



THE SAFETY RECORD

INSIDE THIS ISSUE

States' Rights Advocates Attack NHTSA Roof Crush Preemption Proposal	1
Court Will Hear Public Citizen's Motion To Unseal Volvo Documents	1
Reexamination of Recommendations for Rear-Facing Child Restraints Suggested	2
The Number of Tire Age Recommendations Grows: Bridgestone-Firestone is the Latest Entry	3
NHTSA's Rear Object Detection System Proposal Roundly Criticized	5
New Progress Report Finds Booster Seat Use Still Low	6
Automakers Mark Progress in Vehicle-to-Vehicle Compatibility	7
More Research Concludes Proper-Fitting Restraints Could Reduce Injuries in Children	7
New Safety Feature for Child Passengers Based on F1 Racing Design	8

States' Rights Advocates Attack NHTSA Roof Crush Preemption Proposal

A provision in the National Highway Traffic Safety Administration's (NHTSA) proposed roof crush standard that would preempt state tort law would transfer the societal costs of caring for rollover crash victims to the states, discourage manufacturers from improving vehicles' crashworthiness and usurp Congressional authority, a diverse group of influential commenters has argued.

For the first time in 32 years, NHTSA is proposing to strengthen vehicle roofs and extend the standard to cover vehicles with a Gross Vehicle Weight Rating of 10,000 pounds, as part of what it calls a "comprehensive plan for reducing the risk of death and serious injury from rollover crashes." The proposed regulation would increase the force that vehicles are required to withstand from 1.5 to 2.5 times their unloaded vehicle weight and replace the 22,240 Newton maximum force limit for passenger cars. It would also change the certifying test from the current

plate movement limit of 5 inches with a new direct limit on headroom reduction. (See *The Safety Record*, V2, I4).

Since the agency opened the docket in August, many have criticized the proposal for doing little to actually improve safety. Even the agency notes that nearly three-quarters of the vehicles on the market already meet the proposed new standard and that it would only prevent 13-44 fatalities and about 500-800 non-fatal injuries, a fraction of the annual carnage from rollover accidents.

But the preemption clause has provoked almost as much outcry for its negative impact on state budgets, for its infringement on states and consumers' rights and for its rejection of Congress's intent that these federal regulations should represent minimum safety standards.

Consumer groups, members of Congress, Governor Theodore Kulongoski of Oregon, the National Conference of State Legislatures (NCSL) and the National Association of Attorneys

General (NAAG) all weighed in against the preemption clause tucked into the Civil Justice Reform section of the proposal.

The most direct challenge to NHTSA's right to tie preemption to a roof strength standard came from Congress. In a pointed one-page letter, U.S. Senator Arlen Specter (R), chairman of the Senate Judiciary Committee, and Senator Patrick Leahy (D) of Vermont, the committee's ranking Democrat, noted that the Transportation Equity Act did not give NHTSA any explicit authority to preempt state law in this regulation, which is required under Executive Order 13132.

"We are interested to learn how NHTSA concluded that preemption of State law was the intent of Congress when it passed the Transportation Equity Act," the senators wrote.

The National Association of Attorneys General picked up the legal argument against the preemption provision contending that NHTSA had relied on
(Cont. on p. 2)

Court Will Hear Public Citizen's Motion To Unseal Volvo Documents

A Florida judge has granted the advocacy group Public Citizen a hearing next month to determine if the court should again make public "critically important auto safety documents" on roof strength that helped the plaintiffs win a \$10.2 million verdict in *Duncan v. Ford*.

On Feb. 7, Judge Charles O. Mitchell of Florida's Fourth Judicial Circuit Court will

hear Public Citizen's motions to intervene and to unseal the documents which demonstrated that Volvo, a wholly-owned subsidiary, considered roof strength a critical part of occupant protection in roll-overs, while the Ford Explorer was manufactured under a weaker company standard. At trial, the plaintiffs argued that the defective design of the Explorer's roof structure caused Claire Duncan's death in

a rollover accident. [*Gregory Scott Duncan, et al v. Ford Motor Company, et al* (Circuit Court, Fourth Judicial Circuit, Duval County, Florida, Case: A01-7230-CA. Div.: CV-F)].

