Dated: February 20, 1991.

Paul Lapsley,

Director, Regulatory Management Division, Office of Policy, Planning and Evaluation.

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DEPARTMENT OF TRANSPORTATION

National Highway Traffic Safety Administration

49 CFR Part 571

Federal Motor Vehicle Safety Standards: Denial of Petition for Rulemaking

AGENCY: National Highway Traffic Safety Administration (NHTSA), DOT.

ACTION: Denial of petition for rulemaking.

SUMMARY: This notice denies a petition for rulemaking requesting that NHTSA establish bumper height requirements for small trucks and sport-utility vehicles. The petitioner, Dr. F. Wayne Stromeyer, stated that the bumper heights of these vehicles should be identical to those of passenger cars or that they should be equipped with underride guards. The establishment of requirements along the lines suggested by the petitioner would significantly reduce the utility of the vehicles in question. Therefore, the agency believes that such a requirement would not be reasonable, practicable or appropriate for these vehicle types. Moreover, while the agency recognizes that many of these other vehicles are manufactured with bumpers mounted somewhat higher than passenger car bumpers, it does not have evidence of any significant safety problem resulting from those differences.

FOR FURTHER INFORMATION CONTACT: Mr. Samuel Daniel, Office of Vehicle Safety Standards, National Highway Traffic Safety Administration, 400 Seventh Street SW., Washington, DC 20590 (202-366-4921).

SUPPLEMENTARY INFORMATION: F. Wayne Stromeyer, M.D., petitioned this agency for rulemaking regarding bumper heights for small trucks and sport-utility vehicles. The petitioner stated that he is concerned about the lack of bumper height safety standards for these vehicles, noting that he is aware of crashes in which a sport-utility vehicle overrode the hood of a passenger car, killing or seriously injuring the occupants of the car. Dr. Stromeyer compared this to situations in which portions of cars go under the rear bumpers of large trucks, a subject which NHTSA is currently addressing in rulemaking. The petitioner stated that he believes the bumper heights of small trucks and sport-utility vehicles should be identical to those of passenger cars or that they should be equipped with underride guards.

NHTSA has issued a bumper standard for passenger automobiles pursuant to the Motor Vehicle Information and Cost Savings Act (the Cost Savings Act) and the National Traffic and Motor Vehicle Safety Act (the Safety Act). See 49 CFR part 581. The standard establishes requirements for the impact resistance of passenger automobiles in low-speed front and rear collisions and includes a bumper height requirement.

NHTSA's bumper standard does not apply to trucks or multipurpose passenger vehicles (the category which generally includes "sport-utility vehicles"). Title I of the Cost Savings Act specifically excludes trucks from any bumper standards and allows the agency to exempt multipurpose passenger vehicles from bumper standards. While the Safety Act could be used to issue bumper standards for both of those categories of vehicles, NHTSA believes it would be inappropriate to require bumpers of these vehicles to be at the same height as those of passenger cars. These types of vehicles require greater ground clearance than passenger cars, to enable them to clear obstacles and hazards characteristic of commercial and occasional off-road operation. For the same reason, requiring underride guards on trucks and multipurpose passenger vehicles would be inappropriate. The requirement recommended by the petitioner would thus significantly reduce the utility of the vehicle types in question. Therefore, the agency believes that such a requirement would not be reasonable, practicable or appropriate for these vehicle types.

While some vehicle types clearly require greater ground clearance than passenger cars, NHTSA is aware of potential safety problems associated with vehicles whose bodies are significantly raised above their usual design height. These potential safety concerns include more intrusion to struck passenger vehicles and reduced vehicle stability and braking performance. NHTSA's safety standards, however, apply only to new vehicle manufacturers. The agency does not have the legal authority to regulate subsequent vehicle modifications by individual owners. By contrast, the states can regulate subsequent modifications much more effectively through their motor vehicle registration and inspection programs. Several states have established requirements governing the bumper heights on all vehicles, including trucks and multipurpose passenger vehicles, which help to ensure that individual owners do not "jack up" or otherwise modify their vehicles in an unsafe manner.

Finally, while the agency recognizes that many of these other vehicles are manufactured with bumpers mounted somewhat higher than passenger car bumpers, it does not have evidence of any significnt safety problem resulting from those differences. The agency analyzed data from the Fatal Accident Reporting System (FARS), which is a census of all fatal motor vehicle crashes on U.S. roads. Data from the 1989 FARS file (the latest available) indicate there were 3,842 car occupant fatalities in collisions with a light truck, van or sport utility vehicle. In none of these was underride or override reported as a cause of the car occupant fatality. Thus, the agency is not aware of any data indicating a safety problem to be addressed by the rulemaking requested by Dr. Stromeyer.

