UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
4330 EAST WEST HIGHWAY
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This document has been electronically approved and signed.

DATE: JUNE 17, 2015

BALLOT VOTE SHEET:

TO: The Commission
Todd A. Stevenson, Secretary

THROUGH: Stephanie Tsacoumis, General Counsel
Patricia H. Adkins, Executive Director

FROM: Patricia M. Pollitzer, Assistant General Counsel
Matthew T. Mercier, Attorney, OGC

SUBJECT: Proposed Rule: Safety Standard for Portable Hook-On Chairs
BALLOT VOTE DUE - June 23, 2015

The Office of the General Counsel is providing for Commission consideration the attached draft notice of proposed rulemaking for publication in the *Federal Register*. The proposed rule would establish a safety standard for portable hook-on chairs under the Danny Keysar Child Product Safety Notification Act, section 104 of the Consumer Product Safety Improvement Act of 2008.

Please indicate your vote on the following options:

I. Approve publication of the attached document in the *Federal Register*, as drafted.

_____ _____
(Signature) (Date)

II. Approve publication of the attached document in the *Federal Register*, with changes. (Please specify.)

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(Signature) (Date)

III. Do not approve publication of the attached document in the *Federal Register*.

_____ _____

(Signature) (Date)

IV. Take other action. (Please specify.)

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_____ _____

(Signature) (Date)

Attachment: Draft *Federal Register* Notice: Proposed Rule to Establish a Safety Standard for Portable Hook-On Chairs

Billing Code 6355-01-P

CONSUMER PRODUCT SAFETY COMMISSION

16 CFR Parts 1112 and 1233

Docket No. CPSC-2015-XXXX

Safety Standard for Portable Hook-On Chairs

AGENCY: Consumer Product Safety Commission.

ACTION: Notice of proposed rulemaking.

SUMMARY: The Danny Keysar Child Product Safety Notification Act, section 104 of the Consumer Product Safety Improvement Act of 2008 ("CPSIA"), requires the United States Consumer Product Safety Commission ("Commission" or "CPSC") 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 a safety standard for portable hook-on chairs ("hook-on chairs") in response to the direction under section 104(b) of the CPSIA. In addition, the Commission is proposing an amendment to 16 CFR part 1112 to include 16 CFR part 1233 in the list of notice of requirements ("NORs") issued by the Commission.

DATES: Submit comments by [INSERT DATE 75 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER**]**.

ADDRESSES: Comments related to the Paperwork Reduction Act aspects of the marking, labeling, and instructional literature requirements of the proposed mandatory standard for hook-on chairs should be directed to the Office of Information and Regulatory Affairs, the Office of

Management and Budget, Attn: CPSC Desk Officer, FAX: 202-395-6974, or e-mailed to oira_submission@omb.eop.gov.

Other comments, identified by Docket No. CPSC-2015-XXXX, may be submitted electronically or in writing:

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

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

Instructions: All submissions received must include the agency name and docket number for this proposed 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 information, trade secret information, or other sensitive or protected information that you do not want to be available to the public. If furnished at all, such information should be submitted in writing.

Docket: For access to the docket to read background documents or comments received, go to: http://www.regulations.gov, and insert the docket number, CPSC-2015-XXXX, into the "Search" box, and follow the prompts.

FOR FURTHER INFORMATION CONTACT: Patricia L. Edwards, Project Manager, Directorate for Engineering Sciences, U.S. Consumer Product Safety Commission, 5 Research Place, Rockville, MD 20850; telephone: 301-987-2224; e-mail: *pedwards@cpsc.gov*.

SUPPLEMENTARY INFORMATION:

I. Background and Statutory Authority

The CPSIA was enacted on August 14, 2008. Section 104(b) of the CPSIA, part of the Danny Keysar Child Product Safety Notification Act, requires the Commission to: (1) examine and assess the effectiveness of voluntary consumer product safety standards for durable infant or toddler products, in consultation with representatives of consumer groups, juvenile product manufacturers, and independent child product engineers and experts; and (2) promulgate consumer product safety standards for durable infant and toddler products. Standards issued under section 104 are to be "substantially the same as" the 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 term "durable infant or toddler product" is defined in section 104(f)(1) of the CPSIA as "a durable product intended for use, or that may be reasonably expected to be used, by children under the age of 5 years." Section 104(f)(2)(C) of the CPSIA specifically identifies "hook-on chairs" as a durable infant or toddler product.

