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**DEPARTMENT OF TRANSPORTATION**

**National Highway Traffic Safety Administration**

**49 CFR Part 571**

**[Docket No. NHTSA 2008-0124]**

**RIN 2127-AK13**

**Federal Motor Vehicle Safety Standards; Windshield Zone Intrusion**

**AGENCY:** National Highway Traffic Safety Administration (NHTSA), Department of Transportation (DOT).

**ACTION:** Withdrawal of rulemaking.

**SUMMARY:** This document withdraws a rulemaking proposal to rescind Federal Motor Vehicle Safety Standard (FMVSS) No. 219, “Windshield zone intrusion.” The agency has determined that there are two ongoing regulatory developments that could influence vehicle designs by putting a premium on the use of lighter or less rigid materials. These two developments are U.S. fuel economy requirements and a global technical regulation aimed at reducing injuries to pedestrians struck by vehicles. As a result, the agency believes that vehicle designs with regard to the hood and windshield are in a state of change and that the implications of these developments should be better understood before deciding whether to rescind FMVSS No. 219.

**FOR FURTHER INFORMATION CONTACT:** For non-legal issues, you may contact Mr. David Sutula, Office of Crashworthiness Standards, NHTSA, 1200 New Jersey Avenue, S.E., Washington, D.C. 20590 (Telephone: 202-366-3273) (Fax: 202-366-2739).

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### **I. Background**

FMVSS No. 219, “Windshield zone intrusion,” provides that a vehicle’s hood must not enter a defined zone in front of the vehicle’s windshield during a full frontal crash test at 48 kilometers per hour (km/h) (30 miles per hour (mph)). The purpose of the standard is to reduce injuries and fatalities that result from occupant contact with vehicle components, such as the hood, that are displaced into the occupant compartment through the windshield opening or into the zone immediately forward of the windshield aperture during a frontal crash.

FMVSS No. 219 specifies a protected zone at the daylight opening (DLO) portion of the vehicle windshield. The protected zone is an area encompassing the width of the windshield and that protrudes about 76 mm (3 inches) from the outer surface of the windshield. In a 48 km/h (30 mph) frontal rigid barrier crash test, no part of the vehicle from outside the occupant compartment, except windshield molding and other components designed to normally be in contact with the windshield, are permitted to penetrate the protected zone to a depth of more than

6 mm (0.25 inches) and no such part of a vehicle is permitted to penetrate the inner surface of that portion of the windshield, within the DLO, below the protected zone.

FMVSS No. 219, which took effect on September 1, 1976, applies to passenger cars, multipurpose passenger vehicles, trucks, and buses with a gross vehicle weight rating of 4,536 kilograms (kg) (10,000 pounds) or less, except for forward control vehicles, walk-in van-type vehicles, or open-body-type vehicles with fold-down or removable windshields. NHTSA has maintained this standard without substantive revision since 1976.

## **II. NPRM to Rescind FMVSS No. 219**

As part of a periodic review of existing vehicle safety regulations to determine whether a continuing safety need exists for the standard under review, NHTSA published a notice of proposed rulemaking (NPRM) that proposed to rescind FMVSS No. 219 on July 7, 2008.<sup>1</sup> NHTSA undertakes periodic reviews of its regulations under, *inter alia*, the Department's 1979 Regulatory Policies and Procedures, under Executive Order 12866 "Regulatory Planning and Review," and under section 610 of the Regulatory Flexibility Act (5 U.S.C. section 501 *et seq.*). In addition, NHTSA conducts reviews pursuant to its internal operating procedures. During this review process, FMVSS No. 219 was identified as a standard that could possibly be removed as unnecessary. The NPRM tentatively concluded that the safety need that FMVSS No. 219 addresses was being met by FMVSS No. 208, "Occupant crash protection," and FMVSS No. 113, "Hood latch system." The NPRM cited the improvements made to FMVSS No. 208 over the years as well as the secondary latch position required by FMVSS No. 113. Based on the performance requirements in FMVSS No. 208 and FMVSS No. 113, the agency tentatively concluded that FMVSS No. 219 was no longer necessary.

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<sup>1</sup> 73 FR 38372.

Our belief stemmed from the fact that FMVSS No. 219 had succeeded in virtually eliminating the intrusion of vehicle components from outside the occupant compartment into the windshield. The agency's analysis of FMVSS compliance and New Car Assessment Program (NCAP) tests indicated there had been no known incidents in which a crash tested vehicle failed to meet the performance requirements in FMVSS No. 219. Furthermore, in a preliminary analysis of crashes in the National Automotive Sampling System (NASS) Crashworthiness Data System (CDS), no hood intrusions into the areas prescribed by FMVSS No. 219 were found among full frontal crashes.

