



UNITED STATES  
 CONSUMER PRODUCT SAFETY COMMISSION  
 4330 EAST WEST HIGHWAY  
 BETHESDA, MD 20814

**BP - Cribs - Notice of Proposed  
 Rulemaking (NPR)**  
 The contents of this document will be  
 discussed at the Open Commission Meeting  
 on Wednesday, July 7, 2010

**THIS MATTER IS NOT SCHEDULED FOR A BALLOT VOTE.**

**A DECISION MEETING FOR THIS MATTER IS SCHEDULED ON: July 14, 2010**

Date: **JUN 30 2010**

TO : The Commission  
 Todd Stevenson, Secretary

THROUGH: Kenneth R. Hinson, Executive Director *KRH*

FROM : Cheryl A. Falvey, General Counsel *CAF*  
 Philip L. Chao, Assistant General Counsel, RAD *PLC*  
 Patricia M. Pollitzer, Attorney *PM*

SUBJECT : Proposed Standards for Full-Size and Non-Full-Size Cribs under Section 104 of the Consumer Product Safety Improvement Act and Related Documents

Section 104(b) of the Consumer Product Safety Improvement Act (“CPSIA”) directs the Commission to issue safety standards for durable infant or toddler products. Attached is a briefing memorandum from the staff recommending that the Commission issue a notice of proposed rulemaking (“NPR”) that would propose: (1) a standard for full-size cribs that is substantially the same as ASTM F 1169-10, with one modification, and (2) a standard for non-full-size cribs that is substantially the same as ASTM F 406-10, with certain modifications. A draft NPR for these proposed standards is provided at Tab H of the briefing package for your consideration.

In connection with this rulemaking, we are also forwarding to the Commission two additional draft *Federal Register* notices: (1) a draft NPR proposing to revoke the Commission’s existing crib regulations at 16 CFR parts 1508 and 1509 at Tab I (all of those requirements are incorporated into ASTM F 1169-10 and ASTM 406-10); and (2) a draft notice withdrawing an advance notice of proposed rulemaking (“ANPR”) the Commission published in 1996 concerning the disengagement of crib slats at Tab J (this hazard is addressed by the proposed standards the staff recommends).

Please indicate your vote on the following options.

*RH 6/30/2010*  
 CLEARED FOR PUBLIC RELEASE  
 UNDER CPSA 6(b)(1)

THIS DOCUMENT HAS NOT BEEN  
 REVIEWED OR ACCEPTED BY THE  
 COMMISSION.

A. Proposed Standards for Full-Size and Non-Full-Size Cribs

I. Approve publication in the *Federal Register* of the draft NPR proposing standards for full-size and non-full-size cribs without change.

\_\_\_\_\_  
Signature Date

II. Approve publication in the *Federal Register* of the draft NPR proposing standards for full-size and non-full-size cribs with changes (please specify changes):

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Signature Date

III. Do not approve publication in the *Federal Register* of the draft NPR proposing standards for full-size and non-full-size cribs.

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Signature Date

IV. Take other action (please specify):

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Signature Date

B. Proposed Revocation of 16 CFR parts 1508 and 1509

I. Approve publication in the *Federal Register* of the draft NPR proposing to revoke 16 CFR parts 1508 and 1509 without change.

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Signature

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Date

II. Approve publication in the *Federal Register* of the draft NPR proposing to revoke 16 CFR parts 1508 and 1509 with changes (please specify changes):

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Signature

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Date

III. Do not approve publication in the *Federal Register* of the draft NPR proposing to revoke 16 CFR parts 1508 and 1509.

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Signature

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Date

IV. Take other action (please specify):

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Signature

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Date

C. Withdrawal of 1996 Crib ANPR

- I. Approve publication in the *Federal Register* of the draft notice withdrawing the 1996 crib ANPR without change.

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Signature

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Date

- II. Approve publication in the *Federal Register* of the draft notice withdrawing the 1996 crib ANPR with changes (please specify changes):

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Signature

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Date

- III. Do not approve publication in the *Federal Register* of the draft notice withdrawing the 1996 crib ANPR.

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Signature

\_\_\_\_\_  
Date

- IV. Take other action (please specify):

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Signature

\_\_\_\_\_  
Date



UNITED STATES  
CONSUMER PRODUCT SAFETY COMMISSION  
BETHESDA, MD 20814

This document has been  
electronically approved and signed.

Memorandum

DATE: **JUN 30 2010**

TO: The Commission  
Todd A. Stevenson, Secretary

THROUGH: Cheryl A. Falvey, General Counsel  
Kenneth R. Hinson, Executive Director

FROM: Robert J. Howell, Assistant Executive Director  
Office of Hazard Identification and Reduction  
Patricia L. Edwards, Project Manager  
Directorate for Engineering Sciences

SUBJECT: Staff's Draft Proposed Rules for Cribs – Full-Size and Non-Full-Size

**I. INTRODUCTION**

Section 104 of the Consumer Product Safety Improvement Act (CPSIA), *Standards and Consumer Registration of Durable Nursery Products*, requires the U.S. Consumer Product Safety Commission (CPSC) to study and develop safety standards for certain infant and toddler products. The list of products in section 104 includes: full-size and non-full-size cribs; toddler beds; high chairs, booster chairs, and hook-on chairs; bath seats; gates and other enclosures for confining a child; play yards; stationary activity centers; infant carriers; strollers; walkers; swings; and bassinets and cradles. The Commission is charged with examining and assessing the effectiveness of any voluntary consumer product safety standard and for promulgating mandatory consumer product safety standards for these products.

Section 104 of the CPSIA also requires the Commission to consult with representatives of consumer groups, juvenile product manufacturers, and independent child product engineers and experts to examine and assess the effectiveness of the voluntary standards. This consultation process commenced in late 2008 with an advance notice of proposed rulemaking (ANPR) in which the Commission asked for input and comments regarding the voluntary standards published by ASTM International (formerly known as the American Society for Testing and Materials). Consultations with stakeholders are ongoing.

This briefing package assesses the effectiveness of the voluntary standards for cribs, both full-size (FS) and non-full-size (NFS) and presents staff's recommendations for a draft proposed rule.

RH 6/30/2010  
CLEARED FOR PUBLIC RELEASE  
UNDER CPSA 6(b)(1)

THIS DOCUMENT HAS NOT BEEN  
REVIEWED OR ACCEPTED BY THE  
COMMISSION.

## **II. BACKGROUND**

### ***A. Current CPSC Crib Regulations***

In 1973, CPSC published a mandatory regulation for FS cribs (16 CFR 1508); three years later, a mandatory regulation for NFS cribs (16 CFR 1509) followed. These regulations include requirements which address side height, slat spacing, hardware use, construction and finishing, assembly instructions, warning statements, and recordkeeping. In 1982, both of these regulations were amended to include requirements that prohibit hazardous cutouts in crib end panels.

The difference between FS and NFS cribs, as described in 16 CFR 1508 and 1509, is dimensional. A full-size crib has specified interior dimensions (28 +/- 5/8" by 52 3/8 +/- 5/8") and minimum crib rail heights. A NFS crib has no specific interior dimensions and reduced minimum crib rail height requirements. NFS cribs, as defined in 16 CFR 1509, are products which may be larger or smaller than FS cribs. This includes cribs that are non-rectangular or specialty shapes. NFS cribs include oversized, specialty, undersized, and portable cribs. Any product with mesh/net/screen siding, non-rigidly constructed cribs, cradles, car beds, baby baskets, and bassinets are specifically excluded in 16 CFR 1509.

Thus, both FS and NFS cribs are defined as rigid-sided sleeping environments for children under 35 inches in height. Regardless of the size of the crib, they typically serve the same population for the same purpose. Some NFS cribs are smaller and/or portable, thus many commercial establishments such as day care centers and hotels prefer to use NFS cribs over FS cribs.

### ***B. Open Crib Rulemaking Activities***

On December 16, 1996, the Commission published an advance notice of proposed rulemaking (ANPR) pertaining to crib slat disengagement. The basis for the ANPR was the incident data for the 11-year period between January 1985 and September 1996. During this period, CPSC staff is aware of 138 incidents, including 12 deaths due to entrapment, associated with crib slat disengagement. When slats disengage from the crib side panel, a gap is left between the remaining slats. A child may be able to get his or her body, but not his or her head, through the space, resulting in entrapment and potentially severe injury or death. The rulemaking activity is still open.

In November 2008, the Commission published an ANPR related to crib hardware and the growing trend of drop-side hardware failures. This ANPR was published to start the consultative process for new crib regulations. A review of the comments received from that rulemaking activity is included as part of this memo (section III).

## C. *ASTM Voluntary Standards Overview*

### 1) *FS Crib Standard*

ASTM published the first voluntary standard for full-size cribs, ASTM F 1169 *Standard Specification for Full-Size Baby Crib*, in 1988 to address an increasing trend of mechanical failures of structural components. Performance requirements included static and cyclic requirements to test the integrity of the crib's mattress support and side rail. In addition, test requirements were added to verify proper engagement and security attachment of the side latches and plastic teething rail.

In July 1999, an updated ASTM F 1169-99 was published and included a revision of the crib side test, which addresses the integrity of the slat-to-rail joints. This revised performance requirement was in response to the 1996 ANPR on slat detachments. Specifically, the revision added a torque test for side spindles, and an increased applied weight and number of cycles for cyclic testing.

The next revision, ASTM F 1169-03, included editorial changes and also incorporated requirements for corner post entanglements, which were previously published under a separate standard. In 2007, ASTM F 1169-07 was published and included only editorial changes to the previous version. The next revision, ASTM F 1169-09 was published in December 2009. This revision was significant in that it included a limitation on movable sides (drop-sides). This limitation eliminates the traditional style drop-side design, where the front side of the crib raises and lowers. This revision also added a new performance requirement regarding slat strength to address incidents associated with broken slats and slat end disengagements.

Lastly, on June 1, 2010, ASTM approved its current version of the standard, ASTM F 1169-10. This revision added several new provisions, including two performance tests from the Health Canada crib regulation<sup>1</sup> designed to address side rail disengagement, hardware loosening, and poor mattress support integrity. The significant changes from the 2009 to the 2010 version of the standard are listed below:

- 1) Included the 16 CFR 1508 requirements
- 2) Added general requirements such as sharp points, openings, scissoring, etc.
- 3) Added an openings requirement for mattress support systems
- 4) Added the Canadian cyclic side (shake) test to simulate a lifetime of shaking
- 5) Added the Canadian mattress support vertical impact test
- 6) Added requirements to prevent loosening of wood screws and other fasteners
- 7) Added a requirement to help prevent mis-assembly of key components
- 8) Revised the slat strength requirement to be more stringent
- 9) Added a test requirement for accessories, such as bassinets or changing tables
- 10) Revised the warnings to emphasize the fall hazard

Besides the substantial changes listed above, the 2010 version also included other minor and editorial changes.

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<sup>1</sup> Health Canada SOR/86-962 *Cribs and Cradles Regulations*, Schedule III - Parts 1 & 2, December 2, 2009

## 2) NFS Crib Standard

ASTM first published a standard for non-full-size cribs, ASTM F 1822 *Standard Consumer Safety Specification for Non-Full-Size Baby Cribs*, in 1997 to address incidents associated with NFS wooden cribs and mesh/fabric cribs (play yards). These incidents involved wooden cribs with failures of glue joints, collapses of the mattress support, and detachment of screws. It also included incidents associated with mesh/fabric cribs involving tears in the mesh sides, failure of stitched seams, collapse, failure of latching mechanisms, and choking on vinyl or padding<sup>2</sup>. The scope of the standard covered sleeping accommodations for a child (excluding bassinets, cradles, and baskets) that had interior dimensions between 17" and 26" wide and between 35" and 50 3/8" long. Products exceeding both the width and the length, including oversized cribs, were intended to be covered under the full-size crib standard, F 1169.

In June 2002, F 1822-97 was combined with the play yard standard, F 406-99 *Standard Consumer Safety Specification for Play Yards*, to form F 406-02<sup>3</sup>. This was done by ASTM in an attempt to group products with a perceived common use under a single standard and to eliminate duplication in standards. In 2005, the standard was revised again to include testing requirements for play yard accessories. The scope also changed to eliminate the dimensional restrictions and, instead, the standard referenced 16 CFR 1509.

Since 2005, ASTM F 406 has been revised several times. The last and most substantial revision, ASTM F 406-10, was approved June 1, 2010, and modified the previous version as follows:

- 1) Included the 16 CFR 1509 requirements
- 2) Added a limitation on movable components (drop-sides)
- 3) Added the Canadian cyclic side shake test to simulate a lifetime of shaking
- 4) Added requirements to prevent loosening of wood screw and other fasteners
- 5) Added a requirement to help prevent mis-assembly of key components
- 6) Revised the slat strength requirement to be more stringent

In addition to the substantial changes listed above, the 2010 version also included several minor and editorial changes. Many of these were added to make the NFS crib standard more consistent with the FS crib standard.

## 3) Other Crib Standards

CPSC staff compared the performance requirements of ASTM F 1169-10 to the performance requirements of other standards for full size cribs. Table 2 of the Appendix depicts a summary of this review.

The Health Canada (HC) and European (EN) standards, SOR/86-962 and EN 716, respectively, have been very influential in developing ASTM F 1169-10. Several of the new performance requirements in F 1169-10, including the cyclic side (shake) test, mattress support system

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<sup>2</sup> Introduction to ASTM F 1822-97 *Standard Consumer Safety Specification for Non-Full-Size Cribs*

<sup>3</sup> ASTM F 406-02 *Standard Consumer Safety Specification for Non-Full-Size Baby Cribs/Play Yards*, June 2002.

vertical impact test and slat/spindle strength test were adapted for inclusion in F 1169-10. The ASTM subcommittee added the HC shake test with no additional changes. The mattress support system vertical impact test was modified slightly from the requirements in SOR/86-962. The ASTM subcommittee and CPSC staff feel the F 1169-10 performance requirement is equivalent in stringency.

The slat/spindle strength test requirements of F 1169-10 are an evolution of the EN 716 requirements. Stakeholders and CPSC staff felt a significantly more stringent test requirement should be included in F 1169-10. The F 1169-10 slat/spindle strength test is by far a much more stringent test than the EN standard or any other standard including a slat/spindle strength test requirement for full-size cribs.

Other differences still remain between what CPSC staff is recommending for a proposed rule and these other crib standards. These have been reviewed and evaluated and staff believes that the requirements found in ASTM F 406-10 plus the staff recommended changes are the most stringent requirements among all the standards or are considered adequate to address the incidents seen in the data.

### **III. DISCUSSION**

#### **A. Stakeholder Inputs**

##### *1) ANPR Comments*

On November 25, 2008, the Commission published an ANPR (73 Federal Register 71570) regarding options to address crib safety hazards. The ANPR reviewed incident data relating to drop-side hardware, other hardware, assembly issues, and wood quality. The ANPR solicited for information and comments concerning product availability, market information, costs of alternatives, benefits of alternatives, small business impacts, household data, foreign experience, incident data, and other standards or testing requirements. Five comments were received. They are summarized below:

Juvenile Products Manufacturers Association (JPMA) – Robert Waller, Jr., President: JPMA concluded that the ASTM crib standards are more comprehensive than the CPSC regulations and suggested that the requirements from ASTM F 1169 and ASTM F 406 be incorporated into the mandatory standards. Mr. Waller also wrote that "...based on the list of information sought it appears that the CPSC staff is too narrowly focusing its effort on collecting information on hardware attachments for drop-side crib designs and wood slat performance." Mr. Waller wrote that "CPSC should embark on a comprehensive, as opposed to a piecemeal rulemaking process" and also "prior to developing standards that reduces consumer choice and potentially increase cost to consumers, the Commission staff needs to undertake a comprehensive risk benefit analysis." Finally, with regard to international standards, Mr. Waller wrote "we urge the Commission staff to undertake a harmonized approach to revisions to the regulations." He then specifically pointed out the British standard and the Health Canada standard as examples.

Pacific Rim Woodworking, Inc – Greg Zochowski, Owner: As a small business owner and manufacturer of wood cribs, Mr. Zochowski commented that he felt the current CPSC and ASTM standards were adequate for safety. He also expressed concern that it would be too costly for a firm like his, which only sells 300-400 cribs a year, to become JPMA certified.

American Academy of Pediatrics (AAP) – David T. Tayloe, Jr. MD, President: AAP strongly supported strengthening and expanding crib safety standards for all FS and NFS cribs. In addition to mandating the ASTM standard, AAP stated that it believes that the new mandatory standard should establish adequate performance requirements addressing a variety of issues related to crib systems and their hardware.

Consumer Groups, including – Kids In Danger, Consumers Union, Consumer Federation of America, Keeping Babies Safe, U.S. Public Interest Research Group: The consumer groups agreed with the Commission staff that there are not adequate performance requirements in either the mandatory or ASTM voluntary standards that were in effect at that time. Regarding benefits of alternatives, the consumer groups discussed banning drop-sides altogether as an alternative and discussed the pros and cons of such an alternative. The consumer groups also urged CPSC to consider test methods used in other standards such as the Underwriters Laboratories (UL) standard, the British standard, Health Canada standard, the International Organization for Standardization (ISO) standard as well as retailers' internal testing methods. One specific provision that the consumer groups believed to be important was a durability test. They also mentioned that CPSC should consider banning plastic hardware or add a stress test for those parts. In addition, this comment stressed that real-world factors, such as how cribs are shipped and stored and how many children use a crib, be considered in drafting the new mandatory standard.

ASTM Subcommittee F15.18 – William Suvak, Chairman: Mr. Suvak wrote that many of the issues mentioned in the ANPR have been discussed in various working sessions of the ASTM subcommittee. He went on to mention that JPMA intended to propose to the subcommittee modifications to improve both F 1169 and F 406. Mr. Suvak encouraged CPSC staff to remain engaged in making the necessary modifications to the existing voluntary standards and, once they are made, he recommended that the Commission incorporate the ASTM crib standards by reference.

## 2) *CPSC Staff Crib Roundtable Meeting*

On April 22, 2009, CPSC staff hosted a public meeting regarding crib safety<sup>4</sup>. Over 100 people attended, including representatives from manufacturers, testing labs, consumer groups, other government agencies, and interested stakeholders. Presentations made by CPSC staff included:

- *Hazard Analysis: Sleeping Environment Products* – Jonathan Midgett, Ph.D., Engineering Psychologist, Office of Hazard Identification and Reduction, and Suad Wanna-Nakamura, Ph.D., Division of Health Sciences

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<sup>4</sup> Copies of all the presentations for CPSC Crib Roundtable meeting can be found at [www.cpsc.gov/info/cribs/infantsleep.html](http://www.cpsc.gov/info/cribs/infantsleep.html)

- Voluntary and Mandatory Standards Review – Patricia Hackett, Division of Mechanical Engineering, Directorate for Engineering Sciences
- Overview of Recent Recall and Compliance Actions – Michelle Gillice, Office of the General Counsel
- ANPR Comments Review – Patricia Hackett, Division of Mechanical Engineering, Directorate for Engineering Sciences

In addition, there were presentations made by the public, including:

- Marian Sokol, Ph.D., M.P.H., President, First Candle – The importance of providing a safe sleep environment for infants and reducing the incidence of Sudden Infant Death Syndrome and Sudden Unexpected Infant Death
- Michael Dwyer, C.A.E., Executive Director, Juvenile Products Manufacturers Association (JPMA) – Improvements that the voluntary standard provides over the mandatory standard and how the JPMA crib certification program has helped reduce injuries
- Nancy A. Cowles, Executive Director, Kids In Danger – Crib hardware failures, entrapment issues in sleep environments, and key factors for CPSC to consider in drafting a new mandatory standard
- Cara Smith, Deputy Chief of Staff, Illinois Attorney General's Office – Crib standards and effective recall strategies

Following the presentations, there was an open question and answer period.

### 3) *ASTM Crib Subcommittee Meetings*

ASTM holds regular subcommittee meetings for both FS and NFS cribs (including play yards) twice a year, typically in the spring and fall. CPSC technical staff consistently attends the meetings and typically supplies the subcommittee with incident data, either in the form of redacted in-depth investigation reports (IDIs) or summary spreadsheets. In addition to regular participation in the meetings and in task groups, staff has made four separate formal requests to ASTM to consider revisions to the crib standards, either relating to hardware, assembly issues, or wood strength. Copies of these letters are included as an Appendix to this memo. Excerpts from each letter are highlighted below:

September 2002: Letter from Patricia Hackett to William Suvak, Chairman of F15.18 – “CPSC staff believes that it may be necessary to add new requirements to or strengthen some of the existing performance requirements in the ASTM standard in order to address crib hardware related issues.”

October 2007: Letter from Patricia Hackett to William Suvak, Chairman of F15.18 – “The subcommittee should consider looking at avenues that would eliminate the use of plastic hardware on any movable component of a crib (drop-sides and mattress support systems). Additionally, CPSC staff encourages the subcommittee to explore ways to amend the standard in order to significantly reduce the number of movable components of a crib.”

May 2008: Letter from Jonathan Midgett to William Suvak, Chairman of F15.19 – “*In order to properly address this (mis-assembly) hazard, CPSC staff recommends that the requirements proposed by the task group be expanded to include all sides and the mattress support platform...*”

August 2008: Letter from Patricia Hackett to William Suvak and Katherine Pilarz, F15.18 Subcommittee Chairmen – “*The Subcommittees should consider looking at performance requirements that would evaluate the static and dynamic strength of the wood components.*”

#### 4) Stakeholder Input Summary

In 2009, as a result of comments received for the ANPR, the input from the crib roundtable meeting, and participation at previous ASTM meetings, staff developed some areas of consideration with regard to the upcoming regulatory actions on both FS and NFS cribs. At that time, CPSC technical staff started to focus on the ASTM voluntary standards, to assess them for their adequacy in the following areas:

1. Drop-Side Hardware Systems
2. Non-Drop-Side Hardware Systems
3. Mattress Support Issues
4. Wood Screws
5. Assembly and Instructional Issues
6. General Requirements
7. Slat/Spindle Strength/Wood Quality
8. Paint/Finish
9. Attachments
10. Slat Spacing
11. Climb/Fall Out
12. Mattress Fit

Since staff identified the areas of consideration, ASTM has balloted and approved many new requirements addressing most of these issues; they are now included in the June 2010 versions of the FS or NFS crib standards.

#### **B. Incident Data (Tab A)**

Since November 1, 2007, CPSC staff has closely monitored incoming incident reports on cribs in a pilot project known as the Early Warning System (EWS). Each week, all data entered into the CPSC epidemiology databases during the previous week are drawn into EWS and reviewed by a team. Each incident is reviewed, coded as to the failure mode or possible hazard based on the information already available, or referred to CPSC field staff for further follow-up. As additional information becomes available, incident records are updated. As of April 11, 2010, there were a total of 3,584 incidents related to all cribs in the EWS. Of these, 2,395 incidents were clearly identified as involving full-size cribs, 64 were non-full-size cribs, and 1,125 incidents lacked sufficient information to allow for the classification of the cribs as full-size or non-full-size. Note that the Directorate for Epidemiology memorandum found in Tab A provides

a breakdown of the data between FS and NFS cribs. This memo includes only a combined summary of all the data, for all crib incidents regardless of the size of the crib.

### *1) Fatalities*

There were a total of 153 fatalities reported to CPSC staff between November 1, 2007 and April 11, 2010 associated with all cribs. The majority of the deaths (111 out of 153) were unrelated to any structural failure or design flaw of the crib. The cause of death identified among the 111 fatalities can be grouped into the following broad categories:

- Sixty-five suffocation deaths were related to the presence of soft bedding in the sleep area.
- Eighteen asphyxiation deaths were related to prone positioning of the infant on the sleep surface.
- Twelve strangulation deaths were related to window blind/electrical/other cords in or near the crib.
- The remaining 16 deaths resulted from miscellaneous other hazards in and around the crib, including the presence of plastic bags in the crib and the use of other nursery product accessories in the crib.

There were 36 fatalities which were attributable to structural problems/failures of cribs. Thirty-five of the 36 fatalities were due to head/neck/body entrapments. Almost all of the crib failures - detachments, disengagements, and breakages - created openings in which infants became entrapped. One death resulted from a child getting trapped between a wall and a crib while trying to climb out of the crib. In that case, there was a crib assembly problem which prevented the mattress support from being lowered sufficiently. The non-entrapment death resulted from a screw getting lodged in the decedent's throat.

For six of the fatalities, no information on the circumstances was available.

### *2) Non-Fatal Injuries*

A total of 1,703 incidents reported a crib-related injury between November 1, 2007 and April 11, 2010. The vast majority of the injuries were not serious enough to require hospitalization. Among the 48 hospitalizations, nearly half were for limb/skull fractures and other head injuries resulting from falls from cribs. Most of the remaining injuries resulted from children getting their limbs caught between crib slats, falling inside the crib and hitting the crib structure, or getting stuck in gaps created by structural failures. These resulted in limb/head/facial injuries. There were a few other very serious injuries, such as brain damage, cardiac arrest, and sepsis, suffered by infants while in the crib; however, there was no indication that these were related to any structural issues involving the crib.

### 3) *Non-Injury Incidents*

A total of 1,728 of the 3,584 incidents did not have any reported injuries associated with them. These incidents range from ones that could have potentially resulted in an injury or fatality to general complaints or comments from consumers with regard to their crib.

### 4) *Hazard Pattern Identification*

CPSC staff reviewed all 3,584 crib incidents to identify hazard patterns. The issues reported in the incidents can be grouped into four broad categories:

- Product-related
- Non-product-related
- Recall-related
- Miscellaneous other

*Product-related*: Approximately 82 percent of the incidents reported some sort of failure or defect in the product itself. Listed below are the reported incident modes, beginning with the most frequently reported concerns:

- *Falls* from cribs accounted for approximately 23 percent of all incidents. Falls also accounted for the largest proportion of injuries, including nearly half of all injuries requiring hospitalization. There were no fatalities associated with falls.
- Crib *drop-side*-related problems, which include drop-side detachment, operation, hardware, and assembly issues, among others, accounted for approximately 22 percent of the incidents. Half of the fatalities attributable to crib failures were related to drop-side failures. In all of the fatalities, detachments led to the opening of gaps which allowed the infants to become entrapped. The injuries associated with drop-side problems were bruises, lacerations, and scrapes from entrapments in or falls through the gap openings.
- Problems with infants getting their *limbs caught between the crib slats* accounted for over 12 percent of the incidents in the EWS. Although no violation of the 16 CFR 1508 slat spacing requirement was discernable from these reports, this problem was a frequent cause of injuries (which were mostly bruises and some fractures), including the hospitalized injuries. There were no fatalities associated with this problem.
- Close behind limb entrapments were various *wood*-related issues, reported in nearly 12 percent of the incidents. The problems included fractured slats, slat detachments, and fractured rails, among others. There was one fatality where the infant was entrapped in a space created by a broken slat. Injuries ranged from splinters to lacerations from sharp broken wood pieces, bruises from entrapments/falls because of gaps created, and near-choking from chewing on chipped wood.

- Problems relating to ***mattress supports*** were reported in approximately 5 percent of the incidents. The most prevalent issues were the collapse of the support board and hardware/weld failures. There were three fatalities that resulted from entrapments in gaps created by detached mattress supports. A fourth fatality was indirectly related to a mattress support issue in that the decedent became entrapped between a crib and wall while trying to climb out of the crib; assembly issues had prevented sufficient lowering of the mattress support. Most of the injuries involved bruises from limb/body entrapments or falls to the floor.
- About three percent of the incidents in the EWS reported ***mattress fit*** problems which caused partial or full body entrapments in the space between the mattress and crib side. These resulted in numerous bruising injuries but no fatalities.
- Another three percent of the reports were complaints of ***paint***-related issues. The vast majority reported concerns for a possible choking hazard or lead exposure resulting from children chewing on paint chips that came off easily from the crib surface. Five cases reported a positive lead test result: two were associated with cribs that were recalled for the presence of lead paint, two did not specify the lead level that was detected by consumers who were using home test kits, and one reported an increased lead level in the child but there was no indication that it was related to the crib.
- The remaining two percent of incidents reported ***miscellaneous other*** problems with the crib structure such as non-drop-side or drop gate failures, sharp catch points, stability, and/or other structural issues. Thirteen fatalities were reported under this category; six of the 13 were entrapment fatalities attributed to non-drop-side hardware-related issues, and four of the 13 were entrapment fatalities related to structural issues of cribs in very poor general condition. One additional fatality was the result of a loose screw getting lodged in the decedent's throat. The exact product defect/failure could not be determined for the last two fatalities, both of which were entrapments. There were a few reported injuries, mostly bruises, under this category.

***Non-product-related:*** Nearly ten percent of the incident reports were of deaths, injuries, or non-injury incidents that could not be associated with any product defect or failure. As previously noted, most of the fatalities were associated with the use of soft/extra bedding in cribs, prone positioning of infants on sleep surfaces, and the presence of hazardous surroundings in and around cribs. No crib defect or design flaw was cited in these reports.

***Recall-related:*** About five percent of the reports were related to recalls that had been previously issued. Most of the reports were complaints or inquiries from consumers regarding a recalled product.

***Miscellaneous other:*** The remaining three percent of the incidents reported a host of miscellaneous problems including bug infested cribs, odors/fumes emanating from cribs, unexplained injuries to infants in cribs, and ambiguous descriptions of problems. Some of the reports were simply consumers sharing a concern or opinion.

### **C. Hazard Severity Summary/Voluntary Standards Assessment**

The data analysis presented above provided a listing of the hazard patterns by frequency of incident reports, and not necessarily by severity of the hazard. The following is a listing of the hazard patterns identified, starting with the ones with the most fatalities first, followed by the issues with no fatal incidents but in order of the potential severity of the hazard (bold font indicates a hazard where fatalities have been reported). Following the list is a discussion regarding each hazard and how it relates to the current voluntary standards, ASTM F 1169-10 and F 406-10.

- 1) Added soft bedding and other non-product related issues**
- 2) Drop-side hardware or other drop-side entrapment issues**
- 3) Non-drop-side hardware issues, including wood screws or other fasteners**
- 4) Mattress support hardware or other mattress support issues**
- 5) Slat detachment or breakage, other wood issues**
- 6) Mattress fit issues
- 7) Climbing and falling out of cribs
- 8) Limb entrapment between slats
- 9) Paint or other finishing issues

#### *1) Soft Bedding and Other Non-Product Related Issues*

The number one hazard shown in the fatality data is associated with caregivers adding extra bedding, such as pillows or comforters, to the cribs, most likely done in an effort to make the bedding surface softer for the baby (see Tab B). Babies have been found dead on their stomachs with their faces, noses, and mouths covered by soft bedding, such as pillows, quilts, comforters, and sheepskins. In addition, some babies have been found dead with their heads covered by soft bedding even while sleeping on their backs. This hazard is associated with caregiver actions and is not due to the design or construction of the crib itself; thus, there are no performance requirements that can adequately address this hazard. Both ASTM F 1169-10 and F 406-10 already contain labeling requirements that point out the deadly nature of this hazard. At this time, staff is not making any recommended changes to either voluntary standard to attempt to further address soft bedding-related hazards. Staff believes that a strong education and information campaign is a more effective way to address the issue of soft bedding.

As mentioned previously, there were numerous other fatalities associated with non-product related issues. These include children being put to bed on their stomachs resulting in positional asphyxia, and blind cords or other strings/cords in or near the crib resulting from strangulations. With the exception of warning labels, these issues are also not addressable in a crib standard and are more effectively addressed in an education and information program.

#### *2) Drop-side Issues*

Both ASTM F 1169-10 and F 406-10 contain a limitation on movable sides, which, as discussed previously, effectively eliminates the traditional drop-side crib. The limitation allows for designs

that use a hinged joint that folds (drop gate) and would also permit other possible new designs to provide easier access to an occupant. In light of these changes to the two voluntary standards, CPSC staff believes that drop-side hardware and other related issues have been adequately addressed for both FS and NFS cribs. No further changes are proposed with regard to drop-side-related issues.

### *3) Non-Drop-Side Hardware/Fasteners*

Both ASTM F 1169-10 and F 406-10 contain several new performance requirements that address issues related to non-drop-side hardware/fasteners. The FS crib standard is more complete than the NFS crib standard in that it contains a latch strength test on movable sides and it specifies the order in which all testing should be performed on a crib. (The order in which testing occurs could significantly impact test results; thus, staff believes it is important to specify the order for consistency.) Staff is recommending changes to ASTM F 406-10 to include these two requirements so that it is consistent with the FS crib standard and to more fully address hardware-related hazards. Staff is also proposing a change to the FS crib standard, to remove a step<sup>5</sup> in one of the testing procedures dealing with hardware.

### *4) Mattress Support Issues*

The FS crib standard, ASTM F 1169-10, contains a new mattress support vertical impact test that was developed by Health Canada and has been used by them for many years. CPSC staff believes that this test, along with other performance requirements dealing with hardware in general, will adequately address the hazards associated with mattress support systems. The current NFS crib standard does not contain this new impact test. Staff is recommending changes to the NFS crib standard to make it consistent with the FS crib standard and to more fully address mattress support-related hazards.

### *5) Slat Detachments or Breakage Issues*

There are two performance requirements which deal with slat detachments and breakage: the crib side tests and the slat/spindle strength test. Both ASTM F 406-10 and F 1169-10 contain versions of these two requirements, but the FS crib standard has more stringent crib side tests. Staff is recommending changes to the NFS crib standard to make it consistent with the FS crib standard and to more fully address hazards related to slat detachments.

None of the four remaining non-fatal hazards in the list above are fully addressed in either ASTM F 406-10 or F 1169-10. At this time, staff is not recommending any changes to these crib standards to address these potential hazards, as discussed below.

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<sup>5</sup> Currently, the 2010 voluntary standard includes an allowance to retighten screws between the crib side latch test and the mattress support vertical impact test. Staff recommends removing this allowance from the standard.

## 6) *Mattress Fit*

The Directorate for Epidemiology conducted a review of available data and found that there are no known fatal incidents or serious injury incidents relating to mattress fit. However, if there was a significant fit problem between a crib and a mattress, it could result in an entrapment, which could be fatal; thus, these incidents are of concern to staff.

Mattress fit issues are typically related only to FS cribs, because the voluntary standard for NFS cribs requires that the mattress be sold with the crib. If a substitute mattress is used on top of or in place of the mattress provided with a NFS crib, then fatal consequences can occur. Those incidents, when they have been reported to CPSC, have been considered hazardous surroundings-related incidents (e.g., soft bedding) and thus are not included among the incident data related to mattress fit issues.

Since FS crib dimensions are strictly regulated and staff is not aware of any reported mattress fit incidents involving a non-compliant crib, these incidents would tend to indicate a potential problem with the mattress. There are no dimensional standards for crib mattresses; there is only a mention in the warning label dictated by 16 CFR 1508 that states, "Any mattress used in this crib must be at least 27 1/4 inches by 51 5/8 inches." This warning is directed at the crib owner to help them select a proper mattress but is not meant to regulate the mattress itself.

To determine the severity of injury and the prevalence of gaps created in cribs with poor fitting mattresses, CPSC staff assigned 52 of the incidents reported to CPSC between November 2007 and April 2010 for a follow-up investigation, of which 44 investigations were completed. Of the 44 completed incidents, the majority involved limb entrapments, with no serious injuries (in two incidents the infants suffered soft tissue bruises, but no medical attention was needed). Of the 44 incidents, staff was able to collect dimensional information on mattress fit and gap size for only 28 products, because in many incidents the consumer returned the mattress to the store. From the limited information collected by field investigators, the maximum gap size between the mattress and the crib, as measured diagonally at the corners of the cribs, ranged from 2.5 cm (1.0 inches) to 8.1 cm (3.2 inches.)

As outlined in Tab B, Health Sciences (HS) believes this is an important issue to address and that the most effective way to deal with the issue of mattress fit-related hazards is to standardize crib mattresses intended for use with full-size cribs. In this regard, ASTM has started work on a potential new standard for crib mattresses, and CPSC technical staff is participating in that effort.

## 7) *Climbing and Falling Out*

As outlined in Tab A, the largest proportion of injuries associated with cribs was caused by falls from cribs. There were no fatalities, but falls accounted for nearly 23 percent of the incidents, including almost half of the hospitalization incidents. CPSC Human Factors (HF) staff reviewed the tradeoffs associated with making changes to the voluntary standards to address children climbing and falling out of cribs (see Tab C).

A designer of a crib faces limited options for preventing children from climbing out. The crib is basically a lidless box. To be effective, cribs that prevent climbing out would require either higher sides or lids. Both designs could introduce other problems that are potentially of more concern than the climbing out problem. For instance, making the sides higher could increase the difficulty caregivers have placing their children, especially the youngest ones, into the crib or lifting them out. This could increase the use of alternative sleeping arrangements, such as allowing children to sleep in adult beds, which have serious hazards associated with them. Introducing a lid, or some other kind of cover, to a crib creates more movable parts with more possibilities for mechanical failures that could lead to entrapment, entanglement, or strangulation. Staff has been unable to identify a performance criterion for inclusion in the crib standards that would effectively reduce incidents of children climbing out of cribs without simultaneously introducing other potential hazards. Staff supports the June 1, 2010 change to the ASTM full-size crib standard that moved the relevant warning about when to stop using a crib into a higher position in the list of warnings. The comparable warning in the NFS standard is already in a prominent position.

#### 8) *Limb Entrapments*

No fatalities were associated with limb entrapments in slats, but some fractures and bruising were reported. As discussed in Tab C, in the 1970s, the spacing between crib slats was purposefully narrowed to a maximum width of 2 3/8 inches, after careful consideration of fatal head/neck entrapment and strangulation incidents in which infants slipped feet-first between the slats. This spacing requirement has proven to be extremely effective in preventing these types of fatal incidents; thus, staff does not recommend allowing slat spacing to be any wider. Conversely, narrowing the spaces between the slats would still allow entrapment of limbs of smaller infants or entrapment of smaller body parts of larger infants. Although staff acknowledges the high frequency of limb entrapments in crib slats, the injuries associated with this hazard scenario cannot be adequately addressed by altering the current spacing requirements for slats.

#### 9) *Paint/Finish*

CPSC staff looked at the incident reports involving paint-related issues to see if a hazard exists. The vast majority of the incidents reported concerns for a possible choking hazard or lead exposure resulting from children chewing on paint chips that came off easily from the crib surface. Over 3,300 cribs, from two different manufacturers, have been recalled in the last five years due to excess lead levels in the paint. Five incidents mentioned a positive lead test result; two were associated with cribs that were recalled for the presence of lead paint; two were unspecified amounts detected from home test kits performed by consumers and one was a reported lead level increase in a child, but no evidence that it was related to the crib. There were no other reported incidents of toxic poisonings or injuries. Since lead based paints are already prohibited under CPSC regulation 16 CFR 1303 and by reference in both the FS and NFS crib standards, staff believes this hazard is already adequately addressed. Staff is not proposing any paint/finish-related changes to the voluntary standards at this time.

***D. Recent Compliance Activity***

Since 2007, CPSC has issued 40 recalls of over 11 million cribs. All but seven of these recalls were for product defects that created a substantial product hazard, and not for violations of the federal crib regulations. These 40 recalls<sup>6</sup> are listed below:

- C&T International/Sorelle Recalls Cribs Due to Strangulation and Suffocation Hazards (May 6, 2010)
- Graco-Branded Drop Side Cribs Made by LaJobi Recalled Due to Entrapment and Suffocation Hazards (April 29, 2010)
- Simplicity Cribs Recalled by Retailers; Mattress-Support Collapse Can Cause Suffocation and Strangulation (April 29, 2010)
- Generation 2 Worldwide and "ChildESIGNS" Drop Side Crib Brands Recalled; Three Infant Deaths Reported (February 9, 2010)
- Dorel Asia Recalls To Replace Cribs; Pose Strangulation and Suffocation Hazards: One infant death reported, 10 injuries to infants (January 19, 2010)
- Drop Side Cribs Recalled by Caramia Furniture Due to Fall and Entrapment Hazards (January 14, 2010)
- Infant Entrapment and Suffocation Prompts Stork Craft to Recall More Than 2.1 Million Drop-Side Cribs (November 23, 2009)
- Simplicity Drop Side Cribs Recalled by Retailers Due to Risk of Death from Suffocation (July 2, 2009)
- LaJobi Recalls Babi Italia Pinehurst and Bonavita Hudson Drop Side Cribs; Risk of Entrapment and Suffocation (June 9, 2009)
- LaJobi Recalls Bonavita "Cabana" Drop Side Cribs Due To Entrapment and Strangulation Hazards (June 9, 2009)
- Jardine Announces Second Recall Expansion of Cribs Sold by Babies'R'Us; Cribs Pose Entrapment and Strangulation Hazards (April 30, 2009)
- SunKids Convertible Cribs Recalled by Suntech Enterprises Due to Entrapment and

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<sup>6</sup> Details of each of these recalls can be found in the Recall section on the CPSC website.

#### Suffocation Hazards (April 2, 2009)

- Stork Craft Recalls More Than 500,000 Cribs; Mattress Support Bracket Failures Create Risk of Entrapment and Suffocation (January 13, 2009, Revised May 4, 2009)
- Jardine Expands Recall of Cribs Sold by Babies"R"Us; Cribs Pose Entrapment and Strangulation Hazards (January 6, 2009)
- Munire Recalls "Newport Rubbed Black" Cribs and Matching Furniture Due to Violation of Lead Paint Standard (December 23, 2008)
- Infant Death Prompts Recall to Repair 985,000 Delta Enterprise Drop Side Cribs; Missing Safety Pegs Can Cause Entrapment and Suffocation Hazards (October 21, 2008)
- Infant Death Prompts Recall To Repair 600,000 Drop Side Cribs By Delta Enterprise; Spring Peg Failure Can Cause Entrapment and Suffocation Hazards (October 21, 2008)
- Infant Death Prompts Recall of Convertible Cribs by Playkids USA; Crib Poses Entrapment and Suffocation Hazards (October 16, 2008)
- Simplicity Brand Drop Side Cribs Recalled By Various Retailers Due To Serious Entrapment And Suffocation Hazard To Infants and Toddlers (September 17, 2008, Last Revised April 7, 2009)
- Baby Appleseed Recalls Cribs Due to Fall Hazard (August 5, 2008)
- Mother Hubbard's Cupboards Recalls Cribs Due to Fall Hazard (August 5, 2008)
- Stanley Furniture Recalls Cribs Due to Entrapment Hazard (June 26, 2008)
- Jardine Cribs Sold by Babies"R"Us Recalled Due to Entrapment and Strangulation Hazard (June 24, 2008)
- Bassettbaby Cribs Recalled Due to Entrapment Hazard; Sold Exclusively at Babies "R" Us (June 5, 2008)
- Munire Furniture Recalls Cribs Due to Fall Hazard (February 28, 2008)
- Bassettbaby Drop-Side Cribs Recalled Due to Entrapment and Strangulation Hazard (February 14, 2008)
- Cribs Sold By Bassettbaby Recalled Due to Entrapment and Strangulation Hazard: Sold Exclusively at Babies R Us (November 8, 2007)

- About 1 Million Simplicity Cribs Recalled Due To Failures Resulting in Infant Deaths (September 21, 2007, Last Revised April 14, 2009)
- NettoCollection Recalls Cribs Due to Entrapment and Strangulation Hazard (September 4, 2007)
- CPSC, Stokke Announce Recall of Sleepi Crib Foam Mattresses Due to Entrapment Hazard (August 23, 2007)
- Simplicity Recalls Cribs Due to Fall, Entrapment and Choking Hazards (June 6, 2007, Revised April 7, 2009 Release #07-205)
- Song Lin Industrial Inc. Recalls Cribs Due to Fall Hazard (May 31, 2007)
- Simmons Recalls to Repair Drop-Side Cribs Due to Entrapment, Suffocation and Fall Hazards (June 24, 2010)
- Million Dollar Baby Recalls to Repair Drop-Side Cribs Due to Entrapment, Suffocation and Fall Hazards (June 24, 2010)
- LaJobi Recalls to Repair Bonavita, Babi Italia and ISSI Drop-Side Cribs Due to Entrapment, Suffocation and Fall Hazards (June 24, 2010)
- Jardine Recalls to Repair Drop-Side Cribs Due to Entrapment, Suffocation and Fall Hazards (June 24, 2010)
- Evenflo Recalls to Repair Drop-Side Cribs Due to Entrapment, Suffocation and Fall Hazards (June 24, 2010)
- Delta Recalls to Repair Drop-Side Cribs Due to Entrapment, Suffocation and Fall Hazards: Consumers also urged to check stabilizer bar assembly to prevent mattress support collapse (June 24, 2010)
- Child Craft Drop-Side Cribs Recalled Due to Entrapment, Suffocation and Fall Hazards (June 24, 2010)
- CPSC Announces Recall to Repair Child Craft Brand Stationary-Side Cribs with Dowel Due to Entrapment and Strangulation Hazards (June 24, 2010)

**E. *Adequacy of ASTM F 1169-10/FS Crib Standard (Tab D)***

CPSC staff acknowledges that ASTM F 1169-10, *Standard Consumer Safety Specification for Full-Size Baby Cribs*, is the result of many years of development between staff, industry, consumer groups, and other interested stakeholders. Despite the substantial changes made to the

FS crib standard in the June 2010 version, staff recommends making one change for inclusion in the draft proposed rule. Currently, ASTM F 1169-10 includes an allowance to retighten screws between the crib side latch test and the mattress support vertical impact test. Staff recommends removing this allowance from the standard.