For the reasons set forth above, NHTSA denies Dr. Stromeyer's petition for rulemaking.

Issued on February 20, 1991.

Barry Felrice,

Associate Administrator for Rulemaking.

[FR Doc. 91-4451 Filed 2-25-91; 8:45 am]

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49 CFR Part 571

[Docket No. 88-22; Notice 03]

RIN 2127-AA44

Flammability of Interior Materials in Buses

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

ACTION: Request for comments.

SUMMARY: This notice requests comments on a number of issues related to flammability of buses. Additionally, the notice provides the public with information on the activities of the National Highway Traffic Safety Administration to upgrade Federal Motor Vehicle Safety Standard (FMVSS) No. 302, Flammability of Interior Materials, as it applies to large buses. More specifically, this notice provides a discussion of the comments received in response to the Advance Notice of Proposed Rulemaking (53 FR 44627) published on November 4, 1988, and a summary of the research results on school bus seating materials. Finally, the

notice announces the agency's decision to limit any potential regulatory changes to the fire resistance requirements of school buses only.

This notice comprises one part of the agency's comprehensive effort to assess the safety need to amend several Federal motor vehicle safety standards as they apply to the cash avoidance capabilities, crashworthiness, and post-crash performance of school buses. It is essential that upgrades to standards be evaluated in terms of their effect, both positive and negative, on other standards. For example, possible changes in the emergency exit requirements for school buses could have an effect on the need levels of fire resistance.

Despite the outstanding safety record of buses in general, and school buses in particular, tragedies can and do occur. As a result, NHTSA believes it should consider whether there are improvements that could be made in its safety standards that may provide even higher levels of safety.

DATES: Comments on this notice must be received by the agency no later than April 29, 1991.

ADDRESSES: Comments should refer to the docket number and notice number and be submitted in writing to: Docket Section, National Highway Traffic Safety Administration, room 5109, 400 Seventh Street SW., Washington, DC, 20590. Telephone: (202) 366-5267. Docket hours are 9:30 a.m. to 4 p.m. Monday through Friday.

FOR FURTHER INFORMATION CONTACT: Mr. Charles L. Gauthier, Office of Vehicle Safety Standards, National Highway Traffic Safety Administration, (NRM-10) 400 Seventh Street SW., Washington, DC, 20590. Telephone: (202) 366-4799.

SUPPLEMENTARY INFORMATION:

Background

Even though school buses have a proven outstanding safety record, NHTSA has undertaken a comprehensive effort to assess the need to amend several of its Federal Vehicle Safety Standards on the crash avoidance capabilities, crashworthiness, and post-crash performance of school buses. School bus safety has received substantial public and Congressional attention, especially in the aftermath of two recent catastrophic crashes. On May 14, 1988, in Carrollton, Kentucky, a pickup truck being driven the wrong way on an Interstate highway by a drunk driver collided head-on with a former school bus which had been purchased by a local church for use as an activity bus. This was an extremely severe crash, with an impact speed in excess of 100 miles per hour. Twenty-seven bus occupants died in the fire that ensued. On September 21, 1989, in Alton, Texas, a school bus plunged into a water-filled pit after colliding with a tractor-semitrailer and became submerged. Twenty-one students drown when they could not escape from the bus.

In their investigations of these crashes, the National Transportation Safety Board (NTSB) concluded that "contributing to the severity of the accident was the lack of a sufficient number of emergency exits" to accommodate the rapid egress of all passengers. In their investigation of the Carrollton crash, the NTSB concluded that although the number of fatalities was affected by the lack of sufficient emergency escape routes, the actual fatalities were caused by smoke inhalation resulting from the post-crash fire rather than by crash-related trauma or injuries.

The bus involved in the Carrollton crash, which was first used as a school bus and then by a church, was manufactured shortly before several school bus safety standards took effect on April 1, 1977. As a result, the bus was not required to, and apparently did not, comply with the current school bus emergency exit requirements of FMVSS No. 217, Bus window retention and release, nor the more stringent fuel system integrity requirements of FMVSS No. 301, Fuel system integrity.

