products;"

"*Fuel cell engine* means a device used to power equipment and which consists of a fuel cell and its fuel supply, whether integrated with or separate from the fuel cell, and includes all appurtenances necessary to fulfil its function;"

"*Metal hydride storage system* means a single complete hydrogen storage system, including a receptacle, metal hydride, pressure relief device, shut-off valve, service equipment and internal components used for the transport of hydrogen only;"

"*Open cryogenic receptacle* means a transportable thermally insulated receptacle for refrigerated liquefied gases maintained at atmospheric pressure by continuous venting of the refrigerated liquefied gas;"

"*Remanufactured large packaging* means a metal or rigid plastics large packaging that:

- (a) Is produced as a UN type from a non-UN type; or
- (b) Is converted from one UN design type to another UN design type.

Remanufactured large packagings are subject to the same requirements of these Regulations that apply to new large packagings of the same type (see also design type definition in 6.6.5.1.2);"

"*Reused large packaging* means a large packaging to be refilled which has been examined and found free of defects affecting the ability to withstand the performance tests: the term includes those which are refilled with the same or similar compatible contents and are transported within distribution chains controlled by the consignor of the product;"

"*Through or into* means through or into the countries in which a consignment is transported but specifically excludes countries "over" which a consignment is carried by air, provided that there are no scheduled stops in those countries;"

Chapter 1.3

- 1.3.1 In the first sentence, replace "shall receive training" with "shall be trained".
Add a new second sentence to read as follows: "Employees shall be trained in accordance with 1.3.2 before assuming responsibilities and shall only perform functions, for which required training has not yet been provided, under the direct supervision of a trained person."
- 1.3.2 At the end of the introductory text, replace "shall receive the following training" with "shall be trained in the following".
 - 1.3.2 (a) (i) Replace "shall receive training designed to provide familiarity" with "shall be trained in order to be familiar".
 - 1.3.2 (b) Replace "shall receive detailed training concerning" with "shall be trained in".
 - 1.3.2 (c) In the first sentence, replace "shall receive training on" with "shall be trained in".

1.3.3 Amend to read as follows:

"1.3.3 Records of training received according to this Chapter shall be kept by the employer and made available to the employee or competent authority, upon request. Records shall be kept by the employer for a period of time established by the competent authority."

Chapter 1.4

1.4.2.4 Amend to read as follows:

"1.4.2.4 Records of all security training received shall be kept by the employer and made available to the employee or competent authority, upon request. Records shall be kept by the employer for a period of time established by the competent authority."

1.4.3.2.3 Amend to read as follows:

"1.4.3.2.3 For radioactive material, the provisions of this Chapter and of section 7.2.4 are deemed to be complied with when the provisions of the Convention on Physical Protection of Nuclear Material¹ and the IAEA circular on "The Physical Protection of Nuclear Material and Nuclear Facilities"² are applied."

Chapter 1.5

1.5.1.1 In the second sentence, replace "2005" with "2009" (twice).

Replace the last sentence with the two following sentences: "Explanatory material can be found in "Advisory Material for the IAEA Regulations for the Safe Transport of Radioactive Material (2005 Edition)", Safety Standard Series No. TS-G-1.1 (Rev.1), IAEA, Vienna (2008). The prime responsibility for safety shall rest with the person or organization responsible for facilities and activities that give rise to radiation risk.". Delete footnote 1.

1.5.1.2 Amend the first sentence to read as follows: "The objective of these Regulations is to establish requirements that must be satisfied to ensure safety and to protect persons, property and the environment from the effects of radiation in the transport of radioactive material."

1.5.1.3 In the third sentence, replace "that is characterized" by "that are characterized".

1.5.1.5.1 Amend the beginning and sub-paragraph (a) to read as follows:

"1.5.1.5.1 Excepted packages which may contain radioactive material in limited quantities, instruments, manufactured articles and empty packagings as specified in 2.7.2.4.1 shall be subject only to the following provisions of Parts 5 to 7:

¹ IAEACIRC/274/Rev.1, IAEA, Vienna (1980).

² IAEACIRC/225/Rev.4 (Corrected), IAEA, Vienna (1999). See also "Guidance and Considerations for the Implementation of INFCIRC/225/Rev.4, the Physical Protection of Nuclear Material and Nuclear Facilities, IAEA-TECDOC-967/Rev.1.

- (a) The applicable provisions specified in 5.1.2, 5.1.3.2, 5.1.4, 5.1.5.4, 5.2.1.7, and 7.1.8.5.2;"

Delete sub-paragraph (d) and move the final "and" from sub-paragraph (c) to sub-paragraph (b).

1.5.1.5.2 Amend to read as follows:

"1.5.1.5.2 Excepted packages shall be subject to the relevant provisions of all other parts of these Regulations."

1.5.2.3 At the end of the second sentence, add "and 7.1.8.1.1".

1.5.2.7 Replace "shall receive appropriate training concerning" with "shall be appropriately trained in".

PART 2

Chapter 2.0

2.0.1.1 Amend the definition of Class 9 to read as follows:

"Class 9: Miscellaneous dangerous substances and articles, including environmentally hazardous substances".

2.0.2.2 Amend the first paragraph to read as follows:

"2.0.2.2 Dangerous goods commonly carried are listed in the Dangerous Goods List in Chapter 3.2. Where an article or substance is specifically listed by name, it shall be identified in transport by the proper shipping name in the Dangerous Goods List. Such substances may contain technical impurities (for example those deriving from the production process) or additives for stability or other purposes that do not affect its classification. However, a substance listed by name containing technical impurities or additives for stability or other purposes affecting its classification shall be considered a mixture or solution (see 2.0.2.5). For dangerous goods not specifically listed by name "generic" or "not otherwise specified" entries are provided (see 2.0.2.7) to identify the article or substance in transport."

2.0.2.5 Amend to read as follows:

"2.0.2.5 A mixture or solution composed of a single predominant substance identified by name in the Dangerous Goods List and one or more substances not subject to these Regulations and/or traces of one or more substances identified by name in the Dangerous Goods List, shall be assigned the UN number and proper shipping name of the predominant substance named in the Dangerous Goods List unless:

- (a) The mixture or solution is identified by name in the Dangerous Goods List;

- (b) The name and description of the substance named in the Dangerous Goods List specifically indicate that they apply only to the pure substance;
- (c) The hazard class or division, subsidiary risk(s), packing group, or physical state of the mixture or solution is different from that of the substance named in the Dangerous Goods List; or
- (d) The hazard characteristics and properties of the mixture or solution necessitate emergency response measures that are different from those required for the substance identified by name in the Dangerous Goods List."

2.0.2.9 Add a new paragraph 2.0.2.9 to read as follows:

"2.0.2.9 A mixture or solution that is not identified by name in the Dangerous Goods List and that is composed of two or more dangerous goods shall be assigned to an entry that has the proper shipping name, description, hazard class or division, subsidiary risk(s) and packing group that most precisely describe the mixture or solution."

2.0.3.2 At the end, add the following new sentence: "For radioactive material in excepted packages, special provision 290 of Chapter 3.3 applies."

Chapter 2.1

2.1.1.3 Add a new sub-paragraph (d) to read as follows:

- "(d) *Phlegmatized* means that a substance (or "phlegmatizer") has been added to an explosive to enhance its safety in handling and transport. The phlegmatizer renders the explosive insensitive, or less sensitive, to the following actions: heat, shock, impact, percussion or friction. Typical phlegmatizing agents include, but are not limited to: wax, paper, water, polymers (such as chlorofluoropolymers), alcohol and oils (such as petroleum jelly and paraffin)."

2.1.2.1.1 Add the following new notes after the table:

***NOTE 1:** Articles of compatibility groups D and E may be fitted or packed together with their own means of initiation provided that such means have at least two effective protective features designed to prevent an explosion in the event of accidental functioning of the means of initiation. Such articles and packages shall be assigned to compatibility groups D or E.*

***NOTE 2:** Articles of compatibility groups D and E may be packed together with their own means of initiation, which do not have two effective protective features when, in the opinion of the competent authority of the country of origin, the accidental functioning of the means of initiation does not cause the explosion of an article under normal conditions of transport. Such packages shall be assigned to compatibility groups D or E."*

2.1.3.5.5 Amend Note 2 to read as follows:

"NOTE 2: "Flash composition" in this table refers to pyrotechnic substances in powder form or as pyrotechnic units as presented in the fireworks, that are used to produce an aural effect, or used as a bursting charge or lifting charge, unless the time taken for the pressure rise is demonstrated to be more than 8 ms for 0.5 g of pyrotechnic substance in the HSL Flash Composition Test in Appendix 7 of the Manual of Tests and Criteria."

2.1.3.5.5 In the default fireworks classification table, replace "pyrotechnic composition" with "pyrotechnic substance" whenever it appears.

Chapter 2.2

2.2.1.1 Delete the note.

2.2.2.1 (b) In (ii), delete the second sentence ("The oxidizing ability... 10156-2:2005").

Add the following new note:

"NOTE: In 2.2.2.1 (b) (ii), "gases which cause or contribute to the combustion of other material more than air does" means pure gases or gas mixtures with an oxidizing power greater than 23.5% as determined by a method specified in ISO 10156:1996 or 10156-2:2005."

2.2.2.4 Add a new 2.2.2.4 to read as follows:

"2.2.2.4 Gases of Division 2.2 are not subject to these Regulations when contained in the following:

- Foodstuffs, including carbonated beverages (except UN 1950);
- Balls intended for use in sports;
- Tyres (except for air transport); or
- Light bulbs provided they are packaged so that the projectile effects of any rupture of the bulb will be contained within the package."

2.2.3 (d) In the parenthesis, insert "the Note in 2.2.2.1 (b) and" before "ISO 10156:1996".

Chapter 2.3

2.3.3 Amend to read as follows:

"2.3.3 Determination of flash point

The following methods for determining the flash point of flammable liquids may be used:

International standards:

ISO 1516
ISO 1523
ISO 2719
ISO 13736
ISO 3679
ISO 3680

National standards:

American Society for Testing Materials International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, Pennsylvania, USA 19428-2959:

ASTM D3828-93, Standard Test Methods for Flash Point by Small Scale Closed Tester
ASTM D56-93, Standard Test Method for Flash Point by Tag Closed Tester
ASTM D3278-96, Standard Test Methods for Flash Point of Liquids by Setaflash Closed-Cup Apparatus
ASTM D0093-96, Standard Test Methods for Flash Point by Pensky-Martens Closed Cup Tester

Association française de normalisation, AFNOR, 11, rue de Pressensé, 93571 La Plaine Saint-Denis Cedex:

French Standard NF M 07 - 019
French Standards NF M 07 - 011 / NF T 30 - 050 / NF T 66 - 009
French Standard NF M 07 - 036

Deutsches Institut für Normung, Burggrafenstr. 6, D-10787 Berlin:

Standard DIN 51755 (flash points below 65 °C)

State Committee of the Council of Ministers for Standardization, 113813, GSP, Moscow, M-49 Leninsky Prospect, 9:

GOST 12.1.044-84".

2.3.4 Add a new section 2.3.4 to read as follows:

"2.3.4 Determination of initial boiling point

The following methods for determining the initial boiling point of flammable liquids may be used:

International standards:

ISO 3924
ISO 4626
ISO 3405

National standards:

American Society for Testing Materials International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, Pennsylvania, USA 19428-2959:

ASTM D86-07a, Standard Test Method for Distillation of Petroleum Products at Atmospheric Pressure
ASTM D1078-05, Standard Test Method for Distillation Range of Volatile Organic Liquids

Further acceptable methods:

Method A.2 as described in Part A of the Annex to Commission Regulation (EC) No 440/2008¹.

Chapter 2.4

2.4.3.1.2 Amend to read as follows:

"2.4.3.1.2 Self-heating of a substance is a process where the gradual reaction of that substance with oxygen (in air) generates heat. If the rate of heat production exceeds the rate of heat loss, then the temperature of the substance will rise which, after an induction time, may lead to self-ignition and combustion."

¹ *Commission Regulation (EC) No 440/2008 of 30 May 2008 laying down test methods pursuant to Regulation (EC) No 1907/2006 on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (Official Journal of the European Union, No. L 142 of 31.05.2008, p.1-739 and No. L 143 of 03.06.2008, p.55) .*

Chapter 2.5

2.5.3.2.4 In the table, amend the entries listed below as follows:

| Organic peroxide | Column | Amendment |
|--|------------------------------|--|
| tert-AMYLPEROXY-3,5,5-TRIMETHYLHEXANOATE | Subsidiary risks and remarks | Delete "3" |
| DI-(2-tert-BUTYLPEROXYISOPROPYL)BENZENE(S) | Organic peroxide | Amend to read "DI-(tert-BUTYLPEROXYISOPROPYL)BENZENE(S)" |
| 2,5-DIMETHYL-2,5-DI-(tert-BUTYLPEROXY)HEXANE (Concentration > 52 – 100) | (1 st row) | Delete |

Insert the following new entries:

| Organic peroxide | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) |
|--|------------|------|-----|-----|-----|-----|-----|-----|------|------|
| 2,5-DIMETHYL-2,5-DI-(tert-BUTYLPEROXY)HEXANE | > 90 – 100 | | | | | OP5 | | | 3103 | |
| 2,5-DIMETHYL-2,5-DI-(tert-BUTYLPEROXY)HEXANE | > 52 – 90 | ≥ 10 | | | | OP7 | | | 3105 | |

Chapter 2.6

2.6.3.1.5 Delete the text and add the mention "Deleted".

Chapter 2.7

2.7.1.3 In the definition of *Fissile material*, amend the text before sub-paragraphs (a) and (b) to read:

"*Fissile nuclides* means uranium-233, uranium-235, plutonium-239 and plutonium-241. *Fissile material* means a material containing any of the fissile nuclides. Excluded from the definition of fissile material are:".

2.7.2.2.1 In the table, under "Krypton (36)", add the following new entry:

| | | | | |
|-------|-----------------|-----------------|-----------------|-----------------|
| Kr-79 | 4×10^0 | 2×10^0 | 1×10^3 | 1×10^5 |
|-------|-----------------|-----------------|-----------------|-----------------|

2.7.2.3.1.2 (a) (ii) Replace "providing they" by "that".

2.7.2.3.1.2 (a) (iii) and (iv) Replace "excluding material classified as fissile according to 2.7.2.3.5" with "excluding fissile material not excepted under 2.7.2.3.5".

2.7.2.3.1.2 (c) At the beginning, insert "meeting the requirements of 2.7.2.3.1.3," after "excluding powders,".

2.7.2.3.4.1 In the second sentence, insert ", taking into account the provisions of 6.4.8.14," after "package".

2.7.2.3.5 Amend the introductory sentence before sub-paragraph (a) to read as follows:

"Packages containing fissile material shall be classified under the relevant entry of Table 2.7.2.1.1, the description of which includes the words "FISSILE" or "fissile-excepted". Classification as "fissile-excepted" is allowed only if one of the conditions (a) to (d) of this paragraph is met. Only one type of exception is allowed per consignment (see also 6.4.7.2)."

2.7.2.3.5 (a) Amend to read as follows:

"(a) A mass limit per consignment, provided that the smallest external dimension of each package is not less than 10 cm, such that:

$$\frac{\text{mass of uranium - 235 (g)}}{X} + \frac{\text{mass of other fissile material (g)}}{Y} < 1$$

where X and Y are the mass limits defined in Table 2.7.2.3.5, provided that either:

- (i) each individual package contains not more than 15 g of fissile nuclides; for unpackaged material, this quantity limitation shall apply to the consignment being carried in or on the conveyance; or
- (ii) the fissile material is a homogeneous hydrogenous solution or mixture where the ratio of fissile nuclides to hydrogen is less than 5% by mass; or
- (iii) there are not more than 5 g of fissile nuclides in any 10 litre volume of material.

Beryllium shall not be present in quantities exceeding 1% of the applicable consignment mass limits provided in Table 2.7.2.3.5 except where the concentration of beryllium in the material does not exceed 1 gram beryllium in any 1 000 grams.

