



**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****Forty-ninth session**

Geneva, 27 June – 6 July 2016

Item 6 (a) of the provisional agenda

Miscellaneous proposals for amendments to the Model Regulations**on the Transport of Dangerous Goods: dangerous goods in machinery, apparatus or articles, N.O.S****Dangerous goods in machinery, apparatus or articles, N.O.S****Transmitted by the expert from the United Kingdom¹****Introduction**

1. At the forty-second session of the Sub-Committee it was agreed to place the issue of articles containing various quantities of dangerous goods on the programme of work for the biennium 2013-2014 and the issue has continued to be discussed at each meeting since then and is now in the work programme for this biennium.

Background

2. The expert from the United Kingdom had become aware in recent years that the number of consignments of dangerous goods in all modes assigned to the UN entry UN 3363 DANGEROUS GOODS IN MACHINERY or DANGEROUS GOODS IN APPARATUS seems to be growing inexorably. Numerous requests to exempt various items or objects containing a variety of individual or mixtures of dangerous substances of varying quantities from regulatory provisions have been received by competent authorities and it has been noted that the response to such requests is either to assign them to machinery or apparatus UN 3363 or to the appropriate entry for the substance concerned. However UN 3363 should only be used for dangerous substances which are within allowed

¹ In accordance with the programme of work of the Sub-Committee for 2015–2016 approved by the Committee at its seventh session (see ST/SG/AC.10/C.3/92, paragraph 95 and ST/SG/AC.10/42, para. 15).

Limited Quantity amounts and that it may not always be possible or appropriate to consign articles to the appropriate entry for the substance concerned e.g. how would the article meet the packaging requirements?

3. In many cases the expert from the United Kingdom comes across consignments assigned to UN 3363 where that assignment is questionable. The belief is that this happens not because the consignor is trying to avoid more prescriptive measures, but that they simply do not fully consider the constraints placed on the use of UN 3363. They do not consider assignment to the correct entry for the substance contained in the machinery or apparatus because they view what is to be transported as an ‘article’ not as dangerous goods. Equally, it can sometimes be the case that the machinery or apparatus is a one-off item (often large and expensive) that will never be repeated. As a result, UN 3363 seems to be becoming a ‘dumping ground’ for items that fall into the “too difficult to decide” category. The question remains as to how to appropriately consign articles containing more than one hazardous substance and in quantities greater than permitted by limited quantities? Competent authorities even have difficulty in determining an appropriate entry for such articles. Therefore developing a standard harmonised procedure for classifying articles containing dangerous goods as an integral element would be beneficial for consignors and competent authorities.

4. At the forty-eighth session, the Sub-Committee considered ST/SG/AC.10/C.3/2015/33 and informal document INF.5 submitted by the United Kingdom which continued to seek a solution to the issue of the classification and transport of various dangerous goods contained as an integral element within machinery, apparatus or articles (which are necessary for its functioning and cannot be removed for the purposes of transport), and which are not already included within the Dangerous Goods List of Chapter 3.2.

5. The documents were discussed during plenary and in a working group which met in the margins. There was broad support for Alternative 1 for the classification of articles as depicted in the flow diagram but there was no agreement on the generic packing instructions proposed in INF.5. Several delegations expressed concern that these were too permissive for potentially unlimited quantities of dangerous goods contained in articles. However, it was acknowledged that generic packing instructions could be appropriate for many of the articles containing dangerous goods that might be transported in accordance with this new section. The expert from the United Kingdom agreed to return to the forty-ninth session of the Sub-Committee with a further proposal deleting Alternative 2 presented in ST/SG/AC.10/C.3/2015/33 and reflecting the comments and suggestions received at the 48th session and in subsequent correspondence. In doing so, revised generic packing instructions are contained in the main body of the proposal whereas an alternative is presented in the annex.