The bus presumably met the performance requirements of FMVSS No. 302, for the flammability of interior materials, which took effect on September 1, 1972. The purpose of that standard is to "reduce the deaths and injuries to motor vehicle occupants caused by vehicle fires, especially those originating in the interior of the vehicle from sources such as matches and cigarettes." The standard seeks to allow the driver time to stop the vehicle, and if necessary to evacuate it, before untenable conditions develop which could result in injuries or fatalities. The standard specifies a horizontal burn rate of not more than four inches per minute for materials used for certain specified components in the occupant compartment, such as seat cushions, seat backs, seat belts, trim panels, compartment shelves, curtains, floor coverings and all interior materials that are designed to absorb energy on contact by occupants in the event of a crash. All portions of material from a specified component that are within one-half inch of the occupant compartment air space are subject to Standards No. 302's burn rate requirements. The test procedure involves a laboratory test in which test specimens of 4 inches by 14 inches are placed harizontally in a metal cabinet and exposed to a flame for 15 seconds. These test procedures and requirements were based on the technical information available when the standard was promulgated in 1971.

Advance Notice of Proposed Rulemaking

General

On November 4, 1988, NHTSA published an Advance Notice of Proposed Rulemaking (ANPRM) announcing that the agency was considering a proposal to upgrade FMVSS No. 302 for buses, including school buses. (53 FR 44627.) To assist the agency in deciding whether to issue a proposal, that notice requested comments on the safety need for a rulemaking, types of buses that should be covered, types of seating materials available, toxicity of fumes off by burning or smoldering seating materials, upgraded test procedures, and the costs and benefits of a rulemaking.

On the same day, the agency issued an ANPRM about the adequacy of the requirements for school bus emergency exits under FMVSS No. 217 (53 FR 44623). A few months later, the agency issued an ANPRM about the adequacy of the requirements for fuel system integrity for school buses under FMVSS No. 301. (54 FR 13082, March 30, 1989). As these rulemakings indicate, factors related to fire risk are often interrelated. These factors include a fire's source and mangnitude, an occupant's ability to escape from a burning vehicle, the time needed to escape, the location and type of emergency exists, and the flammability resistance of the vehicle's interior materials.

In response to the ANPRM on FMVSS No. 302, the agency received fifty-four comments from bus manufacturers, seating and material manufacturers, State and local governments, trade associations, and individuals. The commenters generally agreed that measures could be taken to increase the flammability resistance of materials used in school buses. Commenters also addressed other issues raised in the ANPRM, including the rulemaking's scope, the availability of new materials for increased fire protection, possible performance requirements to reduce injuries and enhance flammability resistance, and the costs and benefits of the rulemaking.

Scope of Rulemaking

The ANPRM first asked about what vehicles should be covered if the standard were upgraded. The notice asked whether small and large school buses (i.e., those with gross vehicle weight ratings below and above 10,000 pounds) should be covered and whether buses other than school buses should be covered. As for bus size, twenty commenters stated that regardless of size, buses should be treated the same for any new fire resistance requirements. Only Ford commented that the rulemaking should be limited to buses over 10,000 pounds, claiming that small buses are easier to evacuate because they carry fewer occupants. Two commenters explained that handicapped passengers need more time to evacuate regardless of bus size.

As for applicability to non-school buses, four commenters believed school buses should be treated differently while twelve stated that all buses should be treated the same. Two of the four commenters stated that because FMVSS No. 222, School bus passenger seating and crash protection specifies unique energy-absorbing requirements for school bus materials, non-school buses should be treated differently than school buses. Another commenter stated that school buses should be evaluated differently based on current technology and past safety records. One commenter stated that even though non-school buses use different types and amounts of material, they should not be treated differently.

Fire Resistant Materials

The ANPRM posed several questions about the availability of new materials to improve a school bus interior's fire resistance in terms of ignitability, flame spread, smoke emissions, and toxicity. Seventeen commenters, including seating manufacturers and school bus operators, all believed that such materials are available. Commenters generally stated that improved flame-retardant or flame-resistant foams and cushion materials and fire-blocking or fire-barrier covers are available. Flame-retardant or flame-resistant foams and cushions slow down the flame's spread, while fire-blocking or fire-barrier covers prevent the fire from reaching the cushion, typically the most flammable material. Commenters mentioned a variety of seat foams, e.g., urethane, neoprene, and polyurethane, and seat covers, e.g., vinyl, Kevlar, Nomex, and Athol. One commenter explained its patented process in which fabric can be treated to allegedly become fire proof.

The ANPRM requested information about the testing of, and field experiences with, these products. While no commenter described their field test experiences in detail, ten commenters, who in most cases were manufacturers of foams or fire-blocking seat covers, generally responded to this question. They commented that their products would improve fire resistance of school bus interiors because their products meet Federal Aviation Administration (FAA) standards or Urban Mass Transit Administration (UMTA) guidelines. One commenter stated that school buses in its State are required to have fire-blocking materials when carrying children with disabilities.

