



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: October 4, 2011

In reply refer to: H-11-29 and -30
H-06-28 [Reclassification]

The Honorable Steven L. Beshear
Governor
Commonwealth of Kentucky
700 Capitol Avenue, Suite 100
Frankfort, Kentucky 40601

The National Transportation Safety Board (NTSB) is an independent Federal agency charged by Congress with investigating transportation accidents, determining their probable cause, and making recommendations to prevent similar accidents from occurring. We are providing the following information to urge your Commonwealth to take action on the safety recommendations in this letter. The NTSB is vitally interested in these recommendations because they are designed to prevent accidents and save lives.

These recommendations address the need to prohibit the use of cellular telephones by drivers of commercial motor vehicles (CMV) and the need for state seat belt laws to include occupants of 15-passenger vans. The recommendations are derived from the NTSB's investigation of a highway accident that occurred near Munfordville, Kentucky, on March 26, 2010, when a truck-tractor semitrailer traveling south on Interstate 65 crossed the median and entered the northbound lanes, where it was struck by a 15-passenger van. As a result of the accident and subsequent truck fire, the truck driver, the van driver, and nine van passengers died. Two child passengers in the van, who were using child restraints, sustained minor injuries.¹ As a result of this investigation, the NTSB has issued 15 safety recommendations, 2 of which are addressed to the Commonwealth of Kentucky. The recommendations are consistent with the evidence we found and the analysis we performed. Information supporting these recommendations is discussed below. The NTSB would appreciate a response from you within 90 days addressing the actions you have taken or intend to take to implement our recommendations.

The National Transportation Safety Board determined that the probable cause of this accident was the truck driver's failure to maintain control of the truck-tractor combination vehicle because he was distracted by use of his cellular telephone. Contributing to the severity of

¹ For additional information, see *Truck-Tractor Semitrailer Median Crossover Collision With 15-Passenger Van, Munfordville, Kentucky, March 26, 2010*, Highway Accident Report NTSB/HAR-11/02 (Washington, DC: National Transportation Safety Board, 2011), which is available on the NTSB website at <http://www.nts.gov/>.

the accident were a median barrier that was not designed to safely contain or redirect the heavy vehicle and the lack of adequate guidance to the states in the form of high-performance median barrier warrants.

Cellular Telephone Use by Commercial Drivers

Driver Distraction Due to Cellular Telephone Use

In evaluating the possible role of cellular telephone distraction, the NTSB examined the proximity of cellular telephone use to the time and location of the accident, the nature of the cellular telephone use and how that use would affect driving performance, details about the calls based on witness interviews, and the nature of the driver error committed.

As indicated by the records of his cellular service provider, the truck driver repeatedly used his cellular telephone while driving. By mapping cellular tower service for the truck driver's telephone, investigators determined that the driver used his telephone to make calls, receive calls, send text messages, and receive text messages a total of 69 times while driving in the 24-hour period prior to the accident.

The truck driver placed four calls while driving on the morning of the accident; the first of these occurred at 4:28 a.m. He then received an incoming call at 4:51 a.m. The driver made additional outgoing voice calls at 5:03 a.m., 5:07 a.m., and 5:14 a.m. A friend of the driver said he received a call from the driver at 5:14 a.m. and talked to the driver about social plans, but he stated that the connection was dropped. According to the truck driver's cellular provider, the network did connect the two telephones, but the call duration was less than 1 second.² Consequently, the friend's recollection that he had a conversation with the driver is inconsistent with the information in the cellular telephone records. The friend's cellular records also show that he placed calls to the truck driver at 5:15 a.m., 5:16 a.m., 5:17 a.m., 5:19 a.m., 5:26 a.m., and 5:31 a.m. The persistence on the part of the friend, who made six calls in 16 minutes in an attempt to reach the truck driver, suggests that the suddenly dropped call may have been a cause of concern to the friend.

