

High Belt Use Rates? For Four Automakers It's Just Automatic

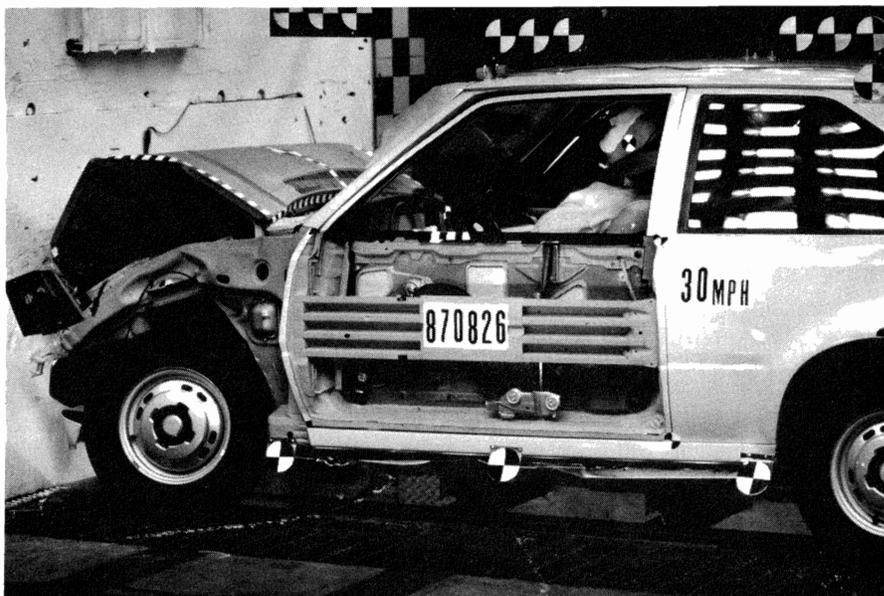
With the exception of Chrysler cars, 1987 autos equipped with automatic seat belts raise front seat belt use significantly, say researchers for the Insurance Institute for Highway Safety.

In a study of cars equipped with automatic belts by six major automakers in four metropolitan areas, the research team found that "the automatic shoulder belts provided by Ford, Nissan, Toyota, and VW increased use rates to high levels — generally 85 to 95 percent — in all regions surveyed."

Ford had the largest incremental gain in seat belt use. "Belt use in Ford cars increased from 39 to 88 percent in Philadelphia and from 67 to 92 percent in the Washington suburbs." In contrast, General Motors cars equipped with detachable automatic lap and shoulder belts that can be used as manual belts had smaller increases.

Chrysler autos equipped with detachable automatic shoulder belts, on the other hand, actually had lower use rates than other late model Chrysler models equipped with manual belts. Only 46 percent of the front seat riders in Chrysler cars equipped with automatic belts were using them, compared with 59 percent riding in cars with manual belts.

The Chrysler automatic shoulder belts are attached to the door and wrap around the
(Cont'd on Page 2)



Ford Escort crashes into barrier to measure compliance with federal standards.

Test Shows Cosmetic Parts Do Not Affect Safety Compliance

Until recently, body shops had to buy replacement parts like fenders, door panels, and grills from auto manufacturers, often at high prices as studies by the Alliance of American Insurers demonstrate year after year.

Now, these crash parts are being marketed by other suppliers at lower prices. A heated debate has erupted about the relative quality of replacement parts from the newcomers.

Some automobile manufacturers contend that using parts from suppliers other than original equipment manufacturers may mean that the car no longer meets the requirements of several federal motor vehicle safety standards.

Insurance Institute for Highway Safety specialists say it should not, because, with the exception of hoods, the cosmetic parts used to repair cars are irrelevant to safety. Parts like fenders, door panels, and grills cover the car like a skin; they serve no structural or safety function.

The Institute recently conducted a 30 mph front-into-barrier crash test of a 1987 Ford Escort equipped with automatic seat belts to measure compliance with the Federal Motor Vehicle Safety Standards (FMVSS) that specify such a test for compliance. The Escort's front fenders, door panels, and grill were removed. If compliance could be achieved without the parts, Institute
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High Belt Use Rates? For Four Automakers It's Just Automatic

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occupant when the door is closed. The rider makes some contact with the belt when entering or exiting and the belt can be detached. However, to be used as a manual belt, the belt must be pulled upward, past the outboard shoulder, and hooked into a buckle in back of the head, a somewhat awkward movement.

