Consumers Union
Nonprofit Publisher of Consumer Reports

November 21, 2005

Docket Management Facility
U.S. Department of Transportation
400 Seventh Street, S.W.
Nassif Building, Room PL-401
Washington, D.C. 20590-001
Via: http://dms.dot.gov

Comments of Consumers Union of the U.S. Inc.
to the U.S. Department of Transportation
National Highway Traffic Safety Administration
In response to Notice of Proposed Rulemaking
49 C.F.R. Part 571
Docket Number 2005-22143
RIN 2127-AG51
Federal Motor Vehicle Safety Standards; Roof Crush Resistance

Introduction

Consumers Union ("CU"), publisher of *Consumer Reports* Magazine, submits the following comments in response to the National Highway Traffic Safety Administration's (NHTSA) Notice of Proposed Rulemaking (NPRM) to upgrade the agency's safety standard on roof crush resistance, NHTSA Docket No. 2005-22143, 70 Fed. Reg. 49223 (August 23, 2005). "Federal Motor Vehicle Safety Standards; Roof Crush Resistance."

Background

CU has a long history of advocacy relating to improving vehicle safety, and first petitioned NHTSA in 1988 to ask the Agency to establish a minimum stability standard to protect consumers against unreasonable risk of rollover. CU filed comments dated November 29, 2001, in response to NHTSA's Request for Comments, "Federal Motor Vehicle Standards; Roof Crush Resistance ("CU's 2001 Comments").[1] CU also filed comments, dated November 21, 2002, in response to NHTSA's request for comments: "Consumer Information Regulations; Federal Motor Vehicle Safety Standards; Rollover Resistance; Proposed Rule" ("CU's 2002 Comments").[2]

[1] 66 Fed. Reg. 53376 (October 22, 2001).
[2] 67 Fed. Reg. 62529 (October 7, 2002).

Consumers Union
Headquarters Office
101 Truman Avenue
Yonkers, New York 10703-1057
(914) 378-2029
(914) 378-2992 (fax)

Washington Office
1666 Connecticut Ave, NW #310
Washington, DC 20009
(202) 462-6262
(202) 265-9548 (fax)

West Coast Office
1535 Mission Street
San Francisco, CA 94103-2512
(415) 461-6747
(415) 431-0906 (fax)

South West Office
1300 Guadalupe, Suite 100
Austin, TX 78701-1643
(512) 477-4431
(512) 477-8934 (fax)

According to NHTSA estimates, approximately 24,000 people are seriously injured and 10,000 people die annually in 273,000 rollover crashes of light vehicles (excluding convertibles).[3] Although rollovers are only 3 percent of all light vehicle crashes, they cause almost one third of all deaths in light vehicles,[4] and 60 percent of deaths in light vehicle SUVs.[5] NHTSA estimates that 807 people are seriously injured, and 596 people die yearly due to roof intrusion and roof contact.[6]

The proposed rule would extend the standard currently applicable to passenger cars and multipurpose passenger vehicles, trucks, and buses with a Gross Vehicle Weight Rating (GVWR) of 2,722 kilograms (6,000 pounds) -- to cover vehicles with a GVWR of up to 4,536 kilograms (10,000 pounds). This extension would enable the rule to cover most large sport utility vehicles. In addition, it would increase the applied force of the test from 1.5 to 2.5 times a vehicle's unloaded weight ("strength-to-weight ratio" or "SWR"). Required roof strength therefore would be increased, on average, to 1.64 SWR.

We applaud the agency for these proposed changes. In CU's 2001 Comments, we recommended that NHTSA increase weight limits to 10,000 pounds, and we commend that Agency for supporting our proposal. However, we view the strength-to-weight ratio in this proposed rule as inadequate, because it does not sufficiently improve the level of roof crush protection available in most vehicles sold today.[7] CU strongly believes that the SWR requirement should be increased to 3.5, because consumers need a roof strength requirement that provides them with an increased level of protection over current design. The proposed changes fall far short due to a failure to provide consumers with reasonable protection based upon (i) the relative risk of serious harm or death faced by someone involved in a rollover accident described above; and (ii) given the current state of technology. The proposed standard fails to require a significant improvement over the roof strength found in most light vehicles on the market today.[8] In addition, an SUV on the market today, the Volvo XC90 reportedly has achieved an SWR of approximately 3.5 SWR – a clear indication that achieving such a standard is possible. Consequently, CU views as inadequate any standard that does not require an increase for light vehicles to 3.5 SWR.

Calculation of Lives Saved and Injuries Prevented

NHTSA estimates the potential lives saved from implementation of the rule as between 13 and 44.[9] However, this number could be increased, perhaps dramatically, if the proposed standard was designed to be more effective, and required safer cars.

---

[3] "Federal Motor Vehicle Safety Standards; Roof Crush Resistance, " 70 Fed. Reg. 49,223.
[4] Id. at 49,226.
[5] Id. at 49,227.
[6] Id. at 49,229.
[7] (See http://dmses.dot.gov/docimages/pdf93/347017_web.pdf, at 1).
[8] 70 Fed. Reg. at 49,231.
[9] Id. at 49,225.