Public Citizen says that it needs those documents to educate the public about the "hazards of Ford Explorers (and of
(Cont. on p. 4)

States' Rights Advocates Attack NHTSA Roof Crush Preemption Proposal

(Cont. from p. 1)

an overly broad interpretation of *Geier v. American Honda Motor Company*, 529 U.S. 861 (2000). In that case, the Court ruled that a common law tort claim alleging that all manufacturers should be required to immediately install airbags in all vehicles conflicted with a NHTSA regulation mandating that airbags be among a choice of passive restraint systems phased in over several years. But the circumstances between *Geier* and the roof crush regulation differ substantially, the attorneys general argued. Applying the conclusions of that case to every motor safety standard would directly impinge on state court jurisdiction. In a letter signed by 27 attorneys general, led by Tom Miller of Iowa (D) and Wayne Stenehjem of North Dakota (R), they noted:

“The state common law court system serves as a vital check on government-imposed safety standards. Vehicles and equipment can contain hazardous features and still meet federal minimum safety standards. NHTSA’s proposal is likely to erode manufacturer incentives to assure that vehicles are as safe as possible for their intended use.”

The National Conference of State Legislatures also argued that *Geier* was meant to be narrowly construed and held that the savings clause in 15 U.S.C. §1397 (k) preserved state lawsuits based in common law.

“There was a clear expression by the U.S. Supreme Court in the *Geier* case that unless there is a direct conflict with the purpose of a particular FMVSS standard, implied preemption would not bar common law tort actions,” the organization maintained in its letter to NHTSA.

Still other advocates for the states protested that preemption would force states – rather than the manufacturers of vehicles with weak roofs – to bear the cost of deaths and injuries caused each year from rollovers. Several contributors to the docket pointed out that NHTSA had violated the principles of federalism outlined in Executive Order 13132 by failing to consult state groups about the impact.

Contrary to NHTSA’s claim that there were “insufficient federal implications to warrant consultation with state and local officials,” respected economist Ted Miller, of the Pacific Institute for Research and Evaluation, concluded that the proposed rule would have a significant economic impact on insurers, state governments and the court system. He called the agency’s failure to consider preemption’s cost “a glaring error.”

Rollover victims and their families who cannot recover their losses will be forced into bankruptcy, with government programs picking up the tab for medical expenses and income support. Using government statistics enumerating the percent-

age of distribution of rollover injuries and fatalities, an arbitrary 10-percentage-point reduction in the portion of state government expenditures recovered and the payer distribution in a NHTSA report on the economic impact of motor vehicle crashes, Miller estimated that states’ costs would rise by \$39 million dollars. But given the decline in private health insurance and the age of the data fueling some of the underlying assumptions, Miller predicted that the burden borne by states would be much heavier.

Miller also argued that preemption would take an economic toll on auto, health and life insurers and on the legal industry by raising the costs of litigation. Finally Miller urged NHTSA to consider the financial implications of discouraging manufacturers to seek out innovative ways to strengthen vehicle roofs without increasing their propensity to rollover. Losing the safety benefits prompted by preemption impacts the marketplace in ways the agency must explore, he said.

One notable dissenter from the protests against preemption was the Washington Legal Foundation, a conservative, non-profit group. The WLF supported the preemption provision, arguing that “it is in the public interest to have consistent and uniform national standards with respect to manufactured goods that are sold on a nationwide basis rather than subject large segments of the United States economy to a patchwork quilt

of confusing, conflicting and costly regulations and the jury verdicts of 50 states and the District of Columbia.” Unlike other legal analysts, the WLF claims ample support for NHTSA’s authority to preempt state tort claims, despite the savings clause, in *Geier*.

Finally, the legal foundation said that it found NHTSA’s case for preemption “compelling,” based on NHTSA’s statements that requiring stronger roofs would negatively affect vehicle dynamics and make rollovers more likely—even though the agency’s own data provided scant support for its assertion. The WLF threw its support behind the agency’s reasoning that broader state statutes would frustrate the agency’s goals of reducing rollovers, without examining the factual bases of that conclusion. Many auto safety experts have challenged those statements. Automakers whose vehicle roofs currently exceed the proposed upgrade, produce cars that offer greater occupant protection and less propensity to rollover.

The effect of the comments and political fallout are not likely to surface for some time as the agency evaluates comments. NHTSA observers expect that it may take a year before the agency formally responds. However, the agency did answer the Specter/Leahy letter. Softening its position, it said preemption was simply a possibility being raised at this stage.

