



**Economic and Social  
Council**

Distr.  
GENERAL

TRANS/WP.15/2004/12  
10 November 2003

ENGLISH  
Original: FRENCH

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**ECONOMIC COMMISSION FOR EUROPE**

**INLAND TRANSPORT COMMITTEE**

Working Party on the Transport  
of Dangerous Goods  
Seventy-fifth session,  
Geneva, 19-23 January 2004,  
agenda item 7

**SAFETY IN ROAD TUNNELS**

**Comments and proposals on the report of the ad hoc expert meeting  
on regulations for dangerous goods cargo groupings in road tunnels,  
Feldkirch, 12-14 May 2003**

**Transmitted by the Government of Switzerland**

**SUMMARY**

***Executive summary:*** Switzerland submits comments on the proposals of the Feldkirch group in informal document INF.15 submitted at the seventy-fourth session and new proposals with the aim of facilitating the implementation of new requirements for tunnels.

***Action to be taken:*** Assign the new proposals to a new Chapter 8.6.  
Adopt a new table adapted to the risks incurred in tunnels.  
Adopt consequential provisions concerning documentation, marking of vehicles, driver training.

***Related documents:*** TRANS/AC.7/9, -/Add.1 and -/Corr.1, TRANS/WP.15/2003/21, INF.15, INF.18 and INF.24 from the May 2003 meeting, INF.48 from the October 2003 RID/ADR/ADN Joint Meeting.

## **1. Introduction**

Switzerland supports solutions which take account of technical requirements and safety in the most efficient form possible. It therefore supports the solution currently in force in ADR where the regulations concerning tunnels come within the competence of each State. This competence should be maintained.

Restrictions on passage through tunnels should be taken by the competent authorities based on analyses of the specific characteristics of each tunnel and traffic density. A general and abstract solution covering a large variety of parameters cannot adequately take the specific characteristics of each tunnel into consideration. For some tunnels this would lead to over-stringent and unjustified provisions, for others, on the contrary, it would lead to excessive laxity in the rules. In order to obviate this, the system selected should establish the minimum requirements and clearly leave each State the competence to go further in individual cases. In principle, this is also the goal of the proposals contained in the OECD/PIARC report. Unfortunately, the experts have not taken the principles they recommend to their logical conclusion, as we shall show.

The possibility of determining the opportunity, the circumstances and the arrangements for passage through tunnels should continue to come within the competence of each State, in particular so as to enable each State to manage traffic and to have the possibility of diverting dangerous goods vehicles in cases where they are completely prohibited from using tunnels.

The terms of reference of the expert meeting does not permit it to exceed these limits.

The text of paragraph 1.9.4 of annex 2 to the report should take these facts into account. Switzerland recommends that these requirements should be placed in a new Chapter 8.6. This would enable a sufficiently strong signal to be given to the authorities concerned, provide useful information for users and ensure that the competence of States to make rules in terms of the specific situation and local conditions is not restricted.

Furthermore, the solution proposed by Austria and the results of the expert meeting do not resolve the fundamental safety problem of maximum permitted quantities in tunnels.

Switzerland has endeavoured to draw the attention of the Feldkirch expert meeting by means of a document summarizing the problems. Some consequential amendments which were necessary in order to facilitate international transport and harmonize information Europe-wide were also included. They are presented below.

### **Comments on the report of the expert meeting in Feldkirch (INF.15)**

#### **Annex 1 (Table)**

##### Class 1

We notice that the proposed restrictions for Class 1 do not correspond to the cargo groupings of the OECD/PIARC model (model), nor to those of the document submitted by the Government of Austria (TRANS/WP.15/2002/21).

Why should there be a divergence from the model only in the case of Class 1?

A detailed examination of the permitted quantities leads to the following observations:

The alleged “restrictions” for cargo groupings B of Division 1.1 are in fact the maximum permissible mass per transport unit according to 7.5.5.2.1 of ADR. This is most certainly not a restriction.

If the solution emerging from the Feldkirch meeting were kept, it would, for example, be permissible to carry articles containing both explosives and a flammable liquid or flammable gel with a mass explosion hazard (1.1J) or a projection hazard (1.2), although there would be no danger of a mass explosion in quantities not exceeding 1,000 kg in tunnels for cargo grouping B.

The same circumstances hold for cargo grouping C and Division 1.3. The quantity of 5,000 kg proposed is the maximum permissible mass per transport unit according to 7.5.5.2.1.

The entry “NO RESTRICTIONS” could figure instead of the contents of columns B and C for the substances of Class 1 in question.

We do not believe that this is the result of a risk analysis study. The Class 1 quantities should be included by the competent authorities concerned as parameters in the Risk Assessment Model (QRAM) of the OECD/PIARC report for the classification of a given tunnel. They cannot be a priori included in the table resulting from the QRAM procedure. These quantities imply that this procedure has been short circuited.

**What will be the consequences of the introduction of maximum permissible quantities per transport unit?**

As in the case of Class 1 there are no de facto restrictions on carriage and cargo categories B and C no longer exist. This means that the same hazard is acceptable inside and outside tunnels. How can restrictions on the other substances in columns B and C then be justified?

**Proposal**

It is proposed to eliminate the quantities given for Class 1.

If these quantities are necessary for specific local configurations, it is for the local authorities to define the classification of the tunnel after applying the QRAM model from the OECD/PIARC report. For this reason we think that it is indispensable to leave open the possibility of permitting certain derogations as we have proposed below in proposal 5.

All classes

The proposed table requires some clarification.

