



Motor Vehicle Occupant Ejection: Too Many Deaths for Too Long

Occupant ejection from motor vehicles is a major safety problem that has resulted in more than 200,000 deaths over the past quarter-century. Each year, nearly 9,000 people are killed and another 20,000 sustain injuries, many of them permanently disabling, when they are thrown or partially ejected from vehicles during crashes. According to NHTSA, about 28 percent of annual traffic fatalities in the U.S. are the result of ejection, and about three of every four people fully ejected from passenger motor vehicles are killed.

In 1991, Congress required NHTSA to initiate a rulemaking on rollover protection. As part of that effort the agency examined the use of a leading safety technology called “advanced side glazing” that prevents passengers from being ejected through side and rear vehicle windows. NHTSA conservatively estimates that by using the same type of advanced side glazing in side and rear windows that is currently used in windshields – laminated glass – 1300 lives could be saved each year.

In 2001, NHTSA issued a report which concluded that ejection prevention could be further enhanced if advanced side glazing is combined with other ejection mitigation systems, such as side airbag curtains.

In 2005, Congress required NHTSA to develop an occupant ejection performance standard to reduce full and partial ejection of occupants by October 1, 2009, as part of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). Since the agency has not yet even published a proposed rule for public comment as of late September 2009, it is clear that the agency will miss the statutory deadline. Since NHTSA has researched ejection prevention since at least 1991, further delay is particularly troubling because the lack of an ejection prevention safety standard permits many lives to be lost that could be saved.

The requirement to reduce full and partial ejections could be implemented through a performance standard. However, NHTSA’s testing demonstrates that a systems-based approach combining advanced side glazing with side curtain air bags can have stronger fail-safe performance and provide the highest safety benefits for all vehicle occupants regardless of age or size, and whether they are belted or unbelted, than either technology alone.

However, a final rule may fall short of the benefits shown by NHTSA’s tests that show the special value of interactive technologies to produce the greatest number of lives saved and injuries prevented. Reliance only on air bags could result in a failure to protect against partial ejections – a leading cause of death and injury.

Advanced side glazing is needed now because current tempered glass windows shatter during a crash and allow full or partial ejection of vehicle occupants. Side air bags often provide only partial restraint, usually for the head of an occupant, and some current designs even allow occupants to miss the bags in a crash. Also, current NHTSA safety standards do not require any upper interior side air bags in rear seating areas of passenger motor vehicles.

Without advanced side glazing, an occupant can be partially ejected through the window opening even wearing a seat belt. NHTSA should propose and adopt a standard based on the best systems engineering approach possible, one that will dramatically reduce both full and partial ejections in frontal, rear, rollover, and side impact collisions, and not rely on a single countermeasure which sometimes may not prevent deaths and injuries. A weak regulation that only provides marginal benefits in preventing ejections will allow more needless deaths and injuries while delaying again the kind of stringent safety standard that can save thousands of lives every year.

