

## 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, 22–26 March 2010

Item 5 (b) of the provisional agenda

##### Proposals for amendments to RID/ADR/ADN: new proposals

### **Comments on the proposal to clarify the obligations of the filler with regards to checking closures (doc ECE/TRANS/WP.15/AC.1/2010/5)**

#### **Transmitted by the European Chemical Industry Council (CEFIC)**

1. The proposal of the UIC suggests extending the obligation of the filler to check the tank for leakproofness of the closures after filling also to internal stop-valves. The German INF.8 paper supports this proposal in principle although with some modification and enhancement to the unloader. Although CEFIC appreciates the objective to further improve safety during transport, we would like to bring the following arguments which are applicable for both filler and unloader where appropriate to the attention of the Joint Meeting.
2. Up till now it has been a common understanding that inner stop-valves cannot be checked for leakproofness for every single loading operation. That's why the regulations have been designed requesting two or three closures to avoid any leakages and why there are regular inspection intervals for the tanks and equipment as defined in 6.8.2.4.2 and 6.8.2.4.3.
3. Currently there are neither operational guidelines nor technical solutions available how the leakproofness of internal stop-valves could be checked after loading operations. It is in particular not useful to perform such a check of the inner stop-valve after filling since then the product is already in the tank and would severely interfere with operational processes in case of any leakages.
4. Considering that for certain types of closures (such as dry break couplings), which are for example used on tank cars/vehicles loaded with toxic or carcinogenic substances for which bottom openings are permitted, a visual check of the stop-valve nearest to the substance being carried is not possible for technical and safety reasons. Even a visual check of the external stop-valve is not possible in such cases for technical and safety reasons.
5. In case of bottom loading of tank containers it is also not always possible to do visual checks of the inner stop-valves after loading since in some cases product remains in the line. The lines are flushed by pushing the product with N<sub>2</sub> overpressure into the vessel but still some residues and a N<sub>2</sub> atmosphere remain in the line. Hence it would be hazardous to open the external valves for a visual check.
6. The German INF.8 paper refers to a DGMK (Deutsche Wissenschaftliche Gesellschaft für Erdöl, Erdgas und Kohle e.V. – German Society for Petroleum and Coal Science and Technology) report of which the results were published in 2009 in two reports. The second part of the report included a feasibility study on the recommendations made. In section 5.2 of this report, deviating from the conclusion in the German INF.8 paper, it is

explicitly mentioned that a leakproofness check of the lines via vacuum test or pressure test have not been considered to be promising solutions. These methods will also not necessarily ensure that lines get free of cargo residues. The expected great effort to comply with this new requirement is not justified especially because of the relatively low number of drip leakages. A summary (in English) of the findings of this study can be found in the annex.

7. Additionally there are editorial differences between the English version and many other versions of RID/ADR 2009 (e.g. French, German, Dutch, Austrian, Swiss) concerning the use of the word “closure” and closure device. Whereas English currently uses “closing device” in 1.4.3.3 (f) and “closure” in 4.3.2.3.3, the other languages use only 1 word e.g. (French) “dispositifs de fermeture”, (German) “Verschlusseinrichtungen”, which are closer to “closing device” than to “closure”. This leads to different operational conclusions.

8. The clause in 4.3.2.3.3 which defines the requirement to check the leakproofness of closures of the tanks after filling needs – as supported by the other language versions mentioned above – have to be seen in context with the previous clause in this paragraph. This defines that openings of bottom-discharge tanks shall be closed by means of screw-threaded plugs, blank flanges or other equally effective devices.

9. These versions in languages other than English, referring only to closing devices, also match better with the definitions of 6.8.2.2.2 RID/ADR and the operational procedures on loading sites.

10. CEFIC therefore cannot accept UIC’s proposal and recommends having a closer look at alternative solutions, put forward in the DGMK study.