Deuterium shall also not be present in quantities exceeding 1% of the applicable consignment mass limits provided in Table 2.7.2.3.5 except where deuterium occurs up to natural concentration in hydrogen."

2.7.2.3.5 (b) Replace "fissile material is" by "fissile nuclides are".

2.7.2.3.5 (d) Amend to read as follows:

"(d) Plutonium containing not more than 20% of fissile nuclides by mass up to a maximum of 1 kg of plutonium per consignment. Shipments under this exception shall be under exclusive use."

2.7.2.4.1.1 (b) At the end, add "as specified in Table 2.7.2.4.1.2".

2.7.2.4.1.1 (d) At the end, add "as specified in Table 2.7.2.4.1.2".

2.7.2.4.1.3 In the first sentence before sub-paragraph (a), replace "provided that" with "only if".

2.7.2.4.1.4 At the beginning, replace "Radioactive material with an activity not exceeding the limit" with "Radioactive material in forms other than as specified in 2.7.2.4.1.3 and with an activity not exceeding the limits".

2.7.2.4.1.5 In the first sentence, delete "with an activity not exceeding the limit specified in column 4 of Table 2.7.2.4.1.2" and replace "provided that" with "only if".

2.7.2.4.1.6 The first amendment only applies to the French version. At the end, replace "provided that" with "only if".

2.7.2.4.2 Replace "if the conditions of 2.7.2.3.1 and 4.1.9.2 are met" with "if the definition of LSA in 2.7.1.3 and the conditions of 2.7.2.3.1, 4.1.9.2 and 7.1.8.2 are met".

2.7.2.4.3 Replace "if the conditions of 2.7.2.3.2.1 and 4.1.9.2 are met" with "if the definition of SCO in 2.7.1.3 and the conditions of 2.7.2.3.2, 4.1.9.2 and 7.1.8.2 are met".

Chapter 2.8

2.8.2.4 At the end, replace "OECD Guideline 404¹." with "OECD Test Guideline 404¹ or 435². A substance which is determined not to be corrosive in accordance with OECD Test Guideline 430³ or 431⁴ may be considered not to be corrosive to skin for the purposes of these Regulations without further testing."

¹ OECD Guideline for the testing of chemicals No. 404 "Acute Dermal Irritation/Corrosion" 2002.

² OECD Guideline for the testing of chemicals No. 435 "In Vitro Membrane Barrier Test Method for Skin Corrosion" 2006.

³ OECD Guideline for the testing of chemicals No. 430 "In Vitro Skin Corrosion: Transcutaneous Electrical Resistance Test (TER)" 2004.

⁴ OECD Guideline for the testing of chemicals No. 431 "In Vitro Skin Corrosion: Human Skin Model Test" 2004.

Chapter 2.9

Amend the Chapter heading to read as follows:

"CLASS 9 - MISCELLANEOUS DANGEROUS SUBSTANCES AND ARTICLES, INCLUDING ENVIRONMENTALLY HAZARDOUS SUBSTANCES".

- 2.9.1.1 The amendment does not apply to the English text.
- 2.9.1.2 Delete the text and add the mention "Deleted".
- 2.9.2 Amend to read as follows:

"2.9.2 Assignment to Class 9

The substances and articles of Class 9 are subdivided as follows:

Substances which, on inhalation as fine dust, may endanger health

- 2212 BLUE ASBESTOS (crocidolite) or
- 2212 BROWN ASBESTOS (amosite, mysorite)
- 2590 WHITE ASBESTOS (chrysotile, actinolite, anthophyllite, tremolite)

Substances evolving flammable vapour

- 2211 POLYMERIC BEADS, EXPANDABLE, evolving flammable vapour
- 3314 PLASTICS MOULDING COMPOUND in dough, sheet or extruded rope form evolving flammable vapour

Lithium batteries

- 3090 LITHIUM METAL BATTERIES (including lithium alloy batteries)
- 3091 LITHIUM METAL BATTERIES CONTAINED IN EQUIPMENT (including lithium alloy batteries) or
- 3091 LITHIUM METAL BATTERIES PACKED WITH EQUIPMENT (including lithium alloy batteries)
- 3480 LITHIUM ION BATTERIES (including lithium ion polymer batteries)
- 3481 LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT (including lithium ion polymer batteries) or
- 3481 LITHIUM ION BATTERIES PACKED WITH EQUIPMENT (including lithium ion polymer batteries)

Live-saving appliances

- 2990 LIFE-SAVING APPLIANCES, SELF-INFLATING
- 3072 LIFE-SAVING APPLIANCES NOT SELF-INFLATING containing dangerous goods as equipment

3268 AIR BAG INFLATORS or
3268 AIR BAG MODULES or
3268 SEAT-BELT PRETENSIONERS

Substances and articles which, in the event of fire, may form dioxins

This group of substances includes:

2315 POLYCHLORINATED BIPHENYLS, LIQUID
3432 POLYCHLORINATED BIPHENYLS, SOLID
3151 POLYHALOGENATED BIPHENYLS, LIQUID or
3151 POLYHALOGENATED TERPHENYLS, LIQUID
3152 POLYHALOGENATED BIPHENYLS, SOLID or
3152 POLYHALOGENATED TERPHENYLS, SOLID

Examples of articles are transformers, condensers and apparatus containing those substances.

Substances transported or offered for transport at elevated temperatures

(a) Liquid

3257 ELEVATED TEMPERATURE LIQUID, N.O.S., at or above 100 °C and below its flash-point (including molten metal, molten salts, etc.)

(b) Solid

3258 ELEVATED TEMPERATURE SOLID, N.O.S., at or above 240 °C

Environmentally hazardous substances

(a) Solid

3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.

(b) Liquid

3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

These designations are used for substances and mixtures which are dangerous to the aquatic environment that do not meet the classification criteria of any other class or another substance within Class 9. These designations may also be used for wastes not otherwise subject to these Regulations but which are covered under the *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal* and for substances designated to be environmentally hazardous substances by the competent authority of the country of origin, transit or destination which do not meet the criteria for an environmentally hazardous substance according to these Regulations or for any other hazard Class. The criteria for substances which are hazardous to the aquatic environment are given in section 2.9.3.

Genetically modified micro-organisms (GMMOs) and genetically modified organisms (GMOs)

3245 GENETICALLY MODIFIED MICRO-ORGANISMS or
3245 GENETICALLY MODIFIED ORGANISMS

GMMOs and GMOs which do not meet the definition of toxic substances (see 2.6.2) or infectious substances (see 2.6.3) shall be assigned to UN 3245.

GMMOs or GMOs are not subject to these Regulations when authorized for use by the competent authorities of the countries of origin, transit and destination.

Genetically modified live animals shall be transported under terms and conditions of the competent authorities of the countries of origin and destination.

Other substances or articles presenting a danger during transport, but not meeting the definitions of another class

1841 ACETALDEHYDE AMMONIA
1845 CARBON DIOXIDE, SOLID (DRY ICE)
1931 ZINC DITHIONITE (ZINC HYDROSULPHITE)
1941 DIBROMODIFLUOROMETHANE
1990 BENZALDEHYDE
2071 AMMONIUM NITRATE BASED FERTILISER
2216 FISH MEAL (FISH SCRAP), STABILIZED
2807 MAGNETIZED MATERIAL
2969 CASTOR BEANS or
2969 CASTOR MEAL or
2969 CASTOR POMACE or
2969 CASTOR FLAKE
3166 ENGINE, INTERNAL COMBUSTION or
3166 VEHICLE, FLAMMABLE GAS POWERED or
3166 VEHICLE, FLAMMABLE LIQUID POWERED or
3166 ENGINE, FUEL CELL, FLAMMABLE GAS POWERED or
3166 ENGINE, FUEL CELL, FLAMMABLE LIQUID POWERED or
3166 VEHICLE, FUEL CELL, FLAMMABLE GAS POWERED or
3166 VEHICLE, FUEL CELL, FLAMMABLE LIQUID POWERED
3171 BATTERY-POWERED VEHICLE or
3171 BATTERY-POWERED EQUIPMENT
3316 CHEMICAL KIT or
3316 FIRST AID KIT
3334 AVIATION REGULATED LIQUID, N.O.S.
3335 AVIATION REGULATED SOLID, N.O.S.
3359 FUMIGATED CARGO TRANSPORT UNIT
3363 DANGEROUS GOODS IN MACHINERY or
3363 DANGEROUS GOODS IN APPARATUS "

2.9.3.1.4 The two first amendments do not apply to the English text.

Amend the definition of "NOEC" to read as follows:

"- NOEC (No Observed Effect Concentration): the test concentration immediately below the lowest tested concentration with statistically significant adverse effect. The NOEC has not statistically significant adverse effect compared to the control;".

The fourth amendment does not apply to the English text.

After the definition of "GLP", add the following new definition:

"- EC_x: the concentration associated with x% response;".

2.9.3.2.1 Rearrange the indents to read as follows:

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

2.9.3.2.3 At the beginning, add the following two new paragraphs:

"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.".

The existing text becomes the new third paragraph.

2.9.3.2.4 *Text of existing 2.9.3.2.6, with the following modifications:*

At the beginning, add the following two new paragraphs:

"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.".

The existing text becomes the new third paragraph. Amend the last sentence to read as follows: "The NOECs or other equivalent EC_x shall be used.".

2.9.3.2.5 *Text of existing 2.9.3.2.4. The modifications do not apply to the English text.*

2.9.3.2.6 *Text of existing 2.9.3.2.5, with the following modifications:*

At the beginning, add the following new paragraph:

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

In the second sentence of the new second paragraph, replace "OECD biodegradability tests (OECD Test Guideline 301 (A - F))" with "biodegradability tests (A-F) of OECD Test Guideline 301". The amendments to the fourth and last sentences do not apply to the English text.

In sub-paragraph (a), at the end, after "has been degraded", insert the following text: ", unless the substance is identified as a complex, multi-component substance with structurally similar constituents. In this case, and where there is sufficient justification, the 10-day window condition may be waived and the pass level applied at 28 days⁴."

2.9.3.3 Amend to read as follows:

"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 (<i>see Note 3</i>) |

⁴

See Chapter 4.1 and Annex 9, paragraph A9.4.2.2.3 of the GHS.

(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 |

(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.*

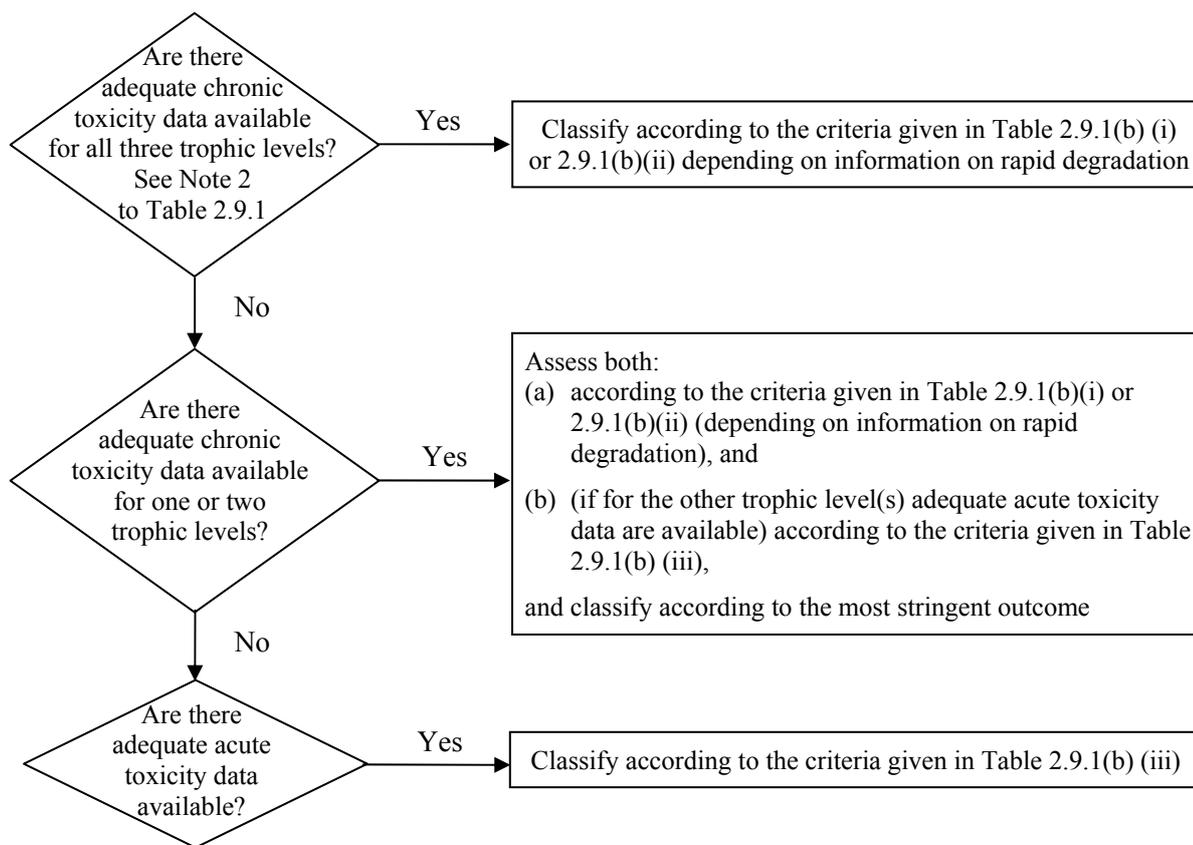
NOTE 2: *When classifying substances as Acute 1 and/or Chronic 1 it is necessary at the same time to indicate an appropriate M factor (see 2.9.3.4.6.4) to apply the summation method.*

NOTE 3: *Where the algal toxicity ErC_{50} (= EC_{50} (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 ErC_{50} . In circumstances where the basis of the EC_{50} is not specified and no ErC_{50} is recorded, classification shall be based on the lowest EC_{50} 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 $BCF \geq 500$ 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)C₅₀ 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."*

2.9.3.4.1 In the first sentence, replace "meaning acute category 1 and chronic categories 1 and 2" with ", meaning categories Acute 1 and Chronic 1 and 2". The second amendment does not apply to the English text.

Amend the second paragraph to read as follows:

"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 Replace "Figure 2.9.1" with "Figure 2.9.2" (twice). In the heading of the figure, replace "chronic" with "long-term".

In the figure, in the middle column, modify the three bullet points to read them as sub-paragraphs (a), (b) and (c). In the new sub-paragraph (c), replace "formula" with "formulas" and insert "or EqNOECm" after "L(E)C₅₀" and "or "Chronic"" after "'Acute'". In the right column, replace "chronic toxicity" with "long-term" (four times).

2.9.3.4.3 Amend to read as follows:

"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

⁵ *Special guidance is provided in Chapter 4.1, paragraph 4.1.2.13 and Annex 9, Section A9.6 of the GHS.*

a whole are lacking, "bridging principles" or "summation method" shall be applied (see 2.9.3.4.4 and 2.9.3.4.5).

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 (LC_{50} or EC_{50}) available for the mixture as a whole showing $L(E)C_{50} \leq 1$ 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 Amend the heading to read as follows: "Classification of mixtures when toxicity data are not available for the complete mixture: bridging principles".

2.9.3.4.4.2 Amend to read as follows:

"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."

2.9.3.4.4.3.1 At the beginning, replace "one production batch of a complex mixture" with "a tested production batch of a mixture". Insert "untested" after "another" and replace "and produced" with "when produced". At the end of the first sentence, insert "untested" before "batch".

2.9.3.4.4.4 The amendment does not apply to the English text.

2.9.3.4.4.4.1 At the beginning, replace "If a mixture" with "If a tested mixture" and insert "the" before "ingredients". Insert "untested" after "concentrated" and "tested" after "original".

2.9.3.4.4.5.1 Amend to read as follows:

"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."

