

Crib Bumper Legislation Recap

March 22, 2017

1. **Consumer Product Safety Commission (CPSC)- Request for Information (RFI) Regarding Crib Bumpers- February 2016**
2. **BreathableBaby Reply to CPSC RFI- April 2016**
3. **Mesh Crib Liner Hazard Analysis: An Analysis of CPSC Incident Data- Conducted by Econometrica, Inc., issued April 2016**
4. **Air Permeability Testing of Crib Bumpers and Mesh Liners- Conducted by Bureau Veritas Consumer Product Services, issued April 2016**
5. **Medical and Scientific Perspective on Safety of BreathableBaby Mesh Crib Liners- Conducted by Michael S. Schechter, MD, MPH and Peter C. Raynor, PHD, issued August 2016**
6. **CPSC Crib Bumper Expert Panel Meeting- October 2016**
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10. **Crib Bumper State Legislation Recap:**
 - a. **Bills That Have Passed:**
 - i. **Maryland**
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 - b. **Bills That Did Not Make it to a Vote:**
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SENATE PUBLIC HEALTH & WELFARE
DATE 3-22-17
ATTACHMENT 5

Back Up:

- 1. Death and Injuries Attributed to Infant Crib Bumpers- Published Journal of Pediatrics, September 2007**
- 2. Crib Bumpers Continue to Cause Infant Deaths: A Need for a New Preventative Approach- Published Journal of Pediatrics, February 2017**



and activities of SDs and MSPs as Commission registrants.

Issued in Washington, DC, on February 10, 2016, by the Commission.

Christopher J. Kirkpatrick, Secretary of the Commission.

Appendix to Order Authorizing the National Futures Association as a Commission Designee for Direct Electronic Access to Data in Swap Data Repositories—Commission Voting Summary

On this matter, Chairman Massad and Commissioners Bowen and Giancarlo voted in the affirmative. No Commissioner voted in the negative.

[FR Doc. 2016-03064 Filed 2-12-16; 8:45 am] BILLING CODE 6351-01-P

CONSUMER PRODUCT SAFETY COMMISSION

[Docket No. CPSC-2012-0034]

Request for Information Regarding Crib Bumpers

AGENCY: U.S. Consumer Product Safety Commission.

ACTION: Notice.

SUMMARY: The Consumer Product Safety Commission ("CPSC" or "Commission") is seeking information regarding the safety benefits of crib bumpers, whether safety hazards are associated with crib bumpers, existing safety standards that apply to crib bumpers, and potential performance requirements, testing, and other standards that may reduce the risk of injury, if any, associated with crib bumpers.

DATES: Submit comments by April 18, 2016.

ADDRESSES: You may submit comments, identified by Docket No. CPSC-2012-0034, by any of the following methods:

Electronic Submissions: Submit electronic comments to the Federal eRulemaking Portal at: http://www.regulations.gov. Follow the instructions for submitting comments. The Commission does not accept comments submitted by electronic mail (email), except through www.regulations.gov.

Written Submissions: Submit written comments by mail/hand delivery/courier to: Office of the Secretary, Consumer Product Safety Commission, Room 820, 4330 East-West Highway, Bethesda, MD 20814; telephone (301) 504-7923.

Instructions: All submissions must include the agency name and docket number for this notice. CPSC may post

all comments, without change, to http://www.regulations.gov, including any personal identifiers, contact information, or other personal information. Do not submit confidential business information, trade secret information, or other sensitive or protected information that you do not want to be available to the public. If furnished at all, submit such information by mail/hand delivery/courier.

Docket: For access to the docket to read background documents or comments, go to: http://www.regulations.gov.

FOR FURTHER INFORMATION CONTACT: Timothy P. Smith, Project Manager, Directorate for Engineering Sciences, U.S. Consumer Product Safety Commission, 5 Research Place, Rockville, MD 20850; telephone: 301-987-2557; email: TSmith@cpsc.gov.

SUPPLEMENTARY INFORMATION:

I. Background

The Consumer Product Safety Commission ("CPSC" or "Commission") has granted a petition to initiate rulemaking regarding crib bumpers. To determine the need for and appropriate scope of such a rulemaking, the Commission is investigating whether crib bumpers pose a safety hazard to infants and, if so, what performance standards or requirements could mitigate that risk. As part of this effort, CPSC staff has reviewed incident data to identify what features or characteristics of crib bumpers create a safety hazard, if any; is evaluating existing safety standards that apply to crib bumpers and similar products; and is testing various types of crib bumpers. In this Request for Information ("RFI"), CPSC seeks input from interested parties to supplement the information, standards, and data currently available to the Commission. CPSC would find specific data regarding the safety risks and benefits associated with various types of crib bumpers and the empirical basis

1 On May 9, 2012, the Juvenile Products Manufacturers Association, Inc. ("JPMA") filed a petition requesting CPSC initiate rulemaking under sections 7 and 9 of the Consumer Product Safety Act ("CPSA"; 15 U.S.C. 2051-2089) to create a performance standard for crib bumpers to distinguish "hazardous 'soft' pillow-like" crib bumpers from "traditional" crib bumpers. See 77 FR 37836. On May 24, 2013, the Commission granted the petition, but adopted a broader framework than JPMA requested, directing staff to examine the safety benefits and risks associated with crib bumpers, evaluate existing standards, identify test methods and performance requirements that reduce any identified safety risks, and consider all regulatory options for addressing the risk of injury associated with crib bumpers.

for, and effectiveness of, existing safety standards particularly helpful.

II. Information Requested

To supplement the information currently available to CPSC, we request input relevant to the following questions:

- What test data or other information is available to identify the specific features or characteristics of a crib bumper that might contribute to a risk of suffocation?
• What objective, repeatable test methods, procedures or measures exist to assess the firmness of bedding, mattresses, and other possible sleep surfaces? To what extent, if any, can such tests, procedures or measures be used to assess whether these materials present a risk of suffocation by smothering?
• To what extent does the test device specified in Australian/New Zealand Standard AS/NZS 8811.1:2013, Methods of Testing Infant Products, Method 1: Sleep Surfaces—Test for Firmness, accurately and reliably assess the potential risk of suffocation associated with a sleep surface?
• To what extent would a test to accurately and reliably identify hazardous soft bedding or sleep surfaces be relevant to vertically-mounted surfaces, such as crib bumpers?
• What safety benefits do crib bumpers offer to consumers? What data are available to demonstrate such benefits?
• What, if any, evidence is there to indicate that "rebreathing" of carbon dioxide occurs with crib bumpers and presents a risk of suffocation?
• The current U.S. voluntary standard covering crib bumpers is ASTM F1917-12, Standard Consumer Safety Performance Specification for Infant Bedding and Related Accessories ("ASTM F1917-12"). Are there other standards, aside from state or regional bans, that include performance requirements for crib bumpers?
• ASTM F1917-12 includes a requirement that essentially limits the compressed thickness of crib bumpers to 2 inches. What evidence exists to support this requirement, and what, if any, association exists between this ASTM requirement and the risk of infant suffocation?
• What alternative or additional requirements beyond those specified in

2 The standard is available from Standards Australia Limited, GPO Box 476, Sydney, NSW 2011 and Standards New Zealand, Private Bag 2439, Wellington 6140, www.standards.co.nz.

3 The standard is available from ASTM International at 100 Bar Harbor Drive, P.O. Box 0700, West Conshohocken, PA 19428, http://www.astm.org/cpsc.htm.

ASTM F1917–12 might address the risk of infant suffocation?

- To what extent could a mesh-like or other “breathable” material present a risk of suffocation to an infant if the infant’s face were pressed into the material? What specific characteristics would make a bumper “breathable,” and to what extent, if any, would such a bumper address the risk of suffocation? What data or research support these conclusions?

- Are incident data or other objective safety information or research available that describe potential hazards associated with mesh-like bumpers or liners? Are similar data or information available on so-called “vertical bumpers,” which essentially are a series of small bumpers that individually cover each crib slat, and other bumper alternatives?

Dated: February 10, 2016.

Todd A. Stevenson,
Secretary, Consumer Product Safety
Commission.

[FR Doc. 2016–03013 Filed 2–12–16; 8:45 am]

BILLING CODE 6355–01–P

CONSUMER PRODUCT SAFETY COMMISSION

[Docket No. CPSC–2012–0019]

Proposed Extension of Approval of Information Collection; Comment Request—Standards for Full-Size Baby Cribs and Non-Full Size Baby Cribs; Compliance Form

AGENCY: Consumer Product Safety
Commission.

ACTION: Notice.

SUMMARY: As required by the Paperwork Reduction Act of 1995 (44 U.S.C. Chapter 35), the Consumer Product Safety Commission (“CPSC” or “Commission”) requests comments on a proposed extension of approval of information collection requirements regarding a form that will be used to measure child care centers’ compliance with the CPSC safety standards for full-size and non-full-size cribs (16 CFR parts 1219 and 1220). The Commission will consider all comments received in response to this notice before requesting an extension of this collection of information from the Office of Management and Budget (“OMB”).

DATES: The Office of the Secretary must receive comments not later than April 18, 2016.

ADDRESSES: You may submit comments, identified by Docket No. CPSC–2012–0019, by any of the following methods:

Electronic Submissions: Submit electronic comments to the Federal eRulemaking Portal at: <http://www.regulations.gov>. Follow the instructions for submitting comments. The Commission does not accept comments submitted by electronic mail (email), except through www.regulations.gov. The Commission encourages you to submit electronic comments by using the Federal eRulemaking Portal, as described above.

Written Submissions: Submit written submissions by mail/hand delivery/courier to: Office of the Secretary, Consumer Product Safety Commission, Room 820, 4330 East West Highway, Bethesda, MD 20814; telephone (301) 504–7923.

Instructions: All submissions received must include the agency name and docket number for this notice. All comments received may be posted without change, including any personal identifiers, contact information, or other personal information provided, to: <http://www.regulations.gov>. Do not submit confidential business information, trade secret information, or other sensitive or protected information that you do not want to be available to the public. If furnished at all, such information should be submitted in writing.

Docket: For access to the docket to read background documents or comments received, go to: <http://www.regulations.gov>, and insert the docket number CPSC–2012–0019, into the “Search” box, and follow the prompts.

FOR FURTHER INFORMATION CONTACT: Robert H. Squibb, Consumer Product Safety Commission, 4330 East West Highway, Bethesda, MD 20814; (301) 504–7815, or by email to: rsquibb@cpsc.gov.

SUPPLEMENTARY INFORMATION: CPSC seeks to renew the following currently approved collection of information:

Title: Safety Standards for Full-Size Baby Cribs and Non-Full Size Baby Cribs-Verification of Compliance Form.

OMB Number: 3041–0161.

Type of Review: Renewal of collection.

Frequency of Response: On occasion.

Affected Public: Child care centers.

Estimated Number of Respondents: 74 child care centers.

Estimated Time per Response: .25 hour for each child care center to provide the information on the form.

Total Estimated Annual Burden: 18.5 hours (.25 hour × 74 child care centers).

General Description of Collection: CPSC staff intends to visit child care centers to measure compliance with the

crib safety standards. Information from those visits would be recorded on a “Verification of Compliance Form.” CPSC investigators or designated state or local officials will use the form, which will be filled out entirely at the site during the normal course of the visit. The Commission will use the information to measure compliance with the crib safety standards and to develop an enforcement strategy. A pilot program was conducted in 2012, which included visits to approximately 50 child care centers in six states. Results of the pilot program were used to expand the program in 2013, to seven states and 112 inspections. CPSC conducted the program in 2015, in three states, which included 47 inspections. CPSC projects that four states will participate in the program in 2016 and approximately 74 inspections will be conducted.

Request for Comments

The Commission solicits written comments from all interested persons about the proposed collection of information. The Commission specifically solicits information relevant to the following topics:

- Whether the collection of information described above is necessary for the proper performance of the Commission’s functions, including whether the information would have practical utility;
- Whether the estimated burden of the proposed collection of information is accurate;
- Whether the quality, utility, and clarity of the information to be collected could be enhanced; and
- Whether the burden imposed by the collection of information could be minimized by use of automated, electronic or other technological collection techniques, or other forms of information technology.

Dated: February 9, 2016.

Todd A. Stevenson,
Secretary, Consumer Product Safety
Commission.

[FR Doc. 2016–02963 Filed 2–12–16; 8:45 am]

BILLING CODE 6355–01–P



APRIL 18, 2016

OFFICE OF THE SECRETARY
U.S. CONSUMER PRODUCT SAFETY COMMISSION
4330 EAST WEST HIGHWAY
BETHESDA, MD 20814

RE: DOCKET NO. CPSC-2012-0034

Dear Mr. Stevenson:

BreathableBaby thanks the Consumer Product Safety Commission ("CPSC") for the opportunity to respond to its Request for Information ("RFI") regarding crib bumpers and mesh crib liners and hereby submits these comments regarding breathable mesh liners (hereinafter "mesh liners") in response to your request.

BreathableBaby is a small company based in Minnesota that manufactures mesh liners as an alternative to crib bumpers. Mesh liners prevent infant entrapments in crib slats and related injuries that sometimes result when such incidents occur. Mesh liners also provide a quality of life benefit to infants, who suffer fewer sleep interruptions, and parents, who rest more peacefully knowing their child likely will not get their arms or legs stuck between crib slats during the middle of the night. Many parents who purchase our product also find reassurance in the fact that the core subject of CPSC's RFI, the risk of suffocation, is not presented by mesh liners, and that there are no known suffocation incidents associated with mesh liners.

As an executive summary of this comment, BreathableBaby will establish the following points:

- Mesh liners are a different product than crib bumpers and should be excluded from any future regulation of crib bumpers.
- The four states (MD, NY, MO, and IL) that have adopted regulations or have pending legislation banning the sale of crib bumpers have all excluded mesh liners.
- The defining characteristics of mesh liners are (1) a minimum level of air permeability for liner materials and (2) specified acceptable locations and measurements for any materials that do not meet the minimum level of air permeability.
- Independent test results show that BreathableBaby's mesh liners are highly permeable to airflow.
- With over 2.5 million units sold over 13+ years, BreathableBaby is not aware of any suffocation incidents associated with its mesh liners.
- An independent forensic data analysis of CPSC's incident databases shows that there are no known suffocation incidents associated with mesh liners.
- This data analysis also shows that there is an annual estimated average of over 280 emergency room visits associated with limb entrapments in crib slats (with some involving injuries ranging from fractures and dislocations to sprains) that could be prevented by the use of mesh liners.
- Data derived from searching over 1,500 product reviews shows that mesh liners provide a tangible quality of life benefit to infants, who suffer fewer sleep interruptions, and parents, who rest more peacefully knowing their child likely will not get their arms or legs stuck between crib slats during the middle of the night.

BreathableBaby, LLC

2841 Hedberg Drive · Minnetonka, MN 55305 · Office: 763.277.8480 · Toll-Free: 877.827.4442

BreathableBaby's Origins

In 1999, when their daughter Sierra was an infant, BreathableBaby founders Susan and Dale Waters experienced a frightening crib slat entrapment episode. "We followed the advice of experts but found our baby daughter Sierra at risk of another recurring danger," recalls Susan. "She kept getting her little arms and legs caught between the crib slats. One night, we heard screaming coming from the nursery and ran in to find little Sierra face down with her leg twisted and stuck in between the crib slats. She was unable to move, terrified and bruised."

After extensive research, the Waters were very surprised that no product other than a traditional bumper existed to prevent limb entrapments in crib slats. Motivated by this personal experience, they invented an alternative – a crib liner using mesh fabric as a way to prevent limb entrapments in crib slats and prevent the suffocation risk they believed to exist with traditional crib bumpers. They introduced their mesh crib liner to the market in 2002.

CPSC's RFI – Mesh Liners Should Be Excluded from Any Future Regulatory Action

BreathableBaby maintains that mesh crib liners differ from crib bumpers, that they do not pose a suffocation risk, and that they provide utility to consumers by preventing limb entrapments between crib slats. BreathableBaby respectfully requests the Consumer Product Safety Commission ("CPSC") to exclude mesh crib liners as a part of any rulemaking that arises from the agency's work on the issue of crib bumpers.

This approach would be consistent with the state of Maryland, which has already banned the sale of crib bumpers but specifically excludes mesh crib liners. Additionally, three states (New York, Missouri, and Illinois) have pending legislation to ban crib bumpers, all three of which provide for the exclusion of mesh crib liners. The CPSC should take a similar position. The Maryland regulation and pending state bills are attached as Exhibit 1.

CPSC's RFI – What Constitutes a Mesh Crib Liner

As a starting point, it's important to outline the key characteristics that BreathableBaby suggests should be required to be defined as a mesh crib liner, which include (1) a minimum level of air permeability for liner materials when tested to ASTM D737—Air Permeability of Textile Fabrics and (2) a maximum height and specified acceptable locations for any materials that do not meet the minimum level of air permeability. The combination of these two characteristics enable the mesh crib liner to serve its purpose of protecting babies from arm and leg entrapment in crib slats while also mitigating the risk of suffocation that may occur with traditional crib bumpers.

The chart below outlines the proposed criteria to be considered a mesh liner.

Characteristic	Hazard Addressed	Recommended Measurements	Rationale
Minimum Air Permeability Level for Liner Materials	<ul style="list-style-type: none"> Suffocation 	<ul style="list-style-type: none"> 300+ CFM (cubic feet per meter) of air permeability as tested by ASTM D737 	<ul style="list-style-type: none"> Establishes a minimum acceptable level of air permeability for liner materials
Limits on Non-Permeable Materials	<ul style="list-style-type: none"> Suffocation 	<ul style="list-style-type: none"> 1" maximum trim height on top and bottom of liner 	<ul style="list-style-type: none"> Establishes acceptable location(s) and maximum dimensions for non-permeable materials Non-permeable material is defined as any material that does not meet the minimum CFM requirement for air permeability Must also account for diameter of 12 month old's head (6"-6.5" for 95th percentile infants), plus additional margin of safety for circumstances where baby's head could be elevated. See Exhibit 2 (CDC Growth Charts, Head Circumference for Age Percentiles, Boy and Girl)

The basic characteristics of BreathableBaby's mesh crib liners compared to traditional crib bumpers are outlined below:

	Traditional Crib Bumper	BreathableBaby Mesh Crib Liner
Purpose	<ul style="list-style-type: none"> Protect baby from bumps and bruises and arm and leg entrapment in crib slats 	<ul style="list-style-type: none"> Protect baby from arm and leg entrapment in crib slats
Air Permeable Material Coverage	<ul style="list-style-type: none"> Generally limited 	<ul style="list-style-type: none"> Highly permeable mesh material 9" mesh height
Non-Permeable Material Coverage	<ul style="list-style-type: none"> Commonly contains fillers and padding 	<ul style="list-style-type: none"> Trim only – 1" on top and bottom of liner No fillers or padding
Fastening Agent	<ul style="list-style-type: none"> Ties (10 or more; 5 or more sets of 2) Ties should be 9" max (adheres to ASTM F1917-12 standard) 	<ul style="list-style-type: none"> Hook and loop fasteners (e.g. Velcro) May have ties as secondary fastening agent (6 maximum; 3 sets of 2) Ties are 8" (below ASTM F1917-12— Infant Bedding and Related Accessories— standard of 9" max)

CPSC's RFI – Mesh Crib Liners Do Not Pose a Suffocation Risk

The CPSC has asked: *“To what extent could a mesh-like or other ‘breathable’ material present a risk of suffocation to an infant if the infant’s face were pressed into the material? What specific characteristics would make a bumper ‘breathable,’ and to what extent, if any, would such a bumper address the risk of suffocation? What data or research support these conclusions?”*

BreathableBaby commissioned independent studies to validate its claims that its breathable mesh crib liner helps mitigate the risk of suffocation and the rebreathing of carbon dioxide while promoting airflow. Most recently, BreathableBaby asked an independent third party testing lab, Bureau Veritas, to test BreathableBaby’s products as well as traditional crib bumpers to ASTM D737 (Air Permeability of Textile Fabrics). This test showed that mesh crib liners have a significantly higher degree of air permeability as compared to traditional crib bumpers.

BreathableBaby’s 4 crib liner products tested between a range of 384.6 to 1013.1 CFM (cubic feet per meter) of airflow. On average, BreathableBaby’s 4 crib liner products were over 10 times as permeable to air as the 11 traditional crib bumpers that were also tested. BreathableBaby’s most permeable crib liner was over 46 times more permeable to air than the least permeable traditional crib bumper and was over 14 times more permeable to air than the most permeable traditional crib bumper tested. The Bureau Veritas Air Permeability test report is attached as Exhibit 3.

In the RFI, CPSC specifically asked about the risk of suffocation if an infant’s face were pressed into the material. There is one incident from CPSC’s IPII file that involved a child of 4 months with her head pressed against the liner. The child had red marks on her face but was not injured. This report is attached as Exhibit 4. This case appears to show that mesh liners do not pose a suffocation risk and, in this case, the use of a mesh crib liner provided a substantial safety benefit.

BreathableBaby also believes it is important to note that the November 2015 article authored by NJ Scheers, Dean Woodard, and Bradley Thach published in the *Journal of Pediatrics* specifically called for the regulation of “traditional crib bumpers.” The article is attached as Exhibit 5. Regarding mesh crib liner products, the authors stated: “[N]ontraditional bumper designs seem to mitigate some of the problems found with traditional crib bumpers. Mesh bumpers are breathable and thin and may reduce the likelihood of slat entrapment and climb outs.” Not only did the authors recognize that mesh products are breathable thereby mitigating the hazards associated with traditional crib bumpers, but they also recognized the potential utility of mesh products for preventing limb entrapment and climb outs.

CPSC's RFI – There Are No Known Suffocation Incidents Involving Mesh Crib Liners

In its RFI, the CPSC has also asked: *“Are incident data or other objective safety information or research available that describe potential hazards associated with mesh-like bumpers or liners?”*

BreathableBaby has been selling breathable mesh crib liners since 2002 as an alternative to traditional crib bumpers. During this 13+ year period and with sales of over 2.5 million units, BreathableBaby has received no information indicating that a single suffocation incident has occurred involving a mesh crib liner.

BreathableBaby commissioned Econometrica to conduct an independent forensic data analysis to better understand incidents across CPSC's NEISS, IPII, INDP, and DTHS databases that could be associated with mesh crib liners. The Econometrica report is attached as Exhibit 6. The study ultimately found that, with respect to mesh crib liners, there were no fatalities, no injuries treated in emergency departments, no injuries that required medical attention, and no incidents that involved a risk of suffocation.

Further, the analysis indicates that there are a negligible number of reported incidents (three over the 7-year period from 2009 through 2015) in which a mesh crib liner was present. The three incidents were consumer reports in the CPSC's IPII file. One incident, which was previously cited, involved a child of 4 months with her head pressed against the liner. The child had red marks on her face but was not injured. This appears to represent a case where use of a mesh crib liner provided a substantial safety benefit. The other two reports involved arm/leg entrapments that occurred in cribs with mesh liners installed but did not involve an injury requiring medical attention. These two incidents describe cases in which the liner simply failed to prevent an entrapment injury rather than being a product that contributed to the injury.

With respect to any question about whether a crib liner might erroneously be called a crib bumper or not include a reference to mesh, a September 2015 BreathableBaby consumer survey would suggest otherwise. In 2015, BreathableBaby commissioned an independent third party survey of over 1,000 mothers of infants aged 6-12 months to better understand the attitudes toward and usage of crib bumpers and mesh crib liners. The survey revealed that consumers have a very high recall rate of 45% for BreathableBaby's brand name by all mothers (and nearly 60% among mothers who had brand recall), greater than all other branded liner products combined. Key slides from the survey are attached as Exhibit 7.

Additionally, consumers ostensibly purchase or are given mesh liners for the safety benefit they provide. Parents who purchase mesh liners for this reason would be more likely to correctly report any safety issues involving these products.

CPSC's RFI – Mesh Crib Liners Provide Utility to Consumers

In addition to not presenting a risk of suffocation, mesh crib liners also have utility to consumers because they prevent limb entrapments in crib slats for babies and improve quality of life (sleep) for parents and infants alike.

Utility: Limb Entrapments

As a starting point, it's important to point out that consumers have voted in the marketplace with respect to any question about whether products that prevent limb entrapments serve a useful purpose. BreathableBaby's consumer survey, noted above as Exhibit 7, also showed that over 74 percent of the surveyed mothers of 6-12 month old infants had used a crib bumper or breathable crib liner for their child. Taking into account mothers who used bumpers, liners or had switched from one product to another, almost 45 percent of the respondents used crib bumpers, while nearly 30 percent used a breathable crib liner. This consumer research study shows that parents see a use for a product that prevents limb entrapments and that many of today's new parents still utilize crib bumpers despite the fact that the American Academy of Pediatrics has spoken out against them, numerous Safe Sleep NGOs have warned against them, and the vast majority of states' Health and Human Services Departments have advocated for

parents not to use them in cribs. A representative sample of states' Safe Sleep materials are attached as Exhibit 8.

With respect to limb entrapment data, the Econometrica forensic analysis supports the contention that there is a safety need for products that prevent limb entrapments. Econometrica's analysis of the 2009-2015 IPII database records shows that more than half of all injury incidents that consumers reported to CPSC (288 of 544, or 53 percent) associated with cribs involved arm or leg entrapments. This research also demonstrated two reports of consumers who said they switched to a mesh crib liner to stop entrapment. These examples are attached as Exhibit 9.

The NEISS data also suggest that mesh crib liners provide a safety benefit by reducing the rate of limb entrapments in crib slats or rails. Limb entrapments associated with cribs account for an estimated 280 emergency department treated injuries annually, accounting for 5 percent of all estimated emergency department treated injuries associated with cribs. The two largest categories of these injuries were fractures and dislocations. Additional injury categories included contusions, abrasions, strains, sprains, and other injuries.

Based on this analysis of all of the CPSC incidents reports since 2009, the Econometrica study concluded that mesh crib liners appear to provide a potentially substantial safety benefit in the form of reduced numbers of limb entrapment injuries without posing a potential suffocation risk.

Additionally, the American Academy of Pediatrics published a 2011 report that also studied the epidemiology of injuries related to cribs, playpens and bassinets. The report is attached as Exhibit 10. It concluded that "given the consistently high number of observed injuries, greater efforts are needed to ensure safety in the design and manufacture of these products, ensure their proper usage in the home, and increase awareness of their potential dangers to young children." In that study there were an estimated 9,908 incidences of children caught or wedged in a crib over the period from 1990-2008 (reported at a 95% confidence interval), which would include limb entrapment incidents in crib slats.

Finally, the recent article by Scheers, Woodard, and Thach also recognized that mesh products could provide utility to consumers by preventing limb entrapments.

Utility: Quality of Life

Mesh crib liners also provide utility in regard to quality of life, in the form of fewer sleep interruptions for both parents and infants as well as more peaceful rest for parents, knowing that their infant will not get their arm or leg entrapped in crib slats during the middle of the night and that they will avoid the risk of suffocation. We have included a representative sample of 80+ consumer reviews from Amazon.com, which are copied verbatim and speak directly to the utility and quality of life benefit that a mesh crib liner provides. The reviews are attached as Exhibit 11. Five examples of these comments are also reproduced below.

BreathableBaby

April 18, 2016

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★★★★★ Safe all around!

By [REDACTED] on February 26, 2016

Color: Light Pink [Verified Purchase](#)

These crib liners were a Godsend! I had my first child when everyone was starting to lose their minds about crib bumpers being a possible cause of SIDS or suffocation. My very active baby liked to get her little chubby legs stuffed through the slats in her crib. She couldn't get them out on her own, so she would scream until I could get to her to get them out. Sometimes she had them jammed in so far that it took me a little bit. She was a wiggle worm. After 3 times of her getting her legs stuck through the slats, I started searching for something that would keep her from getting stuck, but wouldn't suffocate her if she rolled under them. This set of crib liners was perfect. The mesh is similar to a laundry bag, not big enough to get little fingers stuck in, but big enough to breathe through if she got her face stuck against them. I ordered them in pink, and they were a very pale shade of pink. They are washable. I always washed them on delicate. They lasted through both of my children, and were still good enough to take to the resale shop when my little one stopped using her crib.

★★★★★ I would recommend this a thousand times and am so glad that ..., July 25, 2014

By [REDACTED]

This review is from: [BreathableBaby Breathable Mesh Crib Liner, Fits All Cribs, Sage \(Discontinued by Manufacturer\)](#) (Baby Product)

After several nights of waking to the piercing screams of my 7 week old twins because their legs, arms or both were stuck in the crib slats I figured I had to do something and this has been a life saver! I would recommend this a thousand times and am so glad that I bought it because we haven't had another limb stuck since I installed it.

★★★★★ Exactly what I was looking for!, June 3, 2011

By [REDACTED]

[Verified Purchase](#) ([What's this?](#))

This review is from: [BreathableBaby Breathable Mesh Crib Liner, White](#) (Baby Product)

I researched breathable bumpers for a while. My son is 6 months and post-colic. I'm sure as any parent of a difficult child can tell you, you want that kid to sleep, and more importantly stay asleep! My son started rolling recently and when he'd hit the side of his crib he'd wake up either because of the impact or because his arm would get caught in the bars. I'm VERY weary of bumpers because of the inherent suffocation hazard. We did not use them with our first son, but he was an easy baby and I'd imagine if he did bump the side of the crib he just put himself back to sleep. This time around the bumpers seemed necessary if we were going to continue getting a good night's sleep. So after much research and reading of reviews I decided to get this one. It is perfect! I was afraid it wouldn't fit our crib well or that the "padding" would be either too thick (hazardous) or too thin (wouldn't soften the impact of a rolling baby). Turns out, I had nothing to worry about. The bumpers came in two pieces, and I installed them in two L-shapes to fit around the whole crib. The ends had long strips of velcro - so they are pretty adjustable for the various sizes and shapes of cribs. The thickness and consistency of the fabric was PERFECT! I have no worries about my son suffocating on this bumper. So thankful for the peace of mind AND for the return of sleep-filled nights in our house!

★★★★★ Best baby product I bought!, September 4, 2010

By [REDACTED]

This review is from: [BreathableBaby Breathable Mesh Crib Liner, White](#) (Baby Product)

I was so worried about the bumpers that they sell but that you can't use b/c your baby will rollover into them and won't be able to breathe. Who knows why they even sell those, they look cute, but not practical. My daughter moved into her crib at 6mos and she immediately got her leg caught between the slats of the bed and cried. I found this, had it overnighted and it is fantastic. I've used only this in her crib until today when we finally moved her into the convertible toddler bed. This is the single best product I bought for her bedroom, hands down. I give this to all my friends having babies, this is now my go to baby gift.

★★★★★ Great for when they start rolling over, January 15, 2009

By [REDACTED]

[Verified Purchase](#) ([What's this?](#))

This item is a real blessing when young kids get to the age where they start rolling over. Our son started to roll and he would get his legs caught in the crib rails - this took care of the issue. It is better than a crib pad because it is tough for kids (as they get older) to stand on (it collapses down pretty easily) and it has a mesh weave that makes it breathable. Very easy to install (it took 5 minutes) without any tools. This is one of those simple, cheap items that pays for itself with better sleep and piece of mind.

BreathableBaby, LLC

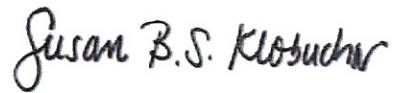
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BreathableBaby
April 18, 2016
Page 8

Conclusion

For the reasons stated herein, BreathableBaby respectfully requests CPSC to explicitly exclude mesh crib liners from the scope of any rulemaking concerning crib bumpers.

Sincerely,



Susan Klobuchar
BreathableBaby, LLC

Enclosures: Exhibits 1-11

Report

Mesh Crib Liner Hazard Analysis:

An Analysis of CPSC Incident Data

Project 2078.001

Prepared For:

Susan Klobuchar
VP, Marketing
BreathableBaby, LLC
2841 Hedberg Drive
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April 18, 2016

April 18, 2016

Susan Klobuchar
VP, Marketing
BreathableBaby, LLC
2841 Hedberg Drive
Minnetonka, MN 55305

Reference: "Mesh Crib Liner Hazard Analysis."

Dear Ms. Klobuchar:

Attached is a report summarizing our analysis of incidents associated with cribs and mesh crib liners. This analysis was based on a review of the records in four Consumer Product Safety Commission (CPSC) hazard monitoring databases.

If you have any questions or need more information, please contact me at (240) 333-0250.

Sincerely,



Steve McGonegal
Senior Staff Associate
Econometrica, Inc.



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Executive Summary

Introduction

In May 2013 the Consumer Product Safety Commission (CPSC) prepared a Staff Briefing Package in response to a May 9, 2012 petition from the Juvenile Products Manufacturers Association (JPMA). A memo included in the Staff Briefing Package summarized the results of an epidemiological assessment of the hazards associated with crib bumpers. The CPSC staff analysis focused on incidents involving head/neck entrapment or suffocation where a crib bumper was present. It did note 24 consumer complaints between January 1990 and October 2012 relating to “slat entrapments” of arms or legs.

However, the CPSC analysis did not address two issues that are important in assessing the safety and potential benefits of mesh crib liners:

- Whether mesh crib liners pose a suffocation risk.
- Whether mesh crib liners substantially reduce the likelihood of limb entrapments in crib rails or slats.

Econometrica was asked to review and analyze CPSC hazard monitoring data and to determine:

- The frequency and nature of any incidents associated with mesh crib liners.
- The frequency and types of injuries associated with limb entrapments in cribs.

Data Analyzed

These issues were analyzed using incident data available from four major CPSC hazard monitoring databases.

- The **National Electronic Injury Surveillance System (NEISS)** contains reports of product-related injuries involving children from a statistically structured sample of approximately 100 hospital emergency departments (EDs).
- The **Injury and Potential Injury Incidents (IPII)** database is a compilation of product-related incidents—fatalities, injuries, and no-injury cases—reported to the CPSC from a number of sources, including reports from consumer.
- The **In-Depth Investigation (INDP)** summary database provides date, demographic, and injury information for injuries, fatalities, and other incidents for which CPSC staff or contractors conducted a telephone or on-site investigation.
- The **Death Certificates (DTHS)** file provides date, demographic, and limited incident information for some but not all fatal injuries associated with consumer products.



Our review included all incidents associated with cribs and crib bedding involving children age 3 to 15 months.¹

Key Results

Our analysis of incidents in the four CPSC databases indicates that there are a negligible number of reported incidents (three over the 7-year period from 2009 through 2015) in which a mesh crib liner was present. **There were no fatalities; no injuries treated in emergency departments (EDs); no injuries that required medical attention; and no incidents that involved a risk of suffocation.** One of the three reported incidents involved a child of 4 months with her head pressed against the liner; she had red marks on her face but was not injured. This appears to represent a case where use of a mesh crib liner provided a substantial safety benefit. The other two reports involved arm/leg entrapments that occurred in cribs with mesh liners installed but did not involve injuries requiring medical attention. These two incidents describe cases in which the liner simply failed to prevent an entrapment injury rather than being a product that contributed to the injury.

The NEISS data also suggest that mesh crib liners provide a safety benefit by reducing the rate of limb entrapments in crib slats or rails. Limb entrapments associated with cribs account for an estimated 280 ED-treated injuries annually, accounting for 5 percent of all estimated ED-treated injuries associated with cribs.

Our analysis of the 2009-2015 IPII database records shows that more than half of all injury incidents that consumers reported to CPSC (288 of 544, or 53 percent) associated with cribs involved arm or leg entrapments.

Based on our analysis of the CPSC incidents reports since 2009, mesh crib liners appear to provide a potentially substantial safety benefit in the form of reduced numbers of limb entrapment injuries without posing a potential suffocation risk.²

¹ Although BreathableBaby mesh crib liners are marketed for children age 0 to 12 months, our preliminary review of the CPSC data indicated that there are significant numbers of reports associated with cribs involving children age 3 to 15 months.

² In fact, some consumers reported to CPSC that they needed to buy mesh crib liners to eliminate recurring limb entrapment problems (see CPSC IPII database records I1110606A and I13A0332A).



1. Data Sources and Methodology

1.1. Public Data on Injuries Associated with Cribs

CPSC maintains several hazard monitoring databases that can be used to assess the frequency and characteristics of incidents and injuries associated with cribs. The results presented in this report are based on tabulations and analysis of records from four CPSC databases.

The **National Electronic Injury Surveillance System (NEISS)** collects reports of product-related injuries involving children from a statistically structured sample of approximately 100 hospital emergency departments (EDs). These reports include information on a number of case characteristics, including age, gender, type of injury, body part, level of treatment required, and one or two products associated with the injury (from a choice that includes several hundred potential products and activities). Each report contains a two-line narrative. Reports from each participating hospital are assigned a statistical weight that depends on the annual number of patients seen in the ED. NEISS data for injuries treated from 2009 through 2014 involving children age 3 to 15 months were used to estimate a baseline level of injuries associated with the hazard patterns of interest and to create a statistically representative profile of the characteristics of incidents associated with cribs.

The **Injury and Potential Injury Incidents (IPII)** database is a compilation of product-related incidents—fatalities, injuries, and no-injury cases—reported to the CPSC from a number of sources. The largest share consists of consumer complaints, including those published on SaferProducts.gov and others that do not meet the applicable standards for inclusion in the public incident database. Data on consumer complaints entered on the IPII database during the period from 2009 through 2015 involving children age 3 to 15 months were analyzed to quantify the extent to which consumers report potential hazards associated with cribs to the CPSC and to determine whether the hazard patterns for these reported incidents are consistent with the baseline injury profile developed from the NEISS data.