### **III. Agency Response to Comments on the NPRM**

The following organizations submitted comments on the NPRM: Public Citizen and the Center for Auto Safety (CAS) (the two commenters submitted joint comments), Advocates for Highway and Auto Safety (Advocates), the Insurance Institute for Highway Safety (IIHS), and the Alliance of Automobile Manufacturers (Alliance).<sup>2</sup> The issues raised include: changes in the vehicle fleet, real world data, dummy and air bag performance in windshield zone intrusion, industry burden and possible effects of FMVSS No. 219 rescission on State regulation. The consumer advocacy organizations and the insurance consortium did not support the NPRM, while the vehicle manufacturer organization generally supported the rescission.

#### *A. The Changing Vehicle Fleet*

Public Citizen/CAS stated, "In coming years, there will be an influx of new small cars from Europe and Asia, which will not necessarily be designed with consideration of FMVSS [No.] 219 if it is rescinded." Advocates stated that "both long and short-term changes in the vehicle fleet make this an inappropriate action to take at this time." Advocates stated:

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<sup>2</sup> The members included: BMW Group, Chrysler LLC, Ford Motor Company, General Motors, Mazda, Mercedes-Benz USA, Mitsubishi, Porsche, Toyota, and Volkswagen.

the vehicle manufacturing industry is in a rapidly evolving, dynamic state and is developing radically new designs and types of motor vehicles. Small, uniquely designed vehicles are being produced in Europe and imported into the U.S. Three-wheel vehicles are also nearing entry into the U.S. market. In the near future, production of vehicles in China will supply many more models for import into the U.S. market, and inexpensive passenger vehicles using new designs are planned in India and other countries that may eventually be sold in the U.S. In addition, alternative fuel vehicles will incorporate unknown designs and features that, without the performance requirement and safety protection for occupants provided by FMVSS No. 219, may present safety threats that neither FMVSS No. 208 nor FMVSS No. 113 are equipped to prevent.

IIHS commented that “NHTSA is underestimating the continuing benefits of FMVSS [No.] 219, especially considering a growing global market, while simultaneously overestimating the benefits of its rescission.”

*Agency Response:* The agency agrees that the vehicle fleet is in a period of change because of many factors. We agree that the U.S. fleet may begin to see new entrants from foreign and domestic manufacturers that have less experience with the FMVSS framework, in comparison to manufacturers that have long been part of the U.S. market. In addition, we also believe a period of change may be initiated by two specific influences on vehicle design, the effects of which have not yet been fully determined. Those influences are more stringent U.S. Corporate Average Fuel Economy (CAFE) standards and a global technical regulation requiring changes in vehicle design aimed at minimizing injuries to pedestrians that are struck by automobiles.

We believe manufacturers may begin using lighter materials to meet CAFE standards, including materials in and around the hoods of vehicles. Hood design could be affected by the use of lighter materials. We, therefore, agree with commenters that suggested that FMVSS No. 219 should remain in place to assure protection against hood intrusion while the vehicle fleet evolves in response to CAFE standards.

Additionally, in November 2008, the World Forum for Harmonization of Vehicle Regulations (WP.29) adopted Global Technical Regulation (GTR) No. 9 (ECE/TRANS/180/Add. 9). GTR No. 9 is aimed at establishing vehicle design criteria that will result in vehicles with hoods and related hardware that will reduce the severity of injuries to pedestrians struck by automobiles. Among the vehicle changes that manufacturers are likely to consider as a result of implementation of this GTR are softer, more deformable hood structures and alternative hood designs that aid in protecting a pedestrian that is struck by a vehicle. NHTSA is considering the benefit of adopting this GTR to harmonize U.S. regulations with the international community. Canada is currently considering adopting GTR No. 9, while Japan and the European Commission already have adopted requirements in their domestic regulations similar to those of the GTR.

Several vehicles have already shown up in the U.S. market that both comply with FMVSS No. 219 and have incorporated the kinds of changes in vehicle design anticipated by the GTR. The agency is concerned that a pedestrian safety standard might increase the possibility that some manufacturers would use hood hinges that are significantly less stiff, to produce low injury values for pedestrian testing. It makes sense that FMVSS No. 219 would be needed, at least during the initial implementation of a pedestrian standard, to ensure that rearward deformation of the vehicle's hood is not excessive in an FMVSS No. 219 type crash.

The agency agrees that there are unknowns associated with the effect of new pedestrian safety designs on the vehicle fleet as they pertain to FMVSS No. 219. Therefore, these unknowns warrant retaining FMVSS No. 219, at least until the impact of these circumstances can be more fully understood.

#### *B. Real World Data*

The IIHS and Public Citizen/CAS commented that NHTSA did not provide sufficient real world data to support the rescission of FMVSS No. 219. Public Citizen/CAS suggested that NHTSA should analyze the effectiveness of FMVSS No. 219 and the potential consequences of rescinding it before deciding whether to rescind the standard.

