LEGAL BUT LETHAL: THE 15-PASSENGER VAN

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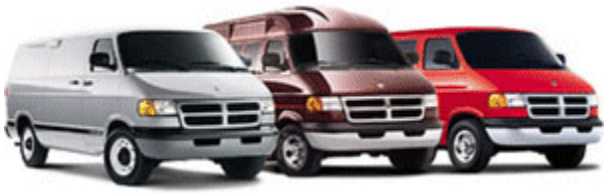


One of the most dangerous vehicles on the road in terms of rollover is a vehicle marketed for use by ball teams, scout troops, churches and day care centers. It is the 15-passenger van. This article will look at the history of this product, safety hazards that have been identified by litigation, the National Highway Traffic Safety Administration and the National Transportation Safety Board, and will examine alternative designs that could and should be considered by the manufacturers.

History of 15-Passenger Vans

The history of 15-passenger vans can effectively be traced to the early 1970s with the Dodge Maxi Wagon. In response to the emerging market, Dodge and then Ford chose to modify cargo vans to accommodate multiple passengers by simply extending the cargo van's length and installing seat capacity for 15 occupants. Around 1990, General Motors expanded its 12-passenger van to 15

passengers. GM, however, lengthened the wheelbase whereas Dodge and Ford simply added on rear clips. Internal Ford records show that engineers recognized the need to extend the wheelbase and add dual rear wheels, but projected profits and potential delays caused rejection of the recommendations. In 1979, Ford began selling the E-350 SCW and it has remained essentially unchanged since that time, controlling most of the market. Dodge gave up manufacturing 15-passenger vans in June 2002.

Data for 1991-2000 in the fatal accident reporting system (FARS) of the National Highway Traffic Safety Administration (NHTSA) indicate that about 52% of the 15-passenger vans involved in a single vehicle, fatal accident were in a rollover. This compares to 33% of passenger automobiles involved in accidents. Additionally, 81% of 15-passenger van fatalities are from single vehicle rollover accidents.[1] NHTSA research reported in 2001 that 15-passenger vans with 10 or more occupants had three times the rollover ratio than did those with fewer than 10 occupants. Fifteen-passenger vans with 10-15 occupants had a rollover ratio of 85% compared with the ratio of 28.3% for vans with fewer than five occupants.

[1] W. Riley Garrott, Barbara Rhea, Rajesh Subramanian and Gary Heydinger, *The Rollover Propensity of Fifteen-Passenger Vans*, Research Note, Washington, D.C., NHTSA, April 2001.

Because of their inexpensive price compared to school buses, vans have proven a popular item. Marketing materials have shown that all three manufacturers have marketed the products for use by ball teams, churches and other groups. Chrysler stated its van "can hold more than your daughter's closet and carry as many as 15 happy campers." GM portrayed its van surrounded by a young ball team.

The Problem

Because of the "package layout" of the 15-passenger van, as occupants load into the van, they tend to cause the center of gravity to both get higher and move rearward. This combination is especially treacherous.[2] In real life, the vehicle becomes more tippy and more likely to fishtail. Dangerous stability problems, not noticeable to

[2]Arndt, et al., "Effects of Loading on Vehicle Handling," SAE Paper 980228 (1998).

average drivers, become all too apparent in emergency steering situations such as a sudden failed tire at highway speed. A sharp 180-degree turn in an emergency is expected behavior, and even advised in the General Motors van owner's manual, but few vans have ever been tested to see if they can safely conduct such a steering maneuver. Fishtailing occurs when the maximum lateral friction capacity of the rear tires is reached. Because current 15-passenger vans are equipped with single rather than dual rear wheels, they do not have adequate rear traction when fully loaded to safely perform emergency steering maneuvers without the danger of fishtailing. A van fishtailing is not under control, and has increased the likelihood it will overturn. The more heavily loaded, the greater the gravity shift, and thus the higher the likelihood of tragic consequences.