Pursuant to section 104(b)(1)(A) of the CPSIA, the Commission consulted with manufacturers, retailers, trade organizations, laboratories, consumer advocacy groups, consultants, and members of the public in the development of this notice of proposed rulemaking ("NPR"), largely through the ASTM process. The NPR is based on the most recent voluntary standard developed by ASTM International (formerly the American Society for Testing and

Materials), ASTM F1235-15, *Standard Consumer Safety Specification for Portable Hook-On Chairs* ("ASTM F1235-15"), and contains no modifications to the ASTM standard.

The testing and certification requirements of section 14(a) of the Consumer Product Safety Act ("CPSA") apply to the standards promulgated under section 104 of the CPSIA. Section 14(a)(3) of the CPSA requires the Commission to publish an NOR for the accreditation of third party conformity assessment bodies (test laboratories) to assess conformity with a children's product safety rule to which a children's product is subject. The proposed rule for hook-on chairs, if issued as a final rule, would be a children's product safety rule that requires the issuance of an NOR. To meet the requirement that the Commission issue an NOR for the hook-on chairs standard, this NPR also proposes to amend 16 CFR part 1112 to include 16 CFR part 1233, the CFR section where the hook-on chair standard will be codified, if the standard becomes final.

II. Product Description

A. Definition of "Hook-On Chair"

The scope section of ASTM F1235-15 defines a "portable hook-on chair" as "[u]sually a legless seat constructed to locate the occupant at a table in such a position and elevation so that the surface of the table can be used as the feeding surface for the occupant . . . [s]upported solely by the table on which it is mounted." The ASTM standard specifies the appropriate ages and weights for children using portable hook-on chairs as "between the ages of six months and three years and who weigh no more than 37 lb (16.8 kg) (95th percentile male at three years)."

Typical hook-on chairs consist of fabric over a lightweight frame, with a device to mount the seat to a support surface, such as a table or counter. Some hook-on chairs fold for easy

storage or transport, and some include a removable tray that can be used in conjunction with a table.

Figure 1. Examples of Hook-On Chairs

B. Market Description

CPSC staff has identified 10 firms supplying hook-on chairs to the U.S. market, typically priced at $40 to $80 each. These 10 firms specialize in the manufacture and/or distribution of durable nursery products and represent only a small segment of the juvenile products industry. Nine of the 10 known firms are domestic (including 3 manufacturers and 6 importers). The remaining firm is a foreign manufacturer. Hook-on chairs represent only a small proportion of each firm's overall product line; on average, each firm supplies one hook-on chair model to the U.S. market annually.

III. Incident Data

CPSC's Directorate for Epidemiology, Division of Hazard Analysis, is aware of a total of 89 portable hook-on chair-related incidents reported to the CPSC that occurred between January 1, 2000 and October 31, 2014. These reports include 50 incidents involving injury, 38 non-injury incidents, and one fatality. Thirty-one of the incident reports were received through the National Electronic Injury Surveillance System ("NEISS"). Only one of the injured children (age 5 months) was outside the ASTM recommended user age range of 6 months to 3 years. One injured adult is included among the 50 nonfatal injuries.

A. Fatalities

The only known fatality occurred in 2002 when a 12-month-old child slid down in his portable hook-on chair so that his head and neck became wedged between the seat and the table edge, and the child was strangled. No restraints were attached to the chair at the time of the incident.

B. Nonfatalities

No hospitalizations occurred among the 50 reported nonfatal injuries. Thirty-five of the incidents were classified as "treated and released" from hospital emergency rooms, and the remaining 15 incidents involved no medical treatment. The reported injuries included skull fractures, concussions, broken or fractured bones, and fingertips.

Five of the 50 nonfatal injuries involved head or neck entrapment. None of these entrapments resulted in death because in each instance the child was quickly released from the entrapment by the caregiver. Most of the injury cases involved some sort of fall, namely a hook-on chair falling from the counter or table to which it was attached, or a child falling from or slipping out of the hook-on chair.

C. Hazard Pattern Identification

CPSC staff reviewed all 89 reported incidents (1 fatality, 50 with injuries, and 38 without injuries) to identify hazard patterns associated with portable hook-on chairs. Subsequently, CPSC staff considered the hazard patterns when reviewing the adequacy of ASTM F1235.

Because the level of detail in the analyzed NEISS data is sufficient only for macro-level hazard assessment, staff first grouped NEISS injury data and non-NEISS data separately. Within NEISS injury data, staff grouped the incidents into three broad categories:

- compromised attachment;

- child fall or slip out of the hook-on chair; and
- fall of unknown type.

