

## Belt Buzzer-Light Approach A Failure

A federally required buzzer-light warning device intended to induce car owners to wear their safety belts is "a public health failure," two highway loss researchers have found.

Comparing drivers of 1972 buzzer-light equipped cars with drivers of 1972 cars without the system, the researchers found safety belt use levels virtually identical for both groups. "... The buzzer-light system had no statistically significant effect on the safety belt use rate in equipped vehicles compared with nonequipped vehicles operated under the same conditions. ... It is unlikely that it will contribute to a reduction in overall frequency or severity of injuries associated with motor vehicle crashes, which was its purpose under the statute providing for motor vehicle safety standards."

The two researchers are Dr. Leon S. Robertson, senior behavioral scientist for the Insurance Institute for Highway Safety, and Dr. William Haddon, Jr., the Institute's president. Their findings were based on more than 60,000 observations of actual driver safety belt use. More than 5,000 of the observed cars were 1972 models. About half of the observed 1972 model cars were equipped with the warning devices; half were not.

The buzzer-light device is required by a federal standard (FMVSS 208) issued by the National Highway Traffic Safety Administration in March, 1971. It requires that, effective Jan. 1, 1972, cars

manufactured for sale in the United States be equipped either with passive crash protection for passengers (which works without requiring action by vehicle occupants), or in the alternative, with a buzzer-light system—"a warning system which activates, for at least one minute, a continuous or intermittent audible signal and continuous or flashing warning light, visible to the driver, displaying the words 'Fasten Seat Belts' or 'Fasten Belts'...."

All manufacturers represented in the U.S. market have chosen to date to install the buzzer-light system in lieu of passive restraints.

In the survey reported by the two researchers, observations were made of drivers in 5,659 vehicles of the 1972 model—2,864 with the buzzer-light system and 2,795

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without it. Of drivers in the vehicles equipped with the device, 18 per cent were using belts, while of drivers in the vehicles not equipped with the device, 16 per cent were using belts. "The slight difference between 16 and 18 per cent falls short of usually accepted standards for statistical significance," Robertson and Haddon said.

They concluded, "Previous scientific evidence that approaches directed toward changing driver behavior have little, if any, effect, is augmented by the present study. On the other hand, initial standards that require passive approaches to protect crash-involved vehicle users, such as by converting steering assemblies and windshields into energy absorbing systems, have been shown to be substantially successful. It is evident that passive approaches must be pursued more vigorously. Of course, specific passive devices must also be researched properly before they are generally applied."

The researchers pointed out that the warning systems can easily be "deactivated, including ways permanently rendering the belts unusable." An informal *Status Report* survey conducted earlier this year found that some new car salesmen offered Institute personnel posing as prospective customers advice on ways to defeat the warning system. (See *Status Report*, Vol. 7, No. 6, March 28, 1972.)

Single prepublication copies of the study are available by writing to "Belt Warning Devices," Insurance Institute for Highway Safety, Suite 300, Watergate Six Hundred, Washington, D.C. 20037.

## **'Inept Science': Prelude To Warning Device Requirement**

Two researchers have concluded that the federal standard requiring a buzzer-light warning system to induce safety belt use on new cars was adopted "in the absence of suitable evidence that it would accomplish its purpose, and without sufficient real-world field testing."

Drs. Leon Robertson and William Haddon, Jr., in a just-released study of the effectiveness of the buzzer-light system (see story above), noted two previous evaluations of the device that, they said, represented "inept science."

One of the evaluations was carried out in 1970 by the National Highway Traffic Safety Administration—the agency which subsequently required the device on all new cars. In the evaluation project, various buzzer-light-belt combinations were installed in fleet cars operated by government drivers, who later were asked by questionnaire to voluntarily report their use or non-use of belts. Ninety five per cent of those responding claimed to have used the belts.

The project's numerous flaws—"any one of which would have been sufficient to invalidate the results," according to Robertson and Haddon—included the safety agency's failure to note that the General Services Administration already had issued an order some three years earlier, that "each GSA employee operating or riding in an interagency motor pool vehicle shall wear his seat belt at all times while the vehicle is in motion." A number of other agencies had similar requirements.

The second study was carried out by Ford Motor Co. In it, 100 drivers in Houston and Minneapolis were given cars equipped with the buzzer-light system and other "advanced features" to test drive for 30 days. After the test period, interviewers observed driver safety belt use while in the car with the driver. More than 60 per cent of the Houston drivers and more than 80 per cent of the Minneapolis drivers reportedly used their belts while being thus observed.

