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

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Executive Summary

In this report, 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 5 years old.

Emergency Department Treated Injuries:

- In 2010, there were an estimated 81,700 emergency department-treated injuries associated with, but not necessarily caused by, nursery products among children under age 5.
- Infant carriers and car seat carriers, cribs/mattresses, strollers/carriages, and high chairs were associated with about 68 percent of the injuries. Falls were the leading cause of injury, and the head was the body part injured most frequently.
- Annual injury estimates associated with nursery products do not display a statistically significant trend over the 5-year period 2006–2010.

Fatalities:

- During the 3-year period 2006–2008, CPSC staff has reports of 304 deaths—an annual average of 101 deaths—associated with, but not necessarily caused by, nursery products among children under age 5.
- Cribs/mattresses, bassinets/cradles, playpens/play yards, infant carriers and car seat carriers, and baby baths/bath seats/bathinettes were associated with 90 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 2011, for portable youth bedrails and play yards, 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 portable youth bedrails and play yards, as required in section 104 of the Consumer Product Safety Improvement Act (CPSIA) of 2008. In 2011, the agency also voted on a final rule establishing a new toddler bed standard. In addition, new federal standards on full-size and non-full-size cribs went into effect as of June 28, 2011. Staff evaluations of voluntary standards for infant swings, bedside sleepers, strollers, soft infant carriers, and handheld infant carriers 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 2010,[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 2006 to 2008, is also presented.

Nursery Product-Related Emergency Department-Treated Injury Estimates

There were an estimated 81,700 nursery product-related injuries among children younger than 5 years old that were treated in U.S. hospital emergency departments in 2010. Table 1 below 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 increase in the injury estimate from 2008 to 2009, no statistically significant trend was observed over the 2008 to 2010 period. Annual estimates for 2006 through 2010 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 2010. About 50 percent of the total injuries involved the head, which was the body part injured most frequently.

Table 1: Estimated Emergency Department-Treated Injuries to Children Under Age Five Associated with Nursery Products 2008–2010

Calendar Year	Estimated Emergency Department-Treated Injuries
2008	63,700
2009	77,300
2010	81,700
2008–2010 Average	74,300

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

Table 2 shows the breakdown of injury estimates by different product categories. As in 2009,[3] there were more than 30 product codes associated with the injury estimates in 2010. Similar to 2009, the products have been aggregated into 13 product categories that align closely with voluntary standards development activities.

Among the observed changes in the emergency department-treated injury estimates in specific product categories between 2009 and 2010, there was a decrease in stroller injuries (from 14,000 to 12,800), but an increase in injuries for infant carriers (from 15,800 to 16,900), baby gates (from 1,900 to 3,500), and the "other" category (from 3,100 to 4,600). Only the increases observed in baby gates and the "other" categories were statistically significant. The differences in the two remaining estimates were not

[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, November 2010.

statistically significant; they reflect random variation in the data. A review of the injury cases does not suggest any change in the type of injuries or the age of the injured in these two categories.

Table 2: Estimated Emergency Department-Treated Injuries in 2010 to Children Under Age Five by Type of Nursery Product

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

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. As this report was being written, the Commission's death certificates database was at least 87 percent complete for 2008, and earlier years. Hence, the deaths reported here are from 2006 through 2008.[6] CPSC staff is aware of a total of 304 deaths—an annual average of 101 deaths—associated with nursery products during this time period. About 41 percent (124 total or about 41 annually) were associated with cribs/mattresses. Bassinets/cradles accounted for a total of 57 deaths (an annual average of 19 deaths). Playpens/play yards accounted for a total of 35 deaths (an annual average of 12 deaths); infant carriers and car seat carriers accounted for 30 deaths (an annual average of 10 deaths); and baby baths/bath seats/bathinettes accounted for a total of 29 deaths (an annual average of 10 deaths). The remaining 29 fatalities were associated with a range of products, including walkers/jumpers, highchairs, and bouncer seats, 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

[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, sample size 20 or larger, and coefficient of variation be less than 33 percent.
[5] This category includes: pacifiers/teething rings, diapers (excluding diaper rash cases), diaper fasteners, diaper pails, baby harnesses, rattles, night lights, crib mobiles, potty chairs/training seats, 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 2006–2008 period. However, they do provide a minimum number for deaths associated with nursery products during that time.

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.

Table 3 provides a summary of nursery product-related deaths (total and average annual) for 2006 through 2008, along with annual average deaths for 2005 through 2007, for comparison purposes.

