Injuries and Deaths Associated with Nursery Products Among Children Younger than Age Five

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Executive Summary

In this report, U.S. Consumer Product Safety Commission (CPSC or Commission) staff presents the latest available statistics on injuries and deaths associated with nursery products among children younger than the age of 5 years.

Emergency Department-Treated Injuries:

- In 2011, there were an estimated 74,100 emergency department-treated injuries associated with, but not necessarily caused by, nursery products among children younger than age 5.
- Infant carriers/car seat carriers, strollers/carriages, cribs/mattresses, and high chairs were associated with about 67 percent of the injuries. Falls were the leading cause of injury, and the head was the body part injured most frequently. Internal organ injuries, contusions/abrasions, and lacerations accounted for 74 percent of the injuries.
- Annual estimates of injuries associated with nursery products do not display a statistically significant trend over the 5-year period 2007–2011.

Fatalities:

- For the 3-year period 2007–2009, CPSC staff has reports of 341 deaths—an annual average of 114 deaths—associated with, but not necessarily caused by, nursery products among children younger than age 5.
- Cribs/mattresses, bassinets/cradles, playpens/play yards, infant carriers/car seat carriers, and baby baths/bath seats/bathinettes were associated with 89 percent of the fatalities reported.
- Causes of death included positional asphyxia, strangulation, and drowning, among others. 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 2012, for many durable infant and toddler products, 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 bassinets, bedside sleepers, and handheld carriers, as required by the Danny Keysar Child Product Safety Notification Act, section 104 of the Consumer Product Safety Improvement Act (CPSIA) of 2008. In 2012, the agency also voted on final rules establishing a new play yard standard and a new portable infant swing standard. In addition, new federal standards on portable bed rails went into effect as of August 29, 2012. Staff evaluations of voluntary standards for soft infant carriers, strollers, and slings are under way. Many of these evaluations contribute to the CPSC's 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 2011,[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 3-year period from 2007 to 2009, is also presented.

Nursery Product-Related Emergency Department-Treated Injury Estimates

There were an estimated 74,100 nursery product-related injuries among children younger than 5 years old that were treated in U.S. hospital emergency departments in 2011. Table 1 shows the estimated injuries for the latest 3 years, as well as the annual average for this 3-year period. While there was a significant decrease in the injury estimate from 2010 to 2011, no statistically significant trend was observed over the 2009 to 2011 period. Annual estimates for 2007 through 2011 are presented in the attached Appendix.

As in previous years, falls were the leading cause of all nursery product-related injuries reported through the National Electronic Injury Surveillance System (NEISS) for 2011. More than 51 percent of the total injuries involved the head, which was the body part injured most frequently. Internal organ injuries, contusions/abrasions, and lacerations accounted for 74 percent of the injuries.

Table 1: Estimated Emergency Department-Treated Injuries to Children Younger than Age Five Associated with Nursery Products
2009–2011

Calendar Year	Estimated Emergency Department-Treated Injuries
2009	77,300
2010	81,700
2011	74,100
2009–2011 Average	77,700

Source: NEISS, U.S. Consumer Product Safety Commission (CPSC). Estimates are rounded to the nearest 100; the average calculation is based on unrounded injury estimates.

Table 2 shows the breakdown of injury estimates by different product categories for 2011, along with the injury estimates for 2010, for comparison purposes. As in 2010,[3] there were more than 30 product codes associated with the injury estimates in 2011. Similar to 2010, the associated products have been aggregated into 13 product categories that align closely with voluntary standards development activities. The top four categories, infant carriers/car seat carriers, strollers/carriages, cribs/mattresses, and high chairs, were associated with about 67 percent of the injuries.

Overall, there was a significant decrease in the injury estimate from 2010 to 2011. Among the observed changes in the emergency department-treated injury estimates in specific product categories between the 2

[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 the 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 CPSC staff to make timely national estimates of the number of injuries associated with specific consumer products.

[3] R. Chowdhury, "Nursery Product-Related Injuries and Deaths Among Children Under Age Five," CPSC, December 2011, http://www.cpsc.gov/library/foia/foia12/os/nursery10.pdf.

years, there was a decrease in almost all categories, except in stroller injuries (which increased from 12,800 to 12,900) and injuries in baby bouncer seats (which increased from 3,200 to 4,200). Neither of these increases was statistically significant.

