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Working Party on the Transport of Dangerous Goods
(Geneva, 13-23 September 2005)

PROPOSALS FOR AMENDMENTS TO RID/ADR/ADN

Carriage of UN No. 1013, carbon dioxide of Class 2 in cylinders up to 0.5 litres

Proposal by the Government of Germany*

The secretariat has received from the Central Office for International Carriage by Rail (OCTI) the proposal reproduced below.

SUMMARY

Executive summary: In the special multilateral agreements M114 and RID 3/2002 the signatory States authorized facilitated conditions of carriage for carbon dioxide in small steel cylinders. Transport operations under this agreement have taken place without incident. The aim of this document is therefore to include these agreed provisions in RID/ADR.

Action to be taken: Adoption by the Joint Meeting of facilitated conditions of carriage as an exemption from subsection 1.1.3.2.

Related documents: Special multilateral agreements M114 and RID 2/2002.

* Circulated by the Central Office for International Carriage by Rail (OCTI) under the symbol OCTI/RID/GT-III/2005/53.

Introduction

Under special multilateral agreements M114 and RID 3/2002, carbon dioxide (UN No. 1013) of Class 2, carried in cylinders with a maximum capacity of 0.5 litres - referred to below as small cylinders - under certain conditions, is exempted from the requirements of Class 2 in RID or in Annexes A and B of ADR. These conditions are cited below.

“By derogation from the provisions of RID/ADR, carbon dioxide (UN No. 1013) of Class 2 carried in cylinders with a capacity not exceeding 500 ml is not subject to the provisions for Class 2 of RID/Annexes A and B of ADR when the following conditions are met:

- 1.1 The provisions for construction and testing of cylinders are observed.
- 1.2 The cylinders are contained in outer packagings which at least meet the requirements of Part 4 for combination packagings. The general provisions of packing of 4.1.1.1, 4.1.1.2 and 4.1.1.5 to 4.1.1.7 must be observed.
- 1.3 The cylinders are not packed together with other dangerous goods.
- 1.4 The total gross mass of a package does not exceed 30 kg.
- 1.5 Each package is clearly and durably marked with ‘UN 1013’. This marking is displayed within a diamond-shaped area surrounded by a line that measures at least 100 mm by 100 mm.”

The ADR special agreement was transmitted to the Contracting Parties of ADR by Austria in September 2001 for signature and was signed by Norway, Germany and the Czech Republic. It is valid until 2 January 2006.

The RID special agreement was transmitted to the member States of COTIF by Austria in February 2002 for signature and was signed by Croatia, the Czech Republic, Germany and Norway. It is valid until 31 December 2006.

Background

In subsection 1.1.3.2 of RID/ADR, gases of Group A (asphyxiant) and O (oxidizing) are exempted from all the provisions of RID/ADR if their pressure in the receptacle or tank at a temperature of 15° C does not exceed 2 bar (gauge pressure) and if the gas is completely in the gaseous state during carriage. This means, for example, that the carriage of carbon dioxide cylinders with a remainder of pressure not exceeding 2 bar (gauge pressure) is not subject to RID/ADR requirements.

It is possible for 100 litres of carbon dioxide to be released from a normal 50 litre cylinder which according to the above explanations is not carried as dangerous goods if the valve is not airtight or is improperly closed - this is very rare - and can spread rapidly throughout the cargo space of the wagon/vehicle without endangering the health of the participants in the transport operation.

The gas content has been calculated for the carriage of small cylinders of carbon dioxide of 0.5 litres - a cylinder contains 200 litres of gas at 15° C - and it has been estimated whether, if the gas is released in the cargo space of any wagon/vehicle, there is reason to fear that the health of the participants is endangered.

It may be deduced that, even under adverse conditions, no concentrations of carbon dioxide will be produced in the cargo spaces of wagons/vehicles that could endanger the health of the driver or the participants in the transport operation.

Moreover, in the opinion of the Bundesanstalt für Materialforschung und Prüfung (BAM) (Federal Institute for Materials Research and Testing), it may be assumed, depending on the type of valves tested for these carbon dioxide cylinders, that there is an infinitely small probability of a valve ceasing to be airtight during carriage. If the valve of a small carbon dioxide cylinder is not airtight, this is apparent directly after filling at the filling facility - the filled cylinder will already be empty at the start of carriage - or the airtightness deficiency is so slight that the quantities of carbon dioxide released over time into the wagon/vehicle do not cause an appreciable increase in the atmospheric concentration of carbon dioxide.

Proposal

1.1.3.2 Add a new paragraph (g) to read:

“(g) carbon dioxide, UN No. 1013 in cylinders with a maximum capacity of 0.5 litres, provided that:

- The provisions for construction and testing of cylinders are observed.
- The cylinders are contained in outer packagings which at least meet the requirements of Part 4 for combination packagings. The general provisions of packing of 4.1.1.1, 4.1.1.2 and 4.1.1.5 to 4.1.1.7 must be observed.
- The cylinders are not packed together with other dangerous goods.
- The total gross mass of a package does not exceed 30 kg.
- Each package is clearly and durably marked with ‘UN 1013’. This marking is displayed within a diamond-shaped area surrounded by a line that measures at least 100 mm by 100 mm.”

Existing subparagraph (g) becomes (h).

Subparagraph (h) proposed in document TRANS/WP.15/AC.1/2005/42/Add.1-OCTI/RID/GT-III/2005/42/Add.1 becomes (i).

Justification

In the opinion of the signatory States, the exemption under the special multilateral agreements for the carriage of carbon dioxide, UN No. 1013 in cylinders with a maximum capacity of 0.5 litres has proved its worth. It should be included among the tested provisions of RID/ADR, since from the technical safety point of view the exemption is comparable with the exemption of gases of Groups A and O according to (c).

Impact on safety

There is no adverse impact on safety, since from the technical safety point of view the exemption is comparable with the exemption of gases of Groups A and O according to (c) of subsection 1.1.3.2.

Feasibility and applicability

No problems are foreseen.