In the annex to our document INF.18 we had proposed a revised table summarizing the results of the expert meeting but transposing the references to classification codes into UN numbers or labels since these two elements appear in the transport document, unlike classification codes. The WP.15 Working Party must decide what is to be done with this information:

- Keep the classification code only;
- Change the codes into UN numbers and labels;
- Keep both elements.

#### **Reference to subsection 1.1.3.6**

Tunnels represent a special situation which was not taken into consideration in preparing the current version of table 1.1.3.6.3 of ADR. For example, the carriage of unlimited quantities of empty uncleaned packagings containing dangerous goods is permitted, with the exception of transport category 0. This means that the carriage of unlimited quantities of empty uncleaned packagings, for example, of flammable substances of Class 3 and packing group I is permitted. Another example is that it is possible to carry substances of Class 1, group 1.4S, in unlimited quantities through tunnels. This does not seem to be the safest way to proceed.

We also feel that it is not acceptable in terms of safety to permit substances of UN No. 3256 ELEVATED TEMPERATURE LIQUID, FLAMMABLE, N.O.S. to be carried through tunnels in quantities of 1,000 l, even though this product belongs to packing group III.

We do not feel that the permitted quantities of flammable gases (333 l of liquefied gas, for example) represent any real level of safety either for tunnels or for other sections of the road.

Examples can be multiplied. The Government of Switzerland refers in this context to the proposals submitted by the United Kingdom in the October 2003 Joint Meeting document INF.48\* concerning the hazards certain substances represent. This document shows the need of revising table 1.1.3.6, not only for questions of safety in tunnels but also for transport in general.

On the other hand, we see no need to prohibit completely the carriage of substances belonging to transport category 0. The same comment applies to other transport categories. These substances may be carried in tunnels under certain conditions to be established by the competent authorities of each country and in quantities which depend on possible choices of other routes. This can be ensured by accepting proposal 5 below.

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\* Available on the ECE Transport Division web site  
(<http://www.unece.org/trans/main/dgdb/ac.1/inf101303.html>).

The aim of the table in 1.1.3.6 has never been to solve issues of safety in tunnels. It was introduced in order to exempt the carrier from the obligations of carrying an ADR certificate, the vehicle equipment prescribed by ADR and the orange-coloured vehicle plates. The last major revision of the table of marginal 10 011 in 1999 was effected exclusively in order to facilitate its use. In so doing, WP.15 agreed to relinquish a certain degree of safety still existing in the table in 10 011 prior to 1999 when the work of OECD/PIARC began. Since then, WP.15 has changed marginal 10 011 to such an extent that the original assumptions can no longer be applied today.

We can no longer say that the table in 1.1.3.6.3 of ADR was drawn up on the same basis as that of the OECD/PIARC model. This new ADR 1999 table cannot provide a basis for safety in tunnels.

The informal document INF.48 submitted by the United Kingdom at the October 2003 Joint Meeting and concerning the hazards certain substances represent shows the need for a revision of table 1.1.3.6, not only for questions of safety in tunnels but also for transport in general.

## **Annex 2 of the report**

### ***Section 1.9.4***

As mentioned earlier, Switzerland is of the opinion that the new provisions cannot be binding. The word “shall” should be replaced by “should” in this sentence.

#### ***Subsection 1.9.4.2***

It is not appropriate to refer to the table in subsection 1.1.3.6. An appropriate table needs to be designed in accordance with the principles of the OECD/PIARC model to fulfil the need for safety in tunnels. Until this has been achieved, the reference to 1.1.3.6 should remain in square brackets.

#### **Second sentence**

The second sentence endeavours to resolve the question of mixed loading in the use in the table of the cargo groupings of annex 1 of the report. It is only partially successful. For tunnels corresponding to cargo grouping D, for example, it is difficult to imagine how receptacles for toxic and flammable gases can be loaded together with tanks containing flammable liquids of packing group III and pesticides of packing group I. Subsection 1.1.3.6 is only applicable to carriage in packages. How is the phrase “..., the most restrictive grouping shall apply to the whole load after application of the provisions of 1.1.3.6.4 and 1.1.3.6.5” to be evaluated in this case? How can the dangers of gas receptacles carried without exceeding the limits of 1.1.3.6 of Class 2 in column D be compared with those of substances of Class 3 in column D of the table?

The text proposed in 1.9.4.2 and the table of annex 1 is not very helpful in resolving this question. It would be necessary to be an expert in each of the substances carried to settle the matter. The users (carriers) cannot settle these problems alone. There is also a need in this case to reflect further before adopting the expert meeting's proposal. Tunnel operators and users need clear and practical answers.

In our opinion, the only way out is the establishment of clear limits for tunnels taking into account only the physical and chemical characteristics of substances and their action in a confined volume. This would be the safest and simplest way to proceed. If 1,000 l of flammable liquids are involved in an accident in the tunnel - very often a fire - it is not of great importance whether the 1,000 l are in packages or in tanks.

### **Last sentence**

We do not understand why the last sentence concerns only empty or half-full tanks and containers. Why are packagings not included? Are more products to be carried in tunnels in empty uncleaned packagings than in full packagings? The carriage of empty packagings in accordance with 1.1.3.6 is permitted in unlimited quantities. This means that it is possible to exceed the quantities mentioned for transport categories 1 to 3 when empty uncleaned packagings are carried. We find no logic in these provisions. They were included in ADR exclusively with a view to exempting drivers from the obligation of undergoing training and having a correctly equipped vehicle and cannot be referred to for the question of tunnels.

It is for this reason that we have proposed a table in 8.6.3 and a risk assessment procedure in our proposal 3.