Only one commenter responded to the question about adverse experiences with the products. That commenter stated that although fire-blocking materials are available, "the market rejects them due to vandalism concerns." Other commenters had similar concerns about how vandalism reduces the effectiveness of fire-blocking materials. Specifically, if a school bus seat with a fire-blocking cover is vandalized, then the highly flammable seat foam is exposed. Based on the comments to the docket, it appears that vandalism of school bus seats is a legitimate concern.

Seven commenters responded to the ANPRM's request for information about materials used for seat padding and seat covers and their performance in terms of fire resistance and injury reduction. Three commenters stated that materials are available that perform well in both fire resistance and injury reduction based on the performance of fire-blocking covers. Two commenters believed that a particular brand of foam could meet FMVSS No. 222's requirements and could increase flammability protection. Two other commenters said materials are available but did not provide data.

Eight commenters responded to the ANPRM's question about whether a standard should focus on seat covers or cushion materials. Five commenters said that both seat covers and cushions should be considered. Two commenters reasoned that although fire-blocking seat covers have cost advantages, vandalism would eliminate any performance advantage. Another commenter stated that if only fire-blocking covers are used, the seat would still burn if there is wear or vandalism. In contrast, two commenters prefer fire-blocking covers because of their cost-effectiveness. Two other commenters stated that fire, smoke, or toxicity problems might still develop if only the seat cover or cushion are required to comply with upgraded fire resistance requirements.

Performance Requirements

After explaining current performance requirements in FMVSS No. 302, the notice asked whether it was desirable or feasible to develop new performance requirements and test procedures for greater fire resistance. While 16 commenters believed that this was desirable or feasible, six disagreed. Four of the six commenters stated that there was no safety need to justify upgrading the bus standard, and one commenter suggested that efforts should be directed at eliminating fuel fires. Of the affirmative responses, two suggested that the burn rate requirements be upgraded. Two others commented that new requirements should be developed which are representative of real-world crashes, including catastrophic fuel fires. Six other commenters suggested NHTSA adopt different kinds of test methods in various existing standards including the Boston Bag Test, the California Technical Bulletin 133 test, the McDonnell Douglas Combined Hazard Analysis System/Single Animal Test system, the E 162 Radiant Panel and D 3675 Smoke Density test methods developed by the American Society for Testing and Materials (ASTM), and procedures similar to the Federal Aviation Administration (FAA) requirements. The principal FAA test for aircraft seats exposes complete seat assemblies to an oil burner set at 1,900 degrees F (1,038 degrees C) for two minutes. The FAA compliance criteria involve both the burn length of the seat cover and the weight loss of the seat assembly.

Thirteen commenters responded to whether FMVSS No. 302 should incorporate a systems approach in compliance testing in which the entire bus, and entire seating system, or a group of seats would be tested instead of testing specimens or seat sub-components. Two favored small-scale tests, three favored a systems approach, five favored seat assembly tests, two favored testing an entire bus, and one favored an initial test of complete seats and for compliance testing, an entire bus.

Eleven commenters responded to questions about testing for the burn rate. One commenter favored the horizontal burn rate test, six favored a vertical test, one favored combining the two tests, and three said none of the tests should be applied. In response to whether new tests should be developed to simulate catastrophic fuel-fires, two commenters

said "yes" and three said "no." As for whether math modeling could be used to predict the burning behavior of materials under simulated crash conditions, the two commenters who responded stated that math modeling has not developed enough to predict fire behavior.

After explaining the FAA's fire-blocking and self-extinguishing requirements, the agency requested comments about their applicability to school and other buses. Six commenters said that the FAA's requirements would be effective for school buses, and three commenters believed that these requirements would be too costly. Four commenters believed that bus seats would need to be redesigned to incorporate the fire-blocking concept. Fourteen commenters believed that vandalism would compromise the effectiveness of fire-blocking materials.

The ANPRM also requested comments about the effectiveness of the Urban Mass Transportation Administration's (UMTA) guidelines and recommended practices for testing flammability and smoke emission characteristics of rapid rail transit and light rail transit vehicles. Four commenters believed that UMTA's guidelines could be effective, with two of these commenters suggesting that NHTSA adopt these guidelines. Of the four other commenters that opposed adopting the UMTA guidelines for buses, one believed that they would not be stringent enough for school buses, one said they were too restrictive, a third said they were not current, and a fourth said they only provided information on test results and not actual performance.

Ten commenters responded to questions about specifying requirements for toxicity. Three commenters generally supported requirements on toxicity. Three commenters suggested NHTSA propose adopting currently existing requirements such as the UMTA guidelines, the University of Pittsburgh test, the Boeing test, or the National Institute of Building Science's requirements. Four commenters opposed any requirements about toxicity, stating that there is insufficient information on which such requirements could be based.