Government Action

On April 9, 2001, NHTSA issued a "consumer advisory" cautioning users of 15-passenger vans of an increased risk of rollover under certain conditions. Based on analysis of rollover propensity carried out by the Agency's contractors, NHTSA warned that the risk of rollover increased "dramatically" as the number of occupants

increased from fewer than 5 occupants to over 10 passengers.[3] According to analysis, 15-passenger vans were three times more likely to roll over in single vehicle crashes when the vans were occupied by 10 or more occupants. It noted that "it is important that these vans be operated by experienced drivers."

LOADED VANS AT GREATER RISK TO ROLL

Passengers	*Crashes*	*Rollovers*	*Rollover Ratio **
Less than 5	**1,815**	**224**	**12.3%**
5 - 9	**77**	**16**	**20.8%**
More than 9	**65**	**23**	**35.4%**

** percentage of crashes that are rollovers*

Source: National Highway Traffic Safety Administration

On November 1, 2002, the National Transportation Safety Board (NTSB), an independent federal agency created by Congress to investigate transportation accidents and make recommendations to prevent accidents from occurring, wrote both Ford and General Motors about 15-passenger vans.[4] The NTSB cited its own findings that 52% of vans' single vehicle accidents were rollover accidents,

[3] U.S. DOT "Consumer Advisory," April 9, 2001.

[4] NTSB recommendation of November 1, 2002; H-02-29.

compared to 33% of other vehicles, and that 81% of 15-passenger van fatalities were as a result of single vehicle rollover accidents.[5] The NTSB recommended that 15-passenger vans be included in the current rule-making activities resulting from the Transportation Recall Enhancement, Accountability and Documentation Act of 2000 (TREAD).[6] As the NTSB advised Ford and GM in November:

> Although NHTSA has initiated rule-making activities concerning vehicle rollovers, established a vehicle rollover resistance rating system, and is currently examining dynamic testing procedures, these programs do not extend to 15-passenger vans. Given their high rate of rollover involvement in single-vehicle accident, particularly under fully loaded conditions for which they are designed and are being used, the Safety Board believes that 15-passenger vans should be included in dynamic testing and proposed rollover resistance ratings for this class of vehicle.

After its April 2001 warning, there were several more highly publicized 15-passenger van accidents. NHTSA issued a second consumer advisory in April 2002, and on November 4, 2002, NHTSA proposed a new school bus category to provide "schools, day care

[5] National Transportation Safety Board, *Evaluation of the Rollover Propensity of 15-Passenger Vans, Safety Report* NTSB-SR-02-03 (Washington, D.C.: NTSB 2002).

[6] 67 Fed. Reg. No. 194 (October 7, 2002). NHTSA had not included 15-passenger vans in proposed TREAD Act testing because vehicles designed to carry more than 10 persons are defined as a bus under 49 Code of Fed. Reg., Part 571.3.

centers and other institutions with a safer alternative to 15-passenger vans."

Under existing federal requirements, motor vehicle dealers cannot sell a vehicle as a school bus unless it meets school bus federal requirements (i.e., flashing lights, stop arms, increased structural standards). An interesting caveat to this, however, is that school buses are not currently mandated to have seat belts.[7] Although neither manufacturers nor the government have given 15-passenger vans the safety attention they deserve for emergency steering, the increasing carnage cause by these vehicles is starting to have its effect.

Case Studies: Killing Them Young

[7] Fifteen-passenger vans are manufactured with seat belts for each position although, because they are classified as buses under state and federal law, most states do not require anyone but the front seat occupants to wear them.

Frequently the victims are young:

- In February 2000, four members of Prairie View A&M University's track team in Texas were killed and seven injured when their van rolled over in route to a meet.

- Much the same happened to a Wisconsin-Oshkosh swim team, the DePaul University women's track team, and the Kenyon College swim team.

- Several students from Hardin-Simmons University in Abilene, TX were severely injured in a van crash in 1998, while traveling to Colorado. But younger pupils, from pre-school and Head Start to high school, also have been victims. In what a 1999 National Transportation Safety Board (NTSB) report called "a disturbing trend in pupil transportation," some school districts, day care centers, Head Start programs, contract transportation companies and others are hauling children in vans that "meet the federal definition of a bus but not the federal occupant crash protection standards of school buses."