### **Proposals**

As some delegations mentioned during the WP.15 November session, the OECD/PIARC model is based on table 1.1.3.6.3 of ADR. Strangely enough, it seems that the model does not enable the possibility of prohibiting the passage of dangerous goods through tunnels to be taken into account. This is not the result of a risk analysis or the application of the model itself. The a priori elimination of this possibility has nothing to do with the application of scientific parameters in a mathematical model. It is not scientific to anticipate the results of a measuring instrument before it has been used. The OECD/PIARC experts have restricted themselves to taking account of the applicability of their proposal. As they state in Chapter 4 of the description of the system, they have defined grouping E as follows:

“Grouping E No dangerous goods (except those for which no marking is required on the vehicles)”.

As a result they have taken into account marginal 10 011 which defines the limits as from which the application of the orange-coloured plates is mandatory. In taking this option they have rendered a disservice to their model since the arbitrary introduction of limits, based on a table the purpose of which is not to ensure safety in tunnels but to relax certain provisions, does not take into account the principles governing the use of the model itself.

The OECD/PIARC (model) proposed by Austria at the November session of WP.15 in document TRANS/WP.15/2002/21 and the results of the Feldkirch meeting give rise to two suppositions:

1. That table 1.1.3.6.3 of ADR is genuinely based on an accurate analysis of the hazards of each dangerous substance.
2. That the weighting of the hazards of table 1.1.3.6.3 also applies to tunnels.

Consequently, some delegations pointed out at the November session that in a large number of cases the table proposed by Austria was either too stringent or too tolerant in its effects.

This would have serious consequences both for the users of the tunnel and for safety in tunnels depending on which side of the balance a given dangerous substance is to be found.

In order to avoid these problems, some delegations proposed that the content of the table should be changed (Norway for Class 1).

We are also of the opinion that it is necessary to change the table.

In our view there are four ways to proceed:

1. Restrictions on States would not be introduced in Chapter 1.9. It would, however, be possible to insert the necessary information for drivers and consignors in a new Chapter 8.6 in the form of a table defining the cargoes permitted in each category of tunnel. Those concerned should then comply when the tunnel signs include the categories contained in this table.
2. A sixth column would have to be added to the table of the Austrian document. This column would be devoted to tunnels in which the carriage of dangerous goods is totally prohibited (regardless of the vehicle marking). This solution would solve the problems of excessive laxity which the table seems to permit in some cases. It would also solve some safety problems deriving from the model proposed.
3. Another measure needed is the use of a reference table other than that of 1.1.3.6 of ADR. This new table should be better adapted to the special situation in a tunnel.
4. A text should be included which does not describe the model as an absolute rule from which it is not possible to diverge but as a recommendation to the Contracting Parties.
5. A clause should be introduced enabling derogations from the rules to be envisaged.

***Proposal 1***

Introduction of provisions concerning the cargo groupings in a new Chapter 8.6

This solution makes it possible to avoid the introduction of restrictions into the sphere of competence of the States but sends a sufficiently strong signal to States to use the model to classify road tunnels. Similarly, this solution enables users to be informed of the existence of these cargoes and categories of tunnels.

The solution is not, however, independent of the other proposals listed below.

The table proposed in annex 2 of the report of the Feldkirch meeting in INF.15 could appear in a section 8.6.3.

**“8.6.3 Cargo groupings of dangerous goods for road tunnels**

The table below describes the cargo groupings of dangerous goods permitted for carriage in the same transport unit in road tunnels. During their passage through road tunnels carrying the relevant signs, drivers of dangerous goods vehicles must ensure that they comply with the permitted cargoes in the tunnels in question.



**Table 8.6.3. Cargo groupings of dangerous goods for road tunnels**

Class	Groupings (see NOTES 1 and 2)					
	A	B	C	D	E	[F]
<b>1</b>	Unrestricted	Restricted for <ul style="list-style-type: none"> <li>Divisions 1.1, 1.2 and 1.5 above [1,000] kg maximum permissible net mass of explosives and</li> <li>explosives belonging to compatibility groups A, K and L, above ADR section 8.6.2 threshold</li> </ul>	Restricted for <ul style="list-style-type: none"> <li>Divisions 1.1, 1.2 and 1.5 above ADR section 8.6.2 threshold</li> <li>division 1.3 above [5,000] kg maximum permissible net mass of explosives and</li> <li>explosives belonging to compatibility groups A, H, J, K and L above ADR section 8.6.2 threshold</li> </ul>	Restricted for <ul style="list-style-type: none"> <li>Divisions 1.1, 1.2, 1.3 and 1.5 above ADR section 8.6.2 threshold</li> <li>explosives belonging to compatibility groups A, H, J, K and L above ADR section 8.6.2 threshold</li> </ul>	Restricted for <ul style="list-style-type: none"> <li>goods of this class above ADR section 8.6.2 threshold</li> </ul>	[Prohibited]
<b>2</b>	Unrestricted	Restricted for <ul style="list-style-type: none"> <li>flammable gases (classification codes F, TF and TFC) in tanks</li> </ul>	Restricted for <ul style="list-style-type: none"> <li>loadings in grouping B and</li> <li>toxic gases (classification codes T, TC, TO and TOC) in tanks</li> </ul>	Restricted for <ul style="list-style-type: none"> <li>loadings in grouping C and</li> <li>flammable and toxic gases (classification codes F, FC, T, TC, TF, TO, TFC and TOC) in packages above ADR section 8.6.2 threshold</li> </ul>	Restricted for <ul style="list-style-type: none"> <li>goods of this class above ADR section 8.6.2 threshold</li> </ul>	[Prohibited]
<b>3</b>	Unrestricted	Restricted for <ul style="list-style-type: none"> <li>classification code D: UN Nos. 1204, 2059, 2059, 2059, 2059, 3064, 3343, 3357 above ADR section 8.6.2 threshold</li> </ul>	Restricted for <ul style="list-style-type: none"> <li>loadings in grouping B</li> <li>PG I in tanks of classification code FC: Labels 3 + 8 and FTC: Labels 3 + 6.1 + 8</li> </ul>	Restricted for <ul style="list-style-type: none"> <li>loadings in grouping C and</li> <li>PG I and II in tanks and</li> <li>classification code F2: UN No. 3256 in tanks</li> </ul>	Restricted for <ul style="list-style-type: none"> <li>goods of this class above ADR section 8.6.2 threshold</li> </ul>	[Prohibited]