The survey results are important because federal regulations require manufacturers to install automatic restraints in automobiles starting with 10 percent in the 1987 model year, increasing to 25 percent in this model year, 40 percent in the 1989 model year, and 100 percent by the 1990 model year.

"Increases in belt use resulting from automatic belt systems will translate into increases in crash protection," the researchers predict. "Most evidence indicates that the major factor affecting injury reductions will be how high a use rate of the automatic system is achieved."

The surveys of recent model cars were conducted during the summer in the Maryland and Virginia suburbs of Washington, D.C., Chicago, Los Angeles, and Philadelphia in order to assess incremental gains in belt use. Belt use laws were in effect in all the survey locations except Philadelphia and Virginia.

Toyota Cressidas and Camrys, equipped with a motorized nondetachable shoulder belt that is supplemented by a lap belt and knee bolster, had a 96 percent belt use level, compared with 74 percent of the occupants in Toyota Cressidas and Camrys equipped with manual belts.

Ford experienced the largest gain in belt use by adding automatic belts. Front seat occupants of the Ford Escort and Mercury Lynx equipped with motorized belts identical to Toyota's, were buckled 87 percent of the time, compared with 52 percent of



Study shows automatic shoulder belts can increase use rates to 85 to 95 percent.

their counterparts in other Ford Escorts and Mercury Lynx's with manual belts.

GM had the smallest incremental gain. Sixty-four percent of the front seat riders in cars equipped with nonmotorized, detachable three-point lap-shoulder automatic belts were belted, compared with 55 percent of their counterparts in similar cars with manual belts. However, lap belt usage was highest for GM drivers.

Some are concerned that ejection is more likely to occur with systems that provide a shoulder belt and knee bolster if the lap belt is unused. NHTSA analysts believe that two-point belts may be less effective in crashes than three-point belts, estimating that fatality-reduction effectiveness ranges from 40 to 50 percent for manual lap and shoulder belts and 35 to 50 percent for automatic belts.

During the surveys, the Institute researchers found that driver manual lap belt use in cars equipped with automatic two-point belts ranged from about 25 to 55 percent. Thus, "the very high — about 90 percent — levels of shoulder belt use consistently observed with motorized two-point systems together with the modest levels of

manual lap belt use can be expected to produce greater fatality reductions than would the observed levels of use of the three-point automatic belt systems," they note.

Although Nissan utilizes a detachable motorized belt, 88 percent of the front seat occupants seen riding in 1987 Maximas were belted, compared with 63 percent in Nissan Maximas equipped with standard manual belts. The system is left attached, the researchers say, "probably because it is out of the way when entering the vehicle."

A separate survey was conducted to provide information on whether automatic belts are being used as manual or automatic systems. The Institute surveyed cars in parking lots and at shopping malls in the Maryland and Virginia suburbs of Washington, D.C., and found that all of the cars with nondetachable motorized shoulder belts — Fords and Toyotas — had the belts attached.

But virtually none of the GM models equipped with automatic belts had the driver systems attached. About half of the Chrysler automatic driver belts were attached. Ninety-two percent of the Nissan Maximas seen had the driver belt connected and 81

Percent of Front Seat Occupants Using Shoulder Belts in Late Model Cars	
Manufacturer and Belt Type	All Areas
Chrysler	
Manual	59
Automatic	46
Ford	
Manual	52
Automatic	87
GM	
Manual	55
Automatic	64
Nissan	
Manual	63
Automatic	88
Toyota	
Manual	74
Automatic	96
VW	
Manual	64
Automatic	89

percent of automatic belt-equipped Volkswagens seen had the driver belt connected.

“The 100 percent connection rate of Ford and Toyota belts found in the parking lot survey is not incompatible with belt use less than 100 percent in these vehicles . . . because many of the nonusers were seen to have the belt connected behind them,” the researchers noted. During the belt use surveys the researchers did find a small number of nonusers had physically detached or cut the shoulder belts in their cars, a problem that “may grow as the vehicles age and are transferred to second and third owners.” Such a practice could be forestalled at state inspection stations by requiring all belts to be operative, they suggest.

