U.S. Department
of Transportation

**National Highway
Traffic Safety
Administration**

People Saving People
http://www.nhtsa.dot.gov

Research Note

July 1997

Injuries Associated With Hazards Involving Motor Vehicle Batteries

NHTSA's National Center for Statistics and Analysis (NCSA) recently examined data from the Consumer Product Safety Commission's (CPSC) National Electronic Injury Surveillance System (NEISS) on cases involving injuries associated with motor vehicle batteries. NEISS data on persons treated in hospital emergency rooms for these injuries were examined to determine the action or activity involved in producing the injury, the injury diagnosis and severity, the body region most often injured, and the age of the injured person.

CPSC's NEISS collects data on a nationally representative sample of consumer product-related injuries treated in hospital emergency rooms. NEISS is a 3-level system consisting of surveillance of emergency room injuries, follow-back telephone interviews with injured persons or witnesses, and comprehensive investigations with injured persons and/or witnesses. NEISS obtains data from a sample of 91 of the 6,127 hospitals nationwide with at least six beds that provide emergency care on a continuing 24-hour basis. The data on injuries associated with motor vehicle batteries were obtained through an agreement between NHTSA and CPSC to collect data on injuries associated with specific motor vehicle hazards that are non-crash related.

During the 1-year period October 1, 1993 through September 30, 1994, data from 134 cases of injuries associated with motor vehicle batteries were obtained from NEISS. Based upon these 134 cases, an estimated 7,051 persons were treated in hospital emergency rooms for injuries resulting from an activity involving motor vehicle batteries nationwide during the 12-month study period. The types of injuries sustained can be described by five general categories: battery explosions, chemical burns and/or contamination resulting from contact with battery acid, muscle strains and/or crush-type injuries associated with lifting or dropping the battery, and electrical shock from contacting battery cables and/or posts. Persons injured as a result of battery explosions, the type of injury of particular interest to NHTSA, comprised the largest of these five general categories. An estimated 2,280 persons (32% of 7,051 motor vehicle battery injuries) were injured as a direct result of a motor vehicle battery explosion. Tables 1 through 5 provide additional details on the persons injured as a result of motor vehicle battery explosion during the period October 1, 1993 - September 30, 1994 by the action which produced the injury, the region of the body most severely injured, the injury diagnosis, the injury severity, and the age of the injured person, respectively. (The percentages may not add to 100% in every table due to rounding.)

Thirty-one percent (31%) of the persons injured by battery explosions were charging the battery (702 persons injured), as shown in Table 1. More than one-fourth (26%) of the injuries were associated with an activity involving the battery cables (replacing, securing, or tightening). An almost equal number of persons were injured as a result of "jump starting" the battery (19%) or checking/adding fluid (19%). Unfortunately, it is not known what activity led to the injury for about 5% of the persons injured.

Table 1
Estimated Number of Persons Injured by MV Battery Explosions by Injury Producing Action
October 1993-September 1994

Injury Producing Action	Estimated No. Of Persons Injured	% Total
Charging Battery	702	31%
Replacing, Securing, or Tightening Cables	581	26%
Jump Starting Battery	444	19%
Checking Fluid Level and/or Adding Water	442	19%
Unknown	111	5%
Total	2,280	100%

Table 2
Estimated Number of Persons Injured by MV Battery Explosions by Injury Diagnosis
October 1993-September 1994

Diagnosis	Estimated No. Of Persons Injured	% Total
Chemical Burns	1,421	62%
Contusion or Abrasion	185	8%
Laceration	475	21%
Conjunctivitis	199	9%
Total	2,280	100%

The majority (62%) of the 2,280 persons estimated to have been injured by motor vehicle battery explosions were diagnosed as having chemical burns [Table 2]. Twenty-one percent (21%) of the persons injured were diagnosed with lacerations. Almost three-fourths (72%) of those injured suffered an eye injury [Table 3]. Unfortunately, a sizeable portion (43%) of the persons injured were diagnosed as having a serious injury [Table 4]. None of the 2,280 persons injured, however, were hospitalized. This may be misleading, as 80% of the persons injured (43% + 37%) were diagnosed as having a serious or moderate injury [Table 4], indicating that while hospitalization may not have been warranted, further medical treatment would probably be necessary.

Table 3
Estimated Number of Persons Injured by MV Battery Explosions by Most Injured Body Region
October 1993-September 1994

Body Part Injured	Estimated No. Of Persons Injured	%Total
Eye	1,648	72%
Face	501	22%
All Other (Including Head, Hands, Fingers)	131	6%
Total	2,280	100%

Table 4
Estimated Number of Persons Injured by MV Battery Explosions by Injury Severity
October 1993-September 1994

Injury Severity	Estimated No. Of Persons Injured	%Total
Minor	464	20%
Moderate	844	37%
Serious	972	43%
Total	2,280	100%

Table 5
Estimated Number of Persons Injured by MV Battery Explosions by Age
October 1993-September 1994

Age of Person	Estimated No. Of Persons Injured	% Total
0 - 14 Years	34	2%
15 - 29 Years	744	33%
30 - 44 Years	834	37%
45 - 59 Years	668	29%
Over 60 Years	0	--
Total	2,280	100%

As might be expected, almost all of the persons injured (2,246 of the 2,280 persons injured, or 98%) were between the ages of 15 - 59 [Table 5].

For additional copies of this research note, please call (202) 366-4198 or toll free, 1-800-934-8517. For questions, contact Henri Richardson at (202) 366-5354 or Delmas Johnson at (202) 366-5382. Further details on the data reported in this research note may be found in ***Injuries Associated with Specific Motor Vehicle Related Hazards: Radiators, Batteries, Power Windows and Power Roofs*** [DOT HS-808 598, July 1997]. This research note and other general information on traffic safety may be accessed by Internet users at http://www.nhtsa.dot.gov/people/ncsa.