2.9.3.4.4.6.1 In sub-paragraph (b), insert "essentially" before "the same". In sub-paragraph (d), replace "Classification" with "Data on aquatic hazards" and "the same" with "substantially equivalent". Amend the text after sub-paragraph (d) to read as follows:

"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 In the heading, insert "toxicity" before "data".

2.9.3.4.5.2 Amend to read as follows:

"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 In the first sentence, replace "each substance" with "each ingredient", "same species" with "same taxonomic group", "daphnia" with "crustacea" and "three

species" with "three groups". In the second sentence, replace "species" with "taxonomic group". In the last sentence, insert "and chronic" before "toxicity" and "and/or Chronic 1 or 2" after "Acute 1".

2.9.3.4.6.1.1 The amendment does not apply to the English text.

2.9.3.4.6.2 Amend the heading to read "Classification for category Acute 1".

2.9.3.4.6.2.1 In the first sentence, replace "All" with "First, all" and "shall be" with "are". In the second sentence, insert "the concentrations (in %) of" before "these ingredients". Delete "category" (twice).

2.9.3.4.6.2.2 Amend to read as follows:

"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 $\times M^a \geq 25\%$ | Acute 1 |

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

2.9.3.4.6.3 Amend the heading to read "Classification for categories Chronic 1 and 2".

2.9.3.4.6.3.1 The first amendment does not apply to the English text. In the second sentence, insert "the concentrations (in %) of" before "these ingredients". Delete "category" (twice).

2.9.3.4.6.3.2 Insert "the concentrations (in %) of" after "the sum of" (twice).

2.9.3.4.6.3.3 Amend to read as follows:

"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 $\times M^a \geq 25\%$ | Chronic 1 |
| $(M \times 10 \times \text{Chronic 1}) + \text{Chronic 2} \geq 25\%$ | Chronic 2 |

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

2.9.3.4.6.4.1 In the first sentence, replace "Category acute 1 ingredients with toxicities well below 1 mg/l may influence" with "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".

In the second sentence, insert "and Chronic 1" after "the concentrations of Acute 1". In the third sentence, replace "Table 2.9.1" with "Table 2.9.3" and "Table 2.9.2" with "Table 2.9.4". In the fourth sentence, replace "summarised in Table 2.9.3" with "summarized in Table 2.9.5". In the last sentence, insert "and/or chronic" after "specific acute".

Table 2.9.3 Replace with the following table:

"Table 2.9.5: Multiplying factors for highly toxic ingredients of mixtures

| Acute toxicity L(E)C ₅₀ value | M factor | Chronic toxicity NOEC value | M factor | |
|---|----------|-----------------------------------|---------------------------------|--------------------------------|
| | | | 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.*"

2.9.3.4.6.5.1 In the first sentence, replace "aquatic hazard" with "aquatic toxicity".

2.9.3.5 Delete.

PART 3

Chapter 3.1

3.1.2.8.1 In the first sentence, insert "or 318" after "special provision 274".

3.1.2.8.1.1 In the first sentence, insert "or biological name," after "recognized chemical".

3.1.3 Amend to read as follows:

"3.1.3 Mixtures or solutions

NOTE: Where a substance is specifically listed by name in the Dangerous Goods List, it shall be identified in transport by the proper shipping name in the Dangerous Goods List. Such substances may contain technical impurities (for example those deriving from the production process) or additives for stability or other purposes that do not affect its classification. However, a substance listed by name containing technical impurities or additives for stability or other purposes affecting its classification shall be considered a mixture or solution (see 2.0.2.2 and 2.0.2.5).

3.1.3.1 A mixture or solution is not subject to these Regulations if the characteristics, properties, form or physical state of the mixture or solution are such that it does not meet the criteria, including human experience criteria, for inclusion in any class.

3.1.3.2 A mixture or solution composed of a single predominant substance identified by name in the Dangerous Goods List and one or more substances not subject to these Regulations and/or traces of one or more substances identified by name in the Dangerous Goods List, shall be assigned the UN number and proper shipping name of the predominant substance named in the Dangerous Goods List unless:

- (a) The mixture or solution is identified by name in the Dangerous Goods List;
- (b) The name and description of the substance named in the Dangerous Goods List specifically indicate that they apply only to the pure substance;
- (c) The hazard class or division, subsidiary risk(s), packing group, or physical state of the mixture or solution is different from that of the substance named in the Dangerous Goods List; or
- (d) The hazard characteristics and properties of the mixture or solution necessitate emergency response measures that are different from those required for the substance identified by name in the Dangerous Goods List.

3.1.3.2.1 Qualifying words such as "MIXTURE" or "SOLUTION", as appropriate, shall be added as part of the proper shipping name, for example, "ACETONE SOLUTION". In addition, the concentration of the mixture or solution may also be indicated after the basic description of the mixture or solution, for example, "ACETONE 75% SOLUTION".

3.1.3.3 A mixture or solution that is not identified by name in the Dangerous Goods List and that is composed of two or more dangerous goods shall be assigned to an entry that has the proper shipping name, description, hazard class or division, subsidiary risk(s) and packing group that most precisely describe the mixture or solution."

Chapter 3.2

Dangerous Goods List

For UN Nos. 0323, 0366, 0441, 0445, 0455, 0456, 0460 and 0500, add "347" in column (6).

For UN Nos. 1002 and 1956, delete "292" in column (6).

For UN Nos. 1092, 1098, 1135, 1143, 1163, 1182, 1185, 1238, 1239, 1244, 1251, 1510, 1541, 1580, 1595, 1605, 1647, 1670, 1695, 1752, 1809, 1810, 1834, 1838, 1892, 1994, 2232, 2334, 2337, 2382, 2407, 2474, 2477, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2521, 2605, 2606, 2644, 2646, 2668, 3023, 3079 and 3246 add "354" in column (6).

For UN Nos. 1092, 1098, 1135, 1143, 1163, 1182, 1185, 1238, 1239, 1244, 1251, 1541, 1580, 1595, 1605, 1647, 1670, 1695, 1752, 1809, 1810, 1838, 1892, 1994, 2232, 2334, 2337, 2382, 2407, 2474, 2477, 2480, 2482, 2484, 2485, 2486, 2487, 2488, 2521, 2606, 2644, 2646, 2668, 3023, 3246 and 3381 to 3390 amend the code in column (7b) to read "E0".

For UN Nos. 1135, 1143, 1695, 1752, 1809, 1810, 2232, 2337, 2382, 2474, 2477, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2521, 2605, 2606, 2644, 2646, 3023, 3079 and 3246 replace "P001" with "P602" in column (8).

For UN Nos. 1135, 1182, 1541, 1605, 1670, 1810, 1838, 1892, 2232, 2382, 2474, 2477, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2521, 2605, 2606, 2644, 2668, 3079 and 3246 amend the code in column (10) to read "T20".

For UN Nos. 1135, 1182, 1251, 1541, 1580, 1605, 1670, 1810, 1834, 1838, 1892, 2232, 2382, 2474, 2477, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2521, 2605, 2606, 2644, 2668, 3079 and 3246 add "TP37" in column (11).

For UN Nos. 1194, 1222, 1261, 1865, 3094 (PG I) and 3301, replace "P099" with "P001" in column (8).

For UN Nos. 1251 and 1580 replace "T14" with "T22" in column (10).

For UN Nos. 1378, 1450, 1461, 1462, 1482 (PG II and III), 1549, 1556 (PG I, II and III), 1557 (PG I, II and III), 1564 (PG II and III), 1566 (PG II and III), 1583 (PG I, II and III), 1655 (PG I, II and III), 1935 (PG I, II and III), 2024 (PG I, II and III), 2025 (PG I, II and III), 2026 (PG I, II and III), 2291, 2570 (PG I, II and III), 2627, 2630, 2742, 2856, 2881 (PG I, II and III), 3141, 3144 (PG I, II and III), 3210 (PG II and III), 3212, 3213 (PG II and III), 3214, 3219 (PG II and III), 3256, 3257, 3258, 3283 (PG I, II and III), 3284 (PG I, II and III), 3285 (PG I, II and III), 3361, 3362 and 3440 (PG I, II and III) add "274" in column (6).

For UN Nos. 1391, 1649 and 2030 (packing group I), delete "329" in column (6).

For UN Nos. 1450 and 3213(PG II and III), add "350" in column (6).

For UN Nos. 1461 and 3210 (PG II and III), add "351" in column (6).

For UN Nos. 1482 (PG II and III) and 3214, add "353" in column (6).

For UN Nos. 1748 (PG II), 2208 and 2880 (PG II and III), delete "313" in column (6).

For UN Nos. 1810 and 1838, replace "8" with "6.1" in column (3) and add "8" in column (4).

For UN Nos. 1810, 1838, 2474, 2486 and 2668, replace "II" with "I" in column (5).

For UN Nos. 1810, 1834, 2474 and 2668 add "TP13" in column (11).

For UN Nos. 1950 and 2037, add "344" in column (6).

For UN Nos. 2474, 2486 and 2668 amend the value in column (7a) to read "0".

For UN Nos. 2481, 2483, 2486, 2605 and 3079, replace "3" with "6.1" in column (3) and replace "6.1" with "3" in column (4).

For UN Nos. 2910, 2916, 2917, 2919 and 3323, add "325" in column (6).

For UN Nos. 3077 and 3082, delete "179" in column (6).

For UN Nos. 3095 (PG I), 3096 (PG I) and 3124 (PG I), replace "P099" with "P002" in column (8).

For UN Nos. 3328, 3329, 3330 and 3331, add "326" in column (6).

For UN Nos. 3391 to 3394, 3395 to 3399 (PG I, II and III) and 3400 (PG II and III), add "TP36" in column (11).

For UN Nos. 3480 and 3481, add "348" in column (6).

UN 1040 Add "342" in column (6).

UN 1072 Add "355" in column (6).

UN 1266 (PG II and III) Add "163" in column (6).

UN 1267 (PG I, II and III) Add "357" in column (6).

UN 1462 Add "352" in column (6).

UN 1510 Replace "5.1" with "6.1" in column (3) and replace "6.1" with "5.1" in column (4).

UN 1580 Replace "P602" with "P601" in column (8).

- UN 1838 Replace "P001 IBC02" with "P602" in column (8).
- UN 1845 Delete "III" in column (5).
- UN 1977 Add "345 346" in column (6).
- UN 1999 (PG II and III) In column (2), amend the name and description to read "TARS, LIQUID, including road oils, and cutback bitumens". Amend the alphabetical index accordingly.
- UN 2481 Replace "P601" with "P602" in column (8).
- UN 2668 Replace "P001 IBC99" with "P602" in column (8).
- UN 3166 In column (2), insert "or ENGINE, FUEL CELL, FLAMMABLE GAS POWERED or ENGINE, FUEL CELL, FLAMMABLE LIQUID POWERED or VEHICLE, FUEL CELL, FLAMMABLE GAS POWERED or VEHICLE, FUEL CELL, FLAMMABLE LIQUID POWERED" at the end and in column (6), add "356". Amend the alphabetical index accordingly.
- UN 3212 Add "349" in column (6).
- UN 3359 In column (2), amend the proper shipping name to read "FUMIGATED CARGO TRANSPORT UNIT". Amend the alphabetical index accordingly.
- UN 3468 Add "356" in column (6) and replace "P099" with "P205" in column (8).
- UN 3474 In column (2), amend the name and description to read "1-HYDROXYBENZOTRIAZOLE MONOHYDRATE" and in column (6), delete "28". Amend the alphabetical index accordingly.

Add the following new entries and amend the alphabetical index and Appendix A accordingly:

| (1) | (2) | (3) | (4) | (5) | (6) | (7a) | (7b) | (8) | (9) | (10) | (11) |
|------|--|------|----------|-----|------------|------|------|-----------------------|------|------|-------------|
| 0509 | POWDER, SMOKELESS† | 1.4C | | | | 0 | E0 | P114(b) | PP48 | | |
| 1471 | LITHIUM HYPOCHLORITE, DRY or LITHIUM HYPOCHLORITE MIXTURE | 5.1 | | III | 223 | 5 kg | E1 | P002 IBC08 LP02 | B3 | T1 | TP33 |
| 3482 | ALKALI METAL DISPERSION, FLAMMABLE or ALKALINE EARTH METAL DISPERSION, FLAMMABLE | 4.3 | 3 | I | 182 183 | 0 | E0 | P402 | | | |
| 3483 | MOTOR FUEL ANTI-KNOCK MIXTURE, FLAMMABLE | 6.1 | 3 | I | | 0 | E5 | P602 | | T14 | TP2 TP13 |
| 3484 | HYDRAZINE AQUEOUS SOLUTION, FLAMMABLE, with more than 37% hydrazine, by mass | 8 | 3 6.1 | I | | 0 | E0 | P001 | | T10 | TP2 TP13 |

| (1) | (2) | (3) | (4) | (5) | (6) | (7a) | (7b) | (8) | (9) | (10) | (11) |
|------|---|-----|----------|-----|------------|------|------|-----------------------|---------------------|------|-------------|
| 3485 | CALCIUM HYPOCHLORITE, DRY, CORROSIVE or CALCIUM HYPOCHLORITE MIXTURE, DRY, CORROSIVE with more than 39% available chlorine (8.8% available oxygen) | 5.1 | 8 | II | 314 | 1 kg | E2 | P002 IBC08 | PP85 B2, B4, B13 | | |
| 3486 | CALCIUM HYPOCHLORITE MIXTURE, DRY, CORROSIVE with more than 10% but not more than 39% available chlorine | 5.1 | 8 | III | 314 | 5 kg | E1 | P002 IBC08 LP02 | PP85 B3, B13 | | |
| 3487 | CALCIUM HYPOCHLORITE, HYDRATED, CORROSIVE or CALCIUM HYPOCHLORITE, HYDRATED MIXTURE, CORROSIVE, with not less than 5.5% but not more than 16% water | 5.1 | 8 | II | 314 322 | 1 kg | E2 | P002 IBC08 | PP85 B2, B4, B13 | | |
| 3487 | CALCIUM HYPOCHLORITE, HYDRATED, CORROSIVE or CALCIUM HYPOCHLORITE, HYDRATED MIXTURE, CORROSIVE, with not less than 5.5% but not more than 16% water | 5.1 | 8 | III | 223 314 | 5 kg | E1 | P002 IBC08 | PP85 B4 | | |
| 3488 | TOXIC BY INHALATION LIQUID, FLAMMABLE, CORROSIVE, N.O.S. with an inhalation toxicity lower than or equal to 200 ml/m ³ and saturated vapour concentration greater than or equal to 500 LC ₅₀ | 6.1 | 3 8 | I | 274 | 0 | E0 | P601 | | T22 | TP2 TP13 |
| 3489 | TOXIC BY INHALATION LIQUID, FLAMMABLE, CORROSIVE, N.O.S. with an inhalation toxicity lower than or equal to 1000 ml/m ³ and saturated vapour concentration greater than or equal to 10 LC ₅₀ | 6.1 | 3 8 | I | 274 | 0 | E0 | P602 | | T20 | TP2 TP13 |
| 3490 | TOXIC BY INHALATION LIQUID, WATER-REACTIVE, FLAMMABLE, N.O.S. with an inhalation toxicity lower than or equal to 200 ml/m ³ and saturated vapour concentration greater than or equal to 500 LC ₅₀ | 6.1 | 4.3 3 | I | 274 | 0 | E0 | P601 | | T22 | TP2 TP13 |
| 3491 | TOXIC BY INHALATION LIQUID, WATER-REACTIVE, FLAMMABLE, N.O.S. with an inhalation toxicity lower than or equal to 1000 ml/m ³ and saturated vapour concentration greater than or equal to 10 LC ₅₀ | 6.1 | 4.3 3 | I | 274 | 0 | E0 | P602 | | T20 | TP2 TP13 |

| (1) | (2) | (3) | (4) | (5) | (6) | (7a) | (7b) | (8) | (9) | (10) | (11) |
|------|--|-----|--------|-----|-----|------|------|---------------|-----|------|-------------|
| 3492 | TOXIC BY INHALATION LIQUID, CORROSIVE, FLAMMABLE, N.O.S. with an inhalation toxicity lower than or equal to 200 ml/m ³ and saturated vapour concentration greater than or equal to 500 LC ₅₀ | 6.1 | 8 3 | I | 274 | 0 | E0 | P601 | | T22 | TP2 TP13 |
| 3493 | TOXIC BY INHALATION LIQUID, CORROSIVE, FLAMMABLE, N.O.S. with an inhalation toxicity lower than or equal to 1000 ml/m ³ and saturated vapour concentration greater than or equal to 10 LC ₅₀ | 6.1 | 8 3 | I | 274 | 0 | E0 | P602 | | T20 | TP2 TP13 |
| 3494 | PETROLEUM SOUR CRUDE OIL, FLAMMABLE, TOXIC | 3 | 6.1 | I | 343 | 0 | E0 | P001 | | T14 | TP2 TP13 |
| 3494 | PETROLEUM SOUR CRUDE OIL, FLAMMABLE, TOXIC | 3 | 6.1 | II | 343 | 1 L | E2 | P001 IBC02 | | T7 | TP2 |
| 3494 | PETROLEUM SOUR CRUDE OIL, FLAMMABLE, TOXIC | 3 | 6.1 | III | 343 | 5 L | E1 | P001 IBC03 | | T4 | TP1 |
| 3495 | IODINE | 8 | 6.1 | III | 279 | 5 kg | E1 | P002 IBC08 | B3 | T1 | TP33 |

Chapter 3.3

3.3.1 **SP172** At the end, add the following new sentence: "For packing, see also 4.1.9.1.5."