For non-NEISS incidents, staff grouped the incidents into six broad categories:

- compromised attachment;
- restraint or containment issues;
- unintended release of seat fabric fastenings;
- seat fabric separation due to breaking or tearing components;
- broken structural components; and
- other.

Staff then further classified the incidents within each category, as indicated in Table 1 below.

In order of frequency of incident reports within NEISS injury data and non-NEISS data, the hazard patterns are described below and summarized in Table 1:

1. NEISS Injury Incidents *(31 incidents)*

Compromised Attachment *(45%)*: Fourteen of the 31 incidents involved a hook-on chair falling from the table or counter to which it was attached. In these incidents, the attachment to the counter or table became compromised in some manner.

Child Fall or Slip from hook-on Chair *(35%)*: Eleven of the 31 incidents involved a child falling or slipping out of the chair partially or completely. These incidents most likely involved issues with the restraints or other means of containment. However, given the limited information available, CPSC staff cannot be sure that the chairs remained securely attached to the table or that other product-related issues did not play a role. The only case in which the fall was

determined to be partial rather than complete involved a child who was found hanging by his neck, caught in the chair.

***Fall of Unknown Type** (19%)*: Six of the 31 incidents involved falls of an unknown type. Although each of these cases appears to be related to some kind of fall affecting the child, the descriptions are not sufficiently clear to allow staff to determine the type of fall that occurred.

Table 1. Suspected NEISS Hazard Patterns Associated with Portable Hook-On Chairs
Date of Treatment: January 1, 2000–October 2014

Suspected Hazard Pattern	***NEISS Injury Cases***	
	Count	*Percentage*
Chair detached and fell with child	14	45%
Child fell or slipped out of chair	11	35%
Fall of unknown type	6	19%
Total	**31**	**100%**

Source: Consumer Product Safety Commission's NEISS epidemiological database.
Note: The percentages have been rounded to the nearest integer and may not add up exactly to 100 percent.

2. Non-NEISS Incidents (58 incidents)

***Compromised Attachment** (53%)*: Thirty-one of the incidents involved scenarios where the security of the hook-on chair's attachment to the table was compromised in some way. In a majority of these cases (17 out of 31), the chair did not completely separate from the table, either because the chair remained partially secured to the table, or because a parent took action before the chair fully detached. In some of the incidents in which the chair partially detached, the seat may have rotated, swung, pitched, or otherwise deviated from its intended position. Four injury incidents are included among the 17 incidents in which the chair did not detach completely. The two most severe of these injuries involved crushed or severed fingertips caught between a part of the chair and the clamp that

was still engaged with the table. Five injuries are included among the 14 incidents in which the chair fell completely from the table, including one broken collarbone. In total, attachment issues resulted in 9 injuries (47% of the 19 nonfatal injuries reported by non-NEISS sources).

Restraint or Containment Issues *(19%)*: Eleven incidents involved chair restraints or other containment issues. These incidents include one fatality, five nonfatal injury incidents, and five non-injury incidents. The most common scenario among these incidents was children slipping and becoming entrapped by the neck in the leg well or between the table and the chair, as occurred in seven incidents (1 fatal, 3 injuries, and 3 non-injuries). In another incident, the child slipped partially, but was caught by the shoulder by waist straps. The remaining three incidents all involved the child getting up or out over the sides of the chair. In one such incident, the child was able to escape from his three-point harness and stand up in the chair before being removed entirely from the chair by his mother. In the other two incidents, the children got themselves up over the sides of the chair and fell out. Only one of the two was injured; a parent of the uninjured child was able to catch the child's legs, preventing impact with the floor.

Unintended Release of Seat Fabric Fastenings *(10%)*: Six incidents involved the chair seat fabric separating from the chair due to the unintended release of snaps or Velcro straps. These chairs, assembled by consumers, relied on snaps (1 incident) or Velcro straps (5 incidents) to hold the seat fabric onto the attachment arms or chair frame. Unintended release of these fastenings allowed the seat fabric to deviate from its intended position and therefore not support the child as

intended. Impacts with the supporting table were the cause of two of the injuries. The third injury resulted when the child started to fall, but his neck became caught against the restraints.

Seat Fabric Separation Due to Breaking or Tearing Components *(5%)*: Three incidents involved issues with seat fabric separating from the chair, including one injury. The injury occurred when a child fell completely out of the chair after the fabric ripped at the seams.

