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ROBSON FORENSIC PRESENTS

# Child Safety

Young children are at an increased risk in hazardous environments because of their reduced ability to identify dangers and take effective actions to avoid them. Older children naturally act in ways that for an adult might be considered unreasonable risk-taking. Preventing child injuries is often rooted in limiting their exposure to hazards from which they are unable to protect themselves.

Robson Forensic has 20 years of experience analyzing aspects of cases and claims that are unique to child injuries. Our sports, recreation, facility design and product experts are active in organizations promulgating standards and procedures aimed at protecting children from injury. Our human factors scientists are experienced in analyzing child perception, cognition and behavior. Our biomechanical experts address the physical causes of child injuries.

To contact us, call **800-813-6736**, or visit our website at [www.robsonforensic.com](http://www.robsonforensic.com).

**Robson Forensic**  
Engineers, Architects, Scientists & Fire Investigators

# Child Safety

## Child Safety areas of expertise:

- ◆ Injury Causation
- ◆ Supervision
- ◆ Product Safety/Toys
- ◆ Warnings/Labeling
- ◆ Sports and Recreation
- ◆ Retail Sites
- ◆ Playgrounds
- ◆ Pools, Waterparks
- ◆ Pedestrian Knock-Downs
- ◆ Attractive Nuisances
- ◆ Risk-Taking
- ◆ Child Transportation
- ◆ Car Seats

## Other expert areas:

- ◆ Biomechanics
- ◆ Human Factors
- ◆ Aquatics
- ◆ Sports and Recreation
- ◆ Product Liability
- ◆ Premises Liability
- ◆ Environmental Health and Safety
- ◆ Professional Liability
- ◆ Construction

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# Recent Case Highlights

## Defective bicycle reflector - Child struck by vehicle

A 12-year-old girl was struck by a car while riding her bicycle at night. Although the girl's bike was outfitted with reflectors, the driver of the car was unable to see her in time to avoid a collision. The bicycle manufacturer and retailer maintained that their products were neither defective nor causes of the crash.

We tested the effectiveness of the subject reflectors on bike rider visibility. We showed that the degree of protection afforded was actually small and that the reflectors failed to make bicycles reasonably conspicuous at night. The defendants then claimed that effectiveness of the reflectors was not an issue because children should know night-time riding is dangerous and that reflectors will not protect them if they choose to ride after dark. The defendants also claimed that children are well aware of these dangers.

To rebut those claims, our human factors experts conducted a national study of middle-school children to test their perception of bike safety and the risks of night-time riding. We showed that children of this age, in fact, do rely on reflectors making them conspicuous and safe at night. We used the study findings to show that reflectors mislead children to feel adequately protected.

We presented the study results and also the tests of reflector performance, and used them to demonstrate how the defendants provided an unsafe and deceptive product. Our reconstruction of the crash showed how this caused the girl to be struck and injured. The case settled before trial.

Dr. Vigilante presented our study results at the 2006 International Ergonomics Association Annual Meeting where it was published as a conference proceeding paper. For a copy of the study, contact Dr. Vigilante at [wwigilante@robsonforensic.com](mailto:wwigilante@robsonforensic.com).

## Fall from backyard play equipment

A child was injured in a fall from an overhead ladder at a backyard play apparatus. The playset had just been erected from a kit by her parents who had not installed any padding or mulch below the equipment. The girl broke her arm when she fell and struck the grass lawn below the equipment.

An expert hired by the girl's parents claimed there were defects in the equipment's overhead ladder and glider that caused her foot to become entangled in a metal chain, lose her balance and fall. We were asked to evaluate those claims and the safety of the equipment and to determine the causes of the child's injury.

We examined the apparatus along with the manufacturer's instructions and packaging the parents received when they purchased the kit. We showed that the equipment fully complied with the national consensus safety standards for home play equipment. In fact the manufacturer cited those standards in its product literature. We also found that the manufacturer's instructions were accurate, clear and complete.

Despite clear and prominent warnings the manufacturer included in the instruction manual, the parents failed to install any mulch or padding before they allowed children to use the equipment. We showed it was the parents' actions and not any defects in the equipment that was the actual cause of the girl's injury.

The case settled before trial with only a small contribution by the playset manufacturer.

## Retail display injury

A 3-year-old's eye was impaled on an unprotected display hook at a national shoe store chain. The company sold carded items like socks and laces hung on hooks that projected from free-standing display towers. They placed the towers in high-traffic areas of the store to maximize visibility and sales. We were asked to evaluate the safety of the store's display methods and equipment.

While many hook types were available, this retailer chose inexpensive hooks made of black wire, only about 3/16" diameter, with blunt cut ends. The hook ends were neither guarded nor covered. The displays presented the hooks at the level of child's eyes, and the last 3/4" inch of each hook was bent up towards a falling child's face. Since the hook ends are small, impact forces are concentrated in a small area, making puncture injuries the likely result.