Nine commenters responded to questions about the optical density of smoke and fumes from fires, four of which made inconclusive general statements. A fifth commenter recommended NHTSA not adopt any requirements on smoke density since laboratory tests cannot simulate actual smoke conditions in a full-scale fire. A sixth commenter suggested that the agency require a "safe egress" time which would be shorter than the time that would be needed for hazardous conditions to arise. A seventh commenter implied that NHTSA should specify a fire resistance level equal to that of low-fire, low-smoke neoprene. An eight commenter suggested that the California 133 test or UMTA guideline (ASTM E 662) be adopted. The ninth commenter stated that smoke obscuration could only be measured in full-scale fires and recommended the use of a cone calorimeter. Two other commenters stated that smoke density had no relationship to toxicity.

Of the thirteen commenters that responded to whether NHTSA should propose new fire resistance requirements for specific areas or components in the vehicle, nine said "yes" and four said "no." As for which component should have the highest fire resistance: five commenters stated the seat; one said the seat and flooring materials; one said the seat, flooring, and sidewalls; and another said the seats and areas which contain materials producing toxic fumes.

Cost Concerns

The ANPRM asked several questions about the estimated costs of increasing fire resistance requirements. Six commenters responded to the question about the costs of flame resistant materials. One stated that fire-retardant and fire-blocking materials are "very expensive." Another stated that fire-blocking covers are three times more expensive than standard vinyl. A third commenter stated that fire-blocking materials "have been produced at a wholesale cost of $5.00 per square meter, but have substantial markups." The fourth commenter stated that the additional cost per seat cushion and back is approximately $35 for buses transporting students with disabilities. The fifth commenter estimated that the additional cost for fire-resistant materials for 22 sets of seats would be $484. The sixth commenter stated that the additional cost of a fire-retardant foam in a 22-seat bus, i.e., a 66-passenger bus, would be $200, although this estimate does not appear to include a fire-resistant cover for the seat.

In response to a question about how the increased cost would affect the purchasing on new buses, seven commenters stated that the rulemaking would have no effect on school bus purchasing. Several commenters explained that their jurisdictions have predetermined school bus replacement cycles. Two commenters stated that the increased costs would affect the number of buses purchased.

Three commenters responded to a question about what cost increase would be significant enough to cause old school buses to be retained. One commenter estimated it as $16.75 per seat, another specified between $15 to $16 per seat, and a third commenter said it would cost $35 per seat for buses carrying disabled students. This translates into $330 to $770 for large school buses (average of 22 seats) and $120 to $280 for small school buses (average of 8 seats).

Developments Since the ANPRM

NIST Study

In January 1989, the agency commissioned the Center for Fire Research of the National Institute of Standards and Technology (NIST) to investigate the state-of-the-art in seating materials that could be used in school bus seats and to develop the data necessary for the agency's use in possible rulemaking actions to upgrade FMVSS No. 302. It was anticipated that the results would provide the agency with the data necessary to propose upgrades to the existing FMVSS No. 302 requirements or to propose new test procedures and test criteria.

The NIST research program was designed to provide data on the fire performance characteristics of seat assemblies in school buses, because seat assemblies represent the single largest source of combustible fuel in school buses. NIST evaluated the fire performance characteristics of seat assemblies in small-scale tests in which samples of materials were burned, large-scale tests in which complete seat assemblies were burned, and full-scale tests in which several complete seat assemblies were placed in simulated bus enclosures. The small-scale tests were used to evaluate six different seat assemblies for ignitability, flame spread, rate of heat release, yields and toxicity of certain gaseous products, and smoke generation. The large-scale tests were used to evaluate the rate of heat release, mass loss rate, and yields of certain gaseous products. The full-scale tests were used to evaluate the rate of heat release, mass loss rate, concentrations and yields of certain gases, and temperatures in the upper and lower layers of the simulated school bus compartment.

In July 1990, NIST published its findings in their final report, "Assessment of the Fire Performance of School Bus Interior Components". A copy of this report appears as item 003 in Docket number 88-22-GR. In their report, NIST noted that, "Seat

assemblies used in school buses represent complex structures that are composed of multiple materials in varying orientations. This complexity is a result of the need to meet comfort, flammability, and impact protection requirements. This complexity, however, also increases the difficulty in assessing the impact of changes in seating design on fire safety."

The major conclusions of the NIST report are as follows:

1. "No one simple small-scale test should be used to measure fire performance of a material."

