**ADR/ADN/RID amendments regarding the orange-coloured plate**

**References**

[1]. European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR)

[2]. Regulations concerning the International Transport of Dangerous Goods by Rail (RID)

[3]. European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (ADN)

[4]. Document ECE/TRANS/WP.15/AC.1/2016/14 ([French version](https://example.com), [English version](https://example.com), [Russian version](https://example.com)) complemented by [document ECE/TRANS/WP.15/AC.1/2016/BE/INF.28/E](https://example.com)


**I. Introduction**

Evolutions to ADR [1], ADN [2] and RID [3] are discussed at the Joint Meeting of the RID Committee of Experts and the Working Party on the Transport of Dangerous Goods, which periodically takes place in Bern, Switzerland. During a recent session of the meeting, the participants discussed a proposal intended to widen the range of situations for which the orange-coloured plate shall be marked with the hazard identification number and the appropriate UN number.

Some participants were hesitant to accept this proposal because it does not directly transpose SSR6 requirements (although it does not contradict them). The chairman of the ADR/ADN/RID Joint Meeting concluded that the opinion of TRANSSC would be useful to make a decision on the proposal. This paper presents the motivations and the content of the proposal and offer suggestions for a TRANSSC opinion on this matter.

**II. Motivations for the proposal**

In the event of an accident occurring during the carriage of radioactive material, the appropriate measures to be taken by the emergency services, whether they relate to the safety perimeters, the individual protection means for the emergency services or the extinguishing media, depend greatly on the type of material being transported. It is therefore vital that the emergency services have rapid access to accurate information on the load.

For instance, if an accident followed by a serious fire were to occur during the carriage of enriched uranium hexafluoride (UF$_6$), it would be important that the radius of the exclusion zone set up by the emergency services be extended, appropriate protective gear and breathing devices be worn and water not be used to put out the fire if the packages were damaged. In contrast, if the packages were not damaged, water should be used to achieve rapid cooling.

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1 C.f. Safety Guide N° TS-G-1.2 [5] §1.5 and §5.9
In case of an accident, the orange-coloured plate is the only reliable source of information on the radioactive materials transported: the crew members may be incapacitated, the transport documents may not be accessible and the labels and markings on packages may not be visible. **It is then important that the orange-coloured plate provides relevant information whenever possible.**

ADR, ADN and RID require the orange-coloured plate to be marked with the hazard identification number and the appropriate UN number only if the radioactive materials are carried under exclusive use. However, the definition of exclusive use was recently restricted to cases where exclusive use is explicitly required in the regulations. A side effect of this new definition is that there are now much fewer cases in which the orange-coloured plate shall be marked. In all the other cases, should an accident happen, emergency services might be unable to get useful information about the involved radioactive materials.

In the example above of the carriage of enriched UF₆, there is no reason why the carriage must take place under exclusive use. The orange-coloured plates would therefore be left blank. Consequently, if the packages containing UF₆ were hidden under a sheet (which is what happens in practice) and if the transport document were not available, the emergency services would not have any information about the content of the packages and could not take appropriate measures to cope with the significant radiological and chemical hazards presented by UF₆.

**III. Content of the proposal**

The proposed amendments to ADR, ADN and RID are provided in Annex I.

Their principle is that the **orange-coloured plate shall be marked with the hazard identification number and the appropriate UN number whenever it is meaningful and practical.**

It would be the case with transport units and containers carrying packaged radioactive material with a single UN number, where the transport unit or container does not at any time during carriage contain radioactive material with a different UN number or another hazardous substance².

A shipment involving various consignors and/or various consignees and several UN numbers would not be subject to this requirement because it would be impractical and of limited safety benefit. More generally, the amendments would incur very low costs to carriers compared to the present situation.

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² The only dangerous goods taken into account would be those in quantities sufficient to warrant the display of a marked orange-colored plate when carried alone. As an example, gammagraphy devices (UN number 2916) used for industrial applications are often carried along with their depleted uranium collimator. This collimator is a radioactive material with UN number 2910 and a vehicle carrying only the collimator would not need any orange-colored plate. With the proposal, the presence of the collimator would not influence the marking of the orange-colored plate, which would bear the UN number 2916. This is relevant from a safety point of view as the risks associated with collimators are insignificant in comparison with those associated with gammagraphy devices.
IV. Suggestions for a TRANSSC opinion on this matter

The ADR/ADN/RID Joint meeting is responsible to fully assess the benefits and costs of the proposal given the circumstances in the impacted countries. However it would be most helpful if TRANSSC could offer a high-level opinion on this matter.

