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Sub-Committee of Experts on the Transport of Dangerous Goods

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Geneva, 29 November–7 December 2010
Item 6 of the provisional agenda
Miscellaneous proposals of amendments to the Model Regulations on the Transport of Dangerous Goods

Provisions for packages containing carbon dioxide, solid (dry ice) as a refrigerant

Transmitted by the International Air Transport Association (IATA)[1]

Background

1. At the thirty-seventh session of the Sub-Committee of Experts on the Transport of Dangerous Goods, text was adopted for a new section 5.5.3 addressing packages and cargo transport units containing substances used for cooling or conditioning purposes and which pose an asphyxiation risk (see informal document INF.85). Text adopted based on informal document INF.85 also resulted in an additional paragraph 1.1.1.7[2], consequential changes to a number of packing instructions and the deletion of special provision 297.

2. The purpose of the original document (ST/SG/AC.10/C.3/2010/12) transmitted by the experts from Germany, Netherlands and the United Kingdom, and informal document INF.85 submitted by Germany was to address the safety risk to personnel loading and unloading cargo transport units containing substances such as dry ice which are used as a refrigerant including where dry ice is used for commodities not subject to the Regulations, such as frozen foods.

3. The text adopted at the last session for section 5.5.3, as shown in the addendum to the report of the thirty-seventh session of the Sub-Committee (ST/SG/AC/10/C.3/74/Add.1)

[1] In accordance with the programme of work of the Sub-Committee for 2009-2010 approved by the Committee at its fourth session (refer to ST/SG/AC.10/C.3/68, para. 118 (d) and ST/SG/AC.10/36, para. 14).

[2] This paragraph has been renumbered as 1.1.1.8 (see document ST/SG/AC.10/C.3/2010/50).

also includes provisions for the marking of packages containing dangerous goods used for cooling or conditioning. The text as adopted means that these packages would not bear the standard marking that would normally apply to a package containing dangerous goods, being the UN number and proper shipping name. In addition based on the text in 5.5.3, these packages would not be required to bear the hazard label that would normally be applied, e.g. for dry ice a Class 9 hazard label.

4. IATA is of the opinion that the removal of the standard hazard communication from packages that contain dangerous goods as a refrigerant will degrade safety and will only serve to confuse persons involved in the handling of such packages.

5. Certainly for air transport dry ice is widely used as a refrigerant for non-dangerous goods. However, the ICAO Technical Instructions provides no relaxation from the marking or labelling provisions for such packages. All packages containing dry ice as a refrigerant for non-dangerous goods must bear the marks and labels required by Chapters 5.1 and 5.2. The only relaxation provided for such consignments is that the documentation requirements of Chapter 5.4 do not apply provided that the consignor supplies alternative written (or electronic) documentation that describes the contents. The information required is "UN 1845", "Carbon dioxide, solid" (or "dry ice"), the number of packages and the net quantity of dry ice in each package.

6. For air transport all persons involved in the handling of cargo, not just dangerous goods, must be trained in the aspects of the dangerous goods regulations commensurate with their responsibilities. For persons who are just involved in handling cargo the dangerous goods training provided focuses on the meaning of the hazard labels and key markings that appear on packages, such as orientation arrows, UN 3373 diamond, etc. so that these persons can comply with segregation and loading limitations that may apply to an aircraft unit load device or cargo compartment. Deviations from the "standard" marks and labels only introduce additional training considerations and offer opportunities for error.

7. Based on the above, IATA proposes that paragraph 5.5.3.4 that describes the marking of packages containing a refrigerant be deleted. In addition, that paragraph 1.1.1.7 be revised to apply only to the cargo transport unit and not to the packages of dangerous goods loaded into the cargo transport unit, special provision 297 be retained, but revised as shown in the proposal and that the text in packing instructions P650 and P904 be revised as shown.

Proposal

8. Delete paragraph 5.5.3.4 from section 5.5.3 as shown below:

"**5.5.3 Special provisions applicable to packages and cargo transport units containing substances presenting a risk of asphyxiation when used for cooling or conditioning purposes (such as dry ice (UN 1845) or nitrogen, refrigerated liquid (UN 1977) or argon, refrigerated liquid (UN 1951))**

5.5.3.1 ***Scope***

5.5.3.1.1 This section is not applicable to substances which may be used for cooling or conditioning purposes when transported as a consignment of dangerous goods. When they are transported as a consignment, these substances shall be transported under the relevant entry of the Dangerous Goods List in Chapter 3.2 in accordance with the associated conditions of transport.