"The Ford sponsored study contained a major flaw," Robertson and Haddon said. "The researchers did not adequately plan the study to preclude the possibility that the studied drivers would behave

according to their perception of the researchers' expectations that they wear safety belts." A pre-test telephone interview about safety belt use, coupled with the "intensive introduction" to the vehicle's special features that was given to each subject driver, "could easily have created a perception of the expectation that safety belts should be used."

Robertson and Haddon concluded: "If the intent of the statute providing for motor vehicle safety standards to reduce death and injury on the highways is to be further realized, much better science and much better standard-setting based on that science must be forthcoming. . . . The principle that properly designed field studies should demonstrate efficacy of a public health policy before it is applied to the general population is as applicable to injury amelioration as it is to vaccine and drug testing.

"A program of coordinated research, development, field testing and implementation of a broad range of approaches employing scientifically based principles for the amelioration of all kinds of damaging energy exchanges, including those involved in all vehicle crash injuries, is well within our capability as a society, and has been for some time.

"Hopefully the armchair approach and inept science illustrated by the buzzer-light case will soon be replaced by competent science."



*Meat Axe Effect in 1971 Vega Crash Test*

## **NHTSA Seeking To Blunt Meat Axe Hood Effect**

The National Highway Traffic Safety Administration has proposed a motor vehicle safety standard to prevent meat axe-like vehicle hoods penetration of windshields in crashes. The agency says there is "an urgent need" for "more protective vehicle design in this area."

In issuing the proposal NHTSA said, "There has been a significant increase in the number of accidents in which some part of the automobile, most notably the hood, has either penetrated the windshield aperture or has been displaced rearward" enough to shatter the windshield, "thereby degrading the valuable passive protection properties of safety glazing materials." The increase "appears to be traceable to a trend in hood and cowl top design in which the rearmost edge of the hood is flared upward in a position close to the glazing surface," according to NHTSA.

The proposed standard would prohibit any part of the vehicle from penetrating the windshield in a 30 mile per hour frontal barrier impact. It would also establish a "protected zone in front of the windshield, with the requirement that no part of

the vehicle penetrate the zone” during the crash test. Such a zone is needed because windshield material—required by federal standards to function like a fire net by cushioning the impact of an occupant thrown against it—may stretch forward in a crash.

Last November the Insurance Institute for Highway Safety told NHTSA that during its medium speed head-on crash test between a 1971 Chevrolet Impala and Chevrolet Vega, the Vega’s hood sliced through its windshield “like a horizontal meat cleaver.” (See *Status Report*, Vol. 6, No. 21, Nov. 16, 1971.)

The proposed effective date for the standard is Sept. 1, 1973, for passenger cars and Sept. 1, 1974, for multipurpose passenger vehicles and trucks and buses with a gross vehicle weight rating of 10,000 lbs. or less. The standard would not apply to forward control vehicles.

Comments on the proposed rule should be submitted before Nov. 30, 1972, to Docket 69-17, Docket Section, National Highway Traffic Safety Administration, Room 5221, 400 Seventh Street, S.W., Washington, D. C. 20590.

## Action Slow On Speed Control Rule

The National Highway Traffic Safety Administration has fallen behind schedule in issuing its speed control rule. According to the agency’s published timetable, the rule—officially called “High Speed Warning and Control”—should have been issued by May 1, 1972.

Agency engineers attribute the delay to “substantial changes” in NHTSA’s controversial proposal. The revised proposal—if and when it is issued—will focus more on “warning device aspects” than speed control, one official told *Status Report*. “The cost-benefit ratio of a high speed control device is questionable,” he claimed. NHTSA officials also say that the standard might not come into force until 1974.

As proposed in the fall of 1970, the rule would have put a built-in 95 miles per hour speed ceiling on all but police cars manufactured after Oct. 1, 1972. Audible and visual warnings that activate between 81 and 85 miles per hour and speedometers that register speeds no greater than 85 miles per hour also were part of the proposal.

That proposal has drawn more responses—almost half in favor and half against—than any other rule the agency has considered. (See *Status Report*, Vol. 6, No. 20, Nov. 1, 1971.)

The adjacent chart, developed by Albert B. Kelley, Institute vice president in charge of communications, illustrates the discrepancies between speeds which automobiles obtain—and at which they crash—and the crash protection capabilities of those same vehicles and the highways on which they travel. The chart appears in “Injury Control,” by Susan P. Baker, a chapter in the 10th Edition of *Preventive Medicine and Public Health*, to be published by Appleton-Century-Crofts.