During the most recent ASTM subcommittee meeting held May 12, 2010<sup>7</sup>, industry representatives raised concerns that this allowance is needed. The rationale was that the new crib cyclic side shake test, added to the 2010 version of the ASTM standard, might loosen fasteners a small amount<sup>8</sup>, which may subsequently contribute to failing other tests that follow.

Representatives from Health Canada's laboratory added valuable input to this discussion at the meeting. The Canadian standard also contains the cyclic side shake test and it does not allow for any retightening of fasteners during the testing of a crib. This has not been shown to be a problem with the vast majority of cribs tested to the Canadian standard.

CPSC staff feels the combination of the cyclic side shake test (to simulate a child standing and shaking the top of side rail), the mattress support system vertical impact test (child jumping), the side rail vertical impact test (child climbing outside of rail), and the slat/spindle strength test (child and/or sibling falling against or kicking slats) together comprise a laboratory simulation of a lifetime of use. Each test imparts a specific aspect of one life cycle. It is only as a combined whole, functioning together, that they accomplish their task. Retightening fasteners between tests would sever the chain of accumulated conditioning effects.

There have been at least 10 fatalities where loose screws have contributed to the death of a child. After drop-sides, loose screws are the second highest cause of fatalities. It is important that fasteners remain secure during the useful life of the crib. Thus, staff strongly believes that fasteners should not be retightened during testing.

#### ***F. Adequacy of ASTM F 406-10/NFS Crib Standard (Tab E)***

CPSC staff acknowledges that ASTM F 406-10 *Standard Consumer Safety Specification for Non-Full-Size Baby Cribs/Play Yards* is the result of many years of development between staff, industry, consumer groups, and other interested stakeholders. Despite the substantial changes made to the NFS crib standard in 2010, there are four areas that CPSC staff believes should be more stringent in order to help further reduce injuries and deaths. In addition, staff recommends two editorial changes. These five recommended changes are summarized below. Details of the technical recommendations can be found in Tab E.

##### *1) Mattress Support Vertical Impact Cycle Test*

CPSC staff recommends that the mattress support performance requirement in the June 2010 version of the NFS crib standard be replaced with the method used in the June 2010 version of

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<sup>7</sup> Minutes of ASTM meetings can be obtained through ASTM at [www.astm.org](http://www.astm.org)

<sup>8</sup> Failure of the cycle test includes the separation of key components by 0.04 inch (1.0 mm), typically 1 – 1½ turns of a fastener. Thus, smaller amounts of loosening would be allowed.

the FS crib standard, which was developed by Health Canada. This recommendation is based on incident data involving mattress support-related hazards, as well as recent developments at the May 12, 2010 ASTM subcommittee meeting<sup>9</sup>. During this meeting, the proposed mattress support vertical impact test requirement and procedure were reviewed for consideration in the NFS standard and are expected to be voted on at the next subcommittee meeting. It is staff's opinion that the proposed changes to the mattress support vertical impact test and procedure are warranted to address known NFS crib mattress support hardware and related structural integrity hazards; this requirement is included in staff's draft proposed rule. The exact language proposed by staff is that which is used in F 1169-10 and is presented in Appendix A of Tab E.

## *2) Side Impact Test*

The crib side impact test in ASTM F 406-10 is different from the crib side impact test in the FS crib standard, ASTM F 1169-10. The FS crib testing requirements are more stringent and address crib slat detachments, such as the ones that prompted the 1996 ANPR. The FS crib side requirement was revised and made more stringent in 1999 as a result of the 1996 ANPR, but the NFS crib requirement was never harmonized. For the draft proposed rule, staff recommends changing the crib side impact test in the NFS crib standard to be identical to what is already in the 2010 version of the FS crib standard.

## *3) Movable Side Latch Test*

The 2009 and all previous versions of ASTM F 406 contained a test called the "Vertical Drop Side Latch Test," which was removed during the development of ASTM F 406-10 as a result of the new limitation on movable sides that eliminates traditional drop-sides. However, movable sides using methods other than a traditional drop-side are still permitted. Thus, staff believes this requirement should be retained but renamed to refer to it as a movable side latch test. The original language from ASTM F 406-09, along with the removal/renaming of the term "drop-sides," is included in the staff's draft proposed rule and is presented in Appendix A of Tab E.

## *4) Order of Structural Tests*

The 2010 version of the NFS crib standard does not specify the order in which tests must be performed, nor does it provide any guidance on the order for testing. CPSC staff believes that the order can influence the results and notes that, in other juvenile product standards, such as the FS crib standard, ASTM F 1169-10, the order of testing is specified. Typically, the most stringent order (the one most likely to result in the failure of the product) is used. Staff agrees with this approach and recommends using the following test order, which is included in ASTM F 1169-10, in the draft proposed rule for NFS cribs:

1. Teething rail test
2. Cyclic side shake test
3. Crib side latch test
4. Mattress support system vertical impact test
5. Mattress support system static test

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<sup>9</sup> Minutes from this meeting can be obtained through ASTM at [www.astm.org](http://www.astm.org)

6. Crib side impact test
7. Spindle/slat strength test

The exact language for this proposed change can be found in Appendix A of Tab E.

In addition to the four technical changes outlined above, staff has two editorial changes that are recommended for the proposed rule. These are discussed below:

*5) Exclude References to Mesh/Fabric Play Yards*

ASTM F 406-10 is the consensus standard for non-full-size cribs and play yards. In the standard, there are specific requirements for mesh/fabric sided units, which are not part of this rulemaking activity. The Commission staff will be developing a separate rulemaking on mesh/fabric sided play yards in the near future. Staff recommends that the mandatory standard clarify that portions of the consensus standard which relate to mesh/fabric units not be included in the NPR for NFS cribs.

*6) Move Recordkeeping Requirements*

Recordkeeping requirements were added to ASTM F 406-10 as an appendix to the standard. Appendices are considered non-mandatory, and thus staff is recommending that the requirements be moved to the General Requirements section of the standard, which is where the recordkeeping requirements are located in the full-size crib standard, ASTM F 1169-10. This move will make the recordkeeping requirements mandatory.

**G. *Potential Small Business Impact (Tabs F & G)***

The Regulatory Flexibility Act (RFA) requires that proposed rules be reviewed for their potential economic impact on small entities, including small businesses. Section 603 of the RFA requires that CPSC staff prepare an initial regulatory flexibility analysis and make it available to the public for comment when the general notice of proposed rulemaking is published. The initial regulatory flexibility analysis must describe the impact of the proposed rule on small entities and identify any alternatives that may reduce the impact. Tabs F and G provide reviews and analysis of the Regulatory Flexibility Act for FS and NFS cribs, respectively.

There are approximately 68 firms currently known to be producing or selling FS cribs and 17 producing or selling NFS cribs in the United States. Under Small Business Administration (SBA) guidelines, a manufacturer of cribs is small if it has 500 or fewer employees and an importer is considered small if it has 100 or fewer employees. Based on these guidelines, for FS cribs, there are 48 small firms—36 domestic manufacturers, ten domestic importers, and two firms with unknown sources of supply<sup>10</sup>. For NFS cribs, there are 14 small firms—nine domestic manufacturers and five importers. The size of the remaining firms—two with unknown supply sources and one domestic manufacturer—could not be determined. There are probably additional unknown small manufacturers and importers operating in the U.S. market.

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<sup>10</sup> There are five firms with unknown supply sources and one domestic manufacturer with insufficient information to determine firm size.

According to the SBA, retailers and services such as day care centers and public accommodations are considered small if they have \$7 million or less in annual receipts. Approximately 93 percent of retailers have receipts of less than \$5 million, with an additional 3 percent having receipts between \$5 million and \$9.99 million.<sup>11</sup> Excluding firms with receipts between \$5 million and \$7 million yields an estimate of 23,236 small retail firms that may potentially be affected by the proposed rule.<sup>12</sup> However, it is important to note that only a small percentage of these small firms actually sell cribs. Thus, the number of small retail firms affected will be much smaller than 23,236. Among day care service and accommodation providers, approximately 98 percent have receipts of less than \$5 million with an additional 0.9 percent having receipts between \$5 million and \$9.99 million. This suggests that there are roughly 58,364 small day care firms (of 59,555) and 42,437 small hotel firms (of 43,303) that use cribs and therefore could be affected.

### *1) Small Manufacturers*

The impact of the staff-recommended standards on small manufacturers will differ based on whether they are expected to be compliant with ASTM standard F 1169-10.<sup>13</sup> Of the 36 small domestic manufacturers of FS cribs, 24 are in compliance with the voluntary standard. The impact on the 24 compliant firms is not expected to be significant. It seems unlikely that any of these products will require modification to meet the staff-recommended standard. Should any modification be necessary, it would most likely take the form of a few minor changes (such as more effective screws or screw combinations).

Of the nine small domestic manufacturers of NFS cribs, five are in compliance with the voluntary standard. The impact on the five compliant firms is not expected to be significant. While it is possible that some of these manufacturers might opt to redesign their product(s) to meet the staff-recommended requirements, it is more likely that they will make a few minor changes (such as different hardware or stronger materials for the mattress support system). None of the expected modifications are expected to impact manufacturers' costs significantly, nor are they expected to significantly increase the price paid by consumers.

The draft proposed standard could have a significant impact on one or more of the 16 firms (including 12 FS and 4 NFS crib producers) that are not known to be compliant with the voluntary standards, as their products might require substantial modifications. The costs associated with these modifications could include product design, development and marketing staff time, and product testing. There may also be increased production costs, particularly if additional materials are required. The actual cost of such an effort is unknown, but could be significant, especially for the three firms (two FS and one NFS manufacturers) that rely primarily or entirely on the production and sale of either FS or NFS cribs and related products, such as accompanying furniture and bedding, and another firm that produces only one other product. However, the impact of these costs may be mitigated if they are treated as new product expenses that can be amortized over time.

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<sup>11</sup> SBA, *Employer Firms, Establishments, Employment, Annual Payroll, and Receipts by Receipts Size of Firm and Major Industry using NAICS, 2002* ([http://www.sba.gov/advo/research/us\\_rec\\_mi.pdf](http://www.sba.gov/advo/research/us_rec_mi.pdf)).

<sup>12</sup> It was not possible to break out the firms with receipts between \$5 million and \$7 million from the \$5 million to \$9.99 million range.

<sup>13</sup> For the purposes of the analyses, it is assumed that firms compliant with the 2009 ASTM standards will remain compliant with the 2010 standards when they go into effect.

The scenarios described above assume that only those firms that provide products certified by JPMA or claim ASTM compliance will pass the voluntary standards' requirements. This is not necessarily the case. CPSC staff has identified many cases where products not certified by JPMA are actually compliant with the relevant ASTM standard. To the extent that this is true, the impact of the staff-recommended rules will be less significant than described.

### *2) Small Importers*

Four of the ten small importers of FS cribs and four of the five small importers of NFS cribs are not compliant with the voluntary standards. All of these importers would need to find an alternate source of cribs if their existing supplier does not come into compliance with the new requirement(s) of the applicable draft proposed standard. The cost to importers may increase and they may, in turn, pass some of those increased costs on to consumers.<sup>14</sup> Some importers may respond to the rule by discontinuing the import of their non-complying cribs. However, the impact of such a decision may be mitigated by replacing the non-compliant crib with a complying product or another juvenile product. Deciding to import an alternative product would be a reasonable and realistic way to offset any lost revenue given that most import a variety of products.

### *3) Small Retailers*

The CPSIA requires that all full-size and non-full-size cribs sold by retailers comply with the crib regulations by the effective date of the standard. This means that retailers, most of whom are small, will need to verify that any cribs in their inventory and any that they purchase in the future comply with the appropriate regulation prior to offering them for sale. It is believed that most retailers, particularly small retailers, do not keep large inventories of cribs. With an effective date six months after publication of the rule, retailers of new products should have sufficient time and notification to make this adjustment with little difficulty. The situation for retailers of used cribs is more complicated, however, because they may not always be able to determine whether the cribs they receive are compliant. For the affected retailers, it may be simpler to discontinue the sale of used cribs. If cribs represent a small proportion of the products they sell, the impact on these firms may be limited.

### *4) Day Care Centers and Public Accommodations*

The CPSIA requires that all NFS cribs provided by day care centers or public accommodations (e.g., hotels) to their customers comply with the NFS crib regulation by the effective date of the standard. It is assumed that day care centers and places of public accommodation tend to provide non-full-size cribs to their customers, as opposed to the more unwieldy full-size cribs.

Day care centers will need to replace all of their NFS cribs by the standard's effective date. Since a new ASTM standard will be published before the final CPSC regulation is published, these firms may not upgrade their existing NFS cribs until they are assured that the cribs they purchase will comply with the forthcoming regulation. The impact could be significant on some

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<sup>14</sup> These products would also be expected to be of higher quality given the additional safety requirements.

small day care centers if they had to replace their cribs all at once. However, these are one-time costs that may be passed on to customers over time, which could mitigate, to some extent, the rule's burden. Additionally, some centers could opt to replace their NFS cribs with play yards, thereby spreading replacement costs over a longer period of time, which would reduce the impact.

One alternative that would reduce the impact on small day care centers would be to set a later effective date for the final rule, allowing them to spread the cost of non-full-size crib replacement over a longer period of time.

Some hotels may keep a few NFS cribs for use by customers. The number at any one establishment is likely to be low, especially given the likelihood of parents with young children traveling with their own sleep products, such as play yards or portable cribs. As with day care centers, this is a one-time cost for firms that can be passed on to customers over time. Firms, particularly smaller firms, may opt to mitigate the costs by ceasing to provide cribs to their customers, not replacing all of their cribs, or providing play yards instead. Therefore, it is unlikely that there will be a significant impact on a substantial number of firms providing public accommodation.

#### **IV. RECOMMENDATIONS**

CPSC staff recommends that the Commission publish the draft notice of proposed rulemaking (NPR) with proposed requirements for FS cribs that are substantially the same as the voluntary standard for full-size cribs, ASTM F 1169-10, except for the change proposed by staff to eliminate the requirement to retighten fasteners between tests.

CPSC staff also recommends that the Commission publish the draft NPR with proposed requirements that are substantially the same as the voluntary standard for non-full-size cribs, ASTM F 406-10, but also including the following four proposed technical changes:

- *Mattress Support System Vertical Impact Test* – Replace the current mattress support impact test with the test included in the FS crib standard, ASTM F 1169-10.
- *Crib Side Tests* – Replace the current crib side tests (impact and torque tests) with the crib side tests included in the FS crib standard, ASTM F 1169-10.
- *Movable Side Latch Tests* – Reinstate the side latch tests that were part of ASTM F 406-09 but removed from ASTM F 406-10.
- *Order of Structural Tests* – Provide a list specifying the order in which tests are to be conducted, using the order included in the FS crib standard, ASTM F 1169-10.

And including the following two editorial changes:

- *Mesh/Fabric Play Yard Requirements* – Remove the requirements found in F 406-10 for mesh/fabric play yards.

- *Recordkeeping Requirements* – Move the current recordkeeping information found in the appendix of ASTM F 406-10 to the General Requirements section of the standard.

The details of these proposed changes are presented in the draft NPR prepared by the Office of General Counsel. Staff also recommends that the Commission set an effective date for both regulations to be 180 days following publication of the final rule. The Commission could elect to set a later effective date, which would allow day care centers and other public accommodations (hotels) to spread the cost of non-full-size crib replacement over a longer period of time.

## **Attachments:**

**CPSC Staff Recommendation Letters to ASTM**



U.S. CONSUMER PRODUCT SAFETY COMMISSION  
WASHINGTON, D.C. 20207

September 23, 2002

William Suvak  
ASTM F15.18 Subcommittee Chairman  
Child Craft Industries  
501 E. Market Street  
Salem, IN 47167

Re: ASTM F1169 "Standard Consumer Safety Specification for Full Size Baby Cribs"

Dear Mr. Suvak:

In Fiscal Year 2002, the U.S. Consumer Product Safety Commission (CPSC) staff commenced a project pertaining to crib hardware. This project involves the review and analysis of incident data followed by a technical evaluation of current crib designs to determine if modifications could eliminate some of the incidents. At the present time, CPSC staff has concluded the review and analysis of incident data. A copy of the hazard analysis is enclosed for your information.

The enclosed hazard analysis reviews 156 crib-related deaths that occurred between January 1, 1997, and July 15, 2002. It should be noted that this is a minimum figure, because CPSC does not necessarily receive reports of all product-related deaths that occur, and reporting is not yet complete for all sources for some years. Twenty-nine of the 156 cases specifically mention hardware problems with the cribs.

Of the 29 fatalities involving hardware, all but two mentioned missing or loose screws, brackets, or other attachment devices that fastened the sides of the cribs to the end panels. In the two cases that did not involve side attachment hardware, failures of mattress support hardware were reported.

In addition, staff has reviewed CPSC files of in-depth investigations for non-fatal hardware incidents reported during the same time period. Most of these incidents were identified through consumer complaints of crib attachment and support hardware failure. While the majority of incidents did not involve injury, staff believes that many had the potential for fatal consequences. A listing of these cases will be provided to ASTM at the October 2002 subcommittee meeting.

William Suvak  
ASTM F15.18 Subcommittee Chairman  
September 23, 2002  
Page 2 of 2

CPSC staff is continuing our work on this project by evaluating crib hardware designs and comparing the performance requirements of various published crib voluntary standards, such as ASTM F1169, UL 2275, and the Canadian Standard, SOR 86-962.

Based on work completed to date, CPSC staff believes that it may be necessary to add new requirements to or strengthen some of the existing performance requirements in the ASTM standard in order to address crib hardware related issues.

Improving the ASTM standard would be a significant effort towards the goal of reducing crib-related deaths and incidents. CPSC staff recommends that the F15.18 subcommittee form a task group to begin working on this effort.

Please note that the views expressed in this letter are those of the CPSC staff and have not been reviewed or approved by the Commission.

Sincerely,

Patricia L. Hackett  
Directorate for Engineering Sciences  
U.S. Consumer Product Safety Commission  
Phone: 301-504-0494, ext. 1309  
Fax: 301-504-0533  
Email: phackett@cpsc.gov

cc: Kandi Mell, JPMA

Enclosure



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

Fabrizio L. Hackett  
Directorate for Engineering Sciences  
Division of Mechanical Engineering

Tel: 301 504-7577  
Fax: 301 504-0533  
Email: FHackett@cpsc.gov

October 11, 2007

Mr. William Suvak  
ASTM F15.18 Subcommittee Chairman  
Child Craft Industries  
1010 Keller Drive  
New Salisbury, Indiana 47161

Re: ASTM F1169, *Standard Consumer Safety Specification for Full Size Baby Cribs*

Dear Mr. Suvak:

U.S. Consumer Product Safety Commission (CPSC) staff\* recommends that the ASTM subcommittee for full-size cribs expedite its work to strengthen the existing performance requirements in the ASTM standard for full-size cribs in order to address crib hardware-related issues.

CPSC continues to receive incident reports relating to crib hardware. Many of these incidents pertain to drop side hardware. Based on the structural design differences between a crib with a drop side and one without it, incident reports and evaluation of incident samples indicate that drop sided cribs are more prone to hardware problems that may lead to potential hazards. Compounding the issue is that many consumers do not realize the potentially deadly hazards associated with a crib with broken or missing hardware.

Improving the ASTM standard to address hardware issues would be a significant effort towards the goal of reducing crib-related deaths and incidents. The subcommittee should consider looking at avenues that would eliminate the use of plastic hardware on any movable component of a crib (drop sides and mattress support systems). Additionally, CPSC staff encourages the subcommittee to explore ways to amend the standard in order to significantly reduce the number of movable components of a crib.

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\* These comments are those of CPSC staff, have not been reviewed or approved by, and may not necessarily reflect the views of, the Commission.

Mr. William Suvak  
ASTM F15.18 Subcommittee Chairman  
Page 2

CPSC staff recommends that the F15.18 subcommittee consider this issue in an expedited attempt to find practical solutions to this critical issue. CPSC staff is willing to contribute or participate in this effort as needed.

Sincerely,

Patricia L. Hackett

cc: Kandi Mell, JPMA  
Colin Church, CPSC Voluntary Standards Coordinator



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

May 14, 2008

Mr. Bill Suvak  
Chairman, ASTM Crib Standard Subcommittee  
1010 Keller Drive NE  
New Salisbury, IN 47161

Re: ASTM F1169 *Standard Specification for Full-size Baby Cribs*

Dear Mr. Suvak:

This letter presents recommendations from the U.S. Consumer Product Safety Commission (CPSC) staff<sup>1</sup> regarding revisions to ASTM F1169 *Standard Specification for Full-size Baby Cribs* to address hazards posed by cribs with sides that can be assembled backwards or upside-down. Some crib designs give the appearance of proper assembly with the drop-side inverted. In this configuration, the drop-side can detach from the crib, possibly creating a dangerous gap that may lead to the entrapment and suffocation of infants. CPSC staff is aware of four deaths where the crib's side was installed upside-down<sup>2</sup>. These deaths included a 6-month-old child, a 7-month old child, a 9-month-old child and a 1-year-old child.

Crib failures can result from a combination of hardware and crib design, which allows consumers to install one or more of a crib's components (a side or mattress support platform) in an incorrect orientation while giving a visual appearance that the crib was assembled correctly and without affecting the crib's first or primary use. In some circumstances, such improper assembly can result in unforeseen stresses on the hardware used to secure that component to the rest of the crib. This may contribute to the component detaching from the crib. When a crib side or the mattress support detaches in one or two corners, it creates a gap that can entrap infants. At the April 1, 2008 ASTM subcommittee meeting on full-size cribs, a requirement for drop sides that are assembled by consumers was proposed by the task group assigned to this matter. The requirement stated that a drop side intended to be installed in a defined orientation must meet one of two conditions:

1. It can only be assembled to the crib in one orientation and function as specified in the instructions, or

<sup>1</sup> The views expressed in this letter are those of the CPSC staff and have not been reviewed or approved by, and may not necessarily represent the views of, the Commission.

<sup>2</sup> 061129HBB2115, 07111411CC1107, 070726CAA3587, and 050615CWE5015

Mr. Bill Suvak  
May 14, 2008  
Page 2

2. If it can be assembled in any other orientation, a label must be provided to clearly indicate the proper orientation.

In order to properly address this hazard, CPSC staff recommends that the requirements proposed by the task group be expanded to include all sides and the mattress support platform and that a third requirement be added as follows:

**Crib designs that permit backwards or inverted assembly of the drop sides, stationary sides, mattress support platforms, headboards or footboards, shall pass all applicable performance tests in the misassembled state.**

If you have any questions regarding this recommendation, please feel free to contact me. Thank you for your consideration of this important consumer product safety concern.

Sincerely,



Jonathan Midgett, Ph.D.  
Directorate for Engineering Sciences

cc: Len Morrissey, ASTM International  
Colin Church, CPSC Voluntary Standards Coordinator



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

Patricia L. Hackett  
Directorate for Engineering Sciences  
Division of Mechanical Engineering

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August 7, 2008

Ms. William Suvak  
ASTM F15.18 Subcommittee Chairman  
Child Craft Industries  
1010 Keller Drive  
New Salisbury, IN 47161

Ms. Kitty Pilarz  
ASTM F15.18 Subcommittee Chairman  
Fisher Price  
636 Girard Avenue  
East Aurora, NY 14052

Re: ASTM F1169. *Standard Consumer Safety Specification for Full Size Baby Cribs* and  
ASTM F406. *Standard Consumer Safety Specification for Play Yards/Non-Full Size Cribs*

Dear Mr. Suvak and Ms. Pilarz:

The U.S. Consumer Product Safety Commission (CPSC) staff<sup>\*</sup> is aware of numerous incidents in the last couple of years involving the failure of wooden slats on baby cribs. These failures involve the fracturing of the wood, either in the middle of the slat or at the connection to one or both of the rails. When a slat breaks, it can present minor hazards including abrasions due to the exposed wood, or severe hazards such as entrapments occurring in the gap created by the broken slat that could result in death.

Recently, the staff has investigated slat breakages on several models of cribs and found them to have been made from weak woods with low densities. CPSC staff believes the properties of the wood contributed to the slat failures.

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<sup>\*</sup> These comments are those of the CPSC staff, have not been reviewed or approved by, and may not necessarily reflect the views of, the Commission.

Mr. William Suvak and Ms. Kitty Pilarz  
August 7, 2008  
Page 2

CPSC staff recommends that the ASTM Subcommittees for full size cribs and for play yards/non-full size cribs revise the two referenced standards to include requirements that will address this hazard. The Subcommittees should consider looking at performance requirements that would evaluate the static and dynamic strength of the wood components. CPSC staff is in the process of accumulating test data associated with this hazard and would be happy to share it with the Subcommittee members at the October 2008 meetings.

Improving the ASTM standards to address this hazard would be a significant effort toward reducing crib-related deaths and incidents. CPSC staff recommends that the F15.18 Subcommittees consider this request in an expedited manner in order to develop practical solutions to this critical issue. CPSC staff is willing to contribute or participate in this effort as needed.

Sincerely,

Patricia L. Hackett

cc: Kandi Mell, Juvenile Product Manufacturers Association  
Colin Church, CPSC Voluntary Standards Coordinator

## **TAB A**

# **Full-Size and Non-Full-Size Cribs-Related Deaths, Injuries and Potential Injuries; November 2007 – Present**



UNITED STATES  
CONSUMER PRODUCT SAFETY COMMISSION  
4330 EAST WEST HIGHWAY  
BETHESDA, MD 20814

## Memorandum

Date: June 3, 2010

TO : Patricia Edwards  
Project Manager, Cribs  
Division of Mechanical Engineering  
Directorate for Engineering Sciences

THROUGH: Russell Roegner, Ph.D.  
Associate Executive Director  
Directorate for Epidemiology

Kathleen Stralka  
Director, Division of Hazard Analysis  
Directorate for Epidemiology

FROM : Risana Chowdhury  
Division of Hazard Analysis  
Directorate for Epidemiology

SUBJECT : Full-Size and Non-Full-Size Cribs-Related Deaths, Injuries and Potential Injuries;  
November 2007 – Present<sup>15</sup>

### Introduction

This memorandum characterizes the number of deaths and injuries and the types of hazards related to full-size and non-full-size cribs (products coded as 1529, 1543, and 1545) as reported to the CPSC over a period of more than two years beginning in November, 2007<sup>16</sup>.

Since November 1, 2007, CPSC staff has been closely monitoring incoming incident reports on cribs in a pilot project known as the Early Warning System (EWS). Each week, all data entered into the CPSC epidemiology databases during the previous week is drawn into EWS and reviewed by a team. For each incident, the subject matter expert codes the failure mode based on the information already available or refers the incident to CPSC Field investigators for further follow-up. As additional information becomes available, incident records are updated. While most of the data characterizations (such as date of incident, severity of injury, age of victim, and

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<sup>15</sup> This analysis was prepared by the CPSC staff. It has not been reviewed or approved by, and may not necessarily reflect the views of, the Commission.

<sup>16</sup> Not all of these incidents are addressable by an action the CPSC could take; however, it was not the purpose of this memorandum to evaluate the addressability of the incidents, but rather to quantify the number of fatalities and injuries reported to CPSC staff.

diagnosis of injury) presented in this memo are based on reports entered into the CPSC epidemiological databases, the hazard patterns that are discussed here are based on the failure mode codes as determined by the subject matter expert.

It is important to note here that the date of entry into the databases is different from the actual date of incident. A search revealed that the year of incident associated with crib-related reports in the EWS ranges from 1986 through 2010. However, only a small fraction of all fatal crib-related reports that occurred prior to 2007 and non-fatal crib-related reports that occurred prior to 2008<sup>17</sup> were captured in the EWS since they preceded the start of the pilot project.

As of April, 2010, the EWS contained over 3,500 incident reports related to cribs. Over 38 percent of these incidents have been followed-up and verified through in-depth investigations. It is the only such large repository of well-reviewed information with the failure modes of the product encoded by the subject matter expert. Hence, it served as the database of choice for data analysis to support all crib-related regulatory work. Furthermore, since the focus of this memo is on the identification of hazard patterns associated with the various failure modes, no overall national estimate of crib-related injuries treated in emergency departments is presented here. Instead, the emergency department-treated injuries are included in the counts and discussions of all injuries. To avoid any double counting of incident reports, multiple reports of the same incident were identified and associated whenever possible.

## **I. Incident Data<sup>18</sup> on Full-Size Cribs**

The full-size crib regulation, 16 CFR 1508, was published in 1973 and amended in 1982. Under the definition in 16 CFR 1508, a full-size crib provides sleeping accommodations for an infant and has interior dimensions of 28 +/- 5/8 inches wide and 52 3/8 +/- 5/8 inches long. The most widely accepted voluntary standard in the U.S., ASTM's "Standard Consumer Safety Specification for Full-Size Baby Crib", was last revised in June of 2010 under the designation F 1169-10. It includes several requirements in addition to what is in 16 CFR 1508. While there is no age or weight restriction specified, ASTM F 1169-10 does include a label to warn caregivers not to use cribs any longer when a child is able to climb out or reaches a height of 35 inches. Any crib with mesh/net/screen siding, non-rigidly constructed cribs, cradles, car beds, baby baskets, and bassinets are specifically excluded under 16 CFR 1508.

As of April 11, 2010, CPSC staff is aware of a total of 3,584 incidents related to all cribs in EWS. Of these, 2,395 incidents were clearly identified as involving full-size cribs, 64 were non-full-size cribs, and 1,125 incidents lacked sufficient information to allow for the classification of the cribs

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<sup>17</sup>This is a reflection of the time lag in the different State fatality reporting systems.

<sup>18</sup> The CPSC databases searched were the In-Depth Investigation (INDP) file, the Injury or Potential Injury Incident (IPII) file, the Death Certificate (DTHS) file, and the National Electronic Injury Surveillance System (NEISS). These reported deaths and incidents are not a complete count of all that occurred during this time period. However, they do provide a minimum number of deaths and incidents occurring during this time period and illustrate the circumstances involved in the incidents related to cribs.

Date of extraction for reported incident data on full-size cribs was 04/11/10. All data coded under product code 1529, 1543, and 1545 was extracted. Upon careful joint review with ES staff, the data was separated into full-size and non-full-size cribs. More information on the identification process for non-full-size cribs is provided in the section II. Any crib not identified as non-full-size was included with the full-size cribs. However, some cases were considered out-of-scope for the purposes of this memo. Convertible cribs which were being used as toddler/day beds at the time of incident were excluded. Products which are generally used in shared sleeping environments are often coded as "portable cribs" in the CPSC databases; these were also excluded. Also excluded were reports of injuries to caregiver/sibling (who was not the user of the crib) or infant (who was the user of the crib but outside the crib at the time of incident) which were unrelated to any crib malfunction or design issues. However, all incidents where hazardous environment in and around the crib resulted in fatalities, injuries, or near-injuries were retained.

as full-size or non-full-size. Most of the reports involving the undetermined size cribs were received from hospital emergency departments and the prevalent hazards reported amongst them are hazards common to all cribs, irrespective of size. Given the predominance of the frequency of incident reports on full-size cribs, these 1,125 reports were grouped with full-size cribs. This section discusses the incident data in these 3,520 reports, involving 2,395 full-size and 1,125 undetermined size cribs. These 3,520 reports will henceforth be referred to as being related to “full-size” cribs.

Of the 3,520 incident reports received by the CPSC staff since November 1, 2007, 147 were fatalities, 1,675 were non-fatal injuries, and 1,698 were non-injury incidents. The non-injury incidents range from incidents that could have potentially resulted in injuries or fatalities to general complaints or comments from consumers. Reporting is ongoing; the number of reported fatalities, non-fatal injuries, and non-injury incidents will change in the future.

### **Fatalities and Non-Fatal Injuries**

#### *A. Fatalities*

There were a total of 147 fatalities reported to CPSC staff between November 1, 2007 and April 11, 2010. About 91 percent of the decedents were 18 months or younger in age. The majority of the deaths (107 out of 147 or nearly 73 percent) were unrelated to any structural failure or design flaw of the crib. The cause of death identified among the 107 fatalities can be grouped into the following broad categories:

- Sixty-two suffocation deaths were related to the presence of soft bedding in the sleep area.
- Seventeen asphyxiation deaths were related to prone positioning of the infant on the sleep surface.
- Twelve strangulation deaths were related to window blind/electrical/other cords in or near the crib.
- The remaining 16 deaths resulted from miscellaneous other hazards in and around the crib, including the presence of plastic bags in the crib and the use of other nursery product accessories in the crib.

There were 35 fatalities (24 percent) which were attributable to structural problems of the crib. Thirty-four of the 35 fatalities were due to head/neck/body entrapments. Over half of these fatalities (18 out of 35) were related to drop-side failures. Almost all of the crib failures - detachments, disengagements, and breakages - created openings in which the infant became entrapped. One of the entrapment deaths resulted from a child getting trapped between a wall and a crib while trying to climb out of the crib; there was a crib assembly problem which prevented the mattress support from being lowered sufficiently. The non-entrapment death resulted from a loose screw getting lodged in the decedent’s throat.

For five (three percent) of the fatalities, no information on the circumstances was available.

#### *B. Non-Fatal Injuries*

A total of 1,675 incidents reported a crib-related injury. About 64 percent of the injuries were suffered by children 18 months of age or younger and 92 percent were two years of age or younger. Age was not specified for four percent of the reported injuries.

The vast majority (97 percent) of the injuries were not serious enough to require any hospitalization. Among the 46 hospitalizations (*i.e.*, three percent of the injuries), approximately half were for limb/skull fractures and other head injuries resulting from falls from cribs. Most of the remaining injuries resulted from children getting their limbs caught between crib slats, falling inside the crib and hitting the crib structure, or getting stuck in gaps created by structural failures. These resulted in limb/head/facial injuries. There were a few other very serious injuries, such as brain damage, cardiac arrest, and sepsis, suffered by infants while in the crib; however, there was no indication that these were related to any structural issues of the crib.

### Hazard Pattern Identification

CPSC staff considered all 3,520 incidents to identify hazard patterns associated with full-size crib-related incidents. The issues reported in the incidents can be grouped into four broad categories:

- Product-related (sufficient information was provided to indicate the defects or failure modes in the product)
- Non-product-related
- Recall-related
- Miscellaneous other.

A. *Product-related*: About 82 percent of the 3,520 incidents reported some sort of failure or defect in the product itself. Listed below are the reported failure modes, beginning with the most frequently reported concerns:

- **Falls** from cribs accounted for approximately 23 percent (about 800 reports) of the 3,520 incidents. These accounted for the largest proportion of injuries, including nearly half of all injuries requiring hospitalization. However, there were no fatalities associated with falls. To better understand why and how falls are occurring, EPHA staff launched a special study in January, 2009 to gather information on the type of crib involved, level of drop-side (if applicable) at the time of incident, level of mattress setting at the time of incident, and other such details. Under the purview of this special study, all incoming reports of infants falling or climbing out of cribs - which are received from NEISS emergency departments - are followed up through telephone investigations. Preliminary results from the study were presented at the ASTM-CPSC joint crib meeting in January, 2010. The data collection is expected to be completed at the end of 2010 and the final analysis and results will be available shortly thereafter.
- Crib **drop-side**-related problems, which include drop-side detachment, operation, hardware, and assembly issues, among others, accounted for about 22 percent (approximately 770 reports) of the incidents. About 12 percent of all reported fatalities (and about half of the fatalities attributable to crib failures) was related to drop-side failures. In all of the fatalities, the detachments led to gaps opening which allowed the infant to get entrapped. The injuries were bruises, lacerations, and scrapes from entrapments in or falls through the gap openings.
- Problems with infants getting their **limbs caught between the crib slats** accounted for 12 percent (about 430 reports) of the incidents in the EWS. Although no violation of the 16 CFR 1508 slat spacing requirement was discernable from these reports, this

problem was the second most frequent cause of injuries (which were mostly bruises and some fractures), including the hospitalized injuries. There were no fatalities associated with this problem.

- Various issues related to *wood* were also reported in about 12 percent (approximately 410 reports) of all incidents in the EWS. The problems included fractured slats, slat detachments, and fractured rails, among others. There was one fatality where the infant was entrapped in space created by a broken slat. The injuries ranged from splinters to lacerations from sharp broken wood pieces, bruises from entrapment/fall because of gaps created, and near-choking from chewing on chipped wood.
  - Problems related to *Mattress support* were reported in about five percent (approximately 170 reports) of the incidents. The most prevalent issues were the collapse of the support board and hardware/weld failures. There were three fatalities that resulted from entrapments in gaps created by detached mattress supports. A fourth fatality was indirectly related to the mattress support issue in that the decedent became entrapped between crib and wall while trying to climb out; assembly issues had prevented sufficient lowering of the mattress support. Most of the injuries involved bruises from limb/body entrapments or falls to the floor.
  - About three percent (about 100 reports) of the incidents in the EWS reported *mattress fit* problems which caused partial or full body entrapments in the space between mattress and crib side. These resulted in numerous bruising injuries but no fatalities.
  - About two percent (approximately 90 reports) of the reports were complaints of issues related to *paint*. The vast majority reported concerns for possible choking hazard or lead exposure resulting from children chewing on paint chips that came off easily from the crib surface. Besides five cases reporting a positive lead test result, no incidents of toxic poisonings were reported. Among the five cases that mentioned a positive lead test result, two were associated with cribs that were recalled for the presence of lead paint, two did not specify the lead level that was detected by consumers who were using home test kits, and one reported an increased lead level in the child but there was no indication that it was related to the crib.
  - The remaining three percent (or 120 reports) of incidents reported *miscellaneous other* problems with the crib structure such as non-drop-side or drop gate failures, sharp catch-points, stability and/or other structural issues. Twelve fatalities were reported under this category; five of the 12 were entrapment fatalities, attributed to non-drop-side hardware-related issues and four of the 12 were entrapment fatalities, related to structural issues of cribs in very poor general condition. One additional fatality was the result of a loose screw getting lodged in the decedent's throat. The exact product defect/failure could not be determined for the last two fatalities, both of which were entrapment deaths. There were a few reported injuries, mostly bruises, under this category.
- B. *Non-product-related*: Approximately ten percent (about 340 reports) of the 3,520 incident reports were of deaths, injuries, or non-injury incidents that could not be associated with any product defect or failure. As previously noted, most of the fatalities in full-size cribs (73 percent) were associated with the use of soft/extra bedding in the crib, prone positioning of the infant on the sleep surface, and the presence of hazardous

surroundings in and around the crib. After injuries from falls and limbs caught in crib slats (both of which are considered product-related issues), the third most frequent cause of injury was reported as children falling on the crib structure, while in the crib. No crib defect or design flaw was cited in these reports.

- C. *Recall-related*: About five percent (approximately 180 reports) of the 3,520 reports were related to recalls issued. Most of the reports were complaints or inquiries from consumers regarding a recalled product.
- D. *Miscellaneous other*: The remaining three percent (about 100 reports) of the incidents reported a host of miscellaneous problems including bug infested cribs, odor/fumes emanating from cribs, unexplained fatalities/injuries to infants in cribs, and ambiguous descriptions of problems. There were five fatalities under this category. Some of the reports were simply consumers sharing a concern or an opinion.

A summary of the above discussion on hazard patterns is presented in Table 1.

**Table 1: Distribution of Reported Incidents by Hazard Patterns Associated with Full-Size Cribs**  
Reporting Period: Nov 1, 2007 – April 11, 2010

<i>Issues</i>	<i>Number of Incidents</i>	<i>Percentage</i>
<b>Product-Related</b>	<b>2,900</b>	<b>82</b>
<i>Falls</i>	800	23
<i>Drop-Side-Related</i>	770	22
<i>Limbs Between Slats</i>	430	12
<i>Wood-Related</i>	410	12
<i>Mattress Support-Related</i>	170	5
<i>Mattress Fit-Related</i>	100	3
<i>Paint-Related</i>	90	2
<i>Miscellaneous Other Product-Related</i>	120	3
<b>Non-Product Related</b>	<b>340</b>	<b>10</b>
Recall-Related	180	5
<b>Miscellaneous Other</b>	<b>100</b>	<b>3</b>
Total	3,520	100

Source: U.S. Consumer Product Safety Commission.

Note: Number of incidents has been rounded to the nearest 10 and the percentages have been rounded to the nearest integer. Subtotals do not necessarily add to heading totals.

While there were injury reports and non-injury incident reports under ALL the categories listed in the left-hand column, fatalities were reported ONLY in the categories in bold font.

## II. Incident Data on Non-Full-Size Cribs

Under the definition in 16 CFR 1509, a non-full-size crib provides sleeping accommodations for an infant and has interior width dimension either greater than 30 and 5/8 inches or smaller than 25 and 3/8 inches, has interior length dimension either greater than 55 inches or smaller than 49 and 3/4 inches, or both. Again, as for full-size cribs, any crib with mesh/net/screen siding, non-rigidly constructed cribs, cradles, car beds, baby baskets, and bassinets are specifically excluded under 16 CFR 1509. So, non-full-size cribs include, but are not limited to, portable cribs, specialty cribs, undersized, and oversized cribs.

The CPSC epidemiological databases have a product code, 1529, for coding portable cribs. However, it is by no means a precise tool for identifying all portable cribs. If an incident narrative fails to mention that the crib involved is portable, the product is not coded as such. On the other hand, many times play yards are loosely referred to as portable cribs in incident reports and get coded under 1529. So, the identification of non-full-size cribs for the purpose of this

memo required a concerted effort between EPHA and ES staff. Beginning with all crib data contained in the EWS, all incident reports that were coded under 1529, or mentioned portable/folding cribs, or a daycare/child care/hotel setting were separated and carefully reviewed for identification of non-full-size cribs. In addition, all incidents reporting a manufacturer or model name that is known by CPSC subject matter experts to be associated with non-full-size cribs were also carefully reviewed for verification. Any crib not positively identified as being non-full-size was grouped with full-size cribs.

CPSC staff is aware of 64 incidents related to non-full-size cribs that have been reported between November 1, 2007 and April 11, 2010. Among these incidents, there were six fatalities, 28 injuries, and 30 non-injury incidents. Since reporting is ongoing, the number of reported fatalities, non-fatal injuries, and non-injury incidents presented here may change in the future.

#### **Fatalities, Non-Fatal Injuries, and Non-Injury Incidents**

- *Fatalities*

Of the six fatalities, three were attributed to the presence of a cushion/pillow in the sleep area. One fatality was due to the prone positioning of the infant on the sleep surface. One fatality resulted from the infant getting entrapped in a gap opened up by loose/missing screws. Very little information was available on the circumstances of the last fatality. All six decedents were under 18 months of age.

- *Non-Fatal Injuries*

Among the 28 non-fatal injuries reported, only two required any hospitalization. One infant was hospitalized for an unspecified life threatening event and the other was hospitalized for a head injury; neither injury was due to any structural failure of the crib. Most of the remaining injuries - which included fractures, bruises, and lacerations - resulted from children falling and hitting the crib structure while in the crib, falling or climbing out of the crib, children getting their limbs caught in the crib slats. Most (75 percent) of the injured were 18 months or younger in age.

#### **Hazard Pattern Identification**

CPSC staff considered all 64 incidents to identify hazard patterns associated with non-full-size crib-related incidents. The hazard pattern is somewhat similar to that among full-size cribs.

- Product-related:* Seventy-two percent of the incidents reported product-related issues. Falls from cribs, limbs getting caught between slats, crib drop-side and non-drop-side-related issues such as detachments and operation/hardware issues, and wood-related issues (including three slat detachments) constituted the bulk of the complaints. In addition, there were three complaints of mattress support collapses or other mattress support issues. There was one fatality that was related to non-drop-side hardware.
- Non-product-related:* Nineteen percent of the incidents reported non-product-related issues. These included four of the six fatalities - three on pillows/cushions and one from prone positioning - and eight injuries resulting from the infant hitting and getting hurt on the crib structure while in the crib.
- Recall-related:* Three percent of the reports were related to recalled products.

*D. Miscellaneous other:* The remaining six percent of incidents included reports of miscellaneous other issues such as a bug-infested crib, an ambiguous description of an incident requiring hospitalization of the infant, and a fatality with very little information on the circumstances involved.

