Nursery Product-Related Injuries and Deaths Among Children under Age Five

Risana T. Chowdhury
Division of Hazard Analysis
Directorate for Epidemiology
U.S. Consumer Product Safety Commission
Washington, DC 20207
February 2009

Table of Contents

Executive Summary

In this report, the U.S. Consumer Product Safety Commission (CPSC) staff presents the latest available statistics on injuries and deaths associated with nursery products among children under age five. It is important to note that the incidents covered by this report were associated with a nursery product but not necessarily caused by the product[1].

- In 2007, there were an estimated 62,500 emergency department treated injuries associated with nursery products among children under age five.
- Infant carriers and car seat carriers, cribs/mattresses, high chairs, and strollers/carriages were associated with the most injuries. Falls were the leading cause of injury; the head was the most frequently injured body part.
- During the three-year period 2003-2005, CPSC staff has reports of 238 deaths - an annual average of 79 deaths - associated with nursery products among children under age five.
- Cribs/mattresses, baby baths/bath seats/bathinettes, and playpens/play yards were associated with most of the deaths.

[1] Not all of these incidents are addressable by an action the CPSC could take; however, it was not the purpose of this report to evaluate the addressability of the incidents, but rather to update estimates of emergency department treated injuries and to quantify the number of fatalities reported to CPSC staff.

Introduction

This report presents nursery product-related injury estimates for 2007[2], as well as comparison with historic injury estimates. Detailed information on deaths associated with nursery products that were reported to have occurred during the three-year period 2003-2005 is also presented.

Nursery Product-Related Injury Estimates

There were an estimated 62,500[3] nursery product-related injuries among children under the age of five that were treated in U.S. hospital emergency departments in 2007. Table 1 below shows the estimated injuries for the latest three years as well as the annual average for this three-year period. While there was a statistically significant increase in the estimated total injuries from 2005 to 2006 (p-value=0.0287), the decrease in estimated injuries from 2006 to 2007 was not statistically significant (p-value=0.3973). In addition, there was no trend observed over the 2005-2007 period. Annual estimates for 2003 through 2007 are presented in the attached Appendix.

The leading cause of all nursery product-related injuries reported through the National Electronic Injury Surveillance System (NEISS) for 2007 was falls. About 44% of the total injuries involved the head, which was the most frequently injured body part.

Table 1: Estimated Injuries to Children under Age Five Associated with Nursery Products 2005-2007

Calendar Year	Estimated Injuries
2005	59,800
2006	66,400
2007	62,500
2005-2007 Average	62,900

Source: NEISS, U.S. Consumer Product Safety Commission (CPSC).

Table 2 shows the breakdown of injury estimates by different product categories. As in 2006, there were more than 30 product codes associated with the injury estimates in 2007. Similar to 2006, the products have been aggregated into 13 product categories that align closely with voluntary standards development activities.

[2] The source of the injury estimates is the National Electronic Injury Surveillance System (NEISS), a statistically valid injury surveillance system. NEISS injury data are gathered from emergency departments of hospitals selected as a probability sample of all the U.S. hospitals with emergency departments. The surveillance data gathered from the sample hospitals enable the CPSC staff to make timely national estimates of the number of injuries associated with specific consumer products.

[3] This estimate has been adjusted to exclude diaper rash from the diaper code.

Table 2: Estimated Injuries in 2007 among Children under Age Five by Type of Nursery Product

PRODUCT CATEGORY	ESTIMATED INJURIES CY 2007
TOTAL	62,500
Infant Carriers and Car Seat Carriers (Excludes Motor Vehicle Incidents)	13,700
Cribs/Mattresses	11,000
High Chairs	9,600
Strollers/Carriages	9,300
Changing Tables	3,700
Baby Walkers/Jumpers/Exercisers	3,600
Baby Gates/Barriers	2,600
Baby Bouncer Seats	2,100
Playpens/Play Yards	1,600
Portable Baby Swings	---[4]
Bassinets/Cradles	---[4]
Baby Baths/Bath Seats/Bathinettes	---[4]
Other[5]	4,000

Source: NEISS, CPSC.
Note: The injury estimates may not add up to the total due to rounding and because two or more nursery products are sometimes associated with a single injury.

Deaths Associated with Nursery Products

While all of the Commission's databases are used to identify nursery product-related deaths, the death certificates database is the major source. At the time of the writing of this report, the Commission's death certificates database was at least 98% complete for 2005 and earlier years. Hence, the deaths reported here are from 2003 through 2005[6]. CPSC staff is aware of a total of 238 deaths - an annual average of 79 deaths - associated with nursery products during this time period. About 38 percent (90 total or about 30 annually) were associated with cribs/mattresses; baby baths/bath seats/bathinettes accounted for a total of 39 deaths (an annual average of 13 deaths) and playpens/play yards accounted for a total of 32 deaths (an annual average of 11 deaths). The remaining 77 fatalities were associated with a range of products including bassinets/cradles, infant carriers and car seat carriers, strollers/carriages, and bouncer seats, among others.

