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Programme or work for the biennium 2013–2014

Articles containing small quantities of dangerous goods

Transmitted by the expert from the United Kingdom¹

Introduction

1. The expert from the United Kingdom has 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. Whilst the terms ‘apparatus’ or ‘machinery’ are not in themselves defined in the Model Regulations, guidance on the assignment of substances to this entry is given in Special Provision 301.

2. Special Provision 301 reads as follows:

This entry only applies to machinery or apparatus containing dangerous substances as a residue or an integral element of the machinery or apparatus. It shall not be used for machinery or apparatus for which a proper shipping name already exists in the Dangerous Goods List of Chapter 3.2. Machinery 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 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 or apparatus contains more than one item of dangerous goods, the individual substances shall not be

¹ In accordance with the programme of work of the Sub-Committee for 2011-2012, approved by the Committee at its fifth session (refer to ST/SRG/AC.10/C.3/76, para. 116 and ST/SRG/AC.10/38para. 16)

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 the specifications of ISO 780:1997 shall be affixed on at least two opposite vertical sides with the arrows pointing in the correct direction.

The competent authority may exempt from regulation machinery 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.

3. There are key parameters to observe in Special Provision 301:
 - The dangerous substance contained must either be a residue (i.e. what is left after all reasonable steps to empty the apparatus or machinery have been taken) or the dangerous substance must be essential to the operation of the apparatus or machinery and not intended to be removed from it (i.e. integral);
 - In either case above, the dangerous substance can only be one which is authorized as a limited quantity and must not exceed the limited quantity threshold for the substance in question (thus butane (UN 1011) cannot qualify since it is not permitted in limited quantities, whilst compressed argon (UN 1006) can qualify since it has a limited quantity threshold of 120 ml);
 - If the machinery or apparatus has its own proper shipping name, that must be used rather than UN 3363. An example of this is a chemical oxygen generator (UN 3356) or a refrigerating machine (UN 3358);
 - There can be more than one dangerous substance contained within the machinery or apparatus providing they are not capable of reacting dangerously with one another;
 - The competent authority can exempt from regulation any machinery or apparatus assigned to UN 3363 irrespective of the quantity of dangerous substance therein (except those substances attracting Special Provision 363).
4. The expert from the United Kingdom regularly receives requests to exempt various items or objects containing a variety of individual or mixtures of dangerous substances of varying quantities from regulatory provisions. However, where possible 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. It should be noted, however, that for European land transport (RID/ADR/ADN), UN 3363 is not used but rather that the provisions of 1.1.3.1 (b) of RID/ADR/ADN are applied. This states that machinery or equipment not specified in the Dangerous Goods List which ‘happens to contain dangerous goods in their internal or operational equipment’ are not regulated if ‘measures have been taken to prevent any leakage of contents in normal conditions of carriage’. There is no mention of quantity of dangerous goods, reaction between two or more dangerous substances and no reference to competent authority approval.
5. In many other 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 a substance. 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.

6. It is also the case that over the last few sessions of the Sub-Committee, more and more requests are being made for new entries in the Dangerous Goods List for items that contain small quantities of dangerous goods either as a means of containment for a specialist purpose (such as oil/gas well samples) or as an initiator for the purpose of the ‘article’ (such as confetti-shooters). Other ‘articles’ under consideration currently include ammonia dispensers, neutron radiation detectors, heat transfer devices and lamps. There are also examples where new entries have been agreed only to have sub-sets of something very similar being proposed for a separate entry (e.g. electric double layer capacitor (UN 3499) and capacitor, asymmetric (yet to be agreed)). This is not to imply any criticism of the proposers of these new entries, but rather to illustrate some of the difficulties even regulators have in determining an appropriate entry for such ‘articles’. In debate on such proposals almost invariably there will be comments made that the new ‘article’ could or should be assigned to UN 3363, that the ‘article’ should be consigned under the entry for the substance(s) it contains or that it poses no real risk in transport and should not be considered as dangerous goods. Some experts now also call into question earlier decisions made on such ‘articles’ as fuel cell cartridges or medical devices/equipment.

7. More often than not, it is usually suggested that the new ‘article’ being discussed should be considered for inclusion in Class 9. Perhaps this is because of the apparent precedent set by UN 3363 being assigned to Class 9 or perhaps because the substance(s) being contained in the article, under the appropriate ‘rationalised approach’ would attract transport provisions considered to be inappropriate or unachievable given the configuration of the ‘article’ or the low risk it apparently poses in transport. The issue then is concern as to whether or not the hazard of the substance is properly conveyed to those who need to know by the use of the Class 9 label.

8. As for packaging for this entry, the requirements of Packing Instruction P907 permit transport unpackaged or otherwise robust outer packagings of suitable material with measures to prevent damage or leakage are permitted. There is no Large Packing instruction assigned to address larger machinery or apparatus.

