Toy-Related Deaths and Injuries
Calendar Year 2006

Risana T. Chowdhury
Division of Hazard Analysis
Directorate for Epidemiology
U.S. Consumer Product Safety Commission
Washington, DC 20207
December 2007

Table of Contents

Executive Summary

The U.S. Consumer Product Safety Commission staff has reports of 22 toy-related deaths that occurred in 2006 among children under age 15. Riding toys, including non-motorized scooters, and toy nails, pegs, and rubber balls were associated with most of the deaths. Incidents involving motor vehicles and airway obstruction from small toys were among the leading scenarios associated with these deaths.

There were an estimated 220,500 toy-related injuries, among all ages, treated in U.S. hospital emergency departments in 2006. An estimated 165,100 of these injuries were among children under age 15. Most of these injuries were lacerations, contusions, and abrasions; the head and face area was the most frequently affected area. Among toys that were specifically identified, riding toys (including non-motorized scooters) continued to be associated with the most injuries.

For toy-related deaths and injuries, it is important to note that many of the incidents were associated with a toy but not necessarily caused by the toy.

Introduction

This memorandum provides updated summary information on toy-related deaths occurring in 2004 and 2005 as well as detailed information on toy-related deaths occurring in 2006 that were reported to the U.S. Consumer Product Safety Commission (CPSC) staff. In addition, the memorandum provides estimated emergency department treated injuries for the 2006 calendar year and provides historic injury estimates in an appendix.

Toy-Related Deaths[1]

Table 1 presents toy-related fatalities among children under 15 years of age as reported to CPSC staff from 2004 to 2006. These fatalities were related to, but not necessarily caused by, toys. The data for 2004 and 2005 have been updated and may not agree with the tabulations in the original memos for those years[2]. Toys that were associated with two or more fatalities in at least one of the three years (2004-2006) are specifically listed in the rows of the table so as to highlight the toys (and the associated hazards) that have historically posed a greater danger to children. The last row of Table 1 records the number of other toys with a single reported fatality in the given year; this allows for the summing of the rows to produce the total number of reported fatalities for a given year.

Table 1: Toy-Related Deaths among Children under 15 by Type of Toy Involved; 2004 - 2006

Type of Toy (Hazard)	2004	2005	2006
TOTAL	**22**	**26**	**22**
Rubber balls/beads (airway obstruction, aspiration)	4	9	3
Tricycles (drowning, motor vehicle involvement)	4	4	2
Non-motorized scooters (motor vehicle involvement)	1	3	3
Balloons (airway obstruction, aspiration, strangulation from ribbon)	3	2	1
Stuffed toys (suffocation)	2		2
Other balls (blunt force, motor vehicle involvement, drowning when retrieving toy)	2		2
Toy nails/pegs (airway obstruction)			3
Powered riding toys (motor vehicle involvement, drowning, strangulation from clothing articles getting caught in toy)		1	3
Other toys with 1 reported fatality each	6	7	3

Source: In-Depth Investigations (INDP), Injury and Potential Injury Incidents (IPII), Death Certificates (DTHS), and the National Electronic Injury Surveillance System (NEISS) from 1/1/2006 to 12/31/2006; CPSC. Data was extracted in Sept, 2007.

Table 2 characterizes the number of reported fatalities in 2006 that were received by CPSC staff. The toy types and associated hazards involved in these reported fatalities are presented in descending order of the frequency of reports. There are three toys, each associated with a single reported death, which were classified as "Other toys" in the last row of Table 1.

[1] These fatalities do not represent a sample of known probability of selection. They may not include all the toy-related deaths that occurred during the time period, in part because at the time of data extraction, death certificate reporting was 97%, 85%, and 40% complete for 2004, 2005, and 2006, respectively.

[2] J. McDonald, "Toy-Related Deaths and Injuries, Calendar Year 2004", CPSC, October 2005, J. McDonald, "Toy-Related Deaths and Injuries, Calendar Year 2005", CPSC, October 2006.