For copies of the paper, “Observed Use of Automatic Seat Belts in 1987 Cars,” by Allan F. Williams, JoAnn K. Wells, Adrian K. Lund, and Nancy Teed, write: Publications, Insurance Institute for Highway Safety, Watergate 600, Washington, D.C. 20037

Trapping Fuel Vapors In Cars Could Let Loose Another Hazard

Clean air objectives in the United States should be achieved by mandating fuel vapor recovery devices on gas pumps rather than adding complicated fuel systems to cars, says Brian O'Neill, president of the Insurance Institute for Highway Safety.

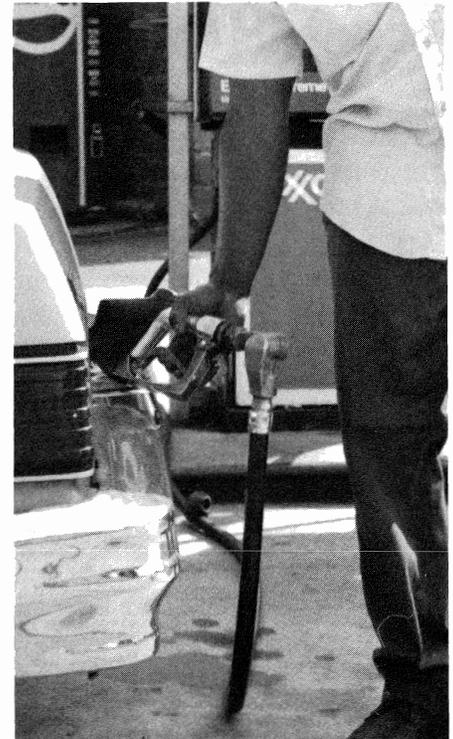
At an Environmental Protection Agency (EPA) hearing on proposals to control fuel volatility and evaporative emissions, O'Neill charged the agency would be trading one public health problem for another by mandating vapor recovery systems on motor vehicles in order to capture refueling vapors.

“Unfortunately, this rulemaking seems to be as much about political constraints as about the technical merits of alternatives to improve air quality,” O'Neill said, adding that “politics seem to be driving the agency toward onboard vapor recovery systems.” The devices might improve air quality but at the cost of more people “burning in motor vehicle fires,” he said.

Gas station owners oppose requiring vapor recovery devices on fuel pumps while automakers oppose requiring them on vehicles. Technology already exists to capture fuel vapors at the gasoline pump. Some metropolitan areas in California require the devices and Washington, D.C. has required them for years.

National Highway Traffic Safety Administration administrator, Diane Steed, says that since 1976, there have been “about” 54 vehicle safety recalls involving evaporative emissions controls. Steed has said that the onboard vapor recovery devices might pose more of a hazard because they are more complicated and use larger diameter lines.

O'Neill notes that many of the safety-related recalls are related to manufacturing mistakes. Although prototype systems demonstrated for EPA could work well most



of the time, “this doesn't alter the fact that manufacturing mistakes can and do occur and that such mistakes in this case could easily lead to motor vehicle fires. It's impossible to predict how many such mistakes would occur if onboard recovery systems were required,” O'Neill says, “But the fact that these mistakes occur at all . . . is something EPA shouldn't ignore.”

CORRECTION

In the October 17 issue of *Status Report*, the discount policy of Prudential P & C was incorrectly reported. The table on Page 2 covering insurance company discounts for cars equipped with factory-installed automatic restraints should have read Prudential P & C provides a 30 percent discount for cars equipped with driver air bags or full front air bags, and a 20 percent discount for cars equipped with automatic belts.

The discounts apply to premiums for medical payments for occupants of the insured vehicle or, in states with no-fault insurance, personal injury protection for the insured vehicle's occupants.

Cosmetic Parts Do Not Affect Compliance

(Cont'd from Page 1)

specialists reasoned, it would demonstrate that cosmetic parts are irrelevant to meeting federal safety requirements.

The Escort's original equipment hood was replaced with a competitive part to measure compliance with FMVSS 219, which requires that exterior parts may not intrude into the windshield or a defined zone in front of it in a 30 mph crash test.

The car met and far exceeded all federal requirements. Here is a breakdown of the results:

FMVSS 204 limits the rearward displacement of the steering column to lower the likelihood of chest, neck, and head injury. In the Institute test, there was no appreciable movement of the steering column.