For certain incident scenarios where direct product involvement or failure was not evident, consultation with engineering staff was necessary to determine the most appropriate product category for the placement of the fatalities. Details of the methodology are provided in the attached Appendix.

Table 3 provides a summary of nursery product-related deaths (total and average annual) for 2003 through 2005, along with annual average deaths for 2002 through 2004 for comparison purposes.

[4] The injury estimates are not presented since they fail to meet standard reporting criteria for NEISS that the estimated number of injuries be 1,200 or higher, sample size be 20 or larger, and coefficient of variation be less than 33%.
[5] This category includes baby bottles/nipples, bottle warmers, pacifiers/teething rings, diapers excluding diaper-rash cases, rattles, crib mobiles/gyms, night lights, potty chairs/training seats, baby harnesses, and safety pins.
[6] These deaths do not constitute a statistical sample of known probability and do not include all nursery product-related deaths that occurred during the 2003-2005 period. They do, however, provide a minimum figure for deaths associated with nursery products during that time.

Table 3: Deaths among Children under Age Five by Type of Nursery Product

PRODUCT CATEGORY	TOTAL DEATHS 2003-2005	AVERAGE ANNUAL DEATHS 2003-2005	AVERAGE ANNUAL DEATHS 2002-2004
TOTAL	238	79	80
Cribs/Mattresses	90	30	32
Baby Baths/Bath Seats/Bathinettes	39	13	12
Playpens/Play Yards	32	11	11
Bassinets/Cradles	25	8	9
Infant Carriers and Car Seat Carriers (Excludes Motor Vehicle Incidents)	20	7	6
Strollers/Carriages	10	3	3
Baby Bouncer Seats	4	1	2
Portable Baby Swings	4	1	1
Baby Walkers/Jumpers/Exercisers	3	1	1
Baby Gates/Barriers	3	1	< 1
High Chairs	1	< 1	1
Changing Tables	1	< 1	< 1
Other[7]	6	2	2

Source: In-depth Investigation (INDP), Injury and Potential Injury Incident (IPII), Death Certificate (DTHS) and NEISS from 2003 to 2005 for reported deaths; CPSC.
Note: The average annual deaths do not add up to the total due to rounding.

A closer look at the top five categories with the largest numbers of deaths provided some insight into the hazard patterns.

Ninety deaths were associated with cribs/mattresses between 2003 and 2005. The majority of these deaths were attributed to the presence of bedding in the crib which often led to asphyxiation of the infant. Approximately 30% of the deaths resulted from a range of hazards such as incomplete assembly; missing, broken, or non-functioning components; or ineffective repairs made to the crib. Some of these incidents occurred on older, re-assembled or second hand cribs. Strangulations resulting from hazardous surroundings near the crib, such as window blind cords, curtain tie backs, baby monitor cords, humidifier cords, and pacifier ribbons, were the next most common cause of crib fatalities.

Baby baths/bath seats/bathinettes were associated with 39 deaths between 2003 and 2005. All of the deaths occurred when parents or caregivers left the infant unattended in the tub, sometimes with an older sibling in the tub. Many of these incidents described infants having slipped out of bath seats, fallen out of baby tubs, or tipped forward or sideways into the water.

There were 32 deaths reported in playpens/play yards between 2003 and 2005. The majority of the deaths were due to positional asphyxia from wedging between the mattress and the side of the product and strangulations or suffocations resulting from the presence of a hazardous environment in or around the product. More than half of the wedging incidents involved the modification of the sleep area through the addition of extra mattresses and/or cushions. Suffocation on bedding accounted for the next largest number of fatalities involving this product.

The next product category is bassinets/cradles. There were 25 deaths in this category during 2003-2005, the majority of which were attributed to bedding. More than half of the suffocation deaths on bedding

[7] This category consists of portable youth bed rails, coded under product code 4075.

involved pillows. Entrapment or wedging between the mattress and the bassinet frame was the next most common cause of bassinet-related deaths.

Finally, there were 20 deaths identified during 2003-2005 that were associated with infant carriers and car seat carriers. The majority of these were strangulation deaths resulting from infants becoming entangled in the restraint straps while the second most common scenario involved the carriers tipping over, many of which were placed on soft surfaces.

The hazard patterns above indicate that while a nursery product was involved, many of the fatalities were not directly caused by failures in the product.