Based on the timing of known cellular telephone calls, the dropped call at 5:14 a.m., the repeated callback behavior of the friend (beginning at 5:15 a.m.), and the shallow departure angle of the accident vehicle from the roadway, the NTSB concluded that because he was distracted from the driving task by the use of his cellular telephone at the time of the accident, the truck driver did not maintain control of his vehicle.

² According to the cellular provider of the friend who received the call, the duration of the call was 3 seconds. The provider indicated that it is not uncommon for a slightly longer duration in this range, as a result of system disconnect processing.

NTSB Recommendation History on Cellular Telephone Use

In 2004, the NTSB investigated an accident involving a motorcoach that crashed into a bridge overpass on the George Washington Memorial Parkway in Alexandria, Virginia.³ As the bus approached the Alexandria Avenue Bridge, it passed warning signs indicating that the bridge had only a 10-foot 2-inch clearance in the right lane. Nevertheless, the driver remained in the right lane and drove the 12-foot-tall bus under the bridge, colliding with the underside of the overpass, destroying the bus roof, and injuring 11 passengers. The bus driver reported that he had been talking on a hands-free cellular telephone when the accident occurred. The NTSB determined that the probable cause of this accident was the bus driver's failure to notice and respond to posted low-clearance warning signs and to the bridge itself, due to cognitive distraction resulting from conversing on a hands-free cellular telephone while driving. The NTSB's investigation resulted in the following recommendation to the Federal Motor Carrier Safety Administration (FMCSA):

Publish regulations prohibiting cellular telephone use by commercial driver's license holders with a passenger-carrying or school bus endorsement, while driving under the authority of that endorsement, except in emergencies. (H-06-27)

Safety Recommendation H-06-27 is "Open—Acceptable Response." A companion recommendation was made to the 50 states and the District of Columbia, as follows:

Enact legislation to prohibit cellular telephone use by commercial driver's license holders with a passenger-carrying or school bus endorsement, while driving under the authority of that endorsement, except in emergencies. (H-06-28)

Safety Recommendation H-06-28 is currently classified with an "Open—Acceptable Response" overall status.

On September 27, 2010, the FMCSA issued a final rule that prohibits texting by CMV drivers while operating in interstate commerce and imposes sanctions, including civil penalties and disqualification, for drivers who fail to comply with this rule. Additionally, motor carriers are prohibited from requiring or allowing their drivers to engage in texting while driving.⁴ On December 21, 2010, the FMCSA published a notice of proposed rulemaking (NPRM) proposing to restrict the use of handheld mobile devices, including handheld cellular telephones, by CMV drivers while operating in interstate commerce as a necessary component of an overall strategy to reduce the number of accidents caused by distracted driving.⁵ The FMCSA has not yet issued a final rule from this rulemaking, but, according to the FMCSA, it will issue a final rule before the end of 2011.

³ *Motorcoach Collision with Alexandria Avenue Bridge Overpass, George Washington Memorial Parkway, Alexandria, Virginia, November 14, 2004*, Highway Accident Report NTSB/HAR-06/04 (Washington, DC: National Transportation Safety Board, 2006).

⁴ *Federal Register*, vol. 75, no. 186 (September 27, 2010), p. 59118.

⁵ *Federal Register*, vol. 75, no. 244 (December 21, 2010), p. 80014.

Other transportation modes have addressed the restriction of cellular telephone use. For example, the Federal Railroad Administration issued Emergency Order 26, which restricts railroad operating employees from using distracting electronic and electrical devices while on duty; the order took effect in October 2008 and was subsequently codified in regulation.⁶

Research on Driving Distractions

Research has demonstrated that distractions while driving degrade several aspects of driving performance, resulting in slower reaction times, slower driving speeds, and more frequent lapses in attention.⁷ Further, studies have shown that conversing on a hands-free cellular telephone while driving impairs performance.⁸ This substantial body of research indicates that changes in driving behavior occur when the cognitive distraction of a cellular telephone conversation diverts attention from driving, and that the use of either a handheld or a hands-free cellular telephone while driving can impair performance. In the case of the Munfordville truck driver, investigators could not determine whether the driver was using a handheld or hands-free device when he placed the 5:14 a.m. call that precipitated the accident; however, either action would have resulted in cognitive distraction.

