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COMMITTEE OF EXPERTS ON THE TRANSPORT OF DANGEROUS GOODS

Sub-Committee of Experts on the Transport of Dangerous Goods
(Fifteenth session,
Geneva, 29 June-10 July l998,
agenda item 5(g))

MISCELLANEOUS DRAFT AMENDMENTS TO THE MODEL REGULATIONS ON THE TRANSPORT OF DANGEROUS GOODS

Toxic by inhalation substances
Portable tank requirements

Transmitted by the Expert from the United States of America

Introduction

1. Requirements for TIH substances transported in tanks were originally proposed by the expert from the United States in document ST/SG/AC.10/C.3/R.591, however no decision was taken. The Sub-Committee at its thirteenth session again considered requirements for portable tanks for "toxic by inhalation substances" (TIH substances) on the basis of ST/SG/AC.10/C.3/1997/20. The Sub-Committee did not take a decision on these requirements during the thirteenth session, however, comments were provided to the expert from the United States. These comments have been taken into account and are discussed in this revised proposal.

Summary of revisions based on comments

2. During previous discussions concerning the proposed requirements two main issues were raised. These are as follows:

a) Some experts indicated that the minimum test pressure for TIH portable tanks should be 10 bar consistent with the requirements established for other higher risk dangerous goods such as metal alkyls or pyrophoric organometallic compounds and with the current portable tank requirements for substances such as Bromine. This has been taken into account in this proposal.

b) The second issue concerned the proposal to require a steel jacket and thermal protection (insulation). Some experts questioned the need for thermal protection and a steel jacket. The expert from the United States explained that the jacket and thermal protection serve two purposes in providing additional accident damage protection and thermal protection. It was explained that this added protection was considered necessary due to the hazard associated with the release of a potentially large quantity of inhalation toxicity substance in the event of a portable tank being involved in an accident or fire. During the discussions, the expert from the United States indicated that the added protection was necessary to minimize the risk to the public including transport workers and the environment. He further explained that the proposed additional protection is consistent with the added protection being proposed for TIH packagings. The representative from HMAC indicated that for corrosive TIH substances corrosion could occur beneath the insulation and jacket and result in a unsafe situation because the corrosion may not be readily apparent from a visual inspection. On the basis of comments, the expert from the United States is proposing an alternative to the jacket requirement for substances which are corrosive to steel (see TP27 below).

Portable tank instructions for Division 6.1 TIH substances

The following portable tank instructions are proposed. These portable tank instructions are only proposed to be assigned to those TIH substances which are currently permitted in portable tanks and for the proposed TIH NOS entries.

T16	**PORTABLE TANK INSTRUCTIONS**			**T16**
Portable tank instruction	**Minimum test pressure (bar)**	**Minimum shell thickness (in mm-reference steel) (see 6.2.4)**	**Bottom opening requirements (see 6.6.2.6)**	**Pressure relief requirements (see 6.6.2.8)**
T16	10	10 mm	Not allowed	See 6.6.2.8.3

This portable tank instruction would apply to substances toxic by inhalation, Group IA. This portable tank instruction already exists on the basis of the revised T notes adopted during the fourteenth session (see ST/SG/AC.10/C.3/28, Annex 1, paragraph 4.2.4.2.6)

T14	**PORTABLE TANK INSTRUCTIONS**			**T14**
Portable tank instruction	**Minimum test pressure (bar)**	**Minimum shell thickness (in mm-reference steel) (see 6.2.4)**	**Bottom opening requirements (see 6.6.2.6)**	**Pressure relief requirements (see 6.6.2.8)**
T14	10	8 mm	Not allowed	See 6.6.2.8.3

This portable tank instruction applies to substances toxic by inhalation, Group IB.

New portable tank special provision:

The following portable tank provision is proposed for Division 2.3 and 6.1 TIH substances currently authorized in portable tanks:

TP 27 - Portable tanks shall:

a) be fitted with a thermal protection system which encompasses a steel jacket. The thermal protection system shall have sufficient thermal resistance so that there will be no release of the contents including through the pressure relief device(s) when the portable tank is fully engulfed in a pool fire for 30 minutes. The source of the simulated pool fire shall be hydrocarbon fuel with a flame temperature of at least 800^{0} C throughout the duration of the test. Except for the performance of the thermal protection system itself, this may be verified by test or thermal analysis taking into account the fire effects and heat flux to the entire surface of the portable tank. The analysis shall consider the fire effects and heat flux through the portable tank's discontinuities, protective housings, shell, metal jacket and insulation, if applicable, and service equipment. The analysis shall also consider the heat and fire effects on the thermal protection system performance. Thermal protection systems shall have their performance verified by a fire test. Procedures for conducting tests and analysis shall be approved by the competent authority.

* *The expert from the United States will provide copies of the analysis procedure used in the United States for interested experts upon request.*

b) Portable tanks without thermal protection systems as specified in (a) which are intended for the transport of substances that are highly corrosive to steel and are capable of meeting the fire performance requirements of (a) need not be fitted with a thermal protection system.

Note: If this is adopted the expert from the United States is prepared to propose grandfather provisions for existing portable tanks.
