

---

**Sub-Committee of Experts on the  
Transport of Dangerous Goods**  
(Nineteenth session,  
2-6 July 2001, agenda item 4)

## **TRANSPORT OF SOLID SUBSTANCES IN BULK IN CONTAINERS**

### **Comments on ST/SG/AC.10/C.3/2001/20**

#### **Submitted by the Expert from the United States of America**

1. The expert from the United States welcomes the continuing work to develop requirements for bulk containers in the Model Regulations. The United States submitted comments to the experts from Germany and the United Kingdom and a number of these have been taken into account in ST/SG/AC.10/C.3/2001/20. The paper contains many improvements over the previously submitted proposals, however a number of significant safety issues remain to be resolved. The expert from the United States offers the following comments for consideration by the Sub-Committee in relation to the proposed bulk container requirements.
2. The Sub-Committee needs to consider if the UN Model regulations should provide requirements that are only relevant to two modes of transport. The expert from the United States believes that the proposal does not adequately address all of the modal transport safety issues that need to be considered relevant to the transport of dangerous goods in bulk containers. In particular, we find the proposal to be relevant to rail and road transport but we do not support the use of bulk containers for sea transport as proposed in ST/SG/AC.10/C.3/2001/20. For example, many of the substances proposed for transport in bulk release flammable vapors that could create flammability hazards in confined spaces. Further, based on recent discussions with shipping line representatives, we are concerned that expanded use of bulk containers for the transport of certain dangerous goods by sea will reduce safety if the proposal is adopted as currently proposed. Past history indicates that there have been numerous incidents involving the leakage of substances other than dangerous goods from bulk containers (freight containers filled with solids or liquids in bladders or liners with no intermediate packaging) during sea transport. There have also been incidents involving the dangerous goods that are currently allowed for transport in bulk containers according to the IMDG Code. The incidents have resulted in personnel injuries and property damage. We are compiling further information on these incidents. The proposal does not introduce sufficient safety requirements that would preclude these types of incidents from continuing to occur. The expert from the United States believes that the Sub-Committee should review data on these incidents and consider implementing safety requirements to address the causal factors contributing to them prior to adopting requirements for bulk containers in the Model Regulations.

#### **Medical Waste**

3. The expert from the United States agrees that bulk containers should be authorized for the transport of medical waste, UN 3291. In the United States requirements for the transport of medical wastes were recently developed for incorporation into national regulations. We believe that specific requirements such as the methods for ensuring that the wastes are retained in the bulk containers, restrictions on the transport of Risk Group 4 wastes, specific requirements to address waste residual liquids, specific performance requirements for inner packagings (e.g. tear and impact resistance for film bags), requirements for containing sharps and others need to be addressed. The proposals in –C.3/2001/20 do not sufficiently address these requirements. We are prepared to submit a proposal in this regard for the next session of the Sub-Committee.

#### **Part 4**

##### **Competent Authority Approvals**

4. The proposed text in 4.3.1.3 concerning interim approvals for substances not assigned BK codes in the Dangerous Goods List is not acceptable. We do not believe that competent authorities should be authorized to allow any substance (i.e. explosives) to be transported in bulk containers. There needs to be guidelines for issuing the interim proposals. There should be restrictions on the types of substances that the competent authority can approve for transport in bulk containers.

### **Substance that may become liquid in transport**

5. The expert from the United States does not agree that substances that may become liquid in transportation should be authorized in bulk containers. Paragraph 4.3.1.7 should be revised to indicate that these substances are not authorized. Allowing these substances would significantly compromise safety because bulk packagings do not have sufficient integrity to contain liquids. Transport of substances that may become liquid in bulk containers opens the door for many safety concerns including container stability during handling and stowage, personnel exposure, contamination of other cargo due to leaking containers and damage to the transport vehicle or ship.

### **Substances that emit flammable vapours**

6. The expert from the United States does not agree that substances that may cause a dust explosion or release flammable vapors should be authorized in bulk containers. For instance, we do not support the transport of solids containing flammable liquids or polymeric beads in bulk containers since residual liquid could easily leak from the container and pose significant hazards in transport. Paragraph 4.3.1.14 should be revised to indicate that these substances are not authorized.