Proposal

6. For ease of reference when reviewing the proposed text, the following are the new UN entries (the full entry into the dangerous goods list is at paragraph 9):

UN Number	Class/Division
35AA	2.1
35BB	2.2
35CC	2.3
35DD	3

35EE	4.1
35FF	4.2
35GG	4.3
35HH	5.1
35II	5.2
35JJ	6.1
35KK	8
35LL	9

7. Insert the following new section into Chapter 2.0 of the Model Regulations:

“2.0.5 Transport of dangerous goods in articles not listed in the Dangerous Goods List and containing dangerous goods

***NOTE 1:** The term ‘article’ includes machinery and apparatus containing dangerous goods which may in addition contain batteries. Lithium batteries that are integral to the article shall meet the requirements of 2.9.4, except when otherwise specified by these Regulations (e.g. for prototype batteries and small production runs under special provision 310 or damaged batteries under special provision 376).*

***NOTE 2:** For articles which do not have an existing proper shipping name which contain only dangerous substances within the permitted limited quantity amounts specified in Column 7a of the Dangerous Goods List see UN No. 3363 and special provision 301.*

2.0.5.1 This section only applies to articles containing dangerous goods as a residue or an integral element of the article. It shall not be used for articles for which a proper shipping name already exists in the Dangerous Goods List of Chapter 3.2. Mass produced articles containing dangerous goods shall be manufactured under a quality management programme (see 2.9.4 (e)).

2.0.5.2 Dangerous goods of Class 1, Division 6.2, Class 7 or radioactive material contained in articles shall not be transported in accordance with this section.

2.0.5.3 Dangerous goods contained in articles shall be assigned to the appropriate Class or Division determined by the primary hazard in accordance with the Precedence of Hazards table in 2.0.3.3 for each of the dangerous substances contained in the article. If a Class 9 substance is contained within the article, all other dangerous goods shall be considered to present a higher hazard.

2.0.5.4 Subsidiary risks shall be representative of the primary hazard posed by the other dangerous goods contained within the article or they shall be the subsidiary risk(s) identified in column 4 of the Dangerous Goods List when only one dangerous substance is present in the article. If the article contains more than one dangerous good, then they shall not be capable of reacting dangerously with one another (see 4.1.1.6).

2.0.5.5 The appropriate name and description shall be inserted in parenthesis after the Proper Shipping Name on the transport document as required by 5.4.1.5.13.”