The **In-Depth Investigation (INDP)** summary database provides date, demographic, and injury information for injuries, fatalities, and other incidents for which CPSC staff or contractors conducted a telephone or on-site investigation. Each record also contains a narrative summary of the incident. Incidents for which in-depth investigations are conducted are typically identified from review of cases reported on the other CPSC hazard databases. INDP database records entered during the period from 2009 through 2015 involving children age 3 to 15 months were reviewed and tabulated to provide information on the extent to which CPSC has investigating incidents and hazard patterns associated with cribs.

The **Death Certificates (DTHS)** file provides date, demographic, and limited incident information for fatal injuries associated with consumer products. DTHS file records entered during the period from 2009 through 2015 involving children age 3 to 15 months were reviewed and tabulated to ensure that our analysis captured information on fatality incidents associated with cribs that were not reported in the IPII or INDP databases.



1.2. Identification of Incidents Involving Mesh Crib Liners or Limb Entrapments

Case reports in the four CPSC hazard monitoring databases contain two fields that identify the product or products associated with the incident, injury, or fatality.³ Incidents associated with cribs and crib bedding can be identified by reviewing the case reports with one of four CPSC product identification codes:

Code	Product
1542	Baby Mattresses/Pads
1543	Cribs
1545	Cribs, not specified
1529	Portable Cribs

For this analysis, we reviewed and tabulated 1,118 reports of injuries treated in hospital EDs; 1,289 consumer complaints associated with these products entered on the IPII database; 527 summaries of CPSC investigations entered; and 171 death certificate records during the period from 2009 through 2015.⁴

The incident reports of the cases in the three crib product codes (1529, 1543, and 1545) all include references to a “crib”. However, many of the reports in the 1542 code described incidents associated with products other than crib bedding, such as infant recliner seats and changing table pads. These incidents were excluded from the analysis entirely.

The incident narratives were reviewed to identify cases specifically involving mesh crib liners.⁵ Only three consumer reports in the IPII database described injury incidents associated with mesh crib liners, but they did not involve a suffocation risk and, as described in Section 3.1, one actually demonstrates the utility of mesh liners. There were no records in the NEISS, INDP, or DTHS files that included references to mesh crib liners.

Incident narratives were also reviewed to identify limb (arm or leg) entrapment cases, as follows:

- The NEISS and INDP databases have a coded field that identifies the part of the body involved. Keyword searches were used to identify cases involving arms (including elbows and wrists) and legs (including knees, ankles, and feet) in the IPII and DTHS files, which do not have a coded field identifying the part of the body involved.
- The case narratives typically include references to arms or legs getting caught, stuck, or entrapped in between crib slats or rails. In a few cases, a crib bumper was cited as a

³ The term “associated with” means that CPSC does not make a judgement about whether the product or products cited in a report caused an incident, injury, or fatality.

⁴ The NEISS data for 2015 were not yet available at the time this analysis was conducted.

⁵ All database records were searched for “mesh” or “liner” in the incident narratives; all of the narrative texts were subsequently reviewed to identify any other potentially relevant incidents.



product associated with the injury, which occurred when the child’s arm or leg slipped below the bumper pad and between the crib slats.⁶

All of the case narratives were reviewed to confirm or revise the preliminary coding for these incidents.

2. NEISS: Injuries Treated in Hospital Emergency Departments

Each incident record in the NEISS database has an accompanying statistical weight based on the size class of the hospital from which the report was received. These weights can be summed to obtain annual estimates of the number of ED-treated injuries involving specific products, types of injuries, or parts of the body injured. For this analysis, we used the coded data for products, injury diagnoses and outcomes (e.g. released, hospitalized), parts of the body injured, and age of the child to develop the tabulations presented in this section for limb entrapment injuries and for all crib related injuries generally.

2.1. NEISS: Estimated Numbers of Injuries

Table 1 provides annual estimates of the number of ED-treated injuries associated with cribs.

Table 1: ED-Treated Injuries Associated with Cribs, 2009-2014 NEISS Data

Incident Year	Limb Entrapment Injuries	All Crib Related Injuries
2009	195	5,544
2010	306	5,869
2011	407	4,974
2012	295	6,425
2013	265	4,840
2014	232	4,391
Total	1,699	32,042
<i>Average/Year</i>	283	5,340

Note: There were no incident reports associated with mesh crib liners in the 2009-2014 NEISS data. Source: Econometrica coding and tabulation of CPSC NEISS database records.

On average, about 5,300 injuries associated with cribs were treated in hospital EDs annually during the period from 2009 through 2014. We estimated that there were about 280 limb entrapment injuries treated in hospitals EDs annually during this time period, accounting for 5 percent of total injuries treated in hospital EDs associated with cribs.

In addition to the tabulations presented in Table 1, we reviewed each of the 1,118 case narratives from the NEISS database on which these estimates are based, including the 15 that cited a “baby

⁶ Properly speaking, these incidents describe cases in which the bumper pad failed to prevent an entrapment injury, rather than being a product that contributed to the injury.



mattress or pad” (code 1542) and another 1,103 associated with one of the three crib product codes.

There were no incident reports mentioning “mesh” or “liner” in any of the four product categories included in this analysis. There were five reports associated with crib bumpers. Four were coded as being associated with mattresses or pads. Of these, three involved arms or legs slipping under the bumper, and one involved ingestion of a detached piece of plastic. There was also one incident that was not coded as being associated with a baby mattress pad. This incident involved a child standing on the bumper to get out of the crib.

Our analysis of the NEISS data suggests that mesh crib liners do provide a safety benefit by reducing the rate of limb entrapments in crib slats or rails.

2.2. NEISS: Outcome of Injury (“Disposition”)

Table 2 provides estimates of ED-treated injuries associated with consumer use of cribs by the disposition of the case—i.e. whether the patient was treated and released, treated and transferred to another health care facility, hospitalized, or left without being seen.

Table 2: Annual Estimates of ED-Treated Injuries Associated with by Outcome of Visit, 2009-2014 NEISS Data

Incident Outcome	Limb Entrapment Injuries		All Crib Related Injuries	
	Total	Percent	Total	Percent
Treated and released	273	96.3%	4,957	92.8%
Hospitalized	10	3.7%	92	1.7%
Held for observation	0	0.0%	111	2.1%
Treated and transferred	0	0.0%	50	0.9%
Fatal Injury	0	0.0%	9	0.2%
Unknown*	0	0.0%	122	2.3%
Total	283		5,340	

* Patients who left the ED without being seen.

Note: There were no incident reports associated with mesh crib liners in the 2009-2014 NEISS data.

Source: Econometrica coding and tabulation of CPSC NEISS database records.

In four of the five incidents associated with crib bumpers (see Section 2.1), the patients were treated and released. Hospitalization was required in one of the arm entrapment cases, which involved a child with fractured ribs.



2.3. NEISS: Injury Diagnosis

Table 3 provides a distribution of ED-treated injuries associated with cribs by injury diagnosis.

Table 3: Annual Estimates of ED-Treated Injuries Associated with Cribs by Injury Diagnosis, 2009-2014 NEISS Data

Diagnosis	Limb Entrapment Injuries		All Crib Related Injuries	
	Total	Percent	Total	Percent
Fracture	74	26.1%	363	7%
Dislocation	64	22.5%	251	5%
Contusion/abrasion	42	14.7%	1,220	23%
Strain/sprain	36	12.6%	105	2%
Hematoma	13	4.5%	121	2%
Internal organ injury	0	0.0%	2,099	39%
Laceration	0	0.0%	499	9%
Concussion	0	0.0%	70	1%
Dental injury	0	0.0%	52	1%
Other	56	19.7%	559	10%
Total	283		5,340	

Note: There were no incident reports associated with mesh crib liners in the 2009-2014 NEISS data.
Source: Econometrica coding and tabulation of CPSC NEISS database records.

Almost half of limb entrapments injuries associated with cribs that were treated in hospital EDs involve fractures (26.1 percent) or dislocations (22.5 percent).



2.4. NEISS: Part of the Body Injured

Table 4 provides a distribution of ED-treated injuries by the part of the body injured.

Table 4: Annual Estimates of ED-Treated Injuries Associated with Cribs by Part of Body Involved, 2009-2014 NEISS Data

Part of Body	Limb Entrapment Injuries		All Crib Related Injuries	
	Total	Percent	Total	Percent
Lower Leg	101	36%	195	4%
Upper Leg	19	7%	25	0%
Knee	19	7%	21	0%
Foot	19	7%	19	0%
Ankle	16	6%	27	1%
Elbow	70	25%	260	5%
Lower Arm	23	8%	117	2%
Upper Arm	13	5%	22	0%
Head	0	0%	2,852	53%
Face	0	0%	651	12%
Mouth	0	0%	449	8%
Others/unknown	4	1%	702	13%
Total	283		5,340	

Note: There were no incident reports associated with mesh crib liners in the 2009-2014 NEISS data.
Source: Econometrica coding and tabulation of CPSC NEISS database records.

About 60 percent of the limb entrapment injuries involved legs, ankles, or feet.



3. IPII: Consumer Reports to the CPSC

Consumers can report product safety related concerns to the CPSC online and through a toll-free number. Beginning in March 2011, consumer reports that meet certain publication standards are published online at www.saferproducts.gov. The full set of consumer reports and other records included in the IPII database can be obtained from CPSC by request. Each of these IPII database records includes a short narrative that can be searched to identify reports of interest (e.g., those specifically relating to mesh crib liners or limb entrapments).

In contrast to the NEISS data, consumer reports on the IPII database do not represent a statistically representative sample of all injuries associated with specific products or hazard patterns. In fact, many reported incidents did not result in any injuries but rather relate to non-injury incidents or concerns that consumers have about the design or use of products. However, these reports provide information about the products and hazards that prompt consumers to communicate their concerns the CPSC.

3.1. IPII: Annual Numbers of Consumer Reports

Table 5 provides annual counts of consumer reports related to cribs during each year in the period from 2009 through 2015.

Table 5: Annual Numbers of Consumer Reports Associated with Cribs, 2009-2015 IPII Data

Incident Year	Limb Entrapment Incidents	All Crib Related Injuries
2009	73	341
2010	122	466
2011	65	154
2012	73	133
2013	28	78
2014	15	42
2015	15	42
Total	391	1,256
<i>Average/Year</i>	<i>56</i>	<i>179</i>

Note: There were three incident reports associated with mesh crib liners, none of which required medical attention or involved a risk of suffocation.

Source: Econometrica coding and tabulation of CPSC consumer report records.

There were three consumer reports concerning incidents associated with mesh crib liners. One incident involved a child of 4 months with her head pressed against the liner; she had red marks on her face but was not injured. This appears to represent a case where use of a mesh crib liner provided a substantial safety benefit. The other two reports involved arm/leg entrapments that occurred in cribs with mesh liners installed but did not involve injuries requiring medical attention. These two incidents describe cases in which the liner simply failed to prevent an entrapment injury rather than being a product that contributed to the injury.



There were also two reports of incidents (one head contact, one arm/leg entrapment) involving cribs without mesh liners in which the consumers indicated that installing mesh liners eliminated the hazard.

More than 30 percent of the consumer reports relating to cribs during the most recent 7 years involved limb entrapments. However, the annual number of consumer reports involving limb entrapments declined from a high of 122 in 2010 to 15 in 2014 and 2015, mirroring the overall trend in consumer reports associated with cribs.

3.2. IPII: Outcome of Incident (“Disposition”)

Table 6 provides counts of consumer reports related to cribs by the disposition of the case. In contrast to the NEISS data, many of the reported incidents did not involve injuries, and many of the injuries reported as being “treated and released” in fact required no medical attention.

Table 6: Consumer Reports Associated with Cribs by Outcome, 2009-2015 IPII Data

Incident Outcome	Limb Entrapment Injuries		All Crib Related Injuries	
	Total	Percent	Total	Percent
Treated & Released*	287	81%	538	45%
Hospitalized	1	0%	6	1%
No Injury	68	19%	513	43%
Fatal Injury	0	0.0%	128	11%
Not Reported	35		71	
Total	391		1,256	

* Includes injuries that did not require medical attention and those treated in facilities other than hospital EDs.
Note: There were three incident reports associated with mesh crib liners, none of which required medical attention or involved a risk of suffocation.
Source: Econometrica coding and tabulation of CPSC NEISS database records.

Limb entrapments accounted for 288 of the 544 consumer reports (53 percent) associated with crib that involved nonfatal injuries, including those that did not require medical attention and those that resulted in hospitalization.



4. INDP: CPSC Incident Investigations

CPSC reviews incident reports from a variety of sources, including the NEISS database records, consumer reports, online news sources, death certificates for fatalities associated with consumer products, and referrals from other organizations. Reports of interest are assigned to CPSC staff or contractors to conduct a follow up investigation by phone or on-site visit. A large number of investigations may indicate that CPSC is interested in learning more about the incidents associated with a particular product or hazard pattern.

Table 7 provides annual counts of the numbers of incidents associated with cribs that were investigated by CPSC from 2009 through 2015.

Table 7: Annual Numbers of CPSC Investigations of Incidents Associated with Cribs, 2009-2015 INDP Summaries

Investigation Year	Limb Entrapment Incidents	All Crib Related Incidents
2009	3	201
2010	5	188
2011	0	45
2012	2	51
2013	0	25
2014	0	8
2015	0	0
Total	10	518
<i>Average/Year</i>	<i>1.4</i>	<i>74</i>

Note: There were no investigations of incidents associated with mesh crib liners in the 2009-2015 INDP data.
Source: Econometrica coding and tabulation of CPSC investigation summaries.

There were no CPSC investigations of incidents involving mesh crib liners.

Of the ten investigated incidents involving arm or leg entrapment:

- One resulted in an ED-treated injury.
- Three resulted in injuries that did not require medical attention.
- Six did not result in any injury.



5. DTHS: Death Certificates

CPSC also obtains death certificates from state health departments. The DTHS file records provide date, demographic, and limited incident information for fatal injuries associated with consumer products. DTHS file records entered during the period from 2009 through 2015 involving children age 3 to 15 months were reviewed and tabulated to ensure that our analysis captured information on fatality incidents associated with cribs that were not reported in the IPII or INDP databases. However, it is important to note that CPSC often has information about these cases from other sources before the death certificate is received.

Table 8 provides annual counts of the numbers of death incidents associated with cribs that CPSC received from 2009 through 2015.

Table 8: Annual Numbers of Death Certificates Associated with Cribs, 2009-2015 DTHS Records

Year Entered	All Crib Related Incidents
2009	27
2010	21
2011	23
2012	16
2013	17
2014	17
2015	1
Total	122
<i>Average/Year</i>	<i>17</i>

Note: There were no death certificates associated with mesh crib liners in the 2009-2015 DTHS data.
Source: Econometrica coding and tabulation of CPSC death certificates.

There were no death certificates for fatalities involving mesh crib liners or limb entrapments.



6. Conclusion

Our analysis of incidents in the four CPSC databases indicates that there are a negligible number of reported incidents (three over the 7-year period from 2009 through 2015) in which a mesh crib liner was present. **There were no fatalities; no injuries treated in emergency departments (EDs); no injuries that required medical attention; and no incidents that involved a risk of suffocation.** One of the three reported incidents involved a child of 4 months with her head pressed against the liner; she had red marks on her face but was not injured. This appears to represent a case where use of a mesh crib liner provided a substantial safety benefit. The other two reports involved arm/leg entrapments that occurred in cribs with mesh liners installed but did not involve injuries requiring medical attention. These two incidents describe cases in which the liner simply failed to prevent an entrapment injury rather than being a product that contributed to the injury.

The NEISS data also suggest that mesh crib liners provide a safety benefit by reducing the rate of limb entrapments in crib slats or rails. Limb entrapments associated with cribs account for an estimated 280 ED-treated injuries annually, accounting for 5 percent of all estimated ED-treated injuries associated with cribs.

Our analysis of the 2009-2015 IPII database records shows that more than half of all injury incidents that consumers reported to CPSC (288 of 544, or 53 percent) associated with cribs involved arm or leg entrapments.

Based on this analysis of all of the CPSC incidents reports since 2009, mesh crib liners appear to provide a potentially substantial safety benefit in the form of reduced numbers of limb entrapment injuries without posing a potential suffocation risk.⁷

⁷ In fact, some consumers reported to CPSC that they needed to buy mesh crib liners to eliminate recurring limb entrapment problems.



Appendix A: Individual Incident Reports

Attached are listings of the individual case reports in all four hazard monitoring databases associated with mesh crib liners or limp entrapment incidents, injuries, and fatalities associated with crib.

Consumer Reports Mentioning Mesh Crib Liners (PII). 2009-2015

Doc No	Date Inc	Date Ent	Disp	Product 1	Product 2	Age	Sex	Narr
H10A0280A	20101018	20101021	1	1542	1526	204		2 consumer daughter's head was stuck underneath the crib mobile and against the crib mattress. her face was also stuck against a meshbumper is used with the crib. the 4 mo had sustained red marks to her face.
H1330219A	20130324	20130328	0	1542	1543	206		1 consumer reported that 6 mom foot stuck between rails of crib. boy couldn't get it out & consumer had to move his body in order to get hisfoot out. child's shin was red after incident. consumer stated thatcrib has crib mesh protector that goes up about a foot wide.
I08C0525A	20081218	20090109	1	1542	0	204		1 4 month old male had breathable bumper installed in his crib. thisallows a child to breath if put their face up against it. consumernoticed a blood on his bumper & crib sheets. he had rubbed his headup against the bumper & gave him a type of brush-burn cut.
I1110606A	20110111	20110120	9	1543	0	212		1 a 1 yom infant got his leg stuck between the slats of his crib twice.the 2nd time he sustained bruises from the efforts by consumer tofree his leg. consumer was compelled to buy a mesh lining for theinside of the crib to prevent further injury.
I13A0332A	20130909	20131022	1	1543	0	205		1 consumer noticed splinter on 5 mom's foot. consumer ran hand down & up slats of crib & also got a splinter. consumer took out both splinters & had 5 mom visit a pediatrician. consumer put liner around slatsso baby doesn't get his limbs between them.

Limb Entrapments in the ... ISS Data, 2009-2014

NKey	Date Treat	Diag	B Part	Disp	Product 1	Product 2	Age	Sex	Narr
90561594	20090523	57	33	1	1545		204		2 patient got arm caught in crib slats last night, found arm caught & crying, now swollen; forearm fx.
90632283	20090529	53	33	1	1542	4075	205		1 arm under bumper pad of crib and caught in rail and r arm up under hi m. dx. cont r arm.
90722402	20090707	55	32	1	1545	5004	209		1 pt was reaching through the bars of a crib to pick up a toy off the flo or and arm got stuck dislocated elbow
90818894	20090726	57	36	1	1545		214		1 caught lower leg in crib bars;dx fractured lower leg
91122410	20091110	57	37	1	1545		212		1 caught ankle in crib. dx- fracture r ankle #
100232145	20100213	71	81	1	1542	1545	213		1 1 yom-father states child's r thigh slipped thru the crib rails after s standing on bumper pad @ home dx normal exam, s/p r leg injury-fall
100335277	20100303	57	36	1	1543	0	214		1 14mom favoring leg and refusing to bear weight, cw getting leg stuck i n crib; tibia and fibula fracture
100339423	20100310	57	81	4	1545	0	209		1 9 mom parents woke him up one day prior and found his leg caught in the crib. dx: fracture femur.
100404796	20100328	53	83	1	1545	0	214		1 14 mo m got foot stuck in crib;dx contused foot
100611547	20100520	64	35	1	1543	0	212		2 12mof was found in her crib with her leg stuck in crib rails dx: rt knee strain
100765399	20100713	64	37	1	1545	0	213		1 13mom- pt was in the crib & got left leg/ankle caught in crib slats. dx left ankle sprain secondary to twisting injury.
100812116	20100719	64	37	1	1543	0	207		1 7mom was found crying in his crib, at home, with his leg between the rails of his crib. dx: rt ankle spran
100850829	20100820	64	36	1	1545	0	213		1 13 month male was sleeping in his crib when got left leg caught in crib . dad tried to remove him & child cried. dx:muscle strain, contusion.

Limb Entrapments in the NEISS Data, 2009-2014

NKey	Date Treat	Diag	B Part	Disp	Product 1	Product 2	Age	Sex	Narr
100857291	20100818	57	80	4	1543	1829	203		1 3mom, was sleeping in the crib when rolled&got, per mom, hand stuck in the rail&dad herad a click in the arm->humrus fx
100917837	20100826	57	36	1	1543	0	210		2 10 mo female got leg caught in crib bars. dx fx
100949154	20100912	53	35	1	1543	0	214		1 14mom contusion knee had leg caught in bars/ slats of crib
100955947	20100917	54	36	1	1543	0	212		1 12mom was taking a nap and woke up crying with right leg stuck in rungs of crib, had to break crib bars, crush injury to right leg
101001722	20100925	57	36	1	1543	0	211		2 11mof sleeping in crib at grandparents last night, heard crying. r lowe r leg found twisted between crib rails. wont bear weight. dx r tibia fx
101002263	20100929	57	36	1	1545	0	213		2 a 13 month old injured leg in crib rails dx fx leg
101022457	20100925	71	36	1	1543	0	212		1 12 mo male got foot caught in a crib. dx leg injury
110113583	20110104	71	81	1	1543	0	214		2 14mof-upper leg injury-caught leg in the crib-at home
110212341	20101228	53	33	1	1543	0	208		2 8mof got r arm stuck in bars of crib, swelling, burising dx: contusion r lower arm
110223975	20110209	57	80	1	1545	0	205		1 5 mom having arm pain got arm hung in crib at day care today. dx-fx humerus.
110253892	20110222	55	32	1	1545	0	208		2 8 mof pt c/o injru to elbow s/p getting caught in crib rails. nursemad ds elbow.
110628688	20110608	57	36	1	1545	0	208		1 8mom fractured right lower leg caught in the slats of the crib
110715572	20110630	53	37	1	1543	0	204		2 4mof found by mom crying in crib. had her r ankle stuck in crib slats, only for short amt of time. ankle swollen. dx r ankle contusion
110742292	20110704	55	32	1	1545	0	206		1 6 mo male being put into crib and arm got caught. dx nursemaids elbow
110800637	20110719	71	81	1	1543	0	213		1 13mom-high injury-caught leg in rail of crib

Limb Entrapments in the .JISS Data, 2009-2014

NKey	Date Treat	Diag	B Part	Disp	Product 1	Product 2	Age	Sex	Narr
110844585	20110811	57	30	1	1543	0	205		2 5mof got her r arm stuck between the rails of her crib yest, mom notice d pt not moving arm as much. dx r clavicle fx
110920346	20110828	55	33	1	1543	0	210		2 10mof got arm stuck in crib railing. dx. dislocation l radial head
110964826	20110926	64	36	1	1543	0	212		2 12mof with sprained lower leg, got stuck in crib slat
111051226	20111010	71	83	1	1545	0	212		1 12mowm mother states pt got r foot caught in crib last night, possible r ear infection. pt screaming & awoke crying this am. dx. crying, fus
111053216	20111023	55	32	1	1545	0	203		2 3mof arm was caught in the side of the crib mom lifting out of the crib and dislocated elbow
120133045	20120113	57	33	1	1543	0	203		1 3mom fx lwr arm in crib rail
120229744	20120213	64	32	1	1545	0	213		2 13 mof sus elbow sprain when pt pulled arm through one of the slots on the crib today%
120238545	20120217	57	80	1	1543	0	208		1 right arm pain patient caught between bars on crib fracture humerus 8month male
120242960	20111224	57	83	1	1543	0	207		1 7mom had gotten his l foot caught in the crib slats, will not bear weight on l leg, has pain. dx fracture to l foot
120320384	20120302	71	36	1	1543	0	214		2 14mof leg injury when caught between rails of crib
120352274	20120315	55	32	1	1545	0	207		1 7 mo m arm got stuck in crib. dx dislocated elbow
120663722	20120613	71	83	1	1543	0	214		1 14mom mother reports she found pt in his crib w/his r foot caught in c rib slats. dx. painful r foot.
120858183	20120819	57	32	1	1545	4010	210		1 *10 mom, pt was crying in crib. mom found him squeezed on the side of the mattress. dx: lt non-displaced supracondylar fracture.
121003285	20120925	53	35	1	1545	0	214		2 14 mof bib mom who states child got r leg caught in between crib rails, bruising noted above rt knee. dx knee contusion%

Limb Entrapments in the NEISS Data, 2009-2014

NKey	Date Treat	Diag	B Part	Disp	Product 1	Product 2	Age	Sex	Narr
121023240	20121006	58	36	1	1545	0	207		2 7mof got leg caught in the crib now there is swelling hematoma to lower leg
121040135	20121008	53	33	1	1543	0	203		2 3 mof was crying- mom checked on her & she had her rt. forearm caught in between the crib bars. dx: rt. forearm / elbow soft tissue injury
121043533	20121005	64	35	1	1545	0	205		1 5mo m got knee stuck in crib; dx knee sprain
121142358	20121118	71	83	1	1545	0	209		2 9mof possibly caught foot in crib rail;swelling,foot pain
121252944	20121225	55	32	1	1545	0	210		2 10mo f arm stuck in crib; dx elbow dislocation
130159468	20130123	57	33	4	1543		204		2 4 mo female got arm caught between bars of her crib. dx fx arm
130225921	20130207	50	92	4	1545		208		1 an 8 mo old male caught finger on cribdx fingertip amputation
130240398	20130217	64	32	1	1545		210		1 10mo m caught arm in bars of crib; dx elbow sprain
130243101	20130217	57	80	4	1542	1545	206		1 dx fx humerus/fx multiple ribs: 6mom father of pt reports pt has beenget, arms stuck btw crib rails, l arm wedged under crib bumper
130638065	20130514	57	36	1	1543		210		1 10mom found crying in crib, ? caught leg between bars dx: spiral tibial fx
130657772	20130605	53	35	1	1545		214		2 14 month old w/fm received contusion and sprain to knee when leg stuckin crib at home.
130743641	20130714	55	32	1	1543		214		2 14 m o f nursemaids elbow playing in a crib a bedtime and got her arm caught in the crib
131037232	20131010	71	36	1	1543		214		1 14mom leg injury when caught in crib rails
131132827	20131110	55	32	1	1545		207		2 7mo f arm caught in crib;dx dislocated elbow
140105463	20131216	64	37	1	1545		210		1 10mo m caught between crib seats;dx ankle strain
140545576	20140521	71	36	1	1543		213		2 13mf got lt leg stuck in the crib now not able to bw->leg inj.

Limb Entrapments in the _ISS Data, 2009-2014

NKey	Date Treat	Diag	B Part	Disp	Product 1	Product 2	Age	Sex	Narr
140612202	20140526	53	36	1	1543		206		2 6mof pain to r leg when leg got caught between spokes of crib while taking a napp. dx leg contusion%
140722757	20140305	71	83	1	1543		210		2 10mof was picked up by mom who did not realize her foot wascaught in rails of crib twisting foot. dx - rt foot injury
140729082	20140629	53	36	1	1543		210		1 10 month old male got leg stuck in crib slots at an angle and could notget out bruising lower leg
140937136	20140909	57	80	1	1542	1543	206		1 rt upper arm fx. 6 month old male got arm caught between mattress andcrib.
140957294	20140919	57	36	1	1545		203		2 3 mof daycare reported that leg was caught in crib railing. dx: fracture tibia.
141145794	20141119	57	81	4	1545		208		1 8 mo male got leg stuck in crib. dx femur fx
141237449	20141213	64	36	1	1545		208		2 8mof got lower leg caught in the slats of the crib strained lower leg
141251953	20141219	71	36	1	1545		206		1 6mof got a new crib, got leg caught in rails xs, not putting weight onleg; leg injury

Consumer Reports of Limb Entrapments (P11), 2009-2015

Doc No	Date Inc	Date Ent	Disp	Product 1	Product 2	Age	Sex	Narr
H0910011A	20081226	20090116	1	1543	0	212		1 consumer reports noticing 1 year old boy's right leg became entrapped between the corner post & the spindle at the end of the crib. it took 2 adults to free his leg. the boy received several bruises.
H0910206A	20090106	20090218	1	1542	1543	208		1 8 month old son was standing at the head of the crib when left foot became trap between mattress and side of crib gap between crib rails was wider than 2 1/2 inches.
H0940307A	20090402	20090513	9	1542	1543	204		2 the arm of a 4 month old girl had become entrapped between the cribmattress and the drop side rail of the crib. consumer immediately removed the child's arm and discontinued using the product.
H0950088A	20090510	20090529	1	1543	0	207		1 a 7 month old boy was inside the crib when consumer found his left leg stuck between the slats. consumer was able to release son from entrapment by pulling his legs. the boy sustained red marks and bruises on his left leg.
H0950251A	20090330	20090618	1	1543	0	212		2 12 month old girl legs have gotten stuck between the crib bars she sustained black and blue marks to her legs. the last incidents left welts and bruises to her legs.
H0970251A	20090315	20090818	1	1543	0	211		1 an 11 months old boy got his arms and legs entrapped in between the side bars of the crib and received bruises on arms.
H0990109A	20090810	20091006	9	1542	1543	211		2 consumer complains there is a 2 inch gap between the side railing of the infant crib & the crib mattress. consumer stated the 11 month old baby has had her arms feet & legs become stuck on multiple occasions while inside the crib.
H0990229A	20090904	20091015	1	1543	0	212		2 a female infant age 1 year suffered bruising to her right inner knee when it got stuck between the spindles of her crib. owner states the spindles on the crib are not spaced properly.
H09A0034A	20090825	20091102	1	1543	0	211		1 the consumer's 11 month old son has gotten his ankles stuck in between the slats of the crib & he fell out of the crib. the boy understands how to unlatch the bar that locks the drop side rail in the up position & this allows him to fall out of the crib.

Consumer Reports of Limb E mpments (PIL), 2009-2015

H09B0225A	20090810	20091204	1	1543	0	214	1 consumer's 14-month-old son has gotten his legs stuck in between the slats of the crib on numerous occasions and sustained bruises as a result.
H09B0460A	20091021	20091229	1	1543	0	207	2 a 7 1/2 month old girl's leg got stuck in the openings in the crib's footboard. next time again the baby's both legs were stuck in openings and in trying to get her out her left ankle received a bruise and her right leg was red.
H09C0008A	20091015	20100107	1	1543	0	211	2 a 11 mo/ infant was standing in her crib when she slipped & fell & got her right leg stuck in between the slats of the drop side rail. she received red marks to her leg. the slat had to be broken in order to release her leg.
H1010304A	20100117	20100226	1	1543	0	214	2 a 14 month old female infant received bruises to both her legs when she got them stuck in between the crib's drop side railing. owner had to pry the wood apart as well as maneuver her legs to release her.
H1010334A	20100110	20100225	1	1543	0	206	2 6 month old female infant's right leg was stuck in between the 2 3/8 spacing of the wooden crib's slats. she sustained a bruise on her right leg.
H1020103A	20100127	20100308	1	1542	1543	206	1 a 6-month-old boy's leg was stuck in between the slats toward the headboard of the crib and his right arm was stuck between the slats on the right side of the crib. consumer states the gap between the mattress and crib side is 1 1/2 to 2 inches.
H1020141A	20100105	20100311	0	1543	0	214	2 14 mo/ has gotten her legs stuck above the knee in between the slats of the crib on numerous occasions.
H1020414A	20100226	20100325	1	1542	1543	207	1 7 mom was stuck in between the crib rail & the mattress bars. his arms & legs were hanging out of the railings.
H1030209A	20100210	20100331	1	1543	0	205	1 a 5-month-old boy's arm got stuck in between the slats of the crib. consumer liberated his arm. about a month later his arm was once again stuck between the slats on the side.
H1030306A	20100318	20100407	1	1543	0	210	1 a 10 mom sustained bruising in the inside and outside of his legs when the legs were stuck in the crib rails.
H1040097A	20100402	20100420	1	1543	0	213	2 consumer states that her 13-month-old daughter was in the crib when her knee got stuck between the slats of the crib. the child's knee area was swollen and red as a result. bruises left.

Consumer Reports of Limb Entrapments (P11), 2009-2015

H1050381A	20100514	20100526	1	1543	0	212	2	consumer's 1-year-old daughter fell forward and got her arm stuck in the crib's rail. the rail busted open and she fell through receiving a scratch.
H1060142A	20100604	20100622	1	1543	0	212	1	12 mom got his right leg above his knee stuck between the bars on the side of the crib. leg was swollen and produced a bruise the next day. incident has occurred twice since the first incident. consumer purchased bumpers for safety.
H1060269A	20100619	20100630	1	1543	0	210	1	1 a 10 mom got his left leg stuck between the front railings of the crib. he had a bruise on his leg after it was taken out of the rail.
H1060334A	20091215	20100702	1	1543	0	208	1	1 a 8 mom baby's leg slipped through the cracks of the side rails of the crib when he was standing & playing. he hit his mouth on the top rail & blood was coming out. several times baby has fallen & have gotten stuck his body parts between the rails.
H1070078A	20100708	20100715	1	1543	0	203	2	2 consumer placed her 3-month-old daughter in the crib and approximately 2 minutes later her legs became stuck in between the side slats of the crib. consumer had to bend the slats in order to release her daughter's legs.
H1070127A	20100402	20100719	0	1543	0	210	1	1 10 mom's legs would get caught in the slots of the crib. his head would be stuck between the bumper & the crib if consumer uses the bumper.
H1070167A	20100515	20100722	1	1542	1543	206	1	1 6 mom got his thigh caught in between spindles on the side of his crib. he was on his stomach with his face in the mattress & he couldn't move his leg.
H1070284A	20100720	20100729	1	1542	1543	207	2	2 7 mom got her arm stuck between the crib mattress & the mattress support. another time her knee cap was stuck between the slats on the higher side of the crib.
H1080103A	20100810	20100814	1	1543	0	214	1	1 a 14-month-old boy was in the crib and his leg got stuck in the crib. consumer was able to get him out but it left a scratch and he was pinched. consumer discovered that the pegs on the crib had come loose.
H1080144A	20100813	20100819	1	1543	0	210	2	2 10 mom got her leg stuck between the slats of the crib near the footboard. the parents had to cut the slats to free the child. her leg was red and swollen.
H1080153A	20100816	20100820	1	1543	0	206	2	2 the consumer noticed that 6 mom's leg was sticking out of the crib bars & was trapped. the consumer had to pry the bars apart in order to pull her leg out.

Consumer Reports of Limb E. mpments (IP11), 2009-2015

H1080196A	20100818	20100824	1	1543	0	207	2 7 mof child's legs were stuck between slats on the side of the crib.while releasing legsthe child sustained bruises to both legs.
H1090103A	20100829	20100915	1	1543	0	212	2 consumer has used the crib for two of her children. her oldestdaughter used crib when she was an 1 year old. her finger gotcaught on the lower track of the drop side rail between mattress.other 12 month old girl got stuck her legs in between slates.
H1090120A	20100907	20100917	1	1543	0	212	1 consumer reports that his 1-year-old son's leg was caught at histhigh through the rails of the crib. the child received a blisterafter his leg was pushed outwas taken to er. previously alsohisleg was wedged between the rails of the attached changing table.
H1090155A	20100912	20100919	1	1543	0	212	1 consumer reports that her 1-year-old son got his right leg stuck inbetween the slats of the drop-side rail of the crib. consumer hadto pull the slats apart in order to free his leg.
H1090278A	20100919	20100927	1	1543	0	213	1 13 mom got his legs caught between slats of the crib. he was unableto free himself and his right leg has reddened.
H10A0031A	20100302	20101006	1	1543	0	212	1 a 1 yom baby's leg got stuck between the crib slats. consumer statesthat baby's legs or leg gets stuck about once every 2 weeks.consumer had a hard time releasing his leg. his leg was bright red
H10A0257A	20101016	20101020	0	1543	0	205	2 consumer's 5 month old daughter was down for her nap in the crib whenshe started to rustle around. she was flat on her stomach with bothlegs stuck between the bottom of footboard & the top of themattress. they were stuck between 2 slats. no injury.
H10A0274A	20101019	20101021	1	1543	0	211	2 11 mof was waking up from a night's sleeps when she started crying. when consumer went into the roomshe saw the baby's thighs werestuck between the slats on the drop side of the crib. the girlsustained bruises near the thigh on both legs.
H10A0346A	20101020	20101026	1	1543	0	212	2 consumer reports that her 12-month-old daughter had been napping inthe crib when her right leg got stuck upto above her knee betweenthe crib slats. the baby woke up screaming. had to call forassistance. the baby sustained confusions/extreme bruising.