## **Summary**

Based on the analysis of the crib data captured in the EWS during the 29-month period between November 1, 2007 and April 11, 2010, the findings may be summarized as follows:

- Most of the fatalities are attributable to non-product-related issues.
- Most of the non-fatal injuries are attributable to product-related issues.
- A small fraction of the non-fatal injuries required hospitalization.
- The hazard patterns identified for the full-size and non-full-size cribs are similar.
- Very few of the incoming incident reports could be definitively identified as non-full-size cribs.

**Health Sciences Staff Response to  
Address:**

- **Hazards associated with extra infant bedding in cribs and**
- **Hazards associated with gaps generated between an ill fitted mattress and crib fit issues**



**UNITED STATES  
CONSUMER PRODUCT SAFETY COMMISSION  
4330 EAST WEST HIGHWAY  
BETHESDA, MD 20814**

**Memorandum**

Date: June 7, 2010

TO : Patricia L. Edwards  
Project Manager, Cribs  
Division of Mechanical Engineering  
Directorate for Engineering Sciences

THROUGH: Mary Ann Danello, Ph.D.  
Associate Executive Director,  
Directorate for Health Sciences

Marilyn L. Wind, Ph.D.  
Deputy Director,  
Directorate for Health Sciences

FROM : Suad Wanna-Nakamura, Ph.D.  
Directorate for Health Sciences

SUBJECT : Health Sciences Staff Response to Address:  
1. Hazards associated with extra infant bedding in cribs and  
2. Hazards associated with gaps between an ill fitted mattress and crib.

**I. Introduction**

Section 104 of the Consumer Product Safety Improvement Act (CPSIA, August 14, 2008)<sup>1</sup> requires U.S. Consumer Product Safety Commission (CPSC) to assess the effectiveness of voluntary consumer product safety standards for durable infant and toddler products; these include, among others, full-size and non-full size cribs. Staff was tasked to assess the effectiveness of the relevant voluntary safety standards and promulgate mandatory standards for these products.

This memorandum describes two of the hazard scenarios associated with cribs and provides the staff rationale for not addressing these issues with performance requirements in the proposed rule. The hazards scenarios are: 1. Extra bedding in cribs and 2. Entrapments in gaps generated between mattress and crib components due to poor mattress fit.

## **II. Extra infant bedding in cribs**

According to CPSC data, extra bedding, such as pillows and comforters, account for the majority of infant deaths in cribs and other sleep products. In the vast majority of cases, the infants were placed to sleep on their stomachs, directly on top of a pillow or a folded quilt<sup>2,3</sup>. Most likely, caregivers placed these products under the baby to make the bedding surface softer and more comfortable for the baby. This type of hazard is associated with the behavior of the caregiver and not due to any design feature of the crib itself, thus there are no performance requirements that can adequately address this hazard. At the present time, standards for both full-size cribs and non-full-size cribs already contain labeling requirements to warn against the hazard of extra bedding in an infant sleep environment<sup>4</sup>. Therefore, staff is not recommending any changes to the voluntary standard in an attempt to further address the hazards associated with extra soft bedding. Staff believes that providing caregivers with education and information is the appropriate way to address the issue of extra bedding and unsafe sleep practices.

## **II. Mattress fit**

According to a CPSC data review conducted by the Directorate for Epidemiology relating to poor mattress fit, there are no known fatal incidents or serious injuries associated with this hazard scenario. Full-size crib dimensions are strictly regulated and staff is not aware of any reported mattress fit-related incidents involving a non-compliant crib. There are no dimensional standards for crib mattresses. There is only a mention in the warning label dictated by 16 CFR 1508.9<sup>5</sup> that states “Any mattress used in this crib must be at least 69 centimeters (27 1/4 inches) by 131 centimeters (51 5/8 inches)”. This warning is directed at the crib owner to help them select a proper mattress, but is not meant to regulate the mattress itself.

To determine the severity of injury and the prevalence of gaps created in cribs with poor fitting mattresses, CPSC staff assigned 52 of the incidents reported to CPSC between November 2007 and April 2010 for a follow-up investigation, of which, only 44 investigations were completed. Of the 44 completed incidents, the majority involved limb entrapments, with no serious injuries. (In two incidents the infants suffered soft tissue bruises, but no medical attention was needed.) Of the 44 incidents, staff was able to collect dimensional information on mattress fit and gap size for only 28 products, because in many incidents the consumer returned the mattress to the store. From the limited information collected by field investigators, the maximum gap size between the mattress and the crib, as measured diagonally at the corners of the cribs, ranged from 2.5 cm (1.0 inches) to 8.1 cm (3.2 inches.)

Although there has been no report of serious injury, Health Sciences staff believes this is an important issue to address and that the most effective way to deal with the issue of mattress fit hazards is by standardizing crib mattresses intended for use with full-size cribs, because the voluntary standard for non-full-size cribs requires that the mattress be sold with the crib. Requirements for crib mattresses, including dimensions and tolerances will be addressed in a separate standard specifically for full-size crib mattresses that is

currently under development at ASTM. Staff believes there can be a mattress fit problem with non-full-size cribs if a substitute mattress is used on top of, or in place of, the original mattress provided by the manufacturer. Staff believes this issue might best be addressed by warning labels and continued educational/information for caregivers on safe settings for infants.

### III. Conclusion

Health Sciences staff believes that the issues of extra bedding in cribs and gaps created between an ill-fitting mattress and the sides of a crib should be addressed. Staff has not made any proposals to the two ASTM standards for cribs beyond the warning labels that are already required in the standard, because caregivers' use of extra bedding is not readily addressed by crib design restrictions or performance tests. As for mattress fit issues, staff believes that the most effective way to address mattress fit hazards is by standardizing crib mattresses. CPSC staff is currently working with ASTM members on the development of standards to address the issue of mattress size and fit.

#### References and electronic links:

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3. Chowdhury, R. 2009. Nursery product-related injuries and deaths among children under age five. <http://www.cpsc.gov/LIBRARY/nursery08.pdf>
4. ASTM F 1169 and F 966, ASTM International (formerly known as the American Society for Testing and Materials) <http://www.astm.org>.
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**TAB C**

**Human Factors Analysis of Children  
Climbing Out of Cribs and Getting Limbs  
Caught Between Slats**



UNITED STATES  
CONSUMER PRODUCT SAFETY COMMISSION  
4330 EAST WEST HIGHWAY  
BETHESDA, MD 20814

## Memorandum

Date: June 3, 2010

TO : Patricia L. Edwards  
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Directorate for Engineering Sciences

THROUGH: Erlinda Edwards  
Acting Associate Executive Director  
Directorate for Engineering Sciences

Robert B. Ochsman, Ph.D.  
Director  
Division of Human Factors  
Directorate for Engineering Sciences

FROM : Jonathan Midgett, Ph.D.  
Children's Hazards Team Coordinator  
Office of Hazard Identification and Reduction

SUBJECT : Human Factors Analysis of Children Climbing Out of Cribs and Getting Limbs Caught Between Slats

### I. Introduction

On August 14, 2008, the Consumer Product Safety Improvement Act (hereafter referred to as the "CPSIA") was signed into law [Public Law 110-314]. Section 104 of the Act requires the U.S. Consumer Product Safety Commission (CPSC, or Commission) to develop safety standards for certain infant and toddler products, including full-size and non-full-size cribs and many other children's products. The Commission must assess the effectiveness of the relevant voluntary safety standards and promulgate mandatory standards for these products.

This memorandum describes two hazard scenarios associated with full-size and non-full-size cribs that staff has not addressed with performance requirements in the proposed rule: children climbing and falling out of cribs and children getting limbs caught between the crib slats.

## II. Climbing Out of Cribs

Between November 1, 2007 and April 11, 2010, the largest proportion of injuries associated with full-size cribs and cribs with undetermined size was caused by *falls* (Chowdhury, 2010). There were no fatalities, but falls account for nearly 23 percent (about 800 reports) of the incidents, including almost half of the hospitalizations. Falls are also a major cause of injury in non-full-size cribs. Videos of children climbing out of cribs are readily available on the internet.

Children climb out of cribs in many ways:

- Caregivers may allow children to sleep in cribs after they have the ability to climb out.
- Caregivers may allow children to use the crib as a daybed with the side in the lowered position to facilitate children climbing into and out of their crib.
- Caregivers may forget or choose not to lower the mattress after a child has gained more mobility. Crib warnings already instruct caregivers to lower the mattress support after a child can pull up to a standing position (typically around 8 months).
- Children can step on items in the crib to get one leg over the top rail. Crib warnings already instruct caregivers to remove items that children could use for this purpose.
- Toeholds are prohibited in the crib's occupant area, but children's bare feet are often moist enough to give them enough traction when they push against the crib slats or end panels to hoist themselves up high enough to get a leg over the side.
- Other children jump into a position, such as at a corner, which allows them to pull themselves over the crib rail. Once children have a foot on the top rail, they can hoist themselves out of the crib.

## III. Design Trade-offs

While some crib escapes may be performed without injury, the likelihood of falling is high and the likelihood of being injured from the fall is also high. A designer of a crib faces limited options for preventing children from climbing out. The crib is basically a lidless box. Cribs that prevent climbing out would require either higher sides or lids to be effective. Both designs would introduce other problems that are potentially of more concern than the climbing out problem. For instance, making the sides higher increases the difficulty caregivers have placing their children, especially the youngest ones, into the crib or lifting them out. This could increase the use of alternative sleeping arrangements, such as allowing children to sleep in adult beds, which have serious hazards associated with them. Introducing a lid or some other kind of cover to a crib creates more movable parts with more possibilities for mechanical failures that could lead to entrapment, entanglement or strangulation. Some cribs in the past (before air conditioning) were designed with lids to keep snakes from getting into the crib while the crib was outside, but this essentially turns a crib into a cage.



“BetterBaby” Snake-proof Crib, Early 1900s, Caldwell Manufacturing Co., Columbus, Ohio  
(photo credit, Phillip Torrone, 2008)

While some currently-available cribs designed for professional childcare situations have a cage-like design (for instance, “stackable cribs”), this option is not a socially acceptable solution for most caregivers.

Staff has been unable to identify a performance criterion for inclusion in the crib standard that would effectively reduce incidents of children climbing out of cribs without simultaneously introducing other potential hazards. Staff supports the recent change to the ASTM full-size crib standard that moved the relevant warning about when to stop using a crib into a higher position in the list of warnings. Staff cannot attribute any percentage of effectiveness to this change, but acknowledges that it may increase the prominence of that item in the warning list. The non-full-size crib standard warnings were already placed in an optimal order in the warning lists required for that product.

#### **IV. Limbs Caught Between Crib Slats**

Between November 1, 2007 and April 11, 2010, CPSC staff is aware of over 430 reports of children getting their limbs caught between the slats of their crib (Chowdhury, 2010). This is the second most frequent cause of injuries, about 12 percent of full-size and undetermined-size crib-related incidents during this timeframe. No fatalities have been associated with limb entrapment, but some fractures and bruising were reported.

Crib designs with slats in the sides are popular and useful. The slats contain children while still allowing clear visibility and air flow without providing openings in the crib that would also provide horizontal surfaces (toeholds) that facilitate climbing out. Some cribs have sides made of clear glass or plastic which also allow two-way viewing without creating toeholds. However, such cribs bear the increased cost of the transparent materials, and they do not have the same air flow characteristics provided by slats. In hot weather, slats are preferable.

The spaces between crib slats were purposefully narrowed to their current 2 3/8 inches maximum width in the 1970's, after careful consideration of fatal head/neck entrapment and strangulation incidents in which infants slipped feet-first between the slats. This spacing requirement has proven to be extremely effective in preventing these types of fatal incidents; thus, staff does not recommend allowing slat spacing to be any wider. Conversely, narrowing the spaces between the slats would still allow entrapment of limbs of smaller infants or entrapment of smaller body parts of larger infants, such as their wrists, hands, feet, fingers or toes. Although staff acknowledges the seriousness and the high frequency of limb entrapments in crib slats, the types of injuries associated with this hazard scenario cannot be adequately addressed by altering the current spacing requirements for slats.

## **V. Conclusion**

Staff has not made any proposals to address climbing out or limbs getting caught between the slats because these issues are not readily addressed with design restrictions or performance tests.

## **References**

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Torrone, P. (2008). Photo of Caldwell Snake-proof Crib posted by Phillip Torrone at Make Blog [http://blog.makezine.com/archive/2008/10/betterbaby\\_snake\\_proof\\_ba.html?CMP=OTC-0D6B48984890](http://blog.makezine.com/archive/2008/10/betterbaby_snake_proof_ba.html?CMP=OTC-0D6B48984890) accessed May 18, 2010.

**TAB D**

**Proposed Changes to ASTM F 1169-10,  
*Standard Consumer Safety Specification for  
Full-Size Baby Cribs*, for Incorporation in  
Staff's Draft Proposed Rule**



UNITED STATES  
CONSUMER PRODUCT SAFETY COMMISSION  
BETHESDA, MD 20814

**Memorandum**

Date: June 07, 2010

TO: Patricia L. Edwards  
Project Manager, Cribs  
Division of Mechanical Engineering  
Directorate for Engineering Sciences

THROUGH: Erlinda Edwards  
Acting Associate Executive Director  
Directorate for Engineering Sciences

Mark Kumagai  
Division Director  
Division of Mechanical Engineering  
Directorate for Engineering Sciences

FROM: Jacob J. Miller  
Division of Mechanical Engineering  
Directorate for Engineering Sciences

SUBJECT: Proposed Changes to ASTM F 1169-10, *Standard Consumer Safety Specification for Full-Size Baby Cribs*, for Incorporation in Staff's Draft Proposed Rule

**I BACKGROUND/OVERVIEW**

Section 104 of the Consumer Product Safety Improvement Act (CPSIA), *Standards and Consumer Registration of Durable Nursery Products*, requires the U.S. Consumer Product Safety Commission (CPSC) to assess the effectiveness of voluntary consumer product safety standards for durable infant and toddler products and to promulgate mandatory safety standards. Section 104 (b)(1)(B) states that "The Commission shall...promulgate consumer product safety standards that -- (i) are substantially the same as voluntary standards; or (ii) are more stringent than such voluntary standards if the Commission determines that more stringent standards would further reduce the risk of injury associated with such products."

In 1973, CPSC published mandatory standards for full-size cribs, 16 CFR part 1508. These standards include requirements, which address side height, slat spacing, mattress fit, hardware use, construction and finishing, assembly instructions, warning statements, and recordkeeping. In 1982, these standards were amended to include requirements that prohibit hazardous cutouts in crib end panels.

ASTM International (ASTM), working with industry and CPSC staff, published the first voluntary standard for full-size cribs, ASTM F 1169 *Standard Specification for Full-Size Baby*

*Crib*, in 1988, to address an increasing trend of mechanical failures of structural components. Performance requirements included static and cyclic requirements to test the integrity of the crib's mattress support and side rail. In addition, test requirements were added to verify proper engagement and security attachment of the side latches and plastic teething rail.

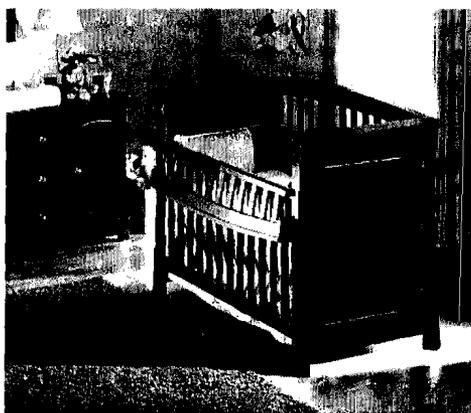
On December 16, 1996, the Commission published an Advance Notice of Proposed Rulemaking (ANPR) pertaining to crib slat disengagement. The basis for the ANPR was the incident data for the 11-year period from January 1985 to September 1996. During this time, there were a total of 138 incidents, including 12 deaths due to entrapments associated with disengagement of slats in crib side panels. When slats disengage from a crib side panel, a gap is left between the remaining slats. A child may be able to get his or her body through the space but not his or her head, resulting in entrapment and potentially severe injury or death. For the 12 fatalities, the children generally had gotten their necks trapped in the space left by missing slats.

Prior to the publication of the ANPR, the Directorate for Laboratory Sciences, Division of Engineering (LSEL), conducted a test program of over 25 different model cribs to evaluate the hazard. Based on the results of the testing, recommendations were made to ASTM to update the voluntary standard, F 1169-88, to include slat testing. In July 1999, an updated ASTM F 1169-99 was published and included requirements for the testing of crib side spindles/slats. Specifically, the modification added a torque test for side spindles and an increased applied weight and number of cycles for cyclic testing.

After 1999, the next two revisions, ASTM F 1169-03 and ASTM F 1169-07, included only minor edits. In November 2008, the Commission published an ANPR related to crib hardware to address the growing trend of drop-side hardware failures.

ASTM F 1169-09 was published in December 2009. This revision required any sides with movable components to be rigidly attached to the crib ends and contain no movable sections less than 20 inches above the top of the mattress support in its lowest position. This resulted in eliminating the traditional full drop-side feature, while still allowing other means of occupant access such as the folding gate (see Figure 1).

Figure 1: Full-Size Crib with Folding Gate



CPSC staff believes that requiring the crib to have fixed parts will result in a structurally robust, stiffer structure. ASTM F 1169-09 also included a new slat strength requirement to address incidents of broken slats.

Lastly, in June 2010, ASTM approved ASTM F 1169-10, *Standard Consumer Safety Specification for Full-Size Baby Cribs* and added various provisions, including two Canadian performance tests adopted to address side rails disengagement, hardware loosening, and poor mattress support integrity. In addition, a more stringent slat strength test was developed to reduce the number of broken slats and slat end disengagements. This memorandum assesses the effectiveness of ASTM F 1169-10 and recommends one change to that standard for inclusion in the staff's draft proposed rule on full-size cribs.

## **II INCIDENT DATA/HAZARD PATTERNS**

According to CPSC's Directorate for Epidemiology, there were a total of 147 fatalities associated with full-size and undetermined-size cribs between November 1, 2007 and April 11, 2010<sup>19</sup> that were reported to CPSC. The majority of the deaths (73 percent) were unrelated to the crib structure and included suffocation from soft bedding, asphyxiation due to a prone sleeping position, and strangulation from cords and bags left in or near the crib.

Thirty-five fatalities (24 percent) were attributed to structural problems of the crib. Thirty-four of the 35 fatalities were due to head and neck or body entrapments. Almost all of the crib failures - detachments, disengagements, and breakages - created openings in which the infant became entrapped. One death resulted from a child getting trapped between a wall and a crib while trying to climb out of the crib. The non-entrapment death resulted from a loose screw getting lodged in the decedent's throat.

In total, there were 3,520 incidents associated with full-size and undetermined-size cribs between November 1, 2007 and April 11, 2010. The incidents were grouped into four broad categories: product-related, non-product-related, recall-related, and miscellaneous. Since the purpose of this memo is to assess the adequacy of the performance requirements of ASTM F 1169-10, only the product-related incidents or incidents caused by the design or construction of the crib are reviewed in detail.

Over 82 percent of the product-related incidents reported some sort of design issue or failure in the product itself. The hazard patterns and failure modes were identified as:

**Falls** - The most common reported incident resulted in the occupant falling out of the crib. Falls from cribs accounted for nearly 23 percent (about 800 reports) of the incidents. There were no fatalities associated with falls; however, falls accounted for the largest proportion of injuries, including nearly half of all injuries requiring hospitalization. In its memorandum<sup>20</sup>, CPSC

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<sup>19</sup> Memorandum from Risana Chowdhury to Patty Edwards, "Full-Size and Non-Full-Size Crib-Related Deaths, Injuries, and Potential Injuries; November 2007 to Present", June 3, 2010.

<sup>20</sup> Memorandum from Jonathan Midgett to Patty Edwards, "Human Factors Analysis of Children Climbing Out of Cribs and Getting Limbs Caught Between Slats", June 3, 2010.

Human Factors staff addresses the high number of injuries associated with falls by placing greater emphasis on the age to stop using a crib.

**Drop-side related problems** - The second most common reported hazard pattern was drop-side related problems, which accounted for nearly 22 percent (over 770 reports) of the incidents. These include drop-side detachment, hardware, and assembly issues. Over half (18 out of 35) of fatalities attributable to structural failures were related to drop-side failures. In all of the fatalities, detachment led to the opening of gaps, which allowed infants to get entrapped. The injuries included bruises, lacerations, and scrapes from entrapments in or falls through the gap openings.

**Limbs caught between slats** - Infants getting their limbs caught between slats was the third most common reported problem, accounting for 12 percent (over 430 reports) of the incidents. Although no violations of the 16 CFR 1508 slat spacing requirements were discernable from the incident reports, this problem was reportedly the second most frequent cause of injuries (which were mostly bruises and some fractures), including hospitalized injuries. There were no fatalities associated with this problem.

**Wood** - Various wood strength issues were also reported in nearly 12 percent (nearly 410 reports) of all incidents. The problems included fractured slats, slat detachments, and fractured rails, among others. There was one fatality where the infant was entrapped in space created by a broken slat. The injuries ranged from splinters to lacerations from sharp broken wood pieces, bruises from entrapments/falls because of gaps created, and near-choking from chewing on chipped wood.

**Mattress Support** - Another hazard pattern dealing with mattress support-related problems, accounted for five percent (nearly 170 reports) of the incidents. The most prevalent issues were the collapse of the support board, loose hardware, and mattress platform weld failures. There were three fatalities that resulted from entrapments in gaps created by detached mattress supports. A fourth fatality was indirectly related to a mattress support in that the decedent became entrapped between a crib and a wall while trying to climb out. Most of the injuries involved bruises from limb/body entrapments or falls to the floor.

**Miscellaneous and General Structural Integrity** - Approximately three percent (120 reports) of incidents reported miscellaneous other problems associated with the crib structure, such as non-drop-side or drop gate failures, sharp catch points, stability, and/or other structural issues. Twelve fatalities were reported under this category. Five of the 12 were entrapment fatalities attributed to non-drop-side hardware-related issues, and four of the 12 were entrapment fatalities related to structural issues of cribs in very poor general condition. One additional was the result of a loose screw that became lodged in the decedent's throat. The exact product defect/failure could not be determined for the last two fatalities, both of which were entrapment deaths. There were a few reported injuries, mostly bruises, under this category.

**Mattress Fit** - Three percent (over 100 reports) of the incidents involved mattress fit problems that caused partial or full body entrapment in the space between the mattress and crib side. These resulted in numerous bruising injuries but no fatalities.

In summary, although falls and limb entrapments accounted for a significant number of all structural-related incidents, no deaths were reported attributed to these two categories. In descending order, the number of deaths associated with structural-related incidents was as follows: drop-sides (18), non-drop-side hardware (6), general structural integrity (4), mattress support (3), wood issues (1), and undetermined product-related issues (2).

### III ADEQUACY OF THE CURRENT VOLUNTARY STANDARD, ASTM F 1169-10

The 2009 and 2010 revisions of ASTM F 1169 added performance requirements to address each of the following hazard types reported:

1. **Drop-side** - entrapment and fall hazards
2. **Non-drop-side hardware** – entrapment hazard
3. **General structural integrity** - entrapment and fall hazards
4. **Wood issues** - entrapment and fall hazards due to slats breaking
5. **Mattress support systems** - entrapment hazard between the mattress support and crib structure due to hardware failure

Table 1 displays an overview of the hazard types (across the top) and the performance requirements aimed at eliminating each hazard (down the left column).

**Table 1: New Performance Requirements Matched to Address Reported Hazards**

	Drop sides	Non-drop side hardware	General Structural Integrity	Wood Issues	Mattress Support
Moveable Side Requirement	✘				
Wood Screw Use		✘	✘		
Shake Test		✘	✘		
Vertical Mattress Impact Test		✘	✘	✘	✘
Crib Side Test		✘	✘	✘	
Slat/Spindle Strength Test			✘	✘	

#### Moveable Side (Drop-Side) Requirements

Eighteen of the 35 fatalities attributable to structural failures were related to drop-side failures. All of the fatalities involved entrapments of infants when gaps were created by one or more corners of a drop-side crib dislocated or disengaged from one end of the crib. The most dangerous gap formed when a lower corner of a drop-side detached creating an upside down “V”, entrapping the infant between the dislocated corner and the mattress and mattress support.

ASTM F 1169-09 (published Dec. 2009) included a new section to address drop-side failures. This section required that the four lower corners of a crib be fixed in place to provide more stability than a traditional drop-side crib. Many companies are expected to meet this requirement by eliminating the traditional drop-side feature and fixing all four sides of their cribs. Companies that make a drop gate feature (Figure 1) may meet the new requirement without modifying their design. This requirement is also included in F 1169-10.

### Structural Integrity Requirements

Twelve of the 35 fatalities were attributed to non-drop-side hardware and poor structural integrity. Screws or inserts, which loosened over time and completely dislocated, caused the majority of the incidents. This resulted in primary crib elements, such as crib side rails and ends, separating and creating an entrapment hazard.

Screws and inserts loosen over time if external forces and loads applied to the crib structure exceed the “preload” of the fastened joint. Preload is the amount of tensile force applied to a fastened joint when a fastener compresses two or more elements together. Torque is a measure of the amount of rotational stress applied to the head of the fastener and is an indicator of the amount of preload applied to a fastening system such as a machine screw and barrel nut commonly used to attach crib side rails and ends together. If the correct amount of torque is not applied, a crib component can and will loosen over the life of the product.

To address the incidents associated with hardware and structural integrity, screw fastener, locking component, and cycle testing requirements were added to the 2010 voluntary standard.

### Screw Fastener and Locking Feature Requirements

Wood screw use requirements from 16 CFR 1508 were added to address the incidents related to loose hardware and poor structural integrity. In addition there were several new requirements added to F 1169-10 related to fasteners. These state:

- 1) Wood screws are only permitted to be used as the primary fasteners of structural elements if a locking feature or means to impede loosening is included.
- 2) Consumer assembly of wood screws used in structural elements is no longer allowed.
- 3) Metal inserts with external wood screw threads for screwing into a wood component and providing internal machine threads to accommodate a machine screw shall be glued or include other means to impede loosening.
- 4) Metal threaded fasteners, such as sheet metal screws and machine screws, secured into metal components and used to attach key structural elements shall have a lock washer, self-locking nuts, or other means to impede loosening.

Without a means of impeding loosening, wood screws are allowed to be used as the primary fasteners for non-primary structural elements only. Non-primary structural elements include crib

components such as decorative railing above the occupant use area. In total, these four new requirements are intended to minimize the likelihood of a screw to loosen or detach when installed either by the manufacturer or the consumer to attach a primary structural element.

#### Alternating Horizontal and Vertical Cyclic Load Test (Canadian Crib Cycle Shake Test)

Developed and used by Health Canada<sup>21</sup>, the crib cycle shake test applies a cyclic force at the midpoint of each top rail, end, and side. The test includes 9,000 vertical and then 9,000 horizontal load cycles, for a total of 72,000 cycles. Each set of 9,000 cycles must be completed in one hour (2.5 Hz). The load applied is  $\pm 27.0$  lbf ( $\pm 120$  N). This rate and magnitude are based on biometric data measured directly by Health Canada researchers on cribs being shaken by young children. The number of cycles was determined by multiplying the expected number of daily shakes times nine months, which is the expected age at which a child would be able to stand. (Once a child is able to stand, manufacturers recommend that the child be removed from the crib.) This test, therefore, simulates a one-child lifetime use of shaking imparted by a 95-percentile user. After the test is completed, a crib may not experience a structural failure nor may fasteners loosen that allow key structural elements to separate by more than 0.04 inches (1.0 mm).

The cyclic side shake test is intended to reduce the number of incidents related to loosened joints, detached sides, and overall poor structural integrity. The cyclic side shake test, along with the mattress support vertical impact test, crib side impact test, and slat/spindle strength test simulate lifetime use by one child.

#### Mattress Support Vertical Impact Test

There were three deaths due to entrapments between a mattress support and a crib structure, and there were 168 reported incidents related to mattress support structural failures. Multiple incidents included details of a child jumping intermittently during the use period of the crib. For example, one investigation revealed that a 13 month old loosened the support hardware of a crib after repeatedly jumping on the mattress and in another incident, the wire grid structure used on a mattress support failed. When a child jumps on a crib, the energy created by the child's mass is absorbed by the mattress and transferred to the support structure and fasteners. Over time, this energy can cause fatigue failures of mattress support brackets, loosen support hardware, and even fracture the mattress support.

The mattress support incidents can be broken down into three categories:

1. hardware loosening
2. bracket failure
3. support structure failure

The mattress support impact test in ASTM F 1169 had not been revised since 1988. Therefore, to better address these hazards, ASTM adopted the mattress impact cyclic test developed by

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<sup>21</sup> Health Canada SOR/86-962 *Cribs and Cradles Regulations*, Schedule III - Parts 3 & 4, December 2, 2009.

Health Canada,<sup>22</sup> which is based on biometric data obtained from young children jumping on an instrumented crib mattress support system. The Canadian test consists of dropping a 45 lb mass (20 kg) repeatedly every four seconds onto a polyurethane foam test mattress covered in vinyl and supported by the mattress support system. This performance requirement is included in the ASTM F 1169-10 standard.

### Crib Side Impact Test

As mentioned previously, the Commission published an ANPR in December 1996 pertaining to crib slat disengagement. The basis for the ANPR was the incident data for the 11-year period January 1985 to September 1996. CPSC staff is aware of 138 incidents, including 12 deaths due to entrapment, during this period. In July 1999, ASTM F 1169 was updated to include new requirements for impact testing of crib sides to address slat disengagements.

In 2010, another provision was added to ASTM F 1169, which required testing of all sides with slats. Previously the number of sides tested was not specified. This provision will make the test more robust and should reduce the number of fatalities and injuries associated with entrapment from disengaged slats.

### Slat/Spindle Strength Test

ESME staff determined one death and 219 non-fatal incidents were related to slat (including rail) fractures. Incidents include fractures at a slat midpoint, slat end (tenon and mortise), slat tenon including separation, and rail mortise. The significance of a broken or dislocated slat is that it can cause a hazardous gap of approximately five inches. Thus, due to the high number of slat breakage incidents that are potential entrapment hazards, a slat strength test requirement of 56.2 lb was added to the voluntary standard in 2009. Based on rationale from testing slats to failure on incident and non-incident cribs and toddler beds<sup>23</sup>, ESME staff recommended that the slat/spindle strength test should be made more stringent than the 2009 ASTM standard. As a result of staff's recommendation, ASTM F 1169-10 requires a set number of slats to withstand an 80 lb load. CPSC staff believes this performance requirement is adequate to reduce the number of incidents involving broken and dislocated slats.

The Spindle/Slat Strength Test in the 2010 voluntary standard will adequately test both the integrity of the slat joint and the slat material. This performance requirement is adequate to reduce the number of incidents involving broken and dislocated slats.

### Other – Test Order

ASTM F 1169-10 specifies the order in which all performance testing requirements must be conducted. The testing order is as follows:

1. Teething rail test

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<sup>22</sup> Health Canada SOR/86-962 *Cribs and Cradles Regulations*, Schedule III - Parts 1 & 2, December 2, 2009

<sup>23</sup> Memorandum from Jacob J. Miller to Celestine T. Kiss, "Proposed Changes to ASTM F 1821-09, Standard Consumer Safety Specification for Toddler Beds, for Incorporation in Staff's Draft Proposed Rule", February 23, 2010.

2. Cyclic side shake test
3. Crib side latch test
4. Mattress support system vertical impact test
5. Mattress support system static test
6. Crib side impact test
7. Slat/spindle strength test

The rationale for this specific order is based on performing the least stringent test first followed either by a more stringent test or a logical sequence in testing. For example, the teething rail test precedes all testing, as it does not relate to the structural integrity of the product. The cyclic side shake test is performed next as the 72,000 cycles subjects the entire product to the simulated stresses that a crib would undergo during a lifetime of shaking by a user. Crib side latch testing immediately follows the shake test, as this is the assembly that would most likely be affected by cyclic stresses. This is then followed by the mattress support vertical impact testing and the mattresses support static testing, which is the assembly most likely to be affected by the vertical impact stresses. Next is the crib side impact test, which subjects the side rails to repeated impacts. The slat/spindle strength test is last as these structural elements are the most likely to be affected by the sum of all the preceding cyclic and impact tests. In addition, the teething rail test and slat/spindle strength test - first and last, respectively, in the test order - are performed on the specified crib component and not on an assembled crib. Therefore, it is logical and practical to begin with a disassembled crib, perform the teething rail test, then assemble the crib, complete all tests in order, and finish with slat/spindle strength testing of disassembled side rails.

CPSC staff feels the combination of the cyclic side shake test (simulating a child standing and shaking the top of a side rail), mattress support system vertical impact test (child jumping), side impact test (child climbing outside of rail), and the slat/spindle strength tests (child and/or sibling falling against or kicking slats) together comprise a laboratory simulation of a lifetime of use. Each test imparts a specific aspect of one life cycle. CPSC staff believes that the new requirements in ASTM F 1169-10 are a significant improvement to the previous standards and should result in more robust cribs.

#### **IV OTHER STANDARDS**

CPSC staff compared the performance requirements of ASTM F 1169-10 to the performance requirements of other standards for full size cribs. Table 2 of the Appendix depicts a summary of this review.

The Health Canada (HC) and European (EN) standards, SOR/86-962 and EN 716, respectively, have been very influential in developing ASTM F 1169-10. Several of the new performance requirements in F 1169-10, including the cyclic side shake test, mattress support system vertical impact test and slat/spindle strength test were adapted for inclusion in F 1169-10. The ASTM subcommittee added the HC cyclic side shake test with no additional changes. The mattress support system vertical impact test was modified slightly from the requirements in SOR/86-962. The ASTM subcommittee and CPSC staff feel the F 1169-10 performance requirement is equivalent in stringency.

The slat/spindle strength test requirements of F 1169-10 are an evolution of the EN 716 requirements. Stakeholders and CPSC staff felt a significantly more stringent test requirement should be included in F 1169-10. The F 1169-10 slat/spindle strength test is by far a much more stringent test than the EN standard or any other standard including a slat/spindle strength test requirement for full-size cribs.

Other differences still remain between what CPSC staff is recommending for a proposed rule and these other crib standards. These have been reviewed and evaluated and staff believes that the requirements already found in ASTM F 406-10 plus the staff recommended changes are either the most stringent requirements among all the standards or are considered adequate to address the incidents seen in the data.

## **V STAFF RECOMMENDED CHANGE TO THE VOLUNTARY STANDARD**

Directorate for Engineering Sciences, Division of Mechanical Engineering (ESME) staff recommends one change to the 2010 version of the ASTM full-size crib standard for inclusion in the staff's draft proposed rule relating to:

- Retightening of Screws Between Tests

ASTM F 1169-10 includes an allowance to retighten screws between the crib side latch and mattress support vertical impact tests. Industry representatives have raised concerns that this allowance is needed. Their argument is that the cyclic side shake test will loosen fasteners, which may cause a crib to fail some performance requirements in subsequent tests. ASTM F 1169-10 defines failure as key components separating by 0.04 inch (1.0 mm), typically 1 – 1½ turns of a fastener.

CPSC staff believes the combination of the tests together comprise a laboratory simulation of a lifetime of use. Each test imparts a specific aspect of one life cycle. It is only as a combined whole, functioning together, that they accomplish their task. Retightening fasteners would sever the chain of accumulated conditioning effects and, therefore, staff believes the tests should be performed without retightening fasteners.

CPSC staff does not believe that performing the sequence of tests without retightening fasteners is an overly restrictive test for the following reasons:

- Health Canada laboratory staff tested 26 cribs, with five cribs noted as having deficiencies. Three had loosening of fasteners (between 1/6<sup>th</sup> and 1/8<sup>th</sup> of a turn). One had a wood screw completely detach and fall into the interior of the crib, and one had a drop-side that was difficult to operate upon completion of shaking. Based on Health Canada's results, the cyclic side shake test alone will only fail cribs of very poor structural construction. Only one of the 26 cribs tested experienced screw rotation greater than 1 turn, or approximately 1 mm component separation.

- CPSC staff conducted tests to verify the effects of subsequent tests on fasteners loosened during the cyclic side shake test. ESME and LSM (Laboratory Sciences, Division of Mechanical Engineering) staff intentionally backed out fasteners  $\frac{1}{4}$  and  $\frac{1}{2}$  turn, chosen at random on three full-size and two non-full-size cribs, prior to mattress support and side impact testing. When loosened  $\frac{1}{4}$  turn, partial fastening torque was retained. When loosened  $\frac{1}{2}$  turn, the fastening torque was almost removed. In other words, fasteners could be turned by hand. After the mattress support vertical impact test, none of the fasteners backed out further.

After completion of the mattress support vertical impact test, the side impact test was performed with the fasteners in their same  $\frac{1}{4}$  and  $\frac{1}{2}$  backed-out conditions. Staff observed that fasteners intentionally backed out  $\frac{1}{4}$  turn did not loosen further. Fasteners intentionally backed out  $\frac{1}{2}$  turn loosened further due to the vibration imparted by the sharp blows from the impactor. Specifically, rotation of the bottom screw parallel to the longitudinal axis of the lower rail led to complete loosening and an almost dislocation of the fastener.

In summary, the side rail impact test severely affected fasteners that lost their seated preload, approximately  $\frac{1}{2}$  turn and greater. Fasteners that were loosened less than  $\frac{1}{2}$  turn maintained sufficient preload to withstand the side impact test vibrations applied to the lower rail. If the fasteners that loosened after the crib side impact test had been retightened beforehand, a potentially dangerous condition such as a hazardous gap created by loosened hardware would have gone unnoticed.

It is important to note that ASTM F 1196-10 includes a new wood screw use requirement, which requires that crib hardware include a locking device or method for impeding loosening. This requirement should reduce the need for the retightening allowance. CPSC staff believes if thread lock or lock washers had been used on the hardware of the cribs tested by staff, the fasteners would have been significantly restricted from loosening.

According to ESME staff determination; there have been at least 10 fatalities where loose screws have contributed to the death of a child. After drop-sides, non-drop-side hardware is associated with the second highest number of fatalities. CPSC staff believes that it is paramount that fasteners remain secure during the useful life of the crib. Therefore, staff's draft proposed rule includes a modification to ASTM F 1196-10 that does not allow for retightening of fasteners during testing.

## **VI CONCLUSIONS**

CPSC staff acknowledges that ASTM F 1169-10, *Standard Consumer Safety Specification for Full-Size Baby Crib*, is the result of many years of development between staff, industry, consumer groups, and other interested stakeholders. CPSC staff also believes ASTM F 1169-10 is adequate to address hazards associated with crib side disengagement, broken and dislocated slats, mattress support failures, and other general structural integrity issues. However, staff believes that modifying the standard by removing the allowance to retighten screws between

tests would improve the structural integrity of cribs and create a more robust performance standard that should result in reduced fatalities and injuries. Therefore, the staff recommends the proposed rule includes a modification to remove the allowance to retighten screws between tests.

**APPENDIX – Table 2: Summary of Other Crib Standards and the ASTM Crib Standards**

Test	ASTM F 406-10	ASTM F 1169-10	Health Canada SOR/86-962	EN 716-1 & 2, 1130-1 & 2, and ISO 7175-1 & 2	AS/NZS 2172	UL 2275
<b>Teething Rail</b>	Feeler gage with 50 lbf force	Feeler gage with 50 lbf force	(Test not in standard.)	(Test not in standard.)	(Test not in standard.)	Refers to ASTM
<b>Cyclic Side Shake</b>	±27 lbf load at midpoint of sides & ends, 9000 cycles each horiz. and vertical.	±27 lbf load at midpoint of sides & ends, 9000 cycles each horiz. and vertical.	±27 lbf load at midpoint of sides & ends, 9000 cycles each horiz. and vertical.	Two test: 1) 300 cycles 2) downwards force of 67.4lbf to the top of the each side 10 times for 10 sec.	Two 200 cycles (2) tests	Two tests: 1) 5500 cycles 2) 6600 cycles
<b>Side Latch</b>	Omitted accidentally. Was present in F 409-09.	60 lbf down, and 30 lbf horiz. for moveable side; 30 lbf horiz. and 30 lbf perp. for folding gate	(Test not in standard.)	45 lbf (200N) applied 5 times, 2 minutes each in an attempt to "fold" crib. Also has same lock/latch requirements as non-folding cots	(Test not in standard.)	Refers to ASTM
<b>Folding/Portable Latch</b>	10 lbf or 2 simultaneous actions	10 lbf or 2 simultaneous actions	(Test not in standard.)	11 lbf (50N) or 2 simultaneous actions.	(Test not in standard.)	(Test not in standard.)
<b>Mattress Support System Vertical Impact</b>	45 lbm weight, 13.5" dia. flat impact head dropped 700 times: 1) 500 cycles in mattress center, 2) 100 cycles in two opposite corners	45 lbm weight, 8" dia. domed impact head dropped 750 times: 1) 150 cycles in each mattress corner, 2) 150 cycles in mattress center	45 lbm weight, 8" dia. domed impact head dropped 750 times: 1) 150 cycles in each mattress corner, 2) 150 cycles in mattress center	1000 cycles @ 22 lbm located at several locations and mattress support system heights.	66 lbm dropped from a height of 5.91" 200 times, and repeated with mis-installations	70 lbm dropped: 1) 11,000 cycles center impact 2) 2200 cycles at each of two diagonally opposite corners 3) 2200 cycles where bottom appears weakest
<b>Mattress Support System Static</b>	25 lbf upward: 1) one corner (unless supports are different, then to all corners)	25 lbf upward: 1) one corner (unless supports are different, then to all corners)	56 lbf vert. to each corner, then all corners simultaneously. 45lb vert. to each mattress support trying to cause disengagement, again to cause deformation	(Test not in standard.)	(Test not in standard.)	Refers to ASTM
<b>Crib Side Impact</b>	25 lbf for 50 cycles	30 lbf for 250 cycles	(Test not in standard.)	(Test not in standard.)	(Test not in standard.)	35 lbf for 250 cycles
<b>Side Static Load</b>	100 lbf static load	100 lbf static load	112 lbf vert. at top rail	(Test not in standard.)	112 lbf static load	Refers to ASTM
<b>Spindle/Slat Strength</b>	80 lbf on 25% One failure between 60 and 80 lbs requires an additional 25% slats to be tested to 80 lbs.	80 lbf on 25% One failure between 60 and 80 lbs requires an additional 25% slats to be tested to 80 lbs.	(Test not in standard.)	56 lbf load applied to three slats per side, plus corner posts.	Same as UL except a 26 lbf load on all slats.	56 lbf load applied to three slats per side, plus corner posts
<b>Spindle/Slat Torque</b>	(Test not in standard.)	30 lbf-in torque	8 Nm torque	(Test not in standard.)	(Test not in standard.)	(Test not in standard.)

## **TAB E**

# **Staff's Recommended Technical Changes to the Voluntary Standard for Non-Full-Size Cribs / Play Yards (ASTM F 406-10) – Segue to a Mandatory CPSC Standard for Non- Full-Size Cribs**



**UNITED STATES  
CONSUMER PRODUCT SAFETY COMMISSION  
BETHESDA, MD 20814**

**Memorandum**

Date: June 3, 2010

TO : Patricia L. Edwards  
Project Manager, Cribs  
Division of Mechanical Engineering  
Directorate for Engineering Sciences

THROUGH: Andrew Stadnik  
Associate Executive Director  
Directorate for Laboratory Sciences

James C. Hyatt  
Division Director  
Division of Mechanical Engineering  
Directorate for Laboratory Sciences

FROM : Gregory K. Rea  
Division of Mechanical Engineering  
Directorate for Laboratory Sciences (LSM)

SUBJECT : Staff's Recommended Technical Changes to the Voluntary Standard for Non-Full-Size Cribs / Play Yards (ASTM F 406-10) – Segue to a Mandatory CPSC Standard for Non-Full-Size Cribs

**I. BACKGROUND AND OVERVIEW**

On August 14, 2008, the Consumer Product Safety Improvement Act (hereafter referred to as the "CPSIA") was signed into law [Public Law 110-314]. Section 104 of the CPSIA Act requires the U.S. Consumer Product Safety Commission (CPSC, or Commission) to develop safety standards for certain infant and toddler products, including full-size and non-full-size cribs and many other children's products. The Commission must assess the effectiveness of the relevant voluntary safety standards and promulgate mandatory standards for these products. Section 104 (b)(1)(B) states that -- "The Commission shall...promulgate consumer product safety standards that -- (i) are substantially the same as voluntary standards; or (ii) are more stringent than such voluntary standards if the Commission determines that more stringent standards would further reduce the risk of injury associated with such products." Directorate for Laboratory Sciences, Mechanical Engineering (LSM) staff believes that more stringent requirements can further reduce the risk of injury associated with non-full-size cribs.

