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
4330 East West Highway
Bethesda, MD 20814
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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 years old.

Emergency Department Treated Injuries:

- In 2009, there were an estimated 77,300 emergency department-treated injuries associated with nursery products among children under age five.

- Infant carriers and car seat carriers, cribs/mattresses, strollers/carriages, and high chairs were associated with about 73 percent of the injuries. Falls were the leading cause of injury, and the head was the most frequently injured body part.

- Annual injury estimates associated with nursery products do not display a statistically significant trend over the five-year period 2005–2009.

Fatalities:

- During the three-year period 2005–2007, CPSC staff has reports of 265 deaths—an annual average of 88 deaths—associated with nursery products among children under age five.

- Cribs/mattresses, bassinets/cradles, baby baths/bath seats/bathinettes, playpens/play yards, and infant carriers and car seat carriers were associated with 90 percent of the fatalities reported.

- Causes of death ranged from positional asphyxia and strangulation to drowning. In some instances, the fatalities were attributed to the product, while in other cases, the fatalities resulted from a hazardous environment in or around the product.[1]

Note:

During 2010, for toddler beds, bassinets/cradles, and cribs, CPSC staff evaluated the incidents characterized in this report, along with previously and subsequently reported incidents, to assess the efficacy of voluntary standards. These evaluations supported the Commission's votes to issue notices of proposed rulemaking (NPRs) for toddler beds, bassinets/cradles, and cribs as required in section 104 of the Consumer Product Safety Improvement Act (CPSIA) of 2008. The agency is scheduled to vote on a final rule establishing new full-size and non-full-size crib standards in 2010. Staff evaluations of standards for portable youth bedrails, infant swings, play yards, and bedside sleepers are underway. These evaluations contributed to the CPSC's 2010 Safe Sleep campaign, which is aimed at helping parents and caregivers create the safest sleep environment possible for young children - www.cpsc.gov/info/cribs/index.html.

[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 2009,[2] as well as comparisons with historic injury estimates. Detailed information on deaths associated with nursery products that were reported to have occurred during the three-year period 2005–2007, is also presented.

Nursery Product-Related Injury Estimates

There were an estimated 77,300 nursery product-related injuries among children under the age of five years old that were treated in U.S. hospital emergency departments in 2009. 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 significant increase in the injury estimate in 2009, compared to the previous two years, no statistically significant trend was observed over the 2007–2009 period. Annual estimates for 2005 through 2009 are presented in the attached Appendix.

As in previous years, the leading cause of all nursery product-related injuries reported through the National Electronic Injury Surveillance System (NEISS) for 2009 was falls. About 54 percent 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 2007-2009

Calendar Year	Estimated Injuries
2007	62,500
2008	63,700
2009	77,300
2007-2009 Average	67,800

Source: NEISS, U.S. Consumer Product Safety Commission (CPSC). Estimates rounded to nearest 100.

Table 2 shows the breakdown of injury estimates by different product categories. As in 2008, there were more than 30 product codes associated with the injury estimates in 2009. Similar to 2008, 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 enables the CPSC staff to make timely national estimates of the number of injuries associated with specific consumer products.

Table 2: Estimated Injuries in 2009 among Children under Age Five by Type of Nursery Product

PRODUCT CATEGORY	ESTIMATED INJURIES CY 2009
TOTAL	77,300
Infant Carriers and Car Seat Carriers (Excludes Motor Vehicle Incidents)	15,800
Cribs/Mattresses	14,600
Strollers/Carriages	14,000
High Chairs	11,700
Changing Tables	4,500
Baby Walkers/Jumpers/Exercisers	3,700
Baby Bouncer Seats	3,600
Baby Gates/Barriers	1,900
Playpens/Play Yards	1,900
Baby Bottles/Warmers/Sterilizers	1,600
Portable Baby Swings	1,600
Bassinets/Cradles	---[3]
Baby Baths/Bath Seats/Bathinettes	---[3]
Other[4]	3,100

Source: NEISS, CPSC. Estimates rounded to nearest 100.
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 85 percent complete for 2007, and earlier years. Hence, the deaths reported here are from 2005 through 2007.[5] CPSC staff is aware of a total of 265 deaths—an annual average of 88 deaths—associated with nursery products during this time period. About 40 percent (107 total or about 36 annually) were associated with cribs/mattresses. Bassinets/cradles accounted for a total of 43 deaths (an annual average of 14 deaths). Baby baths/bath seats/bathinettes accounted for a total of 32 deaths (an annual average of 11 deaths); playpens/play yards accounted for a total of 29 deaths (an annual average of 10 deaths); and infant carriers and car seat carriers accounted for 27 deaths (an annual average of nine deaths). The remaining 27 fatalities were associated with a range of products, including walkers/jumpers, infant gates, and highchairs, among others.