2. A material's fire performance incudes the examination of a combination of factors, such as "ease of ignition, flame spread, rate of heat release, generation of gaseous species, smoke development, and toxicity of the combusion products." Additionally, the heat exposure conditions and geometry of the school bus play a critical role.

3. A full-scale test procedure (testing a complete seat assembly) will provide the best basis for testing school bus seats.

4. While toxicity is a concern, it appears that heat and/or smoke generated by all likely school bus seating materials would cause incapacitation before toxicity became an issue.

Two approaches for assessing fire resistance were considered by NIST. The first was a full-scale test of complete seat assemblies in a burn room designed to measure weight loss of the seats, temperatures at various positions in the room, and gaseous products of combustion. These results would be used to establish test criteria based on tenability (survivability) conditions. It was noted that several standards have either been established or proposed using burn rooms and have gained acceptance by the fire assessment community, most notably the California 133 test for qualifying upholstered furniture for buildings with high risks, e.g., hotels and office buildings. Because the size and ventilation characteristics of the burn room have a critical impact on the test measurements, it is important that these parameters be appropriately defined. NIST suggested that the results from a standard burn room could be extrapolated to various compartment sizes, since school buses are produced in various sizes. However, this may not be a critical issue, since there are a variety of other factors which could offset the compartment size variation in real-world fire situations, e.g., location and intensity of the fire source, ventilation and wind conditions, and the flammability characteristics of other personal items on the school bus.

The NIST report suggested that the tenability criteria for a full-scale test in a burn room could include only the temperature as measured at the height approximately 40 inches (1 meter) above the floor, which is typically just above the back seat. NIST suggested that a test criteria that included keeping the temperature, as measured just above the seat back, below 149 degrees F (65 degrees C) would ensure that untenable conbitions would not develop. Additionally, NIST believed that toxicity, and other factors such as smoke, would not become a factor of concern at or below that temperature.

The second approach discussed by NIST was the concept of using samples of the materials in small-scale tests to assess flammability. They concluded that while individual small-scale tests could provide valuable information on specific aspects of fire performance, e.g., rate of heat release, no single small-scale test appeared to assess the seat assemblies adequately with respect to their ultimate ability to avoid untenable conditions. While NIST did not rule out the possibility that a combination of small-scale tests could provide a suitable means of testing the fire restistance of school bus seats, they did conclude that, "[I]t appears that full-scale testing of multiple seat assemblies may provide the only means for accurately assessing the fire performance of a seat assembly design."

Agency Decision

Most commenters believed that fire resistance requirements should be the same for both school and non-school buses. However, the agency has tentatively concluded that upgrading FMVSS No. 302 for buses, other than school buses, is not justified from a regulatory perspective. The basis for that decision is the limited potential effectiveness for reducing or eliminating casualties in non-school buses as a result of changes to FMVSS No. 302, coupled with potentially substantial cost increases associated with changes to the standard. The agency does not believe it is appropriate to place regulatory burdens on vehicle manufacturers absent substantive data to accurately quantify potential safety benefits. This same rationale was used by the agency to deny a recent petition to upgrade FMVSS No. 302 for all motor vehicles. Additionally, since seats in non-school buses do not have to meet the energy absorption requirements of FMVSS No. 222 that are designed to provide occupant crash protection in school buses, significantly different materials are often used in non-school bus interiors, e.g., plastic seats and seat backs. The kinds of flammability tests that could be applied to school bus interiors may not be appropriate for assessing the fire resistance of the interiors of non-school buses. And, the different types of emergency exits found on non-school buses and their generally more adult ridership obviates the need for changes in interior material flammability.

The outstanding safety performance of school buses means that there are limited potential benefits to upgrading FMVSS No. 302 for these vehicles. However, the agency believes that the safety of the Nation's school children requires careful scrutiny of the potential benefits of possible safety improvements—more than is usually done in traditional safety benefit versus regulatory burden assessments. Support for this belief is derived from the Congressional interest in school bus safety which has been demonstrated over the years through various legislative actions, e.g., the School Bus Safety Amendments of 1974 and the madate for the National Academy of Sciences (NAS) to study means of improving school bus safety. The NAS study specifically mentioned that the agency should consider upgrading the requirements of FMVS No. 302 for school buses.

In the legislative history of the 1974 School Bus Safety Amendments, the intent of Congress to treat school bus safety with higher levels of importance is noteworthy. In his support of the mandate that NHTSA establish unique safety standards for school buses, Senator Hartke noted that:

> The Department of Transportation has had authority since 1966 to set these standards. However, based on the argument that school bus travel achieves one of the lowest fatality and injury rates per mile of any mode of transportation, the Department has given it low priority. This legislation sets those priorities straight. School buses carry very special cargo—our children. Through this legislation, Congress has stated that their lives and their futures can not be and should not be determined solely on a statistical ranking based on level of highway carnage.