LSM staff recommend several changes to ASTM International<sup>24</sup> standard F 406-10<sup>25</sup> (Standard Consumer Safety Specification for Non-Full-Size Cribs / Play Yards) that can further reduce the risk of injury associated with non-full-size cribs. CPSC already has a regulation for non-full-size cribs, 16 CFR part 1509. This regulation was issued in 1976 and differentiates a non-full-size crib from a full-size crib in dimensions only. The regulation also states that mesh/net/screen cribs, non-rigidly constructed baby cribs, cradles, car beds, baby baskets and bassinets are not subject to this regulation.

### A. Non-Full-Size Cribs vs. Full-Size Cribs

Cribs, in general, can be defined as rigid-sided sleep environments for infants, babies and young children, typically under 35 inches in height. Regardless of size, all cribs typically serve the same population for the same purpose. Full-size (FS) cribs have a regulated interior dimension outlined in 16 CFR part 1508 of  $28 \pm 5/8$  inches wide by  $52-3/8 \pm 5/8$  inches long, thus all FS cribs have the same size sleeping surface. Non-full-size (NFS) cribs are products which may be larger or smaller than FS cribs, or be non-rectangular specialty shapes<sup>26</sup> (see figs. 1-3<sup>27</sup>). Any product with mesh/net/screen siding, non-rigidly constructed cribs, cradles, car beds, baby baskets, and bassinets are specifically excluded in CPSC's current regulation for NFS cribs, 16 CFR part 1509. Therefore, NFS cribs include, but are not limited to, oversized, specialty (fig. 1), undersized (fig. 2), and portable cribs (fig. 3). All NFS cribs have the same intended use and are for the same users as those of FS cribs. The intended users are children less than 35 inches in height who cannot climb out when the mattress support is set in its lowest position.

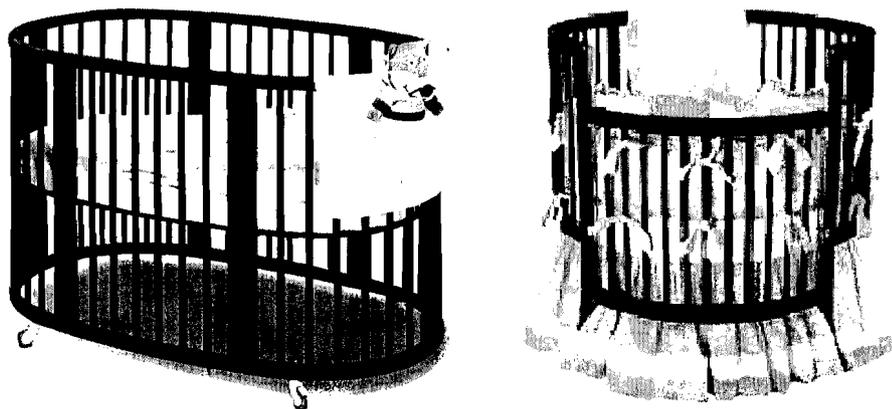


Figure 1. Non-rectangular, specialty shape NFS cribs.

<sup>24</sup> Prior to 2001, ASTM International was known as American Society for Testing and Materials.

<sup>25</sup> ASTM F 406-10 Standard Consumer Safety Specification for Non-Full-Size Baby Cribs/Play Yards, June 2010.

<sup>26</sup> ASTM F 406-10 Standard Consumer Safety Specification for Non-Full-Size Baby Cribs/Play Yards, June 2010, states "interior length dimension either greater than 55 inches or smaller than  $49 \frac{1}{4}$  inches, or an interior width dimension either greater than  $30 \frac{5}{8}$  inches or smaller than  $25 \frac{3}{8}$  inches, or both.

<sup>27</sup> Images in figures 1 through 3 obtained from [www.babycribstation.com](http://www.babycribstation.com) and [www.cribs.com](http://www.cribs.com), May 20, 2010.



Figure 2. Small NFS crib, 40" X 28".



Figure 3. Portable (folding) NFS cribs; approximately 38" X 20".

Portable NFS cribs fold for storage or transport (fig. 3). Repeated manipulation of the folding mechanism and hinges, and jostling during storage and transport impart cyclic fatigue loads to the joints and hardware to which FS cribs are less frequently exposed. Because of the additional handling, relocation, setting up and folding, this class of NFS cribs could potentially experience as much or more wear and tear than a FS crib that would lead to structural failures in normal use.

The differences between FS and NFS cribs are dimensional (interior dimensions and crib side heights). Thus, it is staff's technical opinion that the performance requirements for these the NFS crib should be identical to or more stringent than those for FS cribs, when appropriate.

## B. Incident Hazard Review

From November 1, 2007 to April 11, 2010, a total of 3,584 incidents related to all cribs were reported to CPSC staff<sup>28</sup>. Of these, 2,395 incidents were clearly identified as involving full-size cribs, 64 were non-full-size cribs, and 1,125 incidents lacked sufficient information to allow for the classification of the cribs as full-size or non-full-size. Of the 64 known NFS crib incidents, there were six fatalities, 28 non-fatal injuries, and 30 non-injury incidents. One of the fatalities was attributed to a product failure. All the crib incidents, whether they involved NFS cribs, FS cribs, or cribs with size undetermined, were grouped into four categories: (1) product-related issues (sufficient information were available to describe the product failure modes or defects), (2) non-product related issues, (3) recalled product-related issues, and (4) miscellaneous other issues. The incidents that can be addressed by performance requirements are all product related issues dealing with the crib structure: hardware, including wood screws and other fasteners; mattress support systems; wood slat strength; and the mechanisms used to fold portable products.

Seventy-two percent of the NFS incidents and 82 percent of the FS and undetermined incidents reported product-related issues, and are the focus of this memo. The one product-related fatality in a NFS crib resulted from an infant becoming entrapped in a gap. The gap was formed by a non-drop-side hardware issue. The reported problems for NFS cribs are listed below beginning with the most frequently reported incidents:

- **Falls within or from cribs** – Most of these incidents resulted from children falling inside the crib and hitting a rail or slat, or falling while trying to climb out of the product. Staff believes that these issues are not readily addressed with design restrictions or performance tests<sup>29</sup>.
- **Limbs caught between slats** – In these incidents limbs would become caught involving other objects in the crib which prohibited the child from freeing itself. Although staff acknowledges the potential seriousness and the high frequency of limb entrapments in crib slats, the injuries associated with this hazard scenario cannot be adequately addressed by altering the current spacing requirements for slats<sup>30</sup>.
- **Drop-side issues** - These incidents consist of crib side detachments, and operation and hardware problems. The hazards posed by failed drop-side hardware have been well documented in incident reports and led to numerous product recalls.
- **Non-drop-side-related issues** – Non-drop-side issues include incidents involving hardware, such as wood screws, metal inserts and machine screws. A common problem with all of these fasteners is unintended loosening.
- **Mattress support issues** – These reported incidents consist of mattress support collapses, or hardware issues that result in the mattress supports detaching from the frame of the crib. These incidents have also led to product recalls.
- **Wood-related issues** – The incidents reported deal with slat, rail or other wood failures (including slat detachments, which are a failure of the wood-to-wood joint

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<sup>28</sup> Memorandum from Risana Chowdhury to Patricia Edwards, "Full-Size and Non-Full-Size Cribs-Related Deaths, Injuries, and Potential Injuries; November 2007 to Present", June 3, 2010 (TAB A).

<sup>29</sup> Midgett, J., Human Factors Analysis of Children Climbing Out of Cribs and Getting Limbs Caught Between Slats, June 3, 2010.

<sup>30</sup> Ibid

between the slat and the rail). Wood structural failures of the slats and rails, or wood-to-wood joint failures result in lacerations and/or contusions and also create gaps where children can become entrapped. Wood issues have also resulted in many crib recalls.

## **C. Review of Mandatory and Consensus Standards**

### **1. A Brief History of CPSC Rulemaking**

The NFS crib mandatory standard, 16 CFR part 1509, includes several sections that regulate the side height, component spacing, cutouts, and hardware to minimize accidental limb, torso and head/neck entrapments in new units assembled correctly. Also included are requirements for assembly instructions and labeling, and the prohibitions of sharp edges and protrusions common to durable child product regulations in title 16 of the CFR. Section 1509.7(c) states that wood screws may not be used to secure components a consumer has to remove during disassembly. Another section describes how well a mattress must fit and the required side heights when it is in the enclosure. There are no requirements relating to overall structural integrity, durability or longevity of the product, or any test method that tests joints and fasteners and their ability to remain secure during use.

Since the last revision of 16 CFR part 1509 in 1982, there have been two other rulemaking activities associated with cribs. On December 16, 1996, the Commission published an advance notice of proposed rulemaking (ANPR) pertaining to crib slat disengagements based on 138 incidents, including 12 deaths. The ANPR covered both FS and NFS cribs. On November 25, 2008, the Commission published another ANPR with regard to cribs. This ANPR was issued to commence a consultative process with stakeholders to examine and assess the effectiveness of the voluntary standards for both FS and NFS cribs. Both of these rulemaking activities are still open.

### **2. History of the 2010 Voluntary Standard**

ASTM first published a standard for non-full-size cribs, ASTM F 1822<sup>31</sup>, in 1997. It attempted to address incidents associated with wooden cribs involving dislodgment of slats due to breakage or failure of glue joints, collapse of the mattress support, and detachment of screws. It also attempted to address incidents associated with mesh/fabric cribs involved tears in the mesh sides, failure of stitched seams, collapse, failure of latching mechanisms, and choking on vinyl or padding. The scope of the standard covered sleeping accommodations for a child (excluding bassinets, cradles and baskets) that had interior dimensions between 17 inches and 26 inches wide and between 35 inches and 50 3/8 inches long. Products exceeding both the width and the length, including oversized cribs, were intended to be covered under the full-size crib standard, F 1169.

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<sup>31</sup> ASTM F 1822 Standard Consumer Safety Specification for Non-full-size Baby Cribs, 1977.

In June 2002, F 1822-97 was combined with the play yard standard, F 406-99, to form F 406-02<sup>32</sup>. This was done by ASTM in an attempt to group products with a perceived common use under a single standard and to eliminate duplication in standards.

Since 2002, ASTM F 406 has been revised several times including a recent significant revision approved June 1, 2010. The substantial changes to this version are presented and discussed below.

### 3. Review of Other Standards

CPSC staff reviewed other standards related to NFS cribs. A list of the standards and a summary of their requirements are presented in Table 1. The list includes the two ASTM crib standards, an obsolete Underwriters Laboratory standard (UL), the Health Canada (HC) regulation for cribs (NOTE: The HC crib standard does not differentiate between NFS and FS cribs), the European crib standards (EN) and the Australia/New Zealand crib standards.

The standards have substantial areas of overlap with ASTM F 406-10 in part because ASTM has been influenced by international standards for several years. Evidence of this is seen in the inclusion of a more stringent version of the EN slat strength test in both NFS and FS crib standards. The HC crib cyclic side shake test<sup>33</sup> has also been adopted by the ASTM subcommittee in the two crib standards, and the HC mattress support vertical impact test<sup>34</sup> influenced the 2010 changes to the ASTM mattress support impact test in F 1169-10.

Other differences still remain between what the CPSC staff is recommending for a proposed rule and these other crib standards. With regard to the HC regulation, HC has begun the process to harmonize their requirements with those in F 406-10 as amended by staff recommendations for this NPR. Any other differences between staff's recommendations for the NPR and these other standards have been reviewed and evaluated. Staff believes that the requirements already found in ASTM F 406-10 plus the staff recommended changes are either the most stringent requirements among all the standards or are considered adequate to address the incidents seen in the data.

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<sup>32</sup> ASTM F 406-02 Standard Consumer Safety Specification for Non-full-size Baby Cribs/Play Yards, June 2002.

<sup>33</sup> Health Canada SOR/86-962 Cribs and Cradles Regulations, Schedule III - Parts 3 & 4, 1986.

<sup>34</sup> Health Canada SOR/86-962 Cribs and Cradles Regulations, Schedule III - Parts 1 & 2, 1986.

Table 1. Summary of Other NFS Crib Standards and the ASTM FS Standard

Test	ASTM F 406-10	ASTM F 1169-10	Health Canada SOR/86-962	EN 716-1 & 2, 1130-1 & 2, and ISO 7175-1 & 2	AS/NZS 2172	UL 2275
<b>Teething Rail</b>	Feeler gage with 50 lbf force	Feeler gage with 50 lbf force	(Test not in standard.)	(Test not in standard.)	(Test not in standard.)	Refers to ASTM
<b>Cyclic Side Shake</b>	±27 lbf load at midpoint of sides & ends, 9000 cycles each horiz. and vertical.	±27 lbf load at midpoint of sides & ends, 9000 cycles each horiz. and vertical.	±27 lbf load at midpoint of sides & ends, 9000 cycles each horiz. and vertical.	Two test: 1) 300 cycles 2) downwards force of 67.4lbf to the top of the each side 10 times for 10 sec.	Two 200 cycles (2) tests	Two tests: 1) 5500 cycles 2) 6600 cycles
<b>Side Latch</b>	Omitted accidentally. Was present in F 409-09.	60 lbf down, and 30 lbf horiz. for moveable side; 30 lbf horiz. and 30 lbf perp. for folding gate	(Test not in standard.)	45 lbf (200N) applied 5 times, 2 minutes each in an attempt to "fold" crib. Also has same lock/latch requirements as non-folding cots	(Test not in standard.)	Refers to ASTM
<b>Folding/Portable Latch</b>	10 lbf or 2 simultaneous actions	10 lbf or 2 simultaneous actions	(Test not in standard.)	11 lbf (50N) or 2 simultaneous actions.	(Test not in standard.)	(Test not in standard.)
<b>Mattress Support System Vertical Impact</b>	45 lbm weight, 13.5" dia. flat impact head dropped 700 times: 1) 500 cycles in mattress center, 2) 100 cycles in two opposite corners	45 lbm weight, 8" dia. domed impact head dropped 750 times: 1) 150 cycles in each mattress corner, 2) 150 cycles in mattress center	45 lbm weight, 8" dia. domed impact head dropped 750 times: 1) 150 cycles in each mattress corner, 2) 150 cycles in mattress center	1000 cycles @ 22 lbm located at several locations and mattress support system heights.	66 lbm dropped from a height of 5.91" 200 times, and repeated with mis-installations	70 lbm dropped: 1) 11,000 cycles center impact 2) 2200 cycles at each of two diagonally opposite corners 3) 2200 cycles where bottom appears weakest
<b>Mattress Support System Static</b>	25 lbf upward: 1) one corner (unless supports are different, then to all corners)	25 lbf upward: 1) one corner (unless supports are different, then to all corners)	56 lbf vert. to each corner, then all corners simultaneously. 45lb vert. to each mattress support trying to cause disengagement, again to cause deformation	(Test not in standard.)	(Test not in standard.)	Refers to ASTM
<b>Crib Side Impact</b>	25 lbf for 50 cycles	30 lbf for 250 cycles	(Test not in standard.)	(Test not in standard.)	(Test not in standard.)	35 lbf for 250 cycles
<b>Side Static Load</b>	100 lbf static load	100 lbf static load	112 lbf vert. at top rail	(Test not in standard.)	112 lbf static load	Refers to ASTM
<b>Spindle/Slat Strength</b>	80 lbf on 25% One failure between 60 and 80 lbs requires an additional 25% slats to be tested to 80 lbs.	80 lbf on 25% One failure between 60 and 80 lbs requires an additional 25% slats to be tested to 80 lbs.	(Test not in standard.)	56 lbf load applied to three slats per side, plus corner posts.	Same as UL except a 26 lbf load on all slats.	56 lbf load applied to three slats per side, plus corner posts
<b>Spindle/Slat Torque</b>	(Test not in standard.)	30 lbf-in torque	8 Nm torque	(Test not in standard.)	(Test not in standard.)	(Test not in standard.)

## D. Recent Changes Included to ASTM F 406-10

Numerous changes affecting NFS crib structural integrity performance requirements and other requirements were incorporated into ASTM F 406-10. The following sections describe the significant changes made. In every case the new or modified requirement is more stringent than, or substantially the same as, its predecessor. Staff finds each of these improvements adequate for inclusion in the mandatory rule.

### 1. 16 CFR part 1509 Requirements

The previous version of F 406 referenced 16 CFR part 1509, but did not include the same requirements in the body of the standard. ASTM F 406-10 includes all the actual requirements from 16 CFR part 1509 in the appropriate section in the standard.

### 2. Wood Screws and other Fasteners

A new section was added that addresses the hazards posed by the use of wood screws as the primary method of attachment. Wood screws may no longer be used to assemble key structural elements (e.g., the ends and sides, mattress support system) if they have to be removed during normal disassembly by the consumer. If the manufacturer uses wood screws in the assembly, they must be a secondary method of attachment. In addition, the standard prohibits consumer assembly of key structural elements using wood screw fasteners. This distinction between primary and secondary methods of attachment is not made in 16 CFR part 1509, thus F 406-10 is more stringent in regard to fastening key structural elements. Metal inserts that are threaded into wood must also have a secondary method to impede loosening, as must metal threaded fasteners such as machine screws and sheet metal screws. It is the opinion of LSM staff that the new requirements in the voluntary standard are adequate to address wood screw and other fastener hazards.

### 3. Cyclic Side Shake Test Addition

This new test, adopted from Health Canada,<sup>35</sup> is the only high cycle fatigue test in the standard and complements the low cycle mattress support system and side impact tests. In this test, the midpoint of each top rail, ends and sides, is subjected to 9,000 vertical and then 9,000 horizontal load cycles, for a total of 72,000 cycles. The load rate and magnitudes are taken from biometric data measured directly by Health Canada researchers on cribs being shaken by young children. The number of cycles was determined by multiplying the expected number of daily shakes times nine months<sup>36</sup>, which is the expected length of time a 95<sup>th</sup>

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<sup>35</sup> Health Canada SOR/86-962 Cribs and Cradles Regulations, Schedule III - Parts 3 & 4, 1986.

<sup>36</sup> Personal communication April 15, 2010 between author and T. Goodier, Health Canada. Number of daily shakes based on analysis of video recorded in the nurseries of a test panel of children.

percentile child (male or female) would be able to stand before being removed from the crib. This test therefore simulates one lifetime of shaking imparted by a 95<sup>th</sup> percentile user. (Jumping, kicking, and other common acts are simulated by other tests.) In order to pass this requirement, the crib may not experience a structural failure, nor may any key structural fasteners loosen by more than 0.04 inches (1.0 mm). These sections were also added to the FS crib standard F 1169-10. It is the opinion of LSM staff that the new requirements and test method in the voluntary standard are adequate to address NFS crib shaking structural integrity and hardware hazards.

#### 4. Spindle/Slat Strength Testing

A performance requirement for slat strength and integrity was added to the NFS crib standard. An identical spindle/slat performance requirement and the corresponding test method are also in the F 1169-10 FS crib standard. This test is intended to simulate users kicking and falling, and caregivers leaning on slats. The test force of 80 lbf (360 N) is based on CPSC test data that shows the demarcation below which incident products fail and above which known good products pass.<sup>37</sup> The opinion of LSM staff is that the new requirements and test method in the voluntary standard are adequate to address the spindle/slat strength hazards.

#### 5. Mis-Assembly Issues

The 2010 NFS crib standard also included a requirement that states: “*Crib designs shall only allow assembly of key structural elements in the manufacturer’s recommended use position or have markings that indicate their proper orientation. The markings must be conspicuous in the misassembled state.*” This new requirement will address incidents where mis-assembly has been found to be a contributing factor.

#### 6. Limitation on Movable Sides (Drop-sides)

The 2009 version of the FS crib standard contained a new requirement that limits the types of movable sides permitted on a crib. ASTM F 1169-09 specifies that cribs with side(s) having movable components intended to aid in access to the occupant shall have those sides rigidly attached to the crib ends and contain no movable section more than 6 inches below the top of the side top rail in its fully raised position. This new section no longer allows a crib to have a traditional drop-side that slides up and down on tracks or rails. The NFS crib standard adopted this requirement in its 2010 version. This limitation on drop-sides is expected to address the numerous incidents involving drop-side detachments and other hardware problems.

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<sup>37</sup> Miller, J., Proposed Changes to ASTM F 1821-09, Standard Consumer Safety Specification for Toddler Beds, for Incorporation in Staff’s Draft Proposed Rule, February 23, 2010.

In addition to the substantial changes above, the 2010 version also included several minor and editorial changes. Many of these were made to make the NFS standard consistent with the FS crib standard.

## **II. STAFF RECOMMENDATIONS FOR THE PROPOSED SAFETY STANDARD FOR NON-FULL-SIZE CRIBS**

The previous section discussed additions to the June 2010 version of the ASTM standard compared to previous version of the ASTM standard. ASTM F 406-10 also contains many other general, performance, and labeling requirements that were carried over from the 2009 standard. Below is a discussion of four technical requirements that staff recommend be changed for the proposed rule. All of these requirements are present in the FS crib standard, ASTM F 1169-10.

### **A. Mattress Support System Vertical Impact Test**

CPSC staff recommends that the F 406-10 mattress support performance requirement be replaced with the method developed by Health Canada based on biometric data obtained from young children jumping on an instrumented mattress support system. This recommendation is based on incident data involving mattress support hazards as well as recent developments at the May 12, 2010 ASTM subcommittee meeting. During this meeting, the proposed mattress support impact test requirement and procedure were reviewed for consideration in the NFS standard and it is expected to be voted on at the next meeting. This recommended test is outlined below, and is identical to the one already approved and adopted in the latest FS crib standard, ASTM F 1169-10. It is the opinion of LSM staff that the recommended changes to the mattress support impact test and procedure are warranted to address known NFS crib mattress support hardware and related structural integrity hazards. The exact language recommended by staff is that which is used in F 1169-10 and is presented in Appendix A.1.

#### **1. Performance Requirement**

The staff recommended changes for the pass – fail criteria for the mattress support impact test are for clarification purposes and to simplify understanding. A mattress support system must undergo the specified test and then meet the general performance requirements, and key structural components may not separate by more than 0.04 inches (1.0 mm). This test is intended to simulate one lifetime of jumping imparted by a 95<sup>th</sup> percentile user.

#### **2. Test Method**

The test consists of dropping a 45 lb mass (20 kg) every four seconds onto a polyurethane foam test mattress covered in vinyl supported by the mattress support system. There are several major differences between the staff recommended method and what is in the F 406-10 standard. The recommended

test is a more severe test, yet also more realistic. The specific changes are outlined below:

*i. Impact head shape*

The recommended impact head is a shallow, domed surface with an approximately 8 inch diameter (200mm) while the 2010 ASTM impact head is a flat, 13.5 inch diameter (340 mm) disc (fig. 4). The large 13.5 inch disc's size was chosen because it was the standard size of a 25 lbm iron weight plate. Its cross sectional area is about twice that of the soles of a pair of men's size 12 shoes. The recommended 8 inch impact head has approximately 1/3 of the cross sectional area making it a closer approximation to the load dispersion area of a jumping child.

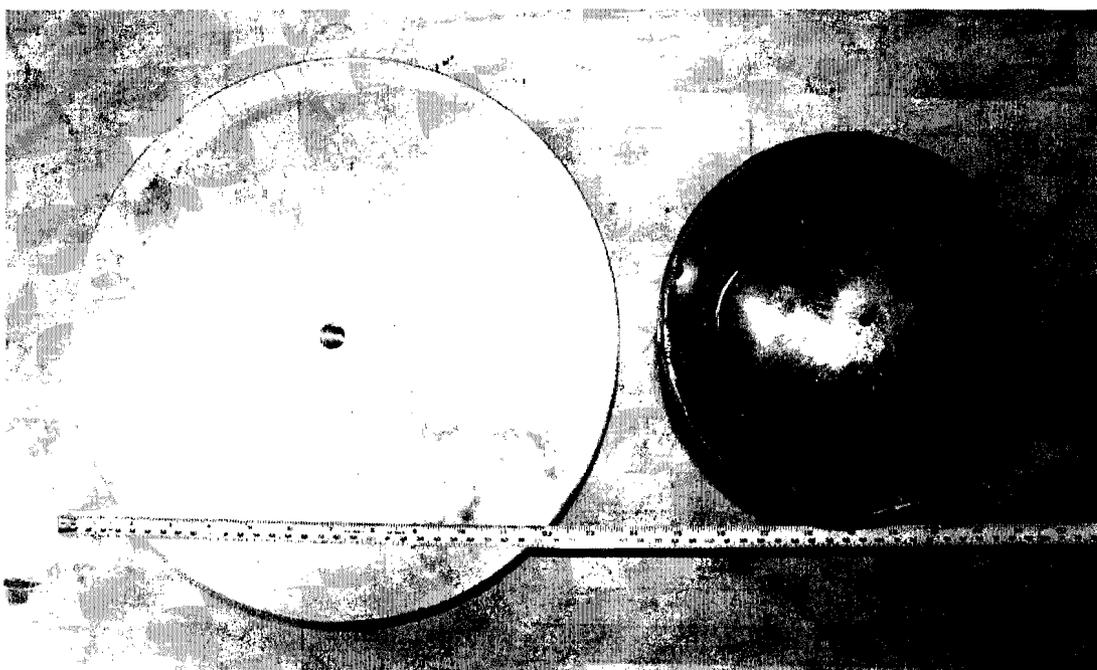


Figure 4. Mattress support system cyclic test impact heads: 13.5 inch (left) and 8 inch (right).

*ii. Impact head guidance system*

The impact head is not allowed to pivot. This constraint will improve the repeatability between tests and between different labs testing the same product because the impact head will remain perpendicular to the mattress throughout the entire test. The 2010 version of the standard allows the mass to fall without guidance. This permits the head to wobble and therefore it does not impact the mattress consistently. This causes impact loads being imparted to the mattress support system to differ from drop to drop.

iii. *Number of cycles and impact location*

The head must impact 150 times in the geometric center of the NFS crib enclosure onto the test mattress, then 150 impact cycles in the corners. Corner impact occurs six inches away from each of the two sides that comprise the corner. The impactor is dropped a total of 750 times with 600 impacts occurring in corners. In F406-10, the 13.5-inch impact head is dropped 500 times in the center, then 100 times in each of two opposite corners. Both recommended and 2010 ASTM versions specify a 6-inch drop height and the same mass, 45 lbm. When positioned for a corner impact, the center of the large disk was nine inches away from the sides. Not only does the smaller surface area of the new impact head impart more impact energy to the mattress support system, by being closer to the corner more of the energy is imparted to the mattress support hardware. Additionally, 80 percent of the impacts are in corners, versus only 29 percent in the F 406-10 test. The recommended impact test is more realistic and more severe than the version in the 2010 ASTM standard.

iv. *Test mattress*

The test mattress specifications developed for the FS crib standard F 1169-10 are recommended for use with NFS cribs. The test mattress is a 3-inch thick, 1.9 lb/ft<sup>3</sup> (30 kg/m<sup>3</sup>) density polyurethane foam with a tight fitting 10-gage vinyl cover. Previously, the impact test was performed with the mattress supplied with the product. These mattresses can be 1 inch thick or less, and use a soft, low density foam and thin cover. This recommended test was conducted by staff with the new impact head on two products with the manufacturer supplied mattress, one small and one portable NFS crib. Both failed the test after about 20 percent of the cycles. Manufacturer supplied mattresses do not dissipate the impact load as well at the test mattress, and they are not uniform in construction, making this test excessively abusive if the test mattress is not used. A uniform test mattress also improves test repeatability.

## **B. Crib Side Testing**

### 1) Vertical Impact Test

The crib side impact test in the 2010 ASTM NFS crib standard calls for a 25 lb. mass to impact the bottom rail of each crib side 50 times. This test addresses crib slat detachments, such as the ones that prompted the 1996 ANPR and that are still occurring<sup>38</sup>. The standard for FS cribs, ASTM F 1164-10, requires the crib side rail impact mass to be 30 lbm and to last for 250 cycles, thus the NFS requirement is less stringent. The FS crib side requirement was revised and made more stringent 1999 as

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<sup>38</sup> Memorandum from Risana Chowdhury to Patricia Edwards, "Full-Size and Non-Full-Size Cribs-Related Deaths, Injuries, and Potential Injuries; November 2007 to Present", June 3, 2010 (TAB A).

a result of the ANPR, but the NFS crib was never harmonized, even though there have been incidents of slat detachments reported in NFS cribs since the 1996 ANPR.

In the FS crib standard there is also a torque test on each spindle/slat that follows the crib side impact test. The intent of this test is to ensure that a rectangular slat cannot be twisted to a position that increases the spacing between two slats to be wider than the mandatory requirement of  $2\frac{3}{8}$  inches, which can lead to an entrapment hazard. This requirement was also added in 1999 to the FS standard following the 1996 ANPR, but is missing from the NFS crib standard. In order to fully harmonize with the FS crib standard, the pass-fail criteria in the NFS standard would also need to change to match the FS standard.

As discussed in Part I.A of this memo, the definition of non-full-size crib includes cribs of dimensions that are larger than full-size cribs. Also, since both the intended use of the products and the age of the occupants are identical to FS cribs, NFS cribs should contain the same requirements as FS products when applicable. Therefore, staff recommends that the NFS crib standard be harmonized with the F 169-10 crib side impact requirements by incorporating the language presented in Appendix A.2.

## 2) Spindle/Slat Torque Test

This test is an important follow up to the side rail impact test and is included in ASTM F 1169-10 for FS cribs as part of the Crib Side Test Methods. The purpose of this test is to determine if the side rail impact cycles caused enough damage to the spindle/slat-to-rail joints to create an entrapment hazard. After the side rail impact test each slat is twisted about its vertical axis with 30 in-lb of torque. If the spindle/slat twists and the gap between adjacent spindles/slats increases above the  $2\frac{3}{8}$  inch limit, an entrapment hazard is created and the product fails. Staff recommends that this test be added to the proposed rule to detect rotated spindle/slat entrapment hazards. The recommended language is given in Appendix A.3.

## C. Movable Side Latch Tests

These tests had been part of all the previous versions of F 406 called the “Vertical Drop-side Latch Tests” and were removed during the development of F 406-10. This test was removed from the standard during re-formatting and inclusions of the new requirement limiting movable sides. However, movable sides using other methods than a traditional drop-side are still permitted and thus staff believes this requirement should be contained in the NPR. Similar language from F 406-09 is recommended by staff and is given in Appendix A.4.

## D. Order of Structural Tests

The 2010 ASTM standard does not specify an order or provide any other guidance for the sequence of tests to be performed on NFS cribs. CPSC staff believes that the sequence can influence the results and notes that in other juvenile standards, such as

the FS crib standard F 1169-10, a specified order is provided. Typically, the most stringent order (one to most likely result in the failure of the product) is what is used. Staff agrees with this approach and recommends using the test sequence included in ASTM F 1169-10 as follows:

- 1) Teething rail test  
Technically not a structural test, it checks the attachment of plastic teething rail guards to the upper side rails.
- 2) Cyclic side shake test  
This fatigue test stresses every joint in the product including those of the slats/spindles to the rails, and any latching mechanisms that may be present.
- 3) Crib side latch test  
This is a static test that evaluates the resistance of foldable and movable side latching mechanisms to foreseeable abuse.
- 4) Mattress support system vertical impact test  
The welds, brackets, springs, slats, fasteners, and other components of a mattress support system are targeted by this cyclic fatigue test.
- 5) Mattress support system static tests  
A test of the mattress support hardware and attachments' ability to resist displacement
- 6) Crib side vertical impact test  
The last cyclic fatigue test, it evaluates the capacity of key structural components' attachments and fasteners to remain secure, and the structural integrity of the lower rails.
- 7) Spindle/slat strength test  
Both the static strength of the slats/spindles and the rail joints are evaluated.

The exact language for this recommended change as well as its rationale can be found in Appendix A.5.

### **III CONCLUSIONS**

LSM staff recommends adopting the requirements specified in ASTM F 406-10 as the CPSC mandatory standard for non-full-size cribs with suggested additional requirements and editorial changes not currently found in the ASTM standard. CPSC staff believes this mandatory standard for non-full-size cribs will help reduce injuries and deaths associated with entrapment and slat breakage hazards. The additions and edits to the existing ASTM F 406-10 standard would potentially result in safer NFS cribs by

improving the structural integrity and durability of the products. CPSC staff recommends the following changes to the voluntary standard for incorporation in the NPR:

- A. Revise the mattress support system vertical impact test to match what is in the FS crib standard, ASTM F 1169-10.
- B. Revise the crib side testing requirements to match what is in the FS crib standard, ASTM F 1169-10.
- C. Reinstate the movable side latch test applicable to any movable sides that are not drop gates.
- D. Specify the order in which the performance tests are to be performed.

## **APPENDIX A – Recommended Language for Mandatory Standard**

### **1. Recommended Language for the Mattress Support System Vertical Impact Test**

#### *6.x Mattress Support System Vertical Impact Test Requirements:*

After testing in accordance with the procedure in 7.x, the crib shall comply with the requirements of section 5. Key structural elements attached by screws shall not have separated by more than 0.04 in. (1.00 mm) upon completion of testing.

#### *8.x Mattress Support System Vertical Impact Test:*

8.x.1 *General* -- This test consists of dropping a specified weight repeatedly onto a polyurethane foam pad covered in vinyl supported by the crib mattress support system. The test assists in evaluating the structural integrity of the crib assembly.

#### *8.x.2 Apparatus*

8.x.2.1 A guided free-fall impacting system machine (which keeps the upper surface of the impact mass parallel to the horizontal surface on which the crib is secured) (see Figure A)

8.x.2.2 A 45 lb (20 kg) impact mass (see Figures B and C).

8.x.2.3 A 6 inch (150 mm) long gauge.

8.x.2.4 A 2 inch (50 mm) square gauge/spacer block.

8.x.2.5 A test mattress with a 3 inch thick sheet of polyurethane foam having a density of 1.9-2 lbs./ft<sup>3</sup> (30 kg/m<sup>3</sup>), a 25% indentation load deflection of 33-37 lbs. (144 N) and dimensions that shall not be more than 1 inches (25 mm) shorter and 1 inches (25 mm) narrower than the respective interior dimensions of the product, covered with a tight fitting 8 to 12 gage vinyl material (tick). The suitability of the test mattress dimensions are to be determined by placing the mattress on the mattress support and pushing it fully over to one side. Measure the gap formed between the mattress and the crib side/end assemblies, which should not be greater than 1 in.(25 mm) in both the length and width.

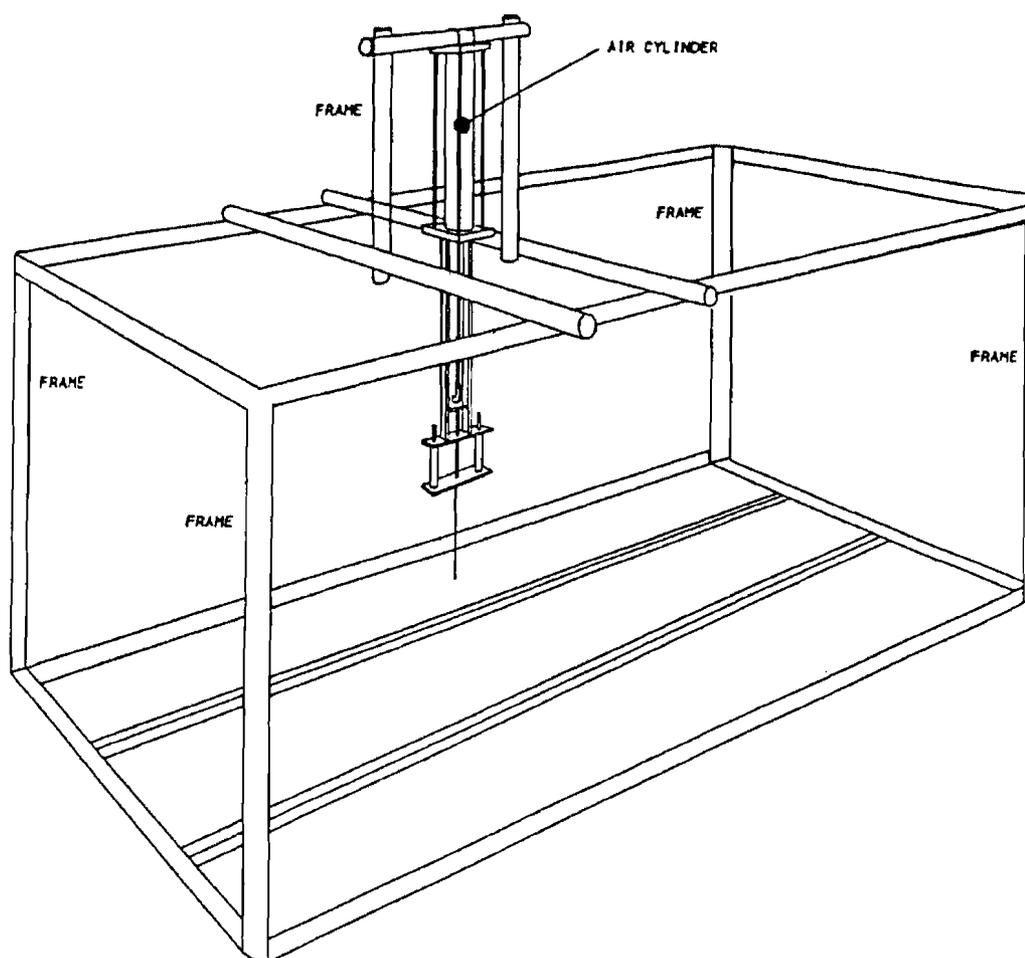
#### *8.x.3 Procedure*

8.x.3.1 Adjust the mattress support to its lowest position.

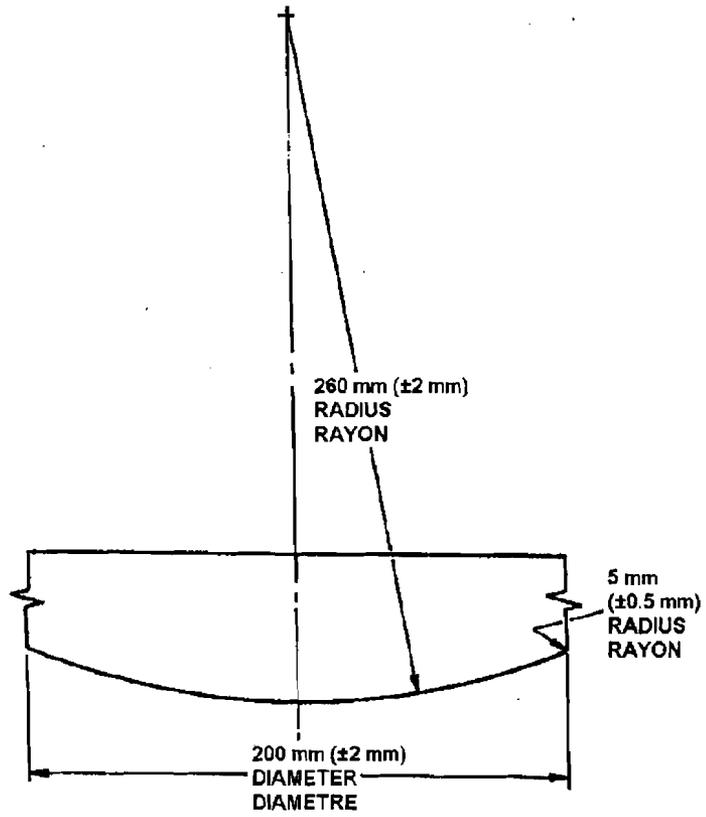
8.x.3.2 Put the test mattress in place. Do NOT use the mattress supplied with the crib. The same test mattress may be used for testing more than one crib if it meets the requirements of 7.2.2.5.

8.x.3.3 Secure the product to the horizontal test plane, remove the castors if supplied. Once the test has begun, no attempt shall be made at re-tightening fasteners which may have loosened because of vibration. The test must proceed without any corrective intervention of adjusting the height difference between the drop weight and mattress, until its completion, unless extensive damage, dislodging or deformation occurs during the course of the test, in which case the test shall be terminated.

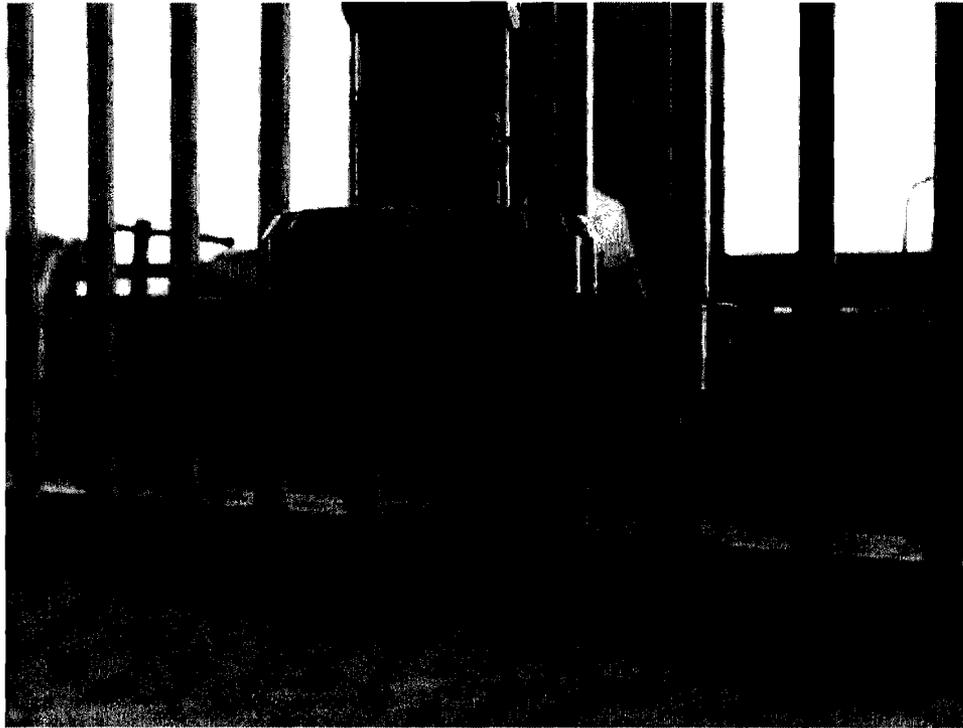
- 8.x.3.4 Position the geometric center of the test mattress below the geometric center of the impact mass.
- 8.x.3.5 Adjust the distance between the top surface of the mattress and bottom surface of the impact mass to 6 inches (150 mm) (using the 7.2.2.3 6 inch (150 mm) long gauge) when the impact mass is in its highest position. Lock the impactor mechanism at this height and DO NOT adjust the height during impacting to compensate for any change in distance due to the mattress compressing or the mattress support deforming or moving during impacting.
- 8.x.3.6 Allow the 45 lb (20.0 kg) impact mass to fall freely 150 times at the rate of one impact every 4 (four) seconds. Load retraction shall not begin until at least 2 seconds after the start of the drop.
- 8.x.3.7 Repeat step 7.2.3.6 at each corner of the mattress support, with the center of the impact mass 6 inches (150 mm) from the two sides forming the corners of the crib. To position the mass for a standard rectangular shaped crib place a 2 inch (50 mm) spacer block against one of the sides of the corner to be tested and move the impact mass until it touches the spacer block (see Figure D). Repeat this process for the other side that makes up the corner to be tested (see Figure E).