For certain incident scenarios, where direct product involvement or failure was not evident, consultation with staff from the Engineering Sciences directorate was necessary to determine the most appropriate product category for the placement of the fatalities. In addition, staff from the Health Sciences directorate reviewed the hazard scenarios in fatalities involving cribs, play yards, and bassinets. Details of the methodology are provided in the attached Appendix.

[3] The injury estimates are not presented because 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 percent.
[4] This category includes pacifiers/teething rings, diapers excluding diaper rash cases, diaper fasteners, diaper pails, infant shoelace fasteners, baby harnesses, rattles, night lights, potty chairs/training seats, and safety pins.
[5] These deaths do not constitute a statistical sample of known probability and do not include all nursery product-related deaths that occurred during the 2005–2007 period. They do, however, provide a minimum figure for deaths associated with nursery products during that time.

Table 3 provides a summary of nursery product-related deaths (total and average annual) for 2005 through 2007, along with annual average deaths for 2004 through 2006, for comparison purposes. In past annual reports, toddler bed-related fatalities had been excluded because they were not considered by CPSC staff to be nursery products. However, because section 104 of CPSIA includes toddler beds, toddler bed-related fatalities have been included in the data presented in Table 3 under the "Other" category.

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

PRODUCT CATEGORY	TOTAL DEATHS 2005-2007	AVERAGE ANNUAL DEATHS 2005-2007	AVERAGE ANNUAL DEATHS 2004-2006
TOTAL	265	88	83*
Cribs/Mattresses	107	36	31
Bassinets/Cradles	43	14	11
Baby Baths/Bath Seats/Bathinettes	32	11	12
Playpens/Play Yards	29	10	11
Infant Carriers and Car Seat Carriers (Excludes Motor Vehicle Incidents)	27	9	8
Baby Walkers/Jumpers/Exercisers	5	2	2
Baby Gates/Barriers	4	1	< 1
High Chairs	4	1	< 1
Baby Bouncer Seats	3	1	1
Strollers/Carriages	2	1	3
Changing Tables	1	< 1	< 1
Portable Baby Swings	1	< 1	< 1
Other[6]	7	2	2*

Source: In-depth Investigation (INDP), Injury and Potential Injury Incident (IPII), Death Certificate (DTHS) and NEISS from 2005 to 2007 for reported deaths; CPSC.
Note: The average annual deaths do not add up to the total due to rounding.
*Reflects the addition of two deaths since the last report; one involved a toddler bed in 2005, while the other involved an inflatable children's bed (which was coded as a toddler bed in the CPSC databases) in 2006. The average annual deaths for the "Other" category, however, remains unchanged from the prior report, due to the effect of rounding.

A closer look at the top five categories with the largest numbers of deaths provided some insight into the hazard patterns. These five product categories were associated with 90 percent of the reported fatalities.

Between 2005 and 2007, 107 deaths were associated with cribs/mattresses. The majority of these deaths were attributed to the presence of extra bedding in the crib, which led to asphyxiation of the infant. Approximately 37 percent of the deaths resulted from a range of hazards, including incomplete assembly; missing, broken, or nonfunctioning components; or ineffective crib repairs. Some of these incidents occurred on older, reassembled, recalled, or secondhand cribs. The next most common cause of crib fatalities involved the presence of hazardous surroundings in and around the crib. Examples include: wedging entrapments between extra mattresses/cushions and the crib frame; strangulations resulting from nearby cords or strings; and suffocations from plastic bags located in close proximity to the crib.

[6] This category consists of two deaths due to positional asphyxia, one on a diaper bag (product code 1512) and one in a diaper pail (product code 1528); two entrapment deaths, with the infant getting wedged between a mattress and portable youth bed rail (product code 4075) in both cases; and three deaths on toddler/children's beds. The first of these three was due to entrapment between the side rail and the footboard of a toddler bed; the second was an asphyxiation death in the corner of an inflatable children's bed; and the third was due to entrapment between the side rails of an upside-down toddler bed.

There were 43 deaths reported in bassinets/cradles between 2005 and 2007, the majority of which were attributed to extra bedding. Nearly half of the suffocation deaths from bedding involved pillows. The next most common cause of bassinet-related deaths involved entrapment or wedging between the mattress and the bassinet frame.

Baby baths/bath seats/bathinettes were associated with 32 deaths between 2005 and 2007. All of the deaths occurred when parent or caregiver attention was diverted away from the infant while the infant was in a bath tub. In the vast majority of the incidents, the infant was left unattended in the tub, sometimes with an older sibling in the tub. Many of these incidents described infants slipping out of bath seats, falling out of baby bath tubs, or tipping forward or sideways into the water.