Reexamination of Recommendations for Rear-Facing Child Restraints Suggested

Findings from the Hospital for Sick Children and Ryerson University in Toronto Canada provide additional evidence that current U.S. and Canadian recommendations may be increas-

ing the risk of spinal cord injuries to young children. The authors of a recent *Journal of Trauma* article cited two cases in which a 23-month old and a 35-month old child who were

properly restrained in forward facing child restraints suffered spinal cord injuries, one of which was fatal.

Government recommenda-

tions suggest that children can be moved from rear-facing child seats to forward-facing at 12 months old and once they reach 22 lbs. in Canada and 20 lbs. in

(Cont. on p. 8)

The Number of Tire Age Recommendations Grows: Bridgestone-Firestone is the Latest Entry

Bridgestone-Firestone has publicly acknowledged what tire makers have long known: Tires degrade internally with time. It is the latest indication that the industry is changing its tack.

Tire age degradation hit the radar of safety advocates, regulators and members of Congress following the Firestone ATX / Wilderness recalls in 2000 and 2001 when experts concluded that age degradation played a role in the catastrophic failure of these tires. Since the recalls Safety Research & Strategies (SRS) began examining what was known about the issue worldwide and found startling evidence that both tire and vehicle manufacturers have known: Tires, whether or not they are actually used, can experience tread separations due to internal oxidative aging, a process that is largely invisible. Following SRS' docket submissions to NHTSA about their findings and an active campaign to alert the public of the danger through the media, some manufacturers have quietly started to address the issue. In late 2005, Bridgestone-Firestone released a "Technical Bulletin" to its dealers, alerting them that 10 year-old tires should not be used, regardless of tread wear. Bridgestone-Firestone's bulletin, which recommends the replacement of tires once they reach 10 years old "even when tires appear to be useable from their external appearance or the tread depth may have not reached the minimum wear out depth" is said to be based on a recommendation from the Japan Automotive Tyre Manufacturers Association (JATMA), also issued in 2005. In an attempt to embrace, yet distance itself from any expiration recommendations, BFS's bulletin says the company "is not aware of technical data that supports a specific tire service life" and "we

believe it is appropriate to follow the JATMA recommendation in the interest of further encouraging consumers to focus on the importance of maintaining and properly replacing their tires." BFS, like JATMA recommends tire inspections after 5 years. It also advises owners to follow the vehicle manufacturers replacement recommendations—which in many cases now includes warnings to replace tires after 6 years regardless of tread or use.

Bridgestone-Firestone's Technical Bulletin follows Ford Motor Company and DaimlerChrysler's owner's manual warnings that appeared in 2005. Both vehicle makers warned consumers to replace tires after six years, regardless of tread. Ford quietly slipped a six-year-useable-life recommendation into a tire safety section on its website and added the recommendation to all of its owner's manuals in 2006. The recommendation states:

"Tires degrade over time, even when they are not being used. It is recommended that tires generally be replaced after 6 years of normal service. Heat caused by hot climates and frequent high loading conditions can accelerate the aging process."

Ford's move is particularly significant because of the body of scientific research it published quantifying tire age degradation following the Firestone ATX / Wilderness investigations. Ford studied the material property changes that occur with age, and found methods to artificially age tires in a way that correlates to real-world conditions.

DaimlerChrysler's warning was more blunt: "Tires and spare tire should be

replaced after six years, regardless of the remaining tread... Failure to follow this warning can result in sudden tire failure. You could lose control and have an accident resulting in serious injury or death."

DaimlerChrysler's addition of the six year recommendation to its 2006 owner's manuals is thought to be based on work from its Mercedes-Benz research division done in the late 1990s. Mercedes considered the elimination of spare tires from its vehicles because of the risks associated with a tire that is rarely used. Mercedes' report noted: "Tyres undergo an ageing process even when they are not in use. . . The rubber parts become less elastic, the steel webbing inside the tyre corrodes and the rubber mixture of which the tread is formed hardens."

While vehicle manufacturer recommendations first appeared in 1990 owner's manuals of German made and Toyota vehicles, the new warnings are important because they are based on a growing body of evidence that age degradation is an important factor in tire failures. However, the tire industry, through the Rubber Manufacturers Association (RMA) still clings to the argument there is no scientific basis for an expiration date. Because of the many comparisons to dairy products, the RMA keeps asserting, "tires are not milk." The RMA also argues there is no "one-size-fits-all" expiration because tires are constructed using varying grades of materials and at different quality levels and are exposed to a wide range of conditions.