Consumer Reports of Limb Entrapments (PII), 2009-2015

H10B0030A	20101101	20101104	1	1543	0	212	2	1 yof's leg was stuck between 2 slats of the crib. the consumer had to pull apart the 2 slats to get the child's leg out. the incident caused a red mark on the child's leg. consumer considers the product a safety hazard.
H10B0227A	20101109	20101118	1	1543	0	207	1	7 mom had his leg stuck between 2 bars on the side of the crib on 2 occasions. the consumer was able to pull his leg out. the leg was red and had an indentation from being pulled out. consumer is worried the crib might break his leg.
H10B0275A	20100829	20101122	1	1542	1543	204	1	consumer heard her 4-month-old son fussing and found that his leg was wedged between the crib bars. there was redness in the place it was stuck. a few months earlier the infant had got one of his arms wedged between the crib mattress and the drop side rail.
H10B0327A	20101121	20101125	1	1543	0	204	1	consumer reports that her 4-month-old son was in the crib when she found her right arm stuck in between the slats. the child sustained a bruise. consumer says that the incident has happened several times with both arms.
H1110228A	20110112	20110121	1	1543	0	212	1	12 mom gets his leg stuck in the slats of the crib. when his parents freed him they noticed that there was redness on his thighs from being stuck. incident has occurred multiple times.
H1110282A	20110101	20110126	0	1543	0	209	1	9 mom has gotten his leg stuck in the crib on more than one occasion. it is very hard to force release his legs.
H1140048A	20110405	20110407	1	1543	0	212	2	consumer stated that her 1-year old daughter's leg keeps getting stuck in between the crib slats and whenever this incident occurs she has to struggle to pry her feet out of it. this has caused her child to have numerous bruises on her legs especially her knees.
H1140157A	20110417	20110420	1	1543	0	209	2	the caller reports that her 9 mo f child was in the crib when she had her left leg caught in the crib slats. the child suffered bruising to her knee very badly.
H1140213A	20110318	20110428	1	1543	0	214	1	1 yom got his left knee stuck between the crib slats. his mother put butter on the knee to free him. about a month later his left leg was again stuck & again she had problems freeing him. she has taken him out of the crib that has metal supports that are recalled.

Consumer Reports of Limb E. amputations (IP11), 2009-2015

H1140265A	20110201	20110503	0	1543	0	212	2	consumer stated that his 1 year old daughter started get stuck between the rails of the crib and that the drop sided rail would slip down with her. consumer stated that he has been able to release her legs & arms whenever they got stuck but he is concerned about serious hazard
H1150016A	20100815	20110505	1	1543	0	207	2	7 month old baby girl had her legs through the bars of the crib and her face was under the bumper pad. caller is afraid that as her baby grows that she may become stuck and she wouldn't be able to free her.
H1160022A	20110601	20110603	1	1543	0	206	1	6 mom got his leg stuck in the wooden slats of his crib. the consumer feels that chasm of the slats in which her son got his leg in are too large. when she found her son his left leg was in a crooked position and has red marks on his leg.
H1160079A	20110607	20110611	1	1543	0	212	2	consumer placed her 12 mo into crib. it isn't drop side crib. she heard screams & rushed back. baby's right leg stuck in the slats. baby was in pain even after her leg came loose. baby was treated with ice and lotions.
H1160085A	20110601	20110611	1	1543	0	210	1	consumer says her 10-month-old son had been in the crib for about an hour for a nap when he heard him screaming. saw both of his legs were caught between the slats up to above the knees. unable to remove herself she called 911. the child suffered bruising on both legs.
H1160163A	20110602	20110622	1	1543	0	213	2	consumer reports that on recent three occasions her 13-month-old son was heard screaming in his crib and was found with his left foot stuck up to the ankle in between two of the slats. her husband would release the baby and he had the area reddened with slight bruise.
H1170002A	20110629	20110706	1	1543	0	211	1	11 mom leg was caught between the slats of crib a few times. consumer contacted doctor because baby's right leg was very red & had abrasions. parents believe that strength of slats has been compromised due to them having to push & pull to free baby's legs.
H1170286A	20110719	20110729	0	1542	1543	205	2	consumer reports that 5 mo gets her arms stuck between the slats of the cribs and there is some difficulty in attempting to release her. the space between the mattress and the crib is too wide. consumer feels that this crib is a safety hazard.

Consumer Reports of Limb Entrapments (IPII), 2009-2015

H1180020A	20110803	20110804	1	1545	0	213	1 a 13 mom child got his leg stuck between the slats of the crib up past the knee cap. after releasing his legthe child was in pain & sustained bruise with red marks.
H1180035A	20110801	20110805	9	1543	0	211	2 11 mof got stuck between cribs slats & it was hard to release her from it. it caused a bruised on child's leg. it was 4th time this happened.
H1180072A	20110701	20110809	0	1543	0	212	2 a 1 yof child's legs have been getting stuck between the slats on therail of the crib. this incident has been occurring for the past 6 months. these are more frequent now that the child is a little older &more active. consumer is concerned that this crib is a safety hazard.
H1180152A	20110806	20110816	0	1543	0	212	2 consumer's children 1yof & 1yomboth get their legs caught in the slats of their cribs. she was able to remove their legs by applying baby oil to their legs & pulling the slats. this incident has happenedon a few occasions while the infants were sleeping.
H1180189A	20110502	20110818	1	1543	0	204	1 4 mom got his hand caught in right slats of crib. consumer took his hand out of slat and massaged his hand to assuage his discomfort. he didn't suffered any welts or bruises.
H1180293A	20110824	20110827	9	1543	0	212	1 1 yom right leg was caught in slats of his crib. he was laying on hisback when his leg was wedged right past knee. consumer made severalattempts to release infants leg. finally consumer used hand saw to saw slat off & removed the leg. leg was swollen right past knee.
H1180320A	20110829	20110831	0	1543	0	204	2 a 4 mof infant's left leg keeps getting stuck between the slats of acrib which causes her to hit her head on the rail. consumer states sometimes it is very difficulty to release her leg. manufacturer stated the crib was made per federal regulations
H1190042A	20110815	20110908	0	1543	0	208	1 8 mom consistently gets his leg caught in the slats of the convertible crib. usually consumer will hear child cry & remove his leg from the slat. on last occasiontheir child's leg was caught in a fashion that was difficult to remove but the child was not injured.
H1190075A	20110615	20110913	9	1543	0	213	1 13 mom consistently gets himself caught in slats of the convertible crib. the first time the child got his left arm caught in the slat. onthe second occasionthe right leg caught in the slats. the child does have scratches & bruises from the crib after the latest incident

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H1190147A	20110905	20110920	9	1543	0	212	1	12 mom has had his legs & arms wedged in between slats of his crib. child has rednessbut no bruising. bumper pads don't help since he gets his legs over them & gets stuck.
H1190162A	20110515	20110921	1	1543	0	213	1	13 mom gets himself caught in slats of full sized stationary crib.this has happened on 3 occasions. on last occasionhis right knee was caught in a fashion that was difficult for consumer to remove. child sustained bruises on each occasion.
H11A0071A	20111007	20111013	1	1543	0	212	1	the consumer stated that her 1 yom child consistently gets caught inthe slats of their full sized stationary convertible crib. on 1 occasionthe child caught his leg past his knees to the inner thigh. thechild sustained bruises to his leg while releasing his leg out.
H11B0121A	20111111	20111115	1	1543	0	212	2	consumer reports that 1 yof's left leg was stuck between the slats ofthe crib up to her knee. consumer's siter broke the slats and freedthe child. child's upper leg and left knee in the front and the backwas swollenpurpleand red is very sensitive.
H11B0181A	20111111	20111122	1	1543	0	213	1	13 mom leg got stuck 3 times in his crib. last time when it happened it was more difficult to free his leg. he was bruising and red on both sides of his knee. he received first aid by non-medical professional.
H11C0062A	20111206	20111207	1	1543	0	211	2	11 mof got her right leg stuck between panels of crib & could not release it. fire department was called & they were able to remove child's leg from crib. she received bruising & leg was swollenbut no medical attention was needed.
H11C0170A	20111214	20111220	0	1543	0	213	2	a 13 mof child's leg has been getting stuck between the panels of thecrib. this incident had occurred at least 4 times. consumer statedthat whenever the child is stuck it is difficult to remove her legs.consumer feels that this crib is a safety hazard. no injury.
H11C0182A	20111216	20111220	0	1543	0	214	1	consumer reports that she heard her 14-month-old son (22 lbs / 2 feet) crying and found that his leg was caught in between the slats in the front railing of the crib.

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H1210014A	20111214	20120104	9	1543	0	214	1	14 mom keeps getting both his legs stuck between slats on crib. this has caused legs to be bruised/red & swollen. consumer contacted physician who advised her to wait few hours. swelling dissolved in 2 hours. incidents have been re-occurring more frequently.
H1210259A	20120105	20120120	9	1543	0	214	1	14 mom leg consistently gets caught in slats of full sized stationery crib. two days ago his leg got caught again & consumer spent 5 minutes to maneuver his leg out of crib. he sustained bruises to his right leg. consumer has yet to schedule a doctor visit.
H1230001A	20120229	20120302	0	1543	0	206	1	consumer laid her 6 mom child to sleep when he got his leg stuck in between the rail of his crib. he flipped onto his stomach & was unable to turn back over. she was able to get his leg out.
H1230047A	20120303	20120307	0	1543	0	208	1	consumer says her son got his leg stuck in between the crib slats. she says she was unable to move the barsher fiance had to break one of the bars in order to get his leg out. she said her child had gotten his legs stuck before too but not to this degree.
H1230097A	20120105	20120310	9	1543	0	213	2	13 mof leg was caught up to her thigh just above kneecap between bars of crib. consumer freed baby's leg which was red & bruising. consumer reported that so far it happened three times & she usually put ice on baby's leg. she made appointment with pediatrician.
H1230291A	20120115	20120328	1	1542	1	211	2	11 mof leg consistently gets caught in slats of full size stationery crib. baby sustained imprints from crib & bruising just above knee most times no first aid or medical attention received. consumer placed bumpers in crib but baby still gotten caught in slats.
H1240048A	20120405	20120406	0	1543	0	211	1	consumer stated that her 11 month old child consistently gets himself caught in the slats of their full sized stationery convertible crib. she found that his leg was caught in the slat up to his thigh. the child shows no signs of injury.
H1240072A	20120405	20120410	0	1543	0	206	1	6 mom woke up from his nap & when his grandmother went to get him she saw that his right thigh was stuck in between slats located on right front side of crib. slats are about 5 & 1/2 from each other. she had to maneuver him for about 1 minute to release his leg.

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H1240094A	20120402	20120411	0	1543	0	212	1	consumer's son 12-13 mom has been getting his legs & knees stuck in slats of his crib. she believes that he could have been seriously injured by way his leg was contorted if she didn't go to his room.
H1240188A	20120418	20120420	0	1543	0	206	2	6 mof got caught in the slats of the full sized stationery convertible crib. consumer found that the child's leg was caught in the slat upto her thigh & was struggling to maneuver herself out of the slat. the child shows no signs of injury but had a red mark on her leg.
H1240277A	20120427	20120428	1	1543	0	209	2	consumer reported that while 9 mof was in crib for nap mid thigh of her left leg was stuck in between slats. this was 2nd time this happened. consumer used lotion & olive oil to forcefully remove baby's leg. she contacted pediatrician & was instructed to ice baby's leg.
H1240288A	20120325	20120501	9	1543	0	206	2	consumer's 6 month old daughter had 2 incidents when her leg was caught in the slat of her crib. the child sustained a bruise on right leg. the consumer fears that her leg could have been broken. consumer estimates that the slats are 2 inches apart from each other.
H1250021A	20100815	20120504	9	1543	0	204	2	consumer says that since she started using this crib when her daughter was 4 the child has been constantly getting her leg stuck in between the rails. the last time she had to use oil and butter to get the child's leg out. the daughter is now 24 months and weighs 24 lbs.
H1250097A	20120510	20120511	1	1543	0	209	2	while using crib consumer noticed that both of her 9 month old daughter's legs were stuck between the slats. consumer stated that it took about 10 minutes before they could free child from between slats. consumer stated that her left knee is bruised & left ankle is swollen.
H1250214A	20120524	20120525	9	1543	0	214	1	14 mom got himself caught in the slats of the full sized stationery convertible crib. consumer found that child's left leg was caught in the slat up to his knee & he was struggling to maneuver himself out of the slat. the child sustained a red marking on his leg.
H1260009A	20120601	20120602	9	1543	0	211	2	11 mof got herself caught in the slats of the full sized stationery convertible crib. consumer estimates that the slats are 2 inches apart from each other. the child sustained a red marking on the leg. consumer had to break the slat of crib in order free her from the crib.

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H1260260A	20120626	20120628	0	1543	0	214	2	consumer laid her 14 mof child down in the crib for bedtime. laterthe child stood up inside the crib & her left leg was stuck (mid calveto her mid thigh) in between the slats. consumer's husband had to pull the slats apart to to be able to remove her leg from slats.
H1270022A	20120601	20120707	0	1543	0	212	0	consumer states that the crib slats entrap her 1-year-old twin children's legs. she says for the past four weeks since the bumper was removedshe is awakened almost every night by their screamsand finds their legs stuck upto their thighs which is very difficult to remove.
H1270173A	20120709	20120720	1	1543	0	212	1	consumer had several incidents with fixed side crib when her one yearold son's leg has become stuck between the slats.with each incidentthe baby has suffered redness & bruising around the knee areasabove& below the knee area.
H1270205A	20120717	20120725	1	1543	0	214	2	consumer stated that she woke up to 14 mof screaming. she found thatbaby's left leg was stuck in between slats of crib. she was able to free baby's leg. child did not receive any medical treatmentbut herleg was extremely sore.
H1270208A	20120722	20120725	1	1543	0	214	2	14 mof started screaming. consumer went to look & found her daughterwith her leg stuck between crib slats. her foot was stuck between slats. she held her daughter still & twisted her foot enough to get it unstuck. child's foot was bruised & she put ice on it.
H1270210A	20120723	20120725	1	1545	0	214	1	14 mom got leg stuckup past the kneebetween crib slats. grandmother called 911 when she could not free him. they were able to free his leg after putting oil on leg and rail. she is concerned that babies could break their legs and would like crib rail regulations changed
H1270214A	20120722	20120725	1	1543	0	206	2	6 mof was playing in her crib with her toy & suddenly started screaming. consumer found her daughter with both legs stuck between slats upto baby's thighs. she had to pull & squeeze baby's legs to free them. thighs were red & bruised. she didn't need medical aid.
H1280017A	20120731	20120804	1	1543	0	205	1	consumer stated that 5 times leg of 5 mom was stuck between slats ofcrib. after she or baby's grandmother freed his legit was red & dimply. usually they rubbed his leg to restore circulation. there was nobruising & no scratching on baby's leg.

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H1280023A	20120801	20120804	0	1543	0	210	1	consumer stated that spacing between slats in crib are too wide & leg of 10 mom has been getting stuck 3 times within last few days. last time his leg got stuck as he fell backwards into crib. he did not sustain any injuries but had minor bruising around his thigh.
H1280185A	20120806	20120818	1	1543	0	204	1	4 mom was placed in crib for nap & 5 minutes later his right leg was caught between slats mid point above his knee. consumer stated that same incident has happened numerous times with baby's arm or leg becoming entrapped first aid received by non-medical professional.
H1280284A	20120827	20120829	1	1543	0	213	1	the mother placed 13 mom in a crib. she turned off light & went to bed. the baby started screaming. she turned on light & found baby's right leg stuck in slats about 3 inches above knee. it took few minutes to get baby's legs out of slats. the baby's legs were red & bruised.
H1290029A	20120901	20120907	0	1542	1545	205	1	consumer placed her 5 months old son in the crib for about 1 « hours. later when she walked in the room found that her son's hand was turning pink. the consumer found that a piece of thread from the crib bumper had wrapped around his wrist. the thread was a nylon clear.
H1290131A	20120725	20120918	1	1543	0	212	1	12 mom's right ankle was stuck between slats she removed it but ankle was bruised. about week later she put bumper back on crib & his left leg was stuck up to his calf. later his leg got stuck & ankle bruised again. she got indentations out of leg by rubbing with lotion.
H1290150A	20120917	20120919	9	1543	0	211	2	caller stated that her 11 mo f child was screaming & discovered that her knee got stuck between the crib slats. this was difficult to remove & then her spouse pulled at the slats to release knee which left a red mark on it. she also noticed that the frame is ready to collapse.
H1290159A	20120918	20120920	0	1543	0	212	2	consumer stated that 12 mo f's leg was stuck in between slats of crib. consumer was able to free child's leg & baby didn't sustain any injuries.
H1290188A	20120921	20120925	1	1543	0	209	1	consumer stated that crib have a wedge opening on it which caused his 9 months old child to get his ankle trapped between rear slat & corner post. he had difficulty removing child's ankle from it which caused bruising to his ankle. the first aid was administered.

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H1290205A	20120901	20120927	0	1543	0	204	0	consumer stated that her 4-months-old child's legs are getting stuckcontantly between the crib slats. she stated that the child's knee gets entrapped and it is very difficult to remove it. she is concernedthat the crib slats pose a hazard that can cause serious injury.
H1290234A	20120920	20120928	9	1545	0	203	1	consumer heard his 3 month old son scream. when he went in to checkon him he saw that his right legabove the knee was stuck in betweenthe crib slats. he easily slid the child's leg out. the child received a bruise right above his calf. the incident occurred twice.
H12A0013A	20120917	20121003	1	1543	0	212	1	1 yom was stuck in between the railing & the springs of the crib where he was laying. consumer was able to get him out & he received minorcut on his right leg: consumer noticed that the bar that supports mattress was fracturedwhich caused springs & mattress to drop down.
H12A0031A	20120715	20121004	0	1542	1543	203	2	when consumer's daughter was about 3 to 4 months old she would roll in her crib while she was asleep. the consumer would wake up to her baby crying & she would see either her arms or legs jammed in between the slats. when tried placing bumperthe child would push them down.
H12A0048A	20121003	20121006	0	1543	0	212	0	the caller stated that her grandchild leg gets entrapped between thecrib slats. whenever the one year old child arm or leg gets stuckshe has difficulty trying to remove it.
H12A0068A	20100615	20121010	0	1543	0	212	1	consumer says that both her almost 3 year old daughter and 1 year oldson have gotten their knees stuck in between the side railing of thefixed-side crib. she stated that this happens on any of the four sections of the railing.
H12A0116A	20120615	20121014	0	1543	0	213	1	consumer stated that son's leg caught between slats of his crib twice: first time he was 13 mo & 2nd time he was 18 mo. both times his right leg was stuck above knee in slats & both times baby's leg had indentionswas red & slightly swollen. he didn't appear to be injured.

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H12C0135A	20120815	20121219	9	1543	0	213	2	consumer reportst that her 15-months-old daughter who weighs approximately 22 lbs has got her and knee caught in the railing of the fixed side crib. she says this has happened three times within the last month itself and several times within four months.
H1310032A	20121204	20130108	1	1543	0	214	2	14 mof's legs have become entrapped between crib slats 3 or 4 times.he right ilg was caught at knee areawhich caused bruising at innerknee. incident repeated 2 more times. later her left leg was caught &her left knee was bruisedalthough not as seriously as right one.
H1310277A	20130129	20130130	1	1543	0	213	2	consumer placed her 13 month old daughter inside her crib & her leg became stuck in between slats. she found that daughter's left leg wasstuck up to her thigh & daughter's foot became stuck in between mattress & bar. t girl suffer redness on left inner thigh & on left foot.
H1320016A	20121115	20130205	0	1543	0	212	1	consumer reported that 1 yom left knee stuck in between crib rails. his knee started to swell & it took some time to get it out. she was told by manufacturer that slat distance meets regulations.
H1320188A	20130217	20130226	1	1543	0	212	1	consumer reported 12 mom began screaming approximately 5 to 10 minutesafter she placed him in crib. she found him with left leg caught upto thigh between slats of crib. it took five minutes to free baby's leg. his knee & upper thigh were red. she treated baby by herself.
H1320227A	20120128	20130301	9	1543	0	214	2	consumer says her 14-months-old daughter's leg started getting stuckbetween the crib slats approximately 2- 3 months ago causing her to receive minor bruises to both her legs. consumer is concerned that thewidth of the slat on the crib is a safety hazard to her child.
H1330139A	20130311	20130319	9	1543	0	208	2	8 mof is getting her leg stuck through the slats of the crib. she has not bruised but left a slight mark. this has happened for severalweeks now. she has used the convertible mesh to try to avoid this from happening but it does not help.

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H1330157A	20130317	20130320	1	1543	0	210	2	the consumer stated that she went to change the baby. 10 moif had herright leg stuck in the slats all the way up to her thigh where the diaper stops. she could not get it out & used baby oil. the baby's legwas red & bruised. she did not require medical attention.
H1330219A	20130324	20130328	0	1542	1543	206	1	consumer reported that 6 mom foot stuck between rails of crib. boy couldn't get it out & consumer had to move his body in order to get hisfoot out. child's shin was red after incident. consumer stated thatcrib has crib mesh protector that goes up about a foot wide.
H1340147A	20130415	20130418	1	1543	0	209	1	consumer stated that 9 mom's leg got stuck between crib slats all theway up to hos knee. they were able to remove his leg from entrapmentby using butter to create a slippery surface. the child received minor bruises; he did not need medical attention.
H1350152A	20130519	20130522	1	1545	0	212	1	consumer reported that while 12 mom was inside crib his legs were stuck in between slats up to his thighs. consumer's husband had to crackslats to be able to remove one of his legs. there were bruises on his left leg. she didn't have to treat it with any medicine.
H1360073A	20130610	20130612	9	1543	0	212	2	caller stated that her 1 year old child's leg keeps getting entrappedbetween the crib slats regularly which are painful to the child. this incident started occurring 6 months agowhich causes minor imprints on both her legs (from the knee up).
H1360165A	20130619	20130622	1	1543	0	210	1	consumer had placed her 10 mom child to sleep in the crib. lattershe discovered that the child's thigh was entrapped between the slats.they were unable to release the child's leg so they had to break thecrib apart. the child sustained bruises & received first aid.
H1370310A	20130729	20130802	1	1543	0	211	2	mother of 11 moif found that baby's left leg was caught in slats of crib up to her thigh& blanket was over baby's face. when baby was released her leg had deep red welts. couple of days later baby's leg wascaught again. redness was treated by mother & grandmother.
H1380081A	20130808	20130810	9	1543	0	214	1	consumer found that 14 mom's right leg became stuck up in between slats up to above knee after she placed him in this crib. she stated ithappened not first time. it took 20 minutes to get him unstuck. he suffered bruises on right leg. mother is going to take him to doctor.

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H13A0059A	20131004	20131010	1	1543	0	214	1	consumer reports that 14 mom had his leg stuck between the slats on acrib. consumer's husband pulled the slats apart while the consumer freed his leg. he suffered bruising next to his knee and she placed arnice pack over his knee to alleviate the swelling.
H13C0051A	20130805	20131210	1	1543	0	204	1	4 mom was placed in crib. after about ten minutes consumer found himwith left arm stuck up to between elbow & shoulder. incident has occurred two to three times per week with his arm or leg becoming entrapped between slats with bruises. no medical treatment was received.
H1410139A	20140115	20140117	0	1543	208	2	2	consumer was asleep when she heard baby screaming. she found that 8 mof's left leg was stuck between crib slats. she stated that liquid soap was used to get leg from between slat & it took about ten minutes. left leg was bruised but baby was alright.
H1430083A	20140307	20140315	9	1542	1543	206	1	crib mattress doesn't fit the crib. 6 mom's legs & arms got entrappedbetween the slats and the bar that hlds up the mattress. she had difficulty removing his arms and legs. she noticed that he had black &blue marks that dissipated after a few minutes.
H1430120A	20140217	20140321	1	1529	213	2	2	caller reached to pick her 13 month old daughter up when she heard her crying. the baby's leg was caught between the crib bars up to above her knee. when could not loosen the leg from between the slats, thecaller's father got a saw & sawed the slats to release her leg.
H1450091A	20140512	20140515	9	1543	213	1	13	mom's legs were entrapped between crib slats & consumer had difficulty removing them. dishwasher detergent and water were used to release child's legs. his legs were stuck up to his thighs. she noticed minor bruising (red marks). no medical attention was received.
H1460071A	20140201	20140613	0	1543	209	2	2	consumer reported that 9 mof's leg slip through slat spacing of crib& gets stuck at thighs. she tries to twist & turn her leg to free itfrom slats. he has to tug leg out to free it from spacing. he statedthat side slat spacing is roughly two inches.

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H14A0007A	20140926	20141004	1	1543	205	1	5 mom was placed in crib when consumer heard screaming. she found him inside crib with right leg all way up to hip stuck between rails. she was able to free his leg. his thigh was red. she stated boy's leg was trapped between bars once before.
H14A0180A	20120601	20141030	1	1543	206	2	consumer stated that her both daughters got their arms & legs stuck in between slats of crib. issue occurred with older daughter when shewas around 6 mo. recently 9moof has same problem. they both got bruises & were seen by medical professional.
H1530210A	20150309	20150324	0	1543	209	2	consumer stated that her daughter's thighs got entrapped between therails of the crib twice. first when she was 9 months old & about 2 weeks ago. she has used bumper pads but the pads slides up & down & allows her to push her legs over the pads. no injury was sustained.
H1550110A	20150429	20150520	9	1543	213	1	13 mom's left leg, between thigh & knee, became trapped between cribslat. consumer had to call emergency services. police officer pulledback slat & released child's leg. ice was administered to swollen area. earlier, bottom slats became loose & child crawled out.
H1560061A	20150609	20150611	1	1543	213	1	13 mom was limping slightly after he woke up & was out of crib. recently consumer placed baby in crib & after 20 minutes he was screaming. she found that his right leg was caught in slats up to knee. after she released leg limping returned, baby has not been seen by doctor.
H1570043A	20150220	20150710	1	1545	213	1	consumer experiencing the problem that her 13 months old son's legs get stuck between the crib's rails at his knees. her son's knee was caught between the crib's rails. she had to almost break one of the rails in order to get him out. his leg was red & mildly swollen.
H1590159A	20150901	20150926	0	1543	206	2	consumer reported that 6 moof gets leg stuck in crib between slats when she tries to turn in crib. legs go all way through. this happened at least 10 times in past month. girl is 28.75" tall & weights about 18 pounds.

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H15A0065A	20151013	20151016	1	1543	204	2	the consumer stated that her 4-months-old daughter got her left leg stuck (up to the knee) between the slats of the crib. the consumer had to twist and push her daughter's leg to get it free from the knee area. the child had marks on her leg. possible recall #10-276.
H15A0066A	20151014	20151016	9	1543	212	1	the consumer stated that her 1-yo son's thigh (just above his knees) got stuck between the crib slats. she stated that the incident occurred twice and caused minor bruising just above the child's knees. themfr advised her that the crib was made in compliance to the standards
I08C0347A	20080501	20090102	1	1543	0	206	1 6 month old boy got his leg trapped between the slats at the back of the crib twice. consumer was able to remove his leg & received a slight bruising.
I0910206A	20090109	20090128	1	1545	0	212	1 1 year old boy's leg became stuck between the slats of his crib in the middle of the night.
I0910436A	20081230	20090205	9	1543	0	204	2 a 4 month old girl got her arm trapped between the mattress and the roll down bar of her crib.
I0910533A	20090117	20090209	1	1543	0	212	2 1 year old female had gotten her leg stuck between the slats of her crib. consumer took 25 minutes to get her leg out. she has bruises & pinch marks on her legs & has trouble walking due to the pain.
I0920273A	20090201	20090311	1	1545	0	212	1 1 year old boy legs & ankles are getting stuck between the wood rails of crib. he is receiving bruises and knots on his ankles from getting stuck.
I0920471A	20090101	20090318	1	1543	0	212	1 1 year old boy's legs get stuck in between slats of baby crib. he has been stuck several times bruising his legs and knees.
I0930039A	20090227	20090326	1	1543	0	213	1 13 month old boy legs and feet got caught between the spindles of the crib
I0930487A	20081101	20090408	9	1545	0	210	2 10 month old girl was pinned between railing & crib platform. the platform is on rods that allow it to move several inches. child's weight pushed it to the side creating gap. she slipped through hole getting caught by neck. caused choking & bruising.
I0930574A	20090223	20090414	1	1543	0	212	2 the leg of a 12 month old girl was stuck above her knee in between the slats on the side of the crib. consumer cut the leg of her pajamas & manipulated her leg free. she sustained redness on both sides of her knee.

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I0940003A	20090327	20090420	1	1545	0	212	2	1 year old female twins' legs have gotten stuck & tangled in the rails of 2 cribs more than once. one baby received a terrible bruise & mark on her knee.
I0940590A	20090421	20090508	9	1543	0	212	1	consumer's one year old son got his foot stuck in the crib. another day consumer's one year old daughter also got her leg stuck.
I0940638A	20090401	20090512	1	1543	0	212	1	consumer purchased crib for her 1 year old son. the spaces on the crib are too far apart & he has about 9 or 10 bruises on his legs & knees for getting his legs stuck between them even with the crib bumpers attached.
I0940681A	20090423	20090513	1	1543	0	210	2	10 month old girl leg slipped between the slats of cribs and she was stuck. it took two adults to free her after much adjustments. her leg was bruised from the ordeal.
I0940712A	20090426	20090513	1	1545	0	209	2	9 month old girl was standing & fell & got her left leg caught in between the bars of the crib causing a very bad contusion on her left calf.
I0940858A	20090428	20090520	1	1543	0	210	2	twice in one week 10 month old girl wedged her leg through the slat of the crib & got stuck.
I0940859A	20090430	20090520	1	1543	0	207	1	consumer woke up to 7 month old boy screaming. he was stuck between the mattress & railing of his crib. his right arm & leg were below the metal mattress support bar & his left arm & leg were above it. his head was buried in the mattress.
I0940861A	20090424	20090520	1	1545	0	211	1	11 month old boy's leg was caught in between the slats of the crib & his leg was bruised.
I0950008A	20070501	20090520	1	1543	0	211	1	11 month old boy's leg got stuck in his crib. consumer had to break crib to free leg. the leg was turning blue & circulation was being cut off.
I0950050A	20081109	20090518	1	1543	0	213	2	both legs of 13 month old girl were stuck through the railing on her crib. her legs were lodged so tight that consumer had to use baby oil in order to get them too slid out.
I0950074A	20090502	20090519	1	1543	0	212	0	1 year old child leg was entrapped above the knee between the slats of the crib. consumer had to pull the leg out causing a lot of pain to the child
I0950078A	20090501	20090519	1	1543	0	212	1	1 year old boy has multiple bruises from his legs getting trapped between the crib slats. it took several attempts & many minutes to get them out without breaking his legs.

Consumer Reports of Limb En...apments (IP11), 2009-2015

I0950921A	20090523	20090615	1	1545	0	214	2 14 month old girl got her foot caught in wooden crib & was unable to free herself. she sustained red marks on her foot.
I0950966A	20090520	20090617	1	1543	0	205	2 5 month old girl rolled overfalling into 3 to 4 inch gap between mattress & crib bars. her arm & half her chest became wedged between the bars & mattress. her face was stuck in mattress. the bars are not sturdy & moved allowing her to fall farther down.
I0951135A	20090401	20090622	1	1543	0	212	2 1 year old girl leg was trapped between the slats in her crib in two separate incidents.
I0960283A	20090607	20090630	1	1543	0	212	1 1 year old boy got his leg caught between the slats on his crib. his leg was stuck in such a way that his knee cap had worked its way to the outside of the crib with the top part of his leg still on the inside. slats on the crib had to be broke to free him.
I0960328A	20090601	20090707	1	1543	0	212	1 1 year old triplet boys have gotten legs stuck in slats of cribs multiple times. in 1 incident the crib side that folds down broke. boy received bruises on both sides of his knee.
I0960390A	20060101	20090706	9	1543	0	206	1 a 6 month old boy had one of his legs stuck through the slats at the back of the crib.
I0970150A	20090629	20090728	1	1543	0	205	2 5 month old girl got her legs caught between slats of the crib and was screaming in pain.
I0970162A	20090501	20090728	1	1543	0	211	1 11 month old boy is constantly getting his legs caught between the bars on this crib.
I0970542A	20090101	20090805	1	1543	0	212	2 1 year old girl has gotten her legs stuck in between the bars of the crib on 2 occasions.
I0970592A	20090713	20090811	1	1543	0	210	1 a 10 months old boy's arm stuck between the rails of the crib and bruised. the drop down rail of the crib also gets stuck and does not come down.
I0970675A	20090715	20090810	1	1543	0	213	1 13 month old boy had his leg stuck between the bars of his crib when he awoke from his nap.
I0970691A	20090608	20090811	1	1545	0	208	1 8 month old male infant's arm got entrapped in the slat of his crib. he suffered a dislocated & broken arm.
I0970694A	20090715	20090811	1	1542	1545	211	1 the drop side of 11 month old boy's crib came apart from the sides of the crib on the right side while he was sleeping causing him to fall between the mattress & drop rail. he became stuck & had red marks on his face chest & arms. suffocation hazard.

Consumer Reports of Limb Entrapments (IP11), 2009-2015

I0970786A	20090716	20090811	1	1542	1545	210	2	10 month old girl got her leg caught in the bars of the crib while trying to sit up. she suffered from a bruise & blister on her upper right thigh. also got leg stuck between standard crib mattress and side of crib.
I0970935A	20090723	20090817	9	1543	0	213	1	consumer found that her 13 month old son had his knee stuck in the side of the crib. consumer pried it out. his knee was swollen and red.
I0971063A	20090727	20090818	1	1543	0	210	1	10 month old boy arm got stuck repeatedly in the crib. the slats on the side of the crib are thin and when he pulls up on them they bend. there are large gaps in each corner of the crib.
I0971136A	20090101	20090819	1	1543	0	212	1	a 1 year old boy getting his ankle caught in the slats of the crib frequently when he is sleeping and gets twisted between the slats. the child received a swollen ankle.
I0971152A	20090728	20090820	1	1543	0	212	1	a one year boy got his leg stuck between the sidebars of the crib he was sleeping in.
I0971208A	20090415	20090820	1	1542	1543	207	2	7 month old girl was playing in her crib when her arm slipped & her shoulder became stuck between the crib & the mattress.
I0980071A	20090802	20090826	1	1543	0	212	1	a 12 months old boy got his foot stuck multiple times between the corner slats of the crib while rolling over. consumer says this is due to design flaw in the corner slats of this crib which is not present in many other cribs.
I0980254A	20090806	20090901	1	1543	0	211	1	11 month old boy's legs became trapped in between the slats of the crib. the crib slat had to be broken in order to free him. he suffered swelling & redness.
I0980389A	20090809	20090902	1	1543	0	208	1	8 month old boy had his leg caught in between the bars of the crib. he sustained a small red mark. later his arm became entrapped.
I0980530A	20090729	20090908	1	1542	1543	207	1	observed 2 gap between the mattress and the crib. a 7-month old boy's leg got stuck between the head of the bed and the mattress. consumer feels this is very unsafe for her child.
I0990376A	20090801	20091002	1	1543	0	212	2	1 year old girl leg got stuck between the slabs of the crib. she was crying & screaming while trying to get her leg out.
I0990451A	20090910	20091008	1	1542	1543	212	1	the mattress support on consumer son's crib broke at the end and the leg of one year old boy got caught between the mattress & the mattress support frame.

Consumer Reports of Limb E. amputations (IP11), 2009-2015

I0991156A	20090927	20091023	1	1543	0	212	2	consumer found her 12-month-old daughter's leg stuck again between the crib bars. first time she had to call paramedics.
I0991230A	20090925	20091102	1	1543	0	212	1	plastic hardware on the dropside of crib snapped & the side was loosely hanging. 1 yom had his arm & part of his body stuck.
I0991248A	20090901	20091102	1	1543	0	211	2	consumer's son got limbs stuck in the crib a few times in the past. now 11 mo has started getting her legs stuck. she has suffered redmarks & bruises.
I09A1103A	20090501	20091120	1	1543	0	209	1	a 9-month-old boy got his arm and shoulder stuck in the spaces between the bars of the crib and could not breathe. the child has gotten stuck three times and would not sleep in the crib any more.
I09B0109A	20091031	20091125	1	1543	0	212	1	1 year old boy has gotten caught between the slats of the crib twice. once it was his elbow once it was his leg where he suffered minor bruising.
I09B0133A	20091030	20091130	1	1543	0	211	1	11 month old boy has gotten his leg stuck in the corner of the crib up to above his knee. the bottom that holds the mattress is far from the side of the crib.
I09B0711A	20091101	20091211	1	1543	0	212	2	a 1-year-old girl is able to fit her legs through the crib slats and when she tries to roll over her legs get stuck and sometimes sustain bruises. consumer used a crib bumper but the child is able to get her legs over the bumper and between the slats.
I09B0722A	20091001	20091211	1	1543	0	207	2	a 7-month-old girl's legs keep getting stuck in between the crib slats leaving welts and red marks on both legs.
I09B0982A	20091014	20091217	1	1543	0	204	2	a 4-month-old girl's one leg was caught between the crib's bars and the side rail popped out while the leg was in between the bars. consumer says if were not present the child could have been seriously hurt.
I09B1066A	20091020	20091222	1	1543	0	204	2	the drop side of the crib started sliding down during night and a 4-month-old girl's arm got caught in a red spot. the brackets at the bottom that stop the dropside portion broke off. the front portion of the crib slides down randomly ends get shaky & loose.
I09B1152A	20091113	20091223	1	1542	1543	212	1	a 12 mo received a large bruise on his left knee when he rolled over and his legs & hips got trapped between the mattress & the front drop side of his crib. the drop side was pulled all the way up when the incident occurred.