SP179 Amend to read as follows: "*Deleted.*".

SP188 In (b), at the end of the second sentence, after "case", add the following text: ", except those manufactured before 1 January 2009 which may be transported in accordance with this special provision and without this marking until 31 December 2010".

In (f), at the beginning, insert "button cell batteries installed in equipment (including circuit boards), or" after "Except for packages containing".

SP198 Insert ", perfumery products" after "paints" and ", 1266" after "1263" respectively.

SP219 Amend to read as follows:

"219 Genetically modified microorganisms (GMMOs) and genetically modified organisms (GMOs) packed and marked in accordance with packing instruction P904 are not subject to any other requirements in these Regulations.

If GMMOs or GMOs meet the definition in Chapter 2.6 of a toxic substance or an infectious substance and the criteria for inclusion in Division 6.1 or 6.2 the requirements in these Regulations for transporting toxic substances or infectious substances apply."

SP240 Add the following new sentence at the end: "Vehicles which contain a fuel cell shall be consigned under the entries UN 3166 VEHICLE, FUEL CELL POWERED WITH FLAMMABLE GAS or UN 3166 VEHICLE, FUEL CELL POWERED WITH FLAMMABLE LIQUID, as appropriate."

SP290 Amend to read as follows:

"290 When this radioactive material meets the definitions and criteria of other classes or divisions as defined in Part 2, it shall be classified in accordance with the following:

- (a) Where the substance meets the criteria for dangerous goods in excepted quantities as set out in Chapter 3.5, the packagings shall be in accordance with 3.5.2 and meet the testing requirements of 3.5.3. All other requirements applicable to radioactive material, excepted packages as set out in 1.5.1.5 shall apply without reference to the other class or division;
- (b) Where the quantity exceeds the limits specified in 3.5.1.2 the substance shall be classified in accordance with the predominant subsidiary risk. The dangerous goods transport document shall describe the substance with the UN number and proper shipping name applicable to the other class supplemented with the name applicable to the radioactive excepted package according to Column 2 in the Dangerous Goods List of Chapter 3.2, and shall be transported in accordance with the provisions applicable to that UN number. An example of the information shown on the dangerous goods transport document is:

UN 1993, Flammable liquid, n.o.s. (ethanol and toluene mixture),
Radioactive material, excepted package – limited quantity of material,
Class 3, PG II.

In addition, the requirements of 2.7.2.4.1 shall apply.

- (c) The provisions of Chapter 3.4 for the transport of dangerous goods packed in limited quantities shall not apply to substances classified in accordance with sub-paragraph (b);
- (d) When the substance meets a special provision that exempts this substance from all dangerous goods provisions of the other classes it shall be classified in accordance with the applicable UN number of class 7 and all requirements specified in 1.5.1.5 shall apply."

SP292 Amend to read as follows: "*Deleted*".

SP302 Amend to read as follows:

"**302** Fumigated cargo transport units containing no other dangerous goods are only subject to the provisions of 5.5.2.".

SP304 Add the following new paragraph at the end:

"Nevertheless, in the case of application of this exemption to sea transport of nickel-metal hydride batteries, other than button cells, the following requirements apply:

- (a) The consignment shall be accompanied by a document describing the batteries as "nickel-metal hydride batteries" including a declaration signed by the consignor that the batteries are securely packed and protected against short-circuits and that stowage away from sources of heat is required;
- (b) Unit loads and cargo transport units shall be marked "STOW AWAY FROM SOURCES OF HEAT" in capital letters not less than 65 mm high."

SP312 At the beginning, add the following new first paragraph:

"Vehicles or machinery powered by a fuel cell engine shall be consigned under the entries UN 3166 VEHICLE, FUEL CELL, FLAMMABLE GAS POWERED or UN 3166 VEHICLE, FUEL CELL, FLAMMABLE LIQUID POWERED, or UN 3166 ENGINE, FUEL CELL, FLAMMABLE GAS POWERED or UN 3166 ENGINE, FUEL CELL, FLAMMABLE LIQUID POWERED as appropriate. These entries include hybrid electric vehicles powered by both a fuel cell and an internal combustion engine with wet batteries, sodium batteries or lithium batteries, transported with the battery(ies) installed."

In the second paragraph (existing first paragraph), at the beginning, replace "Vehicles" with "Other vehicles".

SP313 and 329 Amend to read as follows: "*Deleted.*".

Add the following new special provisions:

"**342** Glass inner receptacles (such as ampoules or capsules) intended only for use in sterilization devices, when containing less than 30 ml of ethylene oxide per inner packaging with not more than 300 ml per outer packaging, may be transported in accordance with the provisions in Chapter 3.5, irrespective of the indication of E0 in column 7b of the Dangerous Goods List provided that:

- (a) After filling, each glass inner receptacle has been determined to be leak-tight by placing the glass inner receptacle in a hot water bath at a temperature, and for a period of time, sufficient to ensure that an internal pressure equal to the vapour pressure of ethylene oxide at 55 °C is achieved. Any glass inner receptacle showing evidence of leakage, distortion or other defect under this test shall not be transported under the terms of this special provision;
 - (b) In addition to the packaging required by 3.5.2, each glass inner receptacle is placed in a sealed plastics bag compatible with ethylene oxide and capable of containing the contents in the event of breakage or leakage of the glass inner receptacle; and
 - (c) Each glass inner receptacle is protected by a means of preventing puncture of the plastics bag (e.g. sleeves or cushioning) in the event of damage to the packaging (e.g. by crushing).
- 343** This entry applies to crude oil containing hydrogen sulphide in sufficient concentration that vapours evolved from the crude oil can present an inhalation hazard. The packing group assigned shall be determined by the flammability hazard and inhalation hazard, in accordance with the degree of danger presented.
- 344** The provisions of 6.2.4 shall be met.
- 345** This gas contained in open cryogenic receptacles with a maximum capacity of 1 litre constructed with glass double walls having the space between the inner and outer wall evacuated (vacuum insulated) is not subject to these Regulations provided each receptacle is transported in an outer packaging with suitable cushioning or absorbent materials to protect it from impact damage.
- 346** Open cryogenic receptacles conforming to the requirements of packing instruction P203 and containing no dangerous goods except for UN 1977, nitrogen, refrigerated liquid, which is fully absorbed in a porous material are not subject to any other requirements of these Regulations.
- 347** This entry shall only be used if the results of Test series 6 (d) of Part I of the Manual of Tests and Criteria have demonstrated that any hazardous effects arising from functioning are confined within the package.
- 348** Batteries manufactured after 31 December 2011 shall be marked with the Watt-hour rating on the outside case.
- 349** Mixtures of a hypochlorite with an ammonium salt are not to be accepted for transport. UN No. 1791 hypochlorite solution is a substance of Class 8.

- 350** Ammonium bromate and its aqueous solutions and mixtures of a bromate with an ammonium salt are not to be accepted for transport.
- 351** Ammonium chlorate and its aqueous solutions and mixtures of a chlorate with an ammonium salt are not to be accepted for transport.
- 352** Ammonium chlorite and its aqueous solutions and mixtures of a chlorite with an ammonium salt are not to be accepted for transport.
- 353** Ammonium permanganate and its aqueous solutions and mixtures of a permanganate with an ammonium salt are not to be accepted for transport.
- 354** This substance is toxic by inhalation.
- 355** Oxygen cylinders for emergency use transported under this entry may include installed actuating cartridges (cartridges, power device of Division 1.4, Compatibility Group C or S), without changing the classification of Division 2.2 provided the total quantity of deflagrating (propellant) explosives does not exceed 3.2 g per oxygen cylinder. The cylinders with the installed actuating cartridges as prepared for transport shall have an effective means of preventing inadvertent activation.
- 356** Metal hydride storage system(s) installed in conveyances or in completed conveyance components or intended to be installed in conveyances shall be approved by the competent authority before acceptance for transport. The transport document shall include an indication that the package was approved by the competent authority or a copy of the competent authority approval shall accompany each consignment.
- 357** Petroleum crude oil containing hydrogen sulphide in sufficient concentration that vapours evolved from the crude oil can present an inhalation hazard shall be consigned under the entry UN 3494 PETROLEUM SOUR CRUDE OIL, FLAMMABLE, TOXIC."

Chapter 3.4

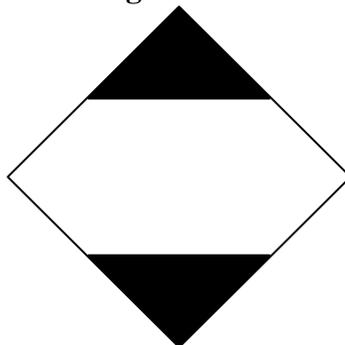
- 3.4.2 Add a new second sentence to read as follows: "Intermediate packagings may be used."
- 3.4.3 Replace the end of the first sentence after "with this Chapter" with the following new sentence: "Inner packagings that are liable to break or be easily punctured, such as those made of glass, porcelain, stoneware or certain plastics, shall be placed in suitable intermediate packagings meeting the provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8, and be so designed that they meet the construction requirements of 6.1.4."

3.4.6 Delete the first sentence and amend the second sentence to read as follows: "Any segregation provisions for dangerous goods packed in limited quantities need not apply within a vehicle or freight container."

3.4.7 to 3.4.9 Replace with the following new sub-sections 3.4.7 to 3.4.11:

"3.4.7 Except for air transport, packages containing dangerous goods in limited quantities need not be labelled nor marked with the proper shipping name or UN number of the contents, but shall bear the marking shown in Figure 3.4.1 below. The marking shall be readily visible, legible and able to withstand open weather exposure without a substantial reduction in effectiveness.

Figure 3.4.1



Marking for packages containing limited quantities

Top and bottom portions and line shall be black, centre area white or suitable contrasting background.

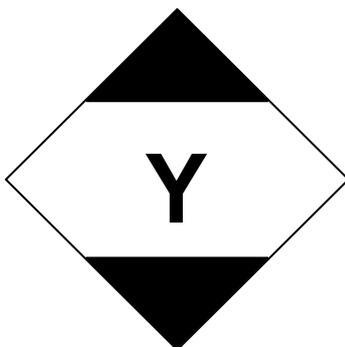
Minimum dimensions: 100 mm x 100 mm.

Minimum width of line forming diamond: 2 mm.

If the size of the package so requires, the dimension may be reduced, to be not less than 50 mm x 50 mm provided the marking remains clearly visible.

3.4.8 Packages containing dangerous goods consigned for air transport in conformity with the provisions of Part 3, Chapter 4 of the ICAO Technical Instructions for the Safe Transport of Dangerous Goods by Air shall bear the marking shown in Figure 3.4.2 below. The marking shall be readily visible, legible and able to withstand open weather exposure without a substantial reduction in effectiveness.

Figure 3.4.2



Marking for packages containing limited quantities conforming to Part 3, Chapter 4 of the ICAO Technical Instructions for the Safe Transport of Dangerous Goods by Air

Top and bottom portions and line shall be black, centre area white or suitable contrasting background.

Minimum dimensions: 100 mm x 100 mm.

Minimum width of line forming diamond: 2 mm.

The symbol "Y" shall be placed in the centre of the mark and shall be clearly visible.

If the size of the package so requires, the dimension may be reduced, to be not less than 50 mm x 50 mm provided the marking remains clearly visible.

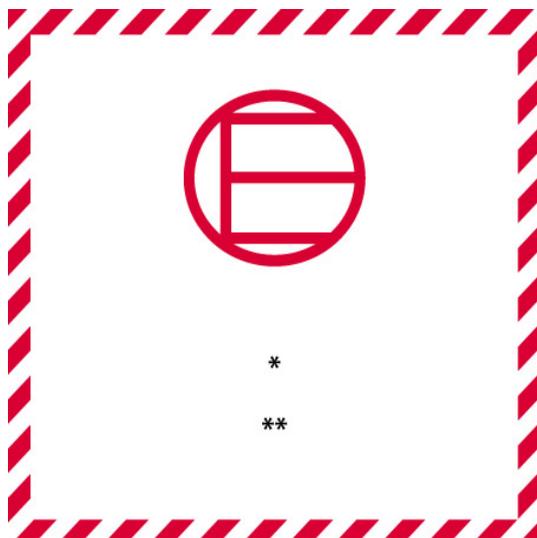
3.4.9 Packages containing dangerous goods bearing the marking shown in Figure 3.4.2 shall be deemed to meet the provisions of sections 3.4.1 to 3.4.5 of this Chapter and need not bear the marking shown in Figure 3.4.1.

3.4.10 Except for air and sea transport the documentation provisions of 5.4.1 need not apply to dangerous goods packed in limited quantities. When transported by air or sea the words "limited quantity" or "LTD QTY" shall be included after the description of the dangerous goods packed in limited quantities (see 5.4.1.5.2).

3.4.11 When packages containing dangerous goods in limited quantities are placed in an overpack, the overpack shall be marked with the word "OVERPACK" and the marking required by this Chapter unless the markings representative of all dangerous goods in the overpack are visible."

Chapter 3.5

Figure 3.5.1 Amend the figure to read as follows:



Excepted quantities mark

Hatching and symbol of the same colour, black or red,
on white or suitable contrasting background

- * *The Class or, when assigned, the Division number(s) shall be shown in this location.*
- ** *The name of the consignor or of the consignee shall be shown in this location if not shown elsewhere on the package.*

PART 4

Chapter 4.1

4.1.1.1 At the end, replace "or reused" with ", reused or remanufactured".

4.1.1.2 Add a new sub-paragraph (c) to read as follows:

"(c) Shall not allow permeation of the dangerous goods that could constitute a danger under normal conditions of transport."

4.1.1.3 Amend the second sentence to read as follows: "However, IBCs manufactured before 1 January 2011 and conforming to a design type which has not passed the vibration test of 6.5.6.13 or which was not required to meet the criteria of 6.5.6.9.5 (d) at the time it was subjected to the drop test, may still be used."

4.1.4.1 **P114** (b) Amend special packing provision PP48 to read as follows:

"PP48 For UN Nos. 0508 and 0509, metal packagings shall not be used."

P200 (4) In special packing provision "k", amend the first sentence to read as follows: "Valve outlets shall be fitted with pressure retaining gas-tight plugs or caps having threads that match those of the valves outlets.". Amend the seventh paragraph ("Each valve shall have a taper threaded connection...") to read as follows:

"Each valve shall be capable of withstanding the test pressure of the pressure receptacle and be connected directly to the pressure receptacle by either a taper thread or other means which meets the requirements of ISO 10692-2:2001."

