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 statistics regarding injuries and deaths associated with nursery products among children younger than the age of 5 years based on the most recently available information.

Emergency Department-Treated Injuries:

- In 2013, there were an estimated 74,900 emergency department-treated injuries associated with, but not necessarily caused by, nursery products among children younger than age 5 years.
- Infant carriers/car seat carriers, cribs/mattresses, strollers/carriages, and high chairs were associated with about 66 percent of the injuries. Falls were the leading cause of injury, and the head, followed by the face, were the body parts injured most frequently. Internal organ injuries, contusions/abrasions, and lacerations accounted for 71 percent of the injuries.
- Annual estimates of injuries associated with nursery products do not display a statistically significant trend over the 5-year period 2009–2013.

Fatalities:

- For the 3-year period 2009–2011, CPSC staff has reports of 336 deaths—an annual average of 112 deaths—associated with, but not necessarily caused by, nursery products among children younger than age 5. Reporting is ongoing, and the number of reported fatalities may change in the future.
- Cribs/mattresses, bassinets/cradles, playpens/play yards, infant carriers/car seat carriers, and baby baths/bath seats/bathinettes were associated with 87 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; in other cases, the fatalities resulted from a hazardous environment in or around the product.[1]

For many durable infant and toddler products, CPSC staff has been evaluating the incidents characterized in the annual reports on nursery products, along with previously and subsequently reported incidents, to assess the efficacy of voluntary standards. These evaluations have supported the Commission's votes to issue notices of proposed rulemakings (NPRs) and final rules as required by the Danny Keysar Child Product Safety Notification Act, section 104 of the Consumer Product Safety Improvement Act (CPSIA) of 2008. In calendar year 2014, the Commission voted to issue NPRs for frame child carriers and sling carriers and also voted on a final rule establishing a new standard for strollers and soft infant carriers. In addition, a new federal rule on bassinets, bedside sleepers, handheld carriers, as well as an amended standard on play yards went into effect in 2014. Staff evaluations of voluntary standards for bouncer seats, infant bathtubs, folding chairs, hook-on chairs, and high chairs, are under way. Many of these evaluations contribute to the CPSC's Safe To Sleep® campaign, which in coordination with the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development and Health Resources and Services Administration, is aimed at helping parents and caregivers create the safest sleep environment possible for young children: www.CPSC.gov/cribs.

[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 2013,[2] as well as comparisons with historic injury estimates. Detailed information on deaths associated with nursery products that reportedly occurred during the 3-year period from 2009 to 2011, is also presented; reporting is ongoing, and the number of reported fatalities may change in the future.

Nursery Product-Related Emergency Department-Treated Injury Estimates

There were an estimated 74,900 nursery product-related injuries among children younger than 5 years old that were treated in U.S. hospital emergency departments in 2013. Table 1 shows the estimated injuries for the latest 3 years, as well as the annual average for this 3-year period. The decrease in the injury estimate from 2012 to 2013 was not statistically significant. No trend in injury estimates was observed over the 2011 to 2013 period. Annual estimates for 2009 through 2013 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 2013. Sixty-eight percent of the total injuries involved the head and the face, which were the body parts injured most frequently. Internal organ injuries, contusions/abrasions, and lacerations accounted for 71 percent of the NEISS-reported injuries.

Table 1: Estimated Emergency Department-Treated Injuries to Children Younger than Age Five Associated with Nursery Products
2011–2013

Calendar Year	Estimated Emergency Department-Treated Injuries
2011	74,100
2012	77,900
2013	74,900
2011–2013 Average	75,600*

Source: NEISS, U.S. Consumer Product Safety Commission (CPSC).
* The average calculation is based on unrounded injury estimates, with the result rounded to the nearest 100.

Table 2 shows the breakdown of injury estimates by different product categories for 2013, along with the injury estimates for 2012, for comparison purposes. As in 2012,[3] there were more than 30 product codes associated with the injury estimates in 2013. Similar to 2012, the associated products have been aggregated into 13 product categories that align with voluntary standards development activities. The top four categories, infant carriers/car seat carriers, cribs/mattresses, strollers/carriages, and high chairs, were associated with about 66 percent of the injuries.

[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, "Injuries and Deaths Associated with Nursery products Among Children Younger than Age Five," CPSC, December 2013, http://www.cpsc.gov//Global/Research-and-Statistics/Injury-Statistics/Toys/nurseryproductsinjuries121313FINAL.pdf.