8. Add a new section into Chapter 5.2 as follows:

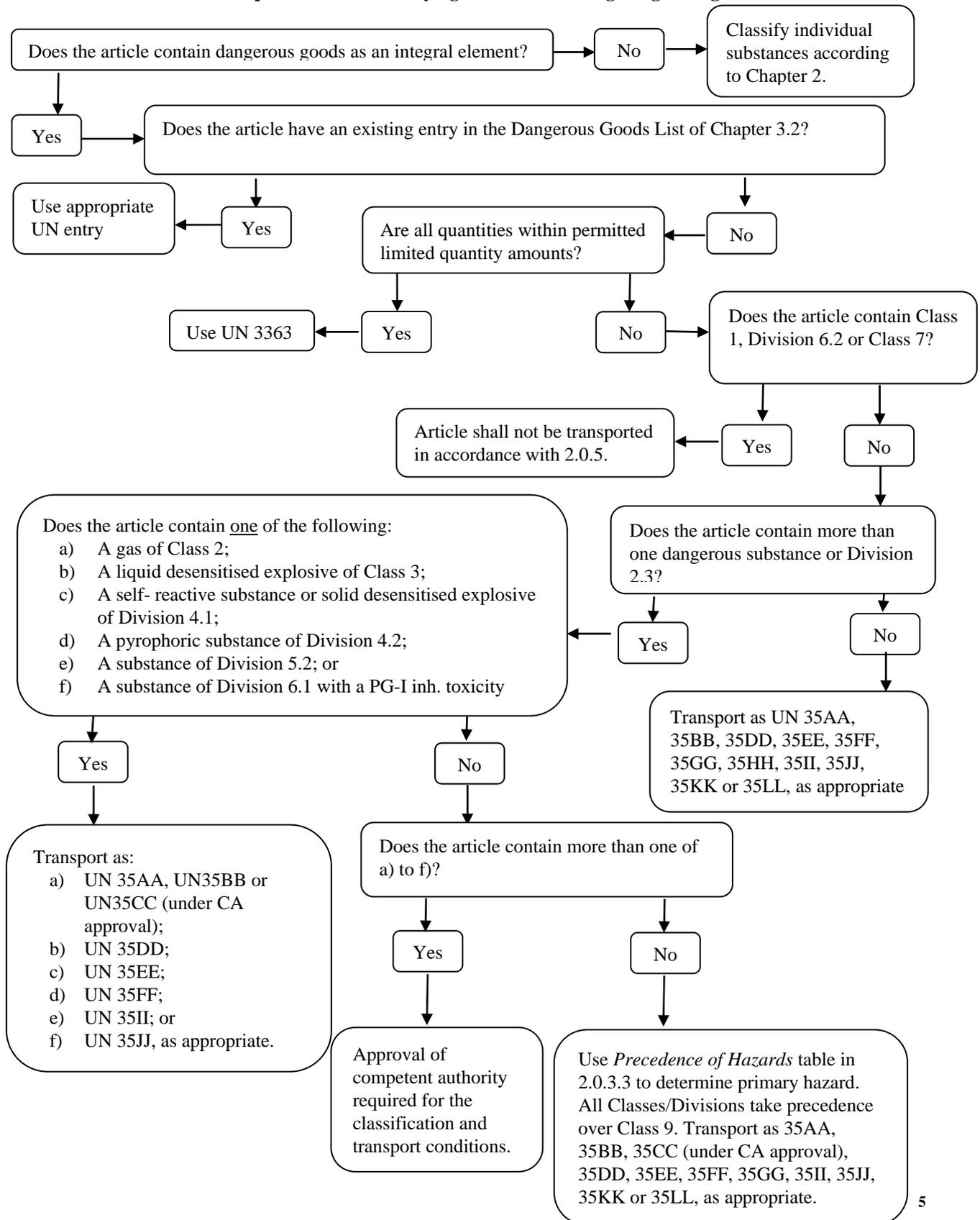
“5.2.2.1.13 *Labels for articles containing dangerous substances transported as UN Nos. 35AA, 35BB, 35CC, 35DD, 35EE, 35FF, 35GG, 35HH, 35II, 35JJ, 35KK and 35LL*

5.2.2.1.13.1 Articles containing dangerous goods shall be labelled according to 5.2.2.1.2 reflecting the primary hazard and subsidiary risks established according to 2.0.5.

5.2.2.1.13.2 When it is required to ensure articles containing liquid dangerous goods remain in their intended orientation, orientation marks meeting 5.2.1.7.1 shall be affixed and visible on at least two opposite vertical sides of the packaged article where possible, with the arrows pointing in the correct upright direction.”

Figure 2.0.5

Scheme of procedure for classifying articles containing dangerous goods



9. Add the following new UN entries to Chapter 3.2 Dangerous Goods List and amend existing UN entries as follows (new text underlined, ~~deleted text strikethrough~~):