Table 3: Deaths Among Children Under Age Five by Type of Nursery Product

PRODUCT CATEGORY	TOTAL DEATHS 2006–2008	AVERAGE ANNUAL DEATHS 2006–2008	AVERAGE ANNUAL DEATHS 2005–2007
TOTAL	304	101	88
Cribs/Mattresses	124	41	36
Bassinets/Cradles	57	19	14
Playpens/Play Yards	35	12	10
Infant Carriers and Car Seat Carriers (Excludes Motor Vehicle Incidents)	30	10	9
Baby Baths/Bath Seats/Bathinettes	29	10	11
Baby Walkers/Jumpers/Exercisers	4	1	2
High Chairs	4	1	1
Baby Bouncer Seats	4	1	1
Changing Tables	3	1	< 1
Portable Baby Swings	3	1	< 1
Baby Gates/Barriers	2	1	1
Strollers/Carriages	2	1	1
Other[7]	7	2	2

Source: CPSC epidemiological databases: In-depth Investigations (INDP), Injury and Potential Injury Incidents (IPII), Death Certificates (DTHS), and NEISS from 2006 to 2008 for reported deaths.
Note: The average annual deaths do not add up to the total due to rounding.

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

Between 2006 and 2008, 124 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 32 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.

[7] Of the seven deaths in this category in 2006–2008, three involved a product coded as a toddler bed (product code 4082). One of these was an asphyxiation death in the corner of an inflatable children's bed; one 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. Additionally, there was one infant who died from getting wedged between a mattress and a portable youth bed rail (product code 4075), and one death due to choking on a nipple from a baby bottle (product code 1509).

There were 57 deaths reported in bassinets/cradles between 2006 and 2008, the majority of which were attributed to extra bedding. More than half 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 35 deaths between 2006 and 2008. 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 30 deaths identified during 2006–2008 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 infant carriers tipping over, many of which had been placed on nonrigid surfaces.

Finally, baby baths/bath seats/bathinettes were associated with 29 deaths between 2006 and 2008. 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 the 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.

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 with 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 annual average number of crib- and bassinet-related fatal incident reports in the three-year periods ending in 2007 and 2008 (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 caused directly by failures of the product.

Appendix

Methodology

Injuries:

- Database: National Electronic Injury Surveillance System (NEISS) from 01/01/2010 through 12/31/2010.
- 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 (2006 and 2007), statistical tests were performed to determine if any trends exist. While there was a significant increase between consecutive years for some of the years (2008 to 2009: p-value=0.0003), there was no statistically significant trend observed from 2006 to 2010 (p-value=0.0694).

Deaths:

- Databases: National Electronic Injury Surveillance System (NEISS), Injury or Potential Injury Incidents (IPII), In-Depth Investigations (INDP), and Death Certificates (DTHS) from 01/01/2006 through 12/31/2008.

  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; 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 playpen 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 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-playpen incidents were counted with playpens.

Historical Data

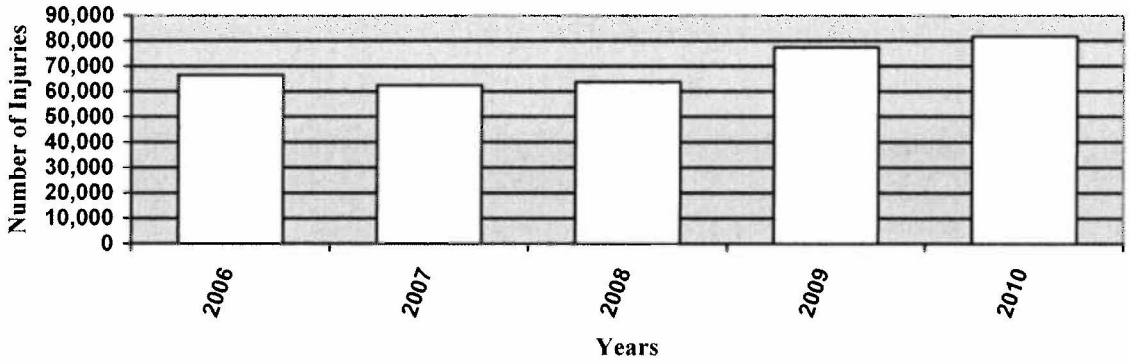
Injury estimates for the last five years, for which data is available, are presented in the table and chart below. Statistical tests indicate no significant trend in the data over the 5-year period 2006–2010 (p-value=0.0694).

Nursery Product-Related Emergency Department-Treated Injury Estimates: 2006–2010

Calendar Year	Estimated Injuries	95% Confidence Interval
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
2010	81,700	66,000–97,400

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

Nursery Product-Related Emergency Department Treated Injury Estimates: 2006-2010



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