Overall, there was a decrease in the total injury estimate from 2012 to 2013, but the decrease was not statistically significant. Among the observed changes in the emergency department-treated injury estimates in specific product categories between the 2 years were seven decreases and six increases. The largest decreases involved cribs/mattresses (decreased from 14,100 to 12,400), high chairs (decreased from 13,200 to 10,900), and portable baby swings (decreased from 2,500 to 1,700). None of these decreases was statistically significant. There was also an increase in baby gates/barriers (increased from 2,900 to 3,800); the change was not statistically significant either.

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	
	2013	2012
TOTAL	74,900	77,900
Infant Carriers/Car Seat Carriers (Excludes Motor Vehicle Incidents)	13,700	13,000
Cribs/Mattresses	12,400	14,100
Strollers/Carriages	12,200	12,300
High Chairs	10,900	13,200
Changing Tables	5,300	5,100
Baby Gates/Barriers	3,800	2,900
Baby Walkers/Jumpers/Exercisers	3,300	2,900
Baby Bouncer Seats	3,100	3,500
Playpens/Play Yards	2,200	2,300
Portable Baby Swings	1,700	2,500
Baby Bottles/Warmers/Sterilizers	1,500	1,800
Bassinets/Cradles	1,300	---[4]
Baby Baths/Bath Seats/Bathinettes	---[4]	---[4]
Other[5]	3,900	3,800

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

Although all of the Commission's databases are used to identify nursery product-related deaths, the death certificates database is the major source of information for this analysis. As this report was being written, the Commission's death certificates database was at least 94 percent complete for each year in the period from 2009 through 2011. As done in the annual nursery product reports from earlier years, the deaths reported here are from 2009 through 2011, the latest 3-year time frame with sufficiently available information.[6]

CPSC staff has received reports of a total of 336 deaths—an annual average of 112 deaths—associated with nursery products during this time period. About 41 percent (138 total or an annual average of about

[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 both 2012 and 2013, the "Other" category included: pacifiers/teething rings, diapers (excluding diaper rash cases), rattles, night lights, potty chairs/training seats, and safety pins. In 2012, the "Other" category also included diaper pails and crib mobiles.
[6] These deaths do not constitute a statistical sample of known probability and do not necessarily include all nursery product-related deaths that occurred during the 2009–2011 period. However, they do provide at least a minimum number for deaths associated with nursery products during that time.

46) were associated with cribs/mattresses. Bassinets/cradles accounted for 19 percent (65 total, or an annual average of 22) of the reported deaths. Playpens/play yards were associated with 12 percent (a total of 39 or an annual average of 13) of the reported deaths while infant carriers/car seat carriers were associated with 10 percent (a total of 35 or an annual average of 12) of the reported deaths; and baby baths/bath seats/bathinettes accounted for four percent (a total of 15 or an annual average of five) of the reported deaths. The remaining 44 reported fatalities were associated with a range of products, including bouncer seats, baby gates/barriers, and strollers, among others.

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. 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 2009 through 2011, along with data previously reported for 2008 through 2010, 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.

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 87 percent of the reported fatalities.

Between 2009 and 2011, 138 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 17 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 65 deaths reported in bassinets/cradles between 2009 and 2011, 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 39 deaths between 2009 and 2011. Most of the deaths were asphyxiations, where the infant suffocated on a blanket/pillow/other soft 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; 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 35 deaths identified during 2009–2011 that were associated with infant carriers and car seat carriers. Hazardous placement of the infant in the carrier or of the carrier itself with the infant in it was the most common scenario. Examples include an unrestrained infant being left unsupervised for an extended period of time, often on top of a blanket/pillow/other soft bedding, 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

caught on fire) or on an elevated surface (which led to a fall). Strangulation deaths resulting from infants becoming entangled in the restraint straps was the next most common scenario. 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 15 deaths between 2009 and 2011. All of the deaths occurred when parent or caregiver attention was diverted away from the infant. 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.