### **Contents of a bulk container**

7. The proposed paragraph 4.3.1.15 indicates that multiple substances may be allowed in a bulk container. The expert from the United States disagrees with this provision. Bulk containers should not be authorized with more than one substance.

### **Prior to loading inspection**

8. It is proposed that the following requirements be included in section 4.3.1:

4.3.1.16 Before a bulk container is filled it shall be visually examined to ensure it is structurally serviceable, free of any residue of previous cargo, its interior walls, ceiling and floors are free from protrusions or damage and that any inner liners or substance retaining equipment are free from rips, tears or any damage that would compromise its cargo retention capabilities. Structurally serviceable means the bulk container does not have major defects in its structural components, such as top and bottom side rails, top and bottom end rails, door sill and header, floor cross members, corner posts, and corner fittings in a freight container. Major defects include:

- (a) Dents, bends, cracks or breaks in the structural or supporting members;
- (b) More than one splice or an improper splice (such as a lapped splice) in top or bottom end rails or door headers;
- (c) More than two splices in any one top or bottom side rail;
- (d) Any splice in a door sill or corner post;
- (e) Door hinges and hardware that are seized, twisted, broken, missing, or otherwise inoperative;
- (f) Gaskets and seals that do not seal;
- (g) Any distortion of the overall configuration great enough to prevent proper alignment of handling equipment, mounting and securing chassis or vehicle, or insertion into ships' cells; or
- (h) Any damage to lifting attachments or handling equipment interface features.

Requirements similar to these are currently included in 7.1.3.2.1(b) for freight containers used for explosives. However, we believe that these minimal visual inspection requirements should also apply to bulk containers that are used to transport dangerous goods.

### **Additional requirements for specific classes/divisions of dangerous goods**

9. The proposed section 4.3.2 seems to indicate that sheeted containers and closed bulk containers may be used for any Division 4.1, 5.1 6.1 or Class 9 substance. The definition of a sheeted container indicates that it is: "an open top bulk container with rigid floor side and end walls and a non-rigid covering." The expert from the United States does not support the use of these types of containers for dangerous goods in international transport especially for transport by sea.

10. The proposed section 4.3.3 is titled “Special provisions for bulk goods of Divisions 4.2, 4.3, 5.1 and Classes 7 and 8”. Consistent with the portable tank requirements in 4.2.1 these proposed requirements should be referred to as “Additional provisions applicable to...”

### **Self-heating substances**

11. Paragraph 4.3.3.1 specifies a spontaneous ignition temperature of 55 °C for the total mass of Division 4.2 substance transported in a container. The expert from the United States believes that the spontaneous ignition temperature for the total mass may need to be changed to “should be greater than 65 °C” based on the potential quantity of material in the bulk container and the potential temperature that may be experienced in transport. We will review this matter (e.g. review the BC Code requirements) and provide further comments.

### **Water reactive substances**

12. The expert from the United States does not support allowing Division 4.3 substances in bulk containers for international transport. Use of a liner as the only means of preventing these substances from coming into contact with water is not in the best interest of safety. This is particularly critical for sea transport where ingress of moisture and water is likely in severe weather conditions even if the containers are of the closed type.

### **Corrosive substances**

13. Paragraph 4.3.3.5 would allow Class 8 corrosive materials to be transported in bulk containers. The expert from the United States does not support allowing Class 8 substances in bulk containers for international transport. Use of a liner as the only means of preventing substances that are potentially corrosive to the structural members of the container is not in the best interest of transport safety.

### **BK codes**

14. The proposed paragraph 4.3.2 “Provisions for bulk goods of Divisions 4.1, 5.1, 6.1 and Class 9” states that “Sheeted bulk containers, (code [BK]1) and closed bulk containers including ventilated bulk containers (code [BK]2) may be used.” There are also similar provisions in 4.3.3.1, 4.3.3.2 and 4.3.3.5. The expert from the United States believes that these requirements are contrary to the format of the Model Regulations and that they are superfluous if BK codes and special provisions are assigned to specific substances in the Dangerous Goods List. These provisions are basically the rationale for assigning the BK codes.