Vehicle manufacturer warnings originated, at least in part, from several German studies published in the late 1980s that

warned about an apparent disproportionate rise in failures once tires reach 6 years old or older.

According to Sean Kane, President of Safety Research & Strategies, "RMA's position is technically correct, there is no 'one-size-fits-all' expiration, just as there is no one recommendation for tread life; however, there is nothing preventing tire makers from labeling their tires with age expirations based on the specific construction of their product lines much the same way they provide tread wear guidelines of 30,000 or 40,000 miles for example."

BFS's tire age recommendation is the first formal recommendation from a tire maker in the U. S. Many other recommendations exist throughout the world, including one from the British Rubber Manufacturers Association, of which most tire makers are members, that was approved in 2001 but never formally released. The BRMA's recommended practice on tire aging states:

"BRMA members strongly recommend that unused tyres should not be put into service if they are over 6 years old and that all tyres should be replaced 10 years from the date of their manufacture."

The recommendation goes on to say that:

"In ideal conditions, a tyre may have a life expectancy that exceeds 10 years from its date of manufacture. However such conditions are rare."

And

"Ageing' may not exhibit any external indications and, since

(Cont. on p. 4)

Court Will Hear Public Citizen's Motion To Unseal Volvo Documents

(Cont. from p. 1) similar vehicles) and to use them in its efforts to convince the federal government to strengthen its regulations governing roof strength." (See "States Rights Advocates Attack NHTSA Roof Crush Preemption Proposal" p. 1)

Judge Mitchell was originally set to consider Public Citizen's motion on March 8. At that hearing, Judge Mitchell would also hear arguments on whether Ford can depose Sean Kane and Donald Friedman, auto safety experts, and who, Ford contends, released the Volvo documents in violation of a protective order. Ford is also seeking to depose Gina Dawson, the daughter of now-deceased reporter, who also got copies of the documents. In granting Public Citizen's request, Judge Mitchell severed the hearings. (The hearing regarding the depositions is still scheduled for March.)

The Volvo documents had been briefly available to the public in the clerk's office of the Duval County courthouse in Jacksonville and on the National Highway Traffic Safety Administration's roof strength rulemaking

docket. Their contents also have been widely reported by the national media, following the unanimous jury verdict on March 18, 2005 (see *The Safety Record* "Ford Fights to Keep Volvo Documents Sealed" V2, I3). Over the course of the six-week trial, the jury heard evidence regarding confidential Volvo memorandums showing Ford's concern about Volvo's contradictory position on roof strength and the need for the company to reach an understanding with its division because of its negative effect on litigation.

For more than a month after the trial concluded, those documents were included in the public domain in the Duval County Clerk's office. But after stories about the corporate rift began to appear in the news, and Kane's submission of the documents to NHTSA's roof crush docket, Ford sought to have the documents sealed, claiming that they were confidential under a protective order issued during pre-trial discovery. The clerk withdrew them from the file and Ford withdrew its motion. Judge Mitchell said he would consider a motion by a third party to unseal them. Ford's

lawyers also succeeded in having NHTSA grant confidentiality for the Volvo test documents submitted by Kane. However, the company did not seek protection for the Ford test documents and the agency reposted that portion of the submission. In the meantime, the Volvo documents have remained in legal limbo.

In its current attempt to bring the Volvo memos and test reports back into the public realm, Public Citizen makes two basic arguments. First, it contends that Ford waived its right to secrecy when it failed to move that the exhibits be sealed when they were presented at trial. Second, the advocacy group maintains that keeping the documents sealed violates the first amendment of the U.S. Constitution and Florida law, all which forbid the unwarranted sealing of trial exhibits. In addition, the state's broadly written Sunshine Law prohibits court orders that hide information about a public hazard – even if that information is considered a trade secret, Public Citizen argues.

In its motion, Public Citizen also accused the automaker of

launching an "aggressive campaign" against anyone attempting to disseminate the documents and claimed that Ford's requests to depose Kane, and Dawson are simply attempts to intimidate them.

Ford has already lost the right to keep the documents confidential in a Texas case. In September, Judge Robert Vargas deemed that the documents were non-confidential in *Marroquin V. Ford Motor Company, et. al. (Cause No. 05-61218-2, Nueces County, TX)*. Judge Vargas ruled that the documents were available publicly from the Duval County Clerk's office and the NHTSA website, that they were obtained by the media and others and widely reported. He also found that Ford offered no evidence that they attempted to reclaim the documents from the media, that the documents were obtained through any "suspicious" circumstances as Ford asserted during the hearings, or how the widespread disclosure affected their basis for secrecy. The matter is now before the Texas Supreme Court.