Class	Groupings (see NOTES 1 and 2)					
	A	B	C	D	E	[F]
4.1	Unrestricted	Restricted for classification code D, DT: UN Nos. 1310, 1322, 1336, 1337, 1344, 1347, 1349, 1354, 1355, 1356, 1357, 1517, 2555, 2556, 2557, 2852, 2907, 3317, 3319, 3344, 3364, 3365, 3366, 3367, 3368, 3370, 3376, 1320, 1321, 1348, 1571, 3369 above ADR section 8.6.2 threshold <ul style="list-style-type: none"> <li>self-reactive substances Type B [UN Nos. 3221, 3222, 3231 and 3232][with labels 4.1 + 1] above ADR section 8.6.2 threshold</li> </ul>	Restricted for <ul style="list-style-type: none"> <li>loadings in grouping B</li> </ul>	Restricted for <ul style="list-style-type: none"> <li>loadings in grouping C and</li> <li>self-reactive substances of Type C to F UN Nos. 3223 to 3230 above ADR section 8.6.2 threshold</li> <li>[related substances to self-reactive substances above ADR section 8.6.2 threshold]</li> </ul>	Restricted for <ul style="list-style-type: none"> <li>goods of this class above ADR section 8.6.2 threshold</li> </ul>	
4.2	Unrestricted	Restricted for <ul style="list-style-type: none"> <li>PG I in tanks</li> </ul>	Restricted for <ul style="list-style-type: none"> <li>loadings in grouping B</li> </ul>	Restricted for <ul style="list-style-type: none"> <li>loadings in grouping C</li> <li>[PG II in bulk/tanks]</li> </ul>	Restricted for <ul style="list-style-type: none"> <li>goods of this class above ADR section 8.6.2 threshold</li> </ul>	[Prohibited]
4.3	Unrestricted	Restricted for <ul style="list-style-type: none"> <li>PG I in tanks</li> </ul>	Restricted for <ul style="list-style-type: none"> <li>loadings in grouping B</li> </ul>	Restricted for <ul style="list-style-type: none"> <li>loadings in grouping C and</li> <li>[PG II in bulk/tanks]</li> </ul>	Restricted for <ul style="list-style-type: none"> <li>goods of this class above ADR section 8.6.2 threshold</li> </ul>	[Prohibited]
5.1	Unrestricted	Restricted for <ul style="list-style-type: none"> <li>PG I in tanks</li> </ul>	Restricted for <ul style="list-style-type: none"> <li>loadings in grouping B</li> </ul>	Restricted for <ul style="list-style-type: none"> <li>loadings in grouping C</li> </ul>	Restricted for <ul style="list-style-type: none"> <li>goods of this class above ADR section 8.6.2 threshold</li> </ul>	[Prohibited]
5.2	Unrestricted	Restricted for <ul style="list-style-type: none"> <li>Type B [UN Nos. 3101, 3102, 3111 and 3112] above ADR section 8.6.2 threshold</li> </ul>	Restricted for <ul style="list-style-type: none"> <li>loadings in grouping B</li> </ul>	Restricted for <ul style="list-style-type: none"> <li>goods of this class above ADR section 8.6.2 threshold</li> </ul>	Restricted for <ul style="list-style-type: none"> <li>goods of this class above ADR section 8.6.2 threshold</li> </ul>	[Prohibited]

Class	Groupings (see NOTES 1 and 2)					
	A	B	C	D	E	[F]
6.1	Unrestricted	Unrestricted	Restricted for <ul style="list-style-type: none"> <li>PG I in tanks of classification codes TF1: Labels 6.1 + 3 which are not pesticides and TFC: Labels 6.1 + 3 + 8</li> </ul>	Restricted for <ul style="list-style-type: none"> <li>loadings in grouping C</li> <li>PG I of classification codes TF2: pesticides with labels 6.1 + 3 and TW1: [liquids with labels 6.1 + 4.3] [UN No. 3123] in tanks</li> <li>PG I of classification codes TF1: labels 6.1 + 3 which are not pesticides and TFC: with labels 6.1 + 3 + 8 in packages above ADR section 8.6.2 threshold</li> <li>PG II in tanks of classification codes TF1, TF2: labels 6.1 + 3, TFC: labels 6.1 + 3 + 8 and TW1: UN No. 3123</li> </ul>	Restricted for <ul style="list-style-type: none"> <li>goods of this class above ADR section 8.6.2 threshold</li> </ul>	[Prohibited]
6.2	Unrestricted	Unrestricted	Unrestricted	Unrestricted	Restricted for <ul style="list-style-type: none"> <li>UN 2814 and 2900 above ADR section 8.6.2 threshold.</li> </ul>	[Prohibited]
7	Unrestricted	Unrestricted	Restricted for <ul style="list-style-type: none"> <li>UN 2977 and 2978</li> </ul>	Restricted for <ul style="list-style-type: none"> <li>loadings in grouping C</li> </ul>	Restricted for <ul style="list-style-type: none"> <li>goods of this class above ADR section 8.6.2 threshold</li> </ul>	[Prohibited]