Table 2: Reported Toy-Related Deaths among Children under 15 in Calendar Year 2006

Type of Toy	Deaths
TOTAL	**22**
Non-motorized scooters (3 motor vehicle involvement)	3
Toy nails/pegs (2 airway obstruction upon impaction, 1 aspiration)	3
Rubber balls (2 airway obstruction, 1 aspiration)	3
Powered riding toys: toy four-wheeler (drowning), toy all terrain vehicle (strangulation), toy truck (motor vehicle involvement)	3
Tricycles (2 drowning)	2
Stuffed toys (2 suffocation)	2
Balls, other (1 blunt force, 1 motor vehicle involvement)	2
Balloon (airway obstruction)	1
Rubber dart (aspiration)	1
Toy organizer (mechanical asphyxia)	1
Unspecified plastic toy (airway obstruction)	1

Source: INDP, IPII, DTHS, and NEISS from 1/1/2004 to 12/31/2006; CPSC. Data was extracted in Sept, 2007.

Victims of the 22 fatal incidents in 2006 ranged in age from three months to 13 years. Fifteen of the victims were males. Some of the scenario specific details in these fatalities are discussed below.

Non-Motorized Scooters

Three deaths occurred when children riding on non-motorized scooters either hit or were hit by an automobile. The children ranged in age from six to 13 years.

Toy Nails and Pegs

Three children died when they choked on or aspirated[3] plastic nails or pegs. One 19 month old boy died after choking on an oversized plastic nail from a toy workbench. A second child, a two year old boy, died when he fell while running with a toy nail and the nail got wedged in the back of his throat. Another two year old suddenly started coughing and stopped breathing. He died at the hospital where an autopsy showed a plastic peg from a toy had become lodged in his left bronchus.

Rubber Balls

Three children died when they either aspirated or choked on small rubber balls. Two of the children who choked on small rubber balls were about one year old while the third child was an autistic eight year old who aspirated a rubber ball.

Powered Riding Toys

There were three fatalities involving powered riding toys. A three year old boy was riding a battery-powered toy four-wheeler unsupervised and fell into a pond. A two year old girl was riding her battery-powered toy truck as her family walked along with her on a sidewalk when a speeding car hit and killed her. A third child, a six year old boy, died when his costume's cape became entangled in the axle of the gasoline-powered ATV (all terrain vehicle) that he was riding and strangled him.

[3] Aspiration is defined as taking foreign matter into the lungs.

Tricycles

There were two fatalities involving tricycles. A three year old female and a three year old male fell into their respective family's in-ground swimming pool while riding their tricycles and drowned.

Stuffed Toys

There were two deaths associated with stuffed toys. A six month old child fell off of the parent's bed into a pile of stuffed animals and suffocated. A three month old child fell off of a bed into a container of stuffed toys and suffocated.

Other Balls

There were two deaths from unspecified types of balls. One ball struck a 10 year old child on the head while she was playing at school; she died of inter-cerebral hemorrhage. A second fatality occurred when a 17 month old, who was playing with a ball, was run over when he followed the ball as it rolled away and ended up behind a truck.

Balloon

A nine month old female died of upper airway obstruction caused by an un-inflated balloon.

Rubber Dart

A 10 year old boy died from aspirating a rubber dart. He had been chewing on a toy gun dart when he told his school teacher that he was having trouble breathing and then collapsed. When transported to the emergency room, he was found to have a rubber dart in his right lung.

Toy Organizer

A nine month old child was found underneath a wooden toy organizer; he died of neck compression.

Unspecified Toy

A seven year old male was chewing on a plastic toy when a small part of the toy broke off and became lodged in his throat. He died of asphyxia.