The NTSB firmly believes that commercial drivers must focus their attention on operating their large, heavy commercial vehicles rather than switching their attention between driving tasks and telephone use. The NTSB does not differentiate between handheld and hands-free devices because research shows that both types of cellular telephones produce performance degradation. The NTSB restated this position in its response to the December 2010 NPRM by the FMCSA that proposed prohibiting the use of handheld mobile devices, including handheld cellular telephones, by drivers of CMVs. In its response to the proposed rulemaking, the NTSB asked the FMCSA to go beyond the prohibition on handheld mobile device use proposed in the NPRM and to develop a final rule that would prohibit drivers' use of any type of wireless device while operating a CMV. The NTSB took the same position in its comments on a recent Pipeline and Hazardous Materials Safety Administration NPRM proposing to prohibit the use of handheld mobile telephones, including handheld cellular telephones, by drivers during the

⁶ Federal Railroad Administration docket FRA-2009-0118 and 49 *Code of Federal Regulations* Part 220.

⁷ (a) D.L. Strayer and F.A. Drews, "Profiles in Driver Distraction: Effects of Cell Phone Conversations on Younger and Older Drivers," *Human Factors*, vol. 46, no. 4 (2004), pp. 640–649. (b) K.E. Beede and S.J. Kass, "Engrossed in Conversation: The Impact of Cell Phones on Simulated Driving Performance," *Accident Analysis and Prevention*, vol. 38, no. 2 (2006), pp. 415–421. (c) D.L. Strayer and W.A. Johnston, "Driven to Distraction: Dual-Task Studies of Simulated Driving and Conversing on a Cellular Phone," *Psychological Science*, vol. 12 (2001), pp. 462–466. (d) J.L. Harbluk, Y.I. Noy, and M. Eizenman, *The Impact of Cognitive Distraction on Driver Visual Behavior and Vehicle Control*, TP#13889E (Ottawa, Canada: Transport Canada, 2002). (e) D.L. Strayer, F.A. Drews, and W.A. Johnston, "Cell Phone-Induced Failures of Visual Attention During Simulated Driving," *Journal of Experimental Psychology-Applied*, vol. 9, no. 1 (2003), pp. 23–32.

⁸ (a) C.J.D. Patten and others, "Using Mobile Telephones: Cognitive Workload and Attention Resource Allocation," *Accident Analysis and Prevention*, vol. 36, no. 3 (2004), pp. 341–350. (b) J.E.B. Tömros and A.K. Bolling, "Mobile Phone Use—Effects of Handheld and Handsfree Phones on Driving Performance," *Accident Analysis and Prevention*, vol. 37, no. 5 (2005), pp. 902–909. (c) D.A. Redelmeier and R.J. Tibshirani, "Association Between Cellular-Telephone Calls and Motor Vehicle Collisions," *The New England Journal of Medicine*, vol. 336, no. 7 (1997). (d) S. McEvoy and others, "Role of Mobile Phones in Motor Vehicle Crashes Resulting in Hospital Attendance: A Case-Crossover Study," *British Medical Journal* (July 2005).

operation of motor vehicles containing certain quantities and types of hazardous materials.⁹ Therefore, the NTSB concluded that because changes in driving behavior occur when the cognitive distraction of a cellular telephone conversation diverts attention from driving, use of either a handheld or a hands-free cellular telephone while driving can impair driver performance.

Safety Benefit of Prohibiting Cellular Telephone Use

Wireless device use is pervasive in our society.¹⁰ Although the use of cellular devices by accident drivers can be documented through records from cellular service providers, the distracting effect of these devices as a contributing factor in highway accidents is difficult to determine. It is usually necessary to attempt to obtain driver or eyewitness testimony. Beyond that evidence, which is rare, police officers must subpoena the billing records of the cellular service provider and analyze the time sequences for cellular use in relation to the accident timelines. Consequently, it is certain that accidents in which distraction due to use of wireless devices played a role are under-reported. NTSB analysis of Fatality Analysis Reporting System data (2005–2009) of fatal cross-median accidents on interstates determined that among vehicles that crossed the median, police cited cellular telephone use or presence as a potential contributing factor for 3.1 percent of passenger vehicles and 6.1 percent of truck-tractors.