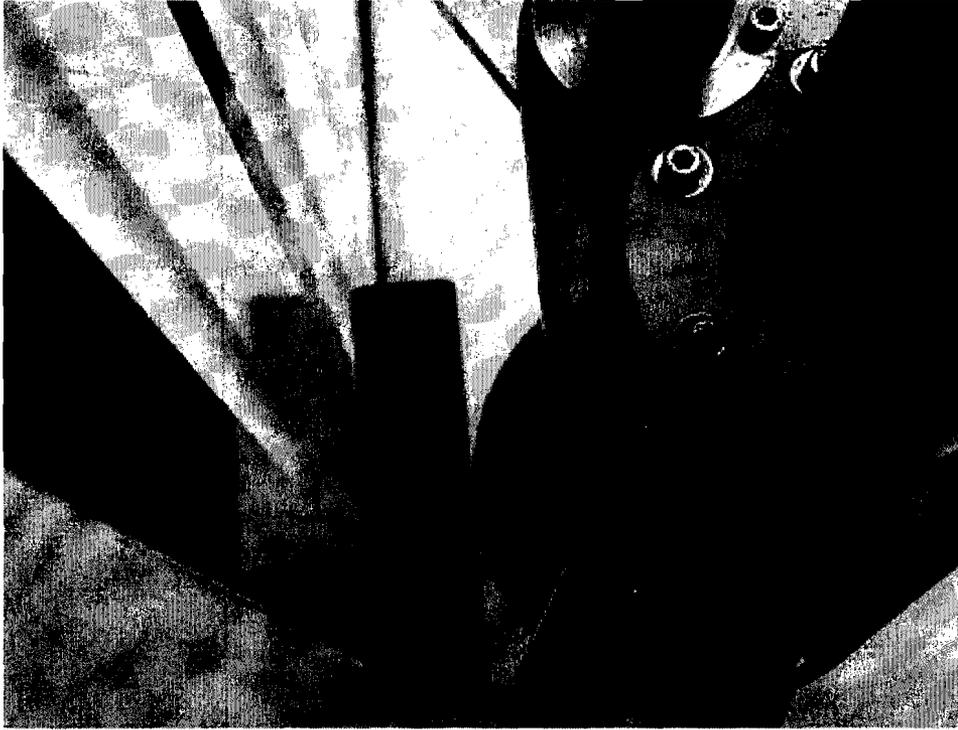
**Figure A. Typical test frame**



**Figure B. Impact mass shape**



**Figure C. Impact mass**



**Figure D. Spacer block (top view)**



**Figure E. Impact mass and spacer block**

#### **4. Recommended Language for NFS Crib Movable Side Latch Test**

##### *6.x.1 Movable Side Latch Testing:*

6.x.1.1 This test consists of horizontally loading the end while a prescribed force is applied to the movable side(s) (see 8.x.x or 8.x.y).

6.x.1.2 The latching mechanism shall not disengage during testing and shall continue to function in the intended manner upon completion of the testing.

##### *8.x.x Procedure for Movable Side Latch Tests:*

8.x.x.1 Gradually apply within 5 s a vertically downward force of 60 lbf (270 N) through a hardwood block with 2-by-2-in. (50-by-50-mm) contact area to the upper horizontal rail of the unit side at a point that is 6 1/2 in. (152.6 mm) from one end of the movable side rail. While the 60-lbf (270-N) downward force is applied to the movable side, gradually apply within 5 s a 30-lbf (133-N) horizontal force in a direction parallel to the movable side. The point of application of this force is to be coincident with the horizontal extension of the longitudinal centerline of the movable side and 1 6 1/2 in. (25.6 mm) down from the top of the unit corner post or unit end panel for construction not incorporating unit corner posts (see Fig. F). Maintain this horizontal force for an additional 30 s, then reverse its direction and maintain for an additional 30 s.

8.x.x.2 Repeat this procedure at the other end of the unit movable side and, if the unit has more than one movable side, perform the test at each end of each movable side.

8.x.x.3 Upon completion of the test, release the movable side latch and operate the movable side. Then raise the side and observe whether the latch automatically engages in the manner intended by the manufacturer.

##### *8.x.y Procedure for Horizontally Hinged Movable Side Latch Test:*

8.x.y.1 Place the hinged movable side in the latched position. Through a hardwood block with contact area of 2 by 2-in. (50 by 50-mm), gradually apply within 5 s a force of 30 lbf (130 N) horizontally outward, perpendicular to, and at a point that is 6 1/2 in. (152.6 mm) from one end of the hinged movable side upper rail. While this 30-lbf (130-N) force is applied to the movable side, gradually apply within 5 s a 30-lbf (130-N) horizontal force in a direction parallel to the hinged side. The point of application of this force is to be coincident with the horizontal extension of the longitudinal centerline of the hinged movable side and 1 6 1/2 in. (25.6 mm) down from the top of the unit corner post or unit end panel for construction not incorporating unit corner posts (see Fig. 15). Maintain this horizontal force for an additional 30 s, then reverse its direction and maintain for an additional 30 s.

8.x.y.2 Place the hinged movable side in the latched position. Through a hardwood block with contact area of 2 by 2-in. (50 by 50-mm), gradually apply within 5 s a force of 30 lbf (130 N) horizontally inward, perpendicular to, and at a point that is 6 1/2 in. (152.6 mm) from one end of the hinged movable side upper rail. While this 30-lbf (130-N) force is applied to the movable side, gradually apply within 5 s a 30-lbf (130-N) horizontal force in a direction parallel to the hinged movable side. The point of application of this force is to be coincident with the horizontal extension of the

longitudinal centerline of the hinged movable side and 1 6 1/2 in. (25 6 13 mm) down from the top of the unit corner post or unit end panel for construction not incorporating unit corner posts. Maintain this horizontal force for an additional 30 s, then reverse its direction and maintain for an additional 30 s.

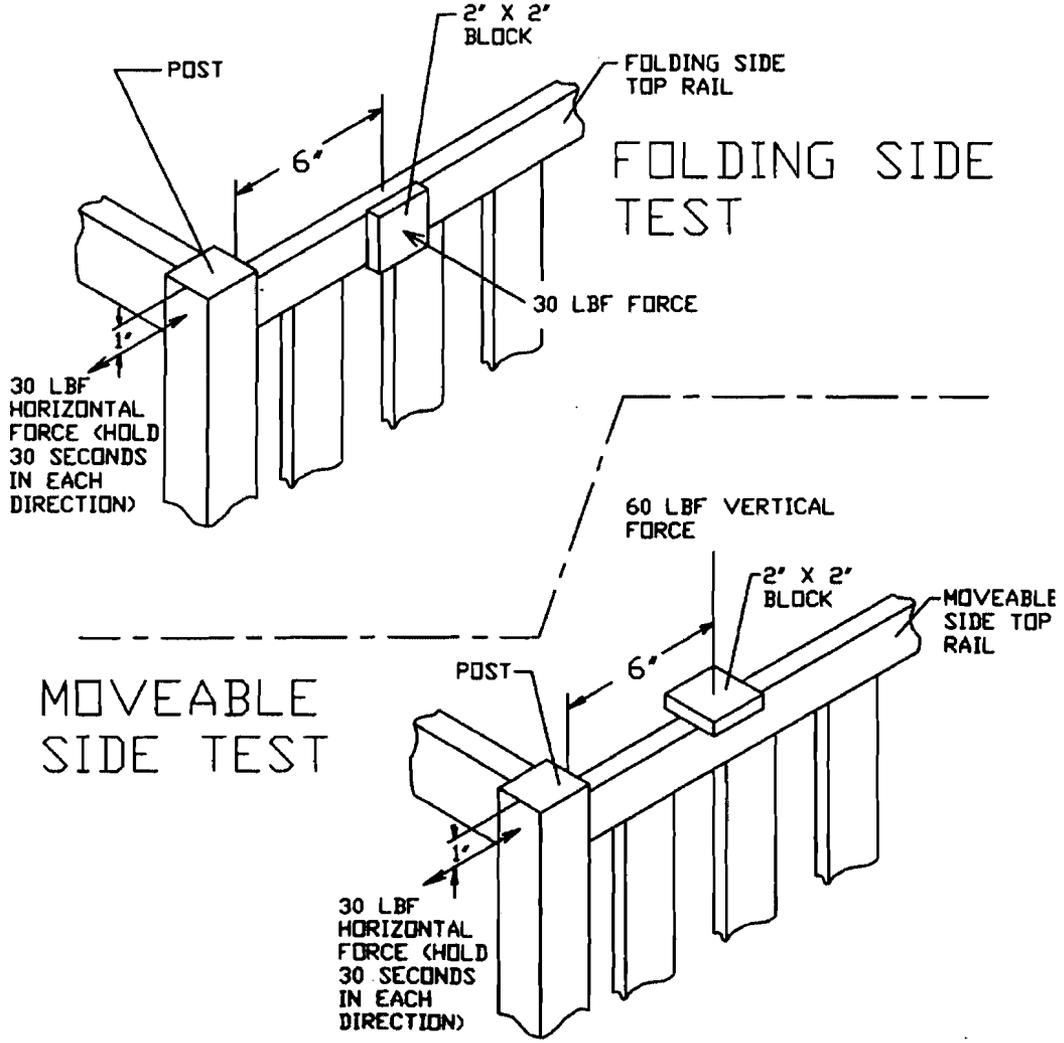


Figure F. Side Latch Test

## **5. Recommended Language for the Order of Structural Tests**

### *Section 6.x Performance Testing Order*

The performance testing requirements of this section shall be performed in the following order:

1. Teething rail test
2. Cyclic side shake test
3. Crib side latch test
4. Mattress support system vertical impact test
5. Mattress support system test
6. Crib side impact test
7. Spindle/slat strength test

#### *Rationale:*

The teething rail test should precede the other testing as it does not relate to the structural integrity of the product. Cyclic side shake testing should come next as the 72,000 cycles will subject the entire product to the simulated stresses that a non-full-size crib would undergo during a lifetime of shaking by a user. Crib side latch testing should immediately follow the cyclic testing as this is the assembly which would most likely to be affected by cyclic stresses. This should then be followed by the vertical impact testing and the mattresses support testing which is the assembly most likely to be affected by the vertical impact stresses. This should then be followed by the crib side impact which subjects the side rails to repeated impacts. The spindle/slat strength test should come last as these structural elements are the most likely to be affected by the sum of all the preceding cyclic and impact tests.

**TAB F**

**Initial Regulatory Flexibility Analysis of  
Staff-Recommended Standard for Full-  
Size Cribs**



**UNITED STATES  
CONSUMER PRODUCT SAFETY COMMISSION  
BETHESDA, MD 20814**

**Memorandum**

Date: June 1, 2010

TO : Patricia L. Edwards  
Project Manager, Cribs  
Division of Mechanical Engineering  
Directorate for Engineering Sciences

THROUGH: Gregory B. Rodgers, Ph.D.  
Associate Executive Director  
Directorate for Economic Analysis

Deborah V. Aiken, Ph.D.  
Senior Staff Coordinator  
Directorate for Economic Analysis

FROM : Jill L. Jenkins, Ph.D.  
Economist  
Directorate for Economic Analysis

SUBJECT : Initial Regulatory Flexibility Analysis of Staff-Recommended Proposed  
Standard for Full-Size Cribs

**Introduction**

On August 14, 2008, the Consumer Product Safety Improvement Act (CPSIA) was enacted. Among its provisions, section 104 of the CPSIA requires that Consumer Product Safety Commission (CPSC) evaluate the currently existing voluntary standards for durable infant or toddler products and promulgate a mandatory standard substantially the same as, or more stringent than, the applicable voluntary standard. Full-size cribs are among the durable products specifically named in section 104. Upon review, CPSC staff recommends that the Commission adopt the voluntary ASTM International (formerly known as the American Society for Testing and Materials) standard for full-size baby cribs (F 1169-10) with one modification.

The Regulatory Flexibility Act (RFA) requires that proposed rules be reviewed for their potential economic impact on small entities, including small businesses. Section 603 of the RFA requires that CPSC staff prepares an initial regulatory flexibility analysis and make it available to the public for comment when the general notice of proposed rulemaking is published. The initial regulatory flexibility analysis must describe the impact of the proposed rule on small entities and identify any alternatives that may reduce the impact. Specifically, the initial regulatory flexibility analysis must contain:

1. a description of and, where feasible, an estimate of the number of small entities to which the proposed rule will apply;
2. a description of the reasons why action by the agency is being considered;
3. a succinct statement of the objectives of, and legal basis for, the proposed rule;
4. a description of the projected reporting, recordkeeping, and other compliance requirements of the proposed rule, including an estimate of the classes of small entities subject to the requirements and the type of professional skills necessary for the preparation of reports or records; and
5. an identification, to the extent possible, of all relevant Federal rules which may duplicate, overlap, or conflict with the proposed rule.

Additionally, the initial regulatory flexibility analysis must contain a description of any significant alternatives to the proposed rule which accomplish the stated objectives of the proposed rule while minimizing the economic impact on small entities.

## **The Product**

Full-size cribs are beds designed for home use to provide sleeping accommodations for infants. They have the following interior dimensions:<sup>39</sup>

- $28 \pm 5/8$  in. ( $710 \pm 16$  mm) wide; and
- $52 \ 3/8 \pm 5/8$  in. ( $1330 \pm 16$  mm) long.

Any accessories that come with the full-size crib are also covered by the staff-recommended proposed rule, as well as ASTM standard F 1169-10, although those accessories must also comply with the relevant ASTM standard (i.e. a bassinet accessory must comply with the full-size cribs standard, as well as the bassinets/crib standard).<sup>40</sup>

## **The Market for Full-Size Cribs**

Full-size cribs are typically produced and/or marketed by juvenile product manufacturers and distributors or by furniture manufacturers and distributors, some of which have separate divisions for juvenile products. There are currently at least 68 manufacturers or importers supplying full-size cribs to the U.S. market. Ten firms are domestic importers (15 percent), 42 firms are domestic manufacturers (62 percent), seven firms are foreign manufacturers (ten percent), and two firms are foreign importers (three percent). There was insufficient information on the remaining seven firms to determine whether they were importers or manufacturers.<sup>41</sup>

The Juvenile Products Manufacturers Association (JPMA), the major U.S. trade association that represents juvenile product manufacturers and importers, runs a voluntary certification

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<sup>39</sup> 16 CFR Part 1508 and ASTM International, *Standard Specification for Full-Size Baby Crib (F 1169-09)*.

<sup>40</sup> ASTM International, *Standard Specification for Full-Size Baby Crib (F 1169-10)*.

<sup>41</sup> Determinations were made using information from Dun & Bradstreet and ReferenceUSA.gov, as well as firm websites. Manufacturers include traditional manufacturers, as well as firms that send out their designs to be manufactured, and firms that import as well but are primarily manufacturers.

program for several juvenile products.<sup>42</sup> Approximately 30 firms (44 percent) supply full-size cribs to the U.S. market that have been certified by JPMA as compliant with the ASTM voluntary standard. Additionally, 15 firms claim compliance although their products have not been certified by JPMA. It is assumed throughout this analysis that the 45 firms that provide cribs that are certified or claim to be compliant with earlier ASTM standards will remain compliant with ASTM standard F 1169-10.

According to a 2005 survey conducted by the American Baby Group (*2006 Baby Products Tracking Study*),<sup>43</sup> 90 percent of new mothers own cribs. Approximately 36 percent of wood cribs and 50 percent of metal cribs were handed down or purchased second-hand.<sup>44</sup> Using an average weighted by the ownership of each type of crib (83 percent for wood and 7 percent for metal), it is estimated that approximately 37 percent of all cribs were handed down or purchased second-hand.<sup>45</sup> Thus, about 63 percent of cribs were acquired new. This suggests annual sales of about 2.4 million cribs to households (.63 x .9 x 4.3 million births per year).<sup>46</sup> To the extent that new mothers own more than one crib, annual sales may be underestimated. Based on a review of the U.S. market, it appears that there are approximately 591 full-size crib models and 81 non-full-size crib models currently being supplied. Therefore, approximately 88 percent of the crib models on the U.S. market are full-sized. Applying this percentage to the number of cribs sold annually, yields an estimate of 2.1 million full-size cribs sold annually. However, this is a rough estimate, since the percentage of full-size crib models on the market does not necessarily correlate directly to sales.

In addition to manufacturers and importers of new full-size cribs, section 104 of the CPSIA explicitly states that when the Commission's crib standards take effect, they will apply to retailers of both new and used full-size cribs,<sup>47</sup> as well as to child care facilities and places of public accommodation, such as hotels, that supply full-size cribs to their patrons. Since day care centers and places of public accommodation tend to provide non-full-size cribs to their customers, as opposed to the more unwieldy full-size cribs, this analysis focuses exclusively on retailers. The number of firms that may be selling or providing full-size cribs is unknown, but may be drawn from approximately 24,985 retail firms (at least 5,292 of which sell used products),<sup>48</sup> that may be supplying new or used full-size cribs to the public.<sup>49</sup>

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<sup>42</sup> JPMA has run this program since 1976, beginning with high chairs. Products voluntarily submitted by manufacturers are tested against the appropriate ASTM standard and only passing products are allowed to display JPMA's Certification Seal. See <http://www.jpma.org/content/safety/overview> for more information.

<sup>43</sup> The data collected for the *Baby Products Tracking Study* does not represent an unbiased statistical sample. The sample of 3,600 new and expectant mothers is drawn from American Baby magazine's mailing lists. Also, since the most recent survey information is from 2005, it may not reflect the current market.

<sup>44</sup> The data on second-hand products for new moms was not available. Instead, data for new moms and expectant moms was combined and broken into first-time mothers and experienced mothers. Data for first-time mothers and experienced mothers has been averaged to calculate the approximate percentage that was handed down or purchased second-hand.

<sup>45</sup> Of the 83 percent of mothers who own wood cribs, 36 percent were handed down or purchased second-hand; of the 7 percent of mothers who own metal cribs, 50 percent are used.

<sup>46</sup> U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC), National Center for Health Statistics, National Vital Statistics System, "Births: Preliminary Data for 2007," *National Vital Statistics Reports* Volume 57, Number 12 (March 18, 2009): 6 (Table 1). Number of live births in 2007 is rounded from 4,317,119.

<sup>47</sup> For simplicity, it is assumed that new cribs available for sale from manufacturers or importers who are no longer in the business of supplying full-size cribs come from retailer inventories, rather than manufacturer/importer inventories. To the extent that this is not true, the burden of assuring full-size crib compliance with the staff-recommended standard would be shared between the manufacturer/importer and the retailer, rather than be borne entirely by the retailer.

<sup>48</sup> The NAICS codes (and product line codes) used are: 4421 (20240), 4421 (20344), 45439 (20340), 4521 (20344), 45291 (20344), 45299 (20344), 45411 (20340), and 4533 (20340). Data on firms is extrapolated from the 2006 Census data which has firm information, using 2007 Census data which has more detailed product line information. For example, the 4421 NAICS code has a ratio of 21,242 firms for 29,245 establishments, or a ratio of 1.38 establishments for each firm. Applying this to the number of establishments for the more detailed 4421 (20240)

## Reason for Agency Action and Legal Basis for the Draft Proposed Rule

Section 104 of the CPSIA requires CPSC to promulgate a mandatory standard for full-size cribs that is substantially the same as, or more stringent than, the voluntary standard. CPSC worked closely with ASTM to address several known hazards in the most recent version of the ASTM standard for full-size cribs (F 1169-10).<sup>50</sup> In addition, CPSC staff is recommending an additional modification to the most recent voluntary standard. CPSC staff believes that removing the allowance to retighten screws between tests will create a more robust testing standard and thereby reduce fatalities and injuries.<sup>51</sup>

## Compliance Requirements of the Draft Proposed Rule

CPSC staff recommends adopting the voluntary ASTM standard (F 1169-10) for full-size cribs with one modification. Some of the more significant components of the 2010 ASTM standard for full-size cribs (F 1169-10) include (requirements that are new or modified for the 2010 standard are italicized):

- Dynamic impact testing of mattress support – intended to address incidents involving collapse or failures of mattress support systems. *The 2010 standard updated the tests to address fatigue of mattress support brackets, support hardware, and mattress support due to children jumping in cribs.*
- Impact testing of side rails and slat strength/integrity – intended to prevent slats and spindles from breaking and/or detaching during use. *The requirements were made more stringent for the 2010 standard. The modification was intended to prevent entrapments by reducing the likelihood of slat/spindle breakage and the gaps that accompany them.*
- Evaluation of mattress support attachment to crib – intended to assure that the mattress support does not become detached from the frame, potentially resulting in a fall.<sup>52</sup>
- Latching mechanism tests – intended to assure that latching and locking mechanisms work as intended, preventing unintended folding while in use. Also requires that they be used with drop gates and movable sides.
- Crib side configurations – intended, in part, to limit movable (drop-) sides. Addresses the numerous incidents related to drop-side failures.

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line (50 establishments) yields approximately 36 firms. The same procedure is followed for each NAICS (product line) code and then summed. It is likely that some of the 1,028 electronic shopping retailers sell used products as well, but a precise estimate cannot be made.

<sup>49</sup> Note that this number is likely to be high, since not every retailer sells non-full-size cribs. For example, not all of the stores selling bedroom furniture will necessarily sell cribs as well. Sources include: Economic Census data from 2007 (<http://www.census.gov/econ/census07/>), Statistics of U.S. Business, *Number of Firms, Number of Establishments, Employment, and Annual Payroll by Employment Size of the Enterprise for the United States, All Industries 2006* (<http://www.census.gov/econ/susb/>), and SBA, *Employer Firms, and Employment by Employment Size of Firm by NAICS Codes, 2006* ([http://www.sba.gov/advo/research/us06\\_n6.pdf](http://www.sba.gov/advo/research/us06_n6.pdf)).

<sup>50</sup> The most recent changes to ASTM F 1169 are outlined in the memorandum from Jacob J. Miller, ESME, Directorate for Engineering Sciences, dated June 7, 2010, Subject: Proposed Changes to ASTM F 1169-10, Standard Consumer Safety Specification for Full-Size Baby Cribs, for Incorporation in Staff's Draft Proposed Rule.

<sup>51</sup> Ibid.

<sup>52</sup> The difference between the dynamic impact testing on the mattress support system and the evaluation of the mattress support attachment is that the former involves dropping a weight repeatedly and the latter involves gradually pressing in a set weight (25 pounds). Both tests address the integrity of the mattress support system.

- Label requirements – *the required warnings were updated for the 2010 standard to emphasize fall hazards.*
- Openings requirement for mattress support systems – *a new requirement for the 2010 standard that addresses gaps in the mattress support system to minimize the possibility of entrapment.*
- Requirements for wood screws and other fasteners – *a new requirement for the 2010 standard that addresses hazards that exist when wood screws are the primary method of attachment. Also includes other fastener requirements to address incidents related to loose hardware and poor structural integrity.*
- Cyclic testing – *a new requirement for the 2010 standard that addresses incidents involving failures of non-drop-side hardware and poor structural integrity. It was taken from the Canadian standard and simulates long-term shaking by a child.*
- Mis-assembly issues – *a new requirement for the 2010 standard where it must either be impossible to misassemble key elements or that those elements must have markings that make it obvious when they have been misassembled.*
- Test requirement for accessories – *a new requirement for the 2010 standard that is intended to address any full-size cribs that may now or in the future include accessories such as bassinets or changing tables.*
- Crib interior dimensions – *a new requirement for the 2010 standard that is taken directly from CPSC's mandatory regulation and intended to assure that all full-size cribs have the same interior dimensions.*
- Component spacing – *a new requirement for the 2010 standard that is taken directly from CPSC's mandatory regulation and intended to prevent child entrapment between both uniformly and non-uniformly spaced components, such as slats.*

There are also a number of additional requirements that are not outlined here.

CPSC staff recommends modifying ASTM standard F 1169-10 to no longer allow screws to be retightened between the crib side latch test and the mattress support vertical impact test. This modification would no longer allow any retightening of screws during crib testing, thereby harmonizing with the Canadian standard. CPSC staff believes that the combination of crib tests in the standard effectively simulates a lifetime of crib use and that retightening screws disrupts this recreation<sup>53</sup> and that the staff-recommended modification address loose screws.<sup>54</sup>

Based on Health Canada testing results for one of the tests (shake test), it appears that only the most poorly constructed cribs will fail when their screws are not retightened during testing. Initial follow-up testing by CPSC staff found that allowing retightening over the entire series of tests could result in this very dangerous hazard going unnoticed during testing. The incident of failure during testing when screws are not retightened may be lower under the F 1169-10 standard, due to new requirements that will require that crib hardware include a locking device or other method to impede loosening.<sup>55</sup> Based on this information, it appears that few, if any, firms

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<sup>53</sup> Memorandum from Jacob J. Miller, ESME, Directorate for Engineering Sciences, dated June 7, 2010, Subject: Proposed Changes to ASTM F 1169-10, Standard Consumer Safety Specification for Full-Size Baby Cribs, for Incorporation in Staff's Draft Proposed Rule.

<sup>54</sup> Ibid.

<sup>55</sup> Ibid.

will need to use better screw mechanisms or redesign their products to comply with the staff-recommended modification.

### **Other Federal or State Rules**

CPSC staff has identified at least one locality (Suffolk County, New York) that has banned drop-side cribs.<sup>56</sup> Additionally, California has a crib law that refers to both 16 CFR parts 1508 and 1509 and ASTM F 1169.<sup>57</sup>

### **Impact on Small Businesses**

There are approximately 68 firms currently known to be producing or selling full-size cribs in the United States. Under Small Business Administration (SBA) guidelines, a manufacturer of full-size cribs is small if it has 500 or fewer employees and an importer is considered small if it has 100 or fewer employees. Based on these guidelines, 48 firms—36 domestic manufacturers, ten domestic importers, and two firms with unknown sources of supply—are small.<sup>58</sup> There are probably additional unknown small manufacturers and importers operating in the U.S. market.

According to the SBA, retailers are considered small if they have \$7 million or less in annual receipts. Approximately 93 percent of retailers have receipts of less than \$5 million, with an additional 3 percent having receipts between \$5 million and \$9.99 million.<sup>59</sup> Excluding firms with receipts between \$5 million and \$7 million yields an estimate of 23,236 small retail firms that may potentially be affected by the draft proposed rule.<sup>60</sup> However, it is important to note that only a small percentage of these small firms actually sell full-size cribs. Thus, the number of small retail firms affected will be much smaller than 23,236.

### ***Small Manufacturers***

The impact of the staff-recommended proposed standard on small manufacturers will differ based on whether they are expected to be compliant with ASTM standard F 1169-10. Of the 36 small domestic manufacturers, 24 product products that are certified by JPMA or claim to be in compliance with the voluntary standard. The impact on the 24 compliant firms is not expected to be significant. It seems unlikely that any of these products will require modification to meet the staff-recommended proposed standard. Should any be necessary, it would most likely take the form of a few minor changes (such as more effective screws or screw combinations).

The staff-recommended proposed standard could have a significant impact on one or more of the 12 firms that are not compliant with the voluntary standard, as their products might require substantial modifications. The costs associated with these modifications could include product design, development and marketing staff time, and product testing. There may also be increased

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<sup>56</sup> See [http://www.northshoreoflongisland.com/Articles-i-2009-10-15-81784.112114-sub\\_Dropside\\_crib\\_ban\\_passes.html](http://www.northshoreoflongisland.com/Articles-i-2009-10-15-81784.112114-sub_Dropside_crib_ban_passes.html) and [http://www.nypost.com/p/news/local/suffolk\\_county\\_first\\_to\\_ban\\_drop\\_WfDyjRp5byPK47FLVnTrVP](http://www.nypost.com/p/news/local/suffolk_county_first_to_ban_drop_WfDyjRp5byPK47FLVnTrVP).

<sup>57</sup> See <http://law.justia.com/california/codes/hsc/24500-24506.html>.

<sup>58</sup> There are five firms with unknown supply sources and one domestic manufacturer with insufficient information to determine firm size.

<sup>59</sup> SBA, *Employer Firms, Establishments, Employment, Annual Payroll, and Receipts by Receipts Size of Firm and Major Industry using NAICS, 2002* ([http://www.sba.gov/advo/research/us\\_rec\\_mi.pdf](http://www.sba.gov/advo/research/us_rec_mi.pdf)).

<sup>60</sup> It was not possible to break out the firms with receipts between \$5 million and \$7 million from the \$5 million to \$9.99 million range.

production costs, particularly if additional materials are required. The actual cost of such an effort is unknown, but could be significant, especially for the two firms that rely primarily or entirely on the production and sale of full-size cribs and related products, such as accompanying furniture and bedding, and a third firm that produces only one other product. However, the impact of these costs may be mitigated if they are treated as new product expenses that can be amortized over time.

The scenario described above assumes that only those firms that produce cribs certified by JPMA or claim ASTM compliance will pass the voluntary standard's requirements. This is not necessarily the case. CPSC staff has identified many cases where products not certified by JPMA are actually compliant with the relevant ASTM standard. To the extent that this is true, the impact of the staff-recommended proposed rule will be less significant than described.

### *Small Importers*

While four of the ten small importers are not compliant with the voluntary standard, all would need to find an alternate source of full-size cribs if their existing supplier does not come into compliance with the new requirement of the staff-recommended proposed standard. The cost to importers may increase and they may, in turn, pass some of those increased costs on to consumers.<sup>61</sup> Some importers may respond to the rule by discontinuing the import of their non-complying cribs. However, the impact of such a decision may be mitigated by replacing the non-compliant crib with a complying product or another juvenile product. Deciding to import an alternative product would be a reasonable and realistic way to offset any lost revenue given that most import a variety of products.

### *Small Retailers*

The CPSIA requires that all full-size cribs sold (or leased) by retailers comply with the full-size crib rule by the effective date of the final standard. This means that retailers, most of whom are small, will need to verify that any full-size cribs in their inventory (that they intend to sell or lease after the effective date) and any that they purchase in the future comply with the regulation prior to offering them for sale. It is believed that most retailers, particularly small retailers, do not keep large inventories of cribs. With an effective date six months after publication of the rule, retailers of new products should have sufficient time and notification to make this adjustment with little difficulty. The situation for retailers of used cribs is more complicated, however, because they may not always be able to determine whether the full-size cribs they receive are compliant. For the affected retailers, it may be simpler to discontinue the sale of used full-size cribs. However, if cribs represent a small proportion of the products they sell, the impact on these firms may be limited.

## **Alternatives**

Under section 104 of the CPSIA, the primary alternative that would reduce the impact on small entities is to make the voluntary standard mandatory with no modifications. Adopting the

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<sup>61</sup> These products would also be expected to be of higher quality given the additional safety requirements.

current voluntary standard without any changes could potentially reduce costs for 12 of the 36 small manufacturers and four of the ten small importers who are not already compliant with the voluntary standard. However, these firms will still require substantial product changes in order to meet the voluntary standard. Since the staff's changes add little to the overall burden of the staff-recommended proposed rule, adopting the voluntary standard with no changes will not significantly offset the burden that is expected for these firms. Additionally, adopting the voluntary standard with no modifications would be unlikely to significantly reduce the impact on small retailers. The primary effect for these retailers (which in most cases should be small) stems from replacing existing inventory with complying product. The staff's recommended changes to the voluntary standard should not significantly affect such replacement costs.

**TAB G**

**Initial Regulatory Flexibility Analysis of  
Staff-Recommended Standard for Non-Full-  
Size Cribs**



UNITED STATES  
CONSUMER PRODUCT SAFETY COMMISSION  
BETHESDA, MD 20814

## Memorandum

Date: June 2, 2010

TO : Patricia L. Edwards  
Project Manager, Cribs  
Division of Mechanical Engineering  
Directorate for Engineering Sciences

THROUGH: Gregory B. Rodgers, Ph.D.  
Associate Executive Director  
Directorate for Economic Analysis

Deborah V. Aiken, Ph.D.  
Senior Staff Coordinator  
Directorate for Economic Analysis

FROM : Jill L. Jenkins, Ph.D.  
Economist  
Directorate for Economic Analysis

SUBJECT : Initial Regulatory Flexibility Analysis of Staff-Recommended Proposed  
Standard for Non-Full-Size Cribs

## Introduction

On August 14, 2008, the Consumer Product Safety Improvement Act (CPSIA) was enacted. Among its provisions, section 104 of the CPSIA requires that Consumer Product Safety Commission (CPSC) evaluate the currently existing voluntary standards for durable infant or toddler products and promulgate a mandatory standard substantially the same as, or more stringent than, the applicable voluntary standard. Non-full-size cribs are among the durable products specifically named in section 104. Upon review, CPSC staff recommends that the Commission adopt the voluntary ASTM International (formerly known as the American Society for Testing and Materials) standard for non-full-size baby cribs (F 406 –10) with a few modifications.

The Regulatory Flexibility Act (RFA) requires that proposed rules be reviewed for their potential economic impact on small entities, including small businesses. Section 603 of the RFA requires that CPSC staff prepares an initial regulatory flexibility analysis and make it available to the public for comment when the general notice of proposed rulemaking is published. The initial regulatory flexibility analysis must describe the impact of the proposed rule on small entities and identify any alternatives that may reduce the impact. Specifically, the initial regulatory flexibility analysis must contain:

1. a description of and, where feasible, an estimate of the number of small entities to which the proposed rule will apply;
2. a description of the reasons why action by the agency is being considered;
3. a succinct statement of the objectives of, and legal basis for, the proposed rule;
4. a description of the projected reporting, recordkeeping, and other compliance requirements of the proposed rule, including an estimate of the classes of small entities subject to the requirements and the type of professional skills necessary for the preparation of reports or records; and
5. an identification, to the extent possible, of all relevant Federal rules which may duplicate, overlap, or conflict with the proposed rule.

Additionally, the initial regulatory flexibility analysis must contain a description of any significant alternatives to the proposed rule which accomplish the stated objectives of the proposed rule while minimizing the economic impact on small entities.

## **The Product**

Non-full-size cribs are rigidly constructed beds designed to provide sleeping accommodations for an infant. They may be used either in the home or for travel.<sup>62</sup> In essence, any rigidly constructed crib with dimensions (or a shape) that differs from a full-size crib is a non-full-size crib. More specifically, either:<sup>63</sup>

- The interior length is greater than 139.7 centimeters (55 inches) or smaller than 126.3 centimeters (49 ¾ inches);
- The interior width dimension is greater than 77.7 centimeters (30 5/8 inches) or smaller than 64.3 centimeters (25 3/8 inches); or
- Both.

This includes:<sup>64</sup>

- Portable cribs – designed to be folded or collapsed, without disassembly.
- Crib-pens – designed so that the legs can be removed or adjusted to provide a play pen or play yard.
- Specialty cribs – designed in unconventional shapes (such as circular) and incorporating a special mattress or other unconventional components.
- Undersized and oversized cribs – designed so that the interior length and/or width meet the specifications outlined above.

Any accessories that come with the non-full-size crib are also covered by the staff-recommended proposed rule, as well as ASTM standard F 406-10, although those accessories

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<sup>62</sup> 16 CFR Part 1509 and F 406-09.

<sup>63</sup> Ibid.

<sup>64</sup> Ibid.

must also comply with the relevant ASTM standard (i.e. a bassinet accessory must comply with the non-full-size cribs standard, as well as the bassinets/cradles standard).<sup>65</sup>

The following products are not considered non-full-size cribs.<sup>66</sup>

- Inflatable products;
- Mesh/net/screen cribs;
- Non-rigidly constructed baby cribs;
- Cradles;
- Car beds;
- Baby baskets; or
- Bassinets.

### **The Market for Non-Full-Size Cribs**

Non-full-size cribs are typically produced and/or marketed by juvenile product manufacturers and distributors or by furniture manufacturers and distributors, some of which have separate divisions for juvenile products. CPSC staff believes that there are currently at least 17 manufacturers or importers supplying non-full-size cribs to the U.S. market. Five firms are domestic importers and ten firms are domestic manufacturers. There was insufficient information on the remaining two firms to determine whether they were importers or manufacturers.<sup>67</sup>

The Juvenile Products Manufacturers Association (JPMA), the major U.S. trade association that represents juvenile product manufacturers and importers, runs a voluntary certification program for several juvenile products.<sup>68</sup> Five firms supply non-full-size cribs to the U.S. market that have been JPMA-certified as compliant with the ASTM voluntary standard. Additionally, two firms claim compliance although their products have not been certified by JPMA. Therefore, including the firms that claim compliance with the ASTM standard, five manufacturers and one importer have products that are ASTM compliant.<sup>69</sup> Additionally, one of the firms with an unknown source of supply also claims compliance with the ASTM standard.<sup>70</sup> It is assumed throughout this analysis that firms that are certified or claim to be compliant with earlier ASTM standards will remain compliant with ASTM standard F 406-10.

According to a 2005 survey conducted by the American Baby Group (*2006 Baby Products Tracking Study*),<sup>71</sup> 90 percent of new mothers own cribs. Approximately 36 percent of wood

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<sup>65</sup> JPMA, *Standard Consumer Safety Specification for Non-Full-Size Cribs/Play Yards* (F 406-09).

<sup>66</sup> *Ibid* and 16 CFR Part 1509 and F 406-09.

<sup>67</sup> Determinations were made using information from Dun & Bradstreet and ReferenceUSAGov, as well as firm websites. Manufacturers include traditional manufacturers, as well as firms that send out their designs to be manufactured, and firms that import as well but are primarily manufacturers.

<sup>68</sup> JPMA has run this program since 1976, beginning with high chairs. Products voluntarily submitted by manufacturers are tested against the appropriate ASTM standard and only passing products are allowed to display JPMA's Certification Seal. See <http://www.jpma.org/content/safety/overview> for more information.

<sup>69</sup> The two firms that claim compliance are both manufacturers.

<sup>70</sup> It should be noted that non-JPMA certified products will not necessarily fail to comply with the ASTM standard.

<sup>71</sup> The data collected for the *Baby Products Tracking Study* does not represent an unbiased statistical sample. The sample of 3,600 new and expectant mothers is drawn from American Baby magazine's mailing lists. Also, since the most recent survey information is from 2005, it may not reflect the current market.

cribs and 50 percent of metal cribs were handed down or purchased second-hand.<sup>72</sup> Using an average weighted by the ownership of each type of crib (83 percent for wood and 7 percent for metal), it is estimated that approximately 37 percent of all cribs were handed down or purchased second-hand.<sup>73</sup> Thus about 63 percent were acquired new. This suggests annual sales of about 2.4 million cribs to households (.63 x .9 x 4.3 million births per year).<sup>74</sup> To the extent that new mothers own more than one crib, annual sales may be underestimated. Based on a review of the U.S. market, it appears that there are approximately 591 full-size crib models and 81 non-full-size crib models currently being supplied. Therefore, approximately 12 percent of the crib models on the U.S. market are non-full-sized. Applying this to the number of cribs sold annually, yields an estimate of 293,000 non-full-size cribs sold annually. However, this is a rough estimate, since the percentage of non-full-size crib models on the market does not necessarily correlate directly to sales.

In addition to manufacturers and importers of new non-full-size cribs, section 104 of the CPSIA explicitly states that when the Commission's new crib standards take effect, they will apply to retailers of both new and used non-full-size cribs, as well as child care facilities and places of public accommodation, such as hotels that supply non-full-size cribs for use by their patrons. The number of firms that may be selling or providing non-full-size cribs is unknown, but would be drawn from approximately 24,985 retail firms (at least 5,292 of which sell used products),<sup>75</sup> 59,555 firms supplying day care services,<sup>76</sup> and 43,303 firms providing public accommodation<sup>77</sup> that may be supplying new or used non-full-size cribs for use by the public.<sup>78</sup>

### **Reason for Agency Action and Legal Basis for the Draft Proposed Rule**

Section 104 of the CPSIA requires CPSC to promulgate a mandatory standard for non-full-size cribs that is substantially the same as, or more stringent than, the voluntary standard. CPSC worked closely with ASTM to address several known hazards in the most recent version of the ASTM standard for non-full-size cribs (F 406-10).<sup>79</sup> In addition, CPSC staff is recommending several modifications to the most recent voluntary standard. CPSC staff believes that the more

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<sup>72</sup> The data on second-hand products for new moms was not available. Instead, data for new moms and expectant moms was combined and broken into first-time mothers and experienced mothers. Data for first-time mothers and experienced mothers has been averaged to calculate the approximate percentage that was handed down or purchased second-hand.

<sup>73</sup> Of the 83 percent of mothers who own wood cribs, 36 percent were handed down or purchased second-hand; of the 7 percent of mothers who own metal cribs, 50 percent are used.

<sup>74</sup> U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC), National Center for Health Statistics, National Vital Statistics System, "Births: Preliminary Data for 2007," *National Vital Statistics Reports* Volume 57, Number 12 (March 18, 2009): 6 (Table 1). Number of live births in 2007 is rounded from 4,317,119.

<sup>75</sup> The NAICS codes (and product line codes) used are: 4421 (20240), 4421 (20344), 45439 (20340), 4521 (20344), 45291 (20344), 45299 (20344), 45411 (20340), and 4533 (20340). Data on firms is extrapolated from the 2006 Census data which has firm information, using 2007 Census data which has more detailed product line information. For example, the 4421 NAICS code has a ratio of 21,242 firms for 29,245 establishments, or a ratio of 1.38 establishments for each firm. Applying this to the number of establishments for the more detailed 4421 (20240) line (50 establishments) yields approximately 36 firms. The same procedure is followed for each NAICS (product line) code and then summed. It is likely that some of the 1,028 electronic shopping retailers sell used products as well, but a precise estimate cannot be made.

<sup>76</sup> The NAICS code used is 6244.

<sup>77</sup> The NAICS code used is 7211.

<sup>78</sup> Note that these numbers are likely to be high, since not every retailer sells non-full-size cribs and not every day care center or hotel provides them. For example, not all of the stores selling bedroom furniture will necessarily sell cribs as well, some day care centers may use play yards instead of non-full-size cribs, and some public accommodations are intended strictly for adults. Sources include: Economic Census data from 2007 (<http://www.census.gov/econ/census07/>), Statistics of U.S. Business, *Number of Firms, Number of Establishments, Employment, and Annual Payroll by Employment Size of the Enterprise for the United States, All Industries 2006* (<http://www.census.gov/econ/susb/>), and SBA, *Employer Firms, and Employment by Employment Size of Firm by NAICS Codes, 2006* ([http://www.sba.gov/advo/research/us06\\_n6.pdf](http://www.sba.gov/advo/research/us06_n6.pdf)).

<sup>79</sup> The most recent changes to ASTM F 406 are outlined in the memorandum from Gregory K. Rea, Directorate for Laboratory Sciences, dated June 3, 2010, Subject: Staff Recommended Technical Changes to the Voluntary Standard for Non-Full-Size Cribs/Play Yards (ASTM F 406-10) – Segue to a Mandatory CPSC Standard for Non-Full Size-Cribs.

stringent requirements will address known hazard patterns and thereby help to further reduce injuries and deaths in non-full-size cribs.<sup>80</sup>

### Compliance Requirements of the Draft Proposed Rule

CPSC staff recommends adopting the voluntary ASTM standard for non-full-size cribs (F 406-10) (excluding parts that relate to play yards) with several modifications. Some of the more significant components of the 2010 ASTM standard for non-full-size cribs (F 406-10) include (requirements that are new or modified for the 2010 standard are italicized):

- Dynamic impact testing of mattress support – intended to address incidents involving collapse or failures of mattress support systems.
- Impact testing of side rails and slat strength/integrity – intended to prevent slats and spindles from detaching during use. *The 2010 standard modified these requirements to address occupants applying pressure to the slats from inside the crib, as well as caregivers applying pressure from the outside. The modifications harmonize with those in the staff-recommended full-size crib standard.*
- Evaluation of mattress support attachment to crib – intended to assure that the mattress support does not become detached from the frame, potentially resulting in a fall.<sup>81</sup>
- Latching mechanism tests – intended to assure that latching and locking mechanisms work as intended, preventing unintended folding while in use. Also requires that they be used with drop gates and movable sides.
- Requirements for wood screws and other fasteners – *a new requirement for the 2010 standard that addresses hazards that exist when wood screws are the primary method of attachment.*
- Limitations on movable sides – *adds an additional requirement to the minimum movable side height for the 2010 standard that essentially bans drop-side cribs.*
- Cyclic testing – *a new requirement for the 2010 standard that simulates long-term shaking by a child. It was taken from the Canadian standard and complements the already existing mattress support system and side rail impact tests.*
- Mis-assembly issues – *a new requirement for the 2010 standard where it must either be impossible to misassemble key elements or that those elements must have markings that make it obvious when they have been misassembled.*

There are also a number of additional requirements that are not outlined here.

CPSC staff recommends modifying the recently approved ASTM standard F 406-10 in the following ways:<sup>82</sup>

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<sup>80</sup> Memorandum from Gregory K. Rea, Directorate for Laboratory Sciences, dated June 3, 2010, Subject: Staff Recommended Technical Changes to the Voluntary Standard for Non-Full-Size Cribs/Play Yards (ASTM F 406-10) – Segue to a Mandatory CPSC Standard for Non-Full Size-Cribs and memorandum from Risana Chowdhury, Division of Hazard Analysis, Directorate for Epidemiology, dated June 3, 2010, Subject: Full-Size and Non-Full-Size Cribs-Related Deaths, Injuries and Potential Injuries; November 2007 – Present.

<sup>81</sup> The difference between the dynamic impact testing on the mattress support system and the evaluation of the mattress support attachment is that the former involves dropping a weight repeatedly and the latter involves gradually pressing in a set weight (25 pounds). Both tests address the integrity of the mattress support system.

