



D16 The Deaths of Children in Moderate-Speed, Rear-End Impacts — Are They Unfortunate Accidents or Manslaughter? Discussions on the Ethical and the Moral Obligations of Manufacturers and Government to the Consumer

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The goal of this presentation is to demonstrate safety defects in vehicles and safer alternative designs. The effects of low costs resulting in predictable seat and belt failure in foreseeable survivable crashes and the effects on adult and child vehicle occupants are presented in tests and case studies.

This presentation will impact the forensic science community by informing attendees regarding the predictable dangers of unsafe seats, slackened belts, and intrusion of rear seat survival space, as well as by presenting associated forensic evidence.

The *Code of Ethics for Engineers*, published by the National Society of Professional Engineers, states in the first section entitled Fundamental Canons that “Engineers, in the fulfillment of their professional duties, shall: (1) Hold paramount the safety, health, and welfare of the public; (2) Perform services only in the areas of their competence; (3) Issue public statements only in an objective and truthful manner; (4) Act for each employer or client as faithful agents or trustees; (5) Avoid deceptive acts; and (6) Conduct themselves honorably, responsibly, ethically and lawfully so as to enhance the honor, reputation and usefulness of the profession.”

Is there any valid reason why the above Fundamental Canons should not be adhered to by the manufacturers of products, like automobiles, that are intended for use by trusting consumers? Likewise, is there any valid reason why government agents, who are assigned to regulate and insure the safety of such products so that they provide the utmost level of protection and safety to the trusting citizens who purchase them and use such products, should not also follow similar Fundamental Canons?

Even if unwritten, the ethical and moral practices following implicit adherence to such Fundamental Canons by manufacturers and the governing regulators should be obvious as far as understanding the importance of the obligations needed to provide the utmost protection and care for its trusting citizens, in particular the most innocent citizens such as the infants and children, who are often exposed to the dangers of defectively produced products that are added to the stream of commerce.

Unfortunately, there are several real-world examples of failure of manufacturers and government regulators to follow such Ethical Canons. This discussion will present one such example entitled, “The Death of 8-Month-Old JF: A Properly Seated and Restrained Infant in a Middle Row Who Was Fatally Injured in a Moderate-Speed Rear-Impact Crash to the Family Minivan, While All Other Occupants, Including the Third-Row Seated Occupants Located Closest to the Impact Escaped Without Serious Injury.”

In 1954, United States Air Force (USAF) tests proved that human tolerance to frontal impact was 46G. In 1958, a human volunteer in a crashworthy seat withstood 83G in a rear-impact test without loss of consciousness or significant injury. Static and dynamic testing from the 1960s to the present by researchers have consistently demonstrated the clear need for strong, crashworthy seats capable of absorbing predictable occupant crash loads.



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Weak, collapsing seats allowed by meaningless “safety standards” continue to defeat seat belts and demonstrate predictable life-threatening consequences to front and rear seat vehicle occupants in otherwise readily survivable crash tests and real-world collisions.

Based on the foregoing human tolerance testing, Federal Motor Vehicle Safety Standard (FMVSS) 210 requires vehicle seat belts to withstand 6,000 pounds static frontal loading. FMVSS 207 ignores the presence of a human in the seat and only requires 275 pounds of static load capacity, much less than the American Society for Testing and Materials (ASTM) safety standard for office chairs. There are no FMVSS regarding occupant protection for rear impacts or rollovers. This is why vehicle seat and seat belt failures predictably occur in minor rear crashes, resulting in severe injury and death to adults and rear-seated children. Yet automakers admit that stronger, crashworthy seats would cost “around a dollar.”

Since 1996, automakers and the National Highway Traffic Safety Administration (NHTSA) advised placing children in rear seats to avoid airbag hazards, while ignoring predictable seat, belt, and intrusion failures. Research published in 1997 by the Insurance Institute for Highway Safety proved that children are 61% more likely to be severely injured or killed in rear impacts than in other collisions. Despite more than 50 years of crash test research and petitions proving the dangers of weak vehicle seats that defeat safety belts, no action has been taken to prevent these hazards.

Seat Failure, Child Fatality, Rear Impact