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

PRODUCT CATEGORY	TOTAL DEATHS		AVERAGE ANNUAL DEATHS	
	2009-2011	2008-2010	2009-2011	2008-2010
TOTAL	336	333	112	111
Cribs/Mattresses	138	144	46	48
Bassinets/Cradles	65	61	22	20
Playpens/Play Yards	39	41	13	14
Infant Carriers/Car Seat Carriers (Excludes Motor Vehicle Incidents)	35	36	12	12
Baby Baths/Bath Seats/Bathinettes	15	15	5	5
Baby Bouncer Seats	10	5	3	2
Baby Gates/Barriers	6	4	2	1
Strollers/Carriages	4	3	1	1
Portable Baby Swings	2	5	1	2
High Chairs	2	3	1	1
Changing Tables	1	2	<1	1
Baby Walkers/Jumpers/Exercisers	1	1	<1	<1
Other[7]	18	13	6	4

Source: CPSC epidemiological databases: In-depth Investigations (INDP), Injury and Potential Injury Incidents (IPII), Death Certificates (DTHS), and NEISS from 2009 to 2011 for reported deaths.
Note: The average annual deaths do not add up to the total due to rounding.

[7] Of the 18 deaths in this category in 2009–2011, 14 were suffocations involving products used in the sleep environment. Among the 14, one death involved a cloth-covered, shared-sleep product, two deaths occurred in infant hammocks; two deaths involved a portable youth bedrail, three deaths involved an inclined, foam sleep product which was being used inside a crib; three deaths were in a collapsible, fabric travel bed; and three deaths involved a toddler bed (product code 4082). Additionally, there were three drowning deaths when an infant was left unattended on a non-bathing baby seat (product code 4074) in a water-filled tub or shallow pool and one death due to a pacifier (product code 1525) getting lodged in the infant's mouth the wrong way. See: http://www.cpsc.gov//Global/Research-and-Statistics/Injury-Statistics/Toys/nurseryproductsinjuries121313FINAL.pdf, p. 7, for a list of deaths in the "Other" category in 2008–2010.

Appendix

Methodology

Injuries:

- Database: NEISS from 01/01/2013 through 12/31/2013.
- Product codes: 1500–1558, 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 (2009 through 2012), statistical tests were performed to determine if any trends exist. While there was a significant change between consecutive years for some of the years (decrease from 2010 to 2011: p-value=0.0091), there was no statistically significant trend observed from 2009 to 2013 (p-value=0.5261).

Deaths:

- Databases: NEISS, IPII, INDP, and DTHS from 01/01/2009 through 12/31/2011.

  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, 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, 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-play yard incidents were counted with play yards.

Historical Data

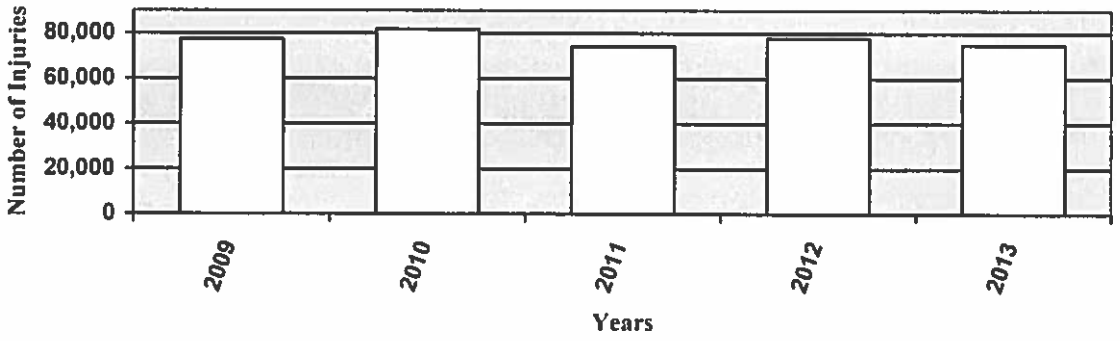
Injury estimates for the last five years, for which data is available, are presented in the table and chart below. Statistical tests indicate no significant trend in the data over the five year period 2009–2013 (p-value=0.5261).

Table 4: Nursery Product-Related Emergency Department-Treated Injury Estimates 2009–2013

Calendar Year	Estimated Injuries	95% Confidence Interval
2009	77,300	60,100–94,500
2010	81,700	66,000–97,400
2011	74,100	58,300–90,000
2012	77,900	61,400–94,400
2013	74,900	57,100–92,600

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

Figure 1: Nursery Product-Related Emergency Department-Treated Injury Estimates: 2009-2013



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