1. CPSC staff recommends that the 2010 ASTM mattress support performance requirement be replaced by the method included in the Canadian standard. This method was developed using biometric data obtained from young children jumping on mattress support systems. The test recommended is identical to the one included in the ASTM standard for full-size cribs (F 1169-10). It is intended to simulate one lifetime of jumping for the heaviest users.
2. CPSC staff recommends harmonizing the side impact test for non-full-size cribs to make it consistent with the more stringent version included in the ASTM standard for full-size cribs (F 1169-10). This would include using a 30 pound weight for 250 cycles (rather than 25 pounds for 50 cycles) to test for possible slat detachment from the bottom rail. It also includes a torque test to assure that spacing between the slats/spindles does not increase beyond the 2 3/8 inches allowed, potentially resulting in an entrapment.
3. CPSC staff recommends modifying the “Vertical Drop-Side Latch Tests” to re-insert the movable side latch tests, which were accidentally dropped during the last revision of the ASTM standard (F 406-10). Since movable sides other than drop-sides are still allowed, this is a necessary modification.
4. CPSC staff recommends specifying the order of tests to be conducted for non-full-size cribs, so that the order mirrors that for full-size cribs. Currently, there is no specified order in the non-full-size crib standard. This would prevent any influence the order of testing might have on results, as well as better harmonizing the two standards.

In order to address known hazards associated with mattress support hardware and structural integrity, CPSC staff recommends modifying the mattress support performance requirement to match the one that is being included in the 2010 ASTM standard for full-size cribs. CPSC staff believes that many firms will need to modify their non-full-size cribs (both compliant and non-compliant) in order to meet this staff-recommended proposed requirement. For most, this would require a stronger mattress support system, perhaps using additional or thicker materials. The cost of this modification is unknown, but unlikely to represent a significant proportion of the end product price. Alternatively, it is possible that some firms may choose to redesign their product to meet this requirement.

The staff-recommended side impact test will harmonize the requirement in the non-full-size cribs standard with that in the full-size crib standard. CPSC staff does not believe that many firms will need to modify their products to comply with this requirement. In fact, the incidence of failure may be lower under the F 1169-10 standard, due to new requirements that will require that crib hardware include a locking device or other method to impede loosening. Any changes that may be required would most likely entail better/stronger attachments of slats to the bottom rails (e.g., more glue or added staples). Therefore, this requirement is not expected to impose a significant burden upon firms, given the relatively low cost of the required modifications.

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<sup>82</sup> Memorandum from Gregory K. Rea, Directorate for Laboratory Sciences, dated June 3, 2010, Subject: Staff Recommended Technical Changes to the Voluntary Standard for Non-Full-Size Cribs/Play Yards (ASTM F 406-10) – Segue to a Mandatory CPSC Standard for Non-Full Size-Cribs.

However, it is possible that some firms may choose to redesign their product to address this requirement.

Reinserting the movable side latch tests is considered important, given that it was unintentionally removed from the ASTM standard F 406-10. However, it is unlikely that firms compliant with F 406-10 made modifications to their products in order to cease to comply with a no longer existing requirement. Therefore, it is assumed that any supplier of ASTM compliant non-full-size cribs will already meet this requirement. In fact, CPSC staff does not believe that there are currently any non-full-size cribs on the market that will require modifications to meet this standard. However, if a firm's non-full-size cribs did not comply, they would most likely require stronger, more effective latching mechanisms. These types of modifications tend to be inexpensive and not require product redesign.

It is possible that specifying the order of testing could have an impact on the test results. To date, however, CPSC staff has not identified any products that fail testing due to test order. In fact, CPSC staff believes that once products meet the 2010 ASTM standard and the additional requirements of the staff-recommended rule, that most suppliers will be able to comply without making any product modifications. Therefore, CPSC staff believes that the impact of this staff-recommended modification will be small. Should modifications be required to comply, however, product redesign seems likely.

### **Other Federal or State Rules**

CPSC staff has identified at least one locality (Suffolk County, New York) that has banned drop-side cribs.<sup>83</sup> Additionally, California has a crib law that refers to both 16 CFR parts 1508 and 1509 and ASTM F 1169.<sup>84</sup>

### **Impact on Small Businesses**

There are approximately 17 firms currently known to be producing or selling non-full-size cribs in the United States. Under Small Business Administration (SBA) guidelines, a manufacturer of non-full-size cribs is small if it has 500 or fewer employees and an importer is considered small if it has 100 or fewer employees. Based on these guidelines, 14 are small firms—nine domestic manufacturers and five importers. The size of the remaining firms—two with unknown supply sources and one domestic manufacturer—could not be determined. There are probably additional unknown small manufacturers and importers operating in the U.S. market.

According to the SBA, retailers and services such as day care centers and public accommodations are considered small if they have \$7 million or less in annual receipts. Approximately 93 percent of retailers have receipts of less than \$5 million, with an additional 3 percent having receipts between \$5 million and \$9.99 million.<sup>85</sup> Excluding firms with receipts between \$5 million and \$7 million yields an estimate of 23,236 small retail firms that may

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<sup>83</sup> See [http://www.northshoreoflongisland.com/Articles-i-2009-10-15-81784.112114-sub\\_Dropside\\_crib\\_ban\\_passes.html](http://www.northshoreoflongisland.com/Articles-i-2009-10-15-81784.112114-sub_Dropside_crib_ban_passes.html) and [http://www.nypost.com/p/news/local/suffolk\\_county\\_first\\_to\\_ban\\_drop\\_drop/WfDyjRp5byPK47fL.VnTrVP](http://www.nypost.com/p/news/local/suffolk_county_first_to_ban_drop_drop/WfDyjRp5byPK47fL.VnTrVP).

<sup>84</sup> See <http://law.justia.com/california/codes/hsc/24500-24506.html>.

<sup>85</sup> SBA, *Employer Firms, Establishments, Employment, Annual Payroll, and Receipts by Receipts Size of Firm and Major Industry using NAICS, 2002* ([http://www.sba.gov/advo/research/us\\_rec\\_mi.pdf](http://www.sba.gov/advo/research/us_rec_mi.pdf)).

potentially be affected by the staff-recommended rule.<sup>86</sup> However, it is important to note that only a small percentage of these small firms actually sell non-full-size cribs. Thus, the number of small retail firms affected will be much smaller than 23,236. Among day care service and accommodation providers, approximately 98 percent have receipts of less than \$5 million with an additional 0.9 percent having receipts between \$5 million and \$9.99 million. This suggests that there are roughly 58,364 small day care firms (of 59,555) and 42,437 small hotel firms (of 43,303) that could be affected.

### ***Small Manufacturers***

The impact of the staff-recommended proposed standard on small manufacturers will differ based on whether they are expected to be compliant with the voluntary ASTM standard (F 406-10). Of the nine small domestic manufacturers, five are in compliance with the voluntary standard. The impact on the five compliant firms is not expected to be significant. While it is possible that some of these manufacturers might opt to redesign their product(s) to meet the staff-recommended proposed requirements, it is more likely that they will make a few minor changes (such as different hardware or stronger materials for the mattress support system). None of the expected modifications are expected to impact manufacturers' costs significantly, nor are they expected to significantly increase the price paid by consumers.

The staff-recommended proposed standard could have a significant impact on one or more of the four firms that are not compliant with the voluntary standard, as their products might require substantial modifications. The costs associated with these modifications could include product design, development and marketing staff time, and product testing. There may also be increased production costs, particularly if additional materials are required. The actual cost of such an effort is unknown, but could be significant, especially for the one firm that relies on the production and sale of non-full-size cribs and related products, such as accompanying furniture and bedding. However, the impact of these costs may be mitigated if they are treated as new product expenses that can be amortized over time.

The scenario described above assumes that only those firms that produce cribs certified by JPMA or claim ASTM compliance will pass the voluntary F 406-10 standard's requirements. This is not necessarily the case. CPSC staff has identified many cases where products not certified by JPMA are actually compliant with the relevant ASTM standard. To the extent that this is true, the impact of the staff-recommended proposed rule will be less significant than described.

### ***Small Importers***

While four of the five small importers are not compliant with the voluntary standard, all would need to find an alternate source of non-full-size cribs if their existing supplier does not come into compliance with the new requirements of the draft proposed standard. The cost to importers may increase and they may, in turn, pass some of those increased costs on to

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<sup>86</sup> It was not possible to break out the firms with receipts between \$5 million and \$7 million from the \$5 million to \$9.99 million range.

consumers.<sup>87</sup> Some importers may respond to the rule by discontinuing the import of their non-complying cribs. However, the impact of such a decision may be mitigated by replacing the non-compliant crib with a complying product or another juvenile product. Deciding to import an alternative product would be a reasonable and realistic way to offset any lost revenue given that most import a variety of products.

### ***Small Retailers, Day Care Centers, and Public Accommodations***

The CPSIA requires that all non-full-size cribs sold (or leased) by retailers or provided by day care centers or public accommodations (e.g., hotels) to their customers comply with the non-full-size crib rule by the effective date of the final standard.

This means that retailers, most of whom are small, will need to verify that any non-full-size cribs in their inventory (that they intend to sell or lease after the effective date of the standard) and any that they purchase in the future comply with the regulation prior to offering them for sale. It is believed that most retailers, particularly small retailers, do not keep large inventories of cribs. With an effective date six months after publication of the rule, retailers of new products should have sufficient time and notification to make this adjustment with little difficulty. The situation for retailers of used cribs is more complicated, however, because they may not always be able to determine whether the non-full-size cribs they receive are compliant. For the affected retailers, it may be simpler to discontinue the sale of used non-full-size cribs. However, if cribs represent a small proportion of the products they sell, the impact on these firms may be limited.

Day care centers will need to replace all of their non-full-size cribs by the standard's effective date. Since a new ASTM standard (F 406-10) will be published before the final CPSC regulation is published, these firms may not upgrade their existing non-full-size cribs until they are assured that the cribs they purchase will comply with the forthcoming regulation. The impact could be significant on some small day care centers if they had to replace their cribs all at once. However, these are one-time costs that may be passed on to customers over time, which could mitigate, to some extent, the rule's burden. Additionally, some centers could opt to replace their non-full-size cribs with play yards, thereby spreading replacement costs over a longer period of time, which would reduce the impact.

Some hotels may keep a few non-full-size cribs for use by customers. The number at any one establishment is likely to be low, especially given the likelihood of parents with young children traveling with their own sleep products, such as play yards or portable cribs. As with day care centers, this is a one-time cost for firms that can be passed on to customers over time. Firms, particularly smaller firms, may opt to mitigate the costs by ceasing to provide cribs to their customers, not replacing all of their cribs, or providing play yards instead. Therefore, it is unlikely that there will be a significant impact on a substantial number of firms providing public accommodation.

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<sup>87</sup> These products would also be expected to be of higher quality given the additional safety requirements.

## **Alternatives**

Under section 104 of the CPSIA, one alternative that would reduce the impact on small entities is to make the voluntary standard mandatory with no modifications. Adopting the current voluntary standard without any changes could potentially reduce costs for four of the nine small manufacturers and four of the five small importers who are not already compliant with the voluntary standard. However, these firms will still require substantial product changes in order to meet the voluntary standard. Since the staff's changes add little to the overall burden of the staff-recommended proposed rule, adopting the voluntary standard with no changes will not significantly offset the burden that is expected for these firms. Additionally, adopting the voluntary standard with no modifications would be unlikely to significantly reduce the impact on small retailers, day care centers, suppliers of public accommodations. The primary effect for these entities (which in most cases should be small) stems from replacing existing inventory with complying product. The staff's changes to the voluntary standard should not significantly affect such replacement costs.

The impact on retailers and hotels is not expected to be significant, but there could be a significant impact on some small day care firms. One way to reduce this impact would be to set a later effective date. This would allow these firms to spread the cost of non-full-size crib replacement over a longer period of time.

# TAB H

**DRAFT 6-30-10**

**[Billing Code 6355-01-P]  
CONSUMER PRODUCT SAFETY COMMISSION**

**16 CFR Parts 1219 and 1220**

CPSC Docket No. CPSC-2010-\_\_\_\_\_

**Safety Standards for Full-Size Baby Cribs and Non-Full-Size Baby Cribs; Notice of Proposed Rulemaking**

**AGENCY:** Consumer Product Safety Commission.

**ACTION:** Notice of proposed rulemaking.

**SUMMARY:** Section 104(b) of the Consumer Product Safety Improvement Act of 2008 (“CPSIA”) requires the United States Consumer Product Safety Commission (“CPSC,” “Commission” or “we”) to promulgate consumer product safety standards for durable infant or toddler products. These standards are to be “substantially the same as” applicable voluntary standards or more stringent ~~than~~ the voluntary standard if the Commission concludes that more stringent requirements would further reduce the risk of injury associated with the product. The Commission is proposing safety standards for full-size and non-full-size baby cribs in response to the direction under section 104(b) of the CPSIA. Section 104(c) specifies that the crib standards will cover used as well as new cribs. The crib standards will apply to anyone who manufactures, distributes or contracts to sell a crib; to child care facilities, and others holding themselves out to be knowledgeable about cribs; to anyone who leases, sublets or otherwise places a crib in the stream of commerce; and to owners and operators of places of public accommodation affecting commerce.

**DATES:** Written comments must be received by **[insert date 75 days after publication in *Federal Register*]**.

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**ADDRESSES:** Comments related to the Paperwork Reduction Act aspects of the recordkeeping, marking and instructional literature requirements of the proposed rule should be directed to the Office of Information and Regulatory Affairs, OMB, Attn: CPSC Desk Officer, FAX: 202-395-6974, or e-mailed to [oir\\_submission@omb.eop.gov](mailto:oir_submission@omb.eop.gov).

Other comments, identified by Docket No. CPSC-2010-\_\_\_\_\_, may be submitted by any of the following methods:

### **Electronic Submissions**

Submit electronic comments in the following way:

Federal eRulemaking Portal: <http://www.regulations.gov>. Follow the instructions for submitting comments.

To ensure timely processing of comments, the Commission is no longer accepting comments submitted by electronic mail (e-mail) except through [www.regulations.gov](http://www.regulations.gov).

### **Written Submissions**

Submit written submissions in the following way:

Mail/Hand delivery/Courier (for paper, disk, or CD-ROM submissions), preferably in five copies, to: Office of the Secretary, Consumer Product Safety Commission, Room 502, 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 rulemaking. 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

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information, trade secret information, or other sensitive or protected information electronically. 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>.

**FOR FURTHER INFORMATION CONTACT:** Patricia Edwards, Project Manager, Directorate for Engineering Sciences, Consumer Product Safety Commission, 4330 East West Highway, Bethesda, MD 20814; telephone (301) 504-7577; [pedwards@cpsc.gov](mailto:pedwards@cpsc.gov).

### **SUPPLEMENTARY INFORMATION:**

#### **A. Background and Statutory Authority**

##### *1. Section 104(b) of the Consumer Product Safety Improvement Act*

The Consumer Product Safety Improvement Act of 2008 (“CPSIA”, Pub. Law 110-314) was enacted on August 14, 2008. Section 104(b) of the CPSIA requires the Commission to promulgate consumer product safety standards for durable infant or toddler products. These standards are to be “substantially the same as” applicable voluntary standards or more stringent than the voluntary standards if the Commission concludes that more stringent requirements would further reduce the risk of injury associated with the product. In this document, the Commission proposes safety standards for full-size and non-full-size cribs. The proposed standard for full-size cribs is substantially the same as a voluntary standard developed by ASTM International (formerly known as the American Society for Testing and Materials), ASTM F 1169-10 *Standard Specification for Full Size Baby Crib*, but with one modification that strengthens the standard. The proposed standard for non-full-size cribs is substantially

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the same as ASTM F 406-10, *Standard Consumer Safety Specification for Non-Full-Size Baby Cribs*, but with several changes that strengthen the standard.

### 2. Section 104(c) of the CPSIA

The CPSIA treats cribs differently than other durable infant or toddler products covered by section 104 of the CPSIA. Section 104(c)(2) of the CPSIA states that the section applies to any person that:

(A) manufactures, distributes in commerce, or contracts to sell cribs;

(B) based on the person's occupation, holds itself out as having knowledge or skill peculiar to cribs, including child care facilities and family child care homes;

(C) is in the business of contracting to sell or resell, lease, sublet, or otherwise place cribs in the stream of commerce; or

(D) owns or operates a place of public accommodation affecting interstate commerce (as defined in section 4 of the Federal Fire Prevention and Control Act of 1974 (15 U.S.C. 2203) applied without regard to the phrase "not owned by the Federal Government").

Section 104(c)(2) of the CPSIA (Pub. Law 110-314).

Section 104(c)(1) of the CPSIA makes it a prohibited act under section 19(a)(1) of the Consumer Product Safety Act ("CPSA") for any person to whom section 104(c) applies to "manufacture, sell, contract to sell or resell, lease, sublet, offer, provide for use, or otherwise place in the stream of commerce a crib that is not in compliance with a standard promulgated under subsection (b) [of the CPSIA]." Section 104(c)(3) of the CPSIA defines "crib" as including new and used cribs, full-size and non-full-size cribs, portable cribs, and crib pens.

Thus, the crib standards will apply to owners and operators of child care facilities (including in-home child care) and public accommodations such as hotels and motels, as

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well as to manufacturers, distributors, and retailers of cribs. Once the standards are in effect, it will be unlawful to sell, lease or otherwise provide a crib for use that does not meet the standards. As discussed in more detail in part I below, the Commission recognizes the potential market impact of this rule on some entities and invites comments on these issues.

### *3. Existing Mandatory Regulations for Cribs*

In 1973, the Commission issued mandatory regulations for full-size cribs, 38 FR 32129 (Nov. 21, 1973), which are codified at 16 CFR part 1508. The standard was amended in 1982, adding a performance requirement to address the hazard of crib cutouts, 47 FR 47534 (Oct. 27, 1982). This standard has requirements addressing crib dimensions, the spacing of crib components, hardware, construction and finishing, assembly instructions, warning statements and marking, recordkeeping, and cutouts. In 1976, the Commission issued similar regulations for non-full-size cribs, 41 FR 6240 (Feb. 12, 1976), codified at 16 CFR part 1509 (also amended in 1982 to address cutouts). According to 16 CFR parts 1508 and 1509, what principally distinguishes full-size from non-full-size cribs are the interior dimensions of the crib. Also, according to these standards, a full-size crib is intended for use in the home, and a non-full-size crib is intended for use “in or around the home, for travel and other purposes.” A full-size crib has interior dimensions of  $28 \pm \frac{5}{8}$  inches ( $71 \pm 1.6$  centimeters) in width by  $52 \frac{3}{8} \pm \frac{5}{8}$  inches ( $133 \pm 1.6$  centimeters) in length. A non-full-size crib may be either smaller or larger than these dimensions. Full-size and non-full-size cribs also differ in the height of the crib side or rail. Non-full-size cribs include oversize, specialty, undersized and portable cribs. However, any product with mesh/net/screen siding, non-rigidly

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constructed cribs, cradles, car beds, baby baskets, and bassinets are excluded from the non-full-size crib requirements of 16 CFR part 1509.

The requirements of 16 CFR part 1508 have been included in ASTM F 1169-10, and the requirements of 16 CFR part 1509 have been included in ASTM F 406-10. However, the recordkeeping requirements in the ASTM standards are expanded from the 3-year retention period that is required in 16 CFR parts 1508 and 1509 to a 6-year retention period, which is consistent with the consumer registration provision in section 104(d) of the CPSIA. Also, as explained in part G.2 of this preamble, ASTM F 406-10 (for non-full-size cribs) places the recordkeeping provision in a non-mandatory appendix. The proposed rule would put the recordkeeping provision in the general requirements section of the non-full-size crib standard.

Elsewhere in this issue of the FEDERAL REGISTER, the Commission is proposing to revoke the existing CPSC regulations for full-size and non-full-size cribs, 16 CFR parts 1508 and 1509. As explained in the proposed revocation notice, the applicable ASTM standards include the requirements of 16 CFR parts 1508 and 1509. Thus, maintaining them would be redundant. Revoking the existing regulations will allow all the crib-related requirements to be together and will avoid confusion about which requirements apply to cribs.

Related to the proposed revocation of 16 CFR parts 1508 and 1509, the Commission is proposing to revise 16 CFR 1500.18(a)(13) and (14). These provisions currently state that full-size cribs that do not comply with 16 CFR part 1508 and non-full-size cribs that do not comply with 16 CFR part 1509 are banned hazardous substances under the Federal Hazardous Substances Act (“FHSA”). This notice proposes to change

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the references in 16 CFR 1500.18(a)(13) and (14) to refer to the crib standards the Commission is proposing.

### ***4. Previous Commission Activities Concerning Cribs***

In addition to issuing 16 CFR parts 1508 and 1509, the Commission has taken other regulatory and non-regulatory actions concerning crib hazards. In 1996, the Commission published an advance notice of proposed rulemaking (“ANPR”) under the FHSA to address the hazard of crib slat disengagement, 61 FR 65996 (Dec. 16, 1996) (“1996 ANPR”). The Commission had become aware of 138 incidents, including 12 deaths due to entrapment, associated with disengagement of crib slats that were reported to the Commission between January 1985 and September 1996. After issuance of the 1996 ANPR, the CPSC staff worked with ASTM to add a provision to ASTM F 1169 to address this hazard. Elsewhere in this issue of the FEDERAL REGISTER, the Commission is terminating the rulemaking it began with the 1996 ANPR because the slat disengagement hazard is addressed by the standards the Commission is proposing.

More recently, the Commission’s Office of Compliance staff has been involved with numerous investigations and recalls of cribs. Since 2007, CPSC has issued 40 recalls of over 11 million cribs. All but 7 of these recalls were for product defects that created a substantial product hazard, and not for violations of the federal crib regulations.

On November 25, 2008, the Commission published an ANPR discussing options to address the hazards which CPSC staff had identified in the reported crib incidents and recalls. The ANPR focused on drop side crib hardware, other hardware, assembly issues, and wood quality. Comments in response to the ANPR suggested that CPSC should look more broadly at crib safety issues to develop a comprehensive crib rule and seek to

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harmonize its regulations with international standards. Another comment expressed concern about the potential costs for small businesses that may sell only several hundred cribs per year. Several consumer groups supported mandating the ASTM crib standards and additionally strengthening crib regulations by such actions as banning drop sides, requiring test methods mandated by other standards, and strengthening requirements for crib hardware. The hazards discussed in the 2008 ANPR are addressed in this proposal.

On April 22, 2009, CPSC staff held a public roundtable meeting concerning crib safety to solicit input about existing voluntary and mandatory standards to help the staff in developing crib standards under section 104 of the CPSIA. Information about the crib roundtable and the presentations made by CPSC staff and others are on the Commission's website at <http://www.cpsc.gov/info/cribs/infantsleep.html>. Over 100 people attended the roundtable, including representatives from crib manufacturers, testing laboratories, consumer groups, other government agencies, and other interested stakeholders.

### **B. The Products**

#### *1. Definitions*

According to existing CPSC standards and the ASTM standards, a crib is a bed designed to provide sleeping accommodations for an infant. As discussed previously, full-size cribs have specific interior dimensions ( $28 \pm \frac{5}{8}$  inches ( $71 \pm 1.6$  centimeters) in width by  $52 \frac{3}{8} \pm \frac{5}{8}$  inches ( $133 \pm 1.6$  centimeters) in length). Non-full-size cribs are either smaller or larger than full-size cribs. The category of non-full-size cribs includes oversized, specialty, undersized and portable cribs, but does not include any product with mesh/net/screen siding, non-rigidly constructed cribs, cradles, car beds, baby baskets, or bassinets.

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### *2. The Market for Full-Size Cribs*

The CPSC staff estimates that there are currently 68 manufacturers or importers supplying full-size cribs to the United States market. Ten of these firms are domestic importers (15 percent), 42 are domestic manufacturers (62 percent), 7 are foreign manufacturers (10 percent), and 2 are foreign importers (3 percent). Insufficient information was available about the remaining firms to categorize them.

Based on information from a 2005 survey conducted by the American Baby Group, CPSC staff estimates annual sales of new cribs to be about 2.4 million, of which approximately 2.1 million are full-size cribs (could be an underestimate if new mothers buy more than one crib). CPSC staff estimates that there are currently approximately 591 models of full-size cribs compared to approximately 81 models of non-full-size cribs. Thus, approximately 88 percent of crib models are full-size cribs.

### *3. The Market for Non-Full-Size Cribs*

CPSC staff estimates that there are currently at least 17 manufacturers or importers supplying non-full-size cribs to the United States market. Five of these firms are domestic importers and ten are domestic manufacturers. Insufficient information is available to determine whether the remaining firms are manufacturers or importers. CPSC staff estimates that there are approximately 2.4 million cribs sold to households annually. Of these, approximately 293,000 are non-full-size cribs.

### *4. Retailers, Child Care Facilities and Places of Public Accommodation*

Section 104(c) of the CPSIA explicitly provides that the crib standards issued under this section will apply to retailers (of both new and used cribs), child care facilities, and owners and operators of places of public accommodation affecting commerce. The

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CPSIA defines a “place of public accommodation affecting commerce” with reference to the Federal Fire Prevention and Control Act of 1974 (but without the phrase that excludes establishments owned by the Federal Government). Thus, the definition under the CPSIA is:

any inn, hotel, or other establishment ... that provides lodging to transient guests, except that such term does not include an establishment treated as an apartment building for purposes of any State or local law or regulation or an establishment located within a building that contains not more than 5 rooms for rent or hire and that is actually occupied as a residence by the proprietor of such establishment.

15 U.S.C. 2203(7).

CPSC staff is unable to estimate the number of retailers that may sell or provide cribs. However, the number would be some subset of approximately 24,985 retail firms in the United States (at least 5,292 of which sell used products). The CPSC staff estimates that there are approximately 59,555 firms supplying day care services and 43,303 firms providing public accommodation.

### **C. Incident Data**

In November 2007, CPSC staff began a pilot project known as the Early Warning System (“EWS”) to monitor incident reports related to cribs. Between November 1, 2007 and April 11, 2010, the Commission has reports through EWS of 3,584 incidents related to cribs. The year of the incident associated with these reports ranged from 1986 through 2010. However, very few crib-related incidents that occurred before 2007 are reflected in EWS. Data from EWS is not meant to provide an estimate of all crib-related incidents that have occurred during any particular time period. Rather, because a substantial number of EWS incident reports were assigned for follow-up investigation, the EWS

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incidents provide a better illustration of the hazard patterns associated with incidents involving cribs than other CPSC databases could.

Of the 3,584 incidents reported through EWS, CPSC staff has clearly identified 2,395 incidents as involving full-size cribs, 64 incidents as clearly involving non-full-size cribs, and 1,125 incidents as lacking sufficient data for CPSC staff to determine whether they involved full-size or non-full-size cribs. The prevalent hazards reported in these incidents are common to all cribs, regardless of size. Given the predominance of incident reports identified as involving full-size cribs, the 1,125 incidents in which size of the crib could not be determined are grouped with the category of full-size cribs.

### *1. Full-Size Cribs (includes cribs of undetermined size)*

This section discusses incident data in the 3,520 reports from EWS involving 2,395 full-size cribs and 1,125 reports involving cribs of an undetermined size. Of these 3,520 incident reports, there were 147 fatalities, 1,675 non-fatal injuries, and 1,698 non-injury incidents. The non-injury incidents range from incidents that could have potentially resulted in injuries or fatalities to general complaints or comments from consumers. Reporting is ongoing; the number of reported fatalities, non-fatal injuries, and non-injury incidents will change in the future.

#### *a. Fatalities*

Between November 1, 2007 and April 11, 2010, a total of 147 fatalities associated with full-size cribs were reported to the Commission. A majority of the deaths (107 out of 147, or almost 73 percent) were not related to any structural failure or design flaw of the crib, but fell into the following categories:

- 62 suffocation deaths related to presence of soft bedding;

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- 17 asphyxiation deaths related to prone positioning of infant;
- 12 strangulation deaths related to window blind/electrical/other cords in or near crib; and
- 16 remaining deaths resulted from miscellaneous hazards, e.g., plastic bags in crib and use of nursery product accessories in crib

There were 35 fatalities attributable to structural problems of the crib. Nearly all (34 of the 35) were due to head/neck/body entrapments. Over half of these (18 out of 35) were related to drop-side failures. Almost all of the crib failures – whether they occurred due to detachments, disengagements, or breakages - created openings in which the infant became entrapped. One entrapment death resulted from a child becoming trapped between a wall and a crib while trying to climb out of the crib; there was a crib assembly problem that prevented the mattress support from being lowered sufficiently. The non-entrapment death resulted from a loose screw becoming lodged in the decedent's throat. (For five fatalities, no information on the circumstances was available.)

### *b. Non-Fatal Injuries*

Of the 3,520 incident reports involving full-size (and undetermined size) cribs, 1,675 reported a crib-related injury. The vast majority (97 percent) of these injuries were not serious enough to require hospitalization. Approximately half of those that did require hospitalization involved limb or skull fractures and other head injuries resulting from falls from cribs. Most of the remaining injuries resulted from children getting their limbs caught between crib slats, falling inside the crib and hitting the crib structure, or getting stuck in gaps created by structural failures.

### *c. Hazard Pattern Identification*

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CPSC staff considered all 3,520 incidents (including fatalities, non-fatalities, and non-injury incidents) involving full-size cribs (including cribs of undetermined size) to identify hazard patterns related to these incidents. CPSC staff grouped these incidents into four broad categories: (1) product-related; (2) non-product related; (3) recall-related; and (4) miscellaneous. More detail is provided in the Epidemiology staff's memorandum that is part of the CPSC staff's briefing package available on the CPSC website at [www.cpsc.gov](http://www.cpsc.gov).

*Product-related.* About 82 percent of the 3,520 incidents reported some sort of failure or defect in the product itself. Beginning with the most frequently reported concerns these included:

- Falls from cribs accounted for approximately 23 percent (about 800 reports) of the 3,520 incidents. This category accounts for the largest proportion of injuries, but no fatalities.
- Crib drop-side-related problems, which include drop-side detachment, operation, hardware, and assembly issues, among others, accounted for about 22 percent (approximately 770 reports) of the incidents. This category accounts for 12 percent of all reported fatalities.
- Infants getting their limbs caught between the crib slats accounted for 12 percent (about 430 reports) of the incidents in the EWS. No fatalities were reported in this category.
- Wood-related issues were reported in about 12 percent (approximately 410 reports) of all incidents in the EWS. This includes fractured slats, slat

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detachments, and fractured rails, among others. One fatality was reported in this category.

- Mattress support-related problems were reported in about 5 percent (approximately 170 reports) of the incidents. Four fatalities were reported in this category.
- Mattress fit problems were reported in about 3 percent (about 100 reports) of the incidents in the EWS. These problems can cause partial or full body entrapments in the space between mattress and crib side. Numerous bruising injuries but no fatalities were reported in this category.
- Paint-related issues were reported/complained of in about 2 percent (approximately 90 reports) of the EWS reports. These mostly expressed concern about a possible choking hazard or lead exposure from children chewing on paint chips.
- Miscellaneous problems with the crib structure were reported in 3 percent (120 reports) of the EWS incidents. These included non-drop-side or drop gate failures, sharp catch-points, stability and/or other structural issues and included 12 fatalities.

*Non-Product-Related.* Approximately 10 percent (about 340 reports) of the 3,520 incident reports were of deaths, injuries, or non-injury incidents that could not be associated with any product defect or failure. As previously noted, most fatalities in full-size cribs were associated with the use of soft/extra bedding in the crib, prone positioning of the infant on the sleep surface, and the presence of hazardous surroundings in and around the crib.

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*Recall-related.* About 5 percent (approximately 180 reports) of the 3,520 reports were related to recalled cribs. Most of the reports were complaints or inquiries from consumers regarding a recalled product.

*Miscellaneous.* The remaining 3 percent (about 100 reports) of the incidents reported a variety of miscellaneous problems including bug-infested cribs, odor/fumes emanating from cribs, unexplained fatalities/injuries to infants in cribs, and ambiguous descriptions of problems. There were five fatalities included in this category.

### *2. Non-Full-Size Cribs*

This category includes portable cribs and other cribs that are either smaller or larger than the dimensions specified for full-size cribs. For its review of incident data, staff included in the category of non-full-size cribs only those cribs it could positively identify as non-full-size cribs. CPSC staff is aware of 64 incidents related to non-full-size cribs that have been reported between November 1, 2007 and April 11, 2010. Among these incidents, there were 6 fatalities, 28 injuries, and 30 non-injury incidents. Because reporting is ongoing, the number of reported fatalities, non-fatal injuries, and non-injury incidents presented here may change in the future.

#### *a. Fatalities*

Of the six fatalities, three were attributed to the presence of a cushion/pillow in the sleep area. One fatality was due to the prone positioning of the infant on the sleep surface. One fatality resulted from the infant getting entrapped in a gap opened up by loose/missing screws. Very little information was available on the circumstances of the last fatality.

#### *b. Non-Fatal Injuries*

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Among the 28 non-fatal injuries reported, only 2 required any hospitalization. Most of the remaining injuries, which include fractures, bruises, and lacerations, resulted from children falling and hitting the crib structure while in the crib, falling or climbing out of the crib, and children getting their limbs caught in the crib slats.

### *c. Hazard Pattern Identification*

CPSC staff considered all 64 incidents (including fatalities, non-fatalities, and non-injury incidents) involving non-full-size cribs to identify hazard patterns related to these incidents. The hazard patterns are similar to those among full-size cribs.

*Product-related.* Seventy-two percent of the incidents reported product-related issues. These primarily involved falls from cribs, limbs becoming caught between slats, issues related to drop-sides and non-drop-sides (such as detachments and operation/hardware issues), and wood-related issues (including three slat detachments). This category includes one fatality which was related to non-drop-side hardware.

*Non-product-related.* Nineteen percent of the incidents reported non-product-related issues. These included four of the six fatalities - three on pillows/cushions and one from prone positioning - and eight injuries resulting from the infant hitting and getting hurt on the crib structure while in the crib.

*Recall-related.* Three percent of the reports were related to recalled products.

*Miscellaneous.* The remaining 6 percent of incidents included reports of such miscellaneous issues as a bug-infested crib, an ambiguous description of an incident requiring hospitalization of the infant, and a fatality with very little information on the circumstances involved.

## **D. Voluntary and International Standards**

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As part of its work in developing standards for full-size and non-full-size cribs under section 104 of the CPSIA, CPSC staff reviewed requirements of existing voluntary and international standards related to cribs. The primary such standards currently in effect are the ASTM standards for full-size and non-full-size cribs, a Canadian standard and a European standard. Underwriters Laboratories, Inc. (“UL”) has a crib standard, UL 2275. However, the UL standard was not followed by crib manufacturers and is no longer an active standard.

### *1. The ASTM Standards*

ASTM first published its voluntary standard for full-size cribs, ASTM F 1169, *Standard Specification for Full-Size Baby Crib*, in 1988. At that time, provisions included requirements for crib side testing, vertical impact testing, a mattress support system test, a test method for crib side latches, a plastic teething test and requirements for labeling and instructional literature. ASTM F 1169 was revised in 1999 in response to the Commission’s 1996 ANPR to address the integrity of slat-to-rail joints. The revision added a torque test for side spindles and increased the applied weight and number of cycles for cyclic testing. ASTM F 1169 was revised again in 2003 to include requirements addressing corner post entanglements and to make editorial changes. The 2007 revision made further editorial changes. In 2009, the standard was revised significantly to include a limitation on movable sides that effectively eliminates the traditional drop side design in which the front side of the crib can be raised and lowered. The 2009 revision also added a new performance requirement for slat strength. On June 1, 2010, ASTM approved the current version of its full-size crib standard, F 1169-10, which is discussed in section E of this preamble.

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In 1997, ASTM first published a standard for non-full-size cribs, ASTM F 1822, *Standard Consumer Safety Specification for Non-Full-Size Baby Cribs*. ASTM F 1822 covered products that provide sleeping accommodations for a child and have interior dimensions between 17" and 26" side and between 35" and 50 3/8" long (excluding bassinets, cradles, and baskets). In June 2002, in order to group products with similar uses, ASTM combined its non-full-size crib standard, ASTM F 1822-97, with its play yard standard (F 406-99, *Standard Consumer Safety Specification for Play Yards*) to create ASTM F 406-02, *Standard Consumer Safety Specification for Non-Full-Size Baby Cribs/Play Yards*. ASTM revised ASTM F 406 several time subsequently. On June 1, 2010, ASTM approved the current version of its non-full-size crib standard, F 406-10, which is discussed in section E of this preamble.

### *2. International Standards*

Health Canada's crib standard, SOR/86-969, and the European standard, EN 716, have several performance requirements that have essentially been included in ASTM F 1169-10. These include the cyclic side (shake) test and the mattress support system vertical impact test (with slight modification) from the Canadian standard. The slat/spindle strength test in ASTM F 1169-10 evolved from the EN 716 requirements. However, the ASTM F 1169-10 test is more stringent than the slat/spindle test in the EN standard. The Commission recognizes the efficiencies to be gained from harmonization with international standards but given staff's conclusions that its proposed tests will reduce the likelihood of injury and death, adopts for this notice the more stringent tests described above. The Commission recognizes the potential market impact of this rule on

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some entities that sell in the global marketplace and invites comments on the proposed tests as well.

### **E. The ASTM 2010 Crib Standards**

As noted in the previous section of this preamble, both ASTM F 1169 and ASTM F 406 have been significantly revised in 2009 and 2010. The Commission is adopting the 2010 version of these standards with certain modifications discussed in section G of this preamble. Drawing from its experience with investigations and recalls related to cribs, from knowledge gained through the crib roundtable and ANPR comments, and from participation in ASTM meetings, CPSC staff developed a list of areas the staff believes should be considered in revised standards for full-size and non-full-size cribs. These areas of consideration are:

- Drop-side hardware systems
- Non-drop-side hardware systems
- Mattress support issues
- Wood screws
- Assembly and instruction issues
- General requirements
- Slat integrity/wood quality
- Paint/finish
- Attachments
- Slat spacing
- Climb/fall out
- Mattress fit

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Most of these areas are now addressed in ASTM F 1169-10 and ASTM F 406-10. To the extent that there are structural/design issues not adequately addressed by the ASTM standards, the Commission is proposing modifications to address these. This is primarily the case with the non-full-size crib standard that lacks some of the more stringent requirements found in the full-size crib standard. (These proposed modifications are discussed in section G of this preamble.)

Some hazards that CPSC staff identified - such as climbing/falling out of cribs, mattress fit, and limb entrapments - are difficult to address through crib standards. The Commission intends to address these hazards through other means.

*Climb/fall out.* With regard to the climb/fall out hazard, product changes, such as increasing the height of the crib sides, could create other hazards or lead to use of sleeping arrangements other than cribs (which could be more hazardous). A principal factor in these incidents is the continued use of cribs with children who are capable of climbing out of the crib. The full-size crib standard moved the warning about when to stop using a crib into a higher position in the list of warnings (this warning was already in a prominent position in the non-full-size crib standard).

*Mattress fit.* With regard to the fit of the crib mattress, CPSC staff's review of available data found no deaths or serious injuries related to this issue. (The fit of the mattress is only an issue with full-size cribs because non-full-size cribs come with a mattress that is required to fit with no gaps larger than ½ inch.) However, a significant gap between the mattress and the crib structure could potentially create an entrapment hazard. The Commission believes this issue would best be addressed through a separate

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ASTM standard for full-size crib mattresses. ASTM has begun work on such a standard, and CPSC staff is participating in this development.

*Limb entrapment.* With regard to limb entrapments between slats, no deaths have been associated with this hazard, but some fractures and bruising have been reported. The existing spacing requirement – maximum width of 2 ¾ inches (6 cm) - specified in 16 CFR 1508 and 1509 (and maintained in ASTM F 1169-10 and ASTM F 406-10) has been extremely effective in preventing incidents of fatal head/neck entrapment and strangulation. Increasing the spacing requirement to address the limb injuries could increase such fatalities, and decreasing the requirement could result in other limb entrapments of smaller infants or smaller body parts.

### *1. ASTM F 1169-10 Standard for Full-Size Baby Cribs*

ASTM F 1169-10 includes definitions; general requirements; performance requirements; specific test methods; and requirements for marking, labeling, and instructional literature.

*Definitions.* The definition of full-size crib is the same as the current definition in 16 CFR part 1508. Among the other terms defined are “accessory,” “key structural element,” “mattress support system,” and “movable side.”

*General requirements.* Several general requirements, such as specifications for interior crib dimensions and rail height, spacing of crib components, restrictions on toe holds, prohibition on hardware or fasteners that present mechanical hazards; restrictions on wood screws; and requirements for recordkeeping come from the provisions of 16 CFR part 1508. Other general requirements include, but are not limited to: paint and surface coatings must comply with the lead paint restrictions in 16 CFR part 1303; small

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parts (as defined in 16 CFR part 1501) are prohibited; corner post assemblies must not extend beyond 0.06 inches (1.50 mm) above the upper edge of an end or side panel; movable sides are limited so that traditional drop sides are essentially eliminated, but designs that use a hinged joint that folds down are allowed; and in addition to the restrictions on wood screws that were already in 16 CFR part 1508, wood screws and other fasteners must meet additional requirements.

*Performance requirements.* ASTM F 1169-10 contains numerous performance requirements and specifies applicable test methods. These include: a requirement for spindle slat strength testing; mattress support system tests (impact and static load testing and openings requirements); crib side tests (includes crib side static and impact tests and a crib side spindle/slat torque test); a plastic teething rail test; crib side latch tests; dynamic structural cyclic (shake) tests (includes horizontal and vertical cyclic testing to simulate shaking); a component separation limitation (post testing); cutout testing; accessories entrapment testing; as well as providing a specified order for these tests.

*Marking, labeling and instructional literature.* ASTM F 1169-10 includes the marking, labeling and instructional requirements that are currently in 16 CFR part 1508 as well as requirements for warnings concerning suffocation on soft bedding, strangulation on strings or cords, and the hazard of falls from the crib. The ASTM standard also requires that instructions that are easy to read and understand be provided with the crib and that the instructions contain certain information and warnings.

### 2. ASTM F 406-10 Standard for Non-Full-Size Baby Cribs

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Like the ASTM standard for full-size cribs, ASTM F 406-10 includes definitions; general requirements; performance requirements; specific test methods; and requirements for marking, labeling, and instructional literature.

*Definitions.* The definition of “non-full-size crib” is the same as that in 16 CFR part 1509. Although ASTM 406-10 includes play yards within its scope, and the standard provides a definition of play yard, the Commission is not including play yards in its proposed non-full-size crib standard. (ASTM F 406-10 defines a “play yard” as “a framed enclosure that includes a floor and has mesh or fabric sided panels primarily intended to provide a play or sleeping environment for children. It may fold for storage or travel.”) The Commission will be developing a separate standard for play yards in the near future.

*General requirements.* For the ASTM non-full-size crib standard, general requirements include: restrictions on corner post assemblies (must not extend beyond 0.06 inches (1.50 mm) above the upper edge of an end or side panel); requirements that cribs meet CPSC provisions concerning sharp points and edges, small parts, lead paint, and flammable solids; restrictions concerning scissoring, shearing and pinching; toy accessory requirements; requirements for latching and locking mechanisms; and restrictions on openings. The standard also contains requirements concerning protective components, labeling, stability, cord/strap length, coil springs, entrapment in accessories, and for mattresses which must be provided with non-full-size cribs.

*Performance and test method requirements.* The non-full-size crib standard provides performance requirements, including a requirement for crib side height (including a limitation on crib side configurations that essentially bans traditional drop

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sides); hardware requirements (including requirements for fasteners and wood screws); construction and finishing requirements; spindle/slat strength testing; mattress support system testing (including vertical impact and static load testing); crib side tests (includes static and impact tests); a plastic teething rail test; foldable side or end latch tests; and dynamic structural cyclic (shake) tests (includes horizontal and vertical cyclic testing to simulate shaking).

*Marking, labeling and instructions.* ASTM F 406-10 has requirements for marking, labeling and instructions that are similar to the requirements for full-size cribs. However, the standard contains additional provisions for warning statements addressing hazards posed by cribs that are likely to be moved around often.

### **F. Assessment of Voluntary Standards ASTM F 1169-10 and ASTM F 406-10**

#### **1. Section 104(b) of the CPSIA: Consultation and CPSC Staff Review**

Section 104(b) of the CPSIA requires the Commission to assess the effectiveness of the voluntary standard in consultation with representatives of consumer groups, juvenile product manufacturers, and other experts. This consultation process for the full-size and non-full-size crib standards has involved an ANPR, a public crib roundtable, and in-depth involvement with ASTM. CPSC staff's consultations with ASTM are ongoing.

#### **2. Full-Size Crib Standard; ASTM F 1169-10**

The Commission believes that the provisions of ASTM F 1169-10 are effective to reduce the risk of injury associated with full-size cribs. The Commission is proposing one modification, discussed in section G.1 of this preamble, to strengthen the ASTM standard. This section summarizes how the provisions of ASTM F 1169-10 address the principal crib-related hazards CPC staff has identified.