### **Part 5**

15. The proposal does not address hazard communication requirements for bulk containers. Hazard communication issues that need to be addressed include:

- Are bulk containers considered “Transport Units”? The expert from the United States believes that they are transport units and therefore the definition of transport unit in 5.3.1.1.1 should be amended to include bulk containers. This is important to ensure that placarding and other hazard communication requirements apply to bulk containers.

- Should a container packing certificate be required for substances loaded in a bulk container? The expert from the United States believes that the Sub-Committee should consider whether only bulk containers that meet the definition of “container” according to the CSC or all bulk containers should be required to have a container packing certificate. Considering that only minimal requirements for the design and construction of bulk containers will be included and that extra care needs to be taken to ensure proper loading a container packing certificate seems appropriate. Based on the Sub-Committee’s decision amendments to 5.4.2 may be necessary.

### **Part 6**

16. In section 6.8.1 of the proposal three definitions are proposed to be included. Considering the current format of the Model Regulations it may be more appropriate to include these definitions in 1.2.1.

17. The proposed paragraph 6.8.2.4 provides provisions for alternate arrangements. The expert from the United States questions whether this is necessary for bulk containers since these packagings are only subject to

minimal general requirements.

18. In section 6.8.3 the proposal defines the bulk container (BK) codes. Consistent with the current format of the Model Regulations and the portable tank requirements (see 4.2.4) the BK codes and special provisions should be included in Part 4. The United States believes that the Sub-Committee should consider a single BK code and a special bulk container provision that states that “only closed bulk containers may be used.” (see the comments relative to Annex 2).

19. The proposed paragraph 6.8.3.5.2 refers to a UN mark for bulk containers. The expert from the United States does not agree that a UN mark is necessary or appropriate.

20. In the proposal the design and construction requirements for bulk containers are covered in two sections. One section applies to freight containers while the other section addresses bulk bins, swap bodies, trough shaped containers, roller containers and road and rail vehicles. The latter section includes only a few general requirements and requires the competent authority to approve the bulk containers for use. The proposal also includes a square bracketed requirement indicating that the approvals need to be renewed every 2 ½ years. This is contradictory to the current situation in the IMDG Code and other regulations where these bulk containers are allowed without approval.

21. Paragraph 6.8.4.6 requires that “The State’s distinguishing sign for motor vehicles in international traffic of the country for which the competent authority acts, shall be marked on the transport document as follows: “Bulk container [BK]X approved by the competent authority of ... ..” . For the reasons indicated above the expert from the United States opposes this requirement.

## **Annex 2 Substances permitted for transport in bulk containers**

22. Based on a review of the proposed BK assignments shown in Annex 2 of the proposal, the expert from the United States believes that it is not necessary to establish two separate BK codes. Of the 20 substances proposed for transport in bulk containers, 3 are only authorized in closed bulk containers (BK2). On this basis, a single bulk code could be used and a special bulk container special provision could be used to indicate that “only closed bulk containers are authorized” when applicable. It would also be useful to assign codes to the other special provisions that are proposed in 4.3.2 and 4.3.3 and include them for each substance that they apply to in the Dangerous Goods List. This approach would be more consistent with the current format of the Model Regulations (e.g. IBC special packing provisions (B notes) and portable tank special provisions (TP notes).

23. In Annex 2, it is recommended that UN 1327, UN 1363, 1364, 1365, 1373, 1386, 1841, 2217 and 2793 be authorized in bulk containers pending the outcome of other amendments. The majority of these substances are already authorized for three modes of transport in bulk containers according to current regulations (IMDG Code, ADR/RID and 49 CFR).

## **Editorial**

24. The proposal uses the word “carriage” in some paragraphs. The word “carriage” was replaced with the word “transport” throughout the Model Regulations as a result of a decision taken at the 21<sup>st</sup> session of the Committee (see ST/SG/AC.10/27/Add.1).

25. In 6.8.2.2 the word “shiftproof” should be “siftproof”.

---