CRASH SPEED PARAMETERS	MILES PER HOUR	VEHICLE AND HIGHWAY CRASH PROTECTION CAPABILITIES
100-120 mph: Range of speed capabilities of most American automobiles	120	
	110	
	100	
	90	
	80	
60-80 mph: Range of maximum legal speeds on U.S. Interstate Highways and expressways	70	
	60	50-60 mph: Range of speeds above which the sides of newest Interstate Highways cannot safely accommodate vehicles leaving the road
	50	
	40	
	30	30 mph: Maximum speed at which cars must be designed to protect belted occupants in head-on barrier crashes, under a Federal Standard for cars manufactured after 8/15/73
	20	
	10	11 mph: Speed above which the sides of most U.S. roads and highways cannot safely accommodate vehicles leaving the road
	0	

## ***NHTSA Sends 1971 Activities Report To Congress***

The National Highway Traffic Safety Administration has sent to the Congress its annual reports on activities under the Highway Safety and National Traffic and Motor Vehicle Safety Acts of 1966.

The reports outline NHTSA's motor vehicle and highway safety efforts for calendar year 1971.

In a letter accompanying the reports, President Richard M. Nixon says that traffic deaths and injuries account for a "\$46 billion annual drain on our economy from lost wages, medical expenses, legal fees, insurance payments, home and family care and other expenses. . . ." The problem, he says, is of "serious and growing" concern to his Administration.

The reports, entitled *Safety '71, A Report On Activities Under The National Traffic and Motor Vehicle Safety Act* and *Safety '71, A Report On Activities Under The Highway Safety Act*, can be obtained for \$1.25 each from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

## **Defective Vehicle Numbers May Be Made Public**

The National Highway Traffic Safety Administration is about to propose that auto makers supply the agency with vehicle identification numbers (VINs) of all cars that are involved in defect notification campaigns.

The VINs would be made public by NHTSA for use by "insurance companies and other groups" who want to use them to assist NHTSA and car makers in notifying owners of vehicle defects, according to a high ranking safety administration official. He pointed out that "NHTSA does not presently require manufacturers to submit the VINs of campaigned vehicles," although "the defect reports regulations do require manufacturers to compile the numbers for their own use."

The agency is required by law to first issue the change in the form of a proposal since the requirement would alter current rules. This will be done "in the nearest possible future," he said.

State Farm Insurance Co. initiated the idea that NHTSA make the information available to private agencies that could assist in the defect notification process. Armed with the VINs of potentially defective vehicles, insurance companies could use their data resources to reach all owners of vehicles involved in defect notification campaigns. This "should significantly increase the response of all owners and be uniquely valuable in reaching cars now in the hands of second and third owners," State Farm officials pointed out. (See *Status Report*, Vol. 7, No. 13, July 17, 1972.)

In suggesting that insurance companies could play a valuable role in defect notification campaigns, the State Farm officials noted that a *New York Times* article in April reported that "40 per cent of cars and trucks sold in this country since 1966 have been recalled for a safety-related defect, and that only 50 to 85 per cent of such vehicles actually have been returned for correction of the defect."

## Safety Board Scores Recreational Vehicle Data Dearth

A wide variety of recreational vehicles, such as campers and snowmobiles, have such special structural, handling and performance characteristics—and have grown so popular in recent years—that it is vital that government begin collecting “reliable, pertinent data” upon which to base sound loss reduction efforts, according to the National Transportation Safety Board.

The board has taken a look at recreational vehicles and has found that at this time little can be done to make them safer because “the paucity of data surrounding both the use and hazards of recreational vehicles” makes identification of loss producing elements impossible.

In fact, the board said, there is such a dearth of data that “one can only assume that there is a recreational-vehicle problem.”

The scarcity of data extends to almost four million motor homes, truck campers, pickup truck “covers” and travel and camping trailers, another four million boat trailers, and countless numbers of rough-terrain vehicles, snowmobiles, minibikes, trail bikes, “go-carts” and “swamp buggies,” the NTSB said in its recent “special study” on *Special Aspects of Recreational Vehicles*.

“Most of these vehicles are not specifically identified or defined in the Federal Motor Vehicle Safety Standards (FMVSS) promulgated by the National Highway Traffic Safety Administration (NHTSA). Most FMVSS do apply to some aspects of recreational vehicles, but not in measures which cope directly with the range of problems and safety hazards involved,” the report said.