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*Moveable Side (Drop-Side) Requirements.* A review of the incident data indicates that 18 of 35 fatalities attributable to structural failures of cribs were related to drop-side failures. The fatalities occurred when gaps were created when the corner of the drop side dislocated or disengaged from the crib end. ASTM 1169-10 addresses this type of hazard through a requirement that the sides of a crib be fixed in place and have no movable sections less than 20 inches from the top of the mattress support (effectively eliminating drop sides).

*Structural Integrity Requirements (Including Non-Drop-Side Hardware).* CPSC staff attributed 12 of the 35 fatalities to problems with non-drop-side hardware and poor structural integrity. Many of these incidents occurred when screws or inserts loosened over time causing primary crib elements, such as crib side rails and ends, to separate and create an entrapment hazard. ASTM F 1169-10 addresses this type of hazard through requirements for screw fasteners, locking components, and the cyclic side (shake) test.

*Screw Fastener and Locking Feature Requirements.* Loosening of wood screw and other fasteners has also led to crib incidents. ASTM F 1169-10 includes the wood screw requirements of 16 CFR 1508 and also: restricts the use of wood screws as primary fasteners; prohibits use of wood screws in structural elements that a consumer would need to assemble; and adds stricter requirements for the use of threaded metal inserts and other metal threaded fasteners.

*Alternating Horizontal and Vertical Cyclic Side (shake) Test.* Among the incidents reported through EWS, were problems with the structural integrity of cribs, and hardware issues. The cyclic side (shake) test - which simulates a child's lifetime shaking of the crib - should address the types of incidents related to loosened joints, detached

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sides and overall poor structural integrity. The test applies a cyclic force (9,000 vertical and then 9,000 horizontal load cycles using 27 lbf) at the midpoint of each top rail, end and side of the crib.

*Mattress Support Vertical Impact Test.* Among the EWS incidents were 3 deaths due to entrapments between a mattress support and a crib structure and 168 reported non-fatal incidents related to mattress support structural failures. ASTM F 1169-10 includes a mattress impact cyclic test developed by Health Canada. This test consists of dropping a 45-pound mass (20 kg) repeatedly every 4 seconds onto a polyurethane foam test mattress covered in vinyl and supported by the mattress support system.

*Crib Side Vertical Impact Test.* Although a provision was added to the ASTM F 1169 standard in 1999 to require testing of crib side spindles and slats, some incidents involving crib slat disengagement (which can result in entrapment) have continued to occur. ASTM F 1169-10 strengthens that testing requirement by specifying that any crib side with slats must be tested (previously the number of sides was not specified and manufacturers could test just one side).

*Slat/Spindle Strength Test.* CPSC staff identified 1 death and 219 non-fatal incidents that were related to fractures of the crib slats or rails. Broken or dislocated slats can cause a gap of approximately 5 inches that can result in entrapment. The 2009 version of the ASTM standard required testing slat strength at 56.2 pounds. Based on testing and evaluations by the Commission's Engineering staff, ASTM F 1169-10 makes this test more stringent by requiring a set number of slats to withstand an 80-pound load.

*Mis-Assembly Issues.* ASTM F 1169-10 includes a requirement that states: "Crib designs shall only allow assembly of key structural elements in the manufacturer's

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recommended use position or have markings that indicate their proper orientation. The markings must be conspicuous in the misassembled state.” This new requirement will address incidents where mis-assembly has been found to be a contributing factor.

*Order of Testing.* ASTM F 1169-10 specifies the order in which all performance tests must be conducted:

1. Teething rail test
2. Cyclic side (shake) test
3. Crib side latch test
4. Mattress support system vertical impact test
5. Mattress support system static test
6. Crib side vertical impact test
7. Slat/spindle strength test

This order requires that the least stringent test be performed first, and for the testing order to continue in increasing stringency. This order also means that testing begins with a disassembled crib for the teething rail test, and the crib is assembled for the tests up to the slat/spindle strength test which is conducted on disassembled side rails.

CPSC staff believes that the combination of the cyclic side test (simulating a child standing and shaking the top of a side rail), mattress support system vertical impact test (child jumping), side rail impact test (child climbing outside of rail), and the slat/spindle strength tests (child and/or sibling falling against or kicking slats) together comprise a laboratory simulation of a lifetime of use. Each test represents a specific aspect of one life cycle. CPSC staff believes that the new requirements in ASTM F 1169-10 are a significant improvement to the previous standards and should result in more robust cribs.

### **3. Non-Full-Size Crib Standard; ASTM F 406-10**

The Commission believes that the provisions of ASTM F 406-10, with the modifications it proposes, are effective to reduce the risk of injury associated with non-

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full-size cribs. The Commission is proposing four modifications and two editorial changes, discussed in section G.2 of this preamble, to strengthen the ASTM standard. This section summarizes how the provisions of ASTM F 406-10 address the principal crib-related hazards CPSC staff has identified.

*Wood Screws and Other Fasteners.* The loosening of wood screws and other fasteners has been involved in crib incidents leading to structural problems and entrapment. ASTM F 406-10 addresses this hazard through requirements that are identical to those in ASTM F 1169-10.

*Alternating Horizontal and Vertical Cyclic Side Test (Shake Test).* ASTM F 406-10 contains the same cyclic for crib sides test that simulates a child's shaking the crib as is provided in ASTM F 1169-10.

*Spindle/Slat Testing.* The spindle/slat performance test in ASTM F 401-10 is identical to the one in ASTM F 1169-10.

*Mis-Assembly Issues.* This provision concerning mis-assembly is identical to the one in ASTM F 1169-10.

*Movable Side (Drop-Side) Requirements.* Similar to the ASTM standard for full-size cribs, ASTM F 406-10 contains requirements that restrict moveable sides, and have the effect of eliminating traditional drop sides.

### **G. Description of Proposed Changes to ASTM Standards**

CPSC staff has evaluated ASTM F 1169-10 and ASTM F 406-10 to determine the adequacy of these standards and any modification that might be needed to strengthen them. Based on this assessment and consultations with others, the Commission proposes a consumer product safety standard for full-size cribs that incorporates by reference

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ASTM F 1169-10 with one modification described in this section and proposes a consumer product safety standard for non-full-size cribs that incorporates by reference ASTM F 406-10 with the four modifications and two editorial changes described in this section.

To best understand the proposed standards it is helpful to view the current ASTM standards for full-size cribs and non-full-size cribs at the same time as the Commission's proposed modifications. The ASTM crib standards are available for viewing for this purpose during the comment period through this link: <http://www.astm.org/cpsc.htm>.

### **1. Proposed Change to the Full-Size Crib Standard (ASTM F 1169-10)**

The Commission is proposing one modification to ASTM F 1169-10. ASTM F 1169-10 allows retightening of screws between the crib side latch test and mattress support vertical impact tests. Industry representatives have argued that this allowance is needed because they believe the cyclic side "shake" test will loosen fasteners, which may cause a crib to fail some performance requirements in subsequent tests. ASTM F 1169-10 defines failure as key components separating by 0.04 inch (1.0 mm), typically 1 – 1½ turns of a fastener.

CPSC staff believes that the combination of performance tests in ASTM F 1169-10 comprise a laboratory simulation of a lifetime of use, and only as a combined whole, functioning together, is this simulation accomplished. Retightening fasteners would sever the chain of accumulated conditioning effects. CPSC staff does not believe that performing the sequence of tests without retightening fasteners is an overly restrictive test. The Canadian standard does not allow for any retightening of fasteners while a crib is tested. According to representatives from Health Canada, this has not been a problem

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for the vast majority of cribs tested to the Canadian standard. The CPSC staff is aware of at least ten fatal incidents in which loose screws have contributed to the death of a child. Loosened hardware can lead to gaps in which the child can become entrapped. Thus, it is important for fasteners to remain secure during the useful life of the crib.

### **2. Proposed Changes to the Non-Full-Size Crib Standard (ASTM F 406-10)**

The Commission is proposing four modifications and two editorial changes to ASTM F 406-10. These changes are necessary to adequately address the risk of injury posed by non-full-size cribs. The proposed changes will make the non-full-size crib standard more consistent with the standard for full-size cribs.

*Mattress Support System Cyclic Impact Test.* The Commission proposes to replace the mattress support performance requirement in ASTM F 406-10 with the test requirement developed by Health Canada that is in the full-size crib standard, ASTM F 1169-10. At its May 12, 2010 meeting, the ASTM Subcommittee for the F 406 standard reviewed this mattress support impact test for inclusion in ASTM F 406-10 and is expected to vote on it at the next subcommittee meeting. This change is needed to address mattress support hardware and related structural integrity hazards.

*Crib Side Tests.* The side impact test in ASTM F 406-10 is less stringent than the side impact test included in the standard for full-size cribs, ASTM F 1169-10 which was revised in 1999 after the Commission's 1996 ANPR concerning crib slat disengagements. However, the same revision was never made to the non-full-size crib standard. The Commission proposes to change the side impact test in the non-full-size crib standard to make it identical to the requirements in ASTM F 1169-10. This includes increasing the weight and number of cycles for the impact testing, and adding the spindle/slat torque test

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which involves twisting each slat after the side rail impact test to determine whether the side rail impact test has weakened the spindle/slat-to-rail joints which could create an entrapment hazard. The full-size crib standard includes this test, and the Commission proposes adding the same test to the non-full-size crib standard.

*Movable Side Latch Tests.* These tests had been part of all the previous versions of ASTM F 406 and were called the “Vertical Drop-Side Latch Tests.” They were removed during the development of F 406-10 in connection with the new limitation on movable sides. However, movable sides using other methods than a traditional drop-side are still permitted. Thus, the Commission believes the tests are still necessary. The Commission proposes to restore the requirement and rename it “movable side latch tests.”

*Order of Structural Tests.* ASTM F 406-10 does not specify the order in which tests must be performed for non-full-size cribs. As discussed in section F.2 above, however, ASTM F 1169-10 does specify the test order for full-size cribs. The Commission proposes to specify the same testing order for non-full-size cribs.

*Editorial Change to Limit Standard to Non-Full-Size Cribs.* ASTM F 406-10 covers play yards as well as non-full-size cribs and thus includes specific requirements for mesh/fabric sided products. In the future, the Commission will establish a separate standard for play yards under the process established by section 104 of the CPSIA. The Commission proposes changes to clarify that its standard covers only non-full-size cribs.

*Editorial Change to Place Recordkeeping Provision in General Requirements.* ASTM F 406-10 contains a recordkeeping provision that is nearly identical to that in 16 CFR part 1509 (the ASTM provision requires record retention for 6 years, whereas 16

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CFR part 1509 requires that records be maintained for 3 years). This recordkeeping provision is in the non-mandatory appendix of ASTM F 406-10. The Commission's proposal places this requirement in the general requirements section (which is the location of the recordkeeping provision in ASTM F 1169-10 for full-size cribs).

### **H. Effective Date**

The Administrative Procedure Act ("APA") generally requires that the effective date of a rule be at least 30 days after publication of the final rule. *Id.* 553(d). To allow time for cribs to come into compliance, the Commission proposes that the standard would become effective 6 months after publication of a final rule. This is consistent with other standards the Commission has proposed under section 104 of the CPSIA. The Commission invites comments regarding the sufficiency of a six-month effective date for the crib standards.

### **I. Regulatory Flexibility Act**

The Regulatory Flexibility Act ("RFA") generally requires that agencies review proposed rules for their potential economic impact on small entities, including small businesses. 5 U.S.C. 603.

#### *1. Full-Size Cribs*

##### *a. The Market for Full-Size Cribs*

As mentioned above, CPSC staff is currently aware of 68 manufacturers or importers supplying full-size cribs to the United States ("U.S.") market (of those that could be categorized, 10 are domestic importers, 42 are domestic manufacturers, 7 are foreign manufacturers, and 2 are foreign importers).

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The Juvenile Products Manufacturers Association (“JPMA”), the major U.S. trade association that represents juvenile product manufacturers and importers, runs a voluntary certification program for several juvenile products. Approximately 30 firms (44 percent) supply full-size cribs to the U.S. market that have been certified by JPMA as complying with the ASTM voluntary standard. Additionally, 15 firms claim compliance, although their products have not been certified by JPMA. It is assumed throughout this summary that the 45 firms that are certified or claim to be compliant with earlier ASTM standards will remain compliant with the 2010 version of the ASTM F 1169–10.

According to a 2005 survey conducted by the American Baby Group (*2006 Baby Products Tracking Study*), 90 percent of new mothers own cribs. Approximately 36 percent of wood cribs and 50 percent of metal cribs were handed down or purchased second-hand. Using an average weighted by the ownership of each type of crib (83 percent for wood and 7 percent for metal), CPSC staff estimates that approximately 37 percent of all cribs were handed down or purchased second-hand. Thus about 63 percent of cribs were acquired new. This suggests annual sales of about 2.4 million cribs to households ( $.63 \times .9 \times 4.3$  million births per year). To the extent that new mothers own more than one crib, annual sales may be underestimated. Based on a review of the United States market, it appears that there are approximately 591 full-size crib models and 81 non-full-size crib models currently being supplied. Therefore, approximately 88 percent of the crib models on the U.S. market are full-sized. Applying this percentage to the number of cribs sold annually, yields an estimate of 2.1 million full-size cribs sold annually. However, this is a rough estimate, since the percentage of full-size crib models on the market does not necessarily correlate directly to sales.

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As noted, section 104 of the CPSIA explicitly mentions retailers of both new and used full-size cribs (child care facilities and places of public accommodation are discussed in the section of this analysis concerning non-full-size cribs). The number of firms that may be selling or providing full-size cribs is unknown, but may be drawn from approximately 24,985 retail firms (at least 5,292 of which sell used products), that may be supplying new or used full-size cribs to the public. The number of affected retailers will be smaller since not all retailers sell full-size cribs.

The Commission is particularly interested in whether this analysis can be enhanced with additional data submitted through the comment period. Accordingly, we ask for comments on the market for full-sized cribs, the amount of existing inventory and the time it will take to manufacture sufficient compliant inventory to meet current market demand and additional demand created by the need to replace non-compliant cribs in hotels, day care centers and other places where cribs are provided for use.

### *b. Compliance Requirements of the Proposal for Full-Size Cribs*

The proposed standard for full-size cribs is nearly identical to ASTM F 1169-10 with the one modification of not allowing screws to be retightened between the crib side latch test and the mattress support vertical test. Based on testing results from Health Canada for the shake test, it appears that only the most poorly constructed cribs will fail when their screws are not retightened during testing. Initial follow-up testing by CPSC staff found that allowing retightening over the entire series of tests could result in this very dangerous hazard going undetected during testing. The incidence of failure during testing when screws are not retightened may be lower under ASTM F 1169-10, due to new requirements that will require that crib hardware include a locking device or other

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method to impede loosening. Based on this information, it appears that few, if any, firms will need to use better screw mechanisms or redesign their products to comply with the modification.

### *c. Impact of the Proposal Concerning Full-Size Cribs on Small Business*

Under Small Business Administration (“SBA”) guidelines, a manufacturer of full-size cribs is small if it has 500 or fewer employees, and an importer is considered small if it has 100 or fewer employees. Based on these guidelines, of the 68 firms currently known to be producing or selling full-size cribs in the United States, 48 are small (36 domestic manufacturers, 10 domestic importers, and 2 firms with unknown sources of supply). There are also probably additional unknown small manufacturers and importers operating in the U.S. market.

According to the SBA, retailers are considered small if they have \$7 million or less in annual receipts. Approximately 93 percent of retailers have receipts of less than \$5 million, with an additional 3 percent having receipts between \$5 million and \$9.99 million. Excluding firms with receipts between \$5 million and \$7 million yields an estimate of 23,236 small retail firms that may potentially be affected by the proposed standard. However, only a small percentage of these small firms actually sell full-size cribs. Thus, the number of small retail firms affected will be much smaller than 23,236.

### *Impact on Small Manufacturers*

The impact of the proposed standard on small manufacturers will differ based on whether they currently comply with ASTM F 1169-10. Of the 36 small domestic manufacturers, 24 produce cribs that are certified by JPMA or claim to be in compliance with the voluntary standard. The impact on the 24 compliant firms is not expected to be

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significant. It seems unlikely that any of these products will require modification to meet the proposed standard. Should any be necessary, it would most likely take the form of a few minor changes (such as more effective screws or screw combinations).

The proposed standard could have a significant impact on one or more of the 12 firms that are not compliant with the ASTM F 1169-10, as their products might require substantial modifications. The costs associated with these modifications could include product design, development and marketing staff time, and product testing. There may also be increased production costs, particularly if additional materials are required. The actual cost of such an effort is unknown, but could be significant, especially for the two firms that rely primarily or entirely on the production and sale of full-size cribs and related products, such as accompanying furniture and bedding, and a third firm that produces only one other product. However, the impact of these costs may be mitigated if they are treated as new product expenses that can be amortized over time.

This analysis assumes that only those firms that produce cribs certified by JPMA or that claim ASTM compliance will pass the voluntary standard's requirements. This is not necessarily the case. CPSC staff has identified many cases where products not certified by JPMA actually comply with the relevant ASTM standard. To the extent that this is true, the impact of the proposed standard will be less significant than described.

### ***Small Importers of Full-Size Cribs***

While four of the ten small importers do not comply with the ASTM standard, all would need to find an alternate source of full-size cribs if their existing supplier does not come into compliance with the new requirement of the proposed standard. The cost to importers may increase and they may, in turn, pass some of those increased costs on to

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consumers. Some importers may respond to the rule by discontinuing the import of their non-complying cribs. However, the impact of such a decision may be mitigated by replacing the non-compliant crib with a complying product or another juvenile product. Deciding to import an alternative product would be a reasonable and realistic way to offset any lost revenue given that most import a variety of products.

### ***Small Retailers of Full-Size Cribs***

The CPSIA requires that all full-size cribs sold by retailers comply with the full-size crib rule by the effective date of the final standard. This means that retailers, most of whom are small, will need to verify that any full-size cribs in their inventory and any that they purchase in the future comply with the regulation prior to offering them for sale. CPSC staff believes that most retailers, particularly small retailers, do not keep large inventories of cribs. With an effective date six months after publication of the final rule, retailers of new products should have sufficient time and notification to make this adjustment with little difficulty. The situation for retailers of used cribs is more complicated, however, because they may not always be able to determine whether the full-size cribs they receive are compliant. For the affected retailers, it may be simpler to discontinue the sale of used full-size cribs. However, if cribs represent a small proportion of the products they sell, the impact on these firms may be limited.

### **Alternatives**

Under section 104 of the CPSIA, the primary alternative that would reduce the impact on small entities is to make the voluntary standard mandatory with no modifications. Adopting the current voluntary standard without any changes could potentially reduce costs for 12 of the 36 small manufacturers and 4 of the 10 small

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importers who are not already compliant with the voluntary standard. However, these firms will still require substantial product changes in order to meet the voluntary standard. Since the Commission's change adds little to the overall burden of the proposed rule, adopting the voluntary standard with no changes will not significantly offset the burden that is expected for these firms. Additionally, adopting the voluntary standard with no modifications would be unlikely to significantly reduce the impact on small retailers. The primary effect for these retailers (which in most cases should be small) stems from replacing existing inventory with complying product. The proposed changes to the voluntary standard should not significantly affect such replacement costs.

### *2. Non-Full-Size Cribs*

#### *a. The Market for Non-Full-Size Cribs*

CPSC staff estimates that there are currently at least 17 manufacturers or importers supplying non-full-size cribs to the United States market (5 are domestic importers, 10 are domestic manufacturers, and insufficient information is available to determine whether the remaining firms are manufacturers or importers). As mentioned above, CPSC staff estimates that there are approximately 2.4 million cribs sold to households annually. Of these, approximately 293,000 are non-full-size cribs.

Five firms that supply non-full-size cribs to the U.S. market provide cribs that have been certified by JPMA as complying with the ASTM voluntary standard. Additionally, two firms claim compliance although their products have not been certified by JPMA. Therefore, including the firms that claim compliance with the ASTM standard, five manufacturers, one importer, and one of the firms with an unknown source of supply, have products that are ASTM compliant. It is assumed throughout this summary

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that firms that are certified or claim to be compliant with earlier versions of the ASTM standard will remain compliant with ASTM F 406-10.

As explained in the analysis concerning full-size cribs (section I.1.a of this preamble), CPSC staff estimates annual sales of all cribs to households to be about 2.4 million cribs. CPSC staff estimates that there are approximately 81 non-full-size crib models currently being supplied (versus 591 full-size crib models). Therefore, approximately 12 percent of the crib models on the U.S. market are non-full-sized. Applying this to the number of cribs sold annually, yields a rough estimate of 293,000 non-full-size cribs sold annually.

In addition to manufacturers and importers of new non-full-size cribs, section 104 of the CPSIA explicitly applies to retailers of both new and used non-full-size cribs, as well as child care facilities and places of public accommodation, such as hotels that supply non-full-size cribs for use by their patrons. The number of firms that may be selling or providing new or used non-full-size cribs to the public is unknown, but would be drawn from approximately 24,985 retail firms (at least 5,292 of which sell used products), 59,555 firms supplying day care services, and 43,303 firms providing public accommodation.

### *b. Compliance Requirements of the Proposal for Non-Full-Size Cribs*

The proposed standard for non-full-size cribs would adopt the requirements of ASTM F 406-10 with certain modifications. The proposed standard would add the following requirements: (1) mattress support system cyclic impact test (as in ASTM F 1169-10); (2) side impact test (as in ASTM F 1169-10); (3) movable side latch tests (as in previous versions of ASTM F 406); and (4) a specific order for the structural tests (as in

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ASTM F 1169-10). The proposed standard would apply only to non-full-size cribs, and not to play yards.

To address known hazards associated with mattress support hardware and structural integrity, CPSC staff recommends modifying the mattress support performance requirement to match the one that is being included in the 2010 ASTM standard for full-size cribs. CPSC staff believes that many firms will need to modify their non-full-size cribs (both compliant and non-compliant) in order to meet this proposed requirement. For most, this would require a stronger mattress support system, perhaps using additional or thicker materials. The cost of this modification is unknown, but unlikely to represent a significant proportion of the end product price. Alternatively, it is possible that some firms may choose to redesign their product to meet this requirement.

The side impact test will harmonize the requirement in the non-full-size cribs standard with that in the full-size crib standard. CPSC staff does not believe that many firms will need to modify their products to comply with this requirement. In fact, the incidence of failure may be lower under ASTM F 1169-10, due to new requirements that will require that crib hardware include a locking device or other method to impede loosening. Any changes that may be required would most likely entail better/stronger attachments of slats to the bottom rails (e.g., more glue or added staples). Therefore, this requirement is not expected to impose a significant burden upon firms, given the relatively low cost of the required modifications. However, it is possible that some firms may choose to redesign their products to address this requirement.

Reinserting the movable side latch tests is considered important, given that it was unintentionally removed from ASTM F 406-10. However, it is unlikely that firms

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previously compliant with ASTM F 406-10 made modifications to their products in order to cease to comply with a superseded requirement. Therefore, CPSC staff assumes that any supplier of ASTM compliant non-full-size cribs will already meet this requirement. In fact, CPSC staff does not believe that there are currently any non-full-size cribs on the market that will require modifications to meet this standard. However, if a firm's non-full-size cribs do not comply, they would most likely require stronger, more effective latching mechanisms. These types of modifications tend to be inexpensive and do not require product redesign.

It is possible that specifying the order of testing could have an impact on the test results. To date, however, CPSC staff has not identified any products that fail testing due to test order. In fact, CPSC staff believes that once products meet the 2010 ASTM standard and the additional requirements of the proposed rule, that most suppliers will be able to comply without making any product modifications. Therefore, CPSC staff believes that the impact of this proposed modification will be small. Should modifications be required to comply, however, product redesign seems likely.

### *c. Impact of the Proposal Concerning Non-Full-Size Cribs on Small Business*

There are approximately 17 firms currently known to be producing or importing non-full-size cribs in the United States. Under SBA guidelines, a manufacturer of non-full-size cribs is small if it has 500 or fewer employees and an importer is considered small if it has 100 or fewer employees. Based on these guidelines, 14 are small firms - consisting of 9 domestic manufacturers and 5 importers. The size of the remaining firms - 2 with unknown supply sources and 1 domestic manufacturer - could not be determined.

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There are also probably additional unknown small manufacturers and importers operating in the U.S. market.

According to the SBA, retailers and services such as day care centers and public accommodations are considered small if they have \$7 million or less in annual receipts. Approximately 93 percent of retailers have receipts of less than \$5 million, with an additional 3 percent having receipts between \$5 million and \$9.99 million. Excluding firms with receipts between \$5 million and \$7 million yields an estimate of 23,236 small retail firms that may potentially be affected by the proposed standard. However, it is important to note that only a small percentage of these small firms actually sell non-full-size cribs. Thus, the number of small retail firms affected will be much smaller than 23,236. Among day care service and accommodation providers, approximately 98 percent have receipts of less than \$5 million with an additional 0.9 percent having receipts between \$5 million and \$9.99 million. This suggests that there are roughly 58,364 small day care firms (of 59,555) and 42,437 small hotel firms (of 43,303) that could be affected.

### ***Impact on Small Manufacturers***

The impact of the proposed standard on small manufacturers will differ based on whether their non-full-size cribs are expected to comply with ASTM F 406–10. Of the nine small domestic manufacturers, five are in compliance with the voluntary standard. The impact on the five compliant firms is not expected to be significant. While it is possible that some manufacturers might opt to redesign their product(s) to meet the proposed requirements, it is more likely that they will make a few minor changes (such as different hardware or stronger materials for the mattress support system). None of the

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expected modifications are expected to impact manufacturers' costs significantly, or to significantly increase the price paid by consumers.

The proposed standard could have a significant impact on one or more of the four firms that are not complying with the ASTM standard, as their products might require substantial modifications. The costs associated with these modifications could include product design, development and marketing staff time, and product testing. There may also be increased production costs, particularly if additional materials are required. The actual cost of such an effort is unknown, but could be significant, especially for the one firm that relies on the production and sale of non-full-size cribs and related products, such as accompanying furniture and bedding. However, the impact of these costs may be mitigated if they are treated as new product expenses that can be amortized over time.

The analysis assumes that only those firms that provide cribs that are certified by JPMA or claim ASTM compliance will pass ASTM F 406-10's requirements. This is not necessarily the case. CPSC staff has identified many cases where products not certified by JPMA actually comply with the relevant ASTM standard. To the extent that this is true, the impact of the proposed standard will be less significant than described.

### ***Small Importers of Non-Full-Size Cribs***

While four of the five small importers are not compliant with the ASTM standard, all would need to find an alternate source of non-full-size cribs if their existing supplier does not come into compliance with the new requirements of the proposed standard. The cost to importers may increase and they may, in turn, pass some of those increased costs on to consumers. Some importers may respond to the rule by discontinuing the import of their non-complying cribs. However, the impact of such a decision may be mitigated by

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replacing the non-compliant crib with a complying product or another juvenile product. Deciding to import an alternative product would be a reasonable and realistic way to offset any lost revenue given that most import a variety of products.

### *Small Retailers, Day Care Centers, and Public Accommodations*

The CPSIA requires that all non-full-size cribs sold or leased by retailers or provided by day care centers or public accommodations (e.g., hotels) to their customers comply with the crib standards by the effective date of the final standard.

This means that retailers, most of whom are small, will need to verify that any non-full-size cribs in their inventory and any that they purchase in the future comply with the regulation prior to offering them for sale or lease. CPSC staff believes that most retailers, particularly small retailers, do not keep large inventories of cribs. With an effective date six months after publication of a final rule, retailers of new products should have sufficient time and notification to make this adjustment with little difficulty. The situation for retailers and other suppliers of used cribs, such as day care centers and smaller places of public accommodation, is more complicated, however, because they may not always be able to determine whether the non-full-size cribs they receive are compliant. For the affected parties, it may be simpler to discontinue the sale of used non-full-size cribs. However, if cribs represent a small proportion of the products they sell, the impact on these firms may be limited.

Day care centers will need to replace all of their cribs by the standard's effective date. Since a new ASTM standard (F 406-10) will be published before the final CPSC regulation is published, these firms might not upgrade their existing non-full-size cribs until they are assured that the cribs they purchase will comply with the forthcoming

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regulation. The impact could be significant on some small day care centers if they had to replace their cribs all at once. However, these are one-time costs that may be passed on to customers over time, which could mitigate, to some extent, the rule's potential burden. Additionally, some centers might opt to replace their non-full-size cribs with play yards, thereby spreading replacement costs over a longer period of time, which would reduce the impact.

Some hotels (or similar places of public accommodation) might keep a few non-full-size cribs available for use by customers. The number at any one establishment is likely to be low, especially given the likelihood of parents with young children traveling with their own sleep products, such as play yards or portable cribs. As with day care centers, this is a one-time cost for firms that can be passed on to customers over time. Firms, particularly smaller firms, might opt to mitigate the costs by ceasing to provide cribs to their customers, or purchasing fewer replacement cribs. Therefore, it is unlikely that there will be a significant impact on a substantial number of firms providing public accommodation.

### **Alternatives**

Under section 104 of the CPSIA, one alternative that would reduce the impact on small entities is to make the voluntary standard mandatory with no modifications. Adopting ASTM F 406-10 without any changes could potentially reduce costs for four of the nine small manufacturers and four of the five small importers who are not already compliant with the voluntary standard. However, these firms will still require substantial product changes in order to meet the voluntary standard. Since the proposed changes add little to the overall burden of the proposed standard, adopting the voluntary standard with

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no changes will not significantly offset the burden that is expected for these firms. Additionally, adopting the voluntary standard with no modifications would be unlikely to significantly reduce the impact on small retailers, day care centers, suppliers of public accommodations. The primary effect on these entities (which in most cases should be small) stems from replacing existing inventory with complying cribs. The proposed changes to the voluntary standard should not significantly affect such replacement costs.

The impact on retailers and hotels (or other places of public accommodation) is not expected to be significant, but there could be a significant impact on some small day care firms. One way to reduce this impact would be to set a later effective date. This would allow these firms to spread the cost of non-full-size crib replacement over a longer period of time.

### **J. Environmental Considerations**

The Commission's regulations provide a categorical exclusion for the Commission's rules from any requirement to prepare an environmental assessment or an environmental impact statement as they "have little or no potential for affecting the human environment." 16 CFR 1021.5(c)(2). This proposed rule falls within the categorical exclusion.

### **K. Paperwork Reduction Act**

This proposed rule contains information collection requirements that are subject to public comment and review by the Office of Management and Budget ("OMB") under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501-3520). We describe the provisions in this section of the document with an estimate of the annual reporting burden. Our estimate includes the time for reviewing instructions, searching existing data

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sources, gathering and maintaining the data needed, and completing and reviewing each collection of information.

We particularly invite comments on: (1) Whether the collection of information is necessary for the proper performance of the CPSC's functions, including whether the information will have practical utility; (2) the accuracy of the CPSC's estimate of the burden of the proposed collection of information, including the validity of the methodology and assumptions used; (3) ways to enhance the quality, utility, and clarity of the information to be collected; and (4) ways to minimize the burden of the collection of information on respondents, including through the use of automated collection techniques, when appropriate, and other forms of information technology.

### *Full-Size Cribs*

*Title:* Safety Standards for Full-Size Cribs

*Description:* The proposed rule would require each full-size crib to comply with ASTM F 1169-10, "Standard Specification for Full-Size Baby Crib." The proposed standard prescribes performance, design, and labeling requirements for full-size cribs. It would require manufacturers and importers of those products to maintain sales records for a period of three years after the manufacture or importation of full-size cribs. Sections 8 and 9 of ASTM F 1169-10 also contain requirements for marking and instructional literature.

*Description of Respondents:* Persons who manufacture full-size cribs.

We estimate the burden of this collection of information as follows:

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Table 1 – Estimated Annual Reporting Burden

16 CFR Section	Number of Respondents	Frequency of Responses	Total Annual Responses	Hours per Response	Total Burden Hours
1219	68	1	68 (23) <sup>1</sup>	5 (4.5)	443.5

There are no capital costs or operating and maintenance costs associated with this collection of information.

Our estimates are based on the following:

CPSC staff estimates that the recordkeeping required by the proposed standard would take 5 hours per firm for obtaining the information from existing sales and distribution data. The annualized cost for the burden collection of information is approximately \$9,401. This estimated cost to respondents is based on 340 hours (68 firms x 5 hours each) multiplied by a cost of \$ 27.65 per hour (Bureau of Labor Statistics, total compensation, all workers, goods-producing industries, Sales and office, March 2010, Table 9).

The cost to the government (wages and benefits) for 34 hours staff time to review the information (1/2 hour per firm) is approximately \$2,784. Assuming that the employee reviewing the records will be a GS-14 level employee, the average hourly wage rate for a mid-level GS-14 employee in the Washington, DC metropolitan area, effective as of January 2010, is \$57.33. This represents 70 percent of total compensation (Bureau of Labor Statistics, March 2010, percentage wages and salaries for all civilian management, professional, and related employees, Table 1). Adding an additional 30 percent for benefits brings average hourly compensation for a mid-range GS-14

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<sup>1</sup> The numbers in parentheses represent additional burdens on some firms that will require label modifications.

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employee to \$81.89. Thus, 34 hours multiplied against an hourly compensation figure of \$81.89 results in an estimated cost to the government of \$2,784.26, which we have rounded to \$2,784.

Proposed § 1219.2(a) would require each full-size crib to comply with ASTM F 1169-10. Sections 8 and 9 of ASTM F 1169-10 contain requirements for marking and instructional literature that are disclosure requirements, thus falling within the definition of “collections of information” at 5 CFR 1320.3(c).

Section 8.1.2.1 of ASTM F 1169-10 requires that the name and the place of business (city and state) of the manufacturer, distributor, or seller be clearly and legibly marked on each product and its retail package. Section 8.1.2.2 of ASTM F 1169-10 requires that a code mark or other means that identifies the model number, stock number, catalog number, or item number be marked on each crib and its retail carton. In both cases, the information must be placed on both the product and the retail package.

There are 68 known firms supplying full-size cribs to the United States market. Forty-five of the 68 firms are known to already produce labels that comply with these sections of the standard, so there would be no additional burden on these firms. The remaining 23 firms are assumed to already use labels on both their products and their packaging, but would need to make some modifications to their existing labels. The estimated time required to make these modification is about 30 minutes per model. Each of these firms supplies an average of 9 different models of full-size cribs, therefore, the estimated burden hours associated with labels is 30 minutes x 23 firms x 9 models per firm = 6,210 minutes or 103.5 annual hours.

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The Commission estimates that hourly compensation for the time required to create and update labels is \$27.65 (Bureau of Labor Statistics, March 2010, all workers, goods-producing industries, sales and office, Table 9). Therefore, the estimated annual cost associated with the Commission recommended labeling requirements is approximately \$2,862 ( $\$27.65 \text{ per hour} \times 103.5 \text{ hours} = \$2,861.78$ , which we have rounded up to \$ 2,862).

Section 9.1 of ASTM F 1169-10 requires instructions to be supplied with the product. Full-size cribs are products that generally require some installation and maintenance, and products sold without such information would not be able to successfully compete with products supplying this information. Under OMB's regulations (5 CFR 1320.3(b)(2)), the time, effort, and financial resources necessary to comply with a collection of information that would be incurred by persons in the "normal course of their activities" are excluded from a burden estimate where an agency demonstrates that the disclosure activities needed to comply are "usual and customary." Therefore, because the CPSC is unaware of full-size cribs that: (a) generally require some installation, but (b) lack any instructions to the user about such installation, we tentatively estimate that there are no burden hours associated with the instruction requirement in section 9.1 of ASTM F 1169-10 because any burden associated with supplying instructions with a bassinet or cradle would be "usual and customary" and not within the definition of "burden" under OMB's regulations.

Based on this analysis, the requirements of the Commission's proposed standard for full-size cribs would impose a burden to industry of 443.5 hours at a cost of \$12,263 annually.

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In compliance with the Paperwork Reduction Act of 1995 (44 U.S.C. 3507(d)), we have submitted the information collection requirements of this rule to OMB for review. Interested persons are requested to fax comments regarding information collection by [**insert date 30 days after date of publication in the FEDERAL REGISTER**], to the Office of Information and Regulatory Affairs, OMB (see ADDRESSES).

### *Non-Full Size Cribs*

*Title:* Safety Standards for Non-Full-Size Cribs

*Description:* The proposed rule would require each non-full-size crib to comply with ASTM F 406-10, “Standard Consumer Safety Specification for Non-Full-Size Baby Cribs/Play Yards.” The proposed standard prescribes performance, design, and labeling requirements for non-full-size cribs. It would require manufacturers and importers of those products to maintain sales records for a period of three years after the manufacture or importation of non-full-size cribs. Sections 9 and 10 of ASTM F 406-10 also contain requirements for marking and instructional literature.

*Description of Respondents:* Persons who manufacture non-full-size cribs.

We estimate the burden of this collection of information as follows:

Table 1 – Estimated Annual Reporting Burden

16 CFR Section	Number of Respondents	Frequency of Responses	Total Annual Responses	Hours per Response	Total Burden Hours
1220	17	1	17 (10) <sup>2</sup>	5 (4.5)	130

<sup>2</sup> The numbers in parentheses represent additional burdens on some firms that will require label modifications.

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There are no capital costs or operating and maintenance costs associated with this collection of information.

Our estimates are based on the following:

CPSC staff estimates that the recordkeeping required by the proposed standard would take 5 hours per firm for obtaining the information from existing sales and distribution data. The annualized cost for the burden collection of information is approximately \$2,350.25. This estimated cost to respondents is based on 85 hours (17 firms x 5 hours each) multiplied by a cost of \$ 27.65 per hour (Bureau of Labor Statistics, total compensation, all workers, goods-producing industries, sales and office, March 2010, Table 9).

The cost to the government (wages and benefits) for 8.5 hours staff time to review the information (1/2 hour per firm) is approximately \$696. Assuming that the employee reviewing the records will be a GS-14 level employee, the average hourly wage rate for a mid-level GS-14 employee in the Washington, DC metropolitan area, effective as of January 2010, is \$57.33. This represents 70 percent of total compensation (Bureau of Labor Statistics, March 2010, percentage wages and salaries for all civilian management, professional, and related employees, Table 1). Adding an additional 30 percent for benefits brings average hourly compensation for a mid-range GS-14 employee to \$81.89. Thus, 8.5 hours multiplied against an hourly compensation figure of \$81.89 results in an estimated cost to the government of \$696.07, which we have rounded up to \$696.

Proposed § 1220.2(a) would require each non-full-size crib to comply with ASTM F 406-10. Sections 9 and 10 of ASTM F 406-10 contain requirements for marking and

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instructional literature that are disclosure requirements, thus falling within the definition of “collections of information” at 5 CFR 1320.3(c).

Section 9.1.1.1 of ASTM F 406-10 requires that the name and either the place of business (city, state, and mailing address, including zip code) or telephone number, or both of the manufacturer, distributor, or seller be clearly and legibly marked on each product and its retail package. Section 9.1.1.2 of ASTM F 406-10 requires that a code mark or other means that identifies the date (month and year as a minimum) of manufacture be marked on each crib and its retail carton. In both cases, the information must be placed on both the product and the retail package.

There are 17 known firms supplying non-full-size cribs to the United States market. Seven of the 17 firms are known to already produce labels that comply with these sections of the standard, so there would be no additional burden on these firms. The remaining 10 firms are assumed to already use labels on both their products and their packaging, but would need to make some modifications to their existing labels. The estimated time required to make these modification is 30 minutes per model. Each of these firms supplies an average of 9 different models of full-size cribs, therefore, the estimated burden hours associated with labels is 30 minutes x 10 firms x 9 models per firm = 2,700 minutes or 45 annual hours.

The Commission estimates that hourly compensation for the time required to create and update labels is \$27.65 (Bureau of Labor Statistics, March 2010, all workers, goods-producing industries, Sales and office, Table 9). Therefore, the estimated annual cost associated with the Commission recommended labeling requirements is

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approximately \$1,244 (\$27.65 per hour x 45 hours = \$1,244.25, which we have rounded to \$1,244).

Section 10.1 of ASTM F 406-10 requires instructions to be supplied with the product. Non-full-size cribs are products that generally require some installation and maintenance, and products sold without such information would not be able to successfully compete with products supplying this information. Under OMB's regulations (5 CFR 1320.3(b)(2)), the time, effort, and financial resources necessary to comply with a collection of information that would be incurred by persons in the "normal course of their activities" are excluded from a burden estimate where an agency demonstrates that the disclosure activities needed to comply are "usual and customary." Therefore, because the CPSC is unaware of non-full-size cribs that: (a) generally require some installation, but (b) lack any instructions to the user about such installation, we tentatively estimate that there are no burden hours associated with the instruction requirement in section 10.1 of ASTM F 406-10 because any burden associated with supplying instructions with a bassinet or cradle would be "usual and customary" and not within the definition of "burden" under OMB's regulations.

Based on this analysis, the requirements of the Commission's proposed standard for non-full-size cribs would impose a burden to industry of 130 hours at a cost of \$3,594 annually.

In compliance with the Paperwork Reduction Act of 1995 (44 U.S.C. 3507(d)), we have submitted the information collection requirements of this rule to OMB for review. Interested persons are requested to fax comments regarding information collection by **[insert date 30 days after date of publication in the FEDERAL**

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**REGISTER]**, to the Office of Information and Regulatory Affairs, OMB (see ADDRESSES).

### **L. Preemption**

Section 26(a) of the CPSA, 15 U.S.C. 2075(a), provides that where a “consumer product safety standard under [the CPSA]” is in effect and applies to a product, no State or political subdivision of a State may either establish or continue in effect a requirement dealing with the same risk of injury unless the State requirement is identical to the Federal standard. (Section 26(c) of the CPSA also provides that States or political subdivisions of States may apply to the Commission for an exemption from this preemption under certain circumstances.) Section 104(b) of the CPSIA refers to the rules to be issued under that section as “consumer product safety rules,” thus implying that the preemptive effect of section 26(a) of the CPSA would apply. Therefore, a rule issued under section 104 of the CPSIA will invoke the preemptive effect of section 26(a) of the CPSA when it becomes effective.

### **M. Certification**

Section 14(a) of the CPSA imposes the requirement that products subject to a consumer product safety rule under the CPSA, or to a similar rule, ban, standard, or regulation under any other act enforced by the Commission, must be certified as complying with all applicable CPSC requirements. 15 U.S.C. 2063(a). Such certification must be based on a test of each product or on a reasonable testing program or, for children’s products, on tests on a sufficient number of samples by a third party conformity assessment body accredited by the Commission to test according to the applicable requirements. As discussed in section L of this preamble, section 104(b)(1)(B)

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of the CPSIA refers to standards issued under that section as “consumer product safety standards.” By the same reasoning, such standards also would be subject to section 14 of the CPSA. Therefore, any such standard would be considered to be a consumer product safety rule to which products subject to the rule must be certified.

Because full-size cribs and non-full-size cribs are children’s products, they must be tested by a third party conformity assessment body whose accreditation has been accepted by the Commission. In the future, the Commission will issue a notice of requirements to explain how laboratories can become accredited as third party conformity assessment bodies to test to the new safety standards. The Commission previously issued a notice of requirements for accreditation to test to the existing crib standards (16 CFR 1508 and 1509). 73 FR 62965. (Baby cribs also must comply with all other applicable CPSC requirements, such as the lead content requirements of section 101 of the CPSIA, the phthalate content requirements in section 108 of the CPSIA, the tracking label requirement in section 14(a)(5) of the CPSA, and the consumer registration form requirements in section 104 of the CPSIA.)

### **N. Request for Comments**

This NPR begins a rulemaking proceeding under section 104(b) of the CPSIA to issue consumer product safety standards for full-size cribs and non-full-size cribs. All interested persons are invited to submit their comments to the Commission on any aspect of the proposed standards. Comments should be submitted in accordance with the instructions in the ADDRESSES section at the beginning of this notice. The Commission is particularly interested in receiving comments on the following issues:

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- Whether 6-month effective date allows sufficient time for firms to come into compliance with crib standards;
- The size of retailer crib inventories, as well as typical rate of turn-over;
- The number of retailers selling cribs and the relative supply levels of full-size and non-full-size cribs at retail establishments;
- The extent to which some day care centers or places of public accommodation (e.g., hotels) may provide full-size cribs rather than non-full-size cribs;
- The average number of cribs (full-size and/or non-full-size) in day care centers and hotels; and
- The extent to which day care centers and hotels provide play yards (soft side structures) rather than either full-size or non-full-size cribs.

### List of Subjects

#### *16 CFR Part 1219*

Consumer protection, Incorporation by reference, Imports, Infants and children, Labeling, Law enforcement, and Toys.

#### *16 CFR Part 1220*

Consumer protection, Incorporation by reference, Imports, Infants and children, Labeling, Law enforcement, and Toys.

#### *16 CFR Part 1500.18*

Consumer protection, Hazardous substances, Imports, Infants and children, Labeling, Law enforcement, Reporting and Recordkeeping, and Toys.