FMVSS 208 sets requirements for occupant protection provided by either manual belts or automatic restraints. The dummies used in the crash test were restrained by the automatic shoulder belt and the manual lap belt provided in the Escort as standard equipment. The Escort performed impressively, with a driver head injury criterion rating of 296 and a passenger rating of 339, far below the federal maximum of 1,000. Femur loads and chest

deceleration forces were also well within safety limits.

FMVSS 212 requires the windshield mounting to retain at least 75 percent of its periphery in cars with manual belts. For cars with automatic restraints, the retention requirement is reduced to 50 percent. In the Institute test, 100 percent of the windshield was retained.

FMVSS 219 prevents the intrusion of vehicle parts — usually the hood — into the windshield or a protected zone in front of it. This is the only standard that could be affected by replacement parts. Key to the standard is whether the competitive hoods will buckle without separating, as new car hoods are designed to do. In the Institute test, the hood buckled and did not intrude into the prohibited zone or windshield, easily meeting the standard's requirements.

Other competitive hoods were also examined by Institute engineers, who found they have built-in buckle points, indicating that they will buckle as they should in frontal crashes.

FMVSS 301 limits fuel spillage in front, side, and rear crash tests followed by a rollover. In the Institute's 30 mph crash test, no fuel was spilled.



Escort "protects" dummies very well.

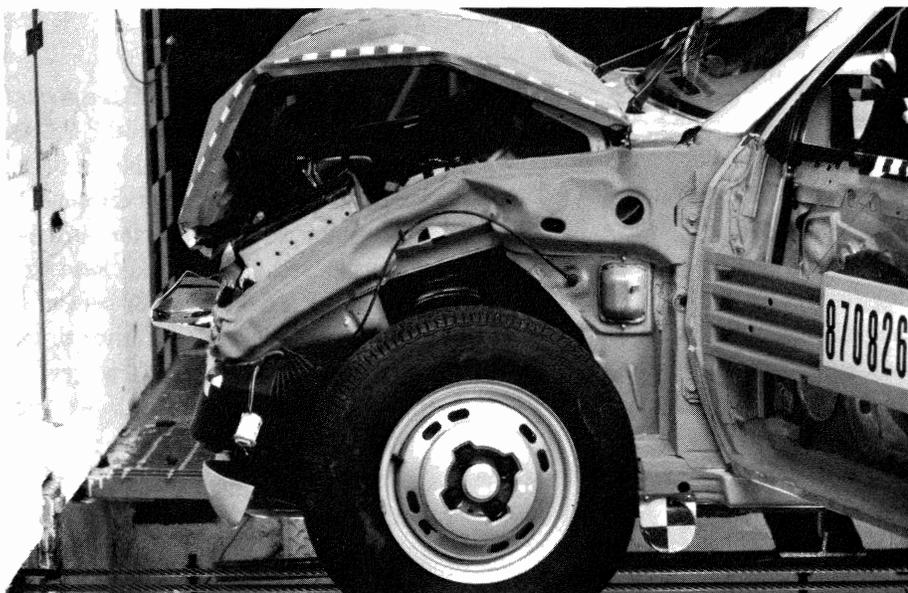
REAR SEAT BELTS

The federal government should act quickly to require combination lap and shoulder belts in the rear seats of new passenger vehicles, the National Safety Council says.

In a resolution adopted at a recent meeting of the board of directors, the council resolved to urge the National Highway Traffic Safety Administration (NHTSA) to "require as soon as practicable, inclusion of shoulder and lap safety belts in the rear seats of all new automobiles, vans, light trucks, and multipurpose passenger vehicles."

The council also agreed to "strongly urge" manufacturers to voluntarily provide them as standard equipment and to provide reasonably priced kits to allow consumers to install lap and shoulder belts in cars already on the road.

Chuck Hurley, executive director of the organization's Washington, D.C. office, says "the National Safety Council is disappointed at the lack of positive action by NHTSA." The agency should have issued a proposed rule requiring new passenger vehicles to be equipped with the better systems rather than delaying action by issuing an advance notice, he says. (See *Status Report*, Vol. 22, No. 9, Aug. 15, 1987.)



Competitive hood used in Institute test easily meets the standard's requirement.

NHTSA Stands By Ruling to Encourage Air Bag Development

The National Highway Traffic Safety Administration (NHTSA) will stand by its decision granting manufacturers additional time to develop passenger side air bags or other nonbelt technology for new cars.

In response to a petition for reconsideration filed by the Public Citizen Litigation Group, NHTSA says the petition presented no reasons to revise the rule.