Class	Groupings (see NOTES 1 and 2)					
	A	B	C	D	E	[F]
8	Unrestricted	Unrestricted	Restricted for <ul style="list-style-type: none"> <li>PG I of classification code CT1: liquids with labels 8 + 6.1 in tanks</li> </ul>	Restricted for <ul style="list-style-type: none"> <li>loadings in grouping C and</li> <li>PG I in tanks of classification codes CF1: Labels 8 + 3, CFT: [8 + 3 + 6.1][UN No. 2029] and CW1 [liquids with labels 8 + 4.3][UN No. 3094]</li> <li>PG I of classification code CT1: liquids with labels 8 + 6.1 in packages above ADR section 8.6.2 threshold</li> </ul>	Restricted for <ul style="list-style-type: none"> <li>goods of this class above ADR section 8.6.2 threshold</li> </ul>	[Prohibited]
9	Unrestricted	Unrestricted	Unrestricted	Restricted for <ul style="list-style-type: none"> <li>classification code M2 (UN 2315, 3151 and 3152) in tanks</li> <li>classification code M3 (UN 2211 and 3314) in bulk/tanks</li> <li>classification code M10 (UN 3258)</li> </ul>	Restricted for <ul style="list-style-type: none"> <li>goods of this class above ADR section 8.6.2 threshold</li> </ul>	[Prohibited]

The Contracting Parties may provide for derogations from the grouping criteria for tunnels.”

**[Remarks: We have decided against translating this table into French for the time being. We have left open the choice of information to appear in the table (UN No., classification code, labels). This remains to be defined by WP.15.**

**We refer, however, to our proposal 3 for a table in 8.6.2 instead of 1.1.3.6; we have introduced a sixth column as noted in proposal 2 below, prohibiting dangerous goods in tunnels so defined and a clause enabling provision to be made for derogations as in proposal 5.**

**The question of the mixed loading of different dangerous goods and the possibility or impossibility for the carrier of making an assessment of the various hazards, however, is not yet resolved by this table.]**

### ***Proposal 2***

Switzerland is of the opinion that the tunnels currently regulated under Swiss legislation do not match the proposed model. These tunnels nevertheless appear in Swiss legislation so as to permit the passage of certain dangerous goods under certain conditions; otherwise, they would be prohibited from using the tunnels in question. We have, however, introduced some degree of flexibility into our legislation while keeping the hazards at a level which can still be controlled or which at least does not augment the consequences of an incident. It would not be acceptable for Switzerland to reduce the level of safety achieved at the present time through existing legislation. The addition of the sixth group of tunnels in which dangerous goods are totally prohibited will make it possible to take into consideration the special conditions of traffic and reduced safety which it is apparently not wished to incorporate into the model.

Should this proposal be accepted, proposal five should in any case be kept so as to continue to make it possible, as is the case today, to allow some flexibility and permit dangerous goods to travel in some form through certain tunnels where the traffic of dangerous goods is prohibited.

### ***Proposal 3***

We have already indicated the problems which derive from the reference to subsection 1.1.3.6. With the aim of arriving at a harmonized international solution which would at the same time provide adequate safety in tunnels, we propose the creation of a new table for tunnels based on the same methods of evaluation as the system used in the OECD/PIARC model.

An agreement needs to be obtained on the smaller quantities which can be carried through tunnels. This table could then serve as a basis for the OECD/PIARC system.

### **Proposal for a reference table**

#### **Table to be used in place of reference table 1.1.3.6 of the OECD/PIARC model**

We propose the following table as a basis for discussion. It should be included in ADR in a new paragraph 8.6.2 as a reference instead of table 1.1.3.6 in the tunnels table.

#### **“8.6.2 Maximum total quantities per transport unit permitted in tunnels**

8.6.2.1 Where, in accordance with 1.9.3 (a), additional provisions concerning carriage of dangerous goods through road tunnels are applied, the Contracting Parties are invited to refer to the groupings of dangerous goods loadings as contained in the following table.

#### **8.6.2.2 Table of maximum total quantities per transport units in tunnels**

Table 8.6.2 below should be used in conjunction with table 8.6.3. It gives the maximum total quantities permitted per transport unit for passage through the road tunnels listed in table 8.6.3. It enables the permissible loads to be evaluated in terms of the cargo grouping permitted in a tunnel as defined in table 8.6.3.

Quantities Labels	0	20	50	100	150	300	1000	Unlimited
1	1.1A to 1.1G, 1.1J, 1.1L, 1.2B to 1.2J, 1.2L, 1.3C, 1.3G to 1.3J, 1.3L							
1.4	1.4C to 1.4G except UN Nos. 0407, 0448, 0479, 0480	1.4C UN Nos. 0407, 0448, 0479, 0480 1.4D	1.4S					
1.4+6.1+8	X							
1.4+8	X							
1.5		1.5D						
1.6	1.6N							
1+6.1	1.1A UN Nos. 0224, 0143 1.1D UN Nos. 0143, 0076 1.3C UN No. 0077							
1+6.1+8	1.2G UN No. 0018, 1.3G UN No. 0019							
1+8	1.2G UN No. 0015, 1.3G UN No. 0016							
2.1			3F		1F, 2F, 4F, 5F, 6F			
2.2	UN 1043				4A UN No. 2073	3A, 5A, 6A	1A, 2A	
2.2+5.1			3O		5O		1O, 2O	
2.3					1T, 2T, 5T, 7T			
2.3+2.1					1TF, 2TF, 5TF, 7TF			
2.3+2.1+8					1TFC, 2TFC, 5TFC			
2.3+5.1					1TO, 2TO, 5TO			
2.3+5.1+8					1TOC, 2TOC, 5TOC			
2.3+8					1TC, 2TC, 4TC, 5TC			
3	D UN No. 3343, PG I (D and F1) D PG II UN Nos. 1204, 3064 F2 PG III UN No. 3256		PG II (F1 and D) except UN Nos. 1204 et 3063		PG III except 3256			
3+6.1	PG I and PG II				PG III			
3+6.1+8	PG I, PG II							