Proposal

9. The expert from the United Kingdom now asks if the Sub-Committee ought to consider over the next biennium whether a better, more generic approach to this issue could be developed that would make it easier for consignors to determine a suitable entry against which to assign their items or ‘articles’; that would better communicate any hazardous properties of the substances contained; and that would avoid the necessity for constant consideration of possible new entries in the Dangerous Goods List. It might also mean that there would be no necessity to permit competent authorities to grant their own exemptions under Special Provision 301 on the basis of criteria unknown to other competent authorities.

10. It would not be the intention, however, to preclude further consideration of papers currently submitted dealing with such ‘articles’ at this session of the Sub-Committee, nor would it be the intention to remove existing entries for ‘articles’ already included in the Dangerous Goods List.

11. As a tentative initial thought-starter, the expert from the United Kingdom suggests that perhaps a range of new generic entries for each Class or Division could be introduced along the lines of:

UN XXXX ARTICLES, N.O.S. containing dangerous substances of Class 2;

UN YYYY ARTICLES, N.O.S. containing dangerous substances of Class 3;

Etc.

A subsidiary risk label(s) could be added if the substances contained in a particular article requires it. The appropriate entry would then appear in column 4 of the Dangerous Goods List.

Alternatively, if it were thought necessary, additional entries could be envisaged for articles containing more than one Class/Division of dangerous goods e.g;

UN ZZZZ ARTICLES, N.O.S. containing dangerous substances of Class/Division [6] and Class/Division [3].

It might also be possible to lists ‘articles’ in the Glossary e.g. ‘Heat Pipes containing Class 2, see UN XXXX’ – it will be easier to add new ‘articles’ to the Glossary rather than seek new UN entries for each but will aid with classification.

12. Of course, the question arises as to what is an article? The term is used throughout the Model Regulations now and might continue to be used on a common sense understanding. Otherwise, it may be necessary to develop a definition in 1.2.1 that would work not only for this purpose but also in all other instances in the Model Regulations. Given their specific nature, it is suggested that such a definition would not include articles of Class 1 [*or possibly Class 7?*]. One possible suggestion for such a definition is:

‘Article(s,) other than for Class 1 [*or Class 7?*], are items or objects that are designed to contain substances of one or more Classes of dangerous goods where the item or object is intended to perform more than a simple containment function (i.e. it could be a lamp or neutron radiation detector for example).’

13. In order to give a clearer indication of the hazard, a Special Provision (yyy) similar to the intent of SP274 would be assigned to supplement the proper shipping name with a broad description of the article. An additional Special Provision could be developed to give an indication of a suitable maximum quantity of dangerous substance that could be contained in the article. This might read along the lines of:

SP zzz Articles shall contain not more than the following quantities of dangerous substance:

For Class 2, aaaa

For Class 3,bbb ml

For Division 4.1, ccc

Etc. [It might be necessary to complicate this by Packing Group but perhaps the EQ model could be followed?]

For articles containing dangerous substances of more than one Class/Division, the total quantity of each Class shall not exceed [50% of each of the relevant Class quantities?].

14. In accordance with previous decisions by the Sub-Committee this biennium, it is proposed not to assign Packing Group to these entries.

15. Columns 7(a) and 7(b) would be 0 and E0 respectively.

16. Given the variable nature of any likely packaging requirements, it is suggested that Packing Instruction P003 and, possibly, LP99 be assigned. Special packing provisions and/or additional requirements would be added either to address necessary requirements by

Class (for example Class 2 might specify certain provisions from P200 relevant to the gas contained or minimum pressure test requirements; for Class 3, measures to prevent leakage) or to apply general measures such as prevention of movement, orientation etc. In some cases a particular requirement associated with a particular type of article might be necessary.

17. Hazard communication would be covered by requiring the appropriate Class labels and indication of Class/Division in a dangerous goods transport document.

18. The entry in the DGL would thus look something like this:

(1)	(2)	(3)	(4)	(5)	(6)	(7a)	(7b)	(8)	(9)
3xxx	ARTICLES, N.O.S. containing dangerous substances of Class 2	2.2	See col 6		yyy zzz ***	0	E0	P003	PPxx [LP99]
3yyy	ARTICLES, N.O.S. containing dangerous substances of Class 3	3	See col 6		yyy zzz ***	0	E0	P003	PPyy [LP99]

*** For specific articles new Special Provisions could be added

Conclusion

19. If the Sub-Committee is interested in considering this approach further, the expert from the United Kingdom would welcome written contributions from others to help develop a formal proposal for consideration in the next biennium. Alternatively, if this paper provokes other experts to consider the issues raised in more detail, a better approach may be to look at the approaches taken for existing entries, and the approvals competent authorities may have issued, to propose some "Guiding Principles/Classification Criteria text" as the initial stage for dealing with 'articles' followed by possible consequential amendments to existing entries and, if appropriate, new UN numbers for articles currently under consideration.