The Number of Tire Age Recommendations Grows: Bridgestone-Firestone is the Latest Entry

(Cont. from p. 3) there is no non-destructive test to assess the serviceability of a tyre, even an inspection carried out by a tyre expert may not reveal the extent of any deterioration." Spare tires and tires that are not frequently used were noted as particularly vulnerable to aging.

SRS' examination of crashes caused by tire aging reveals that many of these cases involve SUVs, vans and pickup trucks—particularly when an

unused or little used spare with ample tread is put into service after a number of years. Kane says that as tire tread wear performance has increased during the past two decades in combination with the exponential growth of the light trucks into the market and their increased likelihood of a loss-of-control event following a tread separation, tire makers are facing an increased number of aged tire cases.

While much of the tire industry has circled the wagons and continues to deny tire age degradation is a problem, some observers are lamenting the tire industry's conservative attitude and in particular their position on expiration dates. In the June/July 2005 edition of *Tire Technology International*, associate editor Roger Williams describes the ponderous way the tire industry moves and its self-defensive attitude, including the industry's position on sell-by and use-by dates.

The vehicle industry appears to be similarly afflicted. Even though Ford Motor Company has endorsed a six-year use-by date and includes this in its owner's manuals and on its website, their tire aging expert Dr. John Baldwin recently testified that the issue is not a safety problem.

The first tire aging case against a vehicle manufacturer is now underway in Texas against Ford involving a full-sized spare on an Explorer.

NHTSA's Rear Object Detection System Proposal Roundly Criticized

NHTSA's proposal to require that straight trucks be equipped with a rear object detection system was met with criticism by trucking companies and safety advocates alike for narrowly focusing on an equipment description instead of a performance standard and for failing to reflect the state of the art in rearward detection systems.

On September 12, the agency published a Notice of Proposed Rulemaking to FMVSS No. 111, which would require straight trucks with a gross vehicle weight rating (GVWR) of 10,000 to 26,000 pounds to sport a rear object detection system, consisting of either convex cross mirrors or a rear video camera system.

Annually, these vehicles cause fatalities and injuries at a rate disproportionate to other classes of vehicles. Using several databases, NHTSA estimated that straight trucks cause 79 back-over fatalities on and off the road, and 148 injuries each year. That translates to an injury rate of 21.89 per 100 billion vehicle miles and 29.68 per million registered vehicles – rates 8-17 times greater than those of passenger vehicles.

Based on those numbers and the fact that several states have begun to enact their own standards, the federal agency decided to go forward with an amendment to FMVSS No. 111. NHTSA estimates a new rear detection requirement would save 23 lives, prevent 43 injuries and save \$32 million in property damage each year, at a cost of \$77 million.

As part of its proposed rulemaking, NHTSA sought comments on whether certain categories of vehicles should be excluded from this requirement. The agency also asked the pub-

lic whether other classes of vehicles should be subject to a rear-detection standard and whether existing commercial trucks should be retrofitted in a future rulemaking.

The current proposal stems from a 1995 petition from Dee Norton, whose grandson was killed when a delivery van accidentally backed up over him.

Norton had asked the agency to require that convex cross mirrors be mounted on the cargo box of all step vans and delivery trucks. Over the next several years, the agency collected data, beginning with a June 1996 notice and ending with a November 2000 Advanced Notice of Proposed Rulemaking that garnered responses from trade associations, auto and rear detection system manufacturers, the New York Department of Transportation and fleet operators, among others.

After considering visual and other detection systems that use auditory cues, as well as infrared, sonar, microwave and radar to alert drivers to objects behind their vehicles, NHTSA has proposed confining the requirement to visual systems only. The agency says that the driver is primarily responsible for determining if the path is clear before backing up, and can only confirm that visually. Under the current proposal, straight trucks would have to be equipped with a visual system that could provide a view of a 3-by-3 meter area behind the vehicle using mirrors or a video system.