Appendix

Methodology

Injuries:

- Database: National Electronic Injury Surveillance System (NEISS) from 01/01/2007 through 12/31/2007.
- Product codes: 1500-1599.
- Age of victim: 0 through 4 years.
- Screened to ensure that no motor vehicle incidents were included.
- All cases of diaper rash were excluded.
- All cases associated with in-scope product codes were included regardless of the severity of the injury.
- After adding additional years of data (2003 and 2004), statistical tests were performed to determine if any trends exist. While there was a significant increase from 2005 to 2006 (p-value=0.0287), there was no statistically significant trend observed from 2003 to 2007 (p-value=0.6231).

Deaths:

- Databases: National Electronic Injury Surveillance System (NEISS), Injury or Potential Injury Incidents (IPII), In-Depth Investigations (INDP), and Death Certificates (DTHS) from 01/01/2003 through 12/31/2005.
- Product codes: 1500-1558; 4075 for *portable youth bed rails*.
- Age of victim: 0 through 4 years.
- Screened to ensure no duplicates were included; all records of the same incident that were reported through different data sources were associated.
- Miscoded products were correctly recoded. A common example was a playpen miscoded as a crib.
- Careful screening was performed to determine if cases were in or out of scope. An example of an out of scope case would be an incident where no direct or circumstantial information was available to determine how the death occurred or if Sudden Infant Death Syndrome (SIDS) was mentioned in the official report.

  In some cases that were considered in scope, the death was not directly associated with the nursery product. However, hazards in the vicinity of the product, often inadvertently created by caregivers, led to the deaths. For instance, soft bedding inside the crib, cords hanging from window blinds or baby monitors, and curtain tie-backs within easy reach from the crib, have led to some deaths. These deaths have been included with crib deaths. Similarly, placement of toys and other soft clothing/bedding inside the playpen, alteration of the setup of the playpen for easy access to the child, or placement of objects on top of the playpen to keep the child inside, have led to some fatalities. These have been counted with playpen deaths. While these deaths were not strictly due to product failure, they highlight some common misconceptions and oversights in the usage of these products and were therefore included.

  One report to CPSC of a nursery product-related incident that occurred outside of the U.S.A. was excluded.
- Deaths involving certain products were grouped together. For instance, baby baths and bathinettes were counted together with bath seats; exercisers were counted with baby walkers and jumpers; and as noted in the previous bullet, any soft-bedding-in-crib incidents were counted with cribs while soft-bedding-in-playpen incidents were counted with playpens.

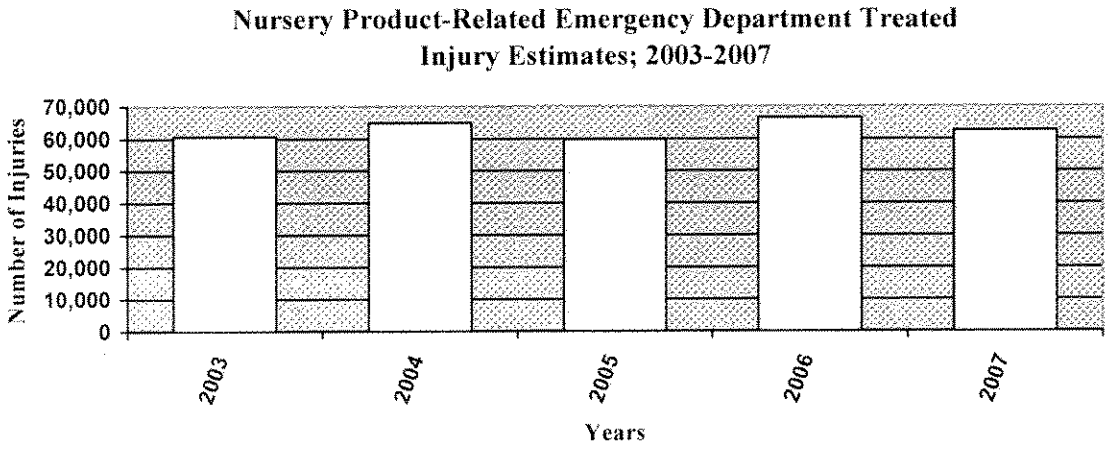
Historical Data

Injury estimates for the latest five available years are presented in the table and chart below. Statistical tests indicate no significant trend in the data over the five year period 2003-2007 (p-value=0.6231).

Nursery Product-Related Emergency Department Treated Injury Estimates; 2003-2007

Calendar Year	Estimated Injuries	95% Confidence Interval
2003	60,700	50,500-70,900
2004	64,900	52,000-77,800
2005	59,800	48,500-71,100
2006	66,400	53,000-79,800
2007	62,500	51,400-73,600

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



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