Consumer Reports of Limb Entrapments (IPII), 2009-2015

I09B1184A	20091101	20091224	1	1542	1543	203	1	consumer states the crib rail was installed with upside down door due to poor directions and cannot be fixed as some plastic parts have broken. the crib has too large a space between the side and mattress a 3-mom rolled over and got his arm stuck.
I09B1198A	20091101	20091224	1	1543	0	207	1	a 7-month-old boy got his foot and ankle trapped and twisted in the slats of the crib.
I09B1202A	20091101	20091224	1	1543	0	213	2	a 13-month-old girl got her whole leg through the crib's bar slabs and got her knee stuck. the bar had to be broken in order to get the baby loose. also the plastic ledge at the bottom to hold the side from sliding down has broken.
I09C0013A	20091124	20091229	1	1543	0	204	1	consumer reports about arms and legs of a 4-month-old boy getting stuck in the crib's rails to the point of leaving bruising and welts.
I09C0067A	20091120	20091229	1	1543	0	214	1	consumer found his 14-month-old boy's legs up to knees were twisted and stuck in the crib rails. the legs were turned purple and his feet were black. the child was in terrible pain and his legs and feet were bruised.
I09C0144A	20091128	20100105	1	1543	0	205	2	a 5-month-old girl's arm got stuck in the front rail of the drop down crib because of too much opening. her arm had red marks from this. the front drop side also fell off a few hours later. her arm was stuck and the rail was attached only at the bottom.
I09C0386A	20091104	20100120	1	1543	0	214	2	a 14 mo/f has gotten her knee stuck in between the slats of her crib on 3 occasions & bruised her knee on one of these occasions. owner had to put lotion to free her. owner feels the unit should be included in the recall.
I09C1132A	20091216	20100127	1	1543	0	212	1	consumer's 12-month-old son woke up crying through the night because his foot and arm got caught and stuck in the crib. consumer reports that many times he had bruises and pain from these incidents.
I09C1134A	20091212	20100127	1	1542	1543	208	2	consumer lowered the crib to the lowest level and reports that there is a 2 inch gap between the mattress and rails. when her 8-month-old daughter pulled herself up to stand or when she rolled over her feet and arms got stuck in the gap causing her pain.
I09C1316A	20091201	20100201	1	1543	0	211	2	11 mo/f is getting her legs stuck in between the slats in the railings of the crib. it has caused bruising & swelling in her legs.

Consumer Reports of Limb En...apments (IP11), 2009-2015

109C1481A	20091226	20100202	1	1543	0	212	2	consumer's 1-year-old daughter's leg was caught in the crib's bars two times. in the first incident she was standing and her leg went through the bar and could not get it out. second time she was lying down and her leg went through the bars and got stuck.
11010139A	20100101	20100212	1	1543	0	211	2	an 11-month-old girl taking nap in the crib woke up screaming. consumer found her leg was caught between the bars of the drop-down rail and the rail had dropped down on to her leg. consumer had to pull the bars apart and cracked one to get her leg out.
11010231A	20091217	20100216	1	1543	0	209	1	a 9-month-old boy entrapped his leg/foot in the crib slats. at the hospital it was determined that he had a fracture to his left tibia. the slats are 2.0 apart. the boy's foot & leg up to his thigh can easily fit between these slats.
11010392A	20100107	20100217	1	1543	0	209	1	consumer's 9-month-old son got his leg stuck in between the cribrails and she could not get it out. consumer sought a neighbor's help and the child ended up with a cut behind his right leg and had swelling. the child was taken to doctor.
11010472A	20100110	20100219	1	1543	0	212	2	consumer heard a loud thud and found her 1-year-old daughter crying sitting on the ground and the siderail on her crib was down. also reports that multiple times the child would get her arms/legs stuck in between the crib's rungs and between the mattress.
11010844A	20091222	20100301	1	1545	0	210	1	10-month-old boy's leg was stuck in between the slats of the dropside of his crib. he sustained bruising on both sides of his leg.
11010852A	20100118	20100301	0	1545	0	208	1	8-month-old male infant's leg was through the slats in the side of his crib & was stuck. child could not pull his leg out. no injury.
11010883A	20100102	20100226	1	1543	0	212	1	the top of the rail on the front of the crib & the pole that goes across the top leave a gap large enough for 1 year old to get his leg upon. he got his whole leg stuck in the gap & mother had to pry his leg out. he had a bruise across the leg.
11011026A	20091120	20100303	1	1543	0	212	1	an one-year-old boy has got his leg stuck in between the rails of the crib 3 times. it took consumer almost a half hour to get it unstuck. the boy had slight bruising on his upper thigh.

Consumer Reports of Limb Entrapments (P11), 2009-2015

I1011090A	20091214	20100310	1	1545	1658	214	2	male infant & 14 mo f got their legs/knees got stuck in crib's siderails numerous times. the wood & finish on crib became soft & girican bite splinters off the sides & scrape the finish off with her teeth. splinters were found in her mouth/crib on clothes.
I1011200A	20100125	20100303	1	1543	0	209	2	consumer reports the plastic guide at the bottom of the crib's dropside rail broke and her 9-month-old daughter slid through it and got her leg caught in it.
I1011222A	20070101	20100303	1	1543	0	206	1	consumer reports his daughter her legs stuck in between the bars of the crib several times which often resulted in bruising and swelling of her legs. more recently six 6-month-old son got his leg stuck and it was hard to get them out.
I1020067A	20100129	20100304	1	1543	0	211	1	crib is very shaky when put together as a regular bed & as a crib 1 mom gets his legs stuck in the rails & there is a gap between the corners of the mattress and the crib.
I1020351A	20100209	20100316	1	1543	0	207	1	a 7 month old boy was playing in the crib & got too close to the edge & his legs got stuck in between the bars. he was trying to stand up & fell over & got his arm stuck in between the bars this time.
I1020544A	20100209	20100322	1	1543	0	207	2	consumer found her 7 month old daughter with her legs stuck between the crib bars. she sustained a small bruise on her inner thigh.
I1020552A	20100207	20100322	1	1543	0	212	1	a 12 month old boy got his leg stuck between the bars of the crib, the dropside part of his crib is separating from the frame and his fingers were pinched at the separation point.
I1020858A	20090918	20100317	1	1543	0	210	1	consumer reports her 10-month-old son while sitting in the crib would put his legs between the bars and his legs would get stuck around the knee area. when taken out the whole area around the knee is bruised badly.
I1030033A	20100103	20100324	1	1542	1543	212	2	an one year old girl got her leg/knee caught between the mattress & crib rails. consumer also has been having an issue with the dropside not latching.
I1030240A	20100302	20100330	1	1543	0	212	1	an 1 year old boy got his left leg stuck in between vertical crib rails above the knee. consumer had to use force to remove it resulting in excess pain and distress to the boy. he has a deep black bruise on his left thigh.

Consumer Reports of Limb E. mpments (IP11), 2009-2015

I1030802A	20100319	20100412	9	1543	0	205	1 5 mom was in his crib and he shares a room with his 2 year oldbrother. when his arm got stuck between the railingthe olderbrother grabbed ahold of his arm and ripped on it and it broke thearm of 5 mom.
I1040339A	20100408	20100504	1	1543	0	212	2 1 yof got her thigh stuck between the posts of the crib & was unableto remove it. her knee became swollen & bruised. post had to bebroken to remove her leg. it also happened to baby boy in a anothercrib.
I1040381A	20100409	20100422	1	1543	0	212	1 one year old boy got his leg stuck in the slats of the crib andbecome bruised and swollen on leg/knee.
I1040842A	20100423	20100503	1	1543	0	206	2 6 mof got stuck her leg in slat on back of crib as well as there is a large gap between the crib and the mattress that her other leg fellinto. she is scraped up and bruisedhad to almost break the slatto get her leg freed.
I1040889A	20100425	20100503	1	1543	0	209	1 9 mom got his leg stuck in between 2 slates in the side of the crib.the leg turned blue from circulation being cut off. consumer had tobreak a slat to get his leg free. it is swollen & red.
I1041007A	20100401	20100505	0	1543	0	208	1 drop rail of crib does not work properly & can detach from the sides.8 mom gets legs & arms stuck between the crib bars.
I1050062A	20100101	20100506	1	1543	0	212	1 12 mom got his legs caught in between the rails of the crib. he hadcuts and bruises on his legs trying to get his legs out.
I1051861A	20100201	20100520	1	1545	0	212	1 a 1 yom dislocated his elbow after his arm got stuck between the cribslats during night. he has gotten his feet caught between the cribslats on two different occasions and was not able to get himselffree.
I1053288A	20090501	20100604	1	1543	0	211	1 the crib sliding rail came apart at the bottom when the consumer'sdaughter was in the cribthen the bottom of the rail came apart and1 mom got his foot and leg stuck between the rail. and they nevergot the repair kit as requested.
I1053648A	20100519	20100607	1	1543	0	212	1 12 mom keeps getting his legs stuck in the crib slats. it's happenedtwice in one week.
I1054227A	20100522	20100615	1	1543	0	209	1 9 mom got his leg stuck between the rails of the crib. consumer hadto cut one of the rails to release child's leg. child sufferedsevere bruising around his knee cap.
I1060086A	20100529	20100617	0	1543	0	214	1 14 year-old twin brothers both had gotten their legs stuck in between the slats of the crib.

Consumer Reports of Limb Entrapments (PII), 2009-2015

I1060205A	20100530	20100616	1	1543	0	212	1 1 year old male's knee became stuck between 2 of the slats in the crib resulting in severe bruising on the sides of right knee.
I1060335A	20100602	20100615	1	1543	0	212	2 1 yof got her leg stuck between the bars of the crib while sleeping in and couldn't get out. she has a bruise on her leg from the incident.
I1060704A	20100606	20100621	1	1543	0	212	1 1 yom got his foot stuck into the cutout of the crib. he had some bruises & a sore ankle after the incident.
I1060715A	20100607	20100618	1	1543	0	214	1 14 mom got his right leg above his knee caught in the wooden front rails of the crib. leg received some bruising. incident hashappened before. parents contacted manufacturer and were told to gobuy a net.
I1060927A	20100612	20100623	1	1543	0	212	1 12 mom has gotten both of his ankles stuck in between the crib railing while sleeping & unable to move on his own. it results in bruises to his ankles. he also fell out of the crib in the middle of the night.
I1061476A	20100621	20100702	1	1543	0	209	2 a 9 mo's leg was stuck between two of the slats on her crib. the slats are 1 1/2 inches wide. the consumer had to forcefully pry her upper thigh out of the slats. she sustained a large bruise across the inner part of her left upper thigh.
I1061573A	20100101	20100706	1	1543	0	212	2 a 1 yof infant's knee got stuck in the slats of her crib on numerous occasions. owner reports one time her knee swelled up so badly & had to apply ice to her knee in order to release it.
I1061610A	20100620	20100706	1	1543	0	207	2 one of the 7 mo's thigh & knee was trapped between the crib spindles & unable to move without getting injured.
I1061676A	20100627	20100707	1	1542	1543	208	2 a 8 mo's baby's leg got stuck in the slats of one end of her crib. her leg was caught about 1 inch above the kneeflesh with her mattress. the consumer had a hard time releasing her leg. her leg where it was wedged in the crib has a red mark on front & back.
I1061770A	20100628	20100708	1	1543	0	212	2 a 1-year-old girl's leg was stuck in between the bars of the crib. when trying to free her the bar split in half. this was the thirddtime it happened.
I1070079A	20100615	20100709	0	1543	0	207	2 7 mo's caught her leg in the crib rails couple times. the rail had been completely pushed off the track while she was in there & she might have fallen out.

Consumer Reports of Limb En...dgments (IP11), 2009-2015

I1070163A	20100704	20100712	1	1543	0	205	2 5 mof got her leg stuck in between the slats of the crib. she turned over twisting her leg.
I1070273A	20100609	20100716	1	1542	1543	212	1 1 yom's left foot stuck between side rail of crib & mattress of crib twisted when he fell over & resulted in fractures to the fibula & tibia of his left leg.
I1070315A	20100707	20100715	1	1545	0	212	2 a 1 yof lodged her arm between stationary side panel & round bar/rail of crib & the arm got stuck above the elbow. in order to avoid further incidents the round bar/rail was removed. now the front of the crib is quite low that she'll be able to climb out.
I1070477A	20100708	20100720	0	1542	1545	212	2 1 yof gets her legs stuck between the slots in the crib railing. it takes 2 adults to free her. parents installed bumper but child still manages to get stuck. parents are worried child could break or dislocate her hip and leg.
I1070487A	20100711	20100720	1	1543	0	212	1 a 1-year-old boy's arm became wedged between two slats on the crib. the slats had to be broken in order to get the arm out. the baby received redness and bruising at the site where the arm was stuck.
I1070720A	20100718	20100723	1	1542	1545	212	1 1 yom had his foot and leg stuck inside the metal part of the mattress frame of the crib slightly below the mattress. he suffered light scratches.
I1070788A	20100718	20100726	1	1545	0	207	2 7 mof had her leg stuck between the bars of her crib. parent was able to break one of the bars and get her leg out. child's leg was red and bruised.
I1070837A	20100630	20100727	1	1543	0	212	1 a 1 yom infant legs keep getting stuck in the bars of his crib.
I1070860A	20100709	20100727	1	1543	0	212	1 1 yom's legs got caught in between the drop side of the rail of the crib causing bruised.
I1070893A	20100722	20100728	1	1543	0	212	2 a 1 yof has got her leg stuck in the side rail of the crib right where it attaches to the back piece because the slat is not as wide as the others. the consumer had to take the crib apart in order to release baby's leg. baby got swollen leg with blue/black marks.
I1070941A	20100401	20100728	1	1543	0	212	2 1 yof had her leg stuck inside of the wood bars of crib. minor injuries.
I1070974A	20071201	20100729	9	1545	0	206	2 6 mof got her leg stuck in between the front bars of the crib parent slid her foot out. she was taken to the hospital later and a hairline fracture on her shin was discovered.

Consumer Reports of Limb Entrapments (IPLI), 2009-2015

11071133A	20100717	20100803	1	1545	0	212	1	1 yom got his leg stuck at the thigh between 2 bars of crib. he wastwisting and trying to get outand his thigh was starting to bruiseand swell up. consumer had to break one of the rails to get his legout.
11080039A	20100801	20100804	1	1543	0	212	1	the leg of a 12 mom became entrapped in the slats of his crib. hesuffered knee painswellinginrednessand difficulty walking.
11080081A	20100615	20100804	1	1543	0	211	2	an 11-month-old girl's legs got jammed between the slats of the crib. she could be freed after a lot of pulling and prodding. next dayshe had bruises surrounding her knees. approx. 5 weeks later herleg was again stuck in the slats around her knees.
11080180A	20100802	20100805	1	1542	1543	206	1	shortly after consumer put her 6-month-old son in the crib to sleephe became pinned between the crib's drop side and the mattress. hisback was up against the drop side and he was trapped from his hipdown with one leg on the mattress and the other leg trapped down.
11080352A	20100808	20100811	1	1545	0	212	2	1 yof has gotten her leg caught between the slates of the crib 4times in the past months. one incident involved her getting her legstuck all the way to her hip. there were bruises on her leg.
11080749A	20100814	20100824	1	1542	1543	212	1	while sleepingan 1 yom child's foot was stuck & had turned purplebetween the slats of the crib. the consumer was able to wiggle himfree. consumer also reports that the lowest setting for themattress is not low enough & the baby can fall out.
11080777A	20100820	20100824	1	1545	0	212	1	1 yom has gotten his leg stuck in the rungs of his dropside cribrmultiple times. to get him freeone parent must pry apart therungs while the other frees the leg. these incidents have causedbruising of the child's leg.
11080958A	20100825	20100901	1	1543	0	210	2	10 month old girl's leg has gotten stuck twice in between the rails of the crib and both times consumer had to pull it out. leg was redand marked.
11090295A	20061201	20100914	1	1543	0	206	1	consumer reports that it has been numerous times that her 6-month-oldson's leg has been stuck between the slats in the crib panels.alsothe wood of the rails is so soft that as soon her child beganteethinge ate hunks out of the top of the rails.

Consumer Reports of Limb L. apments (PII), 2009-2015

I1090330A	20100801	20100913	1	1543	0	212	2	consumer reporter that her 1 year old granddaughter's legs & arms got stuck in her crib 3 times. two of those time consumer's friend pulled the slats apart to remove her legs. she suffered with badbruises & she was limping.
I1090397A	20100830	20100915	1	1542	1543	205	1	consumer reports that a 5 mom had his arm & part of his shoulder stuck down between the side of the crib & mattress. his head was wedged in between at night.
I1090643A	20100912	20100921	1	1542	1543	203	1	consumer reports that a 3.5-month-old boy was laid on his back in the crib for a nap. upon awaking he rolled over and then tried to roll back when his arm got stuck in between the mattress and the backboard of the crib. the mattress did not fit snugly.
I1090758A	20080501	20100924	0	1545	0	213	1	13 mom got his leg stuck in the slats of the side of the crib. parents had to saw open of the front slats to get his leg out.
I1090795A	20100919	20100927	1	1543	0	211	2	a 11 mo infant received a whelp on her thigh & redness when her thigh got stuck in the bars of her crib. owner had to almost break the bars to release her leg.
I1090804A	20100915	20100924	1	1543	0	207	2	7 mo f was repeatedly getting her legs and sometimes arms stuck in the side rails for the crib. her leg had a very slight red/blue tint and her thigh where it was stuck had a very red welt left on it.
I1090884A	20100922	20100928	9	1545	0	210	1	10 mom got his leg stuck in the slats of the crib. the consumer almost had to break one of the slats to get his leg out. the consumer called the doctor. probably no injuries but child is being monitored.
I10A0138A	20101001	20101005	1	1543	0	209	2	9 mo f stuck her leg through the slat of the crib and because of her knee cap she could not pull it back through. her knee and leg were red for a while after the incident.
I10A0392A	20101010	20101014	1	1543	0	211	1	consumer reports that an 11-month-old boy was in the crib when he started screaming. she found his leg was stuck in the slats of the crib. consumer had to pry his leg out which was bruised. consumer says she could hear the wood cracking.

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Consumer Reports of Limb Entrapments (PII), 2009-2015

I10A0513A	20101014	20101019	0	1543	0	204	1 the consumer believe that the crib slats are too far apart. a 4 mombaby has recently learned to roll over & his arm always gets stuckbetween the slats. the consumer is concerned if his arm is stuck hewould not be able to roll back over on his tummy.
I10A0514A	20101015	20101019	1	1543	0	210	1 a 10 mom's leg was caught in the crib railing while he was sleeping;he could not move or get his leg loose. consumer had to bend thewood to release his leg. his leg was swollen & red.
I10A0612A	20100518	20101021	9	1543	0	208	1 one of the screws from the drop side of a crib came out. a 8 mominant got his leg caught in it & suffered a fractured femur.
I10A0616A	20101018	20101021	1	1543	0	212	2 a 1 yof infant leg was completely stuck through the bar of a cribduring use. on a previous occasion owner had to cut off the bar inorder tyo release her leg. owner states manufacturer took 3 monthsto send repair kit under recall program.
I10A0684A	20101006	20101027	1	1543	0	204	1 4 mom's legs caught in the crib dropside rail/slats that runperpendicular to the mattress. he tried to be free by turning overbut his legs gets lodged more tightly & leave bruises on his legs;these incidents have been occurring since he was 4 month old.
I10B0545A	20091201	20101118	1	1545	0	212	2 1 yof child's leg has caught between the bar of the crib multipletimes & consumer had to use lotion to get her leg free.
I10B0729A	20100717	20101201	1	1543	0	212	2 the springs of the metal mattress support in the crib completelybroke off causing 12 mof foot & leg to get stuck down in between thecrib and metal support frame. her leg only had a minor scratch andsome bruising.
I10C0438A	20101212	20101215	1	1542	1545	206	2 the consumer found her 6 mof child face down with her entire armstuck between the crib wall & the mattress.
I10C0560A	20101108	20101220	1	1543	0	209	1 consumer states that both her twin 9-month-old sons get stuck in thecrib even when the door is up. consumer says that they also gethurt by getting their legs caught in the rails all the time.
I10C0600A	20101215	20101221	1	1542	1543	206	2 a 6 mof infant got her leg stuck between the dropside crib railing &the mattress of the crib. she received scratches & bruises.

Consumer Reports of Limb Entrapments (IPII), 2009-2015

I10C0621A	20101214	20101221	1	1542	1543	211	1	11 mom got his leg stuck between the mattress and the rails of the crib. the child got bruises from getting his leg stuck and awakes in the middle of the night crying.
I10C0759A	20101221	20101226	1	1543	0	214	1	consumer reports that her 14-month-old son's legs got wedged between the rails on the crib's front. his legs were stuck above the knees with his feet dangling in front of the crib. he sustained some redmarks on his legs.
I10C0958A	20101227	20110103	1	1543	0	212	2	12 mo/leg has been stuck in-between the rails of the crib. she was unable to free herself when her leg was caught between the rails.
I10C1071A	20100101	20110104	1	1543	0	212	1	a 12 mom infant has got his legs caught in between the wooden slats on the drop-side of his crib numerous times throughout the year. he suffered severe bruising which caused physical pain.
I1110166A	20110103	20110107	9	1543	0	212	1	consumer reports that 12 mom's leg gets caught between the slats on the drop side of the crib. child is in pain when consumer tries to get his leg out.
I1110517A	20110105	20110119	1	1545	0	212	1	on several occasions 1 yom child's leg has become stuck in the railing on the crib. this has caused his leg to bruise & left scratches.
I1110606A	20110111	20110120	9	1543	0	212	1	a 1 yom infant got his leg stuck between the slats of his crib twice the 2nd time he sustained bruises from the efforts by consumer to free his leg. consumer was compelled to buy a mesh lining for the inside of the crib to prevent further injury.
I1110776A	20110120	20110124	0	1545	0	211	1	consumer reports that 11 mom often gets his leg stuck in the crib siding. the consumer has to pull his legs out which leaves a mark on his legs.
I1120488A	20110216	20110218	0	1543	0	213	1	consumer reports 13 mom had his leg stuck between the slats of his crib.
I1120676A	20110223	20110225	0	1543	0	208	2	the consumer found her 8 mo/child's leg being stuck between the convertible crib rails during one of her naps. she did not appear to be harmed.
I1130345A	20110312	20110315	1	1543	0	206	1	6 mom's leg was entrapped in the side rail of a crib. it was wedged in there pretty good and they were unable to release it by pulling. they had to remove his clothing & push up to squeeze his leg out.

Consumer Reports of Limb Entrapments (IPII), 2009-2015

I1130576A	20110318	20110322	1	1543	0	214	0	14 mom was waking up from his nap screaming & consumer found his leg caught in between the crib slats lodged in at the thigh. his leg is bruised and red and sore from the accident.
I1130747A	20110323	20110331	1	1543	0	214	2	14 mof was taking a nap in her baby crib. she started screaming & consumer found her leg stucked in her bed rails of the crib. it took over 25 minutes to get her leg out. she has bruising on her leg whereshe was stuck.
I1130912A	20110330	20110331	1	1543	0	214	2	consumer reports that 14 mof got her leg stuck in the front slats of the crib. consumer removed her leg from the slats. child sustained abruise and red marks from being stuck.
I1140384A	20110418	20110419	1	1543	0	213	2	13 months old girl has gotten her leg stuck in between the slats on the crib. she was unable to free her leg by herself and consumer had to help free her. this was painful to her and she screamed while herried to free her leg from between the slats.
I1140615A	20110426	20110429	0	1543	0	212	1	consumer is concerned about the safety standards for the width of space in between the crib slats. consumer says her 2-year-old daughter had her legs stuck in between the rails in the past and now her 1-year-old son had his leg stuck on a different crib.
I1150214A	20110504	20110513	0	1543	0	208	2	consumer reports that her daughter has been repeatedly getting her legs and arms stuck in the slats of the crib every day. consumer says had to force the wood of the slats apart at one point to get her leg out. also the springs that support the mattress are loud and shaky.
I1150268A	20110514	20110517	0	1543	0	210	2	consumer reports that two times her 10-month-old daughter got herself stuck between the bars in the crib rails. the first time her leg was sticking out the rails wedged up to her thigh. next time both her legs were sticking out stuck at the knees.
I1160439A	20110308	20110622	1	1543	0	211	2	the wooden pieces of the crib that are lined along the sides back & front are very flimsy & can be broken very easily. the mattress is 2-3 inches away from the side of the crib and 11 mof has got her arm and leg both caught in the mattress support because of the gap.

Consumer Reports of Limb E...apments (IP11), 2009-2015

I1160625A	20110601	20110630	1	1543	0	209	1	9 month old boy has on more than a few occassions gotten his leg stuck in the slats of the crib. consumer has been awakened by him screaming because his upper thigh has gone through the slats and gotten stuck.
I1170118A	20110701	20110707	1	1543	0	214	1	14 mom woke up screaming in pain. he was lying with his leg stuck between the vertical crib slats. after consumer was able to get his legoutit was extremely sore to the touch he has bruises on the inner and outer part of his thighit happened twice so far.
I1170179A	20110707	20110712	0	1543	0	209	1	consumer reports that her 9-month-old son keeps getting his leg all the way up to his thigh stuck in the bars of the crib when he rolls over to sleep at night. consumer says that the wakes up crying and thenshe has to go in there and wiggle his leg out.
I1170345A	20110712	20110715	1	1543	0	214	1	consumer reports that her 14-month-old son's leg got stuck pas his knee in between the slats of the crib. they had to call 911 to get himout.
I1170467A	20110621	20110721	1	1543	0	206	1	consumer's crib has cracks in wood that is causing paint to chip also 6 mom got his leg stuck between bars/slats & became trapped. he gotminor skin abrasions to severe bruising of left inner thighbruising & swelling of & kneecap & torn muscles of the leg.
I1170525A	20110707	20110723	1	1543	0	211	2	11 mof legs stuck between bars of her crib 4 times within last month.last time when it happenedher leg was wedged between the bars above her knee area around the middle of her thigh. she had deep creasesin her legs from the bars and the creased areas were very red.
I1170680A	20110728	20110730	1	1543	0	212	1	consumer reports that her 1-year-old son twisted and bruised his ankle when his ankle got caught in the slats of the crib while sleeping.the child woke up screaming. consumer says when she got to the nurseryhis ankle was purple and was stuck in the slats of the crib.
I1180165A	20110804	20110810	1	1543	0	210	2	consumer's 10 month old daughter got her leg stuck between the slatson her crib and was not able to free herself. she sustained welts onher legs from being stuck.
I1180171A	20110808	20110810	1	1543	0	213	1	consumer reported that in the 10 months while her 13 month old son has been sleeping in the crib he has gotten his leg stuck between the slats twice.

Consumer Reports of Limb Entrapments (IPII), 2009-2015

I1180532A	20110816	20110826	1	1543	0	213	1 consumer reports that their 13-month-old son has gotten his leg stuck/wedged between the slats of the crib several times over the last 4 months. consumer says they have to unweidge his leg with him screaming/scared and in pain and his leg has red indentations after being freed
I1190220A	20110910	20110913	1	1543	0	207	1 7 mom had put his leg through slat so far his upper thigh became stuck. it was lodged in slat so much that it would not budge. consumer grabbed some cooking oil & poured it all over his upper thigh to slide it back out. his upper thigh was very red.
I1190290A	20110907	20110914	1	1543	0	212	1 consumer purchased a crib & changing table/dresser set for her son. 1yom got his leg stuck in between the bars of the crib. it took around 15 minutes to get his leg unstuck. his leg could have been broke. consumer stated that this crib is unsafe and needs to be recalled.
I11A0358A	20111015	20111018	0	1543	0	204	1 4 mom foot & leg get stuck in slats of mini crib. manufacture claims that crib is safe for use up to 12 months but consumer claimed that crib is too small once baby can move arms & legs. he hits side of crib & leg or arm gets stuck.
I11A0466A	20111014	20111021	0	1543	0	210	2 10 mo/ legs get stuck in between wooden slats of this crib. this has been an ongoing issue every since consumer purchased the crib. the older she gets the harder it is to free her.
I11A0537A	20111022	20111025	1	1543	0	213	1 consumer reports that their 13-month-old son had his knee trapped in the crib bars. consumer says his knee and leg were injured.
I11A0703A	20080201	20111031	1	1543	0	205	1 consumer had several problems with a 5 mom child's leg getting stuck in the crib bars. he could fit his leg through it but could not retract his leg back in due to it getting caught at the knee. it left his leg all red & irritated & caused him great pain & discomfort.
I11B0302A	20111112	20111116	1	1543	0	207	2 7 mo/ has been getting her legs caught in slats of her crib. she was injured with no first aid or medical attention received. consumer is concerned about a more serious injury that can come from the product.
I1220119A	20120204	20120207	0	1543	0	212	1 consumer reports that her 1-year-old son has got his leg stuck in the bars of the crib over 10 times and she almost had to break the crib to get his leg out.

Consumer Reports of Limb E... apments (PII), 2009-2015

I1220396A	20120211	20120216	1	1543	0	212	1	1 yom has gotten his arm entrapped in the side rails of the crib. consumer stated when babies stand up & then either fall down or sit down their arms will become entrapped. this has happened to consumer's son and caused bruising on his upper arm.
I1220466A	20120217	20120222	1	1543	0	213	1	consumer reports that her 13-month-old nephew has gotten his legs caught above his knee between the crib slats a few times both while sleeping and awake. she says one time his right leg was caught so bad that they almost had to break the slats and he received major bruises.
I1220468A	20120217	20120222	1	1543	0	214	2	14 mof on her back in the crib & her right lower leg was trapped & twisted between the side/corner rails. her body weight was binding the leg & it was difficult to dislodge her. she had a contusion and swelling on leg. consumer concerned about fracture & suffocation hazards.
I1220639A	20110904	20120224	1	1543	0	213	2	13 mof got her leg caught in the drop side rail of the crib & sustained a spiral fracture above the knee.
I1230519A	20120324	20120327	1	1543	0	213	1	consumer reports for the second time in about two months since purchasing the crib her 11-month-old son has gotten his knee cap stuck and lodged in between the spaces of not only the crib wall but the head area too. the child received redness and bruises.
I1240001A	20120331	20120403	1	1543	0	211	2	11 mof kept getting her foot stuck under bar at end of changing table on crib. one time foster parent lifted 11 yof & didn't realize her leg was stuck under bar. leg was bruised & required trip to urgent care. foster parents removed bar.
I1240109A	20120314	20120407	1	1543	0	206	2	6 mof's leg became stuck in railing of her crib. it was several minutes before consumer's husband was able to free her. she ended up with a bruise on her leg where her leg was stuck in crib. she received no first aid or medical attention for her injury.
I1250053A	20120503	20120505	0	1542	1543	205	2	5 mof has gotten caught between the mattress & side of her crib multiple times & in various spots in the crib. she has also had her leg caught between the slats. one time she was stuck up to her shoulder between the mattress & side slats.

Consumer Reports of Limb Entrapments (P11), 2009-2015

I1250399A	20111011	20120522	0	1543	0	207	1	consumer reports that her baby's legs have gotten stuck in between the crib rails a couple of times and she is concerned that one day he might break his leg. consumer says this has been an ongoing occurrence and she uses crib bumper as a protective shield but it's not helping
I1260448A	20120620	20120622	0	1543	0	211	1	consumer reports that her 11-month-old son's leg was stuck in the crib slats up to his knee. she says he was unable to pull it out and was stuck at a very precarious angle.
I1260464A	20120101	20120624	1	1543	0	212	1	12 mom has gotten his leg stuck between rails of crib. vertical railson bed are large enough for him to fit his legbut it gets stuck atthe knee. this has caused bruisingredness and swelling of his leg.he received first aid from non-medical professional.
I1270351A	20120716	20120719	1	1543	0	211	2	consumer says his 11-month-old daughter had been sleeping in the criband started screaming. they found her leg was stuck between the slats on the front of the crib upto her thigh. they had to break the slats to get her out. she had bruising on her left thigh and knee.
I1280024A	20120709	20120803	1	1543	0	206	1	the submitter reports that with the new cribs recently purchased by them they have had several infants get their arms and legs caught in the sides of the cribs leading to serious markings on their limbs. thesubmitter reports injury to a boy and a girlboth 6 months old.
I1280128A	20120802	20120809	0	1543	0	208	1	consumer reports that her 8-month-old son's legs get stuck in the openings of the 4-in-1 convertible fixed-side crib. she says she found him crying and he could not release his leg (thigh) himself. consumersays the distance between the bars is too big.
I1280140A	20120805	20120810	0	1543	0	210	1	10 mom got his legall the way up to his thighstuck in his crib. consumer's husband had to break the bed just to get him out. manufacturer's reply was to send consumer new crib (same as the one where child's leg got stuck) or cheaper version similar to one she had.
I1280406A	20120818	20120821	1	1543	0	211	2	while 11mof was in cribher leg was stuck between corner post of crib & first slat. consumer stated that it took some time to get leg unstuck. it left deep indentions above left ankle & left side of calf due to leg being stuck at angle. consumer applied ice to her leg.

Consumer Reports of Limb E... apments (PII), 2009-2015

I1280698A	20120426	20120901	1	1543	0	212	2	consumer says her 1-yo daughter was napping when she suddenly heard screaming and found that both of her legs were stuck in the slats of her crib. it took a long time to dislodge her knees and her legs werevery red and began bruising. consumer says the slats are too close.
I1290290A	20120912	20120914	1	1543	0	213	2	consumer's 13 month old daughter got her leg stucked between the barsof the crib. this happened several times. he leg had marks on each side of her knee (four marks because she had bent it). consumer was able to free her legbut her knee was extremely purple & swollen.
I1290336A	20120916	20120918	1	1543	0	209	2	consumer says she put her 9-month-old daughter in the crib for a napand later heard her scream. the baby's arm was stuck between the slats of the crib and she couldn't get it out. consumer had to squeeze her arm out of the bars and it was red & had slats' indentation marks.
I1290386A	20120918	20120920	1	1543	0	211	1	consumer says her 11-months-old son was sleeping in the crib and started screaming. she found that his knee was stuck between the bars ofhis crib. she says it took 15 minutes to get his knee out. consumer says another time this happened with his foot.
I12A0376A	20121017	20121020	1	1543	0	211	2	consumer reports that her 11-month-old daughter got her leg stuck inbetween the slots in the crib past her knee to her upper thigh. consumer had to slowly pry her out a little at a time after applying lubricating her leg. her thighknee and upper leg were red and swollen.
I12A0392A	20121019	20121023	1	1543	0	210	2	consumer reports that her 10-mth-old daughter's knee was caught for the 4th time in a month between the crib slats. she was left with twolarge bruises on each side of her knee. cons believes the new smallerspacing between the slats per the new crib regulations is dangerous.
I12A0404A	20121019	20121023	1	1543	0	213	2	consumer reports that 13 moof has gotten her leg stuck through the crib slats twice and has injured her leg both time. consumer states it is painful for the child when trying to remove her leg because of thewidth of her knee. consumer considers the crib dangerous.

Consumer Reports of Limb Entrapments (PII), 2009-2015

I12A0425A	20121013	20121023	1	1543	0	210	1	10 mom got his leg stuck several times in between slats of crib. leg fits in between slats past his kneebut when he turned body to rollover he couldn't get it out. this caused bruise on inner thigh aboveknee as he tried to tug his leg through. he received no first aid.
I12A0640A	20120921	20121101	1	1543	0	209	1	9 mom's leg was trapped in opening between rear side slat & back corner post of his slat when he put his foot through wider opening near top & kicked downwards into narrower part of opening. his ankle was bruised & circulation to leg cut off. he received first aid.
I12B0241A	20121109	20121114	1	1543	0	207	1	consumer reported that her 7-month-old son's leg was stuck in one of the slats of the crib causing bruising.
I12B0550A	20121112	20121128	0	1543	0	212	1	1 yom was screaming when his leg was caught in between the slats of his crib. it happened at least 4 more times over a few weeks. it was so bad the last time that consumer had to jerk slats around to free his leg.
I12B0595A	20120927	20121130	1	1543	0	205	1	consumer says several times her 5-month-old son has gotten his leg stuck in between the slats on the crib. one time he was trapped in such a way that his leg was twisted at a different angle then what his body should have allowed. he received bruising that took almost a week.
I12C0049A	20121115	20121205	0	1543	0	213	1	consumer reports that their 13-month-old son got his arm caught twice and his knee once in between the slats of the crib. consumer believes that the 2 1/8 inch gap between the slats is narrow and it should be larger to prevent this type of accident.
I12C0266A	20121212	20121218	1	1543	0	212	1	consumer found that 1 yom's leg was caught between two slats of crib. he was stuck up to his right thigh. consumer's husband assisted to get him out. baby had large red spot on his thigh 1st aid he received from non-medical professional.
I12C0404A	20121217	20121222	0	1543	0	214	1	14 mom had his leg stuck between the slats of the crib & it took consumer's husband & consumer almost breaking one of the slats to get him free. she used the crub with all 3 of her children. crib was previously recalled.

