

**Economic and Social Council**Distr.: General
10 February 2010

Original: English

Economic Commission for Europe**Inland Transport Committee****Working Party on the Transport of Dangerous Goods****Eighty-eighth session**

Geneva, 3-7 May 2010

Agenda item 6 (b) of the provisional agenda

Proposals for amendments to annexes A and B of ADR: construction and approval of vehicles**Section 9.7.6: Rear protection of vehicles****Transmitted by the Government of Germany****Summary***Executive summary:** This document presents a feasibility study on rear protection and proposes that further action should be taken on this matter.**Action to be taken:** Decision on future work.**Related documents:** TRANS/WP.15/2002/11 and TRANS/WP.15/170, paragraphs 47 and 48.**Introduction**

1. Since the 1980s, requirements concerning the rear protection of special dangerous goods vehicles (tank-vehicles, battery-vehicles, vehicles with demountable tanks with a capacity of more than 1 m³ and MEMUs) have been contained in ADR (currently in Section 9.7.6). The section stipulates that “a bumper sufficiently resistant to rear impact shall be fitted over the full width of the tank at the rear of the vehicle”.

* The present document is submitted in accordance with paragraph 1(c) of the terms of reference of the Working Party, as contained in document ECE/TRANS/WP.15/190/Add.1, which provides a mandate to “Develop and update the European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR)”.

2. The provision does neither lay down performance parameters, nor definitions as to the position of the rear protection or test criteria for the requirement of a sufficiently resistant bumper.
3. At the beginning of the 1990s, due to serious road accidents involving dangerous goods vehicles, Germany carried out the research project "THESEUS - Tank-vehicles with maximum attainable safety through experimental accident simulation" in order to enhance the safety of tank-vehicles. The analysis of accidents showed that rear-end collisions with tank-vehicles were a predominant type of accident. This has not changed to the present day; high-consequence collisions with tank-vehicles still occur throughout Europe. The accident statistics of the UNECE Inland Transport Committee also show this.
4. Back then, the findings gained from THESEUS as regards the enhancement of tank-vehicle safety resulted, among other things, in a proposal to the Working Party to improve the rear protection of dangerous goods tank-vehicles. The suggestions for improvement included fitting energy absorbers to the rear of the vehicle or a targeted energy influx (e.g. by means of crossbars bearing against the tyres). At that time, after long and intensive discussions, the Working Party did not follow these proposals (see TRANS/WP.15/170, paragraphs 47-48).
5. There were two main arguments against the proposal for enhancing the safety at the rear end of the vehicle by means of additional measures: one was the fact that the THESEUS statistics referred to Germany and that other states could not confirm the accident statistics as regards rear-end collisions; the other counter-argument was that no appropriate test method for a "new" rear protection could be presented.

Future work

6. After several, in some cases serious rear-end collisions in Europe, Germany would again like to take the initiative to enhance the safety at the rear end of vehicles. To this end, a feasibility study has been elaborated which, besides a review of the history of the relevant studies and of the previous proposals submitted to the Working Party, contains in particular new approaches to deal with this issue in the future.
7. The study is comprised of an analysis of the UNECE accident statistics which shows that the problem of rear-end collisions continues to exist in Europe and which identifies ways to address the former obstacle concerning the testability of a qualified rear protection.
8. For example, the test method for a rear protection device could be modelled on the basis of the quasi-static punch test as included in the European Union directives for underrun protection. This means that there is no intention to favour a single design solution within ADR. The alternative of a simulated test seems also appropriate in the light of the evolution of modern calculation methods.
9. It is essential to require a defined energy absorbing capability. This would not restrict the design options of an enhanced rear protection and it would provide for development opportunities for future market and material developments. Thus, the combined rear and underrun protection which is already used in some countries could be retained after passing the additional rear protection test.
10. In order to develop a test method, it would, however, be necessary to carry out experiments to develop this new test method in such a way so as to provide effective protection against the release of hazardous material in the case of rear-end collisions.

Proposal

11. The study presented as informal document INF.3 is a sound basis for taking up this issue which is relevant for safety in ADR countries, and Germany would like to ask the ADR Contracting Parties for their support in this matter. If there is appropriate interest in this, Germany is willing to prepare a working paper based on an initial proposal and present it at the next meeting of the Working Party in October 2010.