Public Citizen has not decided whether it will file a lawsuit, Kathryn Meyer, a lawyer for the group, says.

On March 30, 1987, NHTSA said it would extend until Sept. 1, 1993, its one-car credit toward meeting the automatic protection requirements of Federal Motor Vehicle Safety Standard (FMVSS) 208 for cars equipped with driver-side air bags. The final rule requires cars equipped with driver side air bags to also provide a manual seat belt that will meet the dynamic test requirements of the standard for the right front passenger.

"The one-car credit was adopted to promote the widespread introduction of nonbelt automatic restraint systems, and the currently available information suggests that the rule has increased the likelihood of achieving this objective," says agency chief Diane Steed.

The extension of the credit was issued in response to a petition from Ford Motor Co. The automaker intends to equip the majority of its American designed cars with air bags, but needed extra time to iron out engineering issues related to providing passenger side systems. Chrysler and General Motors say they will equip most of their cars with air bags but their plans also were contingent upon the credit extension.

NHTSA based its decision on an evaluation of the engineering and capital resources necessary to develop and tool up for air bag

installation on a wider range of cars. The extension will provide the time needed to resolve the technical and supply issues associated with widespread application of air bag technology, the agency said.

Public Citizen asserted that the four-year leadtime was excessive, particularly because passenger side air bags had been produced for cars built during the early 1970s.

GETTING THE FACTS

A series of fact sheets on safety issues of public concern are now available from the Insurance Institute for Highway Safety.

Detailed information on a variety of topics is provided in the 1987 editions of *IHS Facts*. For example, the issue on occupant safety reports that the ratio of occupant deaths to injuries increases dramatically with the posted speed limit, from less than 3 deaths per 1,000 injuries where the limit is posted at 30 mph to 43 per 1,000 on roads where the limit is 55 mph.

A new fact sheet on motorcycle safety reports that the number of deaths per 100,000 registered motorcycles is 85 compared with 18 for 100,000 registered passenger cars. On a mileage basis, the number of cyclist deaths is about 16 times the rate of cars.

Many of the motorcyclists injured or killed don't have valid licenses — 43 percent of all fatally injured cyclists either don't have a license to operate their motorcycle or have had their license suspended or revoked. And despite evidence that helmets save lives, only 19 states and the District of Columbia require all riders to wear helmets.

Topics covered include: "Alcohol," "Pedestrians," "Occupants," "Elderly," "Bicycles," "Tractor Trailers," and "Motorcycles." For copies, write: Publications, Insurance Institute for Highway Safety, Watergate 600, Washington, D.C. 20037.

NHTSA says that is not true because the structure and size of automobiles have changed drastically since then. Engines are mounted differently, cars are smaller and lighter, and have "significantly different crash pulses, and require significantly different methods of managing crash energy to protect occupants," the agency said in its latest notice.

Manufacturers of present-day air bag systems are working on a single stage generator that is capable of a controlled ignition that will generate the nitrogen gas to inflate the bag fast enough to protect the passenger in a higher speed impact, but not so fast that it will be overly aggressive to an out-of-position occupant.

Public Citizen criticized NHTSA for failing to protect front seat passengers, but NHTSA says it evaluated the safety effects for all front seat occupants. A comparison of the benefits of the various types of

The extension will provide the time needed to resolve the technical and supply issues associated with widespread application of air bag technology, the agency said.

systems shows that safety belt use in cars equipped with automatic belts must exceed 60 percent before the benefits of front seat automatic belts would equal the benefits of a driver air bag and a manual lap and shoulder belt for the right front seat passenger.

NHTSA says it did not adopt a specific timetable for installation of passenger side air bags beyond setting a final deadline, because the commitment of financial and engineering resources to do the design and development work, together with the erection of production facilities, will ensure that passenger side air bags are introduced as quickly as possible.

Study Urges Zero Alcohol Use By Commercial Drivers

“There is no such thing as a safe level of alcohol consumption prior to or during operation of heavy trucks and buses,” reports a committee of the National Research Council (NRC).

“No amount of alcohol in the bloodstream — whether from a beer at lunch or from a hangover — is compatible with the safe operation of commercial vehicles,” says M.W. Perrine, chairman of the committee and director of Boston University’s alcohol research unit.