Breaking Structural Components *(10%)*: Six incidents involved broken chair components affecting the structural integrity of the chair. Four of the incidents involved locking pins reported to have separated from the chair; one of these locking pin incidents involved injury, which resulted from an adult scratching her knee on the sharp protrusion of a locking pin. Two other incidents were associated with a broken release mechanism and a broken chair base, respectively, neither resulting in injuries.

Other *(2%)*: One incident involved a child creating enough motion to tip over a small pedestal table to which the parent had secured the chair.

Table 2. Distribution of Non-NEISS Reported Portable Hook-On Chair Incidents
By Product-Related Issues or Hazard Patterns
Date of Incident: January 1, 2000–October 2014

Product-Related Issues or Hazard Patterns	***Total Reports***		***Reported Injuries***		***Reported Deaths***	
	Count	*Percentage*	*Count*	*Percentage*	*Count*	*Percentage*
Attachment to Table Compromised	31	53%	9	47%		
(chair did not fall from table)	*(17)*		*(4)*			
(chair fell from table)	*(14)*		*(5)*			
Restraints or Containment	11	19%	5	26%	1	100%
(child slipped down, entrapping neck)	*(7)*		*(3)*		*(1)*	
(child slipped partially, but shoulder caught by waist straps)	*(1)*		*(1)*			
(child able to get up and possibly fall out of chair)	*(3)*		*(1)*			
Seat Fabric Separation Due to Unintended Release of Snaps or Straps	6	10%	3	16%		
(child slipped forward and head struck table after metal snaps opened)	*(1)*		*(1)*			
(child slipped and neck became trapped after Velcro opened)	*(1)*		*(1)*			
(child fell entirely out of chair after Velcro opened)	*(2)*		*(1)*			
(child remained seated despite Velcro opening)	*(2)*					
Seat Fabric Separation Due to Torn or Broken Components	3	5%	1	5%		
(child fell entirely out of chair after fabric seam ripped)	*(1)*		*(1)*			
(child remained seated despite broken clip or fabric)	*(2)*					
Miscellaneous Broken Components	6	10%	1	5%		
(locking pin)	*(4)*		*(1)*			
(release mechanism)	*(1)*					
(base of chair)	*(1)*					
Other	1	2%	0	0%		
(tip over of table hooked upon)	*(1)*					
Total	**58**	**100%**	**19**	**100%**	**1**	**100%**

Source: Consumer Product Safety Commission's epidemiological databases CPSRMS, IPII, INDP, and DTHS.
Note: The percentages have been rounded to the nearest integer and shown for totals and subtotals only. Subtotals do not necessarily add to heading totals.

D. Product Recalls

Since January 1, 2000, two hook-on chair recalls occurred involving two different firms. The first recall was in June 2001, and involved Inglesina USA hook-on chairs. The product was recalled after one report of a child who fell from the chair because that model chair did not incorporate a seat belt. The recall involved 780 units.

The second recall was in August 2011, and involved phil&teds USA, Inc., “metoo” clip-on chairs. This recall involved multiple hazards. The first hazard was related to missing or worn clamp pads that allowed the chairs to detach from a variety of different table surfaces, posing a fall hazard. A second hazard occurred when the chair detached; children's fingers were able to be caught between the bar and clamping mechanism, posing an amputation hazard. In addition, user instructions for the chairs were inadequate, increasing the likelihood of consumer misuse. CPSC is aware of 19 reports of the chairs falling from different table surfaces, including five reports of injuries. Two of the five reports of injuries involved children's fingers being severely pinched, lacerated, crushed or amputated. The three other reports of injury involved bruising after a chair detached suddenly and the child fell with the chair, striking the table or floor.

IV. International Standards for Hook-On Chairs and the ASTM Voluntary Standard

CPSC is aware of one international standard, *EN1272-1998, Child Care Articles - Table Mounted Chairs - Safety Requirements and Test Methods*, which addresses hook-on chairs in a fashion similar to ASTM F1235-15. CPSC staff compared ASTM F1235-15 requirements that address chair-to-table attachments and restraints and containment features to the equivalent EN1272-1998 provisions. The EN1272-1998 standard has requirements for:

- Chemical and flammability material properties;
- General construction, such as small parts, sharp edges and openings;
- Structural integrity, including static and dynamic tests;
- Restraints; and
- Labeling.

