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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

#### Sixty-first session

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Item 5 (b) of the provisional agenda

**Transport of gases: limited quantities for division 2.2**

## **Increase of the limited quantity volume for Division 2.2 compressed gases**

### **Transmitted by the Council on Safe Transportation of Hazardous Articles (COSTHA)\***

#### **Introduction**

1. In this document COSTHA proposes to increase the limited quantity volume for Division 2.2 gases, without subsidiary risks, consistent with the current provisions in special provision (SP) 653 of the annexes to the Agreement concerning the International Carriage of Dangerous Goods by Road (ADR).
2. COSTHA introduces this proposal based upon multiple discussions that occurred at previous Sub-Committee sessions. A list of relevant working and informal documents related to this proposal include:
  - ST/SG/AC.10/C.3/2018/16
  - ST/SG/AC.10/C.3/2020/54
  - ST/SG/AC.10/C.3/2021/26
  - Informal document INF.33 (fifty-ninth session)
  - ST/SG/AC.10/C.3/2022/26
  - Informal document INF.34 (sixtieth session)
3. The Model Regulations authorize the transport of Division 2.2 gases without subsidiary hazards to be transported in quantities not exceeding 120 ml per inner packaging and 30 kg per outer packaging. According to the Guiding Principles, the rationale behind limited quantity provisions is that selected dangerous goods packed in small quantities and in strong, robust packaging pose a lesser risk in transport than do the same goods packed in larger volumes, and on this basis some relief from specific requirements such as danger labels is acceptable.

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\* A/75/6 (Sect.20), para. 20.51

4. Typically, a 0.125 cartridge of carbon dioxide (CO<sub>2</sub>), weighs approximately 45 g. Assuming the outer fibreboard box would weigh approximately 0.5 kg, this would allow approximately 650 of 0.125 litre cartridges per package under the existing limited quantity provisions. A 1 litre pressure vessel of CO<sub>2</sub> typically weighs approximately 2 kg, which would restrict the number of pressure vessels in a limited quantity package to 14 per package.

5. Currently, ADR SP 653, states:

*“653 The carriage of this gas in cylinders having a test pressure capacity product of maximum 15.2 MPa.litre (152 bar.litre) is not subject to the other provisions of ADR if the following conditions are met:*

- *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 shall be observed;*
- *The cylinders are not packed together with other dangerous goods;*
- *The total gross mass of a package does not exceed 30 kg; and*
- *Each package is clearly and durably marked with “UN 1006” for argon compressed, “UN 1013” for carbon dioxide, “UN 1046” for helium compressed or “UN 1066” for nitrogen compressed. This mark is displayed within a diamond-shaped area surrounded by a line that measures at least 100 mm by 100 mm.”*

6. During the previous discussions several experts indicated that they were supportive of addressing provisions for limited quantities for Division 2.2 gases. Other experts indicated that COSTHA’s proposal should be limited to the four gases addressed in ADR SP 653. Much of the remaining concern from the participants was related to ensuring that any limited quantity exceptions included pressure limits, as with compressed gasses potential energy was the main concern. Some experts expressed concern that the increased limited quantity provisions should not apply for air transport. This proposal is specific to surface transport and limited to the four gases addressed in ADR SP 653.

7. Non-toxic, non-flammable compressed gases, such as Carbon Dioxide (UN 1013), Argon (UN 1006) and other compressed gases with no subsidiary risks are required to be packaged in accordance with packing instruction P200, which is an established packaging regime with a proven transport history. Shipments of compressed gases according to ADR SP 653 have provided a history of safe shipments of these 2.2 compressed gases, with volumes greater than the existing limited quantity limitations (120 ml). The increase in the limited quantity volume for these commodities is supported by the inclusion of SP 653 in the ADR, and the issuance of similar authorizations by the United States Department of Transport (US DOT-SP 20796 and DOT-SP 20936) and Transport Canada (TU0715) through their regulatory approval processes. Currently, SP 653 requires a mark that consists of a 100 mm by 100 mm diamond mark, with the appropriate UN number inside. COSTHA has received comments from Transport Canada and specific carriers that this mark is awkward and confusing since it only applies to four gases, is consistent with the predecessor of the current limited quantity (LQ) mark and is unique to this special provision. This proposal is in line with ADR SP 653 but requires the LQ marking which COSTHA believes would provide greater safety conditions and result in less confusion and complications for training dangerous goods employees including drivers of transport vehicles.

8. The limited quantity limits for aerosols and gas receptacles other than those that contain toxic gases are 1000 ml / 30 kg in accordance with SP 277. Consistent with a previous comment from Canada, aerosols and gas receptacles containing a Division 2.1, 2.1(8), and 2.2(8) all have a limited quantity limit of 1000 ml. Cylinders do contain a higher pressure, but cylinders are significantly more robust than aerosol cans. We are aware of at least one company that has safely shipped millions of CO<sub>2</sub> cylinders across Europe under SP 653 and under similar authorization through approvals in Canada and the United States of America (USA).

9. The Model Regulations are quite mature and represent the baseline for the safe transport of dangerous goods. However, there are areas of the regulations that have

commonly been granted relief from, and those areas should regularly be reviewed to determine whether they are too conservative and hindering the flow of commodities. It is the position of COSTHA that this is a representative example of where the existing regulations are burdensome and an area where data can be compiled and precedent set to review other related commodities for appropriate safety conditions. The fact that the ADR has long had a special provision which reduces the regulatory burden for the four gases and Canada and the USA have similar exemptions provides evidence that these commodities are over-regulated and an amendment to the existing regulatory language is appropriate. This is further supported by millions of shipments of UN 1013 Carbon Dioxide shipped globally without any significant incidents. In fact, COSTHA is aware of one incident where a vehicle carrying significant quantities of gas cylinders containing CO<sub>2</sub> was involved in a collision which involved a fire. None of the cylinders released gas or burst because of the fire exposure.

10. The introduction of this special provision would authorize the transport of these specific division 2.2 gases under the limited quantity provisions by road, rail, and vessel. The limited quantity provisions by vessel would require the limited quantity mark on the outside of the shipping container as hazard communication. Additionally, when incorporated into the International Maritime Dangerous Goods Code, the sub-committee on Carriage of Cargoes and Containers (CCC) has the ability to determine the appropriate stowage requirements needed to ensure an appropriate level of safety.

## Proposal

11. In the Dangerous Goods List, increase the maximum quantity for transporting limited quantities in column 7A from 120 ml to 1,000 ml. for surface transport only; for:

- UN1006, Argon
- UN1013, Carbon dioxide
- UN 1046, Helium, and
- UN1066, Nitrogen

12. In the Dangerous Goods List, add a new special provision number (SP XXX) to column 6 for the following entries:

- UN1006, Argon
- UN1013, Carbon dioxide
- UN 1046, Helium, and
- UN1066, Nitrogen

13. In 3.3 add a new special provision XXX to read as follows:

“XXX Other than for air transport, this entry may be transported according to the limited quantity provisions of Chapter 3.4 when transported in pressure receptacles containing not more than 1,000 ml. The pressure receptacles shall meet the requirements of packing instruction P200, the special packing provisions for goods of Class 2 in 4.1.6, the applicable construction and testing requirements of Chapter 6.2 and have a test pressure capacity product not exceeding 152 bar. The pressure receptacles shall not be packed together with other dangerous goods.”