- Bennettsville, South Carolina, 1998: A 1996 Dodge van carrying six children, ages 7-11, home from a church-run after-school program was hit by a tow truck after the van ran a stop sign, according to a witness. All six children were killed; three of them were ejected from the vehicle.

- Sweetwater, Florida, 1998: A 1992 Dodge Ram hired by parents to transport their 6-to 11-year old children home from school crashed into a Miami transit bus. The van's driver and one child were seriously injured - the child from being thrown against multiple interior surfaces. Three children were ejected from the van and sustained head injuries.

- East Dublin, Georgia, 1998: A 1995 Ford van carrying five 4- and 5-year-olds and one adult to a Head Start program ran a stop sign and crashed into a pickup truck. One 4-year old was

ejected and fatally injured. The van and truck both overturned. Eight van windows shattered.

- Columbia, South Carolina, 1994: Jacob Strebler, 6, was killed on his way to swimming classes in a private school van hit by a truck. Experts determined he wouldn't have been killed and maybe not even seriously injured had he been in a school bus that met federal safety standards.

- Arizona, Summer 2000: One student and the teacher-driver were killed when a 2000 Dodge van carrying 10 students from Chaminade High School on Long Island, on a tour of national historic sites, veered off a 2-lane highway near the Grand Canyon and overturned. Police said the driver had "over-corrected" when the van left the pavement. (See "Fish-tailing" below.)

- Birmingham, Alabama, July 20, 2002: Two college cheerleaders were killed and others injured when a Ford 15-passenger van flipped after the left rear tire detreaded. The victims were all members of the Christian Cheerleaders of America based in North Carolina.

In reviewing just five accidents between 1999 and 2001 involving 15-passenger vans belonging to policyholders of GuideOne Insurance, eleven deaths and twenty serious injuries resulted in claims totaling $4.3 Million. The company issued the following the following statement:

> More important is the impact that these accidents had on the health and vitality of the ministries and people involved. For these reasons, GuideOne believes that 15-passenger vans are inherently unsafe. We

highly encourage all policyholders to strongly consider other transportation options.[8]

Design Solutions

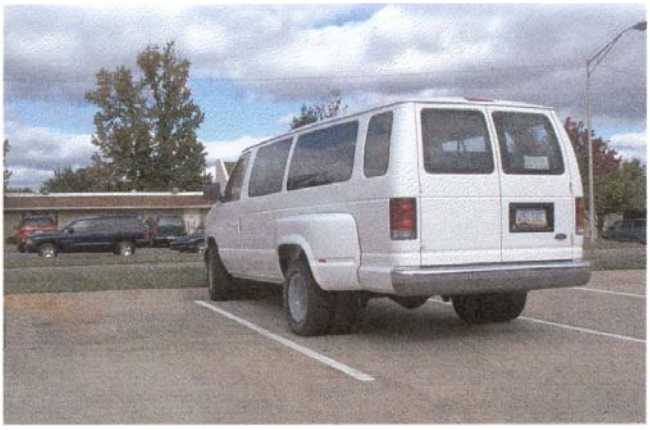
Dual rear wheels, originally recommended by Ford engineers for the extended van back in the mid-1970s, have been shown in testing to given enough additional track width and rear traction to prevent oversteer in most emergency driving. Testing performed under scientific conditions, using computer controlled steering, showed that the General Motors van, for example, could not be made to lose control in either the J-turn or the avoidance maneuver at speeds up to 60-miles per hour even when loaded.

Heitzman Test Video
J-Turn Single Rear Wheel
(Notice the severe tip up.)

Heitzman Test Video
J-Turn Dual Rear Wheels
(Notice no tip up.)

[8] Church and school guide for 15-passenger van use, GuideOne Insurance, www.guideonecenter.com.

Dual rear wheels are a chassis option already available on large pickup trucks offered by the major manufacturers. Dual rear wheels also offer the safety redundancy of an extra tire on each side, so that sudden failure of one tire is less likely to result in tragic loss of control.



As presently configured, none of these vans have the safety margin necessary to allow the non-professional drivers who operate these vans to avoid significant risk of tragedy when there is a simple emergency such as a tire failure.