Even under the best conditions “such vehicles pose many potentially serious hazards both to themselves and to other highway users because of inherent design limitations,” the report said. It cited:

- Problems with “vehicle center of gravity, which may contribute to overturn with minimum provocation. . . .”
- Bodies of motor homes and pickup campers consisting of “box-like skeletons” of metal or wood that “sometimes cannot withstand the forces involved in crashes, and can either collapse or come apart at the joints.”
- The inabilities of such vehicles to “accelerate as rapidly” or “stop as well” as passenger cars.

It also noted that “by and large these vehicles are operable by persons with no special training or demonstrated ability to handle them. . . . The risk of accident increases when the driver is unskilled or unfamiliar with the idiosyncrasies or temperament of such vehicles in adverse conditions.”

### Safety Advisory Council To Discuss Recreational Vehicles

The National Motor Vehicle Safety Advisory Council will sponsor an international conference on problems of motorcycle and recreational vehicle safety.

In a recent meeting, the 22-member council, which advises the National Highway Traffic Safety Administration on matters related to motor vehicle safety standards, voted to schedule the conference for July, 1973, in San Francisco.

The fact that such vehicles are often driven under hostile environmental conditions further complicates the problem, the report said.

Based on its study NTSB has recommended that NHTSA:

- Gather information relating to “accident-frequency, accident circumstances, and cause-analysis data of various recreational vehicle categories.”
- Establish a new rule making category for “light trucks” and “take cognizance of the extensive use of light trucks as personal or recreational vehicles in the promulgation of vehicle safety standards.”
- Extend all “applicable” safety standards to cover pickup truck camper bodies and travel trailers “as expeditiously as the availability of pertinent accident-frequency and causation data will permit.”
- Join with the Recreational Vehicle Institute and the International Snowmobile Industry Association in a consumer information program to “educate purchasers of recreational-type vehicles regarding the hazards and potential hazards” associated with their use.

It also recommended that the U.S. Department of Interior require that persons seeking access to publicly owned wilderness areas “show evidence of competency in the operation” of their vehicle, and that the vehicle be inspected for safety and equipped with a radio and other emergency equipment.

## ***Demand For Care ‘Staggering’***

### **Emergency Medical Service ‘Weakest Link’ In Chain**

*Following is an excerpt from a report prepared by the National Academy of Sciences’ Committee on Emergency Medical Services:*

Accidental injury and acute illness generate a staggering demand on ambulance and rescue services, allied health personnel, physicians, and hospitals for the delivery of emergency medical services. Accidental injury is the leading cause of death among all persons aged 1 to 38. Each year more than 52 million U. S. citizens are injured, of whom more than 110,000 die, 11 million require bed care for a day or more, and 400,000 suffer lasting disability at a cost of nearly \$3 billion in medical fees and hospital expenses and over \$7 billion in lost wages. Those requiring hospitalization occupy an average of 65,000 beds for 22 million bed-days under the care of 88,000 hospital personnel. This hospital load is equivalent to 130 500-bed hospitals. Of the more than 700,000 deaths from heart disease each year, the majority are due to acute myocardial infarction and more than half of these deaths occur before reaching a hospital. Approximately 40 million persons seek care each year in hospital emergency departments as a result of accidents, heart disease, stroke, poisoning, diabetic coma, convulsive disorders, and many other illnesses.

Emergency medical service is one of the weakest links in the delivery of health care in the nation. Thousands of lives are lost through lack of systematic application of established principles of emergency care. Few at the site of accidental injury or sudden illness are trained in the fundamentals of restoration of breathing, control of hemorrhage, or splinting of fractures. The majority of ambulances in the United States are of the hearse, limousine, or station wagon type which are inadequate in space and equipment and are manned by individuals with inadequate training to provide essential life support. Pilot studies with better ambulance services indicate that thousands of lives can be saved and disability reduced.

*(cont’d. on page 8)*

Many ambulances lack radio communication even with their own dispatchers. Communication rarely exists between ambulances and hospitals, so that most patients arrive at emergency departments without prior notification. Most emergency departments of the nation are not only lacking in facilities and personnel, but are overtaxed by millions of non-emergency cases for whom ancillary outpatient facilities should be provided, especially during evening hours and on weekends. In comparison with facilities for definitive care of illness, few centers of excellence for the care of the critically ill or injured exist.

*Single copies of the complete report, entitled "Roles and Resources of Federal Agencies in Support of Comprehensive Emergency Medical Services," are available from the Office of Information, Division of Emergency Medical Health Services, Health Services and Mental Health Administration, 5600 Fishers Lane, Rockville, Md. 20852.*

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the highway  
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## STATUS REPORT

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