The NTSB considers that driver education and rulemaking prohibiting the use of mobile cellular devices by commercial drivers would improve safety on the nation’s highways by reducing the likelihood of, or preventing, accidents, as well as reducing the injuries and fatalities associated with distracted driving. This opinion is shared by the Motor Carrier Safety Advisory Committee (MCSAC), which has recommended rulemaking to ban the use of handheld and hands-free cellular telephones and text messaging by commercial driver’s license (CDL) drivers.¹¹ Similarly, since January 2009, the National Safety Council has advocated a total ban on wireless device use while driving, saying that the practice is clearly dangerous and leads to fatalities.¹²

The research examining the expected efficacy of bans on cellular telephones has been mixed. The Insurance Institute for Highway Safety (IIHS) recently conducted a study assessing the safety outcomes, as measured by insurance collision loss rates, for both handheld telephone bans and texting bans.¹³ The IIHS found that state bans on the use of handheld cellular telephones have not decreased insurance claim rates. In a similar IIHS study of four states (California, Louisiana, Minnesota, and Washington) where the effect of texting bans could be evaluated, three of the four states experienced a statistically significant increase in insurance

⁹ “Hazardous Materials: Restricting the Use of Cellular Phones by Drivers of Commercial Motor Vehicles in Intrastate Commerce,” *Federal Register*, vol. 76, no. 83 (April 29, 2011), p. 23923.

¹⁰ As of June 2010, there were 292.8 million wireless subscribers, and the U.S. population had a wireless penetration of 93 percent, according to midyear estimates by CTIA–The Wireless Association. See <http://www.ctia.org/media/industry_info/index.cfm/AID10323>, accessed March 6, 2011.

¹¹ This position was reflected in a March 27, 2009, letter from the MCSAC chairperson to the FMCSA concerning the MCSAC National Agenda for Motor Vehicle Safety.

¹² For additional information concerning the position of the National Safety Council, see <<http://www.nsc.org/Pages/NationalSafetyCouncilCallsforNationwideBanonCellPhoneUseWhileDriving.aspx>>, accessed July 25, 2011.

¹³ See <http://www.iihs.org/research/topics/pdf/HLDI_Bulletin_27_11.pdf>, accessed July 5, 2011.

collision rates. In July 2011, the Governors Highway Safety Association (GHSA) released a report reviewing distracted driver research.¹⁴ In part, the report was based on a search of 8 major research databases that included over 350 scientific papers on distracted driving published in the past decade. The GHSA report concluded that there was no evidence that cellular telephone laws have reduced crashes. (One limitation of these studies is that none of the bans examined included hands-free cellular telephone use.)

The NTSB examined research on the effectiveness of company policies in limiting cellular telephone use by commercial drivers. The FMCSA considered the prevalence of crashes and near-crashes related to telephone use in a naturalistic study of commercial truck and bus drivers.¹⁵ Unlike previous naturalistic research on commercial drivers, company cellular telephone policy was included as a variable. The study found that a company's cellular telephone policy was effective in reducing cellular telephone use by drivers. Further, the FMCSA study found that drivers working for companies with a cellular telephone policy also had fewer cellular telephone-related safety-critical events than drivers working for a company with no cellular telephone policy. Additional research supporting the benefits of company cellular telephone policy was conducted by the Network of Employers for Traffic Safety, which considered the crash rates per million miles of 45 companies from diverse industries.¹⁶ The study included approximately 400,000 vehicles that logged more than 8 billion miles during 2009. This study found that company vehicle fleet crash rates were lowest at companies that had policies prohibiting cellular telephone use (both handheld and hands-free) and that had established strong consequences, including termination, for employees who violated such policies.