Following a year-long study commissioned by Congress, the committee agreed that all truck and bus drivers operating vehicles over 26,000 pounds should maintain a zero blood alcohol concentration (BAC) while on the job. This would affect operators of tractor trailers, dump trucks, commercial buses, concrete mixers, and other large commercial vehicles.

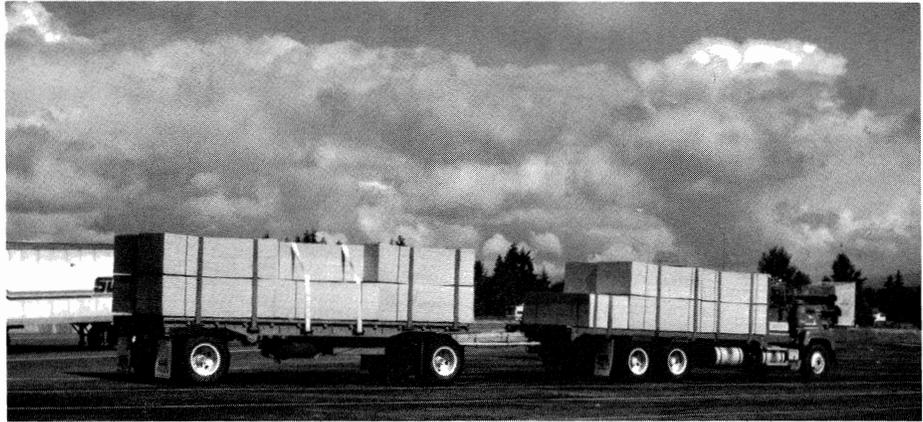
Under current Transportation Department

RADAR DETECTORS

The National Safety Council says it will expand its active opposition to radar detectors by supporting efforts to ban their use in commercial vehicles.

In the past, the safety council, which is celebrating its 75th year, has gone before state legislatures to seek laws outlawing their use. However, only Connecticut, Virginia, and the District of Columbia ban their use.

Now, says the council’s Washington office director, Chuck Hurley, the safety council would support efforts to get the Federal Highway Administration to amend federal motor carrier safety standards to ban detectors in heavy vehicle commerce. The resolution was adopted by the board of directors in a recent meeting.



Commercial drivers generally don't mix drinking and driving, the NRC acknowledges.

rules, drivers of interstate commercial vehicles are not supposed to imbibe for four hours prior to reporting for duty.

Commercial drivers generally don't mix drinking and driving, the NRC acknowledges. The committee estimates that alcohol is involved in about 14 percent of fatal truck crashes, compared with 45 percent for all crashes. However, heavy vehicle crashes are much more likely to be fatal. Heavy trucks and buses each year are involved in an estimated 750 fatal crashes that occur directly as a result of drinking and driving, the report says.

The committee supports the penalties stipulated in the Commercial Motor Vehicle Safety Act of 1986, which will require by October 1988 a one-year suspension of commercial license for a first offense when the driver's BAC equals 0.04 percent or more and a lifetime revocation for a second offense. The committee is recommending that the Department of Transportation (DOT) establish a zero blood alcohol concentration as a requirement for operation of heavy vehicles.

For drivers who are found to have a blood alcohol concentration between 0 and 0.04 percent, the committee recommends a license suspension of up to 30 days for the first offense and up to one year for subsequent offenses.

In the act, Congress told the Secretary of Transportation to determine whether the blood alcohol concentration at which a commercial driver is deemed to be driving under

the influence of alcohol should be lowered from 0.10 to 0.04 percent or some other concentration lower than 0.10 percent.

The law requires rulemaking to establish the standard to be completed by October 1988. If a new rule is not in place, the law will automatically take effect at 0.04 percent BAC.

Sen. Jack Danforth, Missouri Republican and sponsor of the 1986 legislation, says the study “concludes with what common sense would dictate. Commercial truck and bus operators should not drink and drive. They should not drink any alcohol — regardless of the amount — before setting

ONBOARD RECORDERS

The American Automobile Association has asked the Federal Highway Administration (FHWA) to require large commercial trucks to use “black boxes,” which are onboard recording devices measuring speed, time driven, and distance traveled.

Currently, the FHWA requires only that truck drivers keep a pencil-and-paper log book. But AAA says these logs are often tampered with.

“The cause of many truck accidents cannot accurately be measured, because hours-of-service information is available only from drivers’ log books, which are often a work of fiction,” says John Archer, an AAA official.

out on public highways." He urged DOT to take quick action.