Consumer Reports of Limb E...apments (IP11), 2009-2015

I1320428A	20130201	20130222	1	1543	0	211	2	consumer reported that 11 mof was found standing up with her right leg stuck between crib's slats. she couldn't take her knee out. her knee was bruised & 1st aid she received by non-medical professional. consumer stated that this happened couple more times before as well.
I1340413A	20130426	20130430	0	1543	0	207	1	the consumer stated that her 7-month-old son's leg was stuck between the crib slats and her husband and she had a hard time getting it back out. the consumer says it could have easily caused injury.
I1360245A	20130616	20130618	1	1543	0	213	1	13 mom was napping in crib with mattress at lowest setting & upon hearing him scream consumer entered his room & found his leg was stuck between two railings. two firemen freed son's leg. he was checked out by paramedic & his upper knee & thigh were swollen & bruised.
I1360349A	20130621	20130625	1	1543	0	213	2	consumer reported that recently 13 mof awoke from naps stood up & put one leg in between crib bars. her leg got stuck around knee between crib bars. after her leg was released it had red marks on both sides of it. no first aid or medical attention was received.
I1370308A	20130717	20130719	0	1543	0	206	2	6 mofs leg got caught in between the slats of the crib and was stuck. consumer's other 2 children have also had a leg or arm stuck in between slats of this crib. the slats are slanted at an angle which seems to make it easy for the child to slide a limb between the slats.
I1370430A	20130601	20130726	0	1543	0	210	1	consumer reports that 10-month-old son got his both legs stuck in between the bars of his crib. her husband tried to pull his legs out but stopped because it only made him cry out even more and louder. he had to hammer out the middle piece between his legs to get him out.
I1370569A	20130731	20130802	0	1543	0	213	2	consumer reported about convertible crib. 13 mof is standing up in the crib & her legs are slipping between the slats and getting stuck above her knee to the point where consumer almost have to break it to get her leg out. no injury.

Consumer Reports of Limb Entrapments (IPII), 2009-2015

11380418A	20130822	20130827	0	1543	0	208	2 consumer stated that her 8-mo daughter got her leg stuck through thecrib and between the crib and the wall. as she leaned and tried to get the baby's leg outthe top tail of the crib cracked with a loud pop and is now close to breaking in half posing a pinch hazard.
11390184A	20130828	20130910	1	1543	0	206	1 6 mom is getting his legs stuck between crib slatswhich was causingbruising. consumers noticed that slats are becoming loose & bend easily when he pushes on them. one day he hit his head on headboardwhich has sharp edge& cut his head. he received first aid.
11390560A	20130926	20131001	1	1543	0	209	1 consumer reported that she started noticing screws from crib being onfloor. also she stated that 9 mom had got both feet stuck between bars of crib & he had red marks around his ankles. he received no 1st aid or medical attention.
113A0549A	20131030	20131102	1	1543	0	206	1 the consumer stated that she woke up to her 6-month-old son screamingin pain and found the his leg was stuck between the bars of his crib. she had to pull very hard but i finally got it free. his leg was pretty red and had very minor bruising.
113B0237A	20131113	20131115	1	1543	0	210	2 consumer's 10 months old was in her crib. there was no bumper in thecrib. the consumer heard her screaming on the monitor. the consumer went into the room & her entire leg-up to her thigh was stuck between the 2 slats in the center of the crib. she sustained bruise.
11420395A	20140221	20140226	1	1543		212	1 consumer reports that 1 yom was in his crib taking a nap when his legbecame trapped above his knee and twisted in the slats on the back side up against the wall. consumer managed to free his leg by applyingbutter on the slats and the child's leg.
11420437A	20140225	20140227	0	1543		206	1 while consumer's 6-month-old son was in convertible crib his legs seem to fit through the slats causing him to get stuck. consumer reported that his legs go through the slats within a matter of minutes, andit seems like he could really get hurt. no injury.

Consumer Reports of Limb E... apments (PII), 2009-2015

I1440495A	20140426	20140429	0	1542	1543	205	2	a 5 mof baby has recently started rolling over onto her belly & partof her leg has been getting stuck in between the slats of her crib.both of her legs were stuck in the slats, tilting her torso so that her belly was on the mattress & her face was planted in the mattress.
I1460219A	20140613	20140617	1	1543		214	2	14 mof was injured in front crib slat. she got her knee wedged in front of crib, 2nd or 3rd front slat from right side of front, & had twisted her body so she was stuck. this left bruising on her knee & thigh. she didn't receive 1st aid or medical attention.
I1470380A	20140407	20140726	1	1543		211	1	the consumer's 11-month-old son's leg got stuck in between two of thefront side slats of the crib up to his knee. they had to pull the two slats to the sound of cracking to free his leg which later bruisedfrom knee to mid-calf. happened again with back slats and his ankle.
I1490129A	20140830	20140911	1	1543		214	1	14 mom was in crib when his leg got stick all way up to thigh between slats of crib. consumer & her husband removed it with soap & water. it left bruising on his leg. he received no first aid. second time, child was in sleep bag, but his leg still got stuck between slats.
I1490475A	20140815	20141002	1	1543		209	2	i have twins (9 mof & 9 mom) using the crib & the both repeatedly gotten their legs trapped in the slots. both have received severe bruising & i am concerned that they may dislocate or break a bone. my daughter had her leg trapped so severely that we thought of cutting slots.
I14A0211A	20141011	20141015	1	1543		214	2	14 mof has gotten her leg entrapped between crib slats 3 times. twiceher leg was stuck below knee, & once much tighter above knee. putting towels around slats didn't help. it took 2 adults to free her. shereceived no first aid or medical attention for her injury.
I1510516A	20150120	20150122	0	1542	1545	212	2	there is gap between long end of crib & mattress; both were purchasedat same time. consumer stated risk is that 12 mof would get her arms, legs, or body entrapped in gap. crib bottom is made up of slats soif any body part gets stuck she would be unable to pull out of it.

Consumer Reports of Limb Entrapments (PII), 2009-2015

I1510700A	20150113	20150130	1	1543	214	1	14 mom had his leg stuck between rails on backside of crib. he tried to free himself & by doing so, panicked himself into hysterical crying. state troopers & emergency medical technicians freed his leg. he suffered from bruised knee cap & was seen by medical professional.	
I1520478A	20141118	20150226	4	1543	209	1	my 1 year old son's arm & legs has gotten stuck in the slats of the crib when he was 9 months old. his leg got stuck resulted in a brokenthigh. when his father went to check on him because he screamed hisleg was caught in the front slats. later, his arm got wedged.	
I1540086A	20150406	20150408	1	1543	205	2	5 mof flipped over in crib & her leg was stuck in between crib rails. consumer couldn't get leg out & had to call 911. girl's leg was losing blood circulation & turning purple. consumer pulled crib rails until one popped & broke. fire department arrived & examined girl.	
I1570198A	20150712	20150715	1	1543	206	2	6 mof's thigh has gotten stuck 3 times while she was sleeping in newcrib. on 3rd incident, it took both parents to get leg unstuck. one was holding baby/leg; other was pulling slats apart. leg had pinch mark with redness. 6 mof received no first aid or medical attention.	
I1580334A	20150801	20150822	1	1543	208	1	8 mom twins legs get stuck between slats of cribs since babies were able to flip over & roll. bruising is frequent occurrence, 1st aid received by non-medical professional. both twins get legs wedged between slats at least 3-4 times per week & are unable to free themselves.	
I1580361A	20150821	20150825	1	1543	205	1	it is reported that consumer's 5 month old son's leg got stuck in between the bars of the crib while he was asleep. he ended up with markson his leg and foot.	
I15A0144A	20150319	20151010	1	1543	211	1	consumer reported that several times 11 mom got legs stuck between slats of crib & when they released him, there was deep red ring aroundthigh. recently he got arm stuck & when they freed him, his shoulderwas very tender. he didn't receive 1st aid.	
X1120956A	20080101	20110217	0	1543	0	208	1	8 mom got his leg stuck between slats of crib. 10 mof got her foot stuck between the slats of the same crib. no injuries.

Consumer Reports of Limb E... apments (PII), 2009-2015

X1290155A	20120817	20120908	1	1543	0	211	1	consumer reports that her 11 mom son got his foot stuck between the slats of the crib. his foot became swollen and the consumer called the fire department. they chipped away a piece of the slat and freed his foot. he was taken to the hospital to have his foot checked out.
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Limb Entrapment Investigations (INDDP), 2009-2015

Task No	Date Incid	Date Ent	Diag	B Part	Disp	Product 1	Product 2	Age	Sex	Narr
090521HCC3607	20080915	20090702	70	99	0	1542	1543	204		2 the complainant reported the top left side of the drop side railing on a full size crib failed to latch in the up position. the railing could drop and allow a child to fall out of the crib. also, the vertical wooden slats on the side panels of the crib, which have a "paddle" design cause areas between the slats to have wider and then "narrower" areas and can entrap the foot of the child in the crib. the complainant's four-month-old daughter had her foot caught between the slats several times. she was not injured
090827HCC1993	20090713	20091014	64	80	1	1543	1884	210		1 a ten-month old male was slightly injured when his arm passed through two slats (stationary rail) of a full size crib and became jammed against the wall. the crib was positioned 3 inches away from the bedroom wall. his mother released his arm and the injury was treated at home. the mother also complained that the lower locking mechanism of a drop side-rail often jammed. she had a difficult time releasing the lock in order to lower the rail.

Limb Entrapment Investigations (INDP), 2009-2015

091116CWE8504	20091110	20091223	70	99	0	1543	0	209	1	22 year old female consumer purchased crib for her newborn son who began sleeping in crib full time in 9/09 when 4 months old. soon thereafter, consumer often found baby with his leg sticking out between crib slats after spending time in the crib. baby was always unhurt and easily freed from this position. on date of incident, consumer heard baby screaming upon waking up in the morning and discovered him with his leg stuck between two slats. force was required to free baby who was uninjured.
091229HCC3202	20091101	20100202	70	99	0	1543	0	213	2	a 13-month-old female victim had her knee trapped between the slats of her crib, and her grandmother, who was watching her at the time, had to break off the slat to release her knee. the crib was purchased in July 2007 for use with another child, and a plastic piece of the drop side mechanism broke in 2007, so the consumer put the drop side facing the wall. the victim's mother then used it for her second child, the victim, born October 2008. the crib is no longer used and was recently recalled. the victim was

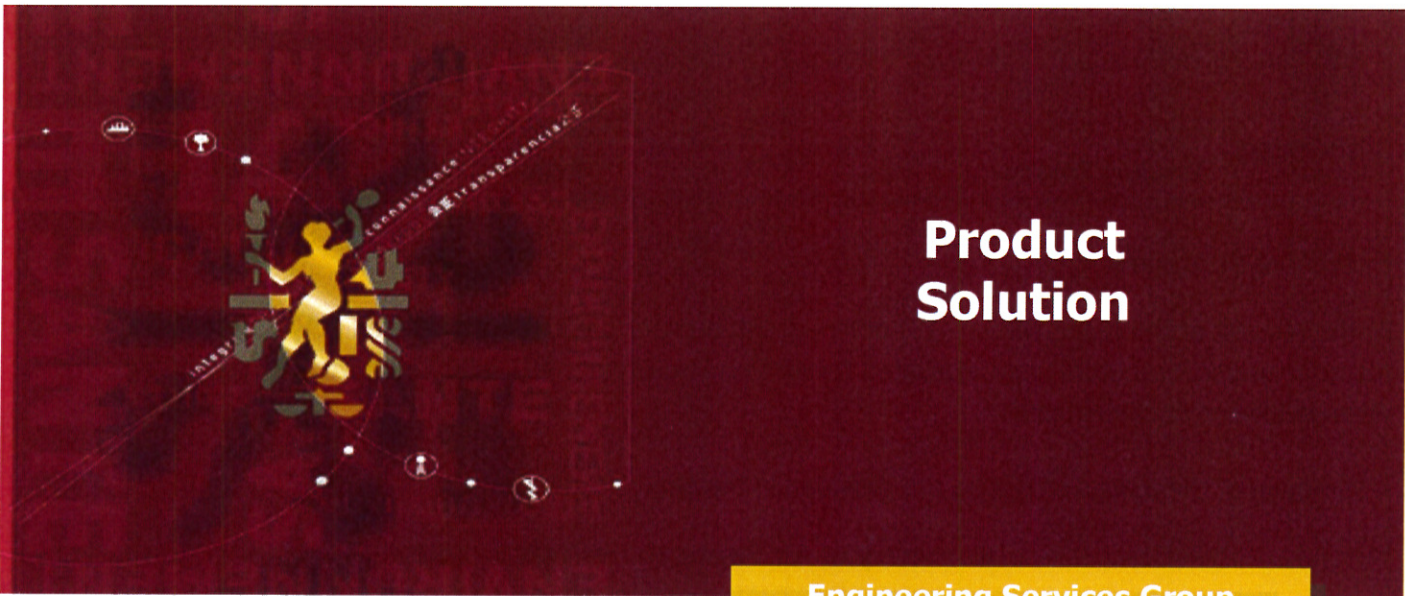
Limb Entrapment Investigations (INDP), 2009-2015

100329HCC2512	20081201	20100505	71	99	0	1543	0	206	2	a 30 year old female reported that the drop side of a new crib oftenlocked in the lowered position when a spring loaded pin got offtrack and lodged in the wrong hole. the crib was replaced by theretailer with an identical crib and there have been no similarproblems. however, the complainant's 14 month old daughter's armsand legs have been trapped between the crib's spindles. the victimhas since learned to free herself. there were no injuriesassociated with either crib.
100507HCC1681	20091015	20100601	71	99	0	1542	1543	204	1	a 35 year old female consumer's infant son was not injured when hislegs became entrapped between the slats on the drop side rail of hiscrib on several occasions. the consumer also reported issues withthe drop side rail of the crib malfunctioning and dropping to thelowered position with the slightest bump or tap.
100809CCC2001	20100801	20100923	71	35	1	1542	4082	211	2	in an unwitnessed event, a 1 yof right knee became entrapped in arectangular opening of the headboard of her toddler bed. afterabout 30 minutes, the victim's parents were able to free her kneefrom the headboard. they did not seek medical assistance for thevictim.

Limb Entrapment Investigations (INDP), 2009-2015

100817HCC3032	20100808	20101018	71	99	0	1542	1543	208	1	an 8 month old male was sleeping in his crib when he suddenly began screaming. his mother found him in a seated position sideways in the crib with his legs between slats on the crib's dropside. his feet were on the top of the bottom rail and his heels were entrapped between the mattress support frame and the bottom rail of the dropside. the drop side was still intact and functioning but the mother discovered the bottom rail flexed enough to allow the victim's feet to be entrapped. the victim was not injured
120914CCC1976	20120817	20121105	71	83	1	1542	1543	211	1	an 11-month-old male's right foot became entrapped between vertical slats in a full-size wooden crib and his parents were unable to free him. firefighters cut one of the wooden slats with a set of bolt cutters to extricate the child. he was transported by ambulance to a local hospital where he received treatment for a swollen foot and then released. addenda added 12/17/2012.
121107HCC1140	20120921	20121130	53	36	1	1542	1543	209	1	a nine-month-old baby boy became entrapped when he kicked his lower leg through a wedge-shaped space between the tapered slat of a full-size, stationary-side crib. the victim suffered bruises on his lower leg but has since made a full recovery.

DIAG	Diagnosis	BPART	Body Part	DISP	Disposition
41	Ingested foreign object/substance	0	Internal	1	Treated & released
42	Aspirated object	30	Shoulder	2	Treated & transferred
46	Burn-electrical	31	Upper Trunk	4	Hospitalized
47	Burn-not specified	32	Elbow	5	Held for observation
48	Burn-scald	33	Lower Arm	6	Left without being seen
49	Burn-chemical	34	Wrist	8	Fatal injury
50	Amputation	35	Knee	9	Not reported
51	Burn-thermal	36	Lower Leg		
52	Concussion	37	Ankle		
53	Contusion/abrasion	38	Pubic Region		
54	Crushing	75	Head (not ear, eye, face, neck)		
55	Dislocation	76	Face		
56	Foreign body, not ingested	77	Eyeball		
57	Fracture	79	Lower Trunk		
58	Hematoma	80	Upper Arm		
59	Laceration	81	Upper Leg		
60	Dental injury	82	Hand (not finger)		
61	Nerve damage	83	Foot (not toe)		
62	Internal organ injury	84	25% to 50% of body		
63	Puncture	85	All parts of body		
64	Strain/sprain	87	Not Stated		
65	Anoxia	88	Mouth		
66	Hemorrhage	89	Neck		
67	Electric shock	92	Finger		
68	Poisoning	93	Toe		
69	Submersion/drowning	94	Ear		
70	Not stated				
71	Other				
72	Avulsion				
73	Burn-radiation				
74	Dermatitis/conjunctivitis				



Engineering Services Group

Product Description:

**Air Permeability Testing
of Crib Bumpers
and Mesh Crib Liners**

Report Number:
(5116)106-0004 Revision 1

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Revision Date:
April 15, 2016

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Executive Summary

At the request of the client, fifteen (15) different crib bumper products from eleven (11) different manufacturers/distributors were evaluated for Air Permeability per ASTM D737 - *Standard Test Method for Air Permeability of Textile Fabrics*.

A summary of the results of testing are provided in the chart below:

Summary of Air Permeability Test Results

Product Description	Manufacturer / Distributor	Air Permeability (CFM)	Overall Rank¹
Breathable Mesh Crib Liner	Breathable Baby, LLC.	1013.1	1
Deluxe Cable Weav Crib Liner	Breathable Baby, LLC.	536.6	2
Deluxe Embossed Crib Liner	Breathable Baby, LLC.	520.5	3
Ultra Luxe Crib Liner	Breathable Baby, LLC.	384.6	4
Product A	Manufacturer A	234.8	5
Product B	Manufacturer B	70.2	6
Product C1	Manufacturer C	48.3	7
Product D	Manufacturer D	46.4	8
Product E	Manufacturer E	45.4	9
Product C2	Manufacturer C	41.6	10
Product F	Manufacturer F	39.8	11
Product G	Manufacturer G	28.4	12
Product H	Manufacturer H	28.1	13
Product I	Manufacturer I	22.8	14
Product J	Manufacturer J	21.7	15

Note 1: The products were ranked on a scale of 1 (highest air permeability) to 15 (lowest air permeability).



Samples/Products Tested

One sample of each product was submitted for testing. The description and details of each product are provided in the chart below:

Sample #	Product Description	Manufacturer / Distributor	Country of Origin	UPC
1	Breathable Mesh Crib Liner	Breathable Baby, LLC.	China	1128302062
2	Deluxe Cable Weav Crib Liner	Breathable Baby, LLC.	China	1128302135
3	Deluxe Embossed Crib Liner	Breathable Baby, LLC.	China	1128302162
4	Ultra Luxe Crib Liner	Breathable Baby, LLC.	China	1128302167
5	Product A	Manufacturer A	China	Not Provided
6	Product B	Manufacturer B	China	Not Provided
7	Product C1	Manufacturer C	China	Not Provided
8	Product D	Manufacturer D	China	Not Provided
9	Product E	Manufacturer E	China	Not Provided
10	Product C2	Manufacturer C	China	Not Provided
11	Product F	Manufacturer F	India	Not Provided
12	Product G	Manufacturer G	China	Not Provided
13	Product H	Manufacturer H	China	Not Provided
14	Product I	Manufacturer I	China	Not Provided
15	Product J	Manufacturer J	China	Not Provided

Photographs of each product are provided in Appendix A.



Performance Tests & Methods

Each sample was subjected to the Air Permeability Test per ASTM D737 - *Standard Test Method for Air Permeability of Textile Fabrics*.

Additionally, the thickness of each product during normal use and the shell and filling material, as labeled on the product, were determined and reported.



Results

The results of testing are provided in the charts below:

Results of the Air Permeability Test

Method: ASTM D737 - *Standard Test Method for Air Permeability of Textile Fabrics*

Sample Rank	Product Description	Manufacturer / Distributor	Air Permeability (CFM)	Thickness (inches)
1	Breathable Mesh Crib Liner	Breathable Baby, LLC.	1013.1	0.13
2	Deluxe Cable Weav Crib Liner	Breathable Baby, LLC.	536.6	0.31
3	Deluxe Embossed Crib Liner	Breathable Baby, LLC.	520.5	0.29
4	Ultra Luxe Crib Liner	Breathable Baby, LLC.	384.6	0.52
5	Product A	Manufacturer A	234.8	0.46
6	Product B	Manufacturer B	70.2	1.09
7	Product C1	Manufacturer C	48.3	1.80
8	Product D	Manufacturer D	46.4	1.41
9	Product E	Manufacturer E	45.4	1.08
10	Product C2	Manufacturer C	41.6	2.35
11	Product F	Manufacturer F	39.8	1.66
12	Product G	Manufacturer G	28.4	0.98
13	Product H	Manufacturer H	28.1	1.50
14	Product I	Manufacturer I	22.8	0.96
15	Product J	Manufacturer J	21.7	1.20

- Notes:**
1. The air permeability and thickness results are the average of 10 specimens/measurements.
 2. For reference, the Air Permeability of Saran Wrap is 0 CFM.
 3. The CFM of the test apparatus with no sample present is approximately 1460 CFM.
 4. Each sample's air permeability was evaluated at a pressure of 125 Pa.
 5. The Test Apparatus' Test Head provides a circular area of 38cm².



Results of Testing – Physical Attributes

Sample Rank	Product Description	Manufacturer / Distributor	Air Permeability (CFM)	Thickness (inches)	Shell Material	Filling Material
1	Breathable Mesh Crib Liner	Breathable Baby, LLC.	1013.1	0.13	Polyester	Not Applicable
2	Deluxe Cable Weav Crib Liner	Breathable Baby, LLC.	536.6	0.31	Polyester	Not Applicable
3	Deluxe Embossed Crib Liner	Breathable Baby, LLC.	520.5	0.29	Polyester	Not Applicable
4	Ultra Luxe Crib Liner	Breathable Baby, LLC.	384.6	0.52	Polyester	Not Applicable
5	Product A	Manufacturer A	234.8	0.46	Polyester	Polyester
6	Product B	Manufacturer B	70.2	1.09	Cotton / Polyester	Polyester
7	Product C1	Manufacturer C	48.3	1.80	Polyester	Polyester
8	Product D	Manufacturer D	46.4	1.41	Cotton / Polyester	Polyester
9	Product E	Manufacturer E	45.4	1.08	Cotton	Polyester
10	Product C2	Manufacturer C	41.6	2.35	Cotton	Polyester
11	Product F	Manufacturer F	39.8	1.66	Cotton	Cotton / Polyester
12	Product G	Manufacturer G	28.4	0.98	Cotton / Polyester	Polyester
13	Product H	Manufacturer H	28.1	1.50	Cotton	Polyester
14	Product I	Manufacturer I	22.8	0.96	Cotton	Polyester
15	Product J	Manufacturer J	21.7	1.20	Cotton / Polyester	Polyester



Note: At the request of the client, this report was revised to obscure any identifying marks in the photographs of the competitive products provided in Appendix A.

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Bureau Veritas
Consumer Products Services, Inc.

Robert T. Cimini, PE
Senior Project Engineer,
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/jn



Appendix A – Photographs of Submitted Samples



Figure A1 – View of Breathable Mesh Crib Liner sample as received.



Figure A2 – View of Breathable Mesh Crib Liner sample removed from retail packaging.



Figure A3 – View of Deluxe Cable Weave Crib Liner sample as received.



Figure A4 – View of Deluxe Cable Weave Crib Liner sample removed from retail packaging.



Appendix A – Photographs of Submitted Samples (continued)



Figure A5 – View of Deluxe Embossed Crib Liner sample as received.



Figure A6 – View of Deluxe Embossed Crib Liner sample removed from retail packaging.



Figure A7 – View of Ultra Luxe Crib Liner sample as received.



Figure A8 – View of Ultra Luxe Crib Liner sample removed from retail packaging.



Appendix A – Photographs of Submitted Samples (continued)



Figure A9 – View of Product A sample as received.



Figure A10 – View of Product A sample removed from retail packaging.



Figure A11 – View of Product B sample as received.

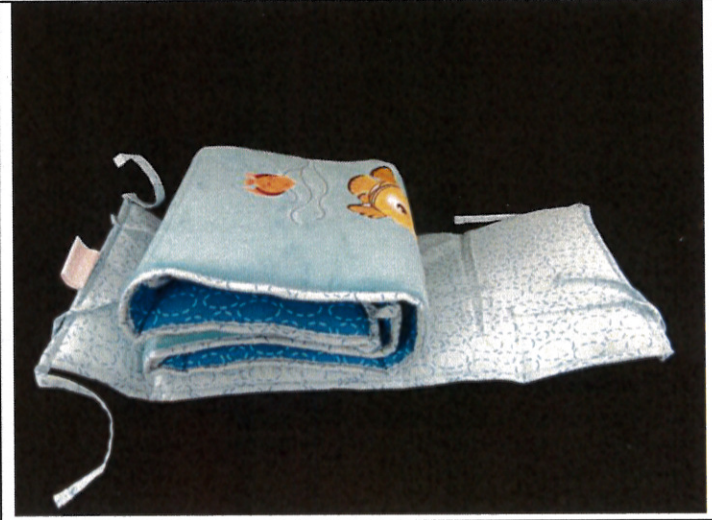


Figure A12 – View of Product B sample removed from retail packaging.



Appendix A – Photographs of Submitted Samples (continued)



Figure A13 – Front view of Product C1 sample as received.



Figure A14 – Rear view of Product C1 sample as received.

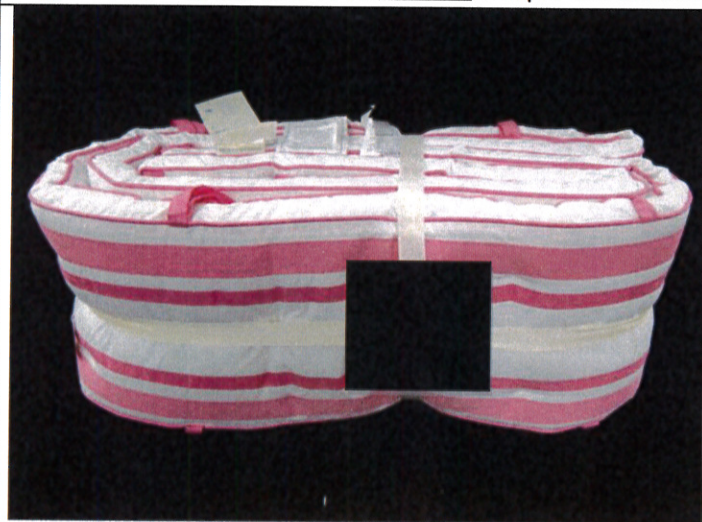


Figure A15 – Front view of Product C2 sample as received.



Figure A16 – Rear view of Product C2 sample as received.



Appendix A – Photographs of Submitted Samples (continued)



Figure A17 – View of Product D sample as received.



Figure A18 – View of Product D sample removed from retail packaging.

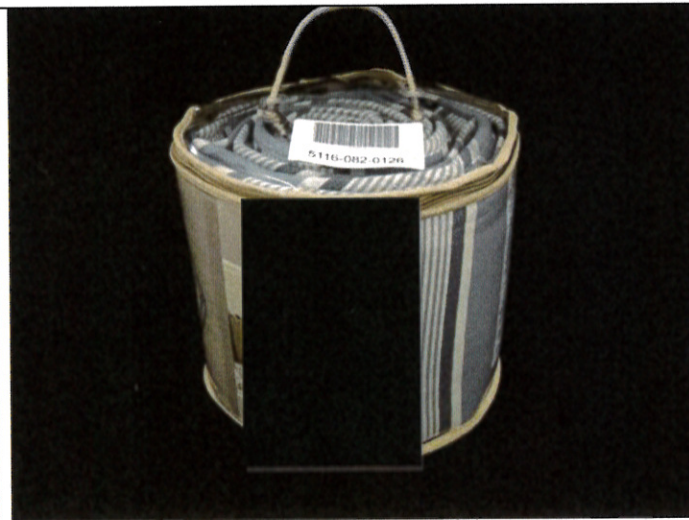


Figure A19 – View of Product E sample as received.



Figure A20 – View of Product E sample removed from retail packaging.



Appendix A – Photographs of Submitted Samples (continued)

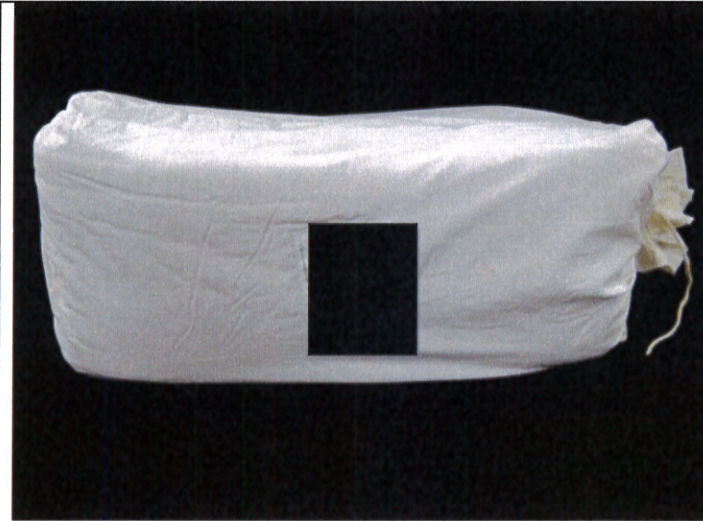


Figure A21 – View of Product F sample as received.



Figure A22 – View of Product F sample removed from packaging.

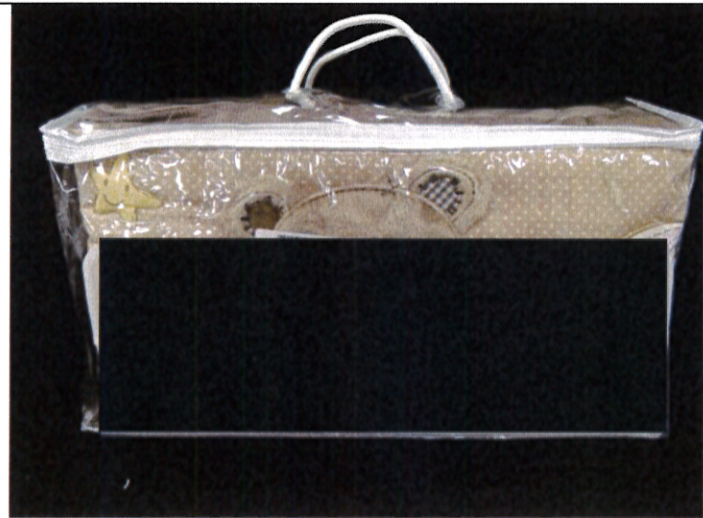


Figure A23 – View of Product G sample as received.



Figure A24 – View of Product G sample removed from retail packaging.



Appendix A – Photographs of Submitted Samples (continued)



Figure A25 – View of Product H sample as received.



Figure A26 – View of Product H sample removed from retail packaging.



Figure A27 – View of Product I sample as received.



Figure A28 – View of Product I sample removed from retail packaging.



Appendix A – Photographs of Submitted Samples *(continued)*



Figure A29 – View of Product J sample as received.



Figure A30 – View of Product J sample removed from retail packaging.

MEDICAL AND SCIENTIFIC PERSPECTIVE ON SAFETY OF BREATHABLEBABY® MESH CRIB LINERS

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REPORT PREPARED FOR:

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AUGUST 11, 2016

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Dr. Schechter is an epidemiologist whose research has been primarily concerned with environmental and sociodemographic influences on outcomes in CF, and he has also worked with the CF Foundation, CDC, Spina Bifida Association, and other groups on fostering methods to improve the quality of care and outcomes for children with chronic illness.

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ABSTRACT

Recent reports have brought the potential risks of crib bumper pads to public attention. It has been suggested that mesh crib liners may mitigate these risks. This medical perspective reports on a review of existing epidemiologic studies as well as 2 technical studies that were commissioned to summarize and evaluate the available scientific evidence regarding BreathableBaby's mesh crib liner products. The authors present a review of literature on control of breathing and respiratory mechanics in infants and the mechanism of bedding-related asphyxiation; summarize an independent epidemiologic analysis of Consumer Product Safety Commission (CPSC) hazard monitoring data on morbidity and mortality associated with crib bedding; and summarize laboratory testing data from 2 independent laboratories regarding air permeability of the BreathableBaby Mesh Liners.

The epidemiologic analysis found that, with respect to mesh crib liners, there were no reports of fatalities, injuries treated in emergency departments, injuries that required medical attention, or incidents that involved a risk of suffocation. These findings are in line with a report published in an academic medical journal in 2016. Testing done in the laboratory of Dr. Raynor (one of the authors of this report) found that the pressure required to maintain physiologic airflow across the mesh liners was more than two orders of magnitude lower than the maximum inspiratory and expiratory pressures that infants can generate. The relatively minimal pressure drop associated with the BreathableBaby liners suggests that they are likely to have minimal impact on the inspiration and exhalation rates of infants were they to breathe directly through the crib liners. Testing by a second independent laboratory found the least permeable BreathableBaby crib liner allows 8X or greater air flow relative to any of the traditional crib bumpers in these tests.

In summary, we believe that the combination of laboratory and epidemiologic data make a compelling argument for the safety of the BreathableBaby products. These mesh crib liners do not appear to present a significant restriction to infant breathing airflows, and there is no reason to believe that they would increase the risk of suffocation hazards for infants. Ongoing surveillance through the established CPSC databases would, nonetheless, be appropriate to confirm this conclusion.

REPORT

BACKGROUND & OBJECTIVES

BreathableBaby®, LLC is a small company based in Minnesota that manufactures mesh crib liners as an alternative to traditional crib bumpers. BreathableBaby asserts that its mesh crib liner is safer than a traditional crib bumper, providing the utility of preventing limb entrapment but with no potential threat of suffocation, and that its mesh crib liners are breathable because they are mostly made up of permeable materials.

A paper by Thach et al published in 2007 brought the potential risk of crib bumper pads to public attention, by reporting on 27 accidental deaths they found in the Consumer Product Safety Commission (CPSC) databases that were attributed to crib bumper pads by medical examiners¹. Following this, the American Academy of Pediatrics, the Canadian Pediatrics Society, and the National Institutes of Health recommended against their use and 2 jurisdictions banned their sale²⁻⁴. However, a recent update of the CPSC database analysis published in 2016 by NJ Scheers et al found an apparent increase in the incidence of suffocation deaths attributable to crib bumpers since their previous report⁴. Notably, they found no evidence that other objects or clutter in the cribs could be blamed for these deaths, refuting an argument made following their initial publication.

In their discussion, Scheers et al distinguished traditional crib bumpers from mesh products such as those manufactured by BreathableBaby, stating that “[N]ontraditional bumper designs seem to mitigate some of the problems found with traditional crib bumpers. Mesh bumpers (sic) are breathable and thin and may reduce the likelihood of slat entrapment and climb outs.”

The current report was commissioned by BreathableBaby to summarize the available scientific evidence regarding their mesh crib liner products. The authors of the report are Michael S. Schechter, MD, MPH, a pediatric pulmonologist and Professor of Pediatrics at Virginia Commonwealth University Health Sciences Center, and Peter C. Raynor, an environmental engineer and Associate Professor of Environmental Health Sciences at the University of Minnesota School of Public Health. The report will provide a review of literature regarding neonatal and infant control of breathing and respiratory mechanics of relevance to potential suffocation risk; describe new data on the epidemiology of any adverse events associated with

BreathableBaby products; provide the results of laboratory testing data on air permeability of the BreathableBaby Mesh Liners; and discuss the implications of all of these findings in regard to infant safety.

METHODS

1. Review of Literature on control of breathing and respiratory mechanics in infants and mechanism of bedding-related asphyxiation

Introductory text on mechanisms and control of breathing were summarized from standard textbooks. A literature review was performed by Dr. Schechter in April 2016 through a search of PubMed using search terms including “lung compliance”, “respiratory muscles/physiology”, “airway obstruction”, “asphyxia” “sudden infant death” and “nasal obstruction”, all limited to infancy. The bibliography and references of articles discovered through this search were reviewed to look for additional papers of interest.

2. Epidemiologic data on morbidity and mortality associated with BreathableBaby Mesh Liners

BreathableBaby commissioned Econometrica to conduct an independent epidemiologic analysis of Consumer Product Safety Commission (CPSC) hazard monitoring data to determine the frequency and nature of any incidents associated with mesh crib liners and the frequency and type of injuries associated with limb entrapment in cribs. These issues were analyzed using incident data available from four major CPSC hazard monitoring databases:

- The National Electronic Injury Surveillance System (NEISS) contains reports of product-related injuries involving children from a statistically structured sample of approximately 100 hospital emergency departments (EDs).
- The Injury and Potential Injury Incidents (IPII) database is a compilation of product-related incidents – fatalities, injuries, and no-injury cases – reported to the CPSC from a number of sources, including reports from consumers.
- The In-Depth Investigation (INDP) summary database provides date, demographic, and injury information for injuries, fatalities and other incidents for which CPSC staff or contractors conducted a telephone or on-site investigation.
- The Death Certificates (DTHS) file provides date, demographic, and limited incident information for some but not all fatal injuries associated with consumer products.

Their review included all incidents associated with cribs and crib bedding involving children age 3 to 15 months and was completed in April 2016. It should be noted that these are the same databases accessed and reported on by Scheers et al for their paper⁴.