The efficacy of company cellular telephone policies may be related to the safety culture the company projects by employing such a policy. Further, companies with cellular telephone policies can provide a strong deterrent to violating the policy, through negative performance evaluations or employment termination. A prohibition on cellular telephones for commercial drivers would require all carriers affected by the ban to develop effective cellular telephone policies.

The circumstances of the Munfordville accident illustrate that the prohibition against cellular telephone use—both handheld and hands-free—should apply to all operators of CMVs, not just passenger-carrying drivers, as was recommended in Safety Recommendation H-06-27. No professional CDL driver should be using a cellular telephone, even in a hands-free mode, while operating a CMV. Commercial drivers, as evidenced by their required training, medical certification, and Federal oversight, are held to a higher safety standard than are private drivers. These factors indicate that CMV drivers should be required to maintain a higher degree of safety with respect to cellular telephone use, as well. Therefore, the NTSB reclassified Safety Recommendation H-06-27 to the FMCSA “Closed—Superseded.” To supersede

¹⁴ E. Williams-Bergen and others, *Distracted Driving, What the Research Shows and What the States Can Do* (Governors Highway Safety Association, July 2011). The full text of the report is available at <<http://statehighwaysafety.org/html/publications/pdf/sfdist11.pdf>>, accessed July 22, 2011.

¹⁵ J.S. Hickman, R.J. Hanowski, and J. Bocanegra. *Distraction in Commercial Trucks and Buses: Assessing Prevalence and Risk in Conjunction With Crashes and Near-Crashes*. Report No. FMCSA-RRR-10-049 (September, 2010).

¹⁶ *Fleet Safety Benchmark Report Data Year 2009*, Network of Employers for Traffic Safety and SMS/FleetRisk Advisors (October 2010).

Safety Recommendation H-06-27 with a broader recommendation, the NTSB recommended that the FMCSA prohibit the use of both handheld and hands-free cellular telephones by all CDL holders while driving in commercial operations, except in emergencies. Similarly, the NTSB reclassifies Safety Recommendation H-06-28 to the 50 states and the District of Columbia “Closed—Superseded.” The NTSB recommends that the 50 states (including Kentucky) and the District of Columbia prohibit the use of both handheld and hands-free cellular telephones by all CDL holders while driving in commercial operations, except in emergencies.

Seat Belts on 15-Passenger Vans

All 15 seat positions in the Munfordville accident van were equipped with either lap belts or lap/shoulder belts. Of the 12 van occupants, only 4 were using safety restraints: a 4-month-old infant in a rearward-facing convertible child restraint in the second bench row directly behind the driver, an adult female occupant in the second row center seat position next to the infant, and two children, ages 3 and 5, in forward-facing child restraints in the left and center seat positions in the third bench row. Because of the severity and location of the intrusion into the interior, the 4-month-old infant and the adult seated in the second row sustained fatal head injuries. The two surviving children were not in the intrusion area and were strapped into child restraints held by seat belts, which kept them secure. The seats remained attached to the vehicle, and the children were harnessed by the child restraints throughout the accident sequence. The NTSB concluded that the two children who survived the accident did so because of the protection provided by their child restraint systems.

The remaining eight van occupants were unrestrained. For the two unrestrained occupants in the first row, intrusion into the occupant space was the primary cause of the fatal injuries. The six remaining unrestrained occupants were thrown from their seating compartments. When the van came to final rest, the unrestrained adult occupant who had been in the back (fifth) row and the two unrestrained adult occupants who had been in the fourth row seated in the left and center seat positions were all found located behind the right front bucket seat. The two unrestrained adult occupants who were seated in the right-side seat positions in the third and fourth rows were fully ejected from the van. The unrestrained occupant of the right front passenger seat in the first row was also partially ejected. The NTSB cannot determine whether the use of occupant restraints would have prevented the fatalities of all the unrestrained occupants, especially those in the area of intrusion, but restraint use would have prevented ejections and occupants’ motion out of their seating locations. In addition, restraint use might have allowed the occupants to “ride down” the collision as the vehicle decelerated throughout the accident sequence. The NTSB concluded that had all the occupants of the 15-passenger van been restrained, some injuries might have been mitigated and the likelihood of ejections would have been reduced.