In special packing provision "q", in the first sentence, at the beginning, replace "The valves" with "Valve outlets". In the second sentence, at the end, replace "manifold outlet valve" with "outlet of the manifold valve" and add "pressure retaining" before "gas-tight plug". Add a new third sentence to read as follows: "Gas-tight plugs or caps shall have threads that match those of the valves outlets."

Add the following new special packing provision "ra":

"ra: This gas may also be packed in capsules under the following conditions:

- (a) The mass of gas shall not exceed 150 g per capsule;
- (b) The capsules shall be free from faults liable to impair the strength;
- (c) The leakproofness of the closure shall be ensured by an additional device (cap, crown, seal, binding, etc.) capable of preventing any leakage of the closure during transport;
- (d) The capsules shall be placed in an outer packaging of sufficient strength. A package shall not weigh more than 75 kg."

P200 In Table 2, against UN 1037, add "ra" in column "Special packing provisions".

P203 Amend to read as follows:

| P203 | PACKING INSTRUCTION | P203 |
|---|----------------------------|-------------|
| This instruction applies to Class 2 refrigerated liquefied gases. | | |
| Requirements for closed cryogenic receptacles: | | |
| <p>(1) The general requirements of 4.1.6.1 shall be met.</p> <p>(2) The requirements of Chapter 6.2 shall be met.</p> <p>(3) The closed cryogenic receptacles shall be so insulated that they do not become coated with frost.</p> <p>(4) Test pressure Refrigerated liquids shall be filled in closed cryogenic receptacles with the following minimum test pressures:</p> <p>(a) For closed cryogenic receptacles with vacuum insulation, the test pressure shall not be less than 1.3 times the sum of the maximum internal pressure of the filled receptacle, including during filling and discharge, plus 100 kPa (1 bar);</p> <p>(b) For other closed cryogenic receptacles, the test pressure shall be not less than 1.3 times the maximum internal pressure of the filled receptacle, taking into account the pressure developed during filling and discharge.</p> <p>(5) Degree of filling For non-flammable, non-toxic refrigerated liquefied gases the volume of liquid phase at the filling temperature and at a pressure of 100 kPa (1 bar) shall not exceed 98% of the water capacity of the pressure receptacle. For flammable refrigerated liquefied gases the degree of filling shall remain below the level at which, if the contents were raised to the temperature at which the vapour pressure equalled the opening pressure of the relief valve, the volume of the liquid phase would reach 98% of the water capacity at that temperature.</p> <p>(6) Pressure-relief devices Closed cryogenic receptacles shall be fitted with at least one pressure-relief device.</p> <p>(7) Compatibility Materials used to ensure the leakproofness of the joints or for the maintenance of the closures shall be compatible with the contents. In the case of receptacles intended for the transport of oxidizing gases, (i.e. with a subsidiary risk of 5.1) these materials shall not react with these gases in a dangerous manner.</p> | | |
| Requirements for open cryogenic receptacles: | | |
| <p>Only the following non oxidizing refrigerated liquefied gases of Division 2.2 may be transported in open cryogenic receptacles: UN Nos. 1913, 1951, 1963, 1970, 1977, 2591, 3136 and 3158.</p> <p>Open cryogenic receptacles shall be constructed to meet the following requirements:</p> <p>(1) The receptacles shall be designed, manufactured, tested and equipped in such a way as to withstand all conditions, including fatigue, to which they will be subjected during their normal use and during normal conditions of transport.</p> <p>(2) The capacity shall be not more than 450 litres.</p> <p>(3) The receptacle shall have a double wall construction with the space between the inner and outer wall being evacuated (vacuum insulation). The insulation shall prevent the formation of hoar frost on the exterior of the receptacle.</p> <p>(4) The materials of construction shall have suitable mechanical properties at the service temperature.</p> <p>(5) Materials which are in direct contact with the dangerous goods shall not be affected or weakened by the dangerous goods intended to be transported and shall not cause a dangerous effect, e.g. catalysing a reaction or reacting with the dangerous goods.</p> | | |

| P203 | PACKING INSTRUCTION | P203 |
|------|--|------|
| (6) | Receptacles of glass double wall construction shall have an outer packaging with suitable cushioning or absorbent materials which withstand the pressures and impacts liable to occur under normal conditions of transport. | |
| (7) | The receptacle shall be designed to remain in an upright position during transport, e.g. have a base whose smaller horizontal dimension is greater than the height of the centre of gravity when filled to capacity or be mounted on gimbals. | |
| (8) | The openings of the receptacles shall be fitted with devices allowing gases to escape, preventing any splashing out of liquid, and so configured that they remain in place during transport. | |
| (9) | Open cryogenic receptacles shall bear the following marks permanently affixed e.g. by stamping, engraving or etching: <ul style="list-style-type: none"> - The manufacturer's name and address; - The model number or name; - The serial or batch number; - The UN number and proper shipping name of gases for which the receptacle is intended; - The capacity of the receptacle in litres. | |

P601 (1) and P602 (1) In the first indent, replace "capacity of 1 litre" with "net quantity of 1 litre"

P620 Add the following new additional requirement:

"4. Other dangerous goods shall not be packed in the same packaging as Division 6.2 infectious substances unless they are necessary for maintaining the viability, stabilizing or preventing degradation or neutralizing the hazards of the infectious substances. A quantity of 30 ml or less of dangerous goods included in Classes 3, 8 or 9 may be packed in each primary receptacle containing infectious substances. These small quantities of dangerous goods of Classes 3, 8 or 9 are not subject to any additional requirements of these Regulations when packed in accordance with this packing instruction."

Renumber existing additional requirement 4. as 5.

P621 In the second sentence, insert ", except 4.1.1.15," after "4.1.1".

P804 (1) Replace "metal receptacles" with "metal or rigid plastics receptacle".

P901 Replace "Maximum quantity of dangerous goods per outer packaging: 10 kg." with "The quantity of dangerous goods per outer packaging shall not exceed 10 kg, excluding the mass of any carbon dioxide, solid, (dry ice) used as a refrigerant."

At the end of the additional requirement, add the following new text:

"Dry ice

When carbon dioxide, solid, (dry ice) is used as a refrigerant, the packaging shall be designed and constructed to permit the release of the gaseous carbon dioxide to prevent the build up of pressure that could rupture the packaging."

P904 Amend to read as follows:

| P904 | PACKING INSTRUCTION | P904 |
|--|---------------------|------|
| <p>This instruction applies to UN No. 3245.</p> | | |
| <p>The following packagings are authorized:</p> <p>(1) Packagings meeting the provisions of 4.1.1.1, 4.1.1.2, 4.1.1.4, 4.1.1.8 and 4.1.3 and so designed that they meet the construction requirements of 6.1.4. Outer packagings constructed of suitable material of adequate strength and designed in relation to the packaging capacity and its intended use shall be used. Where this packing instruction is used for the transport of inner packagings of combination packagings the packaging shall be designed and constructed to prevent inadvertent discharge during normal conditions of transport.</p> <p>(2) Packagings, which need not conform to the packaging test requirements of Part 6, but conforming to the following:</p> <p>(a) An inner packaging comprising:</p> <p>(i) primary receptacle(s) and a secondary packaging, the primary receptacle(s) or the secondary packaging shall be leakproof for liquids or siftproof for solids;</p> <p>(ii) for liquids, absorbent material placed between the primary receptacle(s) and the secondary packaging. The absorbent material shall be in a quantity sufficient to absorb the entire contents of the primary receptacle(s) so that any release of the liquid substance will not compromise the integrity of the cushioning material or of the outer packaging;</p> <p>(iii) if multiple fragile primary receptacles are placed in a single secondary packaging they shall be individually wrapped or separated to prevent contact between them;</p> <p>(b) An outer packaging shall be strong enough for its capacity, mass and intended use, and with a smallest external dimension of at least 100 mm.</p> <p>For transport, the mark illustrated below shall be displayed on the external surface of the outer packaging on a background of a contrasting colour and shall be clearly visible and legible. The mark shall be in the form of a square set at an angle of 45° (diamond-shaped) with each side having a length of at least 50 mm; the width of the line shall be at least 2 mm and the letters and numbers shall be at least 6 mm high.</p> <div style="text-align: center;">  </div> | | |
| <p>Additional requirement:</p> <p><u>Ice, dry ice and liquid nitrogen</u></p> <p>When dry ice or liquid nitrogen is used, all applicable requirements of these Regulations shall be met. When used, ice or dry ice shall be placed outside the secondary packagings or in the outer packaging or an overpack. Interior supports shall be provided to secure the secondary packagings in the original position after the ice or dry ice has dissipated. If ice is used, the outside packaging or overpack shall be leakproof. If carbon dioxide, solid (dry ice) is used, the packaging shall be designed and constructed to permit the release of carbon dioxide gas to prevent a build-up of pressure that could rupture the packagings and the package (the outer packaging or the overpack) shall be marked "Carbon dioxide, solid" or "Dry ice".</p> <p>The primary receptacle and the secondary packaging shall maintain their integrity at the temperature of the refrigerant used as well as the temperatures and the pressures which could result if refrigeration were lost.</p> | | |

4.1.4.1 Add the following new packing instruction:

| P205 | PACKING INSTRUCTION | P205 |
|--|---|------|
| This instruction applies to UN No. 3468. | | |
| (1) | For metal hydride storage systems, the general packing requirements of 4.1.6.1 shall be met. | |
| (2) | Only pressure receptacles not exceeding 150 litres in water capacity and having a maximum developed pressure not exceeding 25 MPa are covered by this packing instruction. | |
| (3) | Metal hydride storage systems meeting the applicable requirements for the construction and testing of pressure receptacles containing gas of Chapter 6.2 are authorised for the transport of hydrogen only. | |
| (4) | When steel pressure receptacles or composite pressure receptacles with steel liners are used, only those bearing the "H" mark, in accordance with 6.2.2.9.1(j) shall be used. | |
| (5) | Metal hydride storage systems shall meet the service conditions, design criteria, rated capacity, type tests, batch tests, routine tests, test pressure, rated charging pressure and provisions for pressure relief devices for transportable metal hydride storage systems specified in ISO 16111:2008 and their conformity and approval shall be assessed in accordance with 6.2.2.5. | |
| (6) | Metal hydride storage systems shall be filled with hydrogen at a pressure not exceeding the rated charging pressure shown in the permanent markings on the system as specified by ISO 16111:2008. | |
| (7) | The periodic test requirements for a metal hydride storage system shall be in accordance with ISO 16111:2008 and carried out in accordance with 6.2.2.6, and the maximum interval between periodic inspections shall not exceed five years. | |

4.1.4.2 **IBC04** Replace ", 21N, 31A, 31B and 31N" with "and 21N".

IBC05 In (1), replace ", 21N, 31A, 31B and 31N" with "and 21N".
 In (2), replace ", 21H2, 31H1 and 31H2" with "and 21H2".
 In (3), replace ", 21HZ1 and 31HZ1" with "and 21HZ1".

IBC06, IBC07 and IBC08

In (1), replace ", 21N, 31A, 31B and 31N" with "and 21N".
 In (2), replace ", 21H2, 31H1 and 31H2" with "and 21H2".
 In (3), replace ", 21HZ2, 31HZ1 and 31HZ2" with "and 21HZ2".

IBC06 Amend the additional requirement to read as follows:

"Additional requirement:

Where the solid may become liquid during transport see 4.1.3.4."

IBC07 Amend the additional requirement to read as follows:

"Additional requirements:

1. Where the solid may become liquid during transport see 4.1.3.4.
2. Liners of wooden IBCs shall be siftproof."

IBC08 Add the following new additional requirement:

"Additional requirement:

Where the solid may become liquid during transport see 4.1.3.4."

IBC520 For UN No. 3109, in the entry for Peroxyacetic acid, stabilized, not more than 17% (last entry), add "31H2" in column "Type of IBC" and add "1500" in column "Maximum quantity (litres)" against this code.

IBC620 In the second sentence, insert ", except 4.1.1.15" after "4.1.1".

4.1.5.5 Amend to read as follows:

"4.1.5.5 Unless otherwise specified in these Regulations, packagings, including IBCs and large packagings, shall conform to the requirements of chapters 6.1, 6.5 or 6.6, as appropriate, and shall meet their test requirements for packing group II."

4.1.6.1.8 In the last paragraph, replace "the requirements of annex B of ISO 10297:1999" with "the requirements of annex A of ISO 10297:2006". At the end, add the following new paragraph:

"For metal hydride storage systems, the valve protection requirements specified in ISO 16111:2008 shall be met."

4.1.6.1.10 In the first sentence, insert "or P205, as applicable" after "P200".

4.1.7.1 Amend the heading to read "Use of packagings (except IBCs)".

4.1.7.1.1 Amend to read as follows:

"4.1.7.1.1 Packagings for organic peroxides and self-reactive substances shall conform to the requirements of Chapter 6.1 and shall meet its test requirements for packing group II."

4.1.7.2.1 At the end, add the following new sentence: "IBCs shall conform to the requirements of Chapter 6.5 and shall meet its test requirements for packing group II."

4.1.9.1.3 In the first sentence, after "package", insert ", other than an excepted package,".

4.1.9.1.5 Amend to read as follows:

"4.1.9.1.5 For radioactive material having other dangerous properties the package design shall take into account those properties. Radioactive material with a subsidiary risk, packaged in packages that do not require competent authority approval, shall be transported in packagings, IBCs, tanks or bulk containers fully complying with the requirements of the relevant chapters of Part 6 as appropriate, as well as applicable requirements of chapters 4.1, 4.2 or 4.3 for that subsidiary risk."

4.1.9.2.3 (b) Replace "2.7.2.3.2" with "2.7.1.2".

4.1.9.3 (a) Insert "(or mass of each fissile nuclide for mixtures when appropriate)" after "a mass of fissile material".

Chapter 4.2

4.2.5.2.6 In the table for portable tank instructions T1-T22, add a reference to a new footnote b after "Bottom opening requirements" in the heading of the last column. The footnote shall read as follows:

"^b When this column indicates "not allowed", bottom openings are not permitted when the substance to be transported is a liquid (see 6.7.2.6.1). When the substance to be transported is a solid at all temperatures encountered under normal conditions of transport, bottom openings conforming to the requirements of 6.7.2.6.2 are authorized."

4.2.5.3 At the end, add the following new special provisions:

"TP36 Fusible elements in the vapour space may be used on portable tanks.

TP37 The portable tank instructions prescribed in the Model Regulations annexed to the 15th revised edition of the Recommendations on the Transport of Dangerous Goods may continue to be applied until 31 December 2016."

4.2.6 Add a new section 4.2.6 to read as follows:

"4.2.6 Transitional measures

Portable tanks and MEGCs manufactured before 1 January 2012, that conform to the marking requirements of 6.7.2.20.1, 6.7.3.16.1, 6.7.4.15.1 or 6.7.5.13.1 of the Model Regulations on the Transport of Dangerous Goods annexed to the 15th revised edition of the Recommendations on the Transport of Dangerous Goods, as relevant, may continue to be used if they comply with all other relevant requirements of the current edition of the Model Regulations including, when applicable, the requirement of 6.7.2.20.1 (g) for marking the symbol "S" on the plate when the shell or the compartment is divided by surge plates into sections of not more than 7 500 litres capacity. When the shell, or the compartment, was already divided by surge plates into sections of not more than 7 500 litres capacity before 1 January 2012, the capacity of the shell, or respectively of the compartment, need not be supplemented with the symbol "S" until the next periodic inspection or test according to 6.7.2.19.5 is performed.

Portable tanks manufactured before 1 January 2014 need not be marked with the portable tank instruction as required in 6.7.2.20.2, 6.7.3.16.2 and 6.7.4.15.2 until the next periodic inspection and test."