3. Laboratory testing data on air permeability of the BreathableBaby Mesh Liners

A. Dr. Raynor conducted tests to measure the ease with which crib liners made by BreathableBaby permit air flow through their fabrics. Four crib liner fabrics created by BreathableBaby were evaluated in these studies. They are designated as follows:

- (a) BreathableBaby Mesh Crib Liner
- (b) BreathableBaby Deluxe Cableweave Crib Liner
- (c) BreathableBaby Ultra Luxe Mesh Crib Liner
- (d) BreathableBaby Deluxe Embossed Crib Liner

Tests were conducted on two occasions, in February and June of 2015. The Mesh Crib Liner and the Deluxe Cableweave Crib Liner were tested in February. The Mesh Liner was tested along with the Ultra Luxe Mesh Crib Liner and the Deluxe Embossed Crib Liner in June.

An image of the test apparatus is shown in Figure 1. On each occasion, measurements were made three separate times with each of the test fabrics and three times with no test fabric present. When used, test fabrics were placed with the surface that would face an infant upward on top of a porous frame that allowed the rear of the fabric to be exposed to room air.

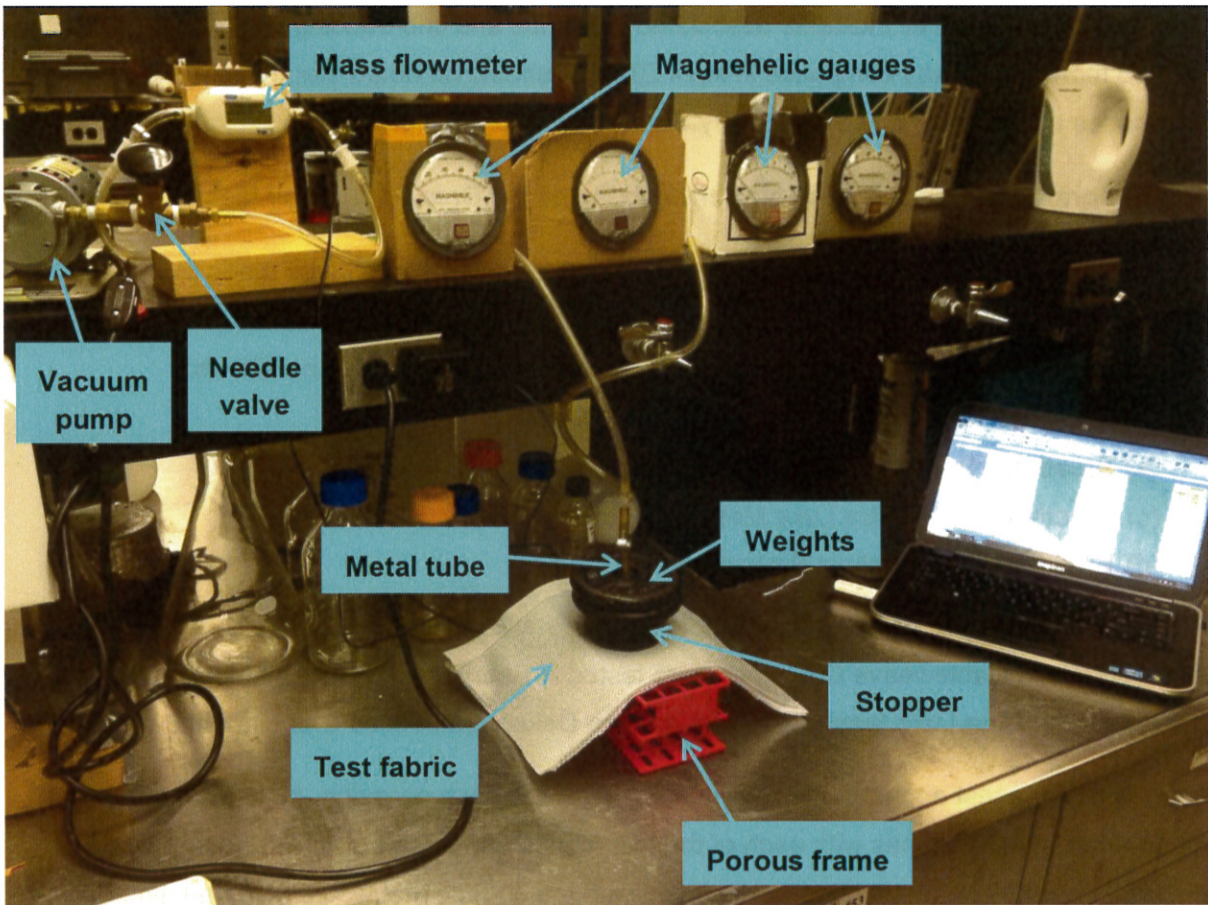


FIGURE 1. An image of the test apparatus.

A small metal tube 3/16 inch (4.8 mm) in diameter, approximately the diameter of an infant's nostril, was inserted through a hole in a large rubber stopper. The end of the tube was even with the bottom of the stopper. When fabrics were being tested, the tube and stopper were placed flat on top of the liner fabric. When measurements were made without a test fabric, the tube and stopper were placed flat on top of the porous frame so that the tube was open to the room air. To approximate the weight of an infant's head, 5 pounds (2.3 kg) of weights were applied in all cases on top of the stopper.

Air was drawn through the metal tube and connected plastic tubing using a vacuum pump. The air flow rate was controlled using a needle valve just upstream from the vacuum pump. Flow through the system was measured in liters per minute (L/min) by a mass flowmeter (TSI Inc., Shoreview, MN). Resistance to air flow was determined by comparing the pressure taken at a point just downstream from the stopper to the room pressure. This pressure drop was

monitored by four Magnehelic pressure gauges with ranges of 0-1, 0-3, 0-10, and 0-50 in. H₂O. The pressure drop readings were converted to units of cm H₂O for later analysis[‡].

During each run, 10 measurements of air flow rate and pressure drop were made. Flow rates were adjusted prior to each measurement using the needle valve to obtain readings that spanned the range of measurable flow rates and pressure drops. Measurements were limited by the maximum flow rate, approximately 25 L/min. Therefore, a total of 30 paired measurements of flow rate and pressure drop were made for each fabric – and when no fabric was present – spanning the practical range of measurements possible with the apparatus.

For each liner, and for the runs when no fabric was present, the readings of pressure drop were plotted against the corresponding readings of air flow rate. Using only measurements with air flow less than 12 L/min, a second-order polynomial regression equation was fit through the data for each fabric with an intercept of zero. For each liner, the fitted second-order regression equation when no fabric was present was subtracted from the regression equation for the fabric to produce a new second-order polynomial equation that estimated the performance of the fabric by itself without any effects from the test apparatus. Using these equations – one for each fabric – estimates were made of the pressure drop at flow rates of 4 and 8 L/min, which were chosen to approximate average and instantaneous maximum inhalation rates for infants.

B. BreathableBaby commissioned Bureau Veritas, an independent testing lab, to evaluate their products as well as traditional crib bumpers for air permeability per ASTM D737 – *Standard Test Method for Air Permeability of Textile Fabrics* (found at <http://www.astm.org/cgi-bin/resolver.cgi?D737>). The same four BreathableBaby mesh liners were evaluated as in the pressure drop versus flow rate tests. In addition, 10 bumper products were evaluated (Products B-J), as well as using impermeable Saran Wrap and no sample at all to assess the limits of the test protocol. Each sample's air permeability was measured at a pressure of 125 Pa (equivalent to 1.27 cm H₂O) through a test head with a circular area of 38 square centimeters, a diameter of roughly 69.6 mm.

[‡] *cm H₂O = centimeter of water, a unit of pressure equivalent to the pressure exerted by a column of water 1 centimeter in height. This is the unit of pressure that is used, by convention, in studies of human physiology.

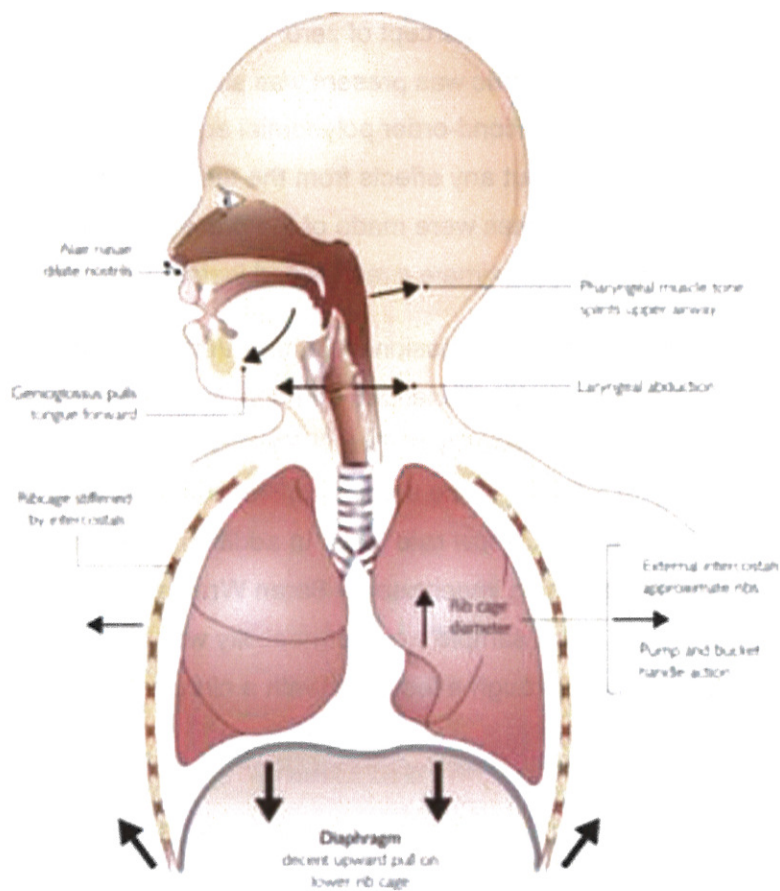
RESULTS

1. Discussion of normal infant breathing and possible mechanisms of bedding-related asphyxiation

Control of breathing and respiratory rhythm are influenced by the integration of multiple inputs from many areas within the brain, central and peripheral chemoreceptors, muscles, joints and peripheral pain receptors. Both central (brain stem) and peripheral (carotid) chemoreceptors are involved in modification of respiratory activity in response to changes in blood carbon dioxide, pH and oxygen. In addition there are several reflexes that are particularly active in infants that may impact on respiratory effort, but are not relevant to this discussion⁵.

Pulmonary ventilation is obtained through changes in the ribcage dynamics that decrease pressure in the alveoli, leading to flow of air. At rest, the lungs and ribcage are in a situation of equilibrium determined by the sum of two contrasting forces: elastic inward recoil of the pulmonary parenchyma and outward elastic traction of the ribcage^{6,7}.

During normal breathing, air movement is accomplished primarily by contraction of the diaphragm, causing an increase in the vertical diameter of the ribcage, and to a lesser degree, especially in infants, by contraction of the intercostal muscles, causing changes in the antero-posterior diameter of the thorax by rotation of the ribs along their axis. Expansion of the ribcage during inspiration causes a reduction in intra-pleural pressure, and the lungs undergo passive



expansion. At the end of quiet inspiration, intrapleural pressure reaches about -8 cm H₂O, which is the transpulmonary pressure distending the lungs. The expiratory phase, by contrast, is usually a passive phenomenon determined by the forces of elastic recoil of distended tissues: the greater the expansion of the lungs during inspiration, the greater its elastic recoil. During quiet expiration, the inspiratory muscles relax and the inward elastic recoil of the lungs results in deflation of the lungs. During deflation, the lungs and chest wall move as one unit. Airflow out of the lungs ceases when alveolar pressure equals atmospheric pressure (0 cm H₂O). The intervention of expiratory muscles, the most important ones being the muscles of the abdominal wall, occurs in physiological situations such as coughing, sneezing, crying or talking, or in some pathological conditions⁶⁻⁸.

The forces that have to be overcome in order to move air through the respiratory system are not only the forces of elastic recoil of the lungs and chest but also the airway resistance. In the respiratory system some 30–40% of the resistance occurs at the nose. Infants are primarily nose breathers but they can establish oral breathing in the presence of nasal occlusion⁶⁻⁹.

Flow of gases through a rigid tube is directly proportional to pressure at its entrance and inversely proportional to resistance⁶. The simple arithmetic relationship is made more complex by the compressibility of the human airway, which will narrow when pressure around it is greater than pressure within it. However, this latter aspect of ventilatory mechanics needs not be considered in the present context as it is relevant to the intrathoracic and not the extrathoracic (upper) airway which is the focus of concern in this discussion⁸.

Restriction of flow through the airway leads to asphyxia and suffocation. Knowledge of normal pressures and flow of air through the respiratory tract, especially the upper airway, of infants, is essential to interpreting and placing into perspective the measurements of flow restriction produced by various products that will be reported later in this document.

Shardonofsky et al measured maximal inspiratory and expiratory airway pressures in 100 healthy infants (51 males, 49 females; age range, 0.06-3.76 years) by occluding the airway with a suitable face mask during a crying effort. The mean ± standard deviation (SD) maximal inspiratory pressure was 118±21 centimeters (cm) H₂O and the mean (±SD) expiratory pressure was 125±35 cm H₂O, respectively. Maximal inspiratory pressure was independent of age, sex,

⁸ The intrathoracic airway includes the trachea and bronchial tubes, all contained within the chest. The extrathoracic airway includes the nose, throat and larynx, all of which are outside the chest and surrounded by atmospheric pressure.

and body measurements, while maximal expiratory pressure showed a low correlation with body weight¹⁰.

Kassim et al studied respiratory muscle strength in 67 healthy term infants, a somewhat younger cohort. They found at birth a mean±SD maximal inspiratory pressure of 89±19 cm H₂O and mean expiratory pressure of 61.8±13.5 cm H₂O; these increased at 6 weeks of age to 101±15.2 cm H₂O and 82.6±19.4 cm H₂O, respectively¹¹.

Normal resting breathing parameters were measured in 7 day old infants by Schmalisch et al¹². They documented a mean inspiratory time of 0.65±0.14 seconds, a mean expiratory time of 0.98±0.24 seconds, and tidal volume** of 5.57±1.06 milliliters/kilogram body weight. The average weight of their cohort was 3.28 kg, giving an average tidal volume of about 18 ml, so the average inspiratory flow of air was 28 ml/second (1.7 liters/minute) and average expiratory flow was 19 ml/second (1.1 liters/minute).

Djupesland and Lyholm used a specially designed nasal probe and determined that the total minimal cross-sectional area of the nose in newborns is 21 square millimeters (mm²) increasing to 35 mm² at 1 year of age¹³. The diameter of the nasal airway (assuming circularity) is 5.2–6.7 mm, which equates to 109-141% of the diameter of the test apparatus used by Dr. Raynor, but only 7.5-9.6% of the test apparatus diameter used in the air permeability tests conducted by Bureau Veritas. The cross-sectional area of the trachea is considerably smaller, estimated by Griscom et al^{14,15}, using radiologic techniques, to be 16mm² at 3 weeks of age and 17 mm² at 5 months of age.

The role of bedding in infant asphyxiation leading to SIDS.

Studies have implicated the infant sleeping environment as a risk factor for SIDS, particularly a soft sleep surface and pillows¹⁶⁻¹⁸. In support of theories regarding the role of environmental triggers, there is compelling epidemiologic evidence that prone positioning confers significant risk and that public health programs recommending “back to sleep” have been responsible for a drop in the incidence of SIDS³. This and the finding of infants found dead with their airways covered by bedding lends support to theories related to accidental suffocation as an etiology in at least some children^{19,20}. A triple-risk model has been proposed suggesting that SIDS occurs in infants with underlying vulnerability (eg, genetic pattern, brainstem abnormality) who

**Tidal volume is the volume of air that is inhaled or exhaled in a single relaxed breath. Tidal breathing (alluded to below) is normal resting breathing.

experience a trigger event (eg, airflow obstruction, maternal smoking or infection), at a vulnerable developmental stage of the central nervous or immune system²¹. However, mechanisms continue to be speculative. Serotonin-mediated responses to decreases in blood oxygen and increases in carbon dioxide have been implicated, as well as other abnormalities of the autonomic nervous system²². Furthermore, it has been suggested that accidental suffocation is a gradual process associated with rebreathing of exhaled air and carbon dioxide accumulation rather than abrupt and complete obstruction of breathing^{23,24}.

2. Results of epidemiologic analysis of CPSC databases on morbidity and mortality associated with BreathableBaby Mesh Liners

Econometrica's analysis of incidents in the four CPSC databases indicates that there are a negligible number of reported incidents (three over the 7-year period from 2009 through 2015) in which a mesh crib liner was present. Specifically, their study found that, with respect to mesh crib liners, there were no fatalities, no injuries treated in emergency departments, no injuries that required medical attention, and no incidents that involved a risk of suffocation.

One of the three reported incidents involved a child of 4 months with her head pressed against the liner; she had red marks on her face but was not injured. Econometrica interpreted this to represent a case where use of a mesh crib liner provided a substantial safety benefit. The other two reports involved arm/leg entrapments that occurred in cribs with mesh liners installed but did not involve injuries requiring medical attention. Econometrica's report describes these as cases in which the liner simply failed to prevent an entrapment injury rather than being a product that contributed to the injury.

The report further states that *"The NEISS data also suggest that mesh crib liners provide a safety benefit by reducing the rate of limb entrapments in crib slats and rails. Limb entrapments associated with cribs account for an estimated 280 ED-treated injuries annually, accounting for 5% of all estimated ED-treated injuries associated with cribs. Our analysis of 2009-2015 IPII database records shows that more than half of all injury incidents that consumers reported to CPSC...associate with cribs involved arm or leg entrapments. Based on our analysis of the CPSC incidents reports since 2009, mesh crib liners appear to provide a potentially substantial safety benefit in the form of reduced number of limb entrapment injuries without posing a potential suffocation risk."*

It should be noted that the Econometrica study sought out all incidents associated with mesh crib liners and the frequency and type of injuries associated with limb entrapment in cribs. So while all incidents of limb entrapment are cataloged, whether they involved mesh liners or not, those involving any suffocation-related incidents were not enumerated as none were found to have occurred in association with mesh liners.

3. Laboratory testing data on air permeability of the BreathableBaby Mesh Liners

A. Findings from Dr. Raynor’s laboratory:

The relationships of pressure drop versus flow rate for the four test fabrics are shown in Figure 2. Table 1 shows pressure drop predictions for the test fabrics at air flow rates of 4 and 8 L/min.

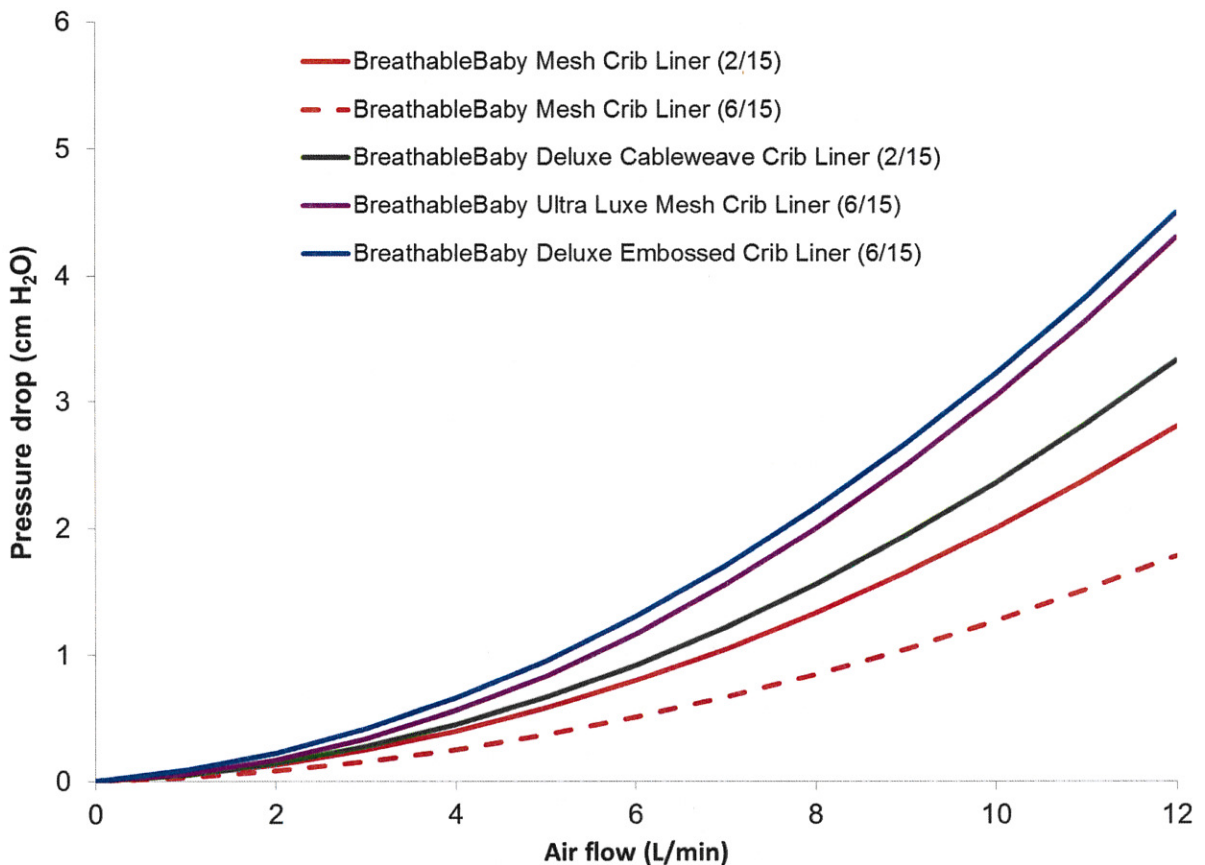


FIGURE 2. Polynomial regression lines of pressure drop versus air flow rate for the test fabrics, corrected for the relationship between pressure drop and flow when no liner or bumper is present.

TABLE 1: Pressure drops predicted at flow rates of 4 and 8 L/min from equations fit to data taken during tests with BreathableBaby crib liners.

Crib liner	Pressure drop estimate (cm H ₂ O) at flow rate = 4 L/min	Pressure drop estimate (cm H ₂ O) at flow rate = 8 L/min
BreathableBaby Mesh Crib Liner (February 2015)	0.40	1.33
BreathableBaby Mesh Crib Liner (June 2015)	0.25	0.85
BreathableBaby Deluxe Cableweave Crib Liner (February 2015)	0.45	1.56
BreathableBaby Ultra Luxe Mesh Crib Liner (June 2015)	0.56	2.00
BreathableBaby Deluxe Embossed Crib Liner (June 2015)	0.66	2.16

B. Permeability testing by Bureau Veritas

The measurements performed by Bureau Veritas are presented in Table 2. They show that mesh crib liners have a high degree of air permeability. BreathableBaby's 4 crib liner products tested between a range of 385 to 1013 cubic feet per minute of airflow. On average, BreathableBaby's 4 crib liner products were over 10 times as permeable to air as the traditional crib bumpers that were also tested. BreathableBaby's most permeable crib liner was over 46 times more permeable to air than the least permeable traditional crib bumper tested.

TABLE 2. Air permeability measured by Bureau Veritas for BreathableBaby crib liners and competitor products, as well as for impermeable Saran Wrap and with no sample present.

Product Description	Air Permeability (cubic feet / minute)
No sample present	1460
BreathableBaby Mesh Crib Liner	1013

BreathableBaby Deluxe Cableweave Crib Liner	537
BreathableBaby Ultra Luxe Mesh Crib Liner	385
BreathableBaby Deluxe Embossed Crib Liner	521
Product B	70.2
Product C1	48.3
Product C2	41.6
Product D	46.4
Product E	45.4
Product F	39.8
Product G	28.4
Product H	28.1
Product I	22.8
Product J	21.7
Saran Wrap	0

DISCUSSION

In judging the safety of BreathableBaby Mesh products, we have the opportunity to synthesize two complementary types of research. On the one hand, we have the epidemiologic data that has been published by Scheers et al and further compiled by the Econometrica research company and on the other hand the physical testing performed by Dr. Raynor and by Bureau Veritas.

The study by Scheers et al. is compelling to us as it provided significant detail on suffocation deaths and near-deaths attributable to the use of conventional crib bumpers as well as other

injuries. Those authors seem not to have found any events associated with the use of mesh liner products, as none were mentioned in their report and they supported the use of mesh liners as a replacement for crib bumpers by stating in their discussion that “*Mesh bumpers (sic) are breathable and thin and may reduce the likelihood of slat entrapment and climb outs...These...designs were excluded from the State of Maryland’s ban on the sale of crib bumpers*”. While it is not clear what proportion of the denominator infant population used BreathableBaby Mesh products during the period of their analysis (which went as far back as 1985 but specifically identified an apparent increase in death rate attributable to crib bumpers between 2006-2012), the company reports sales of over 2.5 million units since 2002, so a significant reduction in risk, at the very least, can be inferred. The study performed by Econometrica, commissioned by BreathableBaby, specifically searched for incidents associated with the use of mesh liners in the CPSC data bases and found nothing except 3 reports of minor injuries reported by consumers that were not attributable to the liners.

Overall, while there is a possibility that suffocation or limb entrapment events were missed by the CPSC database, and it is difficult to compare estimates of incidence without a clearer understanding of the relative prevalence of conventional crib bumper use vs mesh liner use, this line of data makes a compelling argument for relative safety of mesh liners compared with conventional crib bumpers.

The physical testing done by Dr. Raynor and by Bureau Veritas use different techniques, and each presents some challenges in extrapolation to real-life settings with infants. In particular, the diameter of the air flow region in the Bureau Veritas tests is more than 10X larger in diameter than an infant's nostril. Nonetheless, the Bureau Veritas data in Table 2 demonstrate that the BreathableBaby crib liners are all much more permeable to air than the traditional crib bumpers evaluated. Setting aside the most permeable product, Product B, the least permeable BreathableBaby crib liner allows 8X or greater air flow relative to each of the remaining traditional crib bumpers in these tests. These differences suggest a significant advantage for the mesh crib liners versus the traditional bumper products.

The test apparatus developed by Dr. Raynor, while not a dynamic system that simulates tidal breathing, utilized a tube diameter very similar to an infant's nostril diameter and measured pressure drops through crib liners at air flow rates relevant to infant breathing rates. Dr. Raynor's data show that only a trivial increase in pressure (<1 cm H₂O) is observed at air flows

of 1-2 liters/minute through the liners, which is the physiologic range of interest. As noted, normal tidal respiration is associated with inspiratory pressures of <10 cm H₂O, and the publications cited show that infants can generate maximum inspiratory and expiratory pressures up to 100 cm H₂O. Thus, the pressure drop through BreathableBaby mesh liners is more than two orders of magnitude lower than the maximum inspiratory and expiratory pressures that infants can generate. The relatively minimal pressure drop associated with the BreathableBaby liners suggests that they are likely to have minimal impact on the inspiration and exhalation rates of infants were they to breathe directly through the crib liners.

The Bureau Veritas tests and the measurements made by Dr. Raynor use experimental methods that do not directly replicate the breathing process of infants. In addition, the two approaches are not directly comparable due to differences in tube diameters and pressure ranges. Therefore, we must be cautious in trying to extrapolate results to real-life situations. Nonetheless, both sets of data suggest reassuringly high permeability to the flow of gases through BreathableBaby crib liners, and greater permeability than what is found in currently marketed crib bumper products.

As noted, the combination of laboratory and epidemiologic data make a compelling argument for the safety of the BreathableBaby products, despite the limitations of both approaches independently.

CONCLUSIONS

In summary, we believe that there is reasonable evidence from the epidemiologic data and from the laboratory testing data to support the conclusion that BreathableBaby mesh crib liners are safe because they do not present a significant restriction to infant breathing airflows. There is no reason to believe that they would increase the risk of suffocation hazards for infants. Ongoing surveillance through the established CPSC databases would, of course, be appropriate to confirm this conclusion.

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Crib Bumper Expert Panel Agenda

Host: CPSC Commissioner Robert Adler

Wednesday, October 26, 2016 from 10:30am to 1:00pm
 CPSC Hearing Room - 4th Floor, Bethesda Towers, MD

TIME	TOPIC	SPEAKER	AFFILIATION
10:30	Introduction	Commissioner Robert Adler	Consumer Product Safety Commission
10:40	Crib Bumper Deaths & Apparent Life-Threatening Events (ALTEs)	Dr. NJ Scheers	Ph.D., BDS Data Analytics
		Dr. Brad Thach	Neonatologist, St. Louis Children's Hospital & Professor of Pediatrics, Washington University
11:05	Additional Crib Bumper Deaths (Non-CPSC Data)	Ms. Teri Covington	Director, National Center for Fatality Review & Prevention
11:30	American Association of Pediatrics (AAP) Science & Recommendations	Dr. Rachel Moon	Division Head of General Pediatrics & Professor of Pediatrics, U of Virginia School of Medicine
		Ms. Arni Gadhia	Assistant Director, American Association of Pediatrics: Dept. of Federal Affairs
11:55	Break		
12:05	Maryland State Crib Bumper Ban	Dr. Joshua Sharfstein	Professor of the Practice, Johns Hopkins Bloomberg School of Public Health
		Dr. Andrea Gielen	Professor & Director, Johns Hopkins Center for Injury Research & Policy
12:30	Consumer Views	Ms. Nancy Cowles	Executive Director, Kids in Danger
12:55	Wrap Up	Commissioner Robert Adler	Consumer Product Safety Commission

- Also participating will be Commissioner Adler's staff members: Sarah Klein (Chief Counsel) and Jennifer Feinberg (Senior Counsel).
- Each topic will begin with a 15-minute presentation followed by a 10-minute dialogue session among panel members.
- Observers are requested to withhold their questions/comments, and may reach out to panelists at a later time.
- To access the PowerPoint slides presented at this meeting, go to Commissioner Adler's Statements page at: <https://cpsc.gov/about-cpsc/commissioner/robert-s-adler/statements/commissioner-adler-and-staff-meeting-with-expert>
- For additional information, contact Maureen Kentoff at mkentoff@cpsc.gov or (301) 504-7731.

Crib Bumpers: Maryland's Experience

Joshua M. Sharfstein, MD

Andrea C. Gielen, ScD

October 26, 2016

Johns Hopkins Bloomberg School of Public Health

About the Presenters

Andrea C. Gielen is a Professor in the Department of Health, Behavior, and Society at the Johns Hopkins Bloomberg School of Public Health the Director of the Johns Hopkins Center for Injury Research and Policy.

Considered one of the foremost public health experts on injury prevention in the country, she is the author of more than 125 scientific publications, has served as President of the Society for Advancement of Injury and Violence Research and received the Award for Excellence from the American Public Health Association.

Joshua M. Sharfstein is Professor of the Practice in the Department of Health Policy and Management at the Johns Hopkins Bloomberg School of Public Health. He served as Secretary of Maryland's Department of Health and Mental Hygiene from 2011 through 2014. Previously, he served as Commissioner of Health for Baltimore City.

This presentation represents the views of Professors Gielen and Sharfstein and is not an official position of Johns Hopkins University.



Outline

1. Maryland's Experience
2. Response to the CPSC Staff Response



Legal Standard in Maryland

Title 22, Subtitle 5 of the Health-General Article of the Annotated Code of Maryland authorizes the Secretary of DHMH to regulate hazardous materials.

Section 22-502(a) authorizes the Secretary to adopt rules and regulations to that declare as a hazardous material that the Secretary finds are intended for use by children that present an electrical, mechanical, or thermal hazard. The Secretary can further adopt rules and regulations to ban hazardous material if the material is a danger to public health and safety and proper labeling cannot protect the public health and safety adequately.



Maryland's Process on Crib Bumpers

April 2011	DHMH publishes a request for comment in the <i>Maryland Register</i> concerning the use of crib bumpers. 9 comments received.
May 2011	DHMH presents comments and available published evidence to an advisory panel with four senior pediatricians and one public health officer. All agree crib bumpers should not be used; 4 recommend a ban.
July 2011	The advisory panel meets again to hear from several speakers recommended by the Juvenile Products Manufacturers Association. The panel is joined by an Assistant Medical Examiner. The advisory panel all agree there is no meaningful evidence of benefit.



Maryland's Process on Crib Bumpers

October 2011	The Department publishes a second request for public comment in the <i>Maryland Register</i> , this time on a proposal to ban the sale of baby bumper pads in the state. >30 comments received.
July 2012	DHMH publishes a proposed regulation for public comment in the <i>Maryland Register</i> . The regulation would ban the sale of non-mesh crib bumpers in the State of Maryland with an effective date of June 21, 2013.
December 2012	A Committee of the Maryland General Assembly holds a hearing to review the proposed regulations and declines to ask for a delay.
June 2013	Ban on sale of crib bumpers goes into effect.



Maryland's Process

- Multiple opportunities for public comment and scientific process.
- Evaluated both the potential benefit and potential risk of baby bumper pads.
- Benefit: Found no evidence of meaningful benefit at the ages recommended for infants.
- Harm: Found evidence of potentially lethal risk at the ages recommended for infants.
- Communication of baby bumper pad ban emphasized ABCs of safe sleep: Alone, Back, Crib.
- Media and public understood thoughtfulness and rationale for ban on sale of baby bumper pads.



Follow-Up Data

- Best place to look is Baltimore City.
 - Most unexplained deaths in infancy in the state
 - Public health focus on sleep-related deaths
 - Close tracking of sleep-related deaths
- According to Baltimore City Health Department, 2015 was lowest number of sleep-related deaths on record.
- 2015 also lowest infant mortality rate on record, and lowest African-American infant mortality rate on record.

THE BALTIMORE SUN

OCTOBER 5, 2016, 6:25 PM

Infant mortality in Baltimore decreases to record low



CITY OF BALTIMORE
STEREMANE RAWLINGS-BLAKE, Mayor



HEALTH DEPARTMENT
Emma S. Wong, M.D., M.Sc.
Commissioner of Health
1001 E. Fayette Street
Baltimore, Maryland 21202

October 21, 2016

Joshua M. Sharfstein, M.D.
Professor of the Practice
Department of Health Policy & Management
Johns Hopkins Bloomberg School of Public Health
624 N. Broadway Street
Baltimore MD 21205

Dear Dr. Sharfstein:

B'more for Healthy Babies (BHB) whole heartedly supports the ban on baby bumper pad sales. B'more for Healthy Babies is a collective impact strategy that was launched in 2009 to reduce the infant mortality rate (IMR) in Baltimore City. The vision of BHB is that all babies are born healthy, full-term, and ready to thrive in healthy families.

In 2009, Baltimore City had the fourth highest IMR for cities of comparable size in the United States at 13.5 deaths per 1000 live births. Over the last seven years, Baltimore's IMR has decreased by 38% to 8.4 deaths per 1,000 live births in 2015, the lowest IMR ever recorded for the City. One critical contributor to this reduction was a 50% decrease in the number of infant sleep related deaths in this same time period from 27 in 2009 to 13 in 2015.

In Baltimore City nearly every sleep-related infant death is due to an unsafe sleep environment, such as co-sleeping with an adult or sibling, sleeping in a crib or a bed with items such as pillows, blankets, crib bumpers, and stuffed animals, or exposure to smoke.

The messaging for BHB's SLEEP SAFE Campaign focuses on the baby sleeping Alone, on his or her Back, in a Crib, and in an environment where there is no smoke (Don't Smoke). This is better known as the "ABCs" of Safe Sleep. This messaging stemmed from Baltimore City's Child Fatality Review in 2008 that was developed into a citywide social marketing campaign and is based on the American Academy of Pediatrics guidelines. Today, posters and billboards can be seen across bus and metro stops and in barber shops, churches, community based organization centers, jury duty, and drug stores. The short films created for the campaign are played in every birthing hospital in Baltimore City prior to the mother being discharged after delivery and throughout multiple social media sites.

Banning baby bumper pad sales in Maryland in 2013 was critical to Baltimore's infant safe sleep campaign. The ban reinforces and promotes the messaging that babies must sleep alone. Baby bumper pads have been associated with suffocation and asphyxiation in young infants. In older infants, bumper pads are hazardous because infants can use them to climb out of a crib and fall. Baltimore's SLEEP SAFE campaign has been used across Maryland and nationally to prevent infant deaths. Banning crib bumpers is critical to consistent messaging about how infants can sleep safely and reduces just one more risk factor that could result in an infant death.

Sincerely,

Rebecca Dineen, M.S.
Assistant Commissioner, Maternal and Child Health

Letter from Rebecca Dineen, Assistant Commissioner, Baltimore City Health Department



“Banning baby bumper pad sales in Maryland in 2013 was critical to Baltimore’s infant safe sleep campaign. The ban reinforces and promotes the messaging that babies must sleep alone. Baby bumper pads have been associated with suffocation and asphyxiation in young infants. In older infants, baby bumper pads are hazardous because infants can use them to climb out of a crib and fall.

Baltimore’s SLEEP SAFE campaign has been used across Maryland and nationally to prevent infant deaths. Banning crib bumpers is critical to consistent messaging about how infants can sleep safely and reduces just one more risk factor that could result in an infant death.”