Table 2: Estimated Emergency Department-Treated Injuries to Children Younger than Age Five by Type of Nursery Product

PRODUCT CATEGORY	ESTIMATED EMERGENCY DEPARTMENT TREATED INJURIES	
	2011	2010
TOTAL	74,100	81,700
Infant Carriers/Car Seat Carriers (Excludes Motor Vehicle Incidents)	13,200	16,900
Strollers/Carriages	12,900	12,800
Cribs/Mattresses	12,200	14,500
High Chairs	11,300	11,500
Baby Bouncer Seats	4,200	3,200
Changing Tables	3,900	4,300
Baby Walkers/Jumpers/Exercisers	3,300	4,000
Baby Gates/Barriers	2,800	3,500
Playpens/Play Yards	2,200	2,300
Portable Baby Swings	2,100	2,300
Baby Bottles/Warmers/Sterilizers	1,800	1,900
Bassinets/Cradles	---[4]	---[4]
Baby Baths/Bath Seats/Bathinettes	---[4]	---[4]
Other[5]	3,500	4,600

Source: NEISS, CPSC. Estimates are rounded to the 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. As this report was being written, the Commission's death certificates database was at least 93 percent complete for 2009, and earlier years. Hence, the deaths reported here are from 2007 through 2009.[6]

CPSC staff is aware of a total of 341 reported deaths—an annual average of 114 deaths—associated with nursery products during this time period. About 43 percent (148 total or about 49 annually) were associated with cribs/mattresses. Bassinets/cradles accounted for 18 percent (61 total or an annual average of 20) of the reported deaths. Playpens/play yards and infant carriers/car seat carriers each were associated with 11 percent (a total of 37 or an annual average of 12) of the reported deaths; and baby baths/bath seats/bathinettes accounted for 6 percent (a total of 22 or an annual average of 7) of the reported deaths. The remaining 36 reported fatalities were associated with a range of products, including bouncer seats, highchairs, and baby gates/barriers, among others.

[4] 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, the sample size 20 or larger, and the coefficient of variation less than 33 percent.
[5] In 2011, the "Other" category included: pacifiers/teething rings, diapers (excluding diaper rash cases), diaper pails, rattles, night lights, crib mobiles, potty chairs/training seats, and safety pins. In 2010, this category included two additional products: diaper fasteners and baby harnesses.
[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 2007–2009 period. However, they do provide a minimum number for deaths associated with nursery products during that time.

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

Table 3 provides a summary of nursery product-related reported deaths (total and average annual) for 2007 through 2009, along with comparable data for 2006 through 2008, for comparison purposes. Reporting is ongoing, and the number of reported fatalities may change in the future. Moreover, these reports are anecdotal and do not constitute a statistical sample or a complete count of nursery product-related deaths. As such, CPSC staff strongly discourages the drawing of any inferences based on the year-to-year increase or decrease shown in the reported data.

Table 3: Reported Deaths among Children Younger than Age Five Years by Type of Nursery Product

PRODUCT CATEGORY	TOTAL DEATHS		AVERAGE ANNUAL DEATHS	
	2007-2009	2006-2008	2007-2009	2006-2008
TOTAL	341	304	114	101
Cribs/Mattresses	148	124	49	41
Bassinets/Cradles	61	57	20	19
Playpens/Play Yards	37	35	12	12
Infant Carriers/Car Seat Carriers (Excludes Motor Vehicle Incidents)	37	30	12	10
Baby Baths/Bath Seats/Bathinettes	22	29	7	10
Baby Bouncer Seats	5	4	2	1
Portable Baby Swings	4	3	1	1
High Chairs	4	4	1	1
Baby Gates/Barriers	4	2	1	1
Baby Walkers/Jumpers/Exercisers	3	4	1	1
Changing Tables	3	3	1	1
Strollers/Carriages	3	2	1	1
Other[7]	10	7	3	2

Source: CPSC epidemiological databases: In-depth Investigations (INDP), Injury and Potential Injury Incidents (IPII), Death Certificates (DTHS), and NEISS from 2007 to 2009 for reported deaths.
Note: The average annual deaths do not add up to the total due to rounding.

[7] Of the 10 deaths in this category in 2007–2009, two involved a product coded as a toddler bed (product code 4082). One of these was an entrapment between the side rails of an upside-down toddler bed; and one was a strangulation death on a bumper pad used around a toddler bed. There were two suffocation deaths involving a cloth-covered, shared sleep product; in both cases, the product was placed on a couch. There were two asphyxiation deaths in infant hammocks. In both cases, the infant was found face down in the bedding. Additionally, there was one infant who died from getting wedged between a mattress and a portable youth bed rail (product code 4075); one death resulted from choking on the nipple of a baby bottle (product code 1509); one death was due to a pacifier getting lodged in the infant's mouth the wrong way, with nipple-side out and ring-side in (product code 1525); and one drowning death occurred when an infant was left unattended on a non-bathing baby seat (product code 4074) in a water-filled bathtub. See: http://www.cpsc.gov/library/foia/foia12/os/nursery10.pdf for a list of deaths in the "Other" category in 2006–2008.

A closer look at the top five product categories with the largest numbers of reported deaths provides some insight into the hazard patterns. These five product categories were associated with 89 percent of the reported fatalities.

Between 2007 and 2009, 148 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 27 percent of the deaths resulted from a range of hazards associated with the crib, including incomplete assembly; missing, broken, or nonfunctioning components; or ineffective crib repairs. Some of these incidents occurred in, or on, older, reassembled, recalled, or secondhand cribs. The next most common cause of crib fatalities involved the presence of hazardous crib surroundings. 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.