PART 5

Chapter 5.1

5.1.5.1.4 (a) Insert "the competent authority of the country of origin of the shipment and to" after "have been submitted to".

5.1.5.1.4 (b) At the end, insert "the competent authority of the country of origin of the shipment and" after "shall notify".

5.1.5.1.4 (d) In sub-paragraph (v), insert "(or of each fissile nuclide for mixtures when appropriate)" after "the mass of fissile material".

5.1.5.3.4 (d) and (e) Replace "when otherwise specified in the competent authority approval certificate of the country of origin of design (see 2.7.2.4.6)" with "under the provisions of 5.1.5.3.5".

5.1.5.3.5 Add a new paragraph 5.1.5.3.5 to read as follows:

"5.1.5.3.5 In all cases of international transport of packages requiring competent authority design or shipment approval, for which different approval types apply in the different countries concerned by the shipment, the categorization shall be in accordance with the certificate of the country of origin of design".

5.1.5.4 Add a new sub-section 5.1.5.4 to read as follows:

"5.1.5.4 *Specific provisions for excepted packages*

5.1.5.4.1 Excepted packages shall be legibly and durably marked on the outside of the packaging with:

- (a) The UN number preceded by the letters "UN";
- (b) An identification of either the consignor or consignee, or both; and
- (c) The permissible gross mass if this exceeds 50 kg.

5.1.5.4.2 The documentation requirements of Chapter 5.4 do not apply to excepted packages of radioactive material, except that the UN number preceded by the letters "UN" shall be shown on a transport document such as a bill of lading, air waybill or other similar document."

Chapter 5.2

5.2.1.5.2 Amend to read "The marking of excepted packages shall be as required by 5.1.5.4.1."

5.2.1.5.8 Amend to read as follows:

"5.2.1.5.8 In all cases of international transport of packages requiring competent authority design or shipment approval, for which different approval types apply in the different countries concerned by the shipment, marking shall be in accordance with the certificate of the country of origin of the design."

5.2.1.6.1 Amend to read as follows:

"5.2.1.6.1 Packages containing environmentally hazardous substances meeting the criteria of 2.9.3 (UN Nos. 3077 and 3082) shall be durably marked with the environmentally hazardous substance mark with the exception of single packagings and combination packagings where such single packagings or inner packagings of such combination packagings have:

- a net quantity of 5 l or less for liquids; or
- a net mass of 5 kg or less for solids."

5.2.1.7.1 Replace "ISO 780:1985" with "ISO 780:1997".

5.2.1.7.2 (d) Delete "or" at the end.

5.2.1.7.2 (e) Add "or" at the end.

5.2.1.7.2 Add a new sub-paragraph (f) to read as follows:

- "(f) Combination packagings containing hermetically sealed inner packagings each containing not more than 500 ml."

5.2.2.1.12.2 (b) In the second sentence, insert "(or mass of each fissile nuclide for mixtures when appropriate)" after "the mass of fissile material".

5.2.2.1.12.5 Amend to read as follows:

"5.2.2.1.12.5 In all cases of international transport of packages requiring competent authority design or shipment approval, for which different approval types apply in the different countries concerned by the shipment, labelling shall be in accordance with the certificate of the country of origin of design."

5.2.2.2.2 Amend the heading for specimen label No. 9 to read as follows:

"CLASS 9:
Miscellaneous dangerous substances and articles, including environmentally hazardous substances".

Chapter 5.3

5.3.1.1.1 Delete the text and add the mention "Deleted".

5.3.2.1.1 (e) Amend to read as follows:

"(e) Packaged radioactive material with a single UN number in or on a vehicle, or in a freight container, when required to be transported under exclusive use."

Chapter 5.4

Amend the introductory note to read as follows:

"NOTE: These Regulations do not preclude the use of electronic data processing (EDP) and electronic data interchange (EDI) transmission techniques as an alternative to paper documentation. All references to "dangerous goods transport document" in this Chapter also include provision of the required information by use of EDP and EDI transmission techniques."

5.4.1 and 5.4.1.1 Amend to read as follows:

"5.4.1 Dangerous goods transport information

5.4.1.1 General

5.4.1.1.1 Except as otherwise provided, the consignor who offers dangerous goods for transport shall give to the carrier the information applicable to those dangerous goods, including any additional information and documentation as specified in these Regulations. This information may be provided on a dangerous goods transport document or, with the agreement of the carrier, by EDP or EDI techniques.

5.4.1.1.2 When a paper document is used, the consignor shall give the initial carrier a copy of the dangerous goods transport document, completed and signed as required in this Chapter.

5.4.1.1.3 When the dangerous goods transport information is given to the carrier by EDP or EDI techniques, the consignor shall be able to produce the information without delay as a paper document, with the information in the sequence required by this Chapter."

5.4.1.4.3 (b) At the end, replace "proper shipping name" with "dangerous goods description specified in 5.4.1.4.1 (a) to (e)".

5.4.1.5.1 At the end, add the following new note:

"NOTE: The number, type and capacity of each inner packaging within the outer packaging of a combination packaging is not required to be indicated."

5.4.1.5.7.1 (c) In the second sentence, insert "(or mass of each fissile nuclide for mixtures when appropriate)" after "the mass of fissile material".

5.4.1.5.7.1 (j) At the end, add: "For radioactive material for which the A_2 value is unlimited, the multiple of A_2 shall be zero."

5.4.1.5.7.3 Amend to read as follows:

"5.4.1.5.7.3 In all cases of international transport of packages requiring competent authorities design or shipment approval, for which different approval types apply in the different countries concerned by the shipment, the UN number and proper shipping name required in 5.4.1.4.1 shall be in accordance with the certificate of the country of origin of design."

5.4.1.6.2 Amend to read as follows:

"5.4.1.6.2 If the dangerous goods documentation is presented to the carrier by means of EDP or EDI transmission techniques, the signature(s) may be electronic signature(s) or may be replaced by the name(s) (in capitals) of the person authorized to sign."

5.4.1.6.3 Add a new paragraph 5.4.1.6.3 to read as follows:

"5.4.1.6.3 When the dangerous goods transport information is given to a carrier by EDP or EDI techniques and subsequently the dangerous goods are transferred to a carrier that requires a paper dangerous goods transport document, the carrier shall ensure that the paper document indicates "Original received electronically" and the name of the signatory shall be shown in capital letters."

5.4.2.3 Amend to read as follows:

"5.4.2.3 If the dangerous goods documentation is presented to the carrier by means of EDP or EDI transmission techniques, the signature(s) may be electronic signature(s) or may be replaced by the name(s) (in capitals) of the person authorized to sign."

5.4.2.4 Add a new paragraph 5.4.2.4 to read as follows:

"5.4.2.4 When the dangerous goods transport information is given to a carrier by EDP or EDI techniques and subsequently the dangerous goods are transferred to a carrier that requires a paper dangerous goods transport document, the carrier shall ensure that the paper document indicates "Original received electronically" and the name of the signatory shall be shown in capital letters."

5.4.4 Add a new section 5.4.4 to read as follows:

"5.4.4 Retention of dangerous goods transport information

5.4.4.1 The consignor shall retain a copy of the dangerous goods transport document and additional information and documentation as specified in these Regulations, for a minimum period of three months.

5.4.4.2 When the documents are kept electronically or in a computer system, the consignor shall be able to reproduce them in a printed form."

Chapter 5.5

Amend to read as follows:

"CHAPTER 5.5

SPECIAL PROVISIONS

5.5.1 *Deleted.*

5.5.2 **Special provisions applicable to fumigated cargo transport units (UN 3359)**

5.5.2.1 ***General***

5.5.2.1.1 Fumigated cargo transport units (UN 3359) containing no other dangerous goods are not subject to any provisions of these Regulations other than those of this section.

5.5.2.1.2 When the fumigated cargo transport unit is loaded with dangerous goods in addition to the fumigant, any provision of these Regulations relevant to these goods (including placarding, marking and documentation) applies in addition to the provisions of this section.

5.5.2.1.3 Only cargo transport units that can be closed in such a way that the escape of gas is reduced to a minimum shall be used for the transport of cargo under fumigation.

5.5.2.2 ***Training***

Persons engaged in the handling of fumigated cargo transport units shall be trained commensurate with their responsibilities.

5.5.2.3 ***Marking and placarding***

5.5.2.3.1 A fumigated cargo transport unit shall be marked with a warning mark, as specified in 5.5.2.3.2, affixed at each access point in a location where it will be easily seen by persons opening or entering the cargo transport unit. This mark shall remain on the cargo transport unit until the following provisions are met:

- (a) The fumigated cargo transport unit has been ventilated to remove harmful concentrations of fumigant gas; and
- (b) The fumigated goods or materials have been unloaded.

5.5.2.3.2 The fumigation warning mark shall be rectangular and shall not be 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. An illustration of this mark is given in Figure 5.5.1

Figure 5.5.1: Fumigation warning mark

(Existing mark unchanged)

5.5.2.3.3 If the fumigated cargo transport unit has been completely ventilated either by opening the doors of the unit or by mechanical ventilation after fumigation, the date of ventilation shall be marked on the fumigation warning mark.

5.5.2.3.4 When the fumigated cargo transport unit has been ventilated and unloaded, the fumigation warning mark shall be removed.

5.5.2.3.5 Class 9 placards (Model No. 9, see 5.2.2.2.2) shall not be affixed to a fumigated cargo transport unit except as required for other Class 9 substances or articles packed therein.

5.5.2.4 Documentation

5.5.2.4.1 Documents associated with the transport of cargo transport units that have been fumigated and have not been completely ventilated before transport shall include the following information:

- UN 3359, fumigated cargo transport unit, 9, or UN 3359, fumigated cargo transport unit, class 9;
- The date and time of fumigation; and
- The type and amount of the fumigant used.

5.5.2.4.2 The transport document may be in any form, provided it contains the information required in 5.5.2.4.1. This information shall be easy to identify, legible and durable.

5.5.2.4.3 Instructions for disposal of any residual fumigant including fumigation devices (if used) shall be provided.

5.5.2.4.4 A document is not required when the fumigated cargo transport unit has been completely ventilated and the date of ventilation has been marked on the warning mark (see 5.5.2.3.3 and 5.5.2.3.4)."

PART 6

Chapter 6.1

6.1.3.1 (a) Amend the second sentence to read as follows: "This symbol shall not be used for any purpose other than certifying that a packaging, a portable tank or a MEGC complies with the relevant requirements in Chapter 6.1, 6.2, 6.3, 6.5, 6.6 or 6.7."

6.1.4.0 Add a new sub-section 6.1.4.0 to read as follows:

"6.1.4.0 *General requirements*

Any permeation of the substance contained in the packaging shall not constitute a danger under normal conditions of transport."

6.1.5.3.6.3 Amend to read as follows:

"6.1.5.3.6.3 The packaging or outer packaging of a composite or combination packaging shall not exhibit any damage liable to affect safety during transport. Inner receptacles, inner packagings, or articles shall remain completely within the outer packaging and there shall be no leakage of the filling substance from the inner receptacle(s) or inner packaging(s)."

Chapter 6.2

After the heading of the Chapter, add the following new note:

"NOTE: *Aerosol dispensers, small receptacles containing gas (gas cartridges) and fuel cell cartridges containing liquefied flammable gas are not subject to the requirements of 6.2.1 to 6.2.3.*"

6.2.1 Delete the note after the heading.

6.2.1.1.5 At the end, add the following new sentence: "The test pressure of a metal hydride storage system shall be in accordance with packing instruction P205."

6.2.1.3.4 Insert ", P205" after "P200 (1)".

6.2.1.5.1 Insert "and metal hydride storage systems" after "cryogenic receptacles".

6.2.1.5.3 Add a new paragraph 6.2.1.5.3 to read as follows:

"6.2.1.5.3 For metal hydride storage systems, it shall be verified that the inspections and tests specified in 6.2.1.5.1 (a), (b), (c), (d), (e) if applicable, (f), (g), (h) and (i) have been performed on an adequate sample of the receptacles used in the metal hydride storage system. In addition, on an adequate sample of metal hydride storage systems, the inspections and tests specified in 6.2.1.5.1 (c) and (f) shall be performed, as well as 6.2.1.5.1 (e), if applicable, and inspection of the external conditions of the metal hydride storage system.

Additionally, all metal hydride storage systems shall undergo the initial inspections and tests specified in 6.2.1.5.1 (h) and (i), as well as a leakproofness test and a test of the satisfactory operation of the service equipment."

6.2.1.6.1 At the end, add the following new note:

"NOTE: *For the periodic inspection and test frequencies, see packing instruction P200 of 4.1.4.1."*

6.2.1.6.1 (d) In Note 2, delete ", ultrasonic examination". Add the following new sentence at the end: "ISO 16148:2006 may be used as a guide for acoustic emission testing procedures."

Add a new Note 3 to read as follows:

"NOTE 3: *The hydraulic pressure test may be replaced by ultrasonic examination carried out in accordance with ISO 10461:2005+A1:2006 for seamless aluminium alloy gas cylinders and in accordance with ISO 6406:2005 for seamless steel gas cylinders."*

6.2.2.1.1 In the table, add the following three new entries:

| | |
|------------------|---|
| ISO 4706:2008 | Gas cylinders – Refillable welded steel cylinders – Test pressure 60 bar and below |
| ISO 20703:2006 | Gas cylinders – Refillable welded aluminium-alloy cylinders – Design, construction and testing |
| ISO 18172-1:2007 | Gas cylinders – Refillable welded stainless steel cylinders – Part 1: Test pressure 6 MPa and below |

6.2.2.1.5 Add a new paragraph 6.2.2.1.5 to read as follows:

"6.2.2.1.5 The following standards apply for the design, construction, and initial inspection and test of UN metal hydride storage systems, except that inspection requirements related to the conformity assessment system and approval shall be in accordance with 6.2.2.5:

| | |
|----------------|---|
| ISO 16111:2008 | Transportable gas storage devices – Hydrogen absorbed in reversible metal hydride |
|----------------|---|

".

6.2.2.2 At the beginning, in the text between brackets, insert "or P205" after "P200".

6.2.2.3 Replace "ISO 10297:1999" with "ISO 10297:2006".

At the end, add the following new paragraph:

"For UN metal hydride storage systems, the requirements specified in the following standard apply to closures and their protection:

| | |
|----------------|---|
| ISO 16111:2008 | Transportable gas storage devices – Hydrogen absorbed in reversible metal hydride |
|----------------|---|

"

6.2.2.4 At the beginning, insert "and UN metal hydride storage systems" after "UN cylinders" and in the table, add the following new entry at the end:

| | |
|----------------|---|
| ISO 16111:2008 | Transportable gas storage devices – Hydrogen absorbed in reversible metal hydride |
|----------------|---|

6.2.2.7 After the heading, add the following new note:

"NOTE: *Marking requirements for UN metal hydride storage systems are given in 6.2.2.9.*"

Assign paragraph number 6.2.2.7.1 to the first unnumbered paragraph under 6.2.2.7. Renumber subsequent paragraphs and cross-references accordingly. Add a new paragraph 6.2.2.7.9 to read as follows:

"6.2.2.7.9 For bundles of cylinders, pressure receptacle marking requirements shall only apply to the individual cylinders of a bundle and not to any assembly structure."

6.2.2.7.2 (a) (existing 6.2.2.7.1 (a)) Amend the second sentence to read as follows: "This symbol shall not be used for any purpose other than certifying that a packaging, a portable tank or a MEGC complies with the relevant requirements in Chapter 6.1, 6.2, 6.3, 6.5, 6.6 or 6.7;"

6.2.2.8 Assign paragraph number 6.2.2.8.1 to the first unnumbered paragraph under 6.2.2.8. Renumber the following paragraphs accordingly.

