

INLAND TRANSPORT COMMITTEE

Working Party on the Transport of Dangerous Goods

Joint Meeting of the RID Safety Committee and the
Working Party on the Transport of Dangerous Goods
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TANKS

REDUCTION OF THE RISK OF A BLEVE

Transmitted by the European Liquefied Petroleum Association (AEGPL)

SUMMARY

Executive summary: Fitting thermal insulation to road tankers and rail wagons would not significantly reduce the risk of a BLEVE but would increase additional risks.

Action to be taken: Do not change the existing RID / ADR requirements.

Related documents: ECE/TRANS/WP.15/AC.1/2006/8 (Netherlands).
INF.3E (TNO Report).

Introduction

On the basis of INF.3E, the position of the Dutch Delegation is:

- tank wagons and tank vehicles containing flammable liquefied gases should withstand a fire for 75 minutes in the case of a tank vehicle and for 105 minutes for a tank wagon,
- thermal insulation can guarantee these required delays,
- pressure relief valves alone will not guarantee safe cooling and extinguishing by the fire brigade.

AEGPL experts consider that the documentation provided presents insufficient information on the accident / incident conditions and on the various ways fire brigades organized their intervention.

BLEVE frequency and correlation cannot be derived from the data collected due to incomplete coverage and historical details, heterogeneous comparisons and unknown transported ton/kilometres.

It is the view of AEGPL experts that it is by no means clear that thermal insulation would have prevented the incidents.

Moreover, the fitting of thermal insulation might introduce other risks such as the possibility of concealed corrosion, a higher vehicle centre of gravity and an increased number of kilometres travelled because of the lower vehicle payload.

Risk assessment

Historical Data

It is important to analyse data and to determine the conditions of the accidents in order to avoid misunderstanding and misinterpretation of the limited statistical data collected until now

- The period selected for accident information starts in the 1950's; since that period, there have been numerous improvements in the construction and testing of tankers and their safety devices. Moreover, procedures, legislation and training have been constantly developed for an increased safety. These have ensured that the number of BLEVE type incidents has fallen, even though the number of tankers running in the traffic has increased.
- As far as rail transport is concerned, supporting data has been used from the USA and Canada, where very large rail tankers (double size than those used in Europe) are used and where the overall size of each train is much larger, with often mixed chemical wagons interspersed with flammable gases.
- For road tankers, the report speaks of a size of 60 m³, whereas that size of vehicle is not permitted for LPG service in most of Europe where the maximum gross train weight of vehicles is limited to 44 tons (at this weight the largest tanks in use for road transport of LPG are 52 m³). For example the UK mainly uses tanker sizes 20 to 25 tons (corresponding to 20-30 m³) and larger tankers tend to be used only for storage to storage internal transfers.
- Some ratios taken as a reference by the report might lead to overestimating risk and impact evaluation.

Risks of thermal insulation

It is also important to keep in mind the potential risks induced by thermal insulation.

- As the likely scenario for any LPG release is a road accident, there is a high probability that the thermal insulation would not be intact after the accident, making consequently the damaged thermal insulation inefficient in case of fire. Moreover, thermal insulation still intact after the accident would in this case reduce significantly water cooling efficiency.
- Insulating the tanker might also entail the risk of corrosion under the insulation. It is not easy to inspect the metal, especially with epoxy protection and the risk of failure due to corrosion has to be assessed.
- The increased weight of tankers due to thermal insulation is located above the centre of gravity and would increase the risk of the tanker getting unstable and overturning.
- This additional weight related to thermal insulation systems would reduce the carrying capacity of the tanker, depending on the type of material used, and would consequently increase the traffic.

Conclusion

AEGPL therefore recommends to keep unchanged the RID / ADR requirements since, despite the obvious interest of the communicated documentation, it seems difficult to formally conclude on a direct correlation on efficiency of thermal insulation and BLEVE occurrences reduction.

Furthermore, thermal insulation might induce various additional potential risks whose consequences cannot be evaluated unless these risks are clearly assessed.
