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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**

Sub-Committee of Experts on the
Transport of Dangerous Goods

Thirty-second session
Geneva, 3-12 (a.m.) December 2007
Item 6 of the provisional agenda

**MISCELLANEOUS PROPOSALS OF AMENDMENTS TO THE MODEL
REGULATIONS ON THE TRANSPORT OF DANGEROUS GOODS**

Fumigated units and cargo transport units containing dry ice as a refrigerant

Transmitted by the expert from the United Kingdom^{*/}

Introduction

1. At the 31st session of the UN Sub-Committee of Experts on the Transport of Dangerous Goods, the expert from the United Kingdom submitted INF 17 which suggested that regulations were required in Part 5 to cover the marking of fumigated units and also the marking of those transport units (now referred to as cargo transport units following decisions taken at the 31st session) carrying dry ice. Such transport units are frequently handled by personnel not familiar with dangerous goods regulations especially as the cargo itself is usually non-dangerous. The draft proposals in the INF paper were intended for discussion prior to the submission of a formal working paper for the December meeting. There was considerable support for continued

^{*/} In accordance with the programme of work of the Sub-Committee for 2007-2008 approved by the Committee at its third session (refer to ST/SG/AC.10/C.3/60, para. 100 and ST/SG/AC.10/34, para. 14) (safe transport of fumigated containers and dry ice).

work in this area. The proposals below are the result of comments made during the discussion as well as several helpful written comments received subsequently.

2. The expert from the United Kingdom is aware that the forthcoming meetings of the International Maritime Organization's DSC 12 and the International Civil Aviation Organization's DG Panel, to whom this paper will be made available for consideration, may have some influence on the further development of these proposals. It may thus be necessary to amend the proposal prior to consideration by the Sub-Committee in December.

3. The proposed mark for cargo transport units containing packaged dry ice is that found in the Supplement to the IMDG Code. This received a number of adverse comments by the Sub-Committee and an alternative version is included at the end of this paper. It is suggested that any amendment to the IMO mark should be coordinated with that body.

Proposal

4. Delete the whole of the existing Chapter 5.5. Insert a new Chapter 5.5 as follows:

“CHAPTER 5.5

SPECIAL PROVISIONS APPLICABLE TO FUMIGATED TRANSPORT UNITS (UN 3359) AND TRANSPORT UNITS CONTAINING PACKAGED DRY ICE (UN 1845) AS A REFRIGERANT

5.5.1 General

5.5.1.1 Fumigated cargo transport units and cargo transport units containing packaged dry ice as a refrigerant (or other expendable refrigerant used for the cooling process such as liquid nitrogen) shall comply with the provisions of this chapter. No other provisions of these Regulations shall apply.

NOTE 1: *Cargo transport units include:*
a road freight vehicle;
a railway freight wagon;
a freight container

NOTE 2: *Such units may contain general freight and may not necessarily contain goods classified as dangerous in transport, other than the fumigant or refrigerant itself.*

5.5.2 Marking

5.5.2.1 Display of UN numbers

5.5.2.1.1 The application to cargo transport units of UN 3359 when under fumigation or of UN 1845 when containing dry ice as a refrigerant, or the UN number of any other expendable refrigerant, is not required. Where the cargo transport unit contains other goods classified as dangerous in transport the provisions of Chapter 5.3 shall apply.

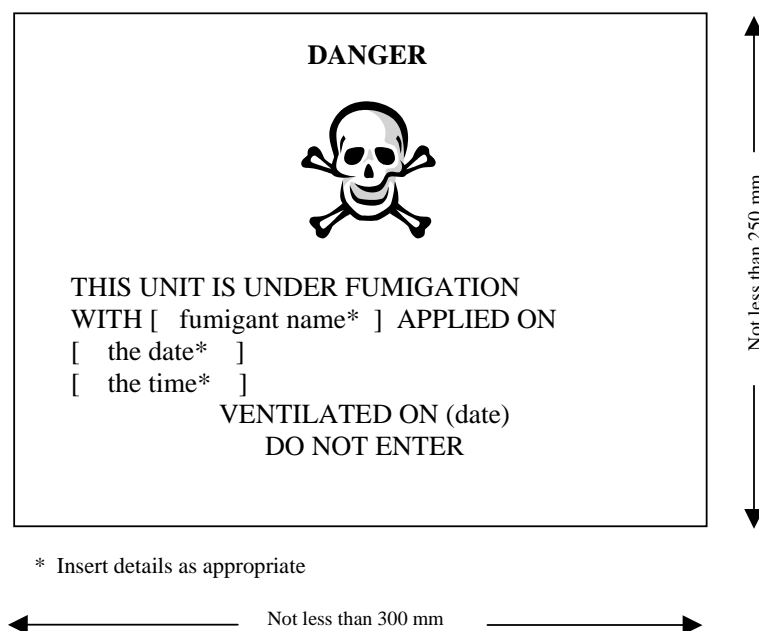
5.5.2.2 *Fumigated cargo transport units*

5.5.2.2.1 A warning mark as specified in 5.5.2.2.2 shall be placed on each door of a fumigated unit in a location where it will be easily seen by persons attempting to enter the interior of the unit. This mark, shall remain on the unit until the following provisions are met:

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

5.5.2.2.2 The fumigation warning mark shall be rectangular and shall not be less than 300 mm wide and 250 mm high. The markings shall be 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



5.5.2.3 *Cargo transport units containing packaged dry ice (UN 1845)*

5.5.2.3.1 A warning mark as specified in 5.5.2.3.2 shall be placed on each door of a cargo transport unit containing packaged dry ice in a location where it will be easily seen by persons attempting to enter the interior of the unit. The cargo transport unit shall also be marked with the words “WARNING – CO2 SOLID (DRY ICE)” in letters not less than 25 mm high in a white box adjacent to the warning mark. Where an alternative refrigerant is used, its name shall replace the words CO2 SOLID (DRY ICE).