The IIHS stated that a review of NASS cases revealed that vehicle hood penetration into the occupant compartment still occurs in a small number of offset crashes, pole impacts, and severe underride collisions with large trucks or tractor trailers. The IIHS said that it identified NASS cases from 2002-2006 that involved crashes different from the 48 km/h (30 mph) flat barrier test required by FMVSS No. 219. The IIHS suggested that FMVSS No. 219 be modified to address the types of crashes seen in these NASS cases. Public Citizen/CAS also stated that an offset frontal crash test should be incorporated into FMVSS No. 219.

CAS compiled a list of 40 recalls from model year 1980 through 2007 that related to defective hood latch equipment. The organization said, “[T]he presence of FMVSS No. 113 does not protect occupants in the face of these defects; therefore, the protection provided by FMVSS No. 219 ensures that occupants are not injured by an intruding roof [sic] in the event of a latch failure.”<sup>3</sup>

*Agency Response:* NHTSA has analyzed crash data to determine the potential safety consequences of a decision to rescind FMVSS No. 219. As discussed below, the analysis has shown that the safety need for the standard for current vehicles is apparently being met by other standards. Nonetheless, for reasons related to future vehicle designs, we have decided not to rescind FMVSS No. 219.

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<sup>3</sup> NHTSA assumes that Public Citizen and the Center for Auto Safety were referring to an intruding hood rather than an intruding roof. [Footnote added.]

NHTSA analyzed NASS cases of model year 2004-2008 vehicles with dual frontal air bags that were coded as having hood intrusion. A total of 78 cases were identified. Of these 78 NASS cases, only one case involved an injury to a non-ejected occupant due to hood intrusion, and the resulting injury was coded as a minor injury to the occupant's right hand and arm. Based on nationally weighting this one case, NHTSA estimates there are annually 127 minor injuries to non-ejected occupants associated with hood intrusion.

The agency also analyzed more than 900 NASS cases that met the following criteria: a 2000 model year vehicle, or newer, with a delta V of 35 km/h (22 mph),<sup>4</sup> or greater, with a primary frontal impact and available air bags. The agency found only 12 cases in which the hood intruded through the windshield. These cases involved frontal offset, pole impact, and underride crashes. None of these crash modes are required to be tested in FMVSS No. 219. The single NASS case with a minor injury to the occupant's arm and hand, described in the previous paragraph, was identified in this analysis as well. There were no other occupant injuries resulting from hood intrusion found.

Finally, the agency also reviewed 230 Crash Injury Research Engineering Network (CIREN) cases and found 9 cases that were coded with hood intrusion, 4 of which had injuries associated with hood intrusion. All of these cases involved exceedingly severe crashes under conditions that far exceed the FMVSS No. 219 testing requirements, and resulted in a significant loss of occupant space. These crashes were so severe that they exceeded the parameters of any crash test in common use, including offset or pole testing suggested by IIHS and Public Citizen/CAS.

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<sup>4</sup> This delta V threshold was set in order to limit the number of cases to a manageable level and to capture crashes around the crash severity of the standard and just below.

Details of the NASS and CIREN crashes discussed above are contained in a technical report titled, "Evaluation of NASS Cases for Windshield Zone Intrusion," which may be found in Docket No. NHTSA-2008-0124 (the docket for the July 7, 2008 NPRM).

C. *Dummy and Air Bag Performance in Windshield Zone Intrusion*

The IIHS commented that FMVSS No. 208 does not protect against windshield zone intrusion in the same way that FMVSS No. 219 does because, under FMVSS No. 208, an intrusion would have to occur and strike a test dummy in the vehicle to be considered dangerous. Any component intruding through a windshield should be considered a hazard, IIHS stated, because when intrusion occurs, even slight changes to the crash scenario could result in occupant injury.

Advocates commented that it is unclear how the dummy performance requirements of FMVSS No. 208, which it suggested are intended to protect occupants from injuries caused by contact with internal vehicle surfaces, will serve to reflect impact injuries due to windshield intrusion by external vehicle parts. It stated that the agency cannot assure the public that only blunt impact injuries would occur if FMVSS No. 219 were rescinded. Advocates also stated that FMVSS No. 208 will not necessarily prevent lacerative injuries because it is unknown how quickly air bags will deflate once punctured by a sharp object protruding through the windshield or because an air bag, once having performed its function, could start to deflate before an object intrudes through a windshield. It stated that in real world crashes, an object can strike an occupant without encountering an inflated air bag.

*Agency Response:* We believe that the concerns raised by Advocates and IIHS about how well FMVSS No. 208 would protect vehicle occupants against injury from objects intruding through a windshield during a crash would merit further discussion in the event further steps

were taken to rescind the standard. The agency is today deciding not to proceed with rescinding FMVSS No. 219 based primarily on changes that are likely to occur in the vehicle fleet. Should the agency consider rescinding FMVSS No. 219 at a future time, we will address all appropriate issues then.