In addition, NHTSA's estimates of lives saved by the proposal are limited to those people killed in the past due to roof intrusion and roof contact.[10] NHTSA has only included in its estimates better outcomes for victims that were belted and were not fully ejected. We believe this estimate is flawed, because had vehicles had stronger roofs helping to prevent the shattering of car windows, some passengers may not have been ejected. To summarize, car windows might not have shattered, and passengers not ejected, if the roof had maintained its integrity. In addition, the performance of seat belts, airbags and doors also are contingent upon roof performance.

Test Must Be Repeatable and Simulate Real World Conditions of Rollover

CU believes that the test must be repeatable, and reflect real world conditions in terms of force, and pitch. In a rollover, there usually are multiple roof impacts. The first impact on one side of the vehicle is not usually the most forceful. Subsequent impacts may cause greater deformation of the roof. NHTSA should study the loading forces and impact angles of typical rollovers and design a test to mimic the typical case scenario. The test should recreate the rollover effect on both sides of car, simulating the angles of impact that occur in the majority of rollover incidents. In addition, if a car has a sunroof as option, manufacturers should be required to test a car with a sunroof.

In CU's 2001 Comments, we asked the Agency to modify the test plate load and size.[11] In its NPRM, NHTSA references our comments, and states that, based upon its testing and analyses, it would not recommend a change in plate load and size because it found a similarity between the deformation of the roofs of cars tested with the current test procedure, and CU's recommended approach.[12]

Regardless of the similarity between NHTSA's testing with its current and CU's recommended methods, CU believes the current plate load and size does not reflect real-world rollover conditions. Having viewed many rollover crashes and crushed vehicles, staff at CU believe that more of the roof crush force is absorbed by the A-Pillar than accounted for either the by current or proposed standards. Any test must place more of the load on the A-Pillar, and not inappropriately place too much load onto the B-Pillar. We therefore recommend that NHTSA conduct additional studies to determine an appropriate plate size and angle that most accurately reproduces the forces acting on a vehicle during a real-world rollover crash.

The Test Should be Dynamic

In CU's 2001 and 2002 Comments, we recommended that NHTSA adopt a repeatable dynamic test that better simulates real world rollover incidents by taking into account weight distribution and vehicle body design. We understand that creating such a test will require a significant level of research and experimentation, but believe that this research and analysis is necessary as a longer term goal.[13] In this NPRM, NHTSA

[10] Id. at.49,229.
[11] Id. at 49,232.
[12] Id. at 49,238.
[13] Id. at 49,239.

states that it will not propose a dynamic test procedure at this time because of its view that the current test procedure is "repeatable and capable of simulating real-world rollover deformation patterns."[14] CU believes that a dynamic test will best simulate vehicle damage during a rollover, and urges NHTSA to continue to work to develop a dynamic test that is both repeatable and that accurately simulates real world rollover.

Test Should Require Testing Using a 95th Percentile Male Dummy

The proposed test would prohibit a roof from "contacting a 50th percentile male dummy under the application of a force equivalent to 2.5 times the unloaded vehicle weight."[15] We believe that preventing roof crush is important to safety for occupants of all sizes. We recommend broadening the test, including creating guidelines for seat position during testing. CU believes that testing should be performed with 95th percentile dummy with the seat placed in its lowest position (if adjustable seats are standard) to better protect taller car occupants. If adjustable seats are optional, a 95th percentile dummy should be placed in the standard non-adjustable seat. However, testing only the 95th percentile dummy alone may result in a less stringent test. If we assume a 95th male would be positioned farther back on seat track, he would be sitting farther away from the area of primary intrusion in the test. We therefore believe that NHTSA should mandate that to comply, a roof cannot intrude on the lower of a 5th percentile female dummy in the highest and closest seat position to the windshield, and the space occupied by a 95th percentile man in the furthest and lowest seat position.

Standard Should Require Additional Countermeasures

NHTSA has requested comment on advanced restraint systems,[16] and other countermeasures that could further this initiative.[17] CU believes that any effort to prevent injury from rollovers must be created in conjunction with changes to other parts of regulations -- such as seatbelts. The standard should require other safety measures that could improve survivability, including, but not limited to laminated glass, rollover sensing systems that trigger side curtain airbags and pre-tensioning of seatbelts. We recommend that NHTSA investigate the use of seatbelts (such as a three-point belt with an additional shoulder belt) or other seatbelt technologies that will better restrain occupants in the event of a crash, including a rollover, but are not likely to significantly reduce seat belt usage.

In this NPRM, NHTSA tentatively concludes that 2.5 SWR is sufficient because the upgrade is only one of several "measures necessary to reduce rollover related fatalities and injuries."[18] Other necessary measures cited are electronic stability control ("ESC") and lane departure warnings.[19] CU strongly agrees that in addition to advanced restraint systems, these additional features are an important part of any rollover injury

[14] Id. at 49,240.
[15] Id. at 49,225.
[16] Id. at 49,242.
[17] Id. at 49,255.
[18] Id. at 49,236.
[19] Id.

prevention standard. However, CU believes NHTSA should promulgate a standard requiring a 3.5 SWR ratio regardless of the inclusion of ESC, because even with ESC, vehicles will be tripped into rollovers that ESC cannot prevent. If NHTSA promulgates a final standard with an SWR of less than 3.5, we strongly urge NHTSA to mandate ESC and lane departure warnings as part of any standard.