The committee says that the specific alcohol concentration standards are "less important than the degree of vigor applied to enforcement." They suggest that ways to enforce the law would be to require drivers suspected of drinking on the job to provide breath samples as part of safety inspections or at truck weighing stations.

Testing for blood alcohol should be mandatory following all crashes involving injuries. To resolve legal questions associated with enforcement, the committee suggests that federal licensing regulations include explicit consent to testing and admission of test results as a condition of receiving a commercial license.

The stricter standard for commercial drivers is needed, Perrine said, because of the hazardous nature of driving a heavy truck or bus. "Heavy vehicles take longer to stop and speed up, occupy more space on the road, swing wide on turns, and have complicated controls to monitor," he noted.

"Moreover, very large vehicles, such as twin trailers operate close to the design limits of our highways, meaning that even ordinary tasks such as turning off an exit ramp require increased attention," said Perrine.

Since driving is a repetitive task that can itself make people sleepy, Perrine says the ingestion of alcohol, a sedative, can magnify the effect. The committee report cited work supported by the Insurance Institute for Highway Safety that showed even at BACs much lower than 0.04 percent, motor skills and activities requiring divided attention are impaired.

The committee estimates that 130 to 250 lives could be saved each year and between 1,700 and 3,000 injuries prevented under the zero BAC rule.

Copies of the 200-page report, *Zero Alcohol and Other Options: Limits for Truck and Bus Drivers*, may be ordered from the Transportation Research Board, 2101 Constitution Ave. NW, Washington, D.C. 20418, at a cost of \$20 per copy.

Disrupted Sleep Puts Truckers at Greater Risk of Death

Disrupting normal sleep patterns can be dangerous for people in many occupations, but for tractor-trailer drivers, it can be deadly.

Tractor-trailer drivers who use their cab's sleeper berth to get eight hours of rest — but split the rest into two parts — are three times as likely to be killed in a crash as those who do not, according to a paper presented to the American Association for Automotive Medicine by Insurance Institute for Highway Safety researcher Robin P. Hertz.

"Sleeper [berth] drivers experience irregular work and rest scheduling; such irregular patterns have been associated with disruption of normal daily rhythms," says Hertz. Like sleep deprivation, the author says, disrupting regular sleep patterns is associated with fatigue and poorer performance.

Federal regulations currently require drivers to rest eight hours for every 10 hours of driving, but they do not require that the rest hours be consecutive when a sleeper berth is used. When the author controls for other possible risk factors, sleeper berth use not only remains a risk factor for fatality, but the strength of the association increases.

In the study, the author compares data on 418 fatally injured tractor-trailer drivers with that of 15,692 drivers in crashes with property damage only. Bureau of Motor Carrier Safety crash reports were used for the study.

Another recent Institute study found that drivers of big trucks who had been behind the wheel for more than eight hours had nearly twice the risk of being in a crash compared with drivers who had been on the road less than two hours. (See *Status Report*, Vol. 22, No. 10, Sept. 19, 1987.)

For a copy of "Sleeper Berth Use as a Risk Factor for Tractor-Trailer Driver Fatali-

ty," by Robin P. Hertz, write: Publications, Insurance Institute for Highway Safety, Watergate 600, Washington, D.C. 20037.

TRUCKER FATALITIES

The percentage of fatally injured tractor trailer drivers with very high blood alcohol concentrations (BACs) of 0.10 percent or more has declined dramatically in the last few years.

Fatal crash statistics, based on data from nine states where at least 70 percent of fatally injured drivers have been tested for alcohol since 1977, show that in the early 1980s, 15-16 percent of fatally injured tractor trailer drivers tested had BACs of 0.10 percent or more. By 1986, only 3 percent had BACs that high.

Although there have been declines in BACs among passenger vehicle drivers during the same period, from 49-51 percent in the early 1980s to 41 percent in 1986, they are not nearly as dramatic.

These and other data are available in a new Insurance Institute for Highway Safety fact sheet on alcohol. For copies, write: Publications, Insurance Institute for Highway Safety, Watergate 600, Washington, D.C. 20037.

Percent of Fatally Injured Tractor Trailer Drivers With BACs ≥ 0.10 Percent

1977	15
1978	11
1979	13
1980	16
1981	15
1982	16
1983	11
1984	10
1985	5
1986	3

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