The mirrors option would require a convex mirror mounted on the driver's side of the upper rear corner of a vehicle, to be used in conjunction with a driver's side exterior rearview mirror. It could have no discontinuities in the slope of the sur-

face; it must be adjustable horizontally and vertically; it must be installed on stable supports on the rear upper corner of the driver's side. The mirror must have an average radius of curvature of no less than 203 millimeters and be placed so that the geometric centers of the two mirrors would be separated by no more than 5 meters.

The rear video detection systems provision requires that the system's monitor be placed as close to the centerline of the vehicle as practicable near the top of the windshield and have a image size of between 90 cm squared and 160 cm squared. The system would also have to be adjustable horizontally and vertically, and able to accommodate motorists of different statures.

Either option would be subject to the school bus mirror compliance test already outlined in FMVSS 111. The rule would become effective for all vehicles manufactured one year after the date of final rule.

In general, industry argued for a performance-based standard that would give companies greater latitude in choosing the best detection system for their fleets. At the same time, many commenters said, a performance standard would encourage the development of better technology. Intelligent detection systems are rapidly evolving. A standard limited to mirrors and cameras would stifle innovation, they said.

Trucking companies and manufacturers also raised myriad objections to mirrors and cameras. They complained that both are expensive to install, maintain and replace. Both often break and the views they provide can be easily obscured in the dirty environments in which many

work trucks operate. Some argued that cameras, in particular, were problematic. For example, one company that uses an ultrasonic rear detection system, argued drivers in trucks equipped with cameras often forgot to use their mirrors, and crashes in their 1000 truck fleet increased when video cameras were installed.

And as industry accused NHTSA of under-estimating the costs of the requirement, safety advocates charged that NHTSA had under-reported the scope of the problem. Janette Fennell of KIDS AND CARS, a non-profit advocacy group, said that at least two children in the U.S. are killed by back-over incidents each week. And a February 2002 Morbidity and Mortality Weekly Review study found that from 2001-2003, 7,475 children, 1-14 years old, were treated at hospital emergency rooms for non-fatal back-over injuries. "This proposal definitely has gaps. It is a very big issue," Fennell says. "Not just for straight trucks, but for all vehicles that have poor visibility behind them."

KIDS AND CARS, along with Advocates for Highway and Auto Safety, agreed with industry that the agency should promulgate a performance standard. But the safety groups argue that the proposal doesn't go far enough. First, they objected to the mirrors option, as ineffective. The standard should require video monitors in conjunction with other types of non-visual detection systems. Advocates also urged NHTSA to grant no exceptions to the standards among straight trucks. In fact, safety advocates suggested that the standard be expanded to cover buses and other vehicles with poor rear visibility.

New Progress Report Finds Booster Seat Use Still Low

A recently released NHTSA progress report on the safety of older-child passengers shows that the use of booster seats for children 4 to 8 years old still remains unacceptably low, despite a number of government educational and regulatory initiatives.

The assessment was reported as part of a five-year strategic plan, stemming from a directive in the Transportation Recall Enhancement, Accountability and Documentation Act of 2000 to improve booster seat use among young children. The statistics regarding restraints, injuries and deaths offered a mixed picture, making plain the need to better educate adults about the proper way to restrain children once they outgrow car seats.

Record levels of infants and toddlers continued to be restrained in 2004 – 98 percent of children under age 1 and 93 percent of children aged 1 to 3. There was a steady decline in the number of incapacitating injuries for the 4-8 age group and substantial progress in educating parents on the need to seat children in the rear, away from the hazards of the front-seat airbag.

In 2002, NHTSA revised its booster seat recommendation to emphasize that height and age are better determinants of when a child can be safely transitioned to adult seat belts. The new best practices language advises parents to keep children in booster seats until they are eight years old or at least 4'9" tall. And as of November 2003, 33 states and the District of Columbia have amended child seat belt laws to include provisions that require appropriate restraints for child too large for car safety seats and too small

for adult seat belts.

Nonetheless, there is ample evidence that the message about the need to restrain young child passengers in booster seats has not reached enough motorists. The fatality rate among passengers, ages 4-8, did not improve. From 2002 to 2003, the death rate among this age group rose 4 percent to 331, according to the Fatality Analysis Reporting System. Meanwhile, only 73 percent of children, ages 4-8 were restrained in 2004, a 10 percent drop since 2002. And most of those children were improperly restrained. A 2003 NHTSA telephone survey showed that just 21 percent of 4-8 year-olds used booster seats "on occasion." A 2002 study by the Children's Hospital of Philadelphia showed that booster seat use was at 16 percent.