-- Rebecca Dineen, Assistant Commissioner for Maternal and Child Health, Baltimore City Health Department



Response to CPSC staff document from an injury prevention perspective

- *Precautionary principle*: the potential threat of harm without evidence of sufficient benefit, even in the absence of definitive cause and effect relationships, is sufficient for action
- *First and best injury countermeasure*: eliminate the hazard
- *Last and most difficult injury countermeasure*: rely on constant vigilance by human beings to protect themselves and their loved ones



Specific Responses to CPSC Staff Document

1. Method of considering only cases without any other potentially contributing factors does not have scientific merit.
 - This method fails to recognize that many injury deaths have multiple causes and is not consistent with attribution in injury research.
 - This method was rejected by Maryland’s advisory panel.
 - This method still finds some fatal injuries to infants.



Brief Responses to CPSC Staff Document

2. Attribution of benefit to crib bumpers is not credible.
 - At the age of recommended use, there is essentially no risk of serious injury from a crib that meets CPSC standards.
 - The staff's analysis of limb entrapment did not address the age of the infants, a serious limitation.
 - Maryland's advisory panel considered the question of benefit and unanimously found there was no evidence of meaningful benefit.



Brief Responses to CPSC Staff Response

3. The idea that parents will respond to a ban on sales by taking more dangerous action is not consistent with the response to the withdrawal of over-the-counter cough and cold medications for young infants.

 - Research has documented substantial declines in poison control calls and Emergency Department visits for young infants following the withdrawal from the market of these products.

Forrester MB. Effect of cough and cold medication withdrawal and warning on ingestions by young children reported to Texas poison centers. *Pediatr Emerg Care.* 2012 Jun;28(6):510-3. doi: 10.1097/PEC.0b013e3182587b0c.

Hampton LM, Nguyen DB, Edwards JR, Budnitz DS. Cough and cold medication adverse events after market withdrawal and labeling revision. *Pediatrics.* 2013 Dec;132(6):1047-54. doi: 10.1542/peds.2013-2236

Klein-Schwartz W, Sorokin JD, Doyon S. Impact of the voluntary withdrawal of over-the-counter cough and cold medications on pediatric ingestions reported to poison centers. *Pharmacoepidemiol Drug Saf.* 2010 Aug;19(8):819-24. doi: 10.1002/pds.1971.



Conclusion

- When there is no evidence of meaningful benefit, there is no justification for permitting a potentially lethal risk to infants.
- The CPSC should ban the sale of bumper pads.
- This ban should be coordinated with public health agencies, child safety organizations, and the American Academy of Pediatrics and should emphasize all important messages regarding safe sleep in a consistent and effective manner.





U.S. CONSUMER PRODUCT SAFETY COMMISSION

4330 EAST WEST HIGHWAY
BETHESDA, MARYLAND 20814-4408

MINUTES OF COMMISSION MEETING October 19, 2016

Chairman Elliot F. Kaye convened the October 19, 2016, 9:30 a.m., meeting of the U.S. Consumer Product Safety Commission in open session. Commissioners Robert S. Adler, Marietta S. Robinson, Ann Marie Buerkle and Joe P. Mohorovic were in attendance. Ann Marie Buerkle participated by telephone.

Decisional Matter: Fiscal Year 2017 ("FY 2017") Operating Plan (Briefing package dated September 15, 2016)

After introducing the matter and making an opening statement, Chairman Kaye called for any opening statements or questions. Present to respond to any questions were Patricia Adkins, Executive Director; DeWane Ray, Deputy Executive Director for Safety Operations; George Borlase, Assistant Executive Director for Hazard Identification and Reduction; and Jay Hoffman, Director, Office of Financial Management. The Commissioners declined to make any statements or ask questions at this point.

Chairman Kaye moved that the FY 2017 Operating Plan be amended to include crib bumpers as a project. The amendment included changes to several parts of the plan. Commissioner Adler seconded the motion. Chairman Kaye explained the purpose of the amendment and the Commission discussed the amendments. After the discussion, Chairman Kaye called for a vote on the matter. The Commission voted (3-2) to adopt Chairman Kaye's motion and amendment. Chairman Kaye, Commissioner Adler and Commissioner Robinson voted to adopt the amendment. Commissioner Buerkle and Commissioner Mohorovic voted to not adopt the amendment. (The adopted amendment is attached.)

Chairman Kaye moved that the FY 2017 Operation Plan be amended in certain portions that pertain to all-terrain vehicles. Commissioner Adler seconded the motion. Chairman Kaye explained the purpose of the amendment and the Commission discussed the amendment. After the discussion, Chairman Kaye called for a vote on the matter. The Commission voted unanimously (5-0) to adopt Chairman Kaye's motion and amendment. (The adopted amendment is attached.)

Chairman Kaye moved that the FY 2017 Operation Plan be amended to include language to include a project involving high energy batteries. Commissioner Robinson seconded the motion. Chairman Kaye explained the purpose of the amendment and the Commission discussed the amendment. After the discussion, Chairman Kaye called for a vote on the matter. The Commission voted unanimously (5-0) to adopt Chairman Kaye's motion and amendment. (The adopted amendment is attached.)

Chairman Kaye moved that the FY 2017 Operation Plan be amended to include language to include a project involving top-loading washing machines. Commissioner Robinson seconded the motion. Chairman Kaye explained the purpose of the amendment and the Commission discussed the amendment. After the discussion, Chairman Kaye called for a vote on the matter. The Commission voted unanimously (5-0) to adopt Chairman Kaye's motion and amendment. (The adopted amendment is attached.)

Chairman Kaye moved that the FY 2017 Operating Plan be amended to change the language at certain parts pertaining to upholstered furniture flammability. Commissioner Adler seconded the motion. Chairman Kaye explained the purpose of the amendment and the Commission discussed the amendment. After the discussion, Chairman Kaye called for a vote on the matter. The Commission voted (4-1) to adopt Chairman Kaye's motion and amendment. Chairman Kaye, Commissioner Adler and Commissioner Robinson and Commissioner Mohorovic voted to adopt the amendment. Commissioner Buerkle voted to not adopt the amendment. (The adopted amendment is attached.)

Chairman Kaye called for any other motions for amendments. Commissioner Adler moved that the FY 2017 Operating Plan be amended to add language to establish a program that would provide support to consumers for technical and other input in the development of voluntary standards in proceedings in which the Commission participates. Commissioner Robinson seconded the motion. Commissioner Adler explained the purpose of the amendment and the Commission discussed the amendment. After the discussion, Chairman Kaye suggested specific changes be made to the amendment. Commissioner Adler withdrew the amendment as written. Chairman Kaye paused the meeting for 15 minutes to allow the Commissioners to revise the amendment.

After the break, Commissioner Adler moved that the FY 2017 Operating Plan be amended to establish a program to support consumer input in voluntary standards proceedings with the revised amendment. Commissioner Robinson seconded the motion. Commissioner Adler explained the purpose of the amendment and the Commission discussed the amendment. After the discussion, Chairman Kaye called for a vote on the matter. The Commission voted unanimously (5-0) to adopt Commissioner Adler's motion and amendment. (The adopted amendment is attached.)

Chairman Kaye called for any other motions for amendments. Commissioner Robinson moved that the FY 2017 Operating Plan be amended to add to the Voluntary Standards Table new projects for "Non-Integral Firearm Locking Devices" and "Youth-Resistant Firearm Security Containers." Commissioner Adler seconded the motion. Commissioner Robinson explained the need for and purpose of the amendment and the Commission discussed the amendment. After the discussion, Chairman Kaye called for a vote on the matter. The Commission voted (3-2) to adopt Commissioner Robinson motion and amendment. Chairman Kaye, Commissioner Adler and Commissioner Robinson voted to adopt the amendment. Commissioner Buerkle and Commissioner Mohorovic voted to not adopt the amendment. (The adopted amendment is attached.)

Chairman Kaye called for any other motions for amendments. Hearing no motions, Chairman Kaye moved to approve the underlying FY 2017 Operating Plan as amended. Commissioner Adler seconded the motion. Chairman Kaye called for any statements. Hearing none, Chairman Kaye called for a vote on the matter. The Commission voted (3-2) to approve and adopt the FY 2017 Operating Plan as amended. Chairman Kaye, Commissioner Adler and Commissioner Robinson voted to adopt the amended plan. Commissioner Buerkle and Commissioner Mohorovic voted to not adopt the amended plan.

Chairman Kaye called for any closing statements. The Commissioners each made closing statements. There being no other business, Chairman Kaye adjourned the meeting at 12:55 p.m.

Commissioner Buerkle issued the attached statement regarding the issue.

For the Commission:



Todd A. Stevenson
Secretary

Attachments: Adopted Amendments
Statement of Commissioner Buerkle

Chairman Kaye Fiscal Year 2017 Operating Plan Amendments

1. Chairman Kaye Amendment on Crib Bumpers

The Commission directs staff to amend the Fiscal Year 2017 Operating Plan as follows:

On page 9, add "Consumer Registration Requirement for Crib Bumpers" to the "Mandatory Standards Summary Table" under the section "CPSIA, as amended by Pub. L. No. 112-28, and including Section 104, the Danny Keysar Child Product Safety Notification Act," with a status of "DA/TR" in the "FY 2017 Op Plan" column.

On page 9, add "Crib Bumpers" to the "Mandatory Standards Summary Table" under the section "CPSIA, as amended by Pub. L. No. 112-28, and including Section 104, the Danny Keysar Child Product Safety Notification Act," with a status of "DA/TR" in the "FY 2017 Op Plan" column.

On page 9, delete "Crib Bumpers" from the "Mandatory Standards Summary Table" under the section "Other Ongoing or Potential Rulemaking-Related Activities."

On page 15, under section "22727 – Children's/Nursery Product Hazards: Rulemaking Activities," delete the following language:

This project covers rulemaking activities related to these products: booster seats, children's folding chairs and stools, high chairs, changing tables, gates and other enclosures, infant bath tubs, infant bouncer seats, infant inclined sleep products, infant slings, and stationary activity centers.

This project also includes DA/TR work on crib bumpers and activities related to age determination guidelines."

On page 15, under section "22727 – Children's/Nursery Product Hazards: Rulemaking Activities," replace the deleted language with the following language:

This project covers rulemaking activities related to these products: booster seats, children's folding chairs and stools, high chairs, changing tables, gates and other enclosures, infant bath tubs, infant bouncer seats, infant inclined sleep products, infant slings, stationary activity centers, and crib bumpers.

The Commission has directed staff to initiate a rulemaking under section 104 of the CPSIA to promulgate a mandatory consumer product safety standard that will address the risk of injury associated with the use of padded crib bumpers. This project shall produce:

- An NPR package in FY 2018 that proposes to include crib bumpers as "durable infant or toddler products" requiring consumer registration under section 104(d) of the CPSIA; and
- An NPR package in FY 2018 that proposes a mandatory consumer product safety standard for crib bumpers under section 104 of the CPSIA that is more stringent than

the current ASTM voluntary standard and will further reduce the risk of injury associated with this product. This package shall address all or as many as possible of the following hazard patterns associated with padded crib bumpers: (1) suffocation; (2) wedging and entrapment; (3) falls; (4) use patterns such as installation difficulties, using crib bumpers for children past the recommended age and using crib bumpers outside of a crib; and (5) mixed messaging about padded objects in cribs. In developing a proposed standard, staff shall, at a minimum: (1) develop a performance requirement and test method to show that a crib bumper is firm enough not to conform to the face of an infant, based on known anthropometric parameters; (2) develop a performance requirement and test method based on known infant inhalation and exhalation requirements and anthropometric parameters to demonstrate that a crib bumper matches or exceeds the airflow characteristics of mesh or mesh-like materials, taking into account the safety of infants with compromised breathing; and (3) compose warnings and instructions on the product that explain all of the types of cribs on which the product can and cannot be installed, clear advice about how to install the product and at what age of the child to stop using the product.

This project also includes activities related to age determination guidelines.

2. Chairman Kaye Amendment on ATVs

The Commission directs staff to amend the Fiscal Year 2017 Operating Plan as follows:

On Page 9, add "ATVs - Other" to the "Mandatory Standards Summary Table" under the section "CPSIA, as amended by Pub. L. No. 112-28, and including Section 104, the Danny Keysar Child Product Safety Notification Act," with a status of "FR" in the "FY 2017 Request" column and a status of "DA/TR" in the "FY 2017 Op Plan" column.



**U.S. CONSUMER PRODUCT SAFETY COMMISSION
4330 EAST WEST HIGHWAY
BETHESDA, MD 20814**

**JOINT STATEMENT OF CHAIRMAN ELLIOT F. KAYE, COMMISSIONER ROBERT S. ADLER,
COMMISSIONER MARIETTA S. ROBINSON AND COMMISSIONER JOSEPH P. MOHOROVIC
RECOMMENDING PARENTS AND CAREGIVERS NOT USE PADDED CRIB BUMPERS**

November 3, 2016

Clutter in America's cribs is a serious public health issue. Dozens of infants and children die each year from soft bedding in their sleeping environments.¹ These deaths are addressable in many cases. We believe we can make a real difference for infants by sharing a specific safety recommendation to protect babies while they sleep.² We strongly advise the public to stop using padded crib bumpers. In our view, they do nothing more than contribute to the deadly clutter in many of our nation's cribs.

I. Background

Crib bumpers are infant bedding accessories intended to line the sides of an infant's crib. Padded crib bumpers are commonly made of fabric and fiber fill or foam panels that are intended to be tied to the crib slats and corner posts. Other types of crib bumpers have been marketed as barriers to prevent limb entrapment, such as mesh crib liners, as well as slat covers that wrap around individual crib slats.

ASTM F1917-12 (Standard Consumer Safety Performance Specification for Infant Bedding and Related Accessories), the ASTM voluntary standard that currently covers crib bumpers among other infant bedding products, requires bumpers that are made of fabric and filled with fibrous material, *i.e.* padded bumpers, to pass a test that entails dropping the bumper through a "bumper thickness test fixture" that is a two-inch wide slot. This requirement limits the thickness of a padded crib bumper to approximately two inches or thinner. It is unclear whether this test method has been validated as a

¹ See Staff Briefing Package on CPSC Staff Response to the Record of Commission Action on Crib Bumpers (September 9, 2016), Tab E, at 28.

² We note that this statement is not a binding or enforceable rule and would not change any person's rights, duties or obligations under the CPSA, CPSIA or any other Act administered by the Commission.

means to mitigate the risk of injury associated with these products. The standard also requires warning labels that address a risk of suffocation, sagging, strangulation on ties and removal of the bumper when a child can sit up unaided or can pull to a standing position.

Although the terms “crib bumper,” “bumper guard” and “bumper pad” are not defined in ASTM F1917-12, we understand those terms as used in ASTM F1917-12 to mean any products made of any material that are intended to cover the sides of a crib. This understanding includes padded crib bumpers, supported and unsupported vinyl bumper guards, mesh crib liners and vertical crib slat covers.

II. Previous Commission Action

In a petition to the Commission dated May 9, 2012, the Juvenile Products Manufacturers Association (JPMA) requested that the Commission initiate rulemaking to regulate crib bumpers by distinguishing between “hazardous pillow-like” crib bumpers and “non-hazardous traditional” crib bumpers.

On June 18, 2012, the Commission voted unanimously to publish a *Federal Register* notice requesting comments on the petition. The notice was published on June 25, 2012, with a closing date of August 24, 2012, for accepting comments on the petition.

On May 15, 2013, CPSC staff provided the Commission with a briefing package on the petition. In that package, CPSC staff concluded that “[s]ome evidence suggests that crib bumpers may increase the risks present in unsafe sleep settings” and recommended that the Commission grant the petition and direct CPSC staff to initiate rulemaking.

On May 24, 2013, the Commission voted to grant the petition and directed CPSC staff to initiate rulemaking to address the risk of injury associated with the use of crib bumpers and to provide the Commission with a second briefing package that:

- Described the possible regulatory options the Commission could take to address the risk of injury associated with crib bumpers.
- Assessed the effectiveness of any related voluntary consumer product safety standard.
- Assessed whether a more stringent standard would further reduce the risk of injury associated with the product.
- Explored and, as possible, developed performance requirements and test

methods to allow the Commission to identify which types of crib bumpers have characteristics that present safety hazards.

- Assessed whether there are any safety benefits provided by crib bumpers.
- Reviewed representative samples of crib bumpers, including, but not limited to, mesh bumpers and bumpers that individually cover crib slats (also called vertical bumpers).

On September 12, 2016, CPSC staff provided the Commission with a briefing package responding to the May 24, 2013 Record of Commission Action. In the 2016 package, CPSC staff identified 107 fatal and 282 non-fatal incidents that were reported to CPSC from January 1, 1990 to March 31, 2016, in which a crib bumper was present in the sleep environment. Of the fatal incidents, CPSC staff concluded that: in 31 cases, the crib bumper was “incidental” to the fatality because there was “no evidence of bumper contact or involvement”; in five cases, the bumper contact occurred outside a crib; and in 41 cases, entrapment or wedging occurred between the bumper and another object inside the crib. Based on these classifications, CPSC staff concluded: 72 of the reported fatalities were “unlikely to be addressable by Commission action”; nine of the reported fatalities were “likely to be addressable to some degree”; and 26 of the reported fatalities “lacked sufficient details to determine whether the crib bumper contributed to the fatality.”

On October 19, 2016, the Commission voted to add to its Fiscal Year 2017 Operating Plan a direction to CPSC staff to initiate rulemaking under section 104 of the Consumer Product Safety Improvement Act (CPSIA) to address the risk of injury or death associated with the use of crib bumpers.³

III. Hazards Associated with Padded Crib Bumpers

After a thorough review of the underlying incident data and consideration of the information presented in the 2013 and 2016 CPSC staff packages, we disagree with the approach and conclusions in the 2016 briefing package regarding both the risk of injury and death associated with padded crib bumpers and the addressability of those risks.

³ Chairman Kaye, Commissioner Adler and Commissioner Robinson voted in favor of Chairman Kaye’s amendment to add to the Fiscal Year 2017 Operating Plan a direction to CPSC staff to initiate rulemaking under section 104 of the CPSIA. Commissioner Mohorovic did not support Chairman Kaye’s amendment because Commissioner Mohorovic believes that the rulemaking procedures outlined in sections 7 and 9 of the Consumer Product Safety Act (CPSA) would be the most appropriate path for any potential crib bumper regulation to take. Commissioner Buerkle also opposed the amendment.

We believe that there is a clear risk of injury or death associated with padded crib bumpers. We believe that some of the reported fatalities that CPSC staff classified as “incidental” in the 2016 briefing package were, in fact, associated with the presence of a padded crib bumper. Further, we believe that there are multiple hazard patterns associated with padded crib bumpers that are addressable.⁴

IV. Our Recommendation: Stop Using Padded Crib Bumpers

One of the stated purposes of the Consumer Product Safety Act (CPSA), which established our agency, is to “assist consumers in evaluating the comparative safety of consumer products.”⁵ Consistent with this purpose, we are providing notice of our position on padded crib bumpers to consumers, parents and caregivers through this joint statement. We believe that there is a clear risk of injury or death associated with padded crib bumpers.

Accordingly, we strongly warn all parents and caregivers not to use padded crib bumpers. Some caregivers may think that padded bumpers assist in protecting against head injury or limb entrapment. We strongly believe that the risk of death from padded crib bumpers far outweighs any purported benefits. We advise parents and caregivers that the best practice for a safe sleep environment for children is a properly assembled crib with only an appropriately sized mattress and a snugly fitted sheet, and that parents should never place soft bedding or other padded objects such as padded bumpers, pillows, sleep positioners, stuffed animals, or cushions in a child’s crib, bassinet or play yard. When it comes to any child’s sleep environment, bare really is best.⁶

⁴ Examples of addressable hazard patterns associated with padded crib bumpers present in the incident data include: limited space on the mattress inside of the crib; crib bumpers that cover or otherwise conceal key failure points on the crib; incorrectly installed crib bumpers; the use of crib bumpers with children who are past the recommended age; the use of crib bumpers outside of the crib; and mixed messages about padded objects in a crib. These hazard patterns create, at a minimum, a risk of suffocation, wedging, entrapment or falls.

⁵ 15 U.S.C. § 2051(b)(2).

⁶ For more information on safe sleep practices or to learn more about common household dangers to children from consumer products, please visit cpsc.gov.



U.S. CONSUMER PRODUCT SAFETY COMMISSION
4330 EAST WEST HIGHWAY
BETHESDA, MD 20814

March 10, 2015

The Honorable Emily McAsey
Chairperson
House Committee on Elementary & Secondary Education: Charter School Policy
249-E Stratton Office Building
Springfield, IL 62706

Dear Chairperson McAsey:

I write to offer my support for your bill, HB 3761, that would ban padded crib bumpers from sale in Illinois, my home. In my years of experience in the consumer product testing industry, I saw the startling data about the risks these products present. As a father, I want to protect my children from such dangers. As a Commissioner of the U.S. Consumer Product Safety Commission, I want to protect all children.

Padded crib bumpers present an array of serious risks, virtually all of them latent hazards that parents might not instinctively appreciate. Moreover, they contribute to a misperception that a soft, padded crib environment is a safe crib environment, and crib bumpers beget pillows, blankets, and other add-ons. To the contrary, professional safety experts all recognize that an uncluttered crib –an appropriate mattress and a tight-fitting sheet – is the safest environment for a baby’s sleep. Seeing padded bumpers on the shelves contradicts the message the safety community needs caregivers to remember: Bare is Best.¹

Parents naturally assume that cribs are the safest place for children to be, and, before my time at CPSC, the agency helped validate that assumption by issuing the most stringent crib standards in the world, including mandatory testing. However, parents may not realize that a product they purchase to make the crib safer is actually making it *less* safe. Our job is to help parents keep their children safe by ensuring that products sold for use in cribs cannot increase the chances a family will have to endure the unimaginable tragedy of a child's death.

We need to do all we can to protect the precious blessings that are sleeping, growing, and blossoming in cribs across Illinois and across America. As a fellow public servant – and as a father – I applaud your efforts to do just that.

With heartfelt thanks and encouragement,

A handwritten signature in black ink, appearing to read "Joe P. Mohorovic", written over a white background.

Joseph P. Mohorovic
Commissioner
U.S. Consumer Product Safety Commission

¹ For more on CPSC’s Safe to Sleep efforts, you can visit the Crib Information Center at www.cpsc.gov.

HB4376



99TH GENERAL ASSEMBLY

State of Illinois

2015 and 2016

HB4376

by Rep. Rita Mayfield

SYNOPSIS AS INTRODUCED:

430 ILCS 125/10
430 ILCS 125/16 new
430 ILCS 125/25
430 ILCS 125/30

Amends the Children's Product Safety Act. Prohibits a commercial dealer, manufacturer, importer, distributor, wholesaler, or retailer from selling, offering to sell, leasing, or offering to lease a crib bumper pad in the State. Imposes a civil penalty of not less than \$100 and not more than \$500 for each violation. Provides for the deposit of these civil penalties into the Attorney General Court Ordered and Voluntary Compliance Payment Projects Fund.

LRB099 15587 MGM 39878 b

A BILL FOR

5-145

1 AN ACT concerning safety.

2 **Be it enacted by the People of the State of Illinois,**
3 **represented in the General Assembly:**

4 Section 5. The Children's Product Safety Act is amended by
5 adding Section 16 and changing Sections 10, 25, and 30 as
6 follows:

7 (430 ILCS 125/10)

8 Sec. 10. Definitions. In this Act:

9 (a) "Children's product" means a product, including but not
10 limited to a full-size crib, non-full-size crib, toddler bed,
11 bed, car seat, chair, high chair, booster chair, hook-on chair,
12 bath seat, gate or other enclosure for confining a child, play
13 yard, stationary activity center, carrier, stroller, walker,
14 swing, or toy or play equipment, that meets the following
15 criteria:

16 (i) the product is designed or intended for the care
17 of, or use by, any child under age 9; and

18 (ii) the product is designed or intended to come into
19 contact with the child while the product is used.

20 Notwithstanding any other provision of this Section, a
21 product is not a "children's product" for purposes of this Act
22 if:

23 (I) it may be used by or for the care of a child under

1 age 9, but it is designed or intended for use by the
2 general population or segments of the general population
3 and not solely or primarily for use by or the care of a
4 child; or

5 (II) it is a medication, drug, or food or is intended
6 to be ingested.

7 (b) "Commercial dealer" means any person who deals in
8 children's products or crib bumper pads or who otherwise by
9 one's occupation holds oneself out as having knowledge or skill
10 peculiar to children's products or crib bumper pads, or any
11 person who is in the business of remanufacturing, retrofitting,
12 selling, leasing, subletting, or otherwise placing in the
13 stream of commerce children's products or crib bumper pads.

14 (b-5) "Manufacturer" means any person who makes and places
15 into the stream of commerce a children's product or crib bumper
16 pad as defined by this Act.

17 (b-10) "Importer" means any person who brings into this
18 country and places into the stream of commerce a children's
19 product or crib bumper pad.

20 (b-15) "Distributor" and "wholesaler" means any person,
21 other than a manufacturer or retailer, who sells or resells or
22 otherwise places into the stream of commerce a children's
23 product or crib bumper pad.

24 (b-20) "Retailer" means any person other than a
25 manufacturer, distributor, or wholesaler who sells, leases, or
26 sublets children's products or crib bumper pads.

1 (b-25) "First seller" means any retailer selling a
2 children's product that has not been used or has not previously
3 been owned. A first seller does not include an entity such as a
4 second-hand or resale store.

5 (c) "Person" means a natural person, firm, corporation,
6 limited liability company, or association, or an employee or
7 agent of a natural person or an entity included in this
8 definition.

9 (d) "Infant" means any person less than 35 inches tall and
10 less than 3 years of age.

11 (e) "Crib" means a bed or containment designed to
12 accommodate an infant.

13 (f) "Full-size crib" means a full-size crib as defined in
14 Section 1508.3 of Title 16 of the Code of Federal Regulations
15 regarding the requirements for full-size cribs.

16 (g) "Non-full-size crib" means a non-full-size crib as
17 defined in Section 1509.2 of Title 16 of the Code of Federal
18 Regulations regarding the requirements for non-full-size
19 cribs.

20 (h) "End consumer" means a person who purchases a
21 children's product for any purpose other than resale.

22 (i) "Crib bumper pad" means any padding material,
23 including, but not limited to, a roll of stuffed fabric, that
24 is designed for placement within a crib to cushion one or more
25 of the crib's inner sides adjacent to the crib mattress, but
26 not including mesh liners.

1 (Source: P.A. 94-11, eff. 6-8-05.)

2 (430 ILCS 125/16 new)

3 Sec. 16. Crib bumper pads.

4 (a) No commercial dealer, manufacturer, importer,
5 distributor, wholesaler, or retailer shall sell, lease, offer
6 for sale, or offer for lease in the State any crib bumper pad
7 as an accessory to a crib or as a separate item unless it meets
8 or exceeds the Standard Consumer Safety Performance
9 Specification for Infant Bedding and Related Accessories as set
10 by the American Society for Testing and Materials International
11 in the most recently published Designation F1917-12.

12 (b) Any person who violates this Section is subject to a
13 civil penalty of not less than \$100 nor more than \$500 for each
14 offense.

15 (430 ILCS 125/25)

16 Sec. 25. Penalty. Except as provided in Sections 16 and
17 ~~Section~~ 20, a commercial dealer, importer, distributor,
18 wholesaler, or retailer who violates this Act by failing to
19 exercise reasonable care is subject to a civil penalty in an
20 amount not to exceed \$500 for each day that the violation
21 continues.

22 (Source: P.A. 94-11, eff. 1-1-06.)

23 (430 ILCS 125/30)

1 Sec. 30. Enforcement.

2 (a) The Attorney General, or a State's Attorney in the
3 county in which a violation of this Act occurred, may bring an
4 action in the name of the People of the State of Illinois to
5 enforce the provisions of this Act.

6 (b) When (i) it appears to the Attorney General that a
7 commercial dealer, manufacturer, importer, distributor,
8 wholesaler, or retailer has engaged in or is engaging in any
9 practice declared to be in violation of this Act, or (ii) the
10 Attorney General receives a written complaint from a consumer
11 of the commission of a practice declared to be in violation of
12 this Act, or (iii) the Attorney General believes it to be in
13 the public interest that an investigation should be made to
14 ascertain whether a person in fact has engaged in or is
15 engaging in any practice declared to be in violation of this
16 Act, the Attorney General may:

17 (1) Require that person to file, on terms that the
18 Attorney General prescribes, a statement or report in
19 writing under oath or otherwise, as to all information the
20 Attorney General considers necessary.

21 (2) Examine under oath any person in connection with
22 the conduct of any trade or commerce.

23 (3) Examine any merchandise or sample thereof, record,
24 book, document, account, or paper the Attorney General
25 considers necessary.

26 (4) Pursuant to an order of the circuit court, impound

1 any record, book, document, account, paper, or sample of
2 merchandise that is produced in accordance with this Act,
3 and retain it in the Attorney General's possession until
4 the completion of all proceedings in connection with which
5 it is produced.

6 (c) In the administration of this Act, the Attorney General
7 may accept an assurance of voluntary compliance with respect to
8 any practice deemed to be a violation of this Act from any
9 commercial dealer, manufacturer, importer, distributor,
10 wholesaler, or retailer who has engaged in or is engaging in
11 that practice. Evidence of the violation of an assurance of
12 voluntary compliance shall be prima facie evidence of a
13 violation of this Act in any subsequent proceeding brought by
14 the Attorney General against the alleged violator with regard
15 to the specific violation or violations addressed in the
16 assurance of voluntary compliance.

17 (d) Whenever the Attorney General or a State's Attorney has
18 reason to believe that any commercial dealer, manufacturer,
19 importer, distributor, wholesaler, or retailer has engaged in
20 or is engaging in any practice in violation of this Act and
21 that proceedings would be in the public interest, he or she may
22 bring an action in the name of the People of the State against
23 that commercial dealer, manufacturer, importer, distributor,
24 wholesaler, or retailer to restrain by preliminary or permanent
25 injunction the use of that practice.

26 (e) Civil penalties paid under Section 25 and civil

1 penalties paid under Section 16 shall be deposited into the
2 Attorney General Court Ordered and Voluntary Compliance
3 Payment Projects Fund. Moneys in the Fund shall be used,
4 subject to appropriation, for the performance of any function
5 pertaining to the exercise of the duties of the Attorney
6 General, including, but not limited to, enforcement of any law
7 of this State and conducting public education programs. Any
8 moneys in the Fund that are required by the court or by an
9 agreement to be used for a particular purpose must be used for
10 that purpose, however.

11 (Source: P.A. 94-11, eff. 1-1-06.)

Crib Bumper Legislation:

Bills that have passed:

Maryland Bill: COMAR 10.11.07.01 (Page 1, Par 2)- Bill Passed June 2013:

"Baby bumper pads" means a pad or pads of non-mesh material resting directly above the mattress in a crib, running the circumference of the crib or along the length of any of the interior sides of the crib, intended to be used until the age that an infant pulls to stand.

Ohio Bill: S.B. 332 (Page 30, Sec. 3713.01 Par. I, Page 31, Sec 3713.022, Par. A & B)- Bill Passed December 2016:

- (I) (I) "Crib bumper pad" means any padding material, including a roll of stuffed fabric, that is designed for placement within a crib to cushion one of more of the crib's inner sides adjacent to the crib mattress. "Crib bumper pad" excludes a mesh crib liner intended for placement between a crib mattress and one or more of the crib's inner sides, regardless of whether consumer product safety standards promulgated by the United States consumer product safety commission pursuant to section 104 of the "Consumer Product Safety Improvement Act of 2008." U.S.C. 2056a, as amended, include mesh crib liners in the federal definition of "crib bumper pad."

Bills that have not passed:

Illinois Bill: HB3761 (Page 10, Line 26)- Bill Not Voted on May 2015:

"Crib Bumper Pads" means any padding material, including, but not limited to, a roll of stuffed fabric, that is designed for placement within a crib to cushion one or more of the crib's inner sides adjacent to the crib mattress. "Crib Bumper Pad" does not include mesh liners."

- (II) (B) No person shall recklessly manufacture, offer for sale, deliver, or possess for the purpose of manufacturing, selling, or delivering a mesh crib liner intended for placement between a crib mattress and one or more of the crib's inner sides that does not comply with consumer product safety standards governing such liners that are promulgated after October 9, 2016, by the United States consumer product safety commission (Pursuant to section 104 of the "Consumer Product Safety Improvement Act of 2008" 15 U.S.C. 2056a, as amended) for the purpose of ensuring sufficient permeability so as to prevent infant suffocations.

- (III) (B) In the absence of standards described in division (A) of this section, no person shall, beginning three years after the effective date of this section, recklessly manufacture, offer for sale, sell, deliver, or possess for the purpose of manufacturing, selling, or delivering a mesh crib liner.

New York Bills (2016): HB9186 &SB7041 (Page 6, Line 7):

"Crib Bumper Pads" shall mean a pad or pads of non-mesh material resting directly above the mattress in a crib or along the length of any of the interior sides of the crib. "Crib Bumper Pad" does not mean Mesh liners."

Bills that are pending:

Missouri Bill: House Bill NO. 581 (Page 1, Line 11): (Pending)

(3) "Crib Bumper Pad", a pad or pads of nonmesh material including, but not limited to, a roll of stuffed fabric that is designed for placement within a crib to cushion one or more of the crib's inner sides adjacent to the crib mattress;

Vermont Bill H.34 (Page 1, Line 14): (Pending)

- (1) "Baby Bumper Pad" means a pad of nonmesh material:
- (A) designed to rest directly above the mattress in a crib, or to run the circumference of a crib or along the length of an interior side of a crib; and
 - (B) intended to be used until the age an infant pulls to stand

New York Bills (2017):

SB 4955:

7 (B) "Crib Bumper Pads" shall mean a pad or pads of non-mesh material
8 Resting directly above the mattress in a crib, running the surface area
9 Of the crib or along the length of any of the interior sides of the
10 crib. "Crib Bumper Pad" does not include mesh liners.

AB 4151 (Page 2, Line 7-9):

- 7 (b) "Crib bumper pads" shall mean a pad or pads resting directly above
8 the mattress in a crib, running the surface area of the crib or along
9 the length of any of the interior sides of the crib.

Deaths and Injuries Attributed to Infant Crib Bumper Pads

BRADLEY T. THACH, MD, GEORGE W. RUTHERFORD, JR, MS, AND KATHLEEN HARRIS

Objective To document deaths attributed to bumper pads and injuries from their use that are potentially preventable.

Study design The US Consumer Product Safety Commission maintains files on cases voluntarily reported to them of deaths and injury related to commercial products. These cases represent an unknown fraction of total occurrences. We searched this database for deaths related to crib bumpers for the years 1985 to 2005. We also searched other Consumer Product Safety Commission databases for crib-related injuries that potentially might have been prevented by bumpers. Additionally, we examined 22 retail crib bumpers and described features that could be hazardous.

Results Twenty-seven accidental deaths reported by medical examiners or coroners were attributed to bumper pads. The mechanism of death included suffocation and strangulation by bumper ties. Twenty-five nonfatal injuries were identified, and most consisted of minor contusions. All retail bumpers had hazardous properties.

Conclusions These findings suggest that crib and bassinet bumpers are dangerous. Their use prevents only minor injuries. Because bumpers can cause death, we conclude that they should not be used. (*J Pediatr* 2007;151:271-4)

Most infant cribs sold in the United States are used with bumper pads. Whether crib bumper pads pose a risk to infants for accidental suffocation is controversial. Recently, the Juvenile Product Manufacturing Association (JPMA) asked the US Consumer Products Safety Commission (CPSC) to review crib deaths involving suffocation or strangulation. On the basis of their own analysis of an unpublished CPSC review, representatives of the JPMA independently concluded, "there were no deaths directly related to the traditional use of crib bumper pads."¹ However, several organizations, including the CPSC and the American Academy of Pediatrics, have stated that crib bumpers are a potential risk when they are "pillow like."^{2,3} In addition, the First Candle Sudden Infant Death Syndrome Alliance cautions that bumper pads should be "thin, firm but not pillow like."⁴ These are subjective assessments and open to interpretation; thus caregivers may have difficulty in applying these criteria to their purchases of bumper pads. Because there are no detailed and systematically gathered data on hazards of crib bumper pads, we searched for cases of accidental death attributed to crib bumpers in CPSC databases.

Also, because crib bumpers are intended to reduce the risk of injury, we searched CPSC's injury database for non-fatal crib injuries that conceivably might have been prevented by crib bumpers. Finally, we have examined crib bumpers currently on the market for features that might be construed as pillow-like or otherwise potentially dangerous.

METHODS

Bumper-related suffocation deaths were identified through a search of CPSC databases from Jan 1, 1985, through Dec 31, 2005, made available to the public. Three CPSC databases were searched. These include the Death Certificate, Injury and Potential Injury Incidents, and In-Depth Investigations databases. The CPSC receives death certificates from all 50 states, the District of Columbia, and New York City; these include deaths from all suffocation codes, with the exception of the suffocation code for "falling earth" that was in use with the *International Classification of Diseases, Ninth Revision* coding system. This information is stored in the Death Certificate database. The CPSC also collects information on deaths from medical examiners, coroners, and other sources such as police and fire departments and media articles that are stored in the Injury and Potential Injury Incidents database or stored in the In-Depth Investigations database. The information in the 3 databases contains unique information about deaths and duplicates

See editorial, p 237

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CPSC	US Consumer Products Safety Commission	NEISS	National Electronic Injury Surveillance System
JPMA	Juvenile Product Manufacturing Association		



Figure 1. Death scene reconstruction of case #1. Infant's neck was actually extended with his face pressed into the bumper. This is not shown in photo because of inability to extend mannequin's neck.

reports that may provide additional information about deaths. Because the CPSC does not receive all deaths reported in the United States, the deaths in the study should be considered a minimum number.