Testing with Windshield and Glazing Removed

We reiterate our request from CU's 2001 Comments, that any roof strength testing be performed without the windshield. Although the windshield may provide some structural reinforcement to the body, this strength is likely to be lost after the first impact, which may not be as forceful as subsequent impacts.

NHTSA states a belief that windshields provide "some" structural support, even after breaking, and that testing with windshield in place better reflects real-world conditions, so declines to propose testing without the windshield or side glazing.[20] However, CU is concerned that the amount of support provided by windshields is impossible to quantify for real-world crashes – and that the amount support will not be consistent across vehicle types. We also are concerned about potential differences in the strength and quality of replacement windshields. We therefore renew our recommendation for the removal of windows before testing, and that windows are not relied upon as a means of support.

Increased Roof Crush Resistance Need Not Result in Significant Increase in Rollover Risk

NHTSA believes "that manufacturers will comply with proposal by strengthening reinforcements in roof pillars, by increasing the gauge of steel used in roofs or by using higher strength materials."[21]

Increasing roof crush resistance will not necessarily cause added weight to the roof and pillars -- with a resulting elevation of the center of gravity -- making vehicles more prone to tip over as asserted by NHTSA.[22] When NHTSA assumed design changes for several vehicles to bring them into compliance with a standard of 2.5 SWR, NHTSA's estimated resulting change in the center of gravity height increases were small.[23] In addition, even if complying with a higher SWR requirement, manufacturers can use light weight metals in the roofs, and make stability control standard in their vehicles.[24]

[20] Id. at 49,238-39.
[21] Id. at 49,236.
[22] Id. at 49,233.
[23] Id.
[24] Id.

NHTSA Standard as National Maximum Safety Standard

Section F of this proposal, "Civil Justice Reform," would preempt "all differing state statutes and regulations."[25] NHTSA tentatively concludes that "if the proposal were adopted as a final rule, it would "preempt all conflicting state common law requirements, including rules of tort law."[26]

Without providing evidence in support of its concern, NHTSA concludes that "either a broad State performance requirement for greater levels of roof crush resistance or a narrower requirement mandating that increased roof strength be achieved by a particular specified means, would frustrate the agency's objectives by upsetting the balance between efforts to increase roof strength and reduce rollover propensity."[27] The Agency continues that it "believe[s] that any effort to impose either more stringent requirements or specific methods of compliance would frustrate our balanced approach to preventing rollovers from occurring as well as the deaths and injuries that result when rollovers nevertheless occur."[28]

NHTSA raises concerns that more stringent requirements could (1) render vehicles more prone to rollover; and (2) require potentially costly methods of improving roof strength that could "delay or even prevent manufacturers from equipping vehicles with advanced vehicle technologies for reducing rollovers, such as Electronic Stability Control."[29] To improve passenger safety, an ideal solution would be for NHTSA to mandate both stronger roofs, and stability control in all vehicles. Instead, under the proposed standard, NHTSA would allow car makers to fall short in both areas. With its current recognition of the importance of ESC, and a failure to mandate its presence in all vehicles, NHTSA is allowing manufacturers to build cars that fail to include well-recognized safety improvements. In addition, NHTSA's own testing shows that six out of 10 vehicles today comply with the proposed 2.5 SWR standard, and as mentioned earlier in these Comments, some vehicles meet a standard of 3.5 SWR. The standard proposed by NHTSA in this NPRM therefore is a move in the right direction, but still is grossly insufficient.

We ask that NHTSA remove this language from any final rule. Tort law establishes a duty of care that protects citizens when the Government is too slow to act, when federal minimum standards are grossly insufficient or outdated or when standards are not well enforced. The agency's preemption position, if accepted by the courts, would reduce or eliminate manufacturer incentives to exceed this inadequate minimum standard. Any preemption of state common and statutory law in this case would remove incentives for car makers to make safer cars – by shielding them from findings that their vehicle, despite meeting a weak federal standard, was nonetheless unreasonably unsafe, causing harm or death.[30]

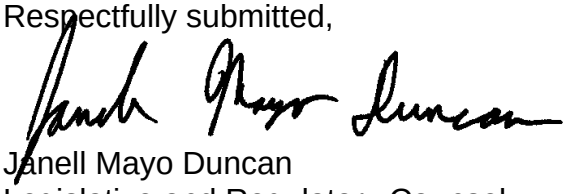
---

[25] Id. at 49,245.
[26] Id. at 49,246.
[27] Id. at 49,245.
[28] Id.
[29] Id. at 49,245-46.
[30] Id. at 49,245.

Conclusion

We request that NHTSA include the foregoing recommendations and requirements in its final rule in order to better prevent rollover crashes, and better protect consumers from devastating rollover deaths and injuries caused by rollover accidents.

Respectfully submitted,



Janell Mayo Duncan
Legislative and Regulatory Counsel
Washington Office