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Therefore, the Commission proposes to amend Title 16 of the Code of Federal Regulations as follows:

1. Add part 1219 to read as follows:

### **PART 1219 – SAFETY STANDARD FOR FULL-SIZE BABY CRIBS**

Sec.

1219.1 Scope and definitions.

1219.2 Requirements for full-size baby cribs.

**AUTHORITY:** The Consumer Product Safety Improvement Act of 2008, Pub. Law 110-314, § 104, 122 Stat. 3016 (August 14, 2008).

#### **§ 1219.1 Scope and definitions.**

(a) *Scope.* This part establishes a consumer product safety standard for new and used full-size baby cribs and applies to the manufacture, sale, contract for sale or resale, lease, sublet, offer, provision for use, or other placement in the stream of commerce on or after (insert date 6 months after date of publication of a final rule the FEDERAL REGISTER) of a new or used full-size baby crib.

(b) *Definitions.* (i) *Full-size baby crib* means a bed that is:

(A) Designed to provide sleeping accommodations for an infant;

(B) Intended for use in the home, in a child care facility, or place of public accommodation affecting commerce; and

(C) Within a range of  $\pm 5.1$  cm ( $\pm 2$  inches) of the following interior dimensions: The interior dimensions shall be  $71 \pm 1.6$  cm ( $28 \pm \frac{3}{8}$  in.) wide as measured between the innermost surfaces of the crib sides and  $133 \pm 1.6$  cm ( $52 \frac{3}{8} \pm \frac{5}{8}$  in) long as measured between the innermost surfaces of the crib end panels, slats, rods, or spindles.

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Both measurements are to be made at the level of the mattress support spring in each of its adjustable positions and no more than 5 cm (2 in.) from the crib corner posts or from the first spindle to the corresponding point of the first spindle at the other end of the crib. If a crib has contoured or decorative spindles, in either or both of the sides or ends, the measurement shall be determined from the largest diameter of the first turned spindle within a range of 10 cm (4 in) above the mattress support spring in each of its adjustable positions, to a corresponding point on the first spindle or innermost surface of the opposite side of the crib.

(ii) *Place of public accommodation affecting commerce* means any inn, hotel, or other establishment that provides lodging to transient guests, except that such term does not include an establishment treated as an apartment building for purposes of any State or local law or regulation or an establishment located within a building that contains not more than five rooms for rent or hire and that is actually occupied as a residence by the proprietor of such establishment.

### **§ 1219.2 Requirements for full-size baby cribs.**

(a) Except as provided in paragraph (b) of this section, each full-size baby crib shall comply with all applicable provisions of ASTM F 1169-10, Standard Specification for Full-Size Baby Crib, approved June 1, 2010. The Director of the Federal Register approves this incorporation by reference in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. You may obtain a copy from ASTM International, 100 Bar Harbor Drive, PO Box 0700, West Conshohocken, PA 19428; telephone 610-832-9585; [www.astm.org](http://www.astm.org). You may inspect a copy at the Office of the Secretary, U.S. Consumer Product Safety Commission, Room 502, 4330 East West Highway, Bethesda, MD 20814, telephone 301-

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504-7923, or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: [http://www.archives.gov/federal\\_register/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html).

(b) Comply with the ASTM F 1169-10 standard, except do not comply with section 6.13 of ASTM F 1169-10.

2. Add part 1220 to read as follows:

### **PART 1220 – SAFETY STANDARD FOR NON-FULL-SIZE BABY CRIBS**

Sec.

1220.1 Scope and definitions.

1220.2 Requirements for non-full-size baby cribs.

**AUTHORITY:** The Consumer Product Safety Improvement Act of 2008, Pub. Law 110-314, § 104, 122 Stat. 3016 (August 14, 2008).

#### **§ 1220.1 Scope and definitions.**

(a) *Scope.* This part establishes a consumer product safety standard for new and used non-full-size baby cribs and applies to the manufacture, sale, contract for sale or resale, lease, sublet, offer, provision for use, or other placement in the stream of commerce on or after (insert date 6 months after date of publication of a final rule in the FEDERAL REGISTER) of a new or used non-full-size baby crib. This part does not apply to play yards.

(b) *Definitions.* (i) *Non-full-size baby crib* means a crib that:

(A) Is intended for use in or around the home, for travel, in a child care facility, in a place of public accommodation affecting commerce and other purposes;

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(B) Has an interior length dimension either greater than 139.7 cm (55 in.) or smaller than 126.3 cm (49  $\frac{3}{4}$  in.), or greater than 77.7 cm (30  $\frac{5}{8}$  in.) or smaller than 64.3 cm (25  $\frac{5}{8}$  in.), or both;

(C) Includes, but is not limited to, the following:

(1) *Portable crib*—non-full-size baby crib designed so that it may be folded or collapsed, without disassembly, to occupy a volume substantially less than the volume it occupies when it is used.

(2) *Crib pen* – a non-full-size baby crib with rigid sides the legs of which may be removed or adjusted to provide a play pen or play yard for a child.

(3) *Specialty crib* – an unconventionally shaped (circular, hexagonal, etc.) non-full-size baby crib incorporating a special mattress or other unconventional components.

(4) *Undersize crib* - non-full-size baby crib with an interior length dimension smaller than 126.3 cm (49  $\frac{3}{4}$  in.), or an interior width dimension smaller than 64.3 cm (25  $\frac{3}{8}$  in.), or both.

(5) *Oversize crib*—non-full-size baby crib with an interior length dimension greater than 55 in. (139.7 cm), or an interior width dimension greater than 30  $\frac{5}{8}$  in. (77.7 cm), or both.

(D) Does not include mesh/net/ screen cribs, non-rigidly constructed baby cribs, cradles (both rocker and pendulum types), car beds, baby baskets and bassinets (also known as junior cribs) .

(ii) *Play yard* means a framed enclosure that includes a floor and has mesh or fabric-sided panels primarily intended to provide a play or sleeping environment for chil-

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dren. It may fold for storage or travel.

(iii) *Place of public accommodation affecting commerce* means any inn, hotel, or other establishment that provides lodging to transient guests, except that such term does not include an establishment treated as an apartment building for purposes of any State or local law or regulation or an establishment located within a building that contains not more than five rooms for rent or hire and that is actually occupied as a residence by the proprietor of such establishment.

### **§ 1220.2 Requirements for non-full-size baby cribs.**

(a) Except as provided in paragraph (b) of this section, each non-full-size baby crib shall comply with all applicable provisions of ASTM F 406-10, Standard Consumer Safety Specification for Non-Full-Size Baby Cribs, approved June 1, 2010. The Director of the Federal Register approves this incorporation by reference in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. You may obtain a copy from ASTM International, 100 Bar Harbor Drive, PO Box 0700, West Conshohocken, PA 19428; telephone 610-832-9585; [www.astm.org](http://www.astm.org). You may inspect a copy at the Office of the Secretary, U.S. Consumer Product Safety Commission, Room 502, 4330 East West Highway, Bethesda, MD 20814, telephone 301-504-7923, or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to:

[http://www.archives.gov/federal\\_register/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html).

(b) Comply with the ASTM F 406-10 standard with the following additions or exclusions:

(1) In addition to complying with section 5.18 of ASTM F 406-10, comply with

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the following:

(i) 5.19 The manufacturer or importer shall keep and maintain for 6 years after production or importation of each lot or other identifying unit of rigid non-full-size baby cribs, records of sale and distribution. These records shall be made available upon request at reasonable times to any officer, employee, or agent acting on behalf of the Consumer Product Safety Commission. The manufacturer or importer shall permit such officer, employee, or agent to inspect and copy such records, to make such inventories of stock as he or she deems necessary, and to otherwise verify the accuracy of such records.

(ii) [Reserved]

(2) Instead of complying with section 6.10.1 through 6.10.1.2 of ASTM F 406-10, comply with the following:

(i) 6.10.1 *Mattress Support System Vertical Impact Test Requirements* -- After testing in accordance with the procedure in 8.6, the crib shall comply with all the requirements of section 5. Key structural elements attached by screws shall not have separated by more than 0.04 in. (1.00 mm) upon completion of testing.

(ii) [Reserved]

(3) In addition to complying with section 6.10.2.2 of ASTM F 406-10, comply with the following:

(i) 6.10.2.3 Any spindles or slats that could be rotated during the torque test in 8.7.4 shall comply with the spacing of crib components in the General Requirements 6.3.1 when turned to their most adverse position.

(ii) [Reserved]

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(4) In addition to complying with section 6.14 of ASTM F 406-10, comply with the following:

(i) 6.15 *Movable Side Latch Testing*:

(A) 6.15.1 This test consists of horizontally loading the end while a prescribed force is applied to the movable side(s) (see 8.28).

(B) 6.15.2 The latching mechanism shall not disengage during testing and shall continue to function in the intended manner upon completion of the testing.

(ii) 6.16 *Performance Testing Order*-- The performance testing requirements of this section shall be performed in the following order:

Teething rail test

Cyclic side shake test

Crib side latch test

Mattress support system vertical impact test

Mattress support system test

Crib side impact test

Spindle/slat strength test

(5) Do not comply with section 7, *Performance Requirements for Mesh/Fabric Products*, of ASTM F 406-10.

(6) Instead of complying with section 8.6 through 8.6.2.6 of ASTM F 406-10, comply with the following:

(i) 8.6 *Mattress Support System Vertical Impact Test*:

(A) 8.6.1 *General* -- This test consists of dropping a specified weight repeatedly onto a polyurethane foam pad covered in vinyl supported by the crib mattress support

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system. The test assists in evaluating the structural integrity of the crib assembly.

(B) 8.6.2 *Apparatus:*

(C) 8.6.2.1 A guided free-fall impacting system machine (which keeps the upper surface of the impact mass parallel to the horizontal surface on which the crib is secured) (see Figure A.).

(D) 8.6.2.2 A 45 lb (20 kg) impact mass (see Figures B and C).

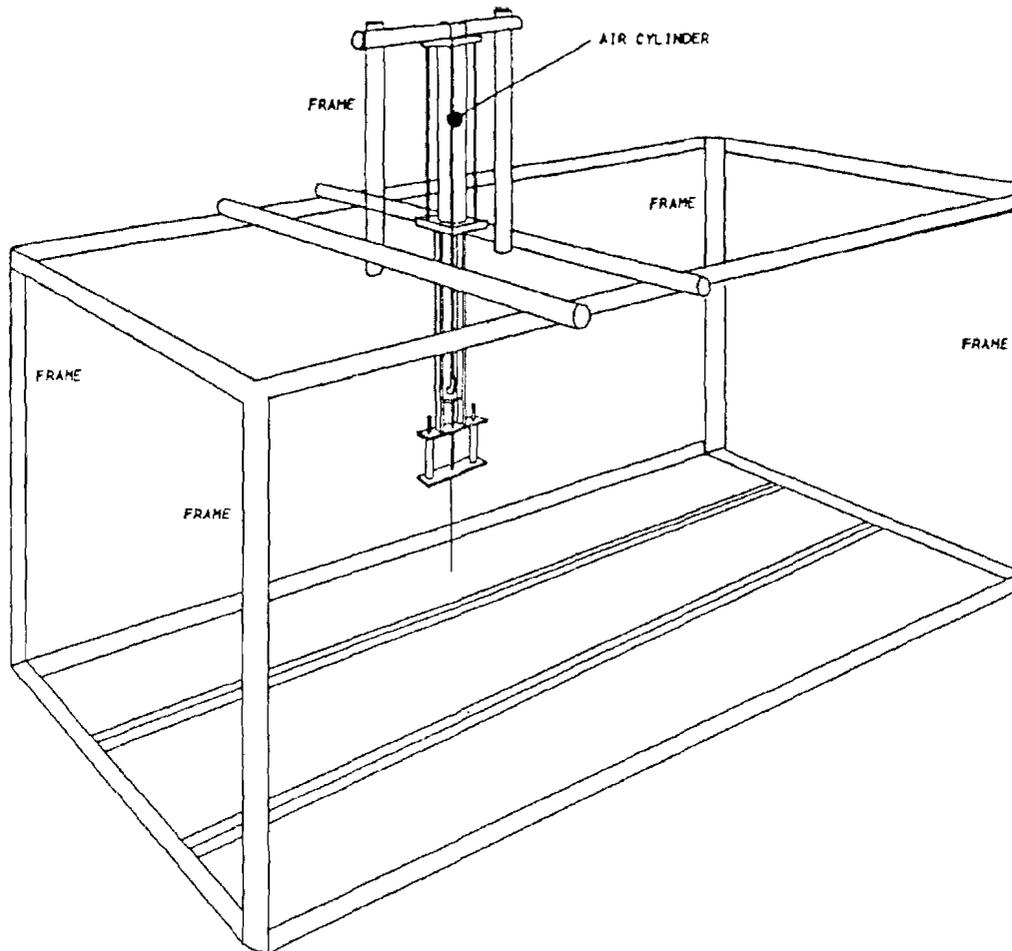


Figure A. Typical Test Frame

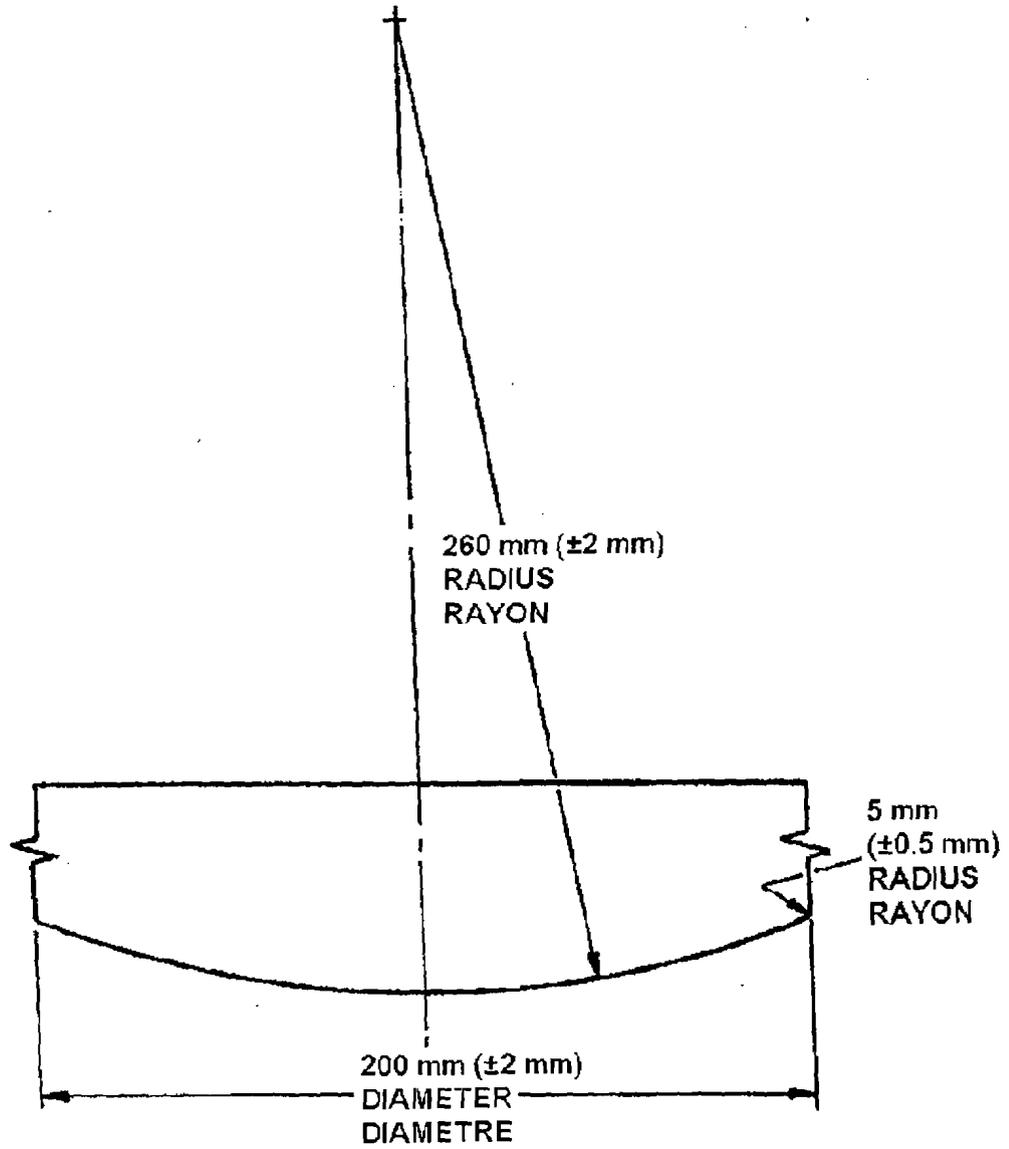


Figure B. Impact Mass Shape

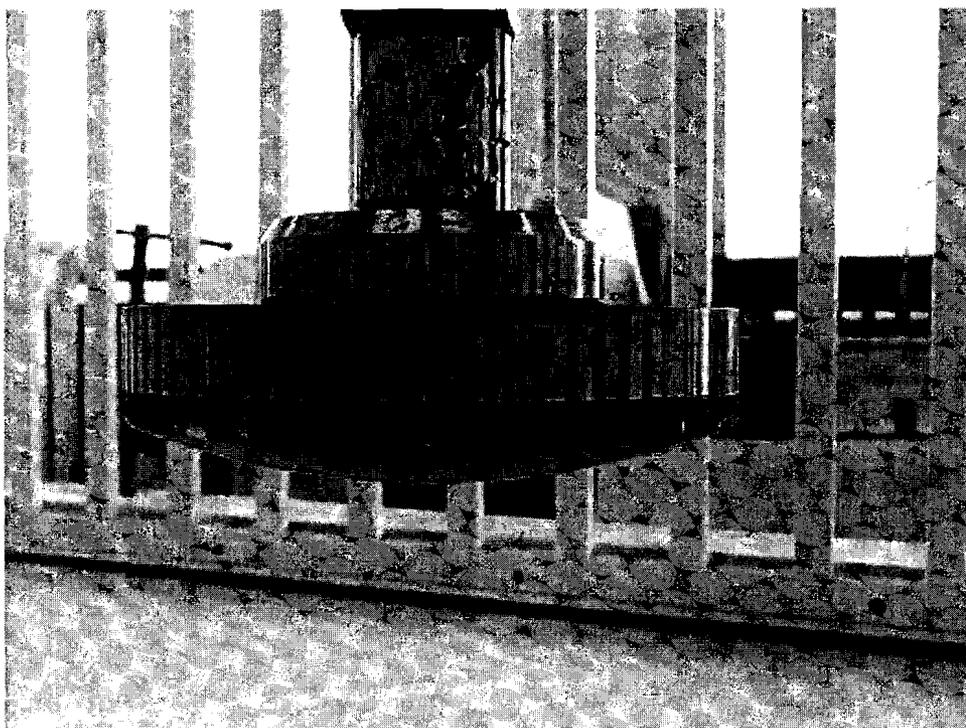


Figure C. Impact Mass

(E) 8.6.2.3 A 6 inch (150 mm) long gauge.

(F) 8.6.2.4 A 2 inch (50 mm) square gauge/spacer block.

(G) 8.6.2.5 A test mattress with a 3 inch thick sheet of polyurethane foam having a density of 1.9-2 lbs./ft<sup>3</sup> (30 kg/m<sup>3</sup>), a 25% indentation load deflection of 33-37 lbs. (144 N) and dimensions that shall not be more than 1 inch (25 mm) shorter and 1 inches (25 mm) narrower than the respective interior dimensions of the product, covered with a tight fitting 8 to 12 gauge vinyl material (tick). The suitability of the test mattress dimensions are to be determined by placing the mattress on the mattress support and pushing it fully over to one side. Measure the gap formed between the mattress and the crib side/end assemblies, which should not be greater than 1 inch (25 mm) in both the length and width.

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(H) 8.6.3 *Procedure:*

(I) 8.6.3.1 Adjust the mattress support to its lowest position.

(J) 8.6.3.2 Put the test mattress in place. Do NOT use the mattress supplied with the crib. The same test mattress may be used for testing more than one crib if it meets the requirements of 8.6.2.5.

(K) 8.6.3.3 Secure the product to the horizontal test plane, remove the castors if supplied. Once the test has begun, no attempt shall be made at re-tightening fasteners which may have loosened because of vibration. The test must proceed without any corrective intervention of adjusting the height difference between the drop weight and mattress, until its completion, unless extensive damage, dislodging or deformation occurs during the course of the test, in which case the test shall be terminated.

(L) 8.6.3.4 Position the geometric center of the test mattress below the geometric center of the impact mass.

(M) 8.6.3.5 Adjust the distance between the top surface of the mattress and bottom surface of the impact mass to 6 inches (150 mm) (using the 8.6.2.3 6 inch (150 mm) long gauge) when the impact mass is in its highest position. Lock the impactor mechanism at this height and DO NOT adjust the height during impacting to compensate for any change in distance due to the mattress compressing or the mattress support deforming or moving during impacting.

(N) 8.6.3.6 Allow the 45 lb (20.0 kg) impact mass to fall freely 150 times at the rate of one impact every 4 seconds. Load retraction shall not begin until at least 2 seconds after the start of the drop.

(O) 8.6.3.7 Repeat step 8.6.3.6 at each corner of the mattress support, with the

## DRAFT 6-30-10

center of the impact mass 6 inches (150 mm) from the two sides forming the corners of the crib. To position the mass for a standard rectangular shaped crib place a 2 inch (50 mm) spacer block against one of the sides of the corner to be tested and move the impact mass until it touches the spacer block (see Figure D). Repeat this process for the other side that makes up the corner to be tested (see Figure E).

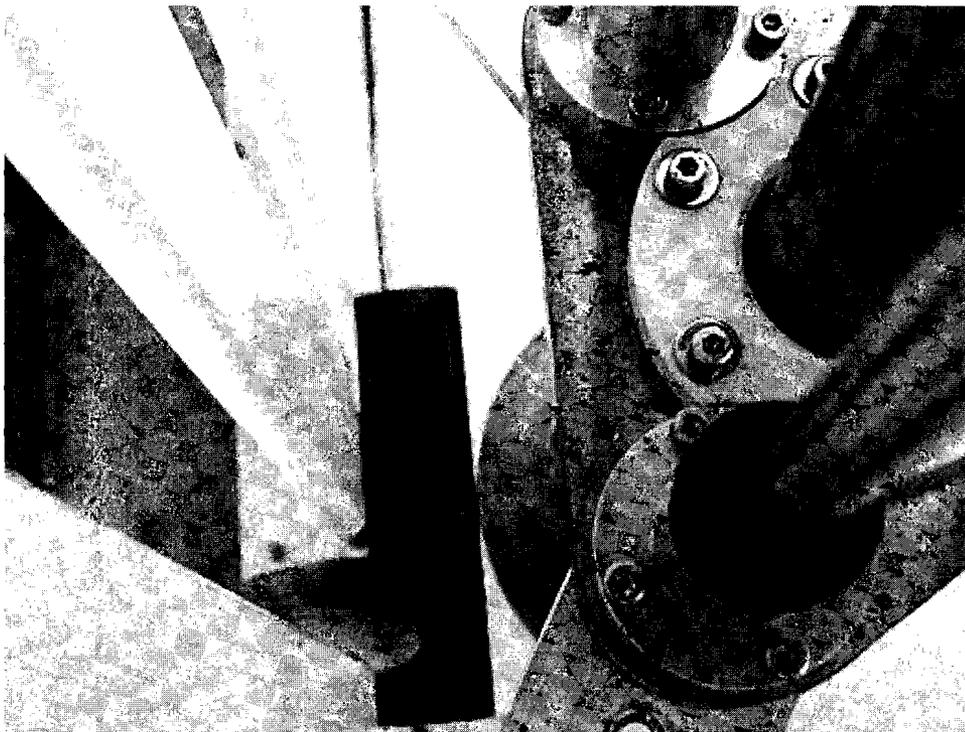


Figure D. Spacer Block (top view).

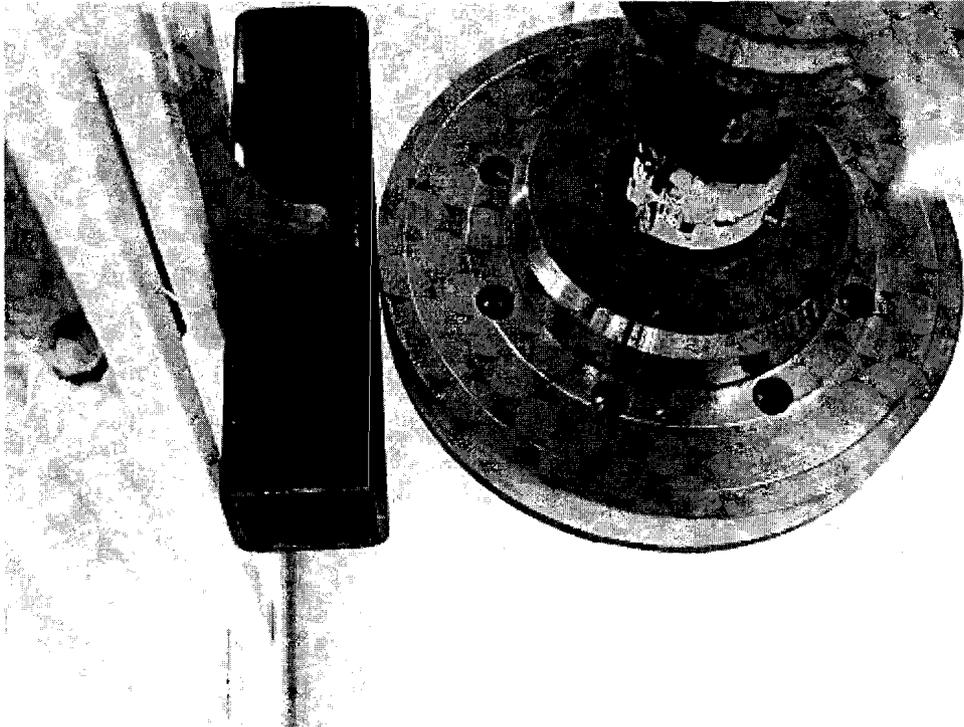


Figure E. Impact Mass and Spacer Block.

(ii) [Reserved]

(7) Instead of complying with 8.7.1.1(2) of ASTM F 406-10, comply with the following:

(i) 8.7.1.1(2) Impactor with contact dimensions of 1.5 by 1 inch (38 by 25 mm) and a weight of 30 lb. (13.6 kg) with the 1 inch (25 mm) positioned perpendicular to the length of the frame.

(ii) [Reserved]

(8) Instead of complying with the first sentence of 8.7.2.3 of ASTM F 406-10, comply with the following:

(i) 8.7.2.3 Allow the impactor to free-fall  $3 + \frac{1}{2}, -0$  in. ( $76 + 13, -0$  mm) 250 times at a rate of  $4 \pm 1$  s per cycle using the impactor contact dimensions specified in

## DRAFT 6-30-10

8.7.1.1(2). \* \* \*

(ii) [Reserved]

(9) In addition to complying with section 8.7.3.4 of ASTM F 406-10, comply with the following:

(i) 8.7.4 *Crib Side Spindle/Slat Torque Test:*

(A) 8.7.4.1 Apply a torque of 30 lbf-in. (3.4 N-m) at the midpoint in height of each spindle or slat.

(B) [Reserved]

(ii) [Reserved]

(10) In addition to complying with 8.27.3 of ASTM F 406-10, comply with the following:

(i) 8.28 *Movable Side Latch Tests:*

(A) 8.28.1 *Procedure for Movable Side Latch Tests:*

(B) 8.28.1.1 Gradually apply within 5 s a vertically downward force of 60 lbf (270 N) through a hardwood block with 2-by-2-in. (50-by-50-mm) contact area to the upper horizontal rail of the unit side at a point that is 6 in. (15 mm) from one end of the movable side rail. While the 60-lbf (270-N) downward force is applied to the movable side, gradually apply within 5 s a 30-lbf (133-N) horizontal force in a direction parallel to the movable side. The point of application of this force is to be coincident with the horizontal extension of the longitudinal centerline of the movable side and 1 in. (25 mm) down from the top of the unit corner post or unit end panel for construction not incorporating unit corner posts (see Fig. F). Maintain this horizontal force for an additional 30 s, then reverse its direction and maintain for an additional 30 s.

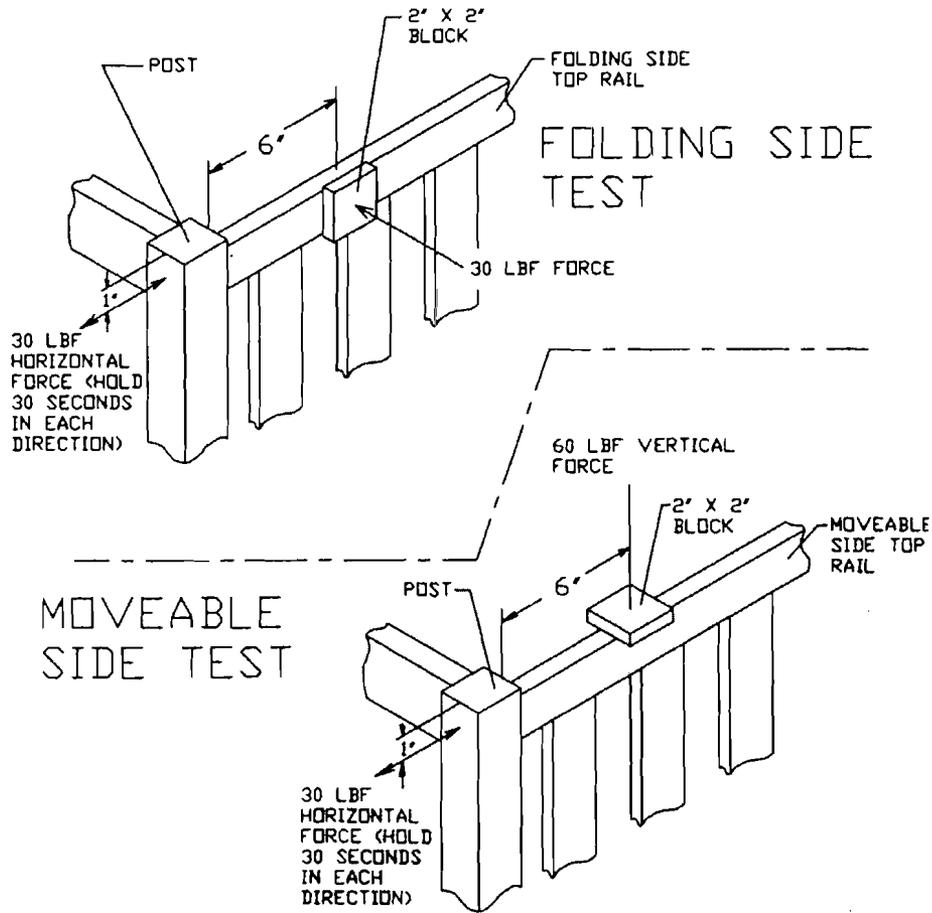


Figure F. Side Latch Test

(C) 8.28.1.2 Repeat this procedure at the other end of the unit's movable side and, if the unit has more than one movable side, perform the test at each end of each movable side.

(D) 8.28.1.3 Upon completion of the test, release the movable side latch and operate the movable side. Then raise the side and observe whether the latch automatically engages in the manner intended by the manufacturer.

(E) 8.28.2 *Procedure for Horizontally Hinged Movable Side Latch Test:*

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(F) 8.28.2.1 Place the hinged movable side in the latched position. Through a hardwood block with contact area of 2 by 2-in. (50 by 50-mm), gradually apply within 5 s a force of 30 lbf (130 N) horizontally outward, perpendicular to, and at a point that is 6 in. (15 mm) from one end of the hinged movable side upper rail. While this 30-lbf (130-N) force is applied to the movable side, gradually apply within 5 s a 30-lbf (130-N) horizontal force in a direction parallel to the hinged side. The point of application of this force is to be coincident with the horizontal extension of the longitudinal centerline of the hinged movable side and 1 in. (25 mm) down from the top of the unit corner post or unit end panel for construction not incorporating unit corner posts (see Fig. 15). Maintain this horizontal force for an additional 30 s, then reverse its direction and maintain for an additional 30 s.

(G) 8.28.2.2 Place the hinged movable side in the latched position. Through a hardwood block with contact area of 2 by 2-in. (50 by 50-mm), gradually apply within 5 s a force of 30 lbf (130 N) horizontally inward, perpendicular to, and at a point that is 6 in. (15 mm) from one end of the hinged movable side upper rail. While this 30-lbf (130-N) force is applied to the movable side, gradually apply within 5 s a 30-lbf (130-N) horizontal force in a direction parallel to the hinged movable side. The point of application of this force is to be coincident with the horizontal extension of the longitudinal centerline of the hinged movable side and 1 in. (25 mm) down from the top of the unit corner post or unit end panel for construction not incorporating unit corner posts. Maintain this horizontal force for an additional 30 s, then reverse its direction and maintain for an additional 30 s.

(ii) [Reserved]

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3. Revise §§ 1500.18(a)(13) and (14) to read as follows:

**§ 1500.18 Banned toys and other banned articles intended for use by children.**

(a) \* \* \*

(1) \* \* \*

(13) Any full-size baby crib that is manufactured, sold, contracted to sell or resell, leased, sublet, offered, provided for use, or otherwise placed in the stream of commerce on or after (six months after publication of final rule in the FEDERAL REGISTER) and that does not comply with the requirements of part 1219 of this chapter.

(14) Any non-full-size baby crib that is manufactured, sold, contracted to sell or resell, leased, sublet, offered, provided for use, or otherwise placed in the stream of commerce on or after (six months after publication of final rule in the FEDERAL REGISTER) and that does not comply with the requirements of part 1220 of this chapter.

\* \* \* \* \*

Dated: \_\_\_\_\_

\_\_\_\_\_  
Todd A. Stevenson, Secretary  
U.S. Consumer Product Safety Commission

# TAB I

**DRAFT 6-30-10**

**[Billing Code 6355-01-P]**

**CONSUMER PRODUCT SAFETY COMMISSION**

**16 CFR Parts 1508 and 1509**

[CPSC Docket No. CPSC-2010-0\_\_\_]

**Revocation of Requirements for Full-Size Baby Cribs and Non-Full-Size Baby Cribs**

**AGENCY:** Consumer Product Safety Commission.

**ACTION:** Proposed rule.

**SUMMARY:** Section 104(b) of the Consumer Product Safety Improvement Act of 2008 (“CPSIA”) requires the United States Consumer Product Safety Commission (“CPSC” or “Commission”) to promulgate consumer product safety standards for durable infant or toddler products. These standards are to be “substantially the same as” applicable voluntary standards or more stringent than the voluntary standard if the Commission concludes that more stringent requirements would further reduce the risk of injury associated with the product. The Commission is proposing to revoke its existing regulations pertaining to full-size and non-full-size cribs because, elsewhere in this issue of the FEDERAL REGISTER, the Commission is proposing consumer product safety standards for cribs that will further reduce the risk of injury associated with these products under section 104 of the CPSIA. The consumer product safety standard for cribs would include the requirements that are currently found at 16 CFR parts 1508 and 1509 for full-size and non-full-size cribs. To eliminate duplication, the Commission is proposing to remove 16 CFR parts 1508 and 1509 entirely.

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**DATES:** Written comments must be received by [insert date 75 days after date of publication in the FEDERAL REGISTER].

**ADDRESSES:** Comments relating to the Paperwork Reduction Act should be directed to the Office of Information and Regulatory Affairs, OMB, Attn: CPSC Desk Officer, FAX: 202-395-6974, or e-mailed to [oir\\_submission@omb.eop.gov](mailto:oir_submission@omb.eop.gov).

Other comments, identified by Docket No. CPSC-2010-----, may be submitted by any of the following methods:

### **Electronic Submissions**

Submit electronic comments in the following way:

Federal eRulemaking Portal: <http://www.regulations.gov>. Follow the instructions for submitting comments. To ensure timely processing of comments, the Commission is no longer accepting comments submitted by electronic mail (e-mail) except through <http://www.regulations.gov>.

### **Written Submissions**

Submit written submissions in the following way:

Mail/Hand delivery/Courier (for paper, disk, or CD-ROM submissions), preferably in five copies, to: Office of the Secretary, Consumer Product Safety Commission, Room 502, 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 rulemaking. 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

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information, trade secret information, or other sensitive or protected information electronically. 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>.

**FOR FURTHER INFORMATION CONTACT:** Patricia Edwards, Project Manager, Directorate for Engineering Sciences, Consumer Product Safety Commission, 4330 East-West Highway, Bethesda, MD 20814; telephone (301) 504-7577; [pedwards@cpsc.gov](mailto:pedwards@cpsc.gov)

### **SUPPLEMENTARY INFORMATION:**

#### **A. What Regulations Is the CPSC Proposing to Revoke?**

CPSC first published the full-size crib regulation, 16 CFR 1508, in 1973 (38 FR 32129 (Nov. 21, 1973)) and amended it in 1982. CPSC published the regulation for non-full-size cribs, 16 CFR 1509, in 1976 (41 FR 6240 (Feb. 12, 1976)) and amended it in 1982. Both standards currently contain requirements pertaining to dimensions, spacing of components, hardware, construction and finishing, assembly instructions, cutouts, identifying marks, warning statements, and compliance declarations. In addition, 16 CFR 1509 contains a requirement regarding mattresses.

#### **B. Why Is CPSC Proposing to Revoke the Regulations Pertaining to Cribs?**

The Consumer Product Safety Improvement Act of 2008, Public Law 110-314 (“CPSIA”) was enacted on August 14, 2008. Section 104(b) of the CPSIA requires the Commission to promulgate consumer product safety standards for durable infant or toddler products. These standards are to be “substantially the same as” applicable voluntary standards or more stringent than the voluntary standard if the Commission concludes that more stringent requirements would further reduce the risk of injury

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associated with the product. Elsewhere in this issue of the FEDERAL REGISTER, the Commission is proposing safety standards for full-size and non-full-size cribs under the authority of section 104 of the CPSIA. These new proposed standards, if finalized, will adopt the voluntary standards developed by ASTM International (formerly known as the American Society for Testing and Materials), which are more stringent in some respects than the current applicable standards, and include ASTM F 1169-10, “Standard Specification for Full-Size Baby Crib,” and ASTM F 406-10, “Standard Consumer Safety Specification for Non-Full-Size Baby Cribs/Play Yards.”

The proposed standards which the CPSC is publishing elsewhere in this issue of the FEDERAL REGISTER incorporate all of the requirements currently found in 16 CFR parts 1508 and 1509. Consequently, if the Commission issues a final rule to adopt the consumer product safety standards for full-size and non-full-size cribs pursuant to section 104(b) of the CPSIA, the requirements found at 16 CFR parts 1508 and 1509 would become redundant. The Commission, therefore, intends to revoke 16 CFR parts 1508 and 1509 in their entirety.

The Commission emphasizes that the proposed revocation of 16 CFR parts 1508 and 1509 would have no substantive effect on crib safety. The requirements currently found at 16 CFR parts 1508 and 1509 would still apply to full-size and non-full-size cribs, but would be part of new consumer product safety standards to be codified at 16 CFR parts 1219 and 1220.

### **C. Paperwork Reduction Act**

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This proposed rule would not impose any information collection requirements. Accordingly, this rule is not subject to the Paperwork Reduction Act, 44 U.S.C. 3501-3520.

### **D. Environmental Considerations**

This proposed rule falls within the scope of the Commission's environmental review regulation at 16 CFR 1021.5(c)(1), which provides a categorical exclusion from any requirement for the agency to prepare an environmental assessment or environmental impact statement for rules that revoke product safety standards.

### **E. Effective Date**

The Commission proposes that a final rule to revoke 16 CFR parts 1508 and 1509 become effective upon the effective date of the new mandatory standards to be developed for full-size and non-full-size cribs.

#### **List of Subjects in 16 CFR part 1508**

Consumer protection, Cribs and bassinets, Infants and children, Reporting and recordkeeping requirements

#### **List of Subjects in 16 CFR part 1509**

Consumer protection, Cribs and bassinets, Infants and children, Reporting and recordkeeping requirements

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For the reasons stated above, and under the authority of section 3 of the CPSIA and 5 U.S.C. 553, the Consumer Product Safety Commission proposes to remove 16 CFR parts 1508 and 1509 entirely.

PART 1508 - [REMOVED]

1. Under authority of section 3 of the CPSIA, part 1508 is removed entirely.

PART 1509 - [REMOVED]

2. Under authority of section 3 of the CPSIA, part 1509 is removed entirely.

Dated: \_\_\_\_\_.

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

BILLING CODE 6355-01-P

**TAB J**

# DRAFT 6-30-10

## [Billing Code 6355-01-P] CONSUMER PRODUCT SAFETY COMMISSION

### 16 CFR Part 1500

#### **Full-Size and Non-Full Size Baby Cribs: Withdrawal of Advance Notice of Proposed Rulemaking**

**AGENCY:** Consumer Product Safety Commission.

**ACTION:** Withdrawal of advance notice of proposed rulemaking.

**SUMMARY:** The Consumer Product Safety Commission (“Commission”) is terminating a proceeding for the possible amendment of the Commission’s standards for full-size cribs, codified at 16 CFR part 1508, and for non-full-size cribs, codified at 16 CFR part 1509 which the Commission began with publication of an advance notice of proposed rulemaking on December 16, 1996, 61 FR 65997. On August 14, 2008, the Consumer Product Safety Improvement Act of 2008 (“CPSIA”) was enacted. Section 104(b) of the CPSIA requires the Commission to promulgate consumer product safety standards for durable infant or toddler products, which are to be “substantially the same as” applicable voluntary standards (or more stringent requirements if they would further reduce the risk of injury associated with the product). Elsewhere in this issue of the FEDERAL REGISTER, the Commission is proposing safety standards for full-size and non-full-size baby cribs in response to section 104(b) of the CPSIA. The crib standards the Commission is proposing include provisions that address the risks of injury identified in the 1996 ANPR.

**FOR FURTHER INFORMATION CONTACT:** Patricia Edwards, Project Manager, Directorate for Engineering Sciences, Consumer Product Safety Commission, 4330 East West Highway, Bethesda, MD 20814; telephone (301) 504-7577; [pedwards@cpsc.gov](mailto:pedwards@cpsc.gov) .

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### SUPPLEMENTARY INFORMATION:

#### A. Background

In 1973, the Commission issued mandatory regulations for full-size cribs, which were amended in 1982 and are codified at 16 CFR part 1508. In 1976, the Commission issued nearly identical regulations for non-full-size cribs, which were also amended in 1982, and are codified at 16 CFR part 1509. In 1996, the Commission published an advance notice of proposed rulemaking (“ANPR”) which initiated a rulemaking proceeding for the possible amendment of the Commission’s crib regulations to address the risk of slats disengaging from cribs sides. 61 FR 65997 (Dec. 16, 1996). After publication of the ANPR, the Commission staff worked with the voluntary standards group, ASTM International (formerly known as the American Society for Testing and Materials), which added provisions in its standard for full-size baby cribs, ASTM F 1169, to address this hazard.

The Consumer Product Safety Improvement Act of 2008 (“CPSIA”, Pub. Law 110-314) was enacted on August 14, 2008. Section 104(b) of the CPSIA requires the Commission to promulgate consumer product safety standards for durable infant or toddler products. These standards are to be “substantially the same as” applicable voluntary standards or more stringent than the voluntary standard if the Commission concludes that more stringent requirements would further reduce the risk of injury associated with the product. Elsewhere in this issue of the FEDERAL REGISTER, the Commission is issuing a proposed rule that would establish safety standards for full-size and non-full-size cribs that are substantially the same as voluntary standards ASTM F 1169-10, *Standard Specification for Full-Size Baby Crib*, and ASTM F 406-10, *Standard*

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*Consumer Safety Specification for Non-Full-Size Baby Cribs.* The Commission proposes to incorporate these ASTM standards by reference with certain modifications to strengthen them. The proposed standards, as modified, would include provisions in both the full-size and non-full-size crib standards that address the risk of crib slat disengagement the Commission identified in the ANPR.

### **B. Withdrawal of the ANPR**

The rulemaking that the Commission is now initiating under section 104(b) of the CPSIA proposes to establish new requirements for full-size and non-full size cribs that will include the requirements of the Commission's existing regulations codified at 16 CFR parts 1508 and 1509 and additional requirements in the ASTM voluntary standards. Because these new crib standards will include performance tests to address the risk of crib slat disengagement, the Commission is withdrawing the ANPR and terminating that rulemaking.

Dated: \_\_\_\_\_

\_\_\_\_\_  
Todd Stevenson, Secretary  
U.S. Consumer Product Safety Commission