Other studies buttress the trend of young children being prematurely graduated from infant safety seats to adult seat belts or to no restraint at all. A study from the Children's Hospital of Philadelphia shows that the incidences of improperly restrained children increases steadily with age, and that booster seats are the most frequently underused restraint system. In a separate study, the hospital found that transitioning children from forward-facing safety seats to belt-positioning booster seats can reduce the risk of injury in a crash by 59 percent.

Stephanie Tombrello, executive director of SafetyBeltSafe USA, a non-profit advocacy and educational organization specializing in child passenger safety, says that reasons for the low incidence of booster seat use are complex. Seat belt laws are inconsistent, from state to

state. Consumers often get a mixed message about the proper use of restraints from manufacturers who design cars with seating positions with no belt or only a lap belt and from government officials, who fail to emphasize that boosters will improve a child's comfort and safety while riding in a car. One of biggest reasons parents may fail to put kids in booster seats is "they simply have no perception of the risk from the lap belt," she says.

In light of these challenges, the agency has reformulated some of its goals to increase restraint use among children 4-8 years old and to decrease fatalities and injuries. First, the agency wants to determine why the percentage of restrained young children passengers has dropped. Second, the agency wants to further reduce fatalities and serious injuries among young passengers. While the number of deaths has dropped from 51 percent in 2000 to 49 percent in 2003, NHTSA acknowledges that it will have to work harder if it is to make its 39 percent goal by 2006. The number of incapacitating injuries has fallen steadily from 6,540 per 100,000 in 1999 to 4,930 in 2003 – exceeding the 2006 goal of 5,700 per 100,000. But the number of moderate to severe injuries among booster-seat-aged children has shown no improvement.

In the meantime, NHTSA is launching a number of research and demonstration projects, federal-state government and government-private sector partnership efforts and education programs to increase booster seat awareness and use. For example, this year, NHTSA will conduct the first observational booster seat survey in an effort to obtain a reliable national esti-

mate of booster seat use among children ages 4-8. Other activities include:

- Expanding its booster seat promotions with the National Automobile Dealers Association, Avis Rent A Car, Babies R Us and Car Max.
- Developing specialized educational tools for law enforcement officers
- Seeking the involvement of state legislators and developing model language for them to use in amending seat belt laws to better protect child passengers.
- Convening periodic meetings among federal agencies and other partners to develop better ways to increase booster seat use, spread the message, and identify gaps in the effort.



Automakers Mark Progress in Vehicle-to-Vehicle Compatibility

Two years after 15 automakers agreed to voluntarily meet vehicle compatibility standards, a third of 2005 models comply with the front-to-side crash guidelines and two thirds meet the guidelines for front-to-front crashes.

The December 2005 progress report, submitted to NHTSA from the Alliance of Automobile Manufacturers as part of its "Initiatives to Address Vehicle Compatibility Docket," outlines automakers' efforts since December 2003 in achieving passenger car and light truck compatibility standards set by an international group of auto safety experts. The group, which includes Honda, BMW Group, GM, Isuzu Motors, Mitsubishi motors, Suzuki, DaimlerChrysler, Kia Motors, Nissan, Toyota, Ford Motor Company, Hyundai Motor, Mazda, Subaru and Volkswagen Group, also defined a research program

to develop new test procedures and performance criteria. The goal is to have all applicable models designed to these new criteria by September 2009.

In the area of front-to-front compatibility, the number of models that met the standard rose from 54 percent in the 2004 production year to 62 percent in the 2005 production year. The participating manufacturers achieved these gains by requiring sufficient overlap in the primary energy absorbing structures (PEAS) of passenger cars and light trucks to reduce the potential for serious override and underride. Engineers used geometric matching—or aligning the two structures—or provided light trucks with an additional structure called secondary energy absorbing structures (SEAS).

The group's research has included barrier and vehicle-to-

vehicle crash tests and computer modeling, with the intent to better understand how vehicles interact in crashes with other vehicles, the injury mechanisms and how to enhance occupant protection in smaller vehicles without compromising it in light trucks.