Estimated Toy-Related Injuries[4]

In 2006 there were an estimated 220,500 toy-related injuries treated in U.S. hospital emergency departments. These injuries were related to, but not necessarily caused by, toys. The injury estimate for 2006 was significantly higher than the injury estimate in 2005 (p-value = 0.0160). None of the other comparisons of yearly estimates differed significantly. Moreover, there was no statistically significant trend observed in the injury estimates from 2002-2006 (p-value = 0.2781). These estimates are presented in Table 3. For more historical data, see the attached Appendix.

[4] The source of these data is the U.S. Consumer Product Safety Commission's National Electronic Injury Surveillance System (NEISS), which is based on a statistical sample of hospital emergency department treated injuries.

Table 3: Toy-Related Emergency Department Treated Injury Estimates; 2002 - 2006

Calendar Year	Estimated Injuries		
	All Ages	Under 15	Under 5
2002	212,400	165,200	72,400
2003	206,500	155,400	71,200
2004	210,300	161,100	72,800
2005	202,300	152,400	72,800
2006	220,500	165,100	78,400
2004-2006 Annual Average	211,000	159,500	74,700

Source: NEISS, CPSC. Estimates rounded to nearest 100.

Seventy-five percent (165,100) of the injuries for 2006 were to children under 15 years of age and 36 percent (78,400) were to children under five. Overall, males were involved in 57 percent of the toy-related injury incidents. Most of the victims (96 percent) were treated and released from the hospital.

Forty-four percent of the total estimated emergency department treated injuries (96,300) occurred to the head and face area, which includes head, face, eyeball, mouth and ear. Arms, from shoulder to finger, accounted for 25 percent of the injuries (55,000), while the leg and foot area accounted for 18 percent (40,200). The remaining 13 percent of the injuries (29,000) were distributed across other body parts or the body part was not reported. The individual body parts having the most estimated emergency department treated injuries overall were faces (44,300), heads (24,900), fingers (13,800) and mouths (13,300). Among the most frequent diagnoses, 28 percent of the total estimated emergency department injuries were diagnosed to be lacerations, 19 percent were contusions and abrasions, 14 percent were fractures and 12 percent were sprains and strains. The remaining 27 percent of the injuries were characterized by a host of other diagnoses such as foreign body, internal injury, ingestion, dislocation, concussion, and puncture injuries, among others.

In 2006, riding toys (including non-motorized scooters) continued to be associated with more emergency department treated injuries among all ages (59,600 or 27 percent) than any other category of toy. Non-motorized scooters were associated with 44,100 of the riding toy-related injuries. The toy category with the next highest number of injuries (8,500) was flying toys.

Table 4 presents the emergency department treated injury estimates among children less than 15 years of age. Along with total injuries, the percentage of estimated injuries associated with non-motorized scooters - the single toy associated with the most injuries - is also presented. In addition, the percentage of estimated injuries associated with a product category titled "Toys, Not Elsewhere Classified" is also shown. Many toys that cannot be placed under already established toy product codes are likely to be coded under this category. CPSC staff is planning a special study to be undertaken in 2008 in order to gain further insight into the toys that are currently in this category. In addition to identifying specific toy types involved in this category, the special study will facilitate the characterization of hazard patterns associated with these injuries. While there was a statistically significant increase from 2005 to 2006 (p-value = 0.0287), no significant trend was evident in the total estimated injuries among children under 15 years from 2002 through 2006 (p-value = 0.7146). There was a significant downward trend in the injuries associated with non-motorized scooters (p-value = 0.0175) while estimated injuries associated with "Toys, Not Elsewhere Classified" significantly increased from 2002 through 2006 (p-value = 0.0233).

Table 4: Toy-Related Emergency Department Treated Injury Estimates Children under 15; 2002 - 2006

Year	Estimated Injuries Among Children under 15 Years	Estimated Injuries (%) Associated with Non-Motorized Scooters	Estimated Injuries (%) Associated with "Toys, Not Elsewhere Classified"
2002	165,200	51,300 (31%)	58,900 (36%)
2003	155,400	43,900 (28%)	61,000 (39%)
2004	161,100	43,100 (27%)	67,000 (42%)
2005	152,400	33,300 (22%)	70,700 (46%)
2006	165,100	37,600 (23%)	75,600 (46%)

Source: NEISS, CPSC. Estimates rounded to nearest 100.