Seat belt use rates among occupants of 15-passenger vans involved in fatal accidents are significantly lower than those associated with occupants of other passenger vehicles. During the 5-year period from 2003 to 2007, about 67 percent of all occupants of 15-passenger vans that

rolled over, resulting in fatal accidents, were unrestrained.¹⁷ Occupants who were killed were four times as likely to be unrestrained as restrained.¹⁸

The Commonwealth of Kentucky's occupant protection restraint law, Kentucky Revised Statute 189.125—*Requirements of use of seat belts, child restraint systems, and child booster seats*, limits its definition of motor vehicles covered by the law to those vehicles designed to carry 10 or fewer passengers. Such a narrow definition does not cover 15-passenger vans and similar vehicles that need seat restraints at least as much as smaller vehicles do. The NTSB concluded that the Kentucky seat belt statute is too restrictive in its definition of "vehicle" and does not afford safety benefits to occupants of 15-passenger vans. The NTSB recommends that the Commonwealth of Kentucky revise its seat belt law so that it applies to all vehicles designed to carry 15 or fewer passengers.

As a result of the investigation, the National Transportation Safety Board makes the following safety recommendations to the Commonwealth of Kentucky:

Prohibit the use of both handheld and hands-free cellular telephones by all commercial driver's license holders while operating a commercial vehicle, except in emergencies. (H-11-29) [This recommendation has been issued to all 50 states and the District of Columbia. It also supersedes Safety Recommendation H-06-28.]

Revise your seat belt law so that it applies to all vehicles designed to carry 15 or fewer passengers. (H-11-30)

The National Transportation Safety Board also reclassifies the following recommendation to the 50 states (including the Commonwealth of Kentucky) and the District of Columbia:

Enact legislation to prohibit cellular telephone use by commercial driver's license holders with a passenger-carrying or school bus endorsement, while driving under the authority of that endorsement, except in emergencies. (H-06-28)

Safety Recommendation H-06-28 is reclassified "Closed—Superseded."

The NTSB also issued safety recommendations to the Federal Highway Administration, the Federal Motor Carrier Safety Administration, the National Highway Traffic Safety Administration, the other 49 states and the District of Columbia, the American Association of State Highway and Transportation Officials, and the Governors Highway Safety Association.

In response to the recommendations in this letter, please refer to Safety Recommendations H-11-29 and -30 and Safety Recommendation H-06-28. If you would like to submit your response electronically rather than in hard copy, you may send it to the following

¹⁷ By comparison, for the same period, 55 percent of passenger vehicle occupants in fatal crashes were unrestrained. See *Traffic Safety Facts Research Note*, "Fatalities to Occupants of 15-Passenger Vans, 1997–2006," DOT HS 810 947 (Washington, DC: National Highway Traffic Safety Administration, May 2008).

¹⁸ For the 5-year period 2003–2007, out of the 1,367 occupants involved in such accidents, 212 of those killed were unrestrained and 716 of those surviving were unrestrained (68 percent unrestrained). See *Traffic Safety Facts Research Note*, "Fatalities to Occupants of 15-Passenger Vans, 2003–2007," DOT HS 811 143 (Washington, DC: National Highway Traffic Safety Administration, May 2009).

e-mail address: correspondence@ntsb.gov. If your response includes attachments that exceed 5 megabytes, please e-mail us asking for instructions on how to use our secure mailbox. To avoid confusion, please use only one method of submission (that is, do not submit both an electronic copy and a hard copy of the same response letter).

Chairman HERSMAN, Vice Chairman HART, and Members SUMWALT, ROSEKIND, and WEENER concurred in these recommendations.

[Original Signed]

By: Deborah A.P. Hersman
Chairman