A TRANSSC opinion could include the following elements:

1) The UN number is a very valuable piece of information to adequately address an emergency situation. Displaying the UN number on a vehicle carrying radioactive materials ensures that emergency services have reliable access to it;

2) The proposed amendments to ADR, ADN and RID are more stringent than the corresponding requirements of SSR6 but do not contradict them;

3) The adoption of the proposed amendments to ADR, ADN and RID would not disrupt international shipments in a noticeable way or negatively affect their safety.

The justifications for such statements are the following:

1) As explained in Safety Guide N° TS-G-1.2 [5], in case of an emergency situation, “the responses to an accident involving any type of dangerous goods can be initiated properly once it has been determined that dangerous goods are present and the material has been properly identified.”[§1.5, p2]. Moreover, “the level of response should be generally determined based upon the potential hazard posed by the contents of the packages involved. This can be assessed in terms of the external radiation levels associated with the undamaged packages […] and the contents of radioactive material present, which will be related to the United Nations numbers for the consignment […]” [§5.9, p18]. This piece of information can be obtained through the crew, the transport documents, the labels and markings on the packages and/or the orange-coloured plates. However, in case of a severe accident followed by a fire, only the orange-coloured plates are likely to be visible.

2) In all cases for which SSR6 (§572) requires the orange-coloured plate to be marked with the hazard identification number and the appropriate UN number, it would also be the case under the proposal. Besides, SSR6 (§571) provides that any placards that do not relate to the contents shall be removed but this would never be the case under the proposal.

3) The proposed amendments would only affect surface shipments in the countries participating to ADR, ADN and/or RID. Since the very large majority of these shipments stay within the ADR/ADN/RID perimeter and these amendments do not contradict SSR6, they cannot noticeably disrupt international shipments. Furthermore, there is no reason why the safety of the radioactive materials shipments would be negatively affected by adequate information on these materials displayed on the transport vehicle.
Annex I: proposed amendments to ADR, ADN and RID

ADR and ADN

5.3.2.1.4 When a hazard identification number is indicated in Column (20) of Table A of Chapter 3.2, transport units and containers carrying unpackaged solids or articles, or packaged radioactive material with a single UN number where the transport unit or container does not at any time during carriage contain other dangerous goods in quantity above thresholds in 1.1.3.6, required to be carried under exclusive use and no other dangerous goods shall in addition display on the sides of each transport unit or container, clearly visible and parallel to the longitudinal axis of the vehicle, orange-coloured plates identical with those prescribed in 5.3.2.1.1. These orange-coloured plates shall bear the hazard identification number and the UN number prescribed respectively in Columns (20) and (1) of table A of Chapter 3.2 for each of the substances carried in bulk in the transport unit or in the container or for the packaged radioactive material when required to be carried under exclusive use in the transport unit or in the container.

5.3.2.1.6 For transport units carrying only one dangerous substance and no non-dangerous substance, or carrying packaged radioactive material with a single UN number possibly along with other dangerous goods in quantity below thresholds in 1.1.3.6, the orange-coloured plates prescribed in 5.3.2.1.2, 5.3.2.1.4 and 5.3.2.1.5 shall not be necessary provided that those displayed at the front and rear in accordance with 5.3.2.1.1 bear the hazard identification number and the UN number for that substance prescribed respectively in Columns (20) and (1) of Table A of Chapter 3.2.

5.3.2.2.1 Third paragraph

When reduced dimensions of orange-coloured plates are used for packaged radioactive material carried under exclusive use, only the UN number is required and the size of the digits stipulated in 5.3.2.2.2 may be reduced to 65 mm in height and 10 mm in stroke thickness.

RID

5.3.2.2.1 A rectangular, orange-coloured plate conforming to 5.3.2.2.1, and so as to be clearly visible, shall be affixed on each side of a
– tank-wagon,
– battery-wagon,
– wagon with demountable tanks,
– tank-container,
– MEGC,
– portable tank,
– wagon for carriage in bulk,
– small or large container for carriage in bulk,
– wagons and containers carrying packaged radioactive material with a single UN number under exclusive use and no other dangerous goods where the wagon or container does not at any time during carriage contain other dangerous goods in quantity above thresholds in 1.1.3.6,
used for the carriage of goods for which a hazard identification number is given in column (20) of Table A of Chapter 3.2.