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**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**  
(Twenty-first session, 1-10 July 2002,  
agenda item 12)

**OTHER BUSINESS**

**Harmonization of the information codes for the identification of hazards  
and emergency measures for the transport of dangerous goods**

**Transmitted by the International Union of Railways (UIC)**

The International Union of Railways, together with CTIF, CEFIC and IRU, submitted a discussion paper to the 20th session of the Committee of Experts on the Transport of Dangerous Goods ST/SG/AC.10/1998/35 with the suggestion to harmonize on a worldwide basis the coding systems for hazard identification of dangerous goods and for emergency response.

The Committee agreed that the four organisations mentioned above could present, as a first step, an analysis of the existing systems of information codes for the identification of hazards and of emergency measures.

Consequently, the UIC presents in the addendum to this document a systematic table of all entries in the dangerous goods list of chapter 3.2, including codes for hazard identification and emergency response.

The entries have been ordered on the basis of the following parameters:

- Class or division
- General n.o.s.-entries (see Appendix A to the Model Regulations)
- Specific n.o.s.-entries (see Appendix A to the Model Regulations)
- The packing group, where assigned

For instance: in class 3, the group: "Flammable liquids without subsidiary risk" is structured as follows:

- petroleum distillates or petroleum products, pg I, II or III
- hydrocarbons, pg I, II or III
- alcohols, pg II or III
- aldehydes, pg I, II or III
- ketones, pg II or III
- ethers, pg I, II or III
- esters, pg I, II or III
- mercaptans, pg I, II or III

Each group of substances ends with the relevant specific or general n.o.s.-entry. (Note, some further differentiations according to the vapour pressure of substances is relevant for RID/ADR only).

For all entries the following hazard identification and/or emergency response codes are indicated:

- the classification according to the restructured RID/ADR, consisting of hazard class, classification code and (if assigned) packing group
- the Hazard Identification Number (RID/ADR)
- the Guide No. from the 2000 Emergency Response Guidebook (USA, Canada, Mexico)
- the Emergency Action Code (United Kingdom)
- the new Emergency Schedule Guide numbers for Fire and Spillage (IMDG-code)
- the new Transport Emergency Card number for groups of substances (CEFIC)

#### **CONFORMITY OF THE ALLOCATION OF CODES WITH THE CLASSIFICATION SYSTEM OF THE UN MODEL-REGULATIONS**

The table in the addendum to this document gives the possibility to assess the conformity of the different coding system with the classification system of the UN-model Regulations. This assessment gives the possibility to answer the question:

"is the UN-classification system appropriate as a basis for a hazard information and emergency response coding system?"

A tentative analysis leads to the following conclusions:

- 1) The UN-numbering system  
The four-digit UN-number is important for the identification of individual substances and groups of substances. It is useful for persons not accustomed to complicated chemical names or names in different languages.  
The four digits of the number, however, give no direct information about the hazards or the emergency response measures for the substance. In all systems the corresponding hazard identification- and/or emergency responding guide-number, has to be looked up in UN- numerical lists.
- 2) The proper shipping name is essential to know in the cases of contact of the hazardous material with humans, animals or the environment. Many Emergency Response Guides include alphabetical lists of proper shipping names and codes to be used. Problems exist however in the case of proper shipping names in foreign languages and technical names of substances, classified under generic entries. The technical names of many substances are not to be found in textbooks and emergency response guides.

- 3) The new RID/ADR classification system  
In the process of restructuring of RID and ADR the old identification system of class, item and group has been abandoned and replaced by a new classification system, considering of:
- the hazard class number
  - a classification code
  - the packing group
- The classification code consists of one or more capital letters, indicating the predominant and subsidiary risks and a figure, indicating additional properties, like organic, acid, liquid etc. This system reflects all possibilities of the UN-classification system and it is used for the numbering of the new CEFIC Transport Emergency Cards for groups of substances
- 4) The Hazard Identification Number
- This two- or three-digit number is used in RID/ADR-countries and in some South-American countries, together with the UN-number on the orange-coloured plate marking the case of tank-an bulk transport and in rail transport on the transport document.  
This numbering system is also fully in line with the UN-classification system and indicates basically the predominant and subsidiary risks. Doubling of a figure indicates an intensification of that particular hazard.  
In some countries (originally France) Emergency Action Sheets have been developed starting from the HIN's.
- 5) The Emergency Response Guidebook
- The 2000 edition of the Emergency Response Guidebook has been developed in North America (Canada, USA and Mexico) as a guidebook for the first responders in a dangerous goods incident. This Guidebook gives very detailed information for emergency response. Substances are classified under a three-digit code: the Guide No. Although the titles of the different pages in the Guidebook give the impression, that the classification of substances under one Guide-No. might be in full conformity with the UN-classification system, this is in practice not the case. Substances with divergent dangerous properties are classified under the same Guide-No.
- 6) The Emergency Action Code
- The EAC-code system is widely used in the United Kingdom and the British Commonwealth. It is a pure action-code and gives no information on the hazards of the substance. The code consists of one digit and one or two letters. The digit indicates the agent for fire extinguishing, the first letter the means for protection and the second letter the external hazards (if any).  
The code is also used on the orange-coloured plate in the case of tank transport.  
The codes attributed to substances of the same group, according to the UN-classification system, may differ considerably.
- 7) The new Emergency Schedules for the IMDG-code.
- The Emergency Procedures for Ships Carrying Dangerous Goods have been revised recently by a correspondence group coordinated by Germany.  
This group was asked to assign one fire and one spillage schedule for each UN-number. The titles of the schedules give some information about the hazards of the substances, classified under that schedule. There seems to be a high compatibility with the UN-classification system, although

some criteria (like liquid floating on water) might be relevant mainly for the marine environment. The degree of hazard (e.g. the packing group) is hardly reflected in the codes.

8) The Emergency Response Intervention Cards.

CEFIC has introduced many years ago the system of the ERIC-cards. This system was designed as an amalgamation of the HIN-system and the EAC-Hazchem-System. It was meant to be a combined hazard- and action-code. This system was used in many European countries, mainly by fire-brigades and emergency responders. The information on the various cards gives the impression, that the group of substances, covered by the same card, are compatible with the UN-classification system. As with the EAC-system this is however often not the case.

9) The new transport emergency card (Tremcard) system.

As indicated under item 3), CEFIC has adapted the numbering system of the Transport Emergency Cards for groups of substances to the new classification code of the restructured RID/ADR. The Tremcards are intended for drivers of road vehicles carrying dangerous goods according to ADR.

### **Conclusions**

Some coding systems for hazard identification and/or emergency response are in full conformity with the UN classification system, others are not.

In the case of systems, which are not in conformity, the criteria for allocation of a code number to substances differ from one system to another. In the various Emergency Guide books such criteria are, however, not explained.

In some countries different emergency guides are used. This situation leads to confusion in the case of emergencies. Therefore the UIC remains of the opinion, that the (Sub-)Committee should consider the possibility of harmonizing all codes for hazard information and emergency response into a system, that takes the best features of the existing systems. The coding system should be in conformity with the UN-classification system and should give in a simple way information on both the hazards of the substance and the emergency action to be taken.

Moreover, the elements of the code should be self-explanatory, and give all information about the hazards and the measures to be taken without consulting textbooks or computer systems and should enable transport workers and initial responders to take adequate measures and protect themselves.

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