Quantities Labels	0	20	50	100	150	300	1000	Unlimited
3+8	PG I, PG II				FC PG III			
4.1	PG I PG II: D: UN Nos. 2555 to 2557, 2907, 3376 SR1 UN Nos. 3223, 3224, 3242 F2 UN No. 3176 PG III: F2 UN Nos. 2304, 3176 F3 UN No. 2448	SR1 UN Nos. 3225, 3226	PG II F3 UN Nos. 1309, 1323, 1326, 1333, 1339, 1341, 1343, 1352, 1358, 1437, 1871, 2989, 3089, 3178, 3181, 3182	(a) PG II: D: UN Nos. 3319 and 3344 F1: UN Nos. 1325, 3175, 3270, 1345 PG III: F3 SR1 UN Nos. 3227 to 3330		PG III: F1 UN Nos. 1312, 1324, 1325, 1328, 1332, 1334, 1353, 2000, 2213, 2538, 2717, 1331, 1944, 1945, 2254, 2623 SR1 UN Nos. 2856, 3241, 3251		
4.1+6.1	PG I			PG II		PG III		
4.1+8				PG II		PG III		
4.1+1	X							
4.2	PG I			PG II		PG III		
4.2+4.3	PG I				PG III			
4.2+6.1	PG I			PG II		PG III		
4.2+8	PG I			PG II		PG III		
4.3	PG I PG II: W2: UN No. 1390, 2813, 3148 PG III: W2: UN Nos. 1403, 2813, 2968, 3148		PG II: W2: UN Nos. 1393, 1394, 1396, 1400, 1401, 1402, 1405, 1409, 1417, 2624, 2805, 2830, 2835, 3078, 3170, 3208 W3: UN No. 3292		PG III W2: UN Nos. 1396, 1398, 1405, 1435, 2844, 2950, 3170, 3208			
4.3+4	PG I + II							
4.3+4.2	PG I, PG II		WS PG III					
4.3+6.1	PG I, II and III except UN 1408				UN 1408			
4.3+3	PG I and II							
4.3+3+8	X							
4.3+8	X							





Quantities Labels	0	20	50	100	150	300	1000	Unlimited
8	PG I PG II UN No. 2576		PG II C1 UN No. 2851 C2 1756, 2439	PG III C1 UN No. 1757 C2 UN No. 1740 PG II except UN Nos. 1756, 2439, 2576, 2851		PG III except UN Nos. 1740, 1757		UN Nos. 2794, 2795, 2800, 3029
8+3	PG I		N.o.s. substances PG II CF1: UN Nos. 1715, 1724, 1747, 1767, 1816, 2218, 2502, 2789, 2826, 2920, 2986	Non n.o.s. substances PG II CF1 UN Nos. 1604, 2051, 2248, 2258, 2264, 2357, 2619, 2685, 2686, 2734				
8+3+6.1	X							
8+4.1	PG I UN No. 2921			PG II UN No. 2921				
8+4.2	PG I			PG II				
8+4.3	X							
8+5.1	N.o.s. substances PG I and II		Non n.o.s. substances PG I and II					
8+5.1+6.1	X							
8+6.1	PG I: CT1		PG II: CT1: UN Nos. 2030, 1732, 1790, 2817 CT2: UN No. 1811	PG II: CT1: UN Nos. 1761, 2818, 2922 CT2: UN No. 2923 PG III: CT1: I UN Nos. 2817, 2030		PG III: CT1: UN Nos. 1761, 2818, 2922		
9	PG II: UN Nos. 2212, 2590, 3258, 2315, 3151, 3152, PG III: UN No. 3257		M3 UN Nos. 2211, 3314 M5 UN Nos. 2990, 3072 PG III M11 UN No. 1841	PG II M4 II UN Nos. 3090, 3091 PG III M5 UN No. 3268		PG II and PG III M 11 UN Nos. 2969, 3316, 1931, 1941, 1990, 3316 M 11 UN Nos. 3363, 3359		PG III: UN Nos. 3082, 3077, 3245 Genetically modified organisms

## (a) PG III

F3: UN Nos. 1325, 3175, 3270, 1345, 1309, 1313, 1314, 1318, 1330, 1338, 1346, 1350, 1869, 2001, 2687, 2714, 2715, 2858, 2878, 2989, 3089, 3178, 3181, 3182.

In the above table, “maximum total quantity per transport unit” means:

- for articles, gross mass in kilograms (for article of Class 1, net mass in kg of the explosive substance);
- for solids, liquefied gases, refrigerated liquefied gases and dissolved gases, net mass in kilograms;
- for liquids and compressed gases, nominal capacity of receptacles (see definition in 1.2.1) in l;
- for articles other than those of Class 1 gross mass of the articles.

The quantities of the different dangerous goods (except for goods accepted in unlimited quantities), contained in a transport unit, must be limited in such that “Q” is not greater than 1, where “Q” is calculated according to the following formula:

$$Q = \frac{n_1}{M_1} + \frac{n_2}{M_2} + \frac{n_3}{M_3} \dots$$

Where  $n_1, n_2$ , etc. are the quantities per transport unit of the different dangerous goods and  $M_1, M_2$ , etc. are the maximum quantities of these dangerous goods taken into account.