#### *D. Industry Burden*

The Alliance supported the agency's tentative assessment in the NPRM that FMVSS Nos. 208 and 113 adequately protect against windshield intrusion, that FMVSS No. 219 is redundant, and that the standard imposes an unnecessary burden on manufacturers. The Alliance commented that it "supports the agency's periodic review of its regulations and standards...to assure that out of date or ineffective regulations or standards are not creating needless compliance burdens."

Advocates, IIHS, and Public Citizen/CAS stated that FMVSS No. 219 testing imposes little burden or cost on vehicle manufacturers. IIHS stated that FMVSS No. 219 testing poses little additional compliance test burden because this aspect of safety is addressed at the same time as other flat barrier dynamic testing. Furthermore, IIHS commented that "[M]aintaining the standard creates little additional work for the agency or manufacturers." Advocates stated that "any cost savings to industry would be extremely small." Public Citizen/CAS commented that FMVSS No. 219 "places a minimal burden on the industry."

*Agency Response:* We note that we clearly stated in the NPRM that any cost savings resulting from the rescission of FMVSS No. 219 would be so minimal that the savings cannot be calculated. We note that the requirements of FMVSS No. 219 may be assessed during the FMVSS No. 208 crash test.<sup>5</sup>

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<sup>5</sup> The full frontal barrier tests in FMVSS No. 208 are now performed at 56 km/m (35 mph), which is a more severe test than that specified in FMVSS No. 219.

In December 2004, NHTSA published a technical report analyzing the cost and weight added by different FMVSSs.<sup>6</sup> This report concluded that there was no attributable weight or cost associated with FMVSS No. 219. This conclusion relied on the results of a NHTSA report<sup>7</sup> that sampled twelve make-models pre-standard and post-standard. The report found no measurable or determinable weight or cost per vehicle associated with FMVSS No. 219.<sup>8</sup> Based on the negligible cost to industry to maintain and test to the performance requirements in FMVSS No. 219, the agency has concluded that FMVSS No. 219 does not place an unreasonable burden on industry.

#### *E. Possible Effect of FMVSS No. 219 Rescission on State Regulation*

The Alliance said that NHTSA “should confirm in the notice publishing the final rule the conclusion that the safety need addressed by FMVSS No. 219 is addressed sufficiently by the current versions of FMVSS No. 208 and FMVSS No. 113, leaving no room for State regulation of this aspect of vehicle performance.” The NPRM had stated the agency’s tentative determination that if FMVSS No. 219 were rescinded, States would be free to regulate the aspect of motor vehicle performance that was regulated by the standard (73 FR at 38374).

*Agency Response:* Our action today to withdraw the July 7, 2008 NPRM will not change the current relationship between FMVSS No. 219 and State regulation of this aspect of vehicle performance.

#### **IV. Agency Decision to Withdraw the Rulemaking**

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<sup>6</sup> Tarbet, M.J., *Cost and Weight Added by the Federal Motor Vehicle Safety Standards for Model Years 1968-2001 in Passenger Cars and Light Trucks*. NHTSA Technical Report No. DOT HS 809 834:128 (2004)

<sup>7</sup> McVetty, T.N., Cross, A.J., and Parr, L.W., *Cost Evaluation for Two Federal Motor Vehicle Safety Standards – FMVSS 113 Hood Latch – Passenger Cars – FMVSS 219 Windshield Zone Intrusion – Passenger Cars*. NHTSA Technical Report No. DOT HS 806 187:19-36 (1982)

<sup>8</sup> We note that in that report, the agency stated that “it is conceivable that a more thorough teardown study including vehicles a year or two before 1976 could have revealed costs of changes made in anticipation of FMVSS No. 219, if there were any.”

The agency has decided to withdraw this rulemaking. There are relatively new considerations affecting vehicle design, specifically, enhanced corporate average fuel economy standards, and global technical regulations for vehicle hoods that will reduce the severity of injuries sustained by pedestrians that are struck by vehicles. These considerations are likely to stimulate the use of lighter or less stiff materials in vehicles. In addition, we may begin to see new entrants from foreign and domestic manufacturers that have less experience with the FMVSS framework, in comparison to manufacturers that have long been part of the U.S. market. Therefore, the agency has concluded that now is not an appropriate time to rescind FMVSS No. 219. The agency will continue to monitor changes in the vehicle fleet that may occur as a result of these new design considerations and will continue its process of regularly reviewing the existing safety standards, which will include FMVSS No. 219.

**AUTHORITY:** 49 U.S.C. 30162; delegations of authority at 49 CFR 1.95 and 501.8.

Christopher J. Bonanti

Associate Administrator for Rulemaking

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