## Annex

### Summary of DGMK-study

#### Background

Due to several complaints about liquid residues during transports in lines between closures at the bottom of rail tank cars by the German railway authority EBA a research project has been initiated by the DGMK (German Society for Petroleum and Coal Science and Technology) with the objective to further reduce the risk of drip leakages. The first part of the project aiming to analyze the causes of those leakages for class 3 products and to make proposals for improvements has been executed by the German competent authority BAM. The evaluation of these proposals based on experiences of the operating companies, technical feasibility and economical environment have been subject of the second part of the project.

The DGMK research report summarizes that drip leakages occur only for 0.2% of the transports and that 90% of these 0.2% would be caused by not sufficiently closed external closing devices. Only 10% of these 0.2% of leakages are caused by leaking bottom valves.

The report makes several technical, operational and regulatory recommendations to improve the situation which can be summarized as follows:

#### Proposals for technical improvements

- Careful closure of external closures (dust caps) with suitable tools to comply with locking torque requirements to make sure that tolerance ranges can be met. The third closure as last barrier is crucial for the tightness of the line systems of rail tank cars and hence needs to be closed systematically with special diligence. This item has to be discussed with manufacturers of dust caps as well as the development or offering of suitable tools. Furthermore the proper use of these tools should be trained and included into the checklists.
- Use of suitable, high quality gaskets. There is a trend to use high quality gaskets, like PTFE. This avoids mixing up gaskets which could cause drip leakages. According to the report a further technical development of sealing material is currently not needed.
- Reasonable standardisation of rail tank car design and operational equipment. Due to the reduction of the number of rail tank cars and producers of equipment an intensive drive for standardization can be recognised in the past years. Nevertheless there is further potential for standardisation of the operational equipment.

#### Proposals to improve operational procedures

- Standardisation of operational procedures. This item has a high potential to avoid leakages since often valves are closed in a wrong order and flow times are not sufficiently observed. Implementation would be easily possible based on standard procedures, checklists and training tools which would need further development. Examples are attached to the DGMK report and could be used to develop according standards.
- Pre-defined locking torques for screw threaded plugs and suitable tools to ensure that relevant tolerance ranges can be met.
- Adequate removal of seals and keeping foreign objects away from the tank to ensure that the internal stop valve (bottom valve) remains tight. This should be solved by operating

procedures and training. Installation of filters is not useful as there is no reliable information about the frequency of this type of damage. Filters would not avoid the cause and have also disadvantages, like e.g. cleaning, loss of pressure.

### **Proposals to improve regulations**

- More precise definition of terms and responsibilities The report states that RID does not define responsibilities and operations unambiguously for enterprises and individuals. In particular wording and definitions should be clearer.
- Both working groups discard more stringent regulations requesting complete emptying of the loading- and discharge systems and shorter inspection periods. Also with regard to ADR and road tank cars where this request does not exist this is not considered to be a requirement as it is no guarantee for a tight system.
- Furthermore it is not clear what “empty” means. Hence it seems more important to define terms like “empty”, “flow times” etc.
- Shortening inspection periods will not have positive effects. Inspection periods should rather be determined dependant on the state of the rail tank car. This would e.g. have the advantage that rail tank cars are inspected in accordance to their condition and that intervals can be adopted based on inspection results.

### **Leakproofness tests**

- Explicitly it has been mentioned that leakproofness tests via vacuum test or pressure test prior to loading are neither technically nor operationally a good solution. The method is not reasonably applicable to all of the main loading systems and locations and retrofitting as well as longer loading times would mean considerable expenses. In addition not all closing devices can be covered by this method.

### **Conclusion**

Taken above into account measures like a systematical well controlled closing procedure for all closings as well as accurate visual controls according to a checklist should take precedence over extending the fillers and unloaders obligation to check the internal and external stop-valve as well, which would cause considerable technical and operational problems. We currently see neither a need nor a proportionate justification for this.

It is in particular not useful to perform such a check after filling since then the product is already in the tank and would severely interfere with operational processes in case of any leakages. RID/ADR rightly define in 4.3 and 6.8 already sufficient measures to avoid the release of product during and after loading.

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