Although there are differences between the two standards, based on this comparison CPSC believes ASTM F1235-15 to be a more stringent standard, which will more completely

address the hazard patterns seen in CPSC incident data. For example, ASTM F1235-15 contains a number of requirements that do not have an equivalent in the European standard, including the seat and seat back disengagement test, the passive crotch restraint requirement, and the scissoring, shearing, and pinching disengagement test. Additionally, in instances where there is an equivalent requirement in the European standard (*e.g.*, static load test and chair pull/push test), ASTM requirements are as stringent as or more stringent than the comparable European standard requirement.

V. Voluntary Standard–ASTM F1235

A. History of ASTM F1235

The voluntary standard for hook-on chairs was first approved and published in 1989, as ASTM 1235-89, *Standard Consumer Safety Specification for Portable Hook-On Chairs*. ASTM has revised the voluntary standard seven times since then. The current version, ASTM F1235-15, was approved on May 1, 2015.

B. Description of the Current Voluntary Standard–ASTM F1235-15

ASTM F1235-15 was published in June 2015. Revisions include modified and new requirements developed by CPSC staff, in conjunction with stakeholders on the ASTM subcommittee task group, to address the hazards associated with hook-on chairs. ASTM F1235-15 includes the following key provisions: scope, terminology, general requirements, performance requirements, test methods, marking and labeling, and instructional literature.

Scope. This section states the scope of the standard, detailing what constitutes a hook-on chair. As stated in section II.A. of this preamble, the Scope section defines a hook-on chair to be "[u]sually a legless seat constructed to locate the occupant at a table in such a position and elevation so that the surface of the table can be used as the feeding surface for the

occupant…[s]upported solely by the table on which it is mounted." The Scope section further specifies the appropriate ages and weights for children using portable hook-on chairs as "between the ages of six months and three years and who weigh no more than 37 lb (16.8 kg) (95th percentile male at three years)."

Terminology. This section provides definitions of terms specific to this standard.

General Requirements. This section addresses numerous hazards with several general requirements, most of which are also found in the other ASTM juvenile product standards. The following are the general requirements contained in this section:

- Sharp points;
- Small parts;
- Lead in paint;
- Wood parts;
- Latching and locking mechanisms;
- Scissoring, shearing, and pinching (including during detachment from table support surface);
- Exposed coil springs;
- Openings;
- Labeling; and
- Protective components.

Performance Requirements and Test Methods. These sections contain performance requirements specific to hook-on chairs, as well as test methods that must be used to assess conformity with such requirements. Below is a discussion of each.

- **Chair Drop Test:** The hook-on chair is dropped twice from a height of 36 inches on each of six different planes. The purpose of this performance requirement is to test that the hook-on chair does not exhibit any mechanical hazards (sharp points, sharp edges, or small parts) after a drop test has been performed.
- **Static Load Test:** The hook-on chair must support a weight of 100 pounds on both the maximum and minimum thickness test surfaces. The purpose of this performance requirement is to test that the hook-on chair is strong enough to support approximately three times the weight of a child expected to be in the seat.
- **Seat and Seat Back Disengagement Test:** The seat and seat back must remain fully attached to the frame of the chair when various forces are applied. The purpose of this performance requirement is to test that the seat and seat back are strong enough to withstand the forces they will be subject to during use.
- **Chair Bounce Test:** The chair must remain attached to the standard test surface and allow no movement greater than 1 in (25 mm) when a force is applied to the seat back and a weight is dropped onto the seat 50 times. The purpose of this test is to simulate a child bouncing up and down in the hook-on chair.
- **Chair Pull/Push Test:** A variety of forces and weights are used to verify that the hook-on chair does not detach from the test surface. The purpose of this test is to simulate a child's actions that might cause the chair to disengage from the table.
- **Restraint System Performance Requirements and Tests:** The standard requires that an active restraint system, such as a belt, be provided to secure a child in the seated position in each of the manufacturer-recommended use positions. In addition, the restraint system must include both a waist and a crotch restraint designed to require the crotch restraint to

be used when the active restraint system is used. The restraint system must be attached to the chair before shipment so the system does not release during normal use. The purpose of this performance requirement is to test that the restraint system and its closing means do not break, separate, or permit removal of the occupant when various forces are applied.