UN No.	Name and description	Class or division	Subsidiary risk	UN packing group	Special provisions	Limited and excepted quantities		Packagings and IBCs		Portable tanks and bulk containers	
						(7a)	(7b)	(8)	(9)	(10)	(11)
-	3.1.2	2.0	2.0	2.0.1.3	3.3	3.4	3.5	4.1.4	4.1.4	4.2.5 / 4.3.2	4.2.5
<u>35AA</u>	<u>FLAMMABLE GAS IN ARTICLES, N.O.S.</u>	<u>2.1</u>	<u>See [2.0.5.4]</u>			<u>0</u>	<u>E0</u>	<u>P00X</u> <u>LP00X</u>	<u>PPZZ</u> <u>LZZ</u>		
<u>35BB</u>	<u>NON-FLAMMABLE, NON TOXIC GAS IN ARTICLES, N.O.S.</u>	<u>2.2</u>	<u>See [2.0.5.4]</u>			<u>0</u>	<u>E0</u>	<u>P00X</u> <u>LP00X</u>	<u>PPZZ</u> <u>LZZ</u>		
<u>35CC</u>	<u>TOXIC GAS IN ARTICLES N.O.S.</u>	<u>2.3</u>	<u>See [2.0.5.4]</u>			<u>0</u>	<u>E0</u>	<u>P00X</u> <u>LP00X</u>	<u>PPYY</u> <u>PPZZ</u> <u>LYY</u> <u>PPZZ</u>		
<u>35DD</u>	<u>FLAMMABLE LIQUID IN ARTICLES, N.O.S.</u>	<u>3</u>	<u>See [2.0.5.4]</u>			<u>0</u>	<u>E0</u>	<u>P00X</u> <u>LP00X</u>	<u>PPZZ</u> <u>LZZ</u>		
<u>35EE</u>	<u>FLAMMABLE SOLID IN ARTICLES, N.O.S.</u>	<u>4.1</u>	<u>See [2.0.5.4]</u>			<u>0</u>	<u>E0</u>	<u>P00X</u> <u>LP00X</u>	<u>PPZZ</u> <u>LZZ</u>		
<u>35FF</u>	<u>SUBSTANCE LIABLE TO SPONTANEOUSLY COMBUST IN ARTICLES, N.O.S.</u>	<u>4.2</u>	<u>See [2.0.5.4]</u>			<u>0</u>	<u>E0</u>	<u>P00X</u> <u>LP00X</u>	<u>PPZZ</u> <u>LZZ</u>		
<u>35GG</u>	<u>SUBSTANCE LIABLE TO EMIT FLAMMABLE GAS IN CONTACT WITH WATER IN ARTICLES, N.O.S.</u>	<u>4.3</u>	<u>See [2.0.5.4]</u>			<u>0</u>	<u>E0</u>	<u>P00X</u> <u>LP00X</u>	<u>PPZZ</u> <u>LZZ</u>		
<u>35HH</u>	<u>OXIDIZING SUBSTANCE IN ARTICLES, N.O.S.</u>	<u>5.1</u>	<u>See [2.0.5.4]</u>			<u>0</u>	<u>E0</u>	<u>P00X</u> <u>LP00X</u>	<u>PPZZ</u> <u>LZZ</u>		
<u>35II</u>	<u>ORGANIC PEROXIDE IN ARTICLES, N.O.S.</u>	<u>5.2</u>	<u>See [2.0.5.4]</u>			<u>0</u>	<u>E0</u>	<u>P00X</u> <u>LP00X</u>	<u>PPZZ</u> <u>LZZ</u>		

35JJ	<u>TOXIC SUBSTANCE IN ARTICLES, N.O.S.</u>	6.1	See [2.0.5.4]	0	E0	P00X LP00X	PPZZ LZZ
35KK	<u>CORROSIVE SUBSTANCE IN ARTICLES, N.O.S.</u>	8	See [2.0.5.4]	0	E0	P00X LP00X	PPZZ LZZ
35LL	<u>MISCELLANEOUS DANGEROUS GOODS IN ARTICLES, N.O.S.</u>	9	See [2.0.5.4]	0	E0	P00X LP00X	PPZZ LZZ
3363	DANGEROUS GOODS IN MACHINERY, or DANGEROUS GOODS IN APPARATUS <u>ARTICLES, N.O.S.</u> in limited quantities	9		301	0	E0	P907

10. Amend Special Provision 301 in Chapter 3.3 as follows (new text underlined, deleted text ~~strikethrough~~):

“301 This entry only applies to ~~machinery, articles or apparatus~~ containing dangerous goods as a residue or an integral element of the ~~machinery, article or apparatus~~. It shall not be used for ~~machinery, articles or apparatus~~ for which a proper shipping name already exists in the Dangerous Goods List of Chapter 3.2. ~~Machinery, Articles and apparatus~~ transported under this entry shall only contain dangerous goods which are authorized to be transported in accordance with the provisions of Chapter 3.4 (Limited quantities). The quantity of dangerous goods in ~~machinery, articles or apparatus~~ shall not exceed the quantity specified in Column 7a of the Dangerous Goods List of Chapter 3.2 for each item of dangerous goods contained. If the ~~machinery, article or apparatus~~ contains more than one item of dangerous goods, the individual substances shall not be capable of reacting dangerously with one another (see 4.1.1.6). When it is required to ensure liquid dangerous goods remain in their intended orientation, package orientation labels meeting 5.2.1.7.1 shall be affixed and visible on at least two opposite vertical sides where possible, with the arrows pointing in the correct upright direction.