The databases were searched for the keywords "bumper," "pad," and "padding" for deaths involving infants aged from 1 month through 2 years. The search was not restricted in sleeping location, external cause of death code, or other identifier. Deaths identified in all of the databases were combined and sorted by state, age, and sex to identify duplicate cases, and deaths were removed that were duplicates or out-of-scope (eg, mattress pad, heating pad), yielding a final dataset of 27 deaths.

Crib-related injury cases were identified through CPSC's National Electronic Injury Surveillance System (NEISS). NEISS is a probability sample of US hospital emergency departments stratified by emergency department size and geographic location. This database was searched from Jan 1, 2000, through Dec 31, 2004, by using product codes for cribs, portable cribs, crib extender rails or youth bed rails, and cribs not specified for infants aged ≤ 6 months. This age range was selected because after 6 months it is doubtful that bumpers would prevent head injury because most infants can raise their heads above the bumper pad. Although it is possible to determine national estimates using the NEISS, we made no attempt to do so because of the small number of cases identified.

Files on these deaths and injuries were obtained and reviewed. Cases with evidence of non-traditional use of bumper pads were excluded.

The authors assessed infant bumpers for sale at a St. Louis, Missouri, retail store; 22 different bumpers were examined and graded for softness, potential space between bottom of bumper and mattress, bumper width, and length of

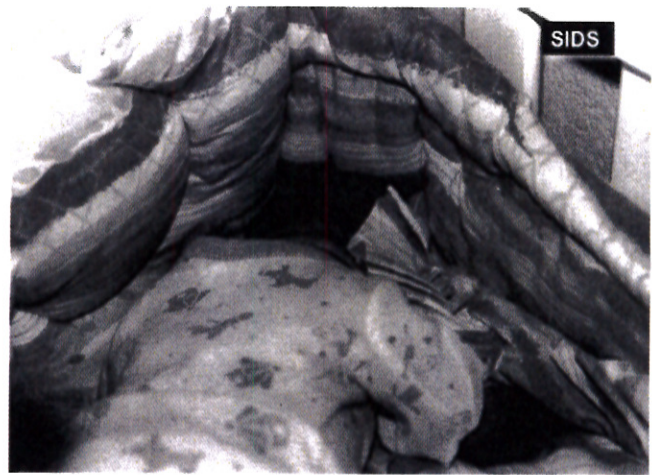


Figure 2. Death scene reconstruction of case #15. Mannequin placed in position in which the infant was found dead.

fabric fasteners that attach the bumper to the crib. Softness was graded on a scale of 1 to 3, with 3 being the consistency of a comforter or soft pillow and 1 being that of a typical couch cushion. We considered a typical cushion to be firm enough to provide comfort when a person otherwise would be sitting on or against a hard surface. It was obvious that softness varied a great deal from bumper to bumper. However, the site of the investigation necessitated a subjective assessment of this property.

RESULTS

In this search, we found 27 cases of infant death involving bumper pads or similarly padded bassinets (4 of the 27 cases). In 26 cases, a death scene investigation was conducted. In 1 case, it was uncertain whether a formal investigation was made. Additionally, CPSC personnel conducted an additional scene investigation in 18 of the 27 cases. In all cases except 1 (#14), an autopsy was performed.

Three types of infant death involving crib bumper pads were found: 1) face against bumper (Figure 1); 2) infant wedged between bumper and other object (Figure 2), and 3): bumper tie around infant's neck. There were 11 deaths in type 1 cases; 13 deaths in type 2 cases, and 3 deaths in type 3 cases (Table I; available at www.jpeds.com).

There were 25 non-fatal crib injuries in the database (Table II; available at www.jpeds.com). It was unclear in most reports whether bumpers were present or not. Summaries in Tables I and II are those of the medical examiner or other health care workers (Table II).

Twenty-two different crib bumper pads were evaluated for relevant properties at a retail outlet store in St. Louis (Table III; available at www.jpeds.com).

DISCUSSION

Recently, the Canadian Healthy Environment and Consumer Safety Bureau in a brief report cited 23 "incidences" involving bumper pads, including 1 suffocation and 1

strangulation death.⁵ The present report provides details of multiple infant deaths in which crib or bassinet bumper pads were thought to play a causal role. Also, it is a report of nonfatal injuries that might have been prevented had crib bumper pads been used. It must be emphasized that our search of the crib database reveals only an undetermined fraction of the actual incidents occurring in the United States in the period studied, because incidents are inconsistently reported to the CPSC and may or may not be published in media sources. Data on accidental deaths from US Vital Statistics are not coded by product. Thus CPSC data is the only resource at the national level with codes allowing for the identification of bumper-related deaths. The degree of underreporting is indicated by cases coming from only 17 states, with some states with large populations (New York, Texas) contributing only 1 case each and other less-populated states (Wisconsin, Missouri) reporting 3 cases each.

It is important to consider limitations of our study. Underreporting of cases is one obvious limitation. In addition, scene investigations and autopsies were performed by different individuals, so there was no consistent protocol for these procedures.

We have divided the bumper- and padded bassinet-related deaths into 3 categories. The first are those in which the infant's face was in close contact with the bumper surface, and death was either judged or could be assumed to be caused by asphyxia possibly resulting from re-breathing expired air or by nasal and oral compression.⁶⁻¹⁰ From past studies, the softest of the retail bumpers examined that had the characteristics of comforters or soft pillows would pose the greatest risk for this type of death.⁶⁻¹⁰ Case #6 in Table I is of particular interest because the bumper had a plastic covering, and it was suggested in the death scene report that moisture on the plastic caused the face to adhere to the bumper surface. This indicates that applying a nonporous covering over a bumper might not make it safer.

Half the cases were in category 2. Here the infant's head was determined to be wedged between a bumper and another surface. Death caused by wedging is a traditional diagnosis, and cases continue to be reported.¹¹⁻¹³ An important contributing factor in wedging deaths is that many infants lack the motor development needed to extricate themselves.¹⁴ Death presumably results from asphyxia caused by re-breathing, nose and mouth compression, or a combination of these. Wedging occurs when the baby pushes his/her head into a narrow space between 2 surfaces. An important feature of the surface is that it is elastic and can spring back to its original shape after deformation. This characteristic provides the force pressing against the infant's head, which causes the entrapment. Couch cushions are elastic and are universally recognized as a common cause of wedging deaths.^{12,13} Because the firmer and thicker retail bumpers we evaluated were elastic, like couch cushions, we deemed them to be more hazardous for wedging than the softer thinner bumpers. Considering this, it would not seem to be helpful to suggest that crib bumper pads be firm.⁴

The last category of death was strangulation. Infant deaths involving neck compression by cords, ribbons, or bands

of various kinds is well-recognized, and frequent warnings to eliminate this hazard have been issued in past years. Current manufacturing standards state that "ribbons, strings, and ties on bumper guard should not exceed 9 inches."¹⁵ It is relevant that in our own survey of commercially available bumpers there were 2 with fabric fasteners longer than 9 inches (case #5 and #10). Therefore, a strangulation hazard may still exist for some bumpers on the market.

In theory, bumpers prevent injury from a baby's head hitting crib bars or from extremities projecting through the bars. We cannot tell from the reports of crib injuries how effective bumpers are in protecting infants, because we do not know whether a bumper was present. The exception is the 1 case in which, ironically, the infant's knee was reportedly contused when it struck a crib bumper pad (Table II, case #14). In the remaining cases, contusions and abrasions to the face and head conceivably could have been prevented had a bumper been in place. However, it is unclear whether a bumper would have prevented an arm or leg from passing through the crib rails, because we found an open space between the bumper and the crib mattress in all the bumper pads we examined. It is conceivable that a bumper might have contributed to the arm and leg injuries because it could provide a mechanism for limb entrapment. This could amplify the force on the limb exerted by an infant struggling to free itself. The seven reported cases of limb fractures or closed head injury were likely not caused by accidents. It is difficult to imagine an infant exerting a force sufficient to cause a limb fracture or hitting its head against a wooden slat with force enough to cause closed head injury. Currently, such cases would immediately raise a pediatrician's suspicion of intentional injury.

In summary, we report a number of fatal accidental infant deaths directly attributable to crib bumper pads. In direct contradiction to the JPMA interpretation of a CPSC staff data review that there were no incidents directly related to normal bumper use, we found 27 cases of death reported in the same CPSC databases. Moreover, an examination of commercial bumper pads indicates that these products continue to have characteristics that appear to be dangerous. Furthermore, a review of cases of non-fatal injuries in cribs indicates that these are not serious and might or might not have been prevented by bumper pads.

This case series provides evidence that the risks from crib bumper pads or padded bassinets (death) outweigh the possible benefits provided by such padding (minor bruises and contusions). Furthermore, our data does not suggest any way in which changes in bumper design can reduce risk of death. We conclude that bumpers should not be placed in cribs or bassinets.

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Table I. Medical examiners' summaries of deaths

1. "Face obstructed by crib bumper pad- positional asphyxia. A male infant, age 2 months, died after he was found with his face against a bumper pad in his crib at home by his mother."
 2. "Died of asphyxiation caused by pressure against an overstuffed crib bumper during sleep. A 7-month old female was found unresponsive in her crib by her mother. The victim was placed on her back in the crib."
 3. "A coroner determined a 7-month-old male infant died in a crib due to positional asphyxiation—face in corner of crib against bumper pad. Victim was on his back with head turned to right, and his face was up into the corner of the bumper pad."
 4. "This incident involved the death of a 4-month-old infant due to positional asphyxia. The infant was found unresponsive by his mother. He had crawled face first into the corner of his crib with his nose and mouth pressed against the protective bumpers."
 5. "A 14-month-old baby boy died sleeping in a crib with his face pressed firmly against a bumper pad."
 6. "Baby got face into plastic bumper pad of cradle. Crib pad was much too large for this size of bed. Night was very hot, and it was felt that the crib pad adhered to the victim due to the heat. Baby got face into plastic bumper pad. Anoxia consistent with accidental suffocation."
 7. "A 13-month-old male was found dead in his crib while he and his mother were visiting at his grandmother's house. The infants face was resting against a properly installed plastic bumper pad."
 8. "A 3-month-old male died of SIDS in his crib with his face against the bumper pad."
 9. "A 2-month-old female was found dead in her wicker infant basket for a nap after being fed at noon. She was found on her stomach, head turning to the left with face pressed slightly against the padded basket liner. The medical examiner found no anatomic cause and attributed the death to probable suffocation."
 10. "A 2-month-old male died of anoxia when he was sleeping and his face was pressed against the bumper of the 'bassinet/carrier' (cradle). The victim was dead on arrival. Note: Mother stated that the baby died due to the tilt of the bassinet/carrier."
 11. "Baby suffocated at home in the corner of the crib against the crib bumper. Suffocation—accidental."
 12. "Baby found face down in crib, pinned between bumper pad and sibling sister. A male infant, age 4 months, placed for a nap in a crib with a twin sister was found wedged between the bumper pad and his sister. Cause of death asphyxia due to positional crib accident."
 13. "A 4-month-old male was found dead in his crib at home. Reports indicated that the victim became wedged between the mattress and the bumper pad of his crib. The death was declared an accident; cause of death was listed as asphyxia by suffocation."
 14. "A 10-month-old male died of positional asphyxia, wedged between his crib railing and a dresser 6 inches away. He apparently stood on the crib bumper pads and climbed over the crib railing." *Author's note:* This case indicates yet another hazard of bumper use. The bumper allowed the infant to climb from a relatively safe environment into a hazardous one.
 15. "Found unresponsive wedged between pillow and bumper pad. Positional asphyxia. Note: Mother reported the baby's head had slipped off the edge of the pillow. His head was wedged between the pillow and the bumper pads inside the bed."
 16. "Seven-month-old girl was placed in her crib for a nap after being fed by her mother. Child was found later in her crib with her head wedged between the mattress and the bumper pad attached to side slats. Child was pronounced dead on arrival at hospital."
 17. "Found by mother with face wedged between crib mattress and bumper pads. COD: asphyxia."
 18. "An 11-month-old female slid off a day bed mattress. The crib bumper pad is believed to have become caught around the victim's neck, and as she slid forward and she was unable to breathe and suffocated. The cause of death is mechanical asphyxia, the manner of death is considered accidental."
 19. "A 2-1/2-month-old male died due to probable suffocation. According to an investigator with the sheriff's department, the infant's mother found him face down in his crib. The investigator stated the baby's head got caught between a baby blanket and the bumper pads in his crib. He was pronounced dead at the scene."
 20. "Face wedged in crib between pillow, mattress, and bumpers, external facial compression (suffocation)."
 21. "An 8-month-old female died after being trapped tight against a side rail padding and mattress in her crib."
 22. "A 6-day-old female was found not responsive in her infant basket. She was on her stomach with her head turned to one side. Her face was pressed into the crevice between the basket mattress and padded sideliner. After an autopsy was preformed, the medical examiner ruled that death was caused by probable suffocation due to an external airway obstruction."
 23. "The baby was found wedged between adult pillows and crib bumper. The baby had originally been placed on her side and was found on her stomach."
 24. "A 2-month-old male was found dead in his crib. Autopsy examination revealed no cause of death, but findings frequently seen in sudden infant death syndrome. Based on circumstances surrounding the death as currently known, this death meets the criteria for sudden infant death syndrome." *Author's note:* The original death scene investigation makes no mention of infant's head position at death, and so the medical examiner lacked this important information. A subsequent CPSC death scene investigation (Figure 2) indicated that the baby's face was covered by a comforter, and his head was wedged between the mattress and the bumper pads.
 25. "A 6-month-old female was strangled by the strings of her bumper pads while sleeping in her full size crib. She had placed her head through a loop formed by the tied fabric attachment strings of the bumper pad."
 26. "Asphyxiation by string-ligature. Father noted the string around baby's neck. He pulled baby from crib, pulling the string from the bumper pad in the process. Police surmise that the baby had grasped the loosened tie in his hand then rolled over pulling the tie across the front of his neck. A mark was made."
 27. "Tie of bumper pad became tangled around neck. Cerebral anoxemia and anoxia; ligature compression of vessels."
-

Table II. Consumer Product Safety Commission file summaries of crib accidents

1. "Patient struck face on side of a crib at home, contusion on face."
 2. "Child has a dent in side of head after pushing against bars of crib at home."
 3. "Hit head on crib Dx. Head abrasion."
 4. "Patient struck left knee against side of a crib, knee contusion."
 5. "Patient fell forward in crib, bumping head on crib at home 7 days ago; head injury, head contusion."
 6. "Four-month-old male, contusion to head, hit head on crib."
 7. "Patient was in crib; mom came home, and patient had a bump on her forehead. Dx: mild head injury."
 8. "Patient sustained head injury hit head on crib."
 9. "Patient hit head against metal bassinet at home 2 days ago, has abrasion in forehead, crying, minor head injury, abrasion."
 10. "Contusion to head when struck on crib."
 11. "Patient's legs were sticking out of crib bars this AM. Now his hip is making a popping sound. DX: sprain right leg."
 12. "Mother states child hit face on side of crib. Dx: nasal contusion."
 13. "Patient hit mouth on crib and sustained cut injury to inner mouth."
 14. "Knee contusion—hitting bumper pads in baby bed-home."
 15. "Left arm caught between bars in crib, contusion left arm."
 16. "Trauma (R) forearm; patient got forearm stuck in the baby crib rail, crying and pain. Patient got arm struck in crib, was alone in bedroom, strain elbow."
 17. "Contused head on bassinet."
 18. "Patient caught arm in crib at home, not using arm; nursemaids elbow."
 19. "Fx (Left Forearm), patient got her arm caught in the rails of the crib, cried a lot of pain."
 20. "Patient got leg caught in crib, twisted thigh, arrives with swollen thigh, Lt femur fracture."
 21. "Patient accidentally hit head against crib side. Dx: closed head trauma."
 22. "Patient's arm got stuck between crib and wall, and father states he heard a crack. Dx: Lt humerus fracture."
 23. "Patient pushed against crib, dad heard snap. Femur fractured."
 24. "Patient hit head on crib; closed head injury."
 25. "Five-month-old female with fractured femur. Patient got leg caught in baby bed rails at home. Patient admitted."
-

Table III. Features of 22 retail crib bumper pads

	Softness scale	Thickness (inches)	Length of bands attaching bumper to crib bars (inches)	Potential for head wedging
1	3	1-1/16	6-1/2	
2	2	1-1/4	8	
3	1	1-3/4	8-1/4	high
4	2	1-3/4	6-3/4	
5	1	1-1/4	9-1/4	high
6	2	1-5/8	7-1/2	
7	1	1-1/2	8	high
8	1	2-3/4	7	high
9	2	2-1/8	7	high
10	2	1-3/4	9-1/8	
11	3	1-3/4	8-3/4	
12	3	1-5/8	8-1/4	
13	2	2-3/4	8-1/4	high
14	1	2-1/4	7	high
15	2	3-3/4	8	high
16	1	2-3/4	7-1/2	high
17	3	1-3/4	6-1/4	
18	1	1-7/8	7-1/2	high
19	1	2	6	high
20	2	1-1/2	8-1/2	
21	3	1-5/8	8-1/2	
22	3	1-3/4	8-1/2	

In the assessment of softness, 1 is the hardest and 3 the softest; 2 is intermediate. The hardest and thickest (>2 inches) bumpers were deemed to have the highest potential for wedging.

Crib Bumpers Continue to Cause Infant Deaths: A Need for a New Preventive Approach

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Objectives To assess whether clutter (comforters, blankets, pillows, toys) caused bumper deaths and provide an analysis of bumper-related incidents/injuries and their causal mechanisms.

Study design Bumper-related deaths (January 1, 1985, to October 31, 2012) and incidents/injuries (January 1, 1990, to October 31, 2012) were identified from the US Consumer Product Safety Commission (CPSC) databases and classified by mechanism. Statistical analyses include mean age, 95% CIs, χ^2 test for trend, and ANOVA with a paired-comparisons information-criterion post hoc test for age differences among injury mechanisms.

Results There were 3 times more bumper deaths reported in the last 7 years than the 3 previous time periods ($\chi^2_{(3)} = 13.5, P \leq .01$). This could be attributable to increased reporting by the states, diagnostic shift, or both, or possibly a true increase in deaths. Bumpers caused 48 suffocations, 67% by a bumper alone, not clutter, and 33% by wedgings between a bumper and another object. The number of CPSC-reported deaths was compared with those from the National Center for the Review and Prevention of Child Deaths, 2008-2011; the latter reported substantially more deaths than CPSC, increasing the total to 77 deaths. Injury mechanisms showed significant differences by age ($F_{4,120} = 3.2, P < .001$) and were caused by design, construction, and quality control problems. Eleven injuries were apparent life-threatening events.

Conclusion The effectiveness of public health recommendations, industry voluntary standard requirements, and the benefits of crib bumper use were not supported by the data. Study limitations include an undercount of CPSC-reported deaths, lack of denominator information, and voluntary incident reports. (*J Pediatr* 2015; ■: ■-■).

In 2007, Thach et al¹ published a case series of 27 deaths attributable to crib bumpers and concluded that bumpers should not be used. In January 2008² and again in 2011,³ the American Academy of Pediatrics (AAP) recommended against their use. The Canadian Paediatric Society,⁴ the National Institutes of Health,⁵ and sudden infant death syndrome (SIDS) experts⁶ also recommended against their use, and 2 jurisdictions banned their sale.^{7,8} Others disagreed,⁹⁻¹¹ contending that factors such as clutter in the crib (comforters, blankets, pillows, toys) are the primary cause of the deaths and believe that eliminating crib bumpers may encourage caregivers to use products such as pillows as a substitute to protect infants from head injuries and limb entrapment.

There are no federal regulations for crib bumpers. There is a long-standing industry voluntary standard that was revised in 2012 to improve crib bumper safety.¹² In 2012, the US Consumer Product Safety Commission (CPSC) was petitioned to develop a mandatory standard to “distinguish and regulate pillow-like crib bumpers from non-hazardous traditional crib bumpers” and recommended the voluntary standard as a basis for such a rule.⁹ In June 2013, the Commission directed CPSC staff to explore all rulemaking options in addition to those requested in the petition before making a decision. This could be as little as adopting the current voluntary standard to as much as banning the product.¹³ To date, there has been no further public action.

The purpose of this study is to identify the extent to which clutter in the crib is the cause of infant deaths based on new information and an update of the study of Thach et al¹ and provide a new analysis of nonfatal bumper-related incidents to document the extent of the problem more fully.

Methods

Four CPSC databases were searched by CPSC staff from January 1, 1985, to October 31, 2012, for bumper deaths and from January 1, 1990, to October 31, 2012, for incidents/injuries. To be complete, we included the years covered by the study of Thach et al¹ but limited to deaths in cribs. The Death Certificate

AAP	American Academy of Pediatrics
ALTE	Apparent life-threatening event
CPSC	US Consumer Product Safety Commission
NCRPCD	National Center for the Review and Prevention of Child Deaths
SIDS	Sudden infant death syndrome

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file contains death certificates purchased by CPSC from the 50 states and the District of Columbia and includes deaths for all suffocation codes except for “falling earth.” The Injury and Potential Injury Incidents file contains product-related incidents from sources such as consumer complaints, media articles, medical examiners, coroners, and police and fire departments. The In-Depth Investigations file contains CPSC follow-up investigations. The National Electronic Injury Surveillance System, a probability sample of US hospitals with emergency departments, contains reports of product-related injuries and some deaths.

Data analyses were conducted with SPSS version 17.0 (SPSS Inc, Chicago, Illinois). Statistical analyses included mean age and 95% CIs, χ^2 test for trend, and ANOVA test with a paired-comparisons information-criterion post hoc test¹⁴ for mean age differences among injury mechanisms. *P* values $\leq .05$ (2-sided) were judged to be statistically significant.

Results

We identified 48 infant deaths; 42 were specifically attributed to crib bumpers on the death certificate, autopsy, or investigation and diagnosed by the medical examiners or pathologists as asphyxia or suffocation. We also included 6 additional deaths as likely bumper-related; 5 were originally diagnosed as SIDS and 1 as a sudden unexplained infant death. The documents available for review included autopsies (98%), death scenes and other investigations (98%), death certificates (75%), and photographs (62.5%), including 23 re-enactment photographs. The search also produced 182 nonfatal incidents. We classified these as 146 injuries and 36 “concerns” of caregivers who identified problems with bumpers, but with no injury. We further classified the injuries by mechanism.

Deaths

Over time, there was a significant increase in the number of crib bumper deaths reported to CPSC, with 23 deaths reported from 2006 through 2012 and an average of 8 deaths reported in the previous 3 time periods ($\chi^2_{(3)} = 13.5$, $P \leq .01$; **Figure 1**).

The mean age at death was 4.6 months, with a range of 1-22 months (95% CI 3.5-5.8). Approximately 50% were ≤ 3 months and 90% were ≤ 7 months. Three infants were noticeably older than others (14, 19, and 22 months). Two had significant illnesses (cerebral palsy; chronic anoxic encephalopathy caused by meconium aspiration), and the 14-month-old infant was healthy with a recent history of cold symptoms.

Complete sleep position information was available for 34 infants and partial information for 9 infants. Placing infants prone to sleep was the most stable position. Of the 14 infants placed prone, 13 infants were found prone and 1 position found was unknown. Placing infants supine or on their sides was less stable. Of the 16 infants placed supine to sleep, 8 were found prone, 3 on their sides, and 5 supine. Of the 4 infants

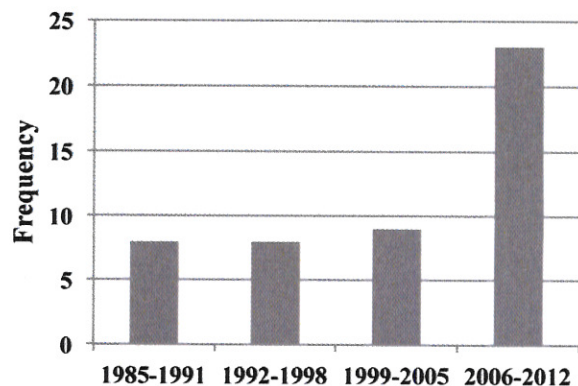


Figure 1. Crib bumper deaths by year.

placed on their sides to sleep, 2 were found prone, 1 on its side, and 1 position found was unknown. Finally, of the 13 infants whose position placed to sleep was unknown, 7 were found prone, 2 on their sides, and 4 infants had no sleep position information available.

To identify whether clutter in the crib contributed to the deaths, we evaluated whether the deaths were caused by the bumper alone or occurred with another object. In the “bumper alone” category, approximately 67% of the total deaths ($n = 32$) could have been prevented if a crib bumper had not been used in the crib: 13 deaths from infants wedged between a bumper and crib mattress; 12 deaths with the infant’s face against a bumper without wedging; 3 deaths with the infant’s arm caught between the bumper and the mattress/side rails found with their faces pressed against a bumper; 1 death where an infant likely climbed out of the crib using the bumper and was found wedged between a crib and bureau; and 3 strangulations from bumper ties wrapped around an infant’s neck. Strangulation deaths have not occurred since the 1980s.

In the “bumper and other object” category, approximately 33% of the total deaths ($n = 16$) could have been prevented if either the bumper or other wedging surface had not been present in the crib. These were 9 deaths from wedgings between a pillow and a bumper; 5 deaths from infants wedged between a bumper and a recliner; 1 death in a crib depression where the bumper prevented the infant from turning her face to the side to breathe; and 1 wedging between a cosleeping twin and a bumper.

We also attempted to determine whether only thick or pillow-like bumpers were implicated in the deaths. Although most investigators did not measure the thickness of the bumpers involved, there were 3 investigations that reported a measured thickness of 1-2 inches uncompressed and several other scene photographs that showed apparently thin bumpers (**Figure 2**; available at www.jpeds.com).

Nonfatal Incidents/Injuries

We reviewed 146 nonfatal incident reports and classified them by the mechanism likely to have caused the infant’s

injury (Table). Three cases were classified by 2 mechanisms (near-suffocation and limb entrapment).

At least 11 of the 146 nonfatal incidents were apparent life-threatening events (ALTEs). Four ALTEs were near suffocations: 2 infants found with their faces pressed into bumpers, 1 found blue, limp, and not breathing and another found after a monitor indicated that the infant stopped breathing; a third infant found wedged between a bumper and mattress diagnosed with “transient cyanosis probably second to position”; and a fourth infant found under a bumper with red face from not being able to breathe. Two ALTEs were choking: 1 infant swallowed a piece of plastic from a bumper, and another choked on a bumper tie. One ALTE was a near strangulation, with an infant experiencing “temporary anoxia.” For 4 ALTEs, infants fell from the crib after climbing on a bumper and went to the emergency department with a head injury.

The average age of infants involved in the incidents was 7.4 months but varied significantly by mechanism ($F_{4,120} = 3.2, P < .001$), excluding the miscellaneous category. A cluster analysis of mean ages by use of the paired-comparisons information-criterion post hoc test method identified the best model that minimized the Akaike information criterion (= 691.9) and comprising 3 distinct clusters. The first cluster, infants involved in near-suffocations, was the youngest ($\bar{X} = 5.0$ months). The middle cluster, infants involved in choking/ingestion or strangulation/entrapment incidents ($\bar{X} = 7.7$ months each), were older than those involved in near-suffocation incidents and younger than those involved in limb entrapments or falls. The last cluster, infants involved in limb entrapments or falls, were the oldest ($\bar{X} = 11.3; \bar{X} = 11.4$ months, respectively).

Near-suffocation incidents (37.6% of 149) often resulted from poor bumper design, with 36% reporting bumpers with inadequate ties, many with missing bottom ties. Infants in near-suffocation incidents were found under a bumper, face covered by a bumper, wedged between a bumper and crib slats, entangled in a bumper, and in 3 cases, wedged with a positioner.

Choking/ingestion and strangulation/entrapment incidents (33.6% of 149) most often resulted from poor construction quality, including bumper ties and decorations that detached, seams with stuffing that came loose, and fraying threads. In all choking/ingestion incidents, infants

were found either with bumper parts down their throats or in their mouths. In 43% of the strangulation/entrapment incidents, the bumper part was wrapped around the infant’s neck or head.

Limb entrapments and falls (21.5% of 149) were reported for the oldest infants. Soft-tissue injury was reported most frequently for limb entrapments and occurred with a bumper in the crib. Several caregivers noted that they bought a bumper to be protective but the infant “still managed to get stuck” by putting their legs over or under the bumper. Falls were reported for 8 infants who fell outside the crib and 1 inside the crib after climbing on a bumper. Two were diagnosed with a closed head injury, 2 with a head injury, 1 fell to the floor hitting his head, 1 fell on his back, and 1 sustained a lower trunk injury and 1 a leg injury. All 8 infants went to the emergency department, and all but one was >8 months of age.

We categorized incidents that did not fit elsewhere as miscellaneous. Of particular concern were 3 reports of finding needles in bumpers, likely a failure of quality control procedures. One incident resulted in a puncture of an adult, another with an infant’s scratched eye, and a third with no injury.

Discussion

Our analysis of 48 deaths found that most of the deaths were caused by the bumper alone and would have been prevented if a bumper had not been in the crib. Although the cribs were not free of other objects (eg, comforters, blankets, pillows, toys), this clutter was not in contact with or near the infants’ nose and mouth in approximately 67% of the deaths.

This study documents a significant increase in bumper death reports, with 3 times the number of deaths reported in the most recent time period. This increase could represent increased reporting by the states, diagnostic shift, or both, or possibly a true increase in deaths. However, there appears to be a substantial CPSC undercounting of these deaths. The National Center for the Review and Prevention of Child Deaths (NCRPCD),¹⁵ under confidentiality agreements with states in their network, has reports of 32 bumper-related deaths from 2008 to 2011 from 37 states (personal communication, Director, NCRPCD). Because of confidentiality agreements with the states, the NCRPCD was unable to share their cases with CPSC or us). For this same time period, CPSC has 13 reports of bumper deaths from 26 states, with only 3 that were from the same states as the NCRPCD cases. Combining reports from these 2 sources would increase the overall total to 77 deaths. This study, along with NCRPCD, ALTE, and injury data, suggests that crib bumpers present a much greater problem than originally indicated by the study of Thach et al.¹

Our study has several limitations. Of significant concern is the apparent undercount of CPSC reports of bumper-related deaths compared with NCRPCD data. This difference could result from the lack of specific diagnoses on some death

Table. Nonfatal crib bumper mechanisms by age

Mechanisms	n	Age, mo	
		Mean	95% CI
Near suffocation	56	5.0	4.2-5.8
Choking/ingestion	27	7.7	6.7-8.8
Strangulation/entrapment	23	7.7	6.2-9.1
Limb entrapment	24	11.3	8.5-14.1
Falls	8	11.4	8.9-13.9
Miscellaneous	11	4.9	2.9-6.9
Total	149	7.4	6.6-8.1

certificates that may not identify a bumper or pad as a contributing cause and thus may not be captured by CPSC's data search procedures. Another limitation includes the lack of denominator information that was not available to calculate a death rate over time. We also had no way of knowing whether the bumpers in question complied with any or all of the voluntary standard requirements. Finally, nonfatal crib bumper injury reports may not be representative of nonfatal incidents that occur nationwide. These reports are provided to CPSC by the public, should be considered a minimum number of those that occurred, and are limited to the detail provided by the caregivers. However, the strength of this study is the complete case information for each death, many with scene recreations, which allowed for a detailed evaluation of how each death occurred, and injury information documenting a variety of potentially serious injury mechanisms compared with suffocation as the primary death mechanism.

One approach to reducing bumper-related deaths and injuries has been for public health organizations, such as the AAP and others, to warn against bumper use and publicize their warnings. The AAP first recommended against crib bumper use in January 2008,² and as early as 2007 and 2008, media articles,¹⁶⁻¹⁸ publications for parents,^{19,20} SIDS experts,^{6,19} and injury lawyers²¹ recommended against their use or reported the deaths. Despite this nationwide publicity that continued each year, deaths have not decreased, likely because bumpers remain widely available in the marketplace, media articles commonly show cribs with bumpers,²² and parents often believe bumpers are necessary for comfort and safety.^{6,23}

Another approach has been for the industry to develop voluntary safety requirements (standards) for safe bumper design and use. Even though many of these requirements have been in effect for a number of years, the number of manufacturers who comply with the voluntary standard requirements is unknown.²⁴

The voluntary standard was revised in 2012 to limit bumper thickness to ≤ 2 inches compressed. We found that this requirement would not have prevented 3 suffocation deaths on bumpers measuring 1-2 inches uncompressed found in this study. Carleton et al²⁵ tested comforters for rebreathing and found that "Surprisingly, the only comforter which fell into the high range ($>20\%$) was of about the same thickness as most of the other infant comforters (1/2 to 1 inch, 1.25 to 2.5 cm, uncompressed)." Assuming bumpers act like comforters, this study suggests that thickness alone is unlikely to address suffocations from rebreathing.

Other voluntary standards requirements include packaging labels with instructions for bumper use and installation. The label warns to discontinue use when infants can sit up or pull to a standing position to address infants using a bumper to climb out of a crib, which usually occurs between 4 and 8 months according to the World Health Organization.²⁶ We found this labeling did not prevent 1 death and 8 injuries of infants who fell after climbing on a bumper and that many parents continued to use bumpers with older infants. Removing bumpers to prevent falls would not have prevented

21 deaths of infants who were ≤ 3 months of age and who suffocated in crib bumpers. The label also instructs users to "position ties to the outside of the crib and be sure they are secure," "keep top of the bumper up and in position," and "do not allow the bumper to sag down or in toward the sleeping surface." There were several deaths in which the bumpers appeared to be installed incorrectly or sagged.

Injury reports cited a number of design, construction, and quality control problems. There are also no requirements for bumper ties to be present on both the top and bottom of the bumper; strength tests to prevent some decorations such as appliques from detaching; thread from breaking or ribbons from fraying; and quality control procedures to prevent needles in bumpers.

Proposed benefits to bumper use include the following¹¹: preventing entrapment of head, neck, or limbs between crib slats with resultant trauma to bone or strangulation; mitigation of head injuries from the crib's hard sides; and allowing parents a possibly safer option who could pad the crib sides with softer, more dangerous materials.

As to the first benefit, preventing entrapment, we found no reports of head or neck entrapment. Crib regulations²⁷ reduced the space between the slats to less than the width of a soda can in the 1970s, making it highly unlikely that an infant's head or neck could be caught between the slats of an intact crib. Although in this study and others^{28,29} limb entrapment was found to be a frequent occurrence, this is the first study to document that limbs can become entrapped with a bumper in the crib. As to the second benefit, we found 2 reports of infants hitting their heads on the side of the crib with a bumper present, one sustaining a bruise and one with no injury reported. Other studies^{28,29} found more incidents of injuries inside the crib but did not report if a bumper was present. We found that serious head injuries resulted from infants falling from a crib after climbing on a bumper. Despite these incidents, cribs remain safer for sleeping infants than other sleeping environments.³⁰

For the last proposed benefit, that parents will substitute more dangerous products such as pillows if they cannot buy safe bumpers, is possible. However, without bumpers for sale, the message that bumpers and other soft bedding should not be placed in the crib would be reinforced through store displays, the media, and other venues providing parents with a unified, consistent message.^{7,22} Finally, none of the proposed benefits outweigh well-established evidence that crib bumpers can cause deaths and serious injuries.²⁹

Two new nontraditional bumper designs seem to mitigate some of the problems found with traditional crib bumpers. Mesh bumpers are breathable and thin and may reduce the likelihood of slat entrapment and climb outs. Vertical bumpers tightly wrap each slat individually, allowing for airflow, and also may reduce the likelihood of slat entrapment and climb outs. These 2 designs were excluded from the State of Maryland's ban⁷ on the sale of crib bumpers.

Although 2 US jurisdictions^{7,8} banned the sale of crib bumpers, such a ban is also possible at the federal level. Only CPSC can promulgate a ban nationwide to make it illegal to sell

traditional crib bumpers. Deliberations concerning such a ban would likely take into account how caregivers have used crib bumpers. Misuse, not following labeling instructions for installing and using bumpers or recommended safe sleep practices, is not an obstacle to such a ban. CPSC can issue a mandatory standard when there is evidence of reasonably foreseeable misuse and has done so in the past.³¹

Other than removing traditional bumpers from cribs, it is unlikely that voluntary standard requirements or safe sleep practices (eg, back sleeping) can address the risk of suffocation when infants' faces become covered by bumpers and who may suffocate or nearly suffocate from occlusion or re-breathing. To prevent these deaths and ALTEs, we recommend that CPSC ban traditional crib bumpers for sale in the US quickly. Preventing bumper deaths and injuries will only be possible if traditional bumpers are removed from the marketplace at the national level. ■

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Figure 2. Examples of “thin” bumpers from death scene recreations.