Playpens/play yards were associated with 29 deaths between 2005 and 2007. Most of the deaths were due to positional asphyxia where the infant became wedged between the mattress and the side of the product or strangled or suffocated as a result of the presence of a hazardous environment in or around the product. Suffocation on bedding accounted for the next largest number of fatalities.

Finally, there were 27 deaths identified during 2005–2007 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 tipping over of carriers, many of which were placed on nonrigid surfaces.

Since November 1, 2007, CPSC staff has been monitoring closely incoming incident reports on cribs, bassinets, and play yards in a pilot project known as the Early Warning System. Because of this project, more than the usual number of incidents have been followed up through in-depth investigations; and many product-related recalls were issued. This may have generated a heightened public awareness regarding sleep-related nursery products, which may be reflected in the increased incident reporting to the CPSC. The relatively high number of crib- and bassinet-related fatal incident reports from 2007 (presented in this annual report), may also be a result of this. Reporting is ongoing; therefore, the number of reported fatalities may change in the future.

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 01/01/2009 through 12/31/2009.
- 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 (2005 and 2006), statistical tests were performed to determine if any trends exist. While there were significant increases between consecutive years for some of the years (2005 to 2006: p-value=0.0310, and 2008 to 2009: p-value=0.0003), there was no statistically significant trend observed from 2005 to 2009 (p-value=0.2117).

Deaths:

- Databases: National Electronic Injury Surveillance System (NEISS), Injury or Potential Injury Incidents (IPII), In-Depth Investigations (INDP), and Death Certificates (DTHS) from 01/01/2005 through 12/31/2007.

  Information available from NEISS, IPII, and DTHS on incidents which have not been investigated is often incomplete or provides insufficient information on the hazard scenario. If these incident reports are investigated at a later date, or, as other associated reports come in, the initial information is corroborated or contradicted, the fatality numbers reported may change.
- Product codes: 1500–1558; 4074 for *children's chairs*, 4075 for *portable youth bed rails*, and 4082 for *toddler beds* (there was no specific product code for identifying *toddler beds* prior to 2005).
- Age of victim: 0 through 4 years old.
- 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-scope 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, extra bedding inside the crib, cords hanging from window blinds or baby monitors, and curtain tiebacks within easy reach of the crib, have led to some deaths. These deaths have been included with crib deaths. Similarly, clutter and extra 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 due strictly to product failure, they highlight some common misconceptions and oversights in the usage of these products and therefore, were included.

Any report to the CPSC of a nursery product-related incident that occurred outside of the United States 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 above, any extra-bedding-in-crib incidents were counted with cribs, while extra-bedding-in-playpen incidents were counted with playpens.

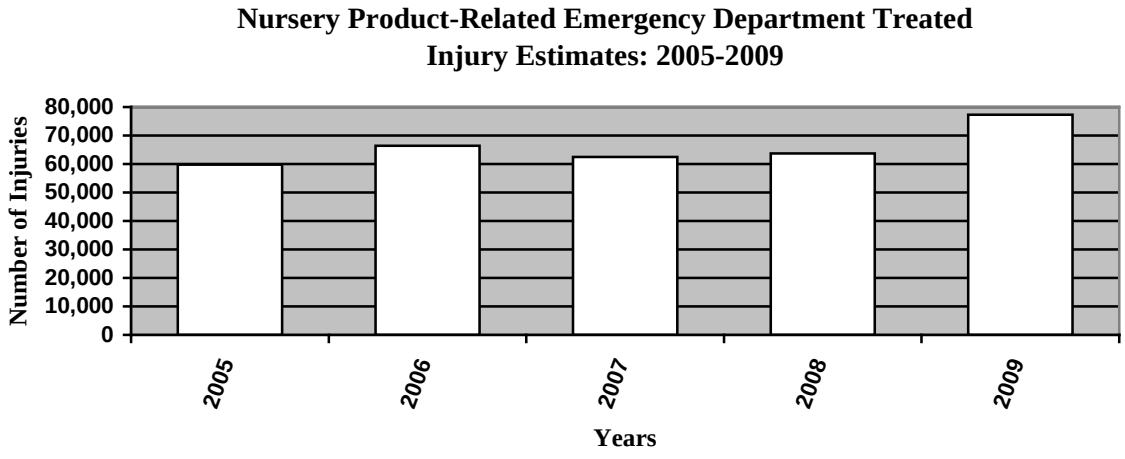
Historical Data

Injury estimates for the last five years, for which data is available, are presented in the table and chart below. Statistical tests indicate no significant trend in the data over the five-year period 2005–2009 (p-value=0.2117).

Nursery Product-Related Emergency Department Treated Injury Estimates: 2005–2009

Calendar Year	Estimated Injuries	95% Confidence Interval
2005	59,800	48,500-71,100
2006	66,400	53,000-79,800
2007	62,500	51,400-73,600
2008	63,700	50,000-77,400
2009	77,300	60,100-94,500

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



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