### Explanations

If this proposal is adopted, the reference to 1.1.3.6 in the table in annex 2 of document INF.15 which we have included in section 8.6.3 as described above, should be changed to a reference to this new table.

The foregoing table summarizes the maximum total quantities per transport unit of each type of substance in terms of their labels (except for Classes 1 and 2). We have selected labels as the most accurate means of defining the hazard currently figuring in the transport document. The other criteria are the packing group and the UN numbers. Lastly, the classification code is an excellent aid for defining the hazards; the disadvantage of the latter, however, is that they do not appear in the transport document (except for Classes 1 and 2). The code continues to be the simplest means of defining the hazard. It is clear, however, that the ADR criteria are not always adapted to the hazards arising from some substances when they are involved in accidents in tunnels. Some physical and chemical characteristics which are important in the particularly

confined volume of a tunnel are not taken into account in the general classification model of ADR. This is one of the reasons why the table cannot be as simple as the table in 1.1.3.6.3. The use of table 8.6.2, however, is fairly simple. It is sufficient to know the labels, the packing group and the UN number to determine the maximum quantity permitted in an E-classified tunnel. The classification codes may be removed from the final table, since they are not part of the documentation. We have kept them for the sake of clarity.

#### ***Proposal 4***

We propose to amend 1.9.4 in document TRANS/WP.15/2002/21 as follows:

“8.6.1 Where, in accordance with 1.9.3 (a), additional provisions concerning carriage of dangerous goods through road tunnels are applied, the Contracting Parties are invited to refer to the groupings of dangerous goods loadings as contained in the following table.”

#### **Justification**

The text proposed in 1.9.4 of document INF.15 cannot exceed the scope established in 1.9.2.

#### ***Proposal 5***

After table 8.6.2, add the following text:

“The Contracting Parties may provide for derogations from the grouping criteria for tunnels.”

Account should be taken of the needs of the economy. As has already been said, the table cannot apply to each special configuration of the tunnel or to each local situation or to each type of product. Some tunnels may be classified as prohibiting dangerous goods but may benefit from derogations permitting certain quantities of some products under conditions defined by the local authority. Not all products are concerned, but only basic commodities for some localized areas which are inaccessible other than by road.

#### **Other provisions required in ADR to harmonize the passage through tunnels in Europe**

It must be acknowledged that tunnels represent another mode of transport (normal roads, trains, air, vessels) and that they should be treated as such. Chapter 1.9 of ADR takes account of this. The same philosophy exists in clause 5 of the introduction to air transport in the United Nations Model Regulations which states, “For air transport more stringent requirements may occasionally apply.”

It is necessary for these reasons to consider other restrictions which may be applicable to passage through tunnels.

We are moreover of the opinion that when account is taken of the quantities given in table 8.6.2 above, the following measures should be included in ADR:

1. Additional provisions for tunnels
2. Documentation
3. Placarding and marking of vehicles
4. Requirements for driver training

***1. Additional provisions for tunnels***

***Proposal 6: Additional provisions for tunnels***

We propose the addition of the following additional provisions for tunnels in a new Chapter 8.6:

**“8.6.1 Carriage of dangerous goods in tunnels in accordance with the exemptions of 1.1.3 and Chapters 3.3 and 3.4 of ADR**

**8.6.1.1** The dangerous goods carried under the conditions of exemption of 1.1.3.2 (b) to (g), 1.1.3.3 (b), 1.1.3.4, 1.1.3.5 and 1.1.3.6 of Chapter 3.4 of ADR and special provisions 119, 145, 188, 190, 191, 216, 238 (b), 242, 283, 286, 287, 289, 291, 584, 592, 593, 594, 598, 599, 600, 601, 641 and 647 of Chapter 3.3 of ADR, are subject to the same restrictions on passage through tunnels per transport unit, according to 8.6.2, as dangerous goods which are not exempted. The description of the goods in the transport document must conform to the requirements of 5.4.1.1 and include the relevant terms of 5.4.1.1.4 and 5.4.1.1.5.

**8.6.1.2** Gases within the meaning of 1.1.3.2 (a) of ADR and fuel within the meaning of 1.1.3.3 (a) of ADR, contained in the tanks of vehicles and used for their propulsion, are not subject to the limitations for which 8.6.2 provides.

**8.6.1.3** Gases carried under the conditions of exemption of 1.1.3.2 (b), (e) and (f) of ADR in pressurized tanks or fuel tanks, with a capacity greater than 450 l, are subject to the same restrictions on passage according to 8.6.2 as portable tanks.

**8.6.1.4 Carriage of goods in accordance with the exemptions of 1.1.3.1 of ADR**

The dangerous goods carried under the conditions of exemption of 1.1.3.1, paragraphs (a), (b), (c) and (d), are subject to the same restrictions on passage through tunnels per transport unit according to 8.6.2 as goods which are not exempted.”

## **Justification**

If account is taken of the hazards inherent in dangerous substances and their consequences in accidents in tunnels, the manner of packing, for example, small packagings, or the use of the products in the food or the pharmaceuticals industry, does not alter the consequences of an accident. The derogations in Chapters 3.3 and 3.4 may be tolerated on normal roads. This is no longer the case in tunnels. The bases for the derogations, moreover, only take account of the use of the products, alcoholic drinks, for example, and are not scientifically justified. They were introduced for reasons other than safety. They should also be analysed in accordance with the OECD/PIARC model. The derogations currently in force short-circuit the model in question and this runs counter to the safety sought in tunnels. For this reason, the dangerous goods carried in tunnels cannot benefit from the same derogations as for normal roads.