The competent authority may exempt from regulation ~~machinery, articles or apparatus~~ which would otherwise be transported under this entry. ~~The transport of dangerous goods in machinery or apparatus where the quantity of dangerous goods exceeds the quantity specified in Column 7a of the Dangerous Goods List of Chapter 3.2 is authorized when approved by the competent authority, except where special provision 363 applies.”~~

11. Insert the following new packing instruction into 4.1.4.1 as follows:

P00X	PACKING INSTRUCTION	P00X
This instruction applies to UN Nos.: 35AA, 35BB, 35CC, 35DD, 35EE, 35FF, 35GG, 35HH, 35II, 35JJ, 35KK and 35LL		
<p>The following packagings are authorized, provided that the general provisions of 4.1.1 and 4.1.3 are met:</p> <p>Drums (1 A2, 1B2, 1N2, 1H2, 1D, 1G) Boxes (4A, 4B, 4N, 4C1, 4C2, 4D, 4F, 4G, 4H1, 4H2) Jerricans (3A2, 3B2, 3H2)</p> <p>Packagings shall conform to the packing group II performance level.</p> <p>Additionally the following conditions have to be met:</p> <ol style="list-style-type: none"> a) The packages shall be designed and constructed so as to prevent movement of the articles and inadvertent operation during normal conditions of transport. b) Receptacles within articles containing liquids or solids shall be constructed of suitable materials and secured in the article in such a way that, under normal conditions of transport, they cannot break, be punctured or leak their contents into the article itself or the outer packaging. c) Receptacles containing liquids with closures shall be packed with their closures correctly oriented. If the receptacle is not leak-tight in all orientations, all openings/closures/valves shall be sealed. d) Receptacles that are liable to break or be punctured easily, such as those made of glass, porcelain or stoneware or of certain plastics materials, shall be properly secured. Any leakage of the contents shall not substantially impair the protective properties of the article or of the outer packaging. e) Receptacles within articles containing gases shall meet the requirements of 4.1.6 and chapter 6.2 as appropriate or be capable of providing an equivalent level of protection as P200 or P208. f) Where there is no receptacle within the article, the article shall fully enclose the dangerous substances and prevent their release under normal conditions of transport. <p>Articles which cannot be packaged according to this packing instruction (unpacked articles or articles packed in non-UN approved packagings) are subject to competent authority approval as specified in 4.1.3.8.1 and 4.1.3.8.2.</p>		
<p>Special packing provision</p> <p>PPYY Packagings of articles which contain dangerous goods of Division 2.3 are subject to competent authority approval.</p> <p>PPZZ Packagings of articles which contain more than one of the hazards listed in 2.0.3.1 b) to g) are subject to competent authority approval.</p>		