The retailer mounted the hooks on displays that lacked recesses or sides to guard the hook ends, and they placed the displays in high traffic areas. The wire ends projected out from the display into paths of travel at the front and sides of the displays. These thin black wire ends were inconspicuous, even to adults and especially to children approaching from the side of the display.

The retailer, and the display and hook manufacturers claimed the display merely represented common retail practices, and they had no notice that it presented a danger to children. We cited nationally published standards for retail safety, notices by government agencies and the safety practices of other national retailers to demonstrate an established standard of care not to use displays with unprotected hook ends. We also presented more than 25 years of patents for safety hooks and publications by eye doctors to show that the hazards of these hooks to children was a well known national concern.

The case settled before trial.

## Pool safety – Slip, trip or dive

A teenage boy was rendered a quadriplegic when he struck his head on the bottom of an above ground swimming pool. The injury occurred during a beer party his girlfriend held while her parents were out of town. The boy claimed he hadn't intended to dive but that he slipped and fell headfirst into the pool while walking towards the pool. We were asked to evaluate his claims that defects of the carpeted deck platform and lack of warnings caused his injuries.

We tested the deck carpet and demonstrated that the deck surface was extremely slip resistant, even when wet. We then reconstructed the forces necessary for someone to have actually slipped on the carpet and showed the boy could only have slipped if he had been running with great speed, or while diving off the deck edge. Since the deck was only about four feet square, the boy could not have reasonably been running, so he had to have been diving.

Despite the boy's claims that he had neither ran nor dove, it was claimed that defects in the deck's warnings caused his injuries. The manufacturer sold the pool deck as a kit that was erected by the pool installer and then maintained by the homeowner. We showed that the components and instructions were clear and complete when it left the manufacturer's plant and that the original kit met the applicable standard for residential pools and warnings. We were also able to show that the installer had improperly modified the kit and had installed some of the rails upside down, causing the warnings to be hidden from view and that the homeowner maintained the deck with the warnings hidden for years before the boy was injured.

The case settled before trial with only a minimal contribution from the deck manufacturer.

# Featured Experts

## **Maria K. Bella, AFOIT, CPOI**

*Aquatics / Child Supervision / Sports and Recreation*

Maria has more than 30 years of professional experience in aquatics and sports and recreation, with particular expertise in child and youth athletics. Maria is an expert in sports facility risk management, aquatic safety, diving, training, pool operation, health and water safety. She has specialty experience in swim schools, therapy facilities, spray pads, and water parks.

In addition to her forensic consulting, Maria owns and operates companies that provide swimming instruction and exercise programs to children and adults and aquatic consulting services to colleges/universities, municipalities, school districts, general contractors, and the hotel/motel industry. She has expertise and experience in hospitality operations, child care management, exercise, health club and recreation facility planning and operations.

Maria is professionally certified by the American Red Cross, National Recreation and Park Association, National Swimming Pool Foundation, and United States Water Fitness Association. She is one of only four U.S. Master Aquatic Facility Operator Instructors and is a Certified Playground Safety Inspector.

## **Harry Ehrlich**

*Product Safety / Warnings / Human Factors*

Harry has worked as an Industrial Engineer since 1978, and has been a Robson Forensic expert for nearly 10 years. Throughout his career, he has concentrated on the design, manufacture, and safety of consumer products, with specific expertise in children's toys. Harry has also developed expertise in workplace safety, focusing on the design of industrial equipment, machine guarding, and OSHA compliance. Harry has been responsible for product development, product testing, and quality control, and has extensive experience in the area of compliance with safety standards. In addition, Harry applies his specialized knowledge in human factors to the development and evaluation of warnings and safety instructions.

Harry was a senior engineer at a nationally prominent toy manufacturer, and is a member of the American Society for Testing and Materials, where he sits on the F15.22 Subcommittee on Toy Safety and actively participates in the Standard Consumer Safety Specification on Toy Safety, an American National Standard.

## **William J. Vigilante Jr., Ph.D.**

*Human Factors / Ergonomics / Safety*

Dr. Vigilante combines more than 15 years of research experience in higher education and industry with 5 years in corporate America at IBM as a human factors engineer. As an expert with Robson Forensic, Dr. Vigilante applies his knowledge of human factors to issues relating to warning design and effectiveness, risk perception, vehicle crashes and driver performance, sports and recreational activities, product design, control and display design for machines and equipment, workplace safety and training, openness and obviousness, visual and auditory perception, and lighting and noise analysis.

Dr. Vigilante is currently serving as the elected program chair for the Human Factors and Ergonomics Society Safety Technical Group. He has written for publications such as Applied Ergonomics, Human Factors, and the International Journal of Industrial Ergonomics. Among his numerous presentations are those to the Human Factors and Ergonomics Society, the International Society for Occupational Ergonomics and Safety, and the International Ergonomics Association. He is the holder of several technical patents, and is a member of the Human Factors and Ergonomics Society (HFES), the Transportation Research Board, the American Society of Safety Engineers, and USA Hockey.