5.5.3.1.2 This section is not applicable to gases in cooling cycles.

5.5.3.1.3 Dangerous goods used for cooling or conditioning portable tanks during transport are not subject to this section.

5.5.3.2 ***General***

5.5.3.2.1 Cargo transport units containing substances used for cooling or conditioning purposes (other than fumigation) during transport are not subject to any provisions of these Regulations other than those of this section.

5.5.3.2.2 When dangerous goods are loaded in cooled or conditioned cargo transport units any provisions of these Regulations relevant to these dangerous goods apply in addition to the provisions of this section.

~~5.5.3.2.3 For air transport, arrangements between consignor and operator shall be made for each consignment, to ensure that ventilation safety procedures are followed.~~

5.5.3.2.3 Persons engaged in the handling or transport of cooled or conditioned cargo transport units shall be trained commensurate with their responsibilities.

5.5.3.3 ***Packages containing a coolant or conditioner***

5.5.3.3.1 Packaged dangerous goods requiring cooling or conditioning assigned to packing instructions P203, P620, P650, P800, P901 or P904 shall meet the appropriate requirements of that packing instruction.

5.5.3.3.2 For packaged dangerous goods requiring cooling or conditioning assigned to other packing instructions the packages shall be capable of withstanding very low temperatures and shall not be affected or significantly weakened by the coolant or conditioner. Packages shall be designed and constructed to permit the release of gas to prevent a build-up of pressure that could rupture the packaging. The dangerous goods shall be packed in such a way to prevent movement after the dissipation of any coolant or conditioner.

5.5.3.3.3 Packages containing a coolant or conditioner shall be transported in well ventilated cargo transport units.

~~**5.5.3.4** ***Marking of packages containing a coolant or conditioner***~~

~~5.5.3.4.1 Packages containing dangerous goods used for cooling or conditioning shall be marked with the proper shipping name of these dangerous goods followed by the words "AS COOLANT" or "AS CONDITIONER" as appropriate.~~

~~5.5.3.4.2 The markings shall be durable, legible and placed in such a location and of such a size relative to the packaging as to be readily visible.~~".

Renumber subsequent paragraphs in Section 5.5.3.

9. Revise paragraph 1.1.1.7 (renumbered 1.1.1.8) as shown below:

"**1.1.1.8** ***Transport of cargo transport units containing dangerous goods used as a coolant or conditioner***

Cargo transport units containing dangerous goods, that are only asphyxiant (which dilute or ~~replace~~ displace the oxygen normally in the atmosphere), when used ~~in cargo transport units~~ for cooling or conditioning purposes are only subject to the provisions of section 5.5.3.".

10. Reinstate a revised special provision 297 against UN 1845 to read as follows:

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

Carbon dioxide, solid (dry ice) is excepted from the ~~shipping paper~~ marking requirements of Chapter 5.2.1 and documentation requirements of Chapter 5.4 when the dry ice is used as a refrigerant for other than dangerous goods, ~~if~~ provided that:

(a) the consignor provides alternative written documentation describing the contents. Where an agreement exists with the carrier, the consignor may provide the information by EDP or EDI techniques. The information required is as follows and should be shown in the following order:

1. UN 1845;

2. "carbon dioxide, solid" or "dry ice";

3. the number of packages and the net quantity of dry ice in each package.

(b) the package(s) is marked "UN 1845", "Carbon dioxide, solid" or "Dry ice" and with the net mass of dry ice in each package ~~and is marked with an indication that the substance being refrigerated is used for diagnostic or treatment purposes (e.g., frozen medical specimens)~~.".

11. Revise packing instructions P650 and P904 as shown below:

P650 Amend paragraph (9) to read as follows:

"(9) Refrigerated or frozen specimens: Ice, dry ice and liquid nitrogen

(a) When dry ice or liquid nitrogen is used as a coolant, 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 with the words "CARBON DIOXIDE, SOLID, AS COOLANT or DRY ICE, AS COOLANT~~.".

P904 Amend the additional requirement to read as follows:

"**Additional requirement:**

Ice, dry ice and liquid nitrogen

When dry ice or liquid nitrogen is used as a coolant 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 packaging 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 with the words "CARBON DIOXIDE, SOLID, AS COOLANT" or "DRY ICE, AS COOLANT~~".