12. Insert the following new large packing instruction into 4.1.4.1 as follows:

LP00X	PACKING INSTRUCTION	LP00X
This instruction applies to UN Nos.: 35AA, 35BB, 35CC, 35DD, 35EE, 35FF, 35GG, 35HH, 35II, 35JJ, 35KK and 35LL		
<p>The following large packagings are authorized, provided that the general provisions of 4.1.1 and 4.1.3 are met:</p> <p style="padding-left: 40px;">Rigid large packagings conforming to the packing group II performance level made of steel (50A); aluminium (50B); metal other than steel or aluminium (50N); rigid plastics (50H); natural wood (50C); plywood (50D); reconstituted wood (50F) rigid fibreboard (50G)</p> <p>Additionally the following conditions have to be met:</p> <ol style="list-style-type: none"> a) The packages shall be designed and constructed so as to prevent movement of the articles and inadvertent operation during normal conditions of transport. b) Receptacles within articles containing liquids or solids shall be constructed of suitable materials and secured in the article in such a way that, under normal conditions of transport, they cannot break, be punctured or leak their contents into the article itself or the outer packaging. c) Receptacles containing liquids with closures shall be packed with their closures correctly oriented. If the receptacle is not leak-tight in all orientations, all openings/closures/valves shall be sealed. d) Receptacles that are liable to break or be punctured easily, such as those made of glass, porcelain or stoneware or of certain plastics materials, shall be properly secured. Any leakage of the contents shall not substantially impair the protective properties of the article or of the outer packaging. e) Receptacles within articles containing gases shall meet the requirements of 4.1.6 and chapter 6.2 as appropriate or be capable of providing an equivalent level of protection as P200 or P208. f) Where there is no receptacle within the article, the article shall fully enclose the dangerous substances and prevent their release under normal conditions of transport. <p>Articles which cannot be packaged according to this packing instruction (unpacked articles or articles packed in non-UN approved packagings) are subject to competent authority approval as specified in 4.1.3.8.1 and 4.1.3.8.2.</p>		
<p>Special packing provision</p> <p>LYY Large packagings of articles which contain dangerous goods of Division 2.3 are subject to competent authority approval.</p> <p>LZZ Large packagings of articles which contain more than one of the hazards listed in 2.0.3.1 b) to g) are subject to competent authority approval.</p>		

13. Add a new paragraph to 5.4.1.5 as follows:

“5.4.1.5.13 *Dangerous goods in articles, N.O.S*

For UN Nos. 35AA, 35BB, 35CC, 35DD, 35EE, 35FF, 35GG, 35HH, 35II, 35JJ, 35KK and 35LL in addition to the Proper Shipping Name, the transport document shall bear in parenthesis the name and description of the dangerous goods presenting the primary hazard (as indicated in column 2 of the Dangerous Goods List) and subsidiary risks contained.

Example: for an article containing two dangerous substances, one of Class 3 and one of Class 8:

UN35CC, DANGEROUS GOODS IN ARTICLES, N.O.S. (Pyrrolidine), [(Chlorite Solution)] 3, (8)”

Consequential amendments

14. Add a new paragraph to Chapter 1.1 as follows:

“1.1.1.10 **Dangerous goods in articles**

Articles containing dangerous goods shall not be subject to these regulations where the quantity of dangerous goods contained within the article is below the quantity permitted in Excepted Quantities as indicated in Column 7b of the Dangerous Goods List in Chapter 3.2 for all the dangerous goods contained.”

15. Amend the proper shipping name for UN3363 in the Dangerous Goods List of Chapter 3.2 as follows (new text underlined, ~~deleted text strikethrough~~):

“3363 DANGEROUS GOODS IN MACHINERY or DANGEROUS GOODS IN APPARATUS ARTICLES, N.O.S. in limited quantities”

(Amendment would also need to be made to the alphabetical index, to Appendix A, the List of Generic and N.O.S. Proper Shipping Names and to Chapter 2.9).

16. Amend 4.1.3.8.1 as follows (new text underlined):

“4.1.3.8.1 Where large and robust articles cannot be packaged in accordance with the requirements of Chapters 6.1 or 6.6 and they have to be carried transported empty, uncleaned and unpackaged or they cannot be packaged in accordance with P00X or LP00X, the competent authority of the country of origin may approve such carriage transport. In doing so the competent authority shall take into account that:”
[*the remainder of text is to remain the same*].

17. Amend Packing Instruction P907 in 4.1.4.1 as follows (new text underlined, ~~deleted text strikethrough~~):

“P907 If the article ~~machinery or apparatus~~ is constructed and designed so that the receptacles containing the dangerous goods are afforded adequate protection, an outer packaging is not required. Dangerous goods in articles ~~machinery or apparatus~~ shall otherwise be packed in outer packagings constructed of suitable material, and of adequate strength and design in relation to the packaging capacity and its intended use, and meeting the applicable requirements of 4.1.1.1.

