

Brussels, 26 May 2005

**IRU POSITION
ON
RETRO-REFLECTIVE CONTOUR MARKING OF VEHICLES**

I. ANALYSIS

- UNECE Regulation 48 concerns the type approval of vehicles with regards to the installation of lighting and light-signalling devices. Supplement 7 to the 02 series of amendments to Regulation 48 introduced, on a voluntary basis, retro-reflective markings as specific devices to be fitted to certain categories of vehicles. The form these markings should take is specified in Regulation 104.
- UNECE, WP 29, Group GRE (Working Party on Light and Light-Signalling) is currently looking into a proposal from the German authorities to make retro-reflective contour marking mandatory for commercial vehicles (M3, N3, O3 and O4). According to the German government, a number of fatal accidents have occurred involving slow or parked heavy trucks and trailers due to insufficient vehicle visibility. Their proposal to impose retro-reflective contour marking to improve road safety is based on a study, published by the University of Darmstadt in 2000, according to which a substantial reduction in accidents involving heavy vehicles was noted when these were fitted with retro-reflective markings.
- At EU level, there are also calls for the mandatory contour marking of vehicles to improve road safety. A study was ordered by the European Commission, DG TREN, Directorate E Inland transport, Road Safety to determine the situation in the individual EU Member States, analyse already existing research results, investigate the effects on accidents of an obligatory introduction of Regulation 104 on “retro-reflective marking for heavy and long vehicles and their trailers”, implement a cost-benefit analysis and produce an overview of the manufacturing market.
- According to the EC study, finalised in December 2004:
 - Of all vehicle categories, heavy goods vehicles are involved in an over-proportional number of fatal accidents relative to their share of the vehicle fleet. Although only 25% of the overall traffic travels at night, about 40% of all accidents happen during this period.
 - The equipping of heavy goods vehicles with retro-reflective contour marking in the European Union is cost-effective. The resulting cost-benefit ratio is between 1.4 and 3.6 depending on the economic lifetime, the duration of the phase-in period and the type of vehicles (HGV >3.5 tonnes or > 12 tonnes).
 - The visual capacity of the human eye at night is only 5% of daytime visual capacity, which is why the increased visibility of HGVs at night and other poor visibility conditions should be recommended.
 - Where contour marking at the side and the rear is impossible, a marking with a line/double line is recommended.

- The introduction of contour marking for HGVs over 3.5 tonnes could prevent accidents in the whole of Europe (EU-15) each year: 165 deaths, 857 serious injuries and 1836 light injuries.
 - A range of materials by three European manufacturers (Avery Denisson in the Netherlands, Reflexite UK Limited in Ireland and 3M Deutschland GmbH in Germany) are type-approved according to UNECE Regulation 104.
- The following considerations must be taken into account to decide with full knowledge of the facts:
- No study ever confirmed that the lack of visibility is a principal cause of accidents.
 - No research or investigation of retro-reflective markings on buses and coaches has ever been carried out.
 - No concrete cost-benefits are available in individual Member States.
 - The apposition of markings is not technical feasible in many cases: mixers, fire engines, car transporters, timber transporters, hook lifts, swap bodies, skip carriers, municipal vehicles, articulated tank vehicles, construction equipments transporters, bitumen transporters, agricultural vehicles.
 - Retro-reflective material does not adhere to used canvas, as the adhesive cannot stick to canvas if it is not new. This means that approximately 20% of the existing HGV fleet in Europe could not be equipped with retro-reflective material.
 - The life span of retro-reflective contour markings is limited: they become 50% less effective after 3 years and would therefore need replacing.
 - A lot of other devices may be used to improve the visibility of HGVs. Indeed, rear position lamps, end-outline marker lamps, rear retro-reflectors, side retro-reflector and side-marker lamps are already prescribed at Community level (Directive 76/756/EEC) but Member states are not presently obliged to comply with this Directive.
 - The results of other studies analysing the costs and benefits of equipping HGV with retro-reflective material vary. An investigation published by Cook in 1998 on the placing of retro-reflective markings on trucks (Department of Environment, Transport and the Regions, London, 1998) states that in the UK a reduction of 4 fatalities (2.2%) per year is possible by fitting HGV with contour markings and calculates a benefit-cost ratio below one. In the Dutch SWOV Study (2002) the cost-effectiveness in comparison with other potential safety measures is rather low.
 - The reliability of the methodology used in the EC study may be questioned as the accident analysis is mainly based on information retrieved from the EC CARE database. The CARE database is limited to the European Union of 15 Member States; there are gaps in the data; no distinction is made between HGV > 12 tonnes gross weight and HGV < 12 tonnes gross weight, not all accidents are reported, no accident data are available for Germany, in several countries the information on the identification of the number of accidents which could possibly be avoided due to better HGV visibility at night is not available. Therefore, the CARE database is not appropriate as a basis for studies in this field (too many estimations and assumptions have to be made).
 - Investments costs for operators are considerable. Materials cost roughly EUR 5 per metre, plus labour costs varying between EUR 40 and EUR 50 per hour. Total cost per truck-trailer is around EUR 505. National supporting measures should be encouraged (lower insurance premiums, bonus points, etc).

II. IRU POSITION

The IRU supports all measures that improve road safety, if they are cost effective.

As the joint IRU-European Commission accident causation study is not yet finalised and the methodology of the current EC study based on the CARE database is not reliable, any decision to impose retro-reflective contour marking of vehicles would be premature as the main causes of accidents are still unknown.