### ***Proposal 7: Transport document***

#### **Carriage according to Chapter 3.4**

For carriage in tunnels according to Chapter 3.4, amend paragraph 5.4.1.1.4 as follows:

**“5.4.1.1.4     *Special provisions for dangerous goods packed in limited quantities***

5.4.1.1.4.1     No information is required in the transport document, if any, for the carriage of dangerous goods packed in limited quantities according to Chapter 3.4.

5.4.1.1.4.2     For carriage according to 1.1.3.4.2, the transport document shall contain the following entry: **‘Carriage according to 1.1.3.4.2 and Chapter 8.6’.**”

#### **Carriage according to Chapter 3.3**

For carriage according to Chapter 3.3 in tunnels, add a new paragraph 5.4.1.1.5 as follows:

**“5.4.1.1.5     *Special provisions for passage through tunnels with dangerous goods carried according to Chapter 3.3***

For carriage in tunnels according to 1.1.3.4.1, the transport document shall contain the following entry: **‘Carriage according to 1.1.3.4.1 and Chapter 8.6’.**”

Re-number the following paragraphs of ADR.

For all other dangerous goods, the necessary information must also be provided and indicated in Chapter 5.4.1 with the addition of the following paragraph:

**“5.4.1.1.17** *Information required according to Chapter 8.6*

For carriage according to Chapter 8.6, other than carriage according to 1.1.3.4.1 and 1.1.3.4.2, the transport document shall contain the following entry:

**‘Carriage according to Chapter 8.6’.**”

**Justification**

The addition of the above information makes for rapid comprehension on the part of tunnel operators and documentation inspection bodies. The necessary inspections will thus be expedited. These provisions are also in accordance with the exemptions procedure in ADR, for example, the exemptions in 5.4.1.1.7 to 5.4.1.1.10. This information is also necessary for safety reasons so as to ensure the efficient and safe management of traffic in tunnels. The owner, operator or manager of the tunnel needs to monitor constantly the dangerous goods in his tunnel so that he will have the right reaction in the event of an incident or accident or when the density of traffic requires appropriate measures to be taken. This cannot be achieved without a transport document containing clear information.

***Proposal 8: Placarding and marking of vehicles***

We propose the introduction of the following in Chapter 5.3:

**“5.3.1.7** **Placarding of vehicles for tunnels**

Transport units carrying dangerous goods through tunnels in which passage is regulated in accordance with 8.6.1 shall carry orange-coloured plates in accordance with 5.3.2.”

Consequential amendments:

After the first paragraph in 1.1.3.6.2,

Add “except for 5.3.1.7” after “Chapter 5.3;” in the first indent;

Add “Chapter 8.6” after “... Chapter 8.5;” in the fifth indent.

In order to identify vehicles carrying dangerous goods when travelling through tunnels, we are of the opinion that the simplest method is to mark all vehicles regardless of the quantity carried and type of derogation applied (Chapters 3.3, 3.4, 1.1.3.6 or normal transport operations). This will considerably simplify the work of the carrier, the tunnel manager and the inspection bodies. The addition of the information to the transport document, as proposed, would clarify the situation in the event of inspections and expedite them.

If the proposals are adopted, there is no need for additional marking of vehicles. All dangerous goods, regardless of the type of carriage (Chapters 3.3, 3.4 or normal) will receive identical treatment in tunnels. In the event of an inspection, the information in the transport document explains the reasons for the lack of certain equipment, training certificates or instructions for the driver. The sentences corresponding to those required in 5.4.1.1.4.2, 5.4.1.1.5 and 5.4.1.1.17 will explain the reasons for such “lacks.”

If this solution is not adopted, a means of distinguishing between vehicles effecting transport operations according to Chapters 3.3, 3.4 or 1.1.3.6 would have to be found, and this would render our requirements inapplicable for tunnels and reduce safety in tunnels to an unacceptable extent.

***Proposal 9: Requirements concerning driver training***

We consider that all drivers carrying goods in tunnels should undergo training in accordance with Chapter 8.2. This training should apply regardless of the mass of the vehicle, as already approved by the Working Party WP.15 at its May 2003 session.

We propose the addition of the following text under 8.2.1.10:

**“8.2.1.10 Training for drivers travelling through regulated tunnels**

Regardless of the maximum mass of the vehicle, drivers of vehicles carrying dangerous goods through regulated tunnels shall take a training course in accordance with 8.2.2.”

**Justification**

This measure makes it possible to ensure driver behaviour in tunnels adapted to the circumstances and in keeping with the dangerous goods carried. The statistics show that drivers trained according to ADR are less subject to accidents than other drivers. This benefits safety in road tunnels.

**Justification**

Safety in tunnels must take precedence over all other considerations. By selecting a table common to all tunnels based on an evaluation of the potential hazards of tunnels and using the QRAM model from the OECD/PIARC report, the model can be transposed to any country. Each authority, however, must be in a position to continue to make provision for national derogations should this prove necessary. The additional proposals which we are making will facilitate the work of all participants and will be beneficial for safety not only in tunnels but also on other sections of road.

**Safety implications**

Mention has already been made of the implications for safety. Better trained drivers and clear transport documents are factors which will increase safety both inside and outside tunnels.

A harmonized system of grouping of dangerous goods will make it easier to understand rules in tunnels; this is also a safety aspect.

**Feasibility**

The proposals made are no more complicated to use than other provisions which already exist in the regulations.

For persons travelling through tunnels the other exceptions existing in ADR will disappear. This is a simplification of the regulations. Only those provisions specific to tunnels and those of ADR must be complied with. The new provisions concerning documentation and training are no more difficult to apply than those already existing in ADR.

**Enforceability**

States must make provision for appropriate signing of their tunnels. There are no other problems of enforceability.

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