There were 61 deaths reported in bassinets/cradles between 2007 and 2009, the majority of which were attributed to extra bedding. Many of the suffocation deaths from bedding involved pillows. A handful of bassinet-related deaths involved product failure and/or the presence of hazardous surroundings around the bassinet.

Playpens/play yards were associated with 37 deaths between 2007 and 2009. Most of the deaths were due to positional asphyxia, where the infant suffocated on extra bedding placed inside the play yard. The next most common scenario was the presence of a hazardous environment in or around the product. These included the placement of improvised covers on the play yard; easy access to cords from window coverings or computers; and the use of non-fitting mattresses and sofa cushions in the play yards. A few of the fatalities involved faulty products as well.

There were 37 deaths identified during 2007–2009 that were associated with infant carriers and car seat carriers. Strangulation deaths resulting from infants becoming entangled in the restraint straps was the most common scenario. Hazardous placement in or around the carrier was the next most common scenario. Examples include an unrestrained infant being left unsupervised for an extended period of time, who subsequently was able to get into a compromising position resulting in death; and placement of an occupied carrier on top of a stove that was turned on inadvertently. In addition, there were a few fatalities resulting from infant carriers tipping over when placed on nonrigid surfaces.

Finally, baby baths/bath seats/bathinettes were associated with 22 deaths between 2007 and 2009. All of the deaths occurred when parent or caregiver attention was diverted from the infant while the infant was in a bath tub. In the majority of these incidents, the infant was left unattended in the tub, sometimes with an older sibling in the tub. Many of these incidents were described as infants slipping out of bath seats, falling out of baby bath tubs, or tipping forward or sideways into the water.

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

Appendix

Methodology

Injuries:

- Database: NEISS from 01/01/2011 through 12/31/2011.
- Product codes: 1500–1599, excluding 1550.
- 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 (2007 and 2008), statistical tests were performed to determine if any trends exist. While there was a significant change between consecutive years for some of the years (increase from 2008 to 2009: p-value=0.0003, decrease from 2010 to 2011: p-value=0.0091), there was no statistically significant trend observed from 2007 to 2011 (p-value=0.1267).

Deaths:

- Databases: NEISS, IPII, INDP, and DTHS from 01/01/2007 through 12/31/2009.

  Information available from NEISS, IPII, and DTHS on incidents that 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, and the fatality numbers reported may change.

- Product codes: 1500–1558 excluding 1550; 4074 for *children's chairs*, 4075 for *portable youth bed rails,* and 4082 for *toddler beds*.
- 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 recoded correctly. 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 associated directly with the nursery product. However, hazards in the vicinity of the product, often created inadvertently by caregivers, led to the deaths. For instance, extra bedding inside the crib, cords from window coverings or computer accessories, which were 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 play yard or placement of objects on top of the play yard to keep the child inside have led to some fatalities. These have been counted with play yard deaths. While these deaths were not due strictly to product failure, they highlight some common misconceptions and oversights in the use of these products, and therefore, we included them.

  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-play yard incidents were counted with play yards.

Historical Data

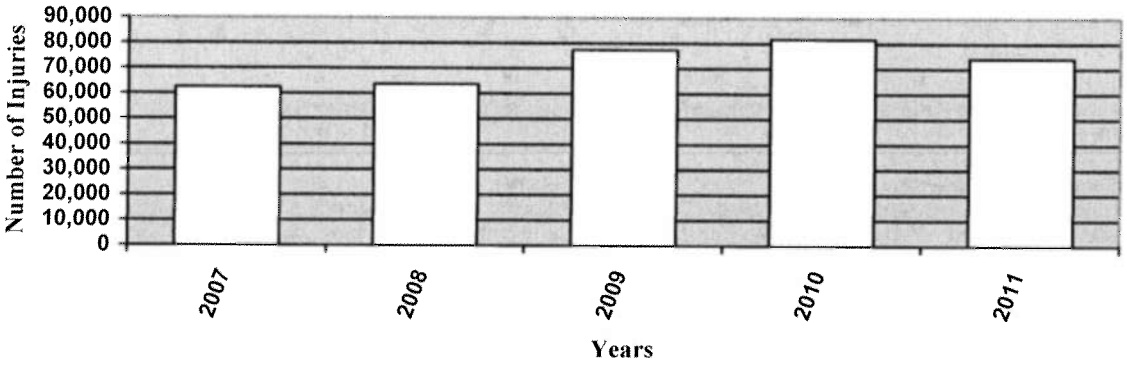
Injury estimates for the last 5 years, for which data is available, are presented in the table and chart below. Statistical tests indicate no significant trend in the data over the 5-year period 2007–2011 (p-value=0.1267).

Table 4: Nursery Product-Related Emergency Department-Treated Injury Estimates 2007–2011

Calendar Year	Estimated Injuries	95% Confidence Interval
2007	62,500	51,400–73,600
2008	63,700	50,000–77,400
2009	77,300	60,100–94,500
2010	81,700	66,000–97,400
2011	74,100	58,300–90,000

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

Figure 1:Nursery Product-Related Emergency Department-Treated Injury Estimates: 2007-2011



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