6.2.2.9 Add a new sub-section 6.2.2.9 to read as follows:

"6.2.2.9 Marking of UN metal hydride storage systems

6.2.2.9.1 UN metal hydride storage systems shall be marked clearly and legibly with the marks listed below. These marks shall be permanently affixed (e.g. stamped, engraved, or etched) on the metal hydride storage system. The marks shall be on the shoulder, top end or neck of the metal hydride storage system or on a permanently affixed component of the metal hydride storage system. Except for the United Nations packaging symbol, the minimum size of the marks shall be 5 mm for metal hydride storage systems with a smallest overall dimension greater than or equal to 140 mm and 2.5 mm for metal hydride storage systems with a smallest overall dimension less than 140 mm. The minimum size of the United Nations packaging symbol shall be 10 mm for metal hydride storage systems with a smallest overall dimension greater than or equal to 140 mm and 5 mm for metal hydride storage systems with a smallest overall dimension less than 140 mm.

6.2.2.9.2 The following marks shall be applied:

- (a) The United Nations packaging symbol  ;

This symbol shall not be used for any purpose other than certifying that a packaging, a portable tank or a MEGC complies with the relevant requirements in Chapter 6.1, 6.2, 6.3, 6.5, 6.6 or 6.7;

- (b) "ISO 16111" (the technical standard used for design, manufacture and testing);
- (c) The character(s) identifying the country of approval as indicated by the distinguishing signs of motor vehicles in international traffic;
- (d) The identity mark or stamp of the inspection body that is registered with the competent authority of the country authorizing the marking;
- (e) The date of the initial inspection, the year (four digits) followed by the month (two digits) separated by a slash (i.e. "/");
- (f) The test pressure of the receptacle in bar, preceded by the letters "PH" and followed by the letters "BAR";
- (g) The rated charging pressure of the metal hydride storage system in bar, preceded by the letters "RCP" and followed by the letters "BAR";
- (h) The manufacturer's mark registered by the competent authority. When the country of manufacture is not the same as the country of approval, then the manufacturer's mark shall be preceded by the character(s) identifying the country of manufacture as indicated by the distinguishing signs of motor vehicles in international traffic. The country mark and the manufacturer's mark shall be separated by a space or slash;
- (i) The serial number assigned by the manufacturer;
- (j) In the case of steel receptacles and composite receptacles with steel liner, the letter "H" showing compatibility of the steel (see ISO 11114-1:1997); and,
- (k) In the case of metal hydride storage systems having limited life, the date of expiry, denoted by the letters "FINAL" followed by the year (four digits) followed by the month (two digits) separated by a slash (i.e. "/").

The certification marks specified in (a) to (e) above shall appear consecutively in the sequence given. The test pressure (f) shall be immediately preceded by the rated charging pressure (g). The manufacturing marks specified in (h) to (k) above shall appear consecutively in the sequence given.

6.2.2.9.3 Other marks are allowed in areas other than the side wall, provided they are made in low stress areas and are not of a size and depth that will create harmful stress concentrations. Such marks shall not conflict with required marks.

6.2.2.9.4 In addition to the preceding marks, each metal hydride storage system that meets the periodic and test requirements of 6.2.2.4 shall be marked indicating:

- (a) The character(s) identifying the country authorizing the body performing the periodic inspection and test, as indicated by the distinguishing sign of motor vehicles in international traffic. This marking is not required if this body is approved by the competent authority of the country approving manufacture;
- (b) The registered mark of the body authorised by the competent authority for performing periodic inspection and test;
- (c) The date of the periodic inspection and test, the year (two digits) followed by the month (two digits) separated by a slash (i.e. "/"). Four digits may be used to indicate the year.

The above marks shall appear consecutively in the sequence given."

6.2.4.3 Amend to read as follows:

"6.2.4.3 With the approval of the competent authority, aerosols and receptacles, small, are not subject to 6.2.4.1 and 6.2.4.2, if they are required to be sterile but may be adversely affected by water bath testing, provided:

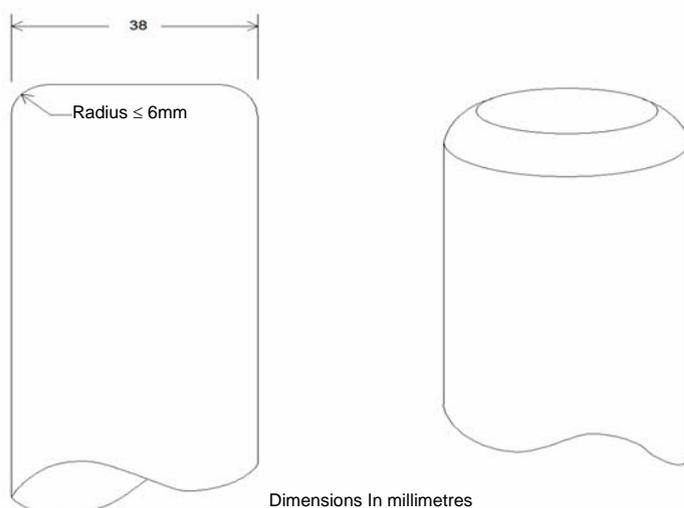
- (a) They contain a non-flammable gas and either
 - (i) contain other substances that are constituent parts of pharmaceutical products for medical, veterinary or similar purposes;
 - (ii) contain other substances used in the production process for pharmaceutical products; or
 - (iii) are used in medical, veterinary or similar applications;
- (b) An equivalent level of safety is achieved by the manufacturer's use of alternative methods for leak detection and pressure resistance, such as helium detection and water bathing a statistical sample of at least 1 in 2000 from each production batch; and

- (c) For pharmaceutical products according to (a) (i) and (iii) above, they are manufactured under the authority of a national health administration. If required by the competent authority, the principles of Good Manufacturing Practice (GMP) established by the World Health Organization (WHO)² shall be followed."

Chapter 6.3

- 6.3.4.2 (a) Amend the second sentence to read as follows: "This symbol shall not be used for any purpose other than certifying that a packaging, a portable tank or a MEGC complies with the relevant requirements in Chapter 6.1, 6.2, 6.3, 6.5, 6.6 or 6.7;".
- 6.3.5.4.1 In the second sentence, insert "(see Figure 6.3.1)" after "not exceeding 6 mm".
- 6.3.5.4.2 In the third sentence, insert "(see Figure 6.3.1)" after "not exceeding 6 mm". At the end, insert the following new figure:

Figure 6.3.1



Chapter 6.4

- 6.4.2.9 Delete "otherwise".
- 6.4.5.4.2 (c) Replace "an increase of more than 20%" with "more than a 20% increase".
- 6.4.5.4.4 Replace "of a permanent enclosed character" with "with the characteristics of a permanent enclosure". In sub-paragraph (c), insert "and subsequent amendments 1:1993, 2:1998, 3:2005, 4:2006 and 5:2006," after "Part 1: General Cargo Containers"

² WHO Publication: "Quality assurance of pharmaceuticals. A compendium of guidelines and related materials. Volume 2: Good manufacturing practices and inspection".

- 6.4.5.4.4 (c) (ii) and 6.4.5.4.5 (b) (ii) Replace "any increase of more than 20%" with "more than a 20% increase".
- 6.4.6.1 Replace "ISO 7195:1993 "Packaging of uranium hexafluoride (UF₆) for transport"" with "ISO 7195:2005 "Nuclear Energy – Packaging of uranium hexafluoride (UF₆) for transport"".
- 6.4.6.2 (a) Replace "ISO 7195:1993" with "ISO 7195:2005".
- 6.4.6.4 (a) Replace "ISO 7195:1993" with "ISO 7195:2005".
- 6.4.7.16 (b) (ii) Replace "designed to ensure retention of the liquid contents" by "designed to enclose the liquid contents completely and ensure their retention".
- 6.4.11.5 Amend to read as follows:
- "6.4.11.5 The package, after being subjected to the tests specified in 6.4.15, shall:
- (a) Preserve the minimum overall outside dimensions of the package to at least 10 cm; and
 - (b) Prevent the entry of a 10 cm cube."
- 6.4.11.7 (a) Replace "each of which" by "not less than two of which". The second amendment does not apply to the English text.
- 6.4.13 (c) Replace "6.4.11.12" with "6.4.11.13".
- 6.4.15.5 The first amendment does not apply to the English version. Amend sub-paragraph (a) to read as follows:
- "(a) A total weight equal to 5 times the maximum weight of the package; and".
- 6.4.23.11 (h), 6.4.23.12 (j), 6.4.23.13 (j) and 6.4.23.14 (l) The amendment does not apply to the English text.
- 6.4.23.12 (h) The amendment does not apply to the English text.
- 6.4.23.12 (j), 6.4.23.13 (j), 6.4.23.14 (l) In the second sentence, replace "(for fissile material)" with "(for fissile material or for each fissile nuclide when appropriate)".
- 6.4.23.14 (g) The amendment does not apply to the English text.
- 6.4.23.14 (j) In the second sentence, replace "should" with "shall".

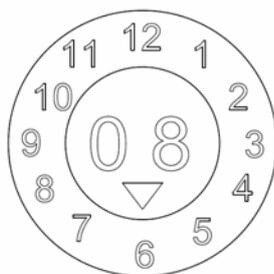
Chapter 6.5

6.5.2.1.1 (a) Amend the second sentence to read as follows: "This symbol shall not be used for any purpose other than certifying that a packaging, a portable tank or a MEGC complies with the relevant requirements in Chapter 6.1, 6.2, 6.3, 6.5, 6.6 or 6.7."

6.5.2.2.4 Amend to read as follows:

"6.5.2.2.4 The inner receptacle of composite IBCs manufactured after 1 January 2011 shall bear the markings indicated in 6.5.2.1.1 (b), (c), (d) where this date is that of the manufacture of the plastics inner receptacle, (e) and (f). The UN packaging symbol shall not be applied. The marking shall be applied in the sequence shown in 6.5.2.1.1. It shall be durable, legible and placed in a location so as to be readily visible when the inner receptacle is placed in the outer casing.

The date of the manufacture of the plastics inner receptacle may alternatively be marked on the inner receptacle adjacent to the remainder of the marking. An example of an appropriate marking method is:



".

6.5.2.4 Add a new paragraph 6.5.2.4 to read as follows:

"6.5.2.4 *Marking of remanufactured composite IBCs (31HZ1)*

The marking specified in 6.5.2.1.1 and 6.5.2.2 shall be removed from the original IBC or made permanently illegible and new markings shall be applied to an IBC remanufactured in accordance with these Regulations."

6.5.4.1 At the beginning, insert ", remanufactured, repaired" after "manufactured". At the end, insert ", remanufactured or repaired" after "manufactured".

6.5.6.9.5 (d) At the end, add the following new note:

"NOTE: *The criteria in (d) apply to design types for IBCs manufactured as from 1 January 2011.*"

Chapter 6.6

6.6.1.2 Replace "and tested" with ", tested and remanufactured" and, at the end, insert "or remanufactured large" after "each manufactured".

6.6.3.1 (a) Amend the second sentence to read as follows: "This symbol shall not be used for any purpose other than certifying that a packaging, a portable tank or a MEGC complies with the relevant requirements in Chapter 6.1, 6.2, 6.3, 6.5, 6.6 or 6.7."

6.6.5.2.2 Amend to read as follows:

"6.6.5.2.2 In the drop tests for liquids, when another substance is used, it shall be of similar relative density and viscosity to those of the substance being transported. Water may also be used for the liquid drop test under the conditions in 6.6.5.3.4.4."

6.6.5.3.4.4 Amend to read as follows:

"6.6.5.3.4.4 Drop height

NOTE: *Large packagings for substances and articles of Class 1 shall be tested at the packing group II performance level.*

6.6.5.3.4.4.1 For inner packagings containing solid or liquid substances or articles, if the test is performed with the solid, liquid or articles to be transported, or with another substance or article having essentially the same characteristics:

| Packing group I | Packing group II | Packing group III |
|-----------------|------------------|-------------------|
| 1.8 m | 1.2 m | 0.8 m |

6.6.5.3.4.4.2 For inner packagings containing liquids if the test is performed with water:

(a) Where the substances to be transported have a relative density not exceeding 1.2:

| Packing group I | Packing group II | Packing group III |
|-----------------|------------------|-------------------|
| 1.8 m | 1.2 m | 0.8 m |

(b) Where the substances to be transported have a relative density exceeding 1.2, the drop height shall be calculated on the basis of the relative density (d) of the substance to be carried, rounded up to the first decimal, as follows:

| Packing group I | Packing group II | Packing group III |
|--------------------|--------------------|---------------------|
| $d \times 1.5$ (m) | $d \times 1.0$ (m) | $d \times 0.67$ (m) |

".

Chapter 6.7

6.7.2.6.2 (a) Amend to read as follows:

"(a) An external stop-valve, fitted as close to the shell as reasonably practicable, and so designed as to prevent any unintended opening through impact or other inadvertent act; and".

6.7.2.8.4 At the end, add the following sentence: "In addition, fusible elements conforming to 6.7.2.10.1 may also be used."

6.7.2.10.1 In the first sentence, replace "110 °C" with "100 °C". In the second sentence, replace "in no case shall they" with "when used for transport safety purposes, they shall not". In the third sentence, replace "utilized" with "used" and at the end of the sentence, add "unless specified by special provision TP36 in Column 11 of the Dangerous Goods List of Chapter 3.2."

6.7.2.20.1 Amend to read as follows:

"6.7.2.20.1 Every portable tank shall be fitted with a corrosion resistant metal plate permanently attached to the portable tank in a conspicuous place readily accessible for inspection. When for reasons of portable tank arrangements the plate cannot be permanently attached to the shell, the shell shall be marked with at least the information required by the pressure vessel code. As a minimum, at least the following information shall be marked on the plate by stamping or by any other similar method:

- (a) Owner information
 - (i) Owner's registration number;
- (b) Manufacturing information
 - (i) Country of manufacture;
 - (ii) Year of manufacture;
 - (iii) Manufacturer's name or mark;
 - (iv) Manufacturer's serial number;
- (c) Approval information

- (i) The United Nations packaging symbol  ;

This symbol shall not be used for any purpose other than certifying that a packaging, a portable tank or a MEGC complies with the relevant requirements in Chapter 6.1, 6.2, 6.3, 6.5, 6.6 or 6.7;

- (ii) Approval country;
- (iii) Authorized body for the design approval;
- (iv) Design approval number;
- (v) Letters 'AA', if the design was approved under alternative arrangements (see 6.7.1.2);
- (vi) Pressure vessel code to which the shell is designed;

- (d) Pressures
 - (i) MAWP (in bar gauge or kPa gauge)²;
 - (ii) Test pressure (in bar gauge or kPa gauge)²;
 - (iii) Initial pressure test date (month and year);
 - (iv) Identification mark of the initial pressure test witness;
 - (v) External design pressure³ (in bar gauge or kPa gauge)²;
 - (vi) MAWP for heating/cooling system (in bar gauge or kPa gauge)² (when applicable);
- (e) Temperatures
 - (i) Design temperature range (in °C)²;
- (f) Materials
 - (i) Shell material(s) and material standard reference(s);
 - (ii) Equivalent thickness in reference steel (in mm)²;
 - (iii) Lining material (when applicable);
- (g) Capacity
 - (i) Tank water capacity at 20 °C (in litres)²;
This indication is to be followed by the symbol "S" when the shell is divided by surge plates into sections of not more than 7 500 litres capacity;
 - (ii) Water capacity of each compartment at 20 °C (in litres)² (when applicable, for multi-compartment tanks).
This indication is to be followed by the symbol "S" when the compartment is divided by surge plates into sections of not more than 7 500 litres capacity;
- (h) Periodic inspections and tests
 - (i) Type of the most recent periodic test (2.5-year, 5-year or exceptional);
 - (ii) Date of the most recent periodic test (month and year);
 - (iii) Test pressure (in bar gauge or kPa gauge)² of the most recent periodic test (if applicable);
 - (iv) Identification mark of the authorized body who performed or witnessed the most recent test.

² The unit used shall be indicated.

³ See 6.7.2.2.10.