Currently, the group is examining the use of a dynamic rigid barrier crash test (also known as a cell load cell wall test) to determine whether a light truck's Height of Force is a factor in vehicle crash compatibility. To date, their findings support independent research by NHTSA that no such relationship exists. This year, research will focus on three areas: evaluating the possibility of using measurements from a test barrier instrumented with a large number of loaded cells to measure crash forces in field-representative crashes; development of a moving deformable barrier as a

surrogate passenger car to establish criteria for light trucks in crashes with passenger cars; and development of computer modeling to assess light truck to passenger car crash performance in a variety of different conditions.

In front-to-side crashes, manufacturers saw a jump from 24 percent of the 2004 production year vehicles to 33 percent of the 2005 production year vehicles. The group has established performance criteria to enhance head protection for passenger car occupants. Currently, manufacturers can design vehicles according to NHTSA's side-into-pole test, which will sunset in 2009, or use the IIHS's moving deformable barrier with front-end geometry to simulate an SUV or pickup. Currently, the IIHS is seeing promising results in vehicles with side air bags, the group reports.

More Research Concludes Proper-Fitting Rear Seat Restraints Could Reduce Injuries in Children

A group of medical researchers from the Universite de Sherbrooke, in Quebec, Canada concluded that the unique set of child-related injuries associated with seat belt syndrome underscores the need for rear seat restraints that can be adjusted to fit smaller passengers.

Doctors from the university's medical faculty examined the injuries sustained by eight children in three separate crashes, all of whom were rear seat passengers wearing lap or three-point restraints. None used a booster seat. The children, including two sets of twins, had lap-belt ecchymosis and multiple abdominal injuries because of seat belt compression with hyperflexion and distraction during deceleration. Five of the children had lumbar spine

fractures and four remained permanently paraplegic.

Seat belt syndrome refers to the spectrum of injuries caused by wearing the seatbelts themselves — especially flexion distraction injuries to the spine, also known as Chance fractures. First described in 1962, seat-belt syndrome injuries include partial and full-thickness intestinal injuries, mesenteric disruption, lumbar spine dislocation and fractures.

School children, ages four through nine, represent a special challenge in seat belt design because they have outgrown infant and toddler car seats and are frequently restrained by seat belts designed for adults. Yet, these children

have a higher center of gravity than adults, the intra-abdominal organs are less protected by the bony thorax and pelvis and the iliac crests are not adequately developed to serve as anchor points for the belt. The result is that the belt can ride up over the abdomen and that children sustain spinal fractures that are different from those seen in the adult population. Children also frequently have a combination of bone and soft-tissue injury and often suffer paraplegia.

The researchers concluded that adult seat belts do not provide protection equivalent to child safety or booster seats. Further, the relationship between type of restraint used and the injury pattern shows that lap belts increased the risk of hollow-

viscous injury and Chance fractures. The proper fitting of lap belts, or booster seats, where appropriate may affect the injury pattern and reduce injuries.



Published by:
Safety Research & Strategies
340 Anawan St. / Suite 200
Rehoboth, MA 02769
www.safetyresearch.net

Editor: **Sean Kane**
Contributors:
Ellen Liberman
Melanie MacDonald
Lauri Stevenson
Ann Boudreau

The Safety Record is published
bimonthly.
Annual Subscription: \$100,
International: \$125

Copyright © 2006
Safety Research & Strategies, Inc.

ISSN 1554-1304

Reexamination of Recommendations for Rear- Facing Child Restraints

(Cont. from p. 2)

the U.S. Rear-facing child restraints on the market can be used for children who weigh 30 to 35 lbs. In some European countries, particularly Sweden, children are kept rear facing up to 40 lbs.

Children are more vulnerable to neck injuries because of their weaker musculature and greater head-to-body ratio.

This article adds to a growing body of literature suggesting re-examination of the current North American recommendations and the need to keep children rear-facing longer.

New Safety Feature for Child Passengers Based on F1 Racing Design

Inspired by a Formula One racing safety device, Renault designed and now offers a new head restraint system to reduce injuries in 6- to 10-year-old children. Called "Sleep Safe," the device is part of the center rear restraint and can flip down to hold a sleeping child's head and body upright like the HANS device used to reduce strain on a F1 driver wearing a helmet. Sleep Safe is also said to cushion the head in a side impact and reduce the chance of neck injuries.

Renault undertook the development of the device in response to accident statistics showing that more than 30 percent of rear seat passengers involved in accidents are children under age 10, in part because children do not fit in current restraint. Sleep Safe is offered as an option on the Espace minivan for about \$75 and will become more widely available on other Renault models soon.



Renault's F1 Racing inspired "Sleep Safe"