Appendix

The emergency department treated injury estimates since 1992 are presented in the table and chart below. Statistically significant upward trends were observed in the data for both the 15 year period 1992 - 2006 with p-value = 0.0038 and the 10 year period 1997 - 2006 with p-value = 0.005. This was brought about by a dramatic increase of incidents related to non-motorized scooters since 2000. However, as previously noted, there has been no increasing trend observed in the overall injury estimates over the last five years.

The increase in injuries from 1999 to 2000 was attributed primarily to a rise in injuries associated with non-motorized scooters (from 3,300 injuries in 1999 to 42,500 injuries in 2000)[5]. The same trend continued in 2001; the increase in overall injuries from 2000 to 2001 was directly correlated to the increase in injuries associated with non-motorized scooters (from 42,500 in 2000 to 99,800 in 2001)[6]. Since 2002, the proportion of injuries associated with non-motorized scooters has been decreasing. However, injuries associated with "Toys, Not Elsewhere Classified" have increased in proportion.

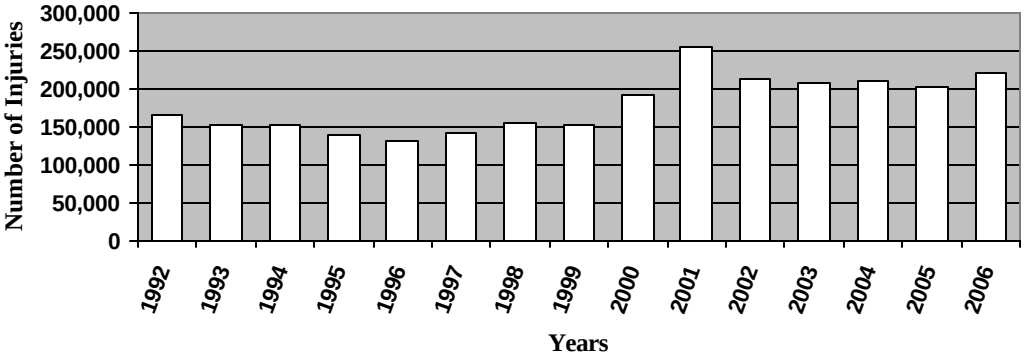
Toy-Related Emergency Department Treated Injury Estimates; 1992 - 2006

Calendar Year*	Estimated Injuries	95% Confidence Interval
1992	165,400	135,300 – 195,570
1993	152,800	124,900 – 180,600
1994	152,700	123,600 – 181,900
1995	138,700	111,200 – 166,200
1996	130,000	104,700 – 155,300
1997	141,300	125,100 – 157,600
1998	153,400	134,400 – 172,400
1999	152,600	133,370 – 171,900
2000	191,000	161,500 – 220,500
2001	255,100	221,100 – 289,100
2002	212,400	182,900 – 242,000
2003	206,700	177,600 – 235,800
2004	210,300	179,800 – 240,700
2005	202,300	175,100 – 229,500
2006	220,500	190,300 – 250,800

Source: NEISS, CPSC. Estimates rounded to nearest 100.
*Tabulated estimates with confidence intervals were produced in November 2007. The estimates for 1992-1995 are slightly lower than those previously reported while the estimate for 2003 is slightly higher in this report.

[5] J. McDonald, "Toy-Related Deaths and Injuries, Calendar Year 2000", CPSC, November 2001.
[6] J. McDonald, "Toy-Related Deaths and Injuries, Calendar Year 2001", CPSC, October 2002.

Toy-Related Emergency Department Treated Injury Estimates
1992 - 2006



Source: NEISS, CPSC. Estimates rounded to nearest 100.