5.5.2.3.2 The dry ice warning mark shall be rectangular and shall not be less than 300 mm wide and 250 mm high. The markings shall be red and black print on a white background with lettering not less than 25 mm high. An illustration of this sign is given in Figure 5.5.2.

Figure 5.5.2: Warning mark for dry ice (or other expendable refrigerant used for the cooling process)



Note: The text under the word ‘warning’ should refer to the refrigerant gas used

5.5.2.4 *Dry ice (UN 1845) used as a refrigerant in individual packages [other than those packed in limited quantities]*

5.5.2.4.1 Packages shall be marked “WARNING - CO₂ SOLID (DRY ICE)” and shall meet the provisions of 5.2.1.2.

5.5.2.4.2 Where packages contain other expendable refrigerants that gas shall be marked on the package and shall meet the provisions of 5.2.1.2.

5.5.3 Placarding

5.5.3.1 The application to cargo transport units of a Class 9 placard when under fumigation or when containing dry ice (or other expendable refrigerants) as a refrigerant is not required. Where the cargo transport unit contains other goods classified as dangerous in transport the provisions of Chapter 5.3 shall apply.

5.5.4 Documentation

5.5.4.1 Transport documents associated with the transport of units that have been fumigated or that contain dry ice (or other expendable refrigerant) as a refrigerant shall include the following information:

- (a) The UN number preceded by the letters “UN”;
- (b) The proper shipping name;
- (c) The hazard class.

For example: UN 3359 Fumigated cargo transport Unit, 9 or UN 1845 Carbon Dioxide, Solid (Dry Ice), 9.

5.5.4.2 Transport documents associated with the transport of units that have been fumigated (and have not been ventilated before transport) shall show the date of fumigation and the type and amount of the fumigant used. In addition, instructions for disposal of any residual fumigant including fumigation devices (if used) shall be provided.

A transport document is not required when the unit has been completely ventilated and when the date of ventilation has been marked on the warning sign.”

Consequential amendments

5. SP297: Replace existing text as follows:

“For documentation and for marking of cargo transport units containing packaged solid carbon dioxide see chapter 5.5.

For air transport, arrangements between consignor and operator(s) shall be made for each consignment, to ensure that ventilation safety procedures are followed.”

6. SP302: Amend to read as follows:

“In the proper shipping name, the word “UNIT” means:

a road freight vehicle;
a railway wagon;
a freight container;
a road tank vehicle;
a railway tank wagon; or
a portable tank.

A fumigated unit is a cargo transport unit containing dangerous goods or non-dangerous materials that either are or have been fumigated within the unit. The fumigant gases are either poisonous or asphyxiant. Except when transported by sea, fumigated units are only subject to the following provisions:

- (a) 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 fumigated cargo.
- (b) For marking and documentation see Chapter 5.5”.

7. P620: Amend 2(b) to read as follows:

- “(b) Substances consigned refrigerated or frozen. Ice, dry ice or other refrigerant shall be placed around the secondary packaging(s) or alternatively in an overpack with one or more complete packages marked in accordance with 6.3.3. Interior supports shall be provided to secure secondary packaging(s) or packages in position after the ice or dry ice has dissipated. If ice is used, the outer packaging or overpack shall be leakproof. If carbon dioxide, solid (dry ice) is used, the packagings 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 “WARNING – CO₂ SOLID (DRY ICE). The requirements of Chapter 5.5 shall apply. The primary receptacle and the secondary packaging shall maintain their integrity at the temperature of the refrigerant used;”.

8. P650: Amend 9(a) to read as follows:

- “(a) When dry ice or liquid nitrogen is used to keep specimens cold, 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 packagings 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 “WARNING – CO₂ SOLID (DRY ICE). The requirements of Chapter 5.5 shall apply;”.

9. P904: Amend the additional requirement to read as follows:

Additional requirement:

Dry ice and liquid nitrogen

If carbon dioxide, solid (dry ice) is used, the packagings 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 “WARNING – CO₂ SOLID (DRY ICE) The requirements of Chapter 5.5 apply

Substances consigned in liquid nitrogen or dry ice shall be packed in primary receptacles that are capable of withstanding very low temperatures. The secondary packaging shall also be capable of withstanding very low temperatures and, in most cases, will need to be fitted over the primary receptacle individually.

10. [Chapter 3.4: Add the following new paragraph 3.4.10 [may now be 3.4.11 following July meeting]:

“3.4.10 Fumigated cargo transport units or cargo transport units containing dangerous goods packaged in limited quantities containing dry ice shall meet the requirements of Chapter 5.5”].

11. Chapter 3.5: Add the following new paragraph xxxx:

“Fumigated cargo transport units or cargo transport units containing dangerous goods packaged in excepted quantities containing dry ice shall meet the requirements of Chapter 5.5”.

12. Insert the following new paragraph 4.1.1.15 (Renumber existing 4.1.1.15 as 4.1.1.16):

“4.1.1.15 Packages containing dry ice or other expendable refrigerants when transported in cargo transport units shall meet the requirements of Chapter 5.5”.

**ALTERNATIVE MARK FOR FUMIGATED CARGO TRANSPORT UNITS CONTAINING
PACKAGED DRY ICE OR OTHER EXPENDABLE REFRIGERANT**

