

3 February 2006

Original: German

English translation provided by the
UK Department for Transport**RID/ADR**

Joint Meeting of the RID Safety Committee and the
Working Party on the Transport of Dangerous Goods
(Berne, 20 – 23 March 2006)

Amendment of special provision TE 3 in section 6.8.4**Proposal transmitted by the International Union of Private Wagons**

Introduction

According to section 6.8.4, special provision TE 3, tanks for the carriage of phosphorus must be equipped with a gauging system for verifying the maximum level of the phosphorus. This gauging system usually consists of a dip stick with measuring notches, which is inserted into a tube for stability.

The device required is a measuring stick that has to be taken out in order to determine the fill level of the phosphorus. This operation is only necessary when loading. According to information received from the phosphorus industry, this device is not used, for reasons of safety and worker protection, because when the measuring stick is taken out, the residues of phosphorus ignite immediately on contact with the air. In addition, the presence of such measuring tubes makes it difficult to clean the tank.

This gauging procedure does not reflect the state of the art, as it holds an increased risk for the environment and loading staff. Special fill level transducers are integrated into all phosphorus loading facilities.

At the Joint Meeting in September 2005, UIP was asked for further explanations, and the preference was not to abandon the measuring tube categorically, as UIP cannot speak for all fillers of phosphorus in the whole RID area.

Proposal

It is proposed to amend special provision TE 3 to the effect that it will no longer be necessary for tanks to be equipped with their own gauging system.

The last sentence of special provision TE 3 would thus be amended as follows:

“The tank shall be equipped with a gauging system for verifying the level of the phosphorus if the fill level cannot be safely regulated and checked at the filling facility using other methods. If water is used as a protective agent, the tank shall be equipped with a fixed gauge mark showing the highest permissible level of the water.”

It is not necessary to make provision for a transitional period.

Safety-related assessment

The stationary gauging method will reduce the risk of fire and emissions and will improve occupational safety. In UIP's view, the issue here is one of adapting to the state of the art.

Comments from the loading industry

Background

According to RID section 6.8.4, special provision TE 3, tank-wagons for phosphorus must be equipped with a gauging system (measuring device) for verifying the level of the phosphorus during filling. The device concerned is a dip stick with markings which (as in the case of a dip stick for oil) has to be taken out in order to determine the fill level.

According to information received from the loading industry, this device was and is not used, for reasons of safety and worker protection. Owing to the properties of phosphorus, the built-in dip stick is not to be used for this type of gauging. Using the dip stick to check the fill level is prohibited from the point of view of emissions legislation because better methods (best available technology) are available. When the dip stick was taken out, the residues of phosphorus adhering to it would ignite immediately, and this would mean, in addition to a fog-like, highly corrosive cloud, a considerable potential danger to the user from drips of phosphorus.

The product is loaded and consigned in the molten state (at around 60°C). A pressure differential measurement is used to determine the fill level during the filling process. In so doing, a tube is introduced into the tank from the stationary facility to the maximum fill level and a small, controlled quantity of nitrogen is passed through (gauge points No. 0610 and 0611, see Annex 2). As soon as the level of phosphorus reaches this fill level, "backup pressure" builds up in the "dip tube", because the flow of nitrogen has to overcome the additional resistance of the phosphorus (higher density), which leads metrologically to the filling process being shut off (pump off and valves HV 0658 and HV 0657 closed). For safety reasons, these readings are available as redundant (twice). During transport, the phosphorus solidifies and experience has shown that it has to be heated up in order to be unloaded.

The filler uses this safeguard against overfilling (LS 0610 and LS 0611, backup pressure gauge principle) to ensure that the tank-wagon cannot be overfilled. This is also required in the filling facility's operating approval. In addition, before leaving the filling facility, each tank-wagon is placed on a weighing machine to check that it does not exceed the total permissible weight and filling weight. Taken together, these redundant and various measurements ensure in our view that the requirements of dangerous goods legislation are met (prevention of overfilling and compliance with the total permissible weight) without additional devices on tank-wagons and the acceptance of additional risks.

As a rule, phosphorus is unloaded under pressure with nitrogen or water after melting. The built-in dip stick guide tube acts as an additional riser pipe; this means an additional risk potential for the unloader from leaking dip stick sealing and operating errors.

Justification for abolishing the existing procedure

When the dip stick is taken out, the phosphorus residues ignite immediately on contact with air. The procedure is not approved in emissions legislation, as better technology is available and the national approval authorities expect this technology to be used. Using a dip stick device is highly questionable from the point of view of worker protection.

The possibility of a leaking flange on the dip tube device leads inevitably to leakage of the load and to fire, which can only be extinguished by deoxygenation.

The dip tube makes it difficult to clean the tank-wagon, as residues of the product can remain on the fixings and in difficult to reach corners.

Annex 2: Sketch of a filling device with backup pressure gauge.