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Economic Commission for Europe**Inland Transport Committee****Working Party on the Transport of Dangerous Goods****Joint Meeting of the RID Committee of Experts and the
Working Party on the Transport of Dangerous Goods**

Bern, 17–21 March 2014

Item 2 of the provisional agenda

Tanks**Vacuum-operated waste tanks**

Transmitted by the Government of France^{1, 2}

Summary

Executive summary:	This proposal seeks to reinforce protection for vacuum-operated waste tanks against the risk of fire or explosion during discharge or filling operations.
Action to be taken:	Amend 6.10.3.8 (b) and add a new paragraph to Chapter 4.5.
Reference documents:	ECE/TRANS/WP.15/AC.1/2013/12 and 2013/36; ECE/TRANS/WP.15/AC.1/130/Add.1, item 6; ECE/TRANS/WP.15/AC.1/132/Add.1, item 1.

Introduction

1. At its March 2013 session, the Joint Meeting adopted an amendment to 6.10.3.8 based on proposal ECE/TRANS/WP.15/AC.1/2013/12, from Germany, introducing the

¹ In accordance with the programme of work of the Inland Transport Committee for 2012–2016 (ECE/TRANS/224, para. 94, ECE/TRANS/2012/12, programme activity 02.7 (A1c)).

² Circulated by the Intergovernmental Organisation for International Carriage by Rail (OTIF) under the symbol OTIF/RID/RC/2014/34.



concept of an explosion-pressure proof design as an alternative to the mandatory flame trap at the inlet and outlet of a vacuum pump/exhauster unit, which may create sparks.

2. At its September 2013 session, the Working Group on Tanks considered proposal ECE/TRANS/WP.15/AC.1/2013/36, from France, which sought to clarify the provisions to protect vacuum-operated waste tanks against the risk of fire or explosion during discharge or filling.

3. The Working Group confirmed that there was a risk of propagation of explosion, specifically during start of filling and end of discharge, when the tank and discharge hose are not filled with liquid, and considered that the inclusion of operational provisions could address this concern.

4. During vacuum-operated pumping of flammable waste using a tank fitted with a vacuum pump/exhauster, the atmosphere inside the tank may become explosive. This explosive atmosphere can then be propagated in the vacuum pump/exhauster. The risk is even greater when pumping a pool of spilled or leaked product, or residue at the bottom of a container, as the product pumped is highly oxygenated by the large amount of air that is pumped along with it.

5. If the vacuum pump/exhauster is likely to generate a source of ignition, an explosion is highly probable. If there is an explosion, it is very likely that it will propagate into the tank and thence into the installations attached to it, either upstream or downstream (see diagram in informal document INF.5). Even if the tank is of a size to tolerate the pressure created by such an explosion, the connected installations upstream and downstream are generally speaking not so designed. The consequences are therefore an explosion, a fire in the connected installations, bursting of the connecting tubes, causing serious injury to operators, and extensive material damage.

6. The fact that a tank is of a size to tolerate explosion pressure is not an adequate safeguard either for operators or for the installations connected to the tank during vacuum-operated discharge or filling. In our view that warrants the addition of a new paragraph in Chapter 4.5, on the use of vacuum-operated waste tanks, and an amendment to the adopted wording of 6.10.3.8 (b), to aid comprehension.

Proposal

7. Amend 6.10.3.8 as follows:

“6.10.3.8 The tanks shall be fitted with the following additional service equipment:

...

(b) A device to prevent immediate passage of flame shall be fitted to ~~both the inlet and outlet~~ **all openings** of a vacuum pump/exhauster unit which may provide a source of ignition and which is fitted on a tank used for the carriage of flammable wastes, or the tank shall be explosion-pressure shock resistant, which means being capable of withstanding without leakage, ~~but allowing~~ **while tolerating** deformation, an explosion resulting from the passage of the flame.”

8. In Chapter 4.5, add a new 4.5.2.5 as follows:

“4.5.2.5 When a vacuum pump/exhauster unit which may provide a source of ignition is used to pump materials or waste with a flashpoint below 60°C, it must be ensured that all installations and equipment upstream and downstream that communicate with the interior of the tank and the vacuum pump/exhauster

unit during filling and discharge operations are either protected by devices to prevent the propagation of a flame or of a size and design such as to be explosion-pressure proof.”