In his support of the 1974 amendments, Senator Magnuson stated that:

> It is high time that we made those big yellow boxes which transport 20 million of our children each day as safe as we possibly can.

From these comments, it appears that Congress believes school buses should always be held to a higher level of safety, not just with respect to the 1974 amendments.

Congress has also held hearings on school bus safety issues as the result of major crashes, e.g., the August 1988 hearings on flamability following the Carrollton, Kentucky crash and the November 1989 hearings on school bus mirrors. Additionally, there is a broad range of support for school bus safety standards among the public and various safety-oriented organizations, e.g., the National Transportation Safety Board. This is not to say that every conceivable safety improvement for school buses should be mandated. The agency's position is that because school bus safety demands close attention, the traditional weighing of regulatory costs and benefits should not be the only basis for a decision.

Agency Position on School Bus Occupant Crash Protection

The highly-padded, strong, well-anchored, evenly-spaced seats required by FMVSS No. 222 since April 1, 1977 have provided exceptional levels of occupant protection to passengers of school buses in low-speed and high-speed crashes, as well as in sudden driving maneuvers. The benefits of FMVSS No. 222 have been recognized and documented in studies by independent organizations such as the National Academy of Sciences and the National Transportation Safety Board. The agency is committed to maintaining the occupant crash protection capabilities of school bus interiors and, given the much higher frequency of these events compared to fires, will not compromise those capabilities in the interest of improvements in fire resistance. If new school bus fire resistance requirements are proposed, any materials used in the seats will have to continue to meet the requirements of FMVSS No. 222.

Issues and Questions

At this stage in the regulatory process, the agency needs more information to decide whether to proceed further. Public comment on the NIST report would be very beneficial to the agency in deciding if sound regulatory proposals for improving the fire resistance of school bus interiors can be developed. Accordingly, the agency requests comments on the entire NIST report and conclusions as well as the following issues and questions.

As more information becomes available, the agency will be able to determine what appropriate measures, if any, are needed to address fire resistance of school bus interiors. NHTSA emphasizes that the issuance of this request for comments does not necessarily mean that a notice of proposed rulemaking (NPRM) will follow. In accordance with statutory criteria, NHTSA will determine whether to issue an NPRM after it evaluates the comments it receives.

It is requested that commenters refer to the following issue/question numbers in their comments.

1. Are the data and conclusions presented in the NIST report reasonable? Specifically, are the conclusions with respect to the need to conduct full-scale tests correct? Can fire resistance be adequately measured and improved by only controlling the allowable temperature above the seat back in a full-scale test in a burn room?

2. Can the agency develop test protocol(s) for improving the fire resistance of school bus interiors based on those data and conclusions? What protocol(s) and test criteria should be adopted? What would be the initial costs for constructing and equipping a test facility? What would be the costs of conducting the test protocol(s)?

3. How can the agency best define objective measures of tenability, e.g., exposure to temperature, material ignitability, flame spread, rate of heat release, smoke generation, toxicity, etc.?

4. Does a small-scale (samples of seating materials) test(s) exist which would result in the use of seating materials that improve the fire resistance of school bus interiors? Which small-scale tests are recommended? Are these tests accepted by a wide variety of organizations? What data exist to indicate that small-scale tests adequately test critical aspects of flammability in real-world fires?

5. Does a full-scale (complete seat assemblies) test exist which would result in the use of seating materials that improved the fire resistance of school bus interiors? Which full-scale tests are recommended? How much experience have organizations had with full-scale tests such as the California Technical Bulletin 133 test and the Boston Bag test? Would it be necessary to use more than one complete seat assembly in a full-scale test?

6. The UMTA Recommended Fire Safety Practices for Transit Material Selection incorporate a number of small-scale tests for flame spread and smoke emission. UMTA believes that subjecting individual material components to various tests is less complex and less costly than full-scale (complete buses) tests, even though full-scale tests may be ultimately desirable. Further, UMTA believes that this approach allows component suppliers to verify the adequacy of their own products without having to be concerned or involved with other products or suppliers of vehicle components. While this approach may be reasonable for initial screening of all the combustible materials used in the interior of a vehicle, NHTSA is concerned that such tests may not be sufficient to test the complex materials used in school bus seats. For example, it appears that there could be a potential interaction in the fire performance of seat cushion materials, seat cover materials, and seat frame materials that would only become evident in a large-scale (full seat) test. What data (correlations) exist to indicate that small-scale tests can be used to successfully predict the outcome of a large-scale test or the performance of complex seats or vehicles in real-world situations?