Figure 6.7.2.20.1: Example of identification plate marking

| Owner's registration number | | | | | | | |
|--|-------------------------------------|--|----------------------|-----------|-----------|--|--|
| MANUFACTURING INFORMATION | | | | | | | |
| Country of manufacture | | | | | | | |
| Year of manufacture | | | | | | | |
| Manufacturer | | | | | | | |
| Manufacturer's serial number | | | | | | | |
| APPROVAL INFORMATION | | | | | | | |
|  | Approval country | | | | | | |
| | Authorized body for design approval | | | | | | |
| | Design approval number | | 'AA' (if applicable) | | | | |
| Shell design code (pressure vessel code) | | | | | | | |
| PRESSURES | | | | | | | |
| MAWP | | bar or kPa | | | | | |
| Test pressure | | bar or kPa | | | | | |
| Initial pressure test date: | (mm/yyyy) | Witness stamp: | | | | | |
| External design pressure | | bar or kPa | | | | | |
| MAWP for heating/cooling system (when applicable) | | bar or kPa | | | | | |
| TEMPERATURES | | | | | | | |
| Design temperature range | | °C to °C | | | | | |
| MATERIALS | | | | | | | |
| Shell material(s) and material standard reference(s) | | | | | | | |
| Equivalent thickness in reference steel | | mm | | | | | |
| Lining material (when applicable) | | | | | | | |
| CAPACITY | | | | | | | |
| Tank water capacity at 20 °C | | litres | 'S' (if applicable) | | | | |
| Water capacity of compartment ___ at 20 °C (when applicable, for multi-compartment tanks) | | litres | 'S' (if applicable) | | | | |
| PERIODIC INSPECTIONS / TESTS | | | | | | | |
| Test type | Test date | Witness stamp and test pressure ^a | | Test type | Test date | Witness stamp and test pressure ^a | |
| | (mm/yyyy) | bar or kPa | | | (mm/yyyy) | bar or kPa | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

^a Test pressure if applicable."

6.7.2.20.2 Insert "Portable tank instruction in accordance with 4.2.5.2.6" in the list.

6.7.3.16.1 Amend to read as follows:

"6.7.3.16.1 Every portable tank shall be fitted with a corrosion resistant metal plate permanently attached to the portable tank in a conspicuous place readily accessible for inspection. When for reasons of portable tank arrangements the plate cannot be permanently attached to the shell, the shell shall be marked with at least the information required by the

pressure vessel code. As a minimum, at least the following information shall be marked on the plate by stamping or by any other similar method:

- (a) Owner information
 - (i) Owner's registration number;
- (b) Manufacturing information
 - (i) Country of manufacture;
 - (ii) Year of manufacture;
 - (iii) Manufacturer's name or mark;
 - (iv) Manufacturer's serial number;
- (c) Approval information
 - (i) The United Nations packaging symbol  ;

This symbol shall not be used for any purpose other than certifying that a packaging, a portable tank or a MEGC complies with the relevant requirements in Chapter 6.1, 6.2, 6.3, 6.5, 6.6 or 6.7;
 - (ii) Approval country;
 - (iii) Authorized body for the design approval;
 - (iv) Design approval number;
 - (v) Letters 'AA', if the design was approved under alternative arrangements (see 6.7.1.2);
 - (vi) Pressure vessel code to which the shell is designed;
- (d) Pressures
 - (i) MAWP (in bar gauge or kPa gauge)²;
 - (ii) Test pressure (in bar gauge or kPa gauge)²;
 - (iii) Initial pressure test date (month and year);
 - (iv) Identification mark of the initial pressure test witness;
 - (v) External design pressure³ (in bar gauge or kPa gauge)²;
- (e) Temperatures
 - (i) Design temperature range (in °C)²;
 - (ii) Design reference temperature (in °C)²;
- (f) Materials
 - (i) Shell material(s) and material standard reference(s);
 - (ii) Equivalent thickness in reference steel (in mm)²;
- (g) Capacity
 - (i) Tank water capacity at 20 °C (in litres)²;

² The unit used shall be indicated.

³ See 6.7.3.2.8.

- (h) Periodic inspections and tests
 - (i) Type of the most recent periodic test (2.5-year, 5-year or exceptional);
 - (ii) date of the most recent periodic test (month and year);
 - (iii) Test pressure (in bar gauge or kPa gauge)² of the most recent periodic test (if applicable);
 - (iv) Identification mark of the authorized body who performed or witnessed the most recent test.

Figure 6.7.3.16.1: Example of identification plate marking

| Owner's registration number | | | | | | | |
|---|-------------------------------------|--|--|----------------|-----------|--|--|
| MANUFACTURING INFORMATION | | | | | | | |
| Country of manufacture | | | | | | | |
| Year of manufacture | | | | | | | |
| Manufacturer | | | | | | | |
| Manufacturer's serial number | | | | | | | |
| APPROVAL INFORMATION | | | | | | | |
|  | Approval country | | | | | | |
| | Authorized body for design approval | | | | | | |
| | Design approval number | | | | | 'AA' (if applicable) | |
| Shell design code (pressure vessel code) | | | | | | | |
| PRESSURES | | | | | | | |
| MAWP | | | | | | bar or kPa | |
| Test pressure | | | | | | bar or kPa | |
| Initial pressure test date: | | (mm/yyyy) | | Witness stamp: | | | |
| External design pressure | | | | | | bar or kPa | |
| TEMPERATURES | | | | | | | |
| Design temperature range | | | | °C to | | °C | |
| Design reference temperature | | | | °C | | | |
| MATERIALS | | | | | | | |
| Shell material(s) and material standard reference(s) | | | | | | | |
| Equivalent thickness in reference steel | | | | | | mm | |
| CAPACITY | | | | | | | |
| Tank water capacity at 20 °C | | | | | | litres | |
| PERIODIC INSPECTIONS / TESTS | | | | | | | |
| Test type | Test date | Witness stamp and test pressure ^a | | Test type | Test date | Witness stamp and test pressure ^a | |
| | (mm/yyyy) | bar or kPa | | | (mm/yyyy) | bar or kPa | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

^a Test pressure if applicable."

6.7.3.16.2 Insert "Portable tank instruction in accordance with 4.2.5.2.6" in the list.

² The unit used shall be indicated.

6.7.4.15.1 Amend to read as follows:

"6.7.4.15.1 Every portable tank shall be fitted with a corrosion resistant metal plate permanently attached to the portable tank in a conspicuous place readily accessible for inspection. When for reasons of portable tank arrangements the plate cannot be permanently attached to the shell, the shell shall be marked with at least the information required by the pressure vessel code. As a minimum, at least the following information shall be marked on the plate by stamping or by any other similar method:

- (a) Owner information
 - (i) Owner's registration number;
- (b) Manufacturing information
 - (i) Country of manufacture;
 - (ii) Year of manufacture;
 - (iii) Manufacturer's name or mark;
 - (iv) Manufacturer's serial number;
- (c) Approval information
 - (i) The United Nations packaging symbol  ;
This symbol shall not be used for any purpose other than certifying that a packaging, a portable tank or a MEGC complies with the relevant requirements in Chapter 6.1, 6.2, 6.3, 6.5, 6.6 or 6.7;
 - (ii) Approval country;
 - (iii) Authorized body for the design approval;
 - (iv) Design approval number;
 - (v) Letters 'AA', if the design was approved under alternative arrangements (see 6.7.1.2);
 - (vi) Pressure vessel code to which the shell is designed;
- (d) Pressures
 - (i) MAWP (in bar gauge or kPa gauge)²;
 - (ii) Test pressure (in bar gauge or kPa gauge)²;
 - (iii) Initial pressure test date (month and year);
 - (iv) Identification mark of the initial pressure test witness;
- (e) Temperatures
 - (i) Minimum design temperature (in °C)²;
- (f) Materials

² *The unit used shall be indicated.*

- (i) Shell material(s) and material standard reference(s);
- (ii) Equivalent thickness in reference steel (in mm)²;
- (g) Capacity
 - (i) Tank water capacity at 20 °C (in litres)²;
- (h) Insulation
 - (i) Either “Thermally insulated” or “Vacuum insulated” (as applicable);
 - (ii) Effectiveness of the insulation system (heat influx) (in Watts)²;
- (i) Holding times – For each refrigerated liquefied gas permitted to be transported in the portable tank:
 - (i) Name, in full, of the refrigerated liquefied gas;
 - (ii) Reference holding time (in days or hours)²;
 - (iii) Initial pressure (in bar gauge or kPa gauge)²;
 - (iv) Degree of filling (in kg)²;
- (j) Periodic inspections and tests
 - (i) Type of the most recent periodic test (2.5-year, 5-year or exceptional);
 - (ii) Date of the most recent periodic test (month and year);
 - (iii) Identification mark of the authorized body who performed or witnessed the most recent test.

² *The unit used shall be indicated.*

Figure 6.7.4.15.1: Example of identification plate marking

| | | | | | |
|--|-------------------------------------|-------------------|----------------------|-----------|---------------|
| Owner's registration number | | | | | |
| MANUFACTURING INFORMATION | | | | | |
| Country of manufacture | | | | | |
| Year of manufacture | | | | | |
| Manufacturer | | | | | |
| Manufacturer's serial number | | | | | |
| APPROVAL INFORMATION | | | | | |
| | Approval country | | | | |
| | Authorized body for design approval | | | | |
| | Design approval number | | 'AA' (if applicable) | | |
| Shell design code (pressure vessel code) | | | | | |
| PRESSURES | | | | | |
| MAWP | | bar <i>or</i> kPa | | | |
| Test pressure | | bar <i>or</i> kPa | | | |
| Initial pressure test date: | (mm/yyyy) | Witness stamp: | | | |
| TEMPERATURES | | | | | |
| Minimum design temperature | | °C | | | |
| MATERIALS | | | | | |
| Shell material(s) and material standard reference(s) | | | | | |
| Equivalent thickness in reference steel | | mm | | | |
| CAPACITY | | | | | |
| Tank water capacity at 20 °C | | litres | | | |
| INSULATION | | | | | |
| 'Thermally insulated' or 'Vacuum insulated' (<i>as applicable</i>) | | | | | |
| Heat influx | | Watts | | | |
| HOLDING TIMES | | | | | |
| Refrigerated liquefied gas(es) permitted | Reference holding time | Initial pressure | Degree of filling | | |
| | days <i>or</i> hours | bar <i>or</i> kPa | kg | | |
| | | | | | |
| | | | | | |
| | | | | | |
| PERIODIC INSPECTIONS / TESTS | | | | | |
| Test type | Test date | Witness stamp | Test type | Test date | Witness stamp |
| | (mm/yyyy) | | | (mm/yyyy) | |
| | | | | | |
| | | | | | |
| | | | | | |

".

6.7.4.15.2 Insert "Portable tank instruction in accordance with 4.2.5.2.6" in the list.

6.7.5.4.1 Amend the last sentence to read as follows: "If so required by the competent authority of the country of use, MEGCs for other gases shall be fitted with pressure relief devices as specified by that competent authority."

6.7.5.13.1 Amend to read as follows:

"6.7.5.13.1 Every MEGC shall be fitted with a corrosion resistant metal plate permanently attached to the MEGC in a conspicuous place readily accessible for inspection. The metal plate shall not be affixed to the elements. The elements shall be marked in accordance with Chapter 6.2. As a minimum, at least the following information shall be marked on the plate by stamping or by any other similar method:

- (a) Owner information
 - (i) Owner's registration number;
- (b) Manufacturing information
 - (i) Country of manufacture;
 - (ii) Year of manufacture;
 - (iii) Manufacturer's name or mark;
 - (iv) Manufacturer's serial number;
- (c) Approval information
 - (i) The United Nations packaging symbol  ;
This symbol shall not be used for any purpose other than certifying that a packaging, a portable tank or a MEGC complies with the relevant requirements in Chapter 6.1, 6.2, 6.3, 6.5, 6.6 or 6.7;
 - (ii) Approval country;
 - (iii) Authorized body for the design approval;
 - (iv) Design approval number;
 - (v) Letters 'AA', if the design was approved under alternative arrangements (see 6.7.1.2);
- (d) Pressures
 - (i) Test pressure (in bar gauge)²;
 - (ii) Initial pressure test date (month and year);
 - (iii) Identification mark of the initial pressure test witness;
- (e) Temperatures
 - (i) Design temperature range (in °C)²;
- (f) Elements / Capacity
 - (i) Number of elements;
 - (ii) Total water capacity (in litres)²;

² The unit used shall be indicated.

- (h) Periodic inspections and tests
 - (i) Type of the most recent periodic test (5-year or exceptional);
 - (ii) Date of the most recent periodic test (month and year);
 - (iv) Identification mark of the authorized body who performed or witnessed the most recent test.

Figure 6.7.5.13.1: Example of identification plate marking

| | | | | | | |
|---|-------------------------------------|---------------|----------------|-----------|----------------------|----|
| Owner's registration number | | | | | | |
| MANUFACTURING INFORMATION | | | | | | |
| Country of manufacture | | | | | | |
| Year of manufacture | | | | | | |
| Manufacturer | | | | | | |
| Manufacturer's serial number | | | | | | |
| APPROVAL INFORMATION | | | | | | |
|  | Approval country | | | | | |
| | Authorized body for design approval | | | | | |
| | Design approval number | | | | 'AA' (if applicable) | |
| PRESSURES | | | | | | |
| Test pressure | | | | | bar | |
| Initial pressure test date: | | (mm/yyyy) | Witness stamp: | | | |
| TEMPERATURES | | | | | | |
| Design temperature range | | | | °C | to | °C |
| ELEMENTS / CAPACITY | | | | | | |
| Number of elements | | | | | | |
| Total water capacity | | | | | litres | |
| PERIODIC INSPECTIONS / TESTS | | | | | | |
| Test type | Test date | Witness stamp | Test type | Test date | Witness stamp | |
| | (mm/yyyy) | | | (mm/yyyy) | | |
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Chapter 7.1

7.1.1.3 Insert a new sub-section 7.1.1.3 to read as follows:

"7.1.1.3 *Acceptance of dangerous goods by carriers*

7.1.1.3.1 A carrier shall not accept dangerous goods for transport unless:

- (a) A copy of the dangerous goods transport document and other documents or information as required by these Regulations are provided; or
- (b) The information applicable to the dangerous goods is provided in electronic form.

7.1.1.3.2 The information applicable to the dangerous goods shall accompany the dangerous goods to final destination. This information may be on the dangerous goods transport document or may be on another document. This information shall be given to the consignee when the dangerous goods are delivered.

7.1.1.3.3 When the information applicable to the dangerous goods is given to the carrier in electronic form, the information shall be available to the carrier at all times during transport to final destination. The information shall be able to be produced without delay as a paper document."

Renumber accordingly existing paragraphs 7.1.1.3 to 7.1.1.9 as paragraphs 7.1.1.4 to 7.1.1.10.

7.1.3.2.3 At the end, add the following new note:

"NOTE: *Alkali metal nitrates include caesium nitrate (UN 1451), lithium nitrate (UN 2722), potassium nitrate (UN 1486), rubidium nitrate (UN 1477) and sodium nitrate (UN 1498). Alkaline earth metal nitrates include barium nitrate (UN 1446), beryllium nitrate (UN 2464), calcium nitrate (UN 1454), magnesium nitrate (UN 1474) and strontium nitrate (UN 1507)."*

Consequential amendment:

In the alphabetical index, add the following new entry:

"Rubidium nitrate, see 5.1 1477".

7.1.8.2 Replace "inland water craft" with "inland waterway craft".

Table 7.1.8.2 In the heading of the third column, replace "inland water craft" with "inland waterways craft".

7.1.10 Add a new section 7.1.10 to read as follows:

"7.1.10 Retention of dangerous goods transport information

7.1.10.1 The carrier shall retain a copy of the dangerous goods transport document and additional information and documentation as specified in these Regulations, for a minimum period of three months.

7.1.10.2 When the documents are kept electronically or in a computer system, the carrier shall be capable of reproducing them in a printed form."
