

## B. USDOT RESEARCH AND PROPOSED RULES ON REAR-END BUMPERS

### Background

On January 8, 1981, the US Department of transportation (USDOT), National Highway Traffic Safety Administration (NHTSA) proposed a new rule on rear-end bumpers for trucks and trailer which would have required a bumper height of 21.65" above the ground on all trucks and trailers (with some exemptions) that have gross vehicle weight ratings (GVWR's) greater than 10,000 pounds. The proposed effective date for this rule was September 1, 1983.

The federal rule on 22" bumpers has not been implemented, in spite of extensive studies by NHTSA over a period of about ten years which have shown the effectiveness of such bumper installation.

A summary of the history behind this proposed federal rule, the rationale, and the results of studies upon which the proposed federal standard was established is found in the *Federal Register* (1981) Vol. 46. No. 5, January 8, 1981, "Federal Motor Vehicle Safety Standards; Rear Underride Protection." Responses to this proposed rule and other supporting materials are located in NHTSA Docket 10-11-Notice 8, which covers the period 12/29/80 to 4/13/83.

The current study draws from the extensive research conducted and/or monitored by NHTSA, in particular the "Supplementary Information" provided with the proposed rule of January 1981.

The concern of USDOT, the trucking industry, and the public with the problem of rear underride spans a period of about thirty years. NHTSA, [*Federal Register* (1981)] describes the underride problem as follows:

"Rear underride involves the front of a car or other small vehicle sliding under and colliding with the rear end of a truck or trailer. Underride occurs because the rear end of the truck vehicle is relatively high off the ground and there is too little structure under the rear end to resist the striking vehicle, or the structure present is not strong enough to accomplish that purpose. Underride occurs to some extent in most collisions in which a passenger car crashes into a truck rear end. This kind of crash typically results in substantial damage to the smaller vehicle and injury to the car occupants. In 1978, 500 deaths or more than one (1) percent of all traffic fatalities occurred in collisions involving a vehicle and a heavy truck rear end. Three hundred and thirty eight (338) of these fatalities were occupants of passenger cars. Sometimes when a car underrides a truck, the rear end of the truck body crashes through the windshield and penetrates the passenger compartment of the automobile. In those cases, the underride is considered "excessive." Death in accidents involving excessive underride usually results from severe head and upper body injuries. It has been estimated that