7. Would there be differences in the performance and costs of materials (cushions and covers) used to meet the criteria of different test protocols? For example, would the costs of materials needed to meet the performance criteria of a small-scale test be different from the costs of materials needed to meet the performance criteria of a full-scale test?

Note: Costs should be discussed in terms of a complete seat assembly, and should be identified as retail or wholesale.

8. Vandalism to school bus seats was described by some commenters to the November 1988 ANPRM as widespread and frequent. What kinds of vandalism are committed on school bus seats? Are the seat covers cut? What is the size of the typical seat cut? What part(s) of the seat are most frequently vandalized? What is the frequency of vandalism? Would the types of vandalism significantly affect flammability? How quickly are vandalized seats repaired or replaced? Are the materials used to repair or replace seat cushions and/or seat covers certified to FMVSS No. 302 requirements?

9. Are there new technologies available, such as monolithic seats with integrated padding, which would reduce the potential for vandalism, while retaining energy absorption and fire resistance capabilities? What are the advantages, disadvantages, and costs of such seating systems?

10. Responses to the November 1988 ANPRM indicate that there is no consensus within the scientific community on toxicity guidelines, including the current study on toxicity by the National Academy of Sciences. Accordingly, is it necessary to include toxicity in any test protocols designed to

improve the fire resistance of school bus interiors? Is it reasonable and practicable to establish toxicity test requirements? Are there alternative technical requirements that could be established that would result in negligible toxicity risks, such as establishing a temperature limit as suggested in the NIST report? Should improvements in fire resistance await a determination of toxicity?

11. Are there any guidelines that could be adopted that would ensure that potentially carcinogenic materials are not utilized in the manufacture of fire retardant or fire resistant materials?

12. Are there other changes or modifications that could be made to school buses, such as changes in the number, location, and size of emergency exits, that would affect the fire resistance requirements of school buses? Should there be a correlation between the fire resistance of materials and the amount of available emergency egress area?

13. The agency is concerned that the cost of upgrading the fire resistance of school bus interiors may be of a magnitude that could affect the ability of school districts to replace older, less safe school buses or to order school buses with other safety features which could have potentially higher benefits. The agency is interested to hear opinions on this topic, especially from state and local school districts.

14. The agency has tentatively concluded that upgrading FMVSS No. 302 for non-school buses is not justified from a regulatory perspective. What data is available that would help support or refute that conclusion?

15. The agency has tentatively concluded that the current flammability characteristics of school bus seats are the most significant source of potential fire danger. Accordingly, the agency has tentatively determined that it will only propose upgrading the fire resistance of seats and cushioning materials in school buses, while maintaining the existing FMVSS No. 302 performance requirements for all other materials in the interiors of school buses.

Comments

NHTSA solicits public comments on this notice. It is requested, but not required, that 10 copies be submitted.

Comments must not exceed 15 pages in length. (49 CFR 553.21). Necessary attachments may be appended to these submissions without regard to the 15-page limit. This limitation is intended to encourage commenters to detail their primary arguments in a concise fashion.

If a commenter wishes to submit certain information under a claim of confidentiality, three copies of the complete submission, including purportedly confidential business information, should be submitted to the Chief Counsel, NHTSA, at the street address given above, and seven copies from which the purportedly confidential information has been deleted should be submitted to the Docket Section. A request for confidentiality should be accompanied by a cover letter setting forth the information specified in the agency's confidential business information regulation. (49 CFR part 512).

All comments received before the close of business on the comment closing date indicated above will be considered, and will be available for examination in the docket at the above address both before and after that date. To the extent possible, comments filed after the closing date will also be considered. NHTSA will continue to file relevant information as it becomes available in the docket after the closing date, and it is recommended that interested persons continue to examine the docket for new material.

Those persons desiring to be notified upon receipt of their comments in the docket should enclose a self-addressed, stamped postcard in the envelope with their comments. Upon receiving the comments, the docket supervisor will return the postcard by mail.

A regulatory information number (RIN) is assigned to each regulatory action listed in the Unified Agenda of Federal Regulations. The Regulatory Information Service Center publishes the Unified Agenda in April and October of each year. The RIN contained in the heading of this document can be used to cross reference this action with the Unified Agenda.

List of Subjects in 49 CFR Part 571

Imports, Motor vehicle safety, Motor vehicles.

(15 U.S.C. 1392, 1401, 1403, 1407; delegation of authority at 49 CFR 1.50)

Issued: February 20, 1991.

Barry Felrice,

Associate Administrator for Rulemaking.

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