Receptacles containing dangerous goods shall conform to the general provisions in 4.1.1, except that 4.1.1.3, 4.1.1.4, 4.1.1.12 and 4.1.1.14 do not apply. For Division 2.2 gases, the inner cylinder or receptacle, its contents and filling density shall be to the satisfaction of the competent authority of the country in which the cylinder or receptacle is filled.

In addition, the manner in which receptacles are contained within the article ~~machinery or apparatus~~, shall be such that under normal conditions of transport, damage to receptacles containing the dangerous goods is unlikely; and in the event of damage to receptacles containing solid or liquid dangerous goods, no leakage of the dangerous goods from the article ~~machinery or apparatus~~ is possible (a leak proof liner may be used to satisfy this requirement).

Receptacles containing dangerous goods shall be installed, secured or cushioned so as to prevent their breakage or leakage and so as to control their movement within the article ~~machinery or apparatus~~ during normal conditions of transport. Cushioning material shall not react dangerously with the content of the receptacles. Any leakage of the contents shall not substantially impair the protective properties of the cushioning material.”

18. Amend the first sentence of 2.0.3.1 to read (new text underlined):

“2.0.3.1 Precedence of hazard characteristics

The table below shall be used to determine the class of a substance, mixture or solution having more than one risk, when it is not named in the Dangerous Goods List in Chapter 3.2 or to assign the appropriate entry for dangerous goods in articles N.O.S (UN Nos. 35AA to 35LL, see 2.0.5)”. [*The rest is to remain unchanged*]

Annex A

Alternative Packing Instruction

Some delegations are concerned that the packing instructions presented in the main body of this paper may be too permissive in allowing substantial quantities of dangerous goods to be transported as articles under these provisions. This could be important considering these provisions cover higher risk (e.g. PG I liquids) goods with acute physical hazards. A more conservative and interim packing instruction is proposed in this Annex which is consistent with the existing packing instruction for articles but modified to include additional performance elements that ensure an equivalent level of safety for the receptacles/primary means of containment for the dangerous goods. The reference to competent authority approval of inner cylinders or receptacles, contents and filling densities for gases would be an interim measure while appropriate and verifiable performance requirements are developed.

P00X	PACKING INSTRUCTION	P00X
This instruction applies to UN Nos.: 35AA, 35BB, 35CC, 35DD, 35EE, 35FF, 35GG, 35HH, 35II, 35JJ, 35KK and 35LL		
<p>If the article is constructed and designed so that the receptacles containing the dangerous goods are afforded adequate protection, an outer packaging is not required. Dangerous goods articles shall otherwise be packed in outer packagings constructed of suitable material, and of adequate strength and design in relation to the packaging capacity and its intended use, and meeting the applicable requirements of 4.1.1.1.</p> <p>Receptacles containing dangerous goods shall conform to the general provisions in 4.1.1, except that 4.1.1.3, 4.1.1.4, 4.1.1.12 and 4.1.1.14 do not apply. For gases, the inner cylinder or receptacle, its contents and filling density shall be to the satisfaction of the competent authority of the country in which the cylinder or receptacle is filled. For liquid dangerous goods the receptacles shall be capable of meeting the internal pressure test provisions of 6.1.5.5.</p> <p>In addition, the manner in which receptacles are contained within the article shall be such that under normal conditions of transport, damage to receptacles containing the dangerous goods is unlikely; and in the event of damage to receptacles containing solid or liquid dangerous goods, no leakage of the dangerous goods from the article is possible. A leak proof liner may be used to satisfy this requirement. Receptacles containing dangerous goods shall be installed, secured or cushioned so as to prevent their breakage or leakage and so as to control their movement within article during normal conditions of transport. Cushioning material shall not react dangerously with the content of the receptacles. Any leakage of the contents shall not substantially impair the protective properties of the cushioning material.</p>		