- **Openings and Passive Crotch Restraint System:** This section requires the chair to be supplied with a passive crotch restraint. In addition, to prevent consumer mis-installation or non-installation, the standard requires the passive crotch restraint be installed on the product at the time of shipment. The leg openings must be tested, using a wedge block, to assess whether the passive crotch restraint is effective under the load. The hook-on chair is attached to a test surface and then the tapered end of the wedge block is inserted, and a 25 lb. (111 N) force is applied to the wedge block to push (or pull) the wedge block through the opening. The wedge block is modeled from the hip/torso dimensions of the youngest expected user. In addition to the leg openings, any side openings of the seat, and openings in front of the occupant (between the chair and the supporting table structure), are also tested in a similar manner. To comply with the requirement, the wedge block must not pass completely through any opening. The purpose of these provisions is to reduce the likelihood of children getting injured or dying as a result of sliding through or becoming entrapped in an opening.
- **Scissoring, Shearing, and Pinching Disengagement Test:** This test is intended to reduce the likelihood of children becoming injured due to motion caused by the rotation of a hook-on chair when one side (clamp) detaches from the table. One recall was conducted in cooperation with the CPSC for this issue. The firm reported that two

incidents resulted in a finger amputation of the occupant in the hook-on chair. In this test, the hook-on chair is partially attached to the minimum test surface with only one of the attachment-fastening devices firmly attached to the test surface; the other fastening device is left loose. A CAMI infant dummy is placed in the hook-on chair with the restraints fastened. A force is then applied to the chair/arm frame in line with the loose fastening device in a direction that results in the rotation of the product on a horizontal plane around the other (fully tightened) attachment point. When the loose attachment point is no longer supported by the test surface, the force is discontinued, and the product is allowed to rotate vertically downward from the test surface. Scissoring, shearing, or pinching that may result in injury is not permissible during the entire test, including when the chair is rotating downward.

Marking and Labeling. This section contains various requirements relating to warnings, labeling, and required markings for hook-on chairs. This section prescribes various substance, format, and prominence requirements for such information.

Instructional Literature. This sections requires that instructions be provided with hook-on chairs and be easy to read and understand. Additionally, the section contains requirements relating to instructional literature contents and format, as well as prominence of certain language.

VI. Assessment of the Voluntary Standard ASTM F1235-15

CPSC believes that the current voluntary standard, ASTM F1235-15, addresses the primary hazard patterns identified in the incident data. The following section discusses how each of the identified product-related issues or hazard patterns listed in section III.C. of this preamble is addressed by the current voluntary standard, ASTM F1235-15:

A. Chair's Attachment

CPSC is aware of 45 incidents in which the attachment of the hook-on chair to the table was compromised. ASTM F1235-15 contains two separate requirements with the intended purpose of reducing the likelihood of a hook-on chair becoming detached from its supporting surface: the chair bounce test and the chair pull/push test. Additionally, in response to CPSC staff's request, ASTM formed a task group to address hazards associated with partial detachment of a chair, which can result in scissoring or shearing hazards. CPSC staff worked with ASTM to develop performance requirements to address this hazard. Accordingly, the standard includes a requirement (first introduced in ASTM F1235-14a) to reduce injuries in the event that a hook-on chair partially detaches from the table support surface: the scissoring, shearing, and pinching test. CPSC believes these requirements adequately address this hazard pattern.

B. Restraint or Containment

CPSC is aware of 22 incidents involving or likely involving issues with the hook-on chair restraints or other means of containment. In these instances, children slipped and became entrapped by the neck, or children were able to stand up and fall out over the sides of the chair. The only known fatality in the incident data occurred when a child's head and neck became wedged between the seat and table edge. Similar non-fatal incidents were also reported. Additionally, CPSC received reports of children standing and then slipping and becoming trapped between the table and the hook-on chair.

In response to reported incidents, CPSC staff worked with an ASTM task group to create a provision that hook-on chairs must contain a passive crotch restraint–a "component that separates the openings for the legs of the occupant into two separate bounded openings and requires no action on the part of the caregiver to use except to position one leg into each opening

created by the component." Before the 2014 version of the standard, ASTM F1235 did not contain a passive crotch restraint requirement.

Additionally, CPSC's work with the ASTM task group led to a related leg openings performance requirement and test method. Consequently, the current standard contains an openings requirement and associated test methodologies that cover leg openings and side openings. This requirement also applies to completely bounded openings in front of the occupant, addressing entrapment between the leading edge of the chair and the supporting table surface.

ASTM F1235-15 requires that all hook-on chairs contain a crotch and waist belt restraint system. In addition, the restraint system undergoes testing to check that the system restrains the child as intended. The leg openings, openings around the side and in front of the seat, and the area between the chair and the supporting table are all tested to check that an occupant cannot slide through or become entrapped in the openings. CPSC believes these recent additions to the standard adequately address this hazard pattern.

C. Fabric- and Component-Related Incidents

CPSC is aware of 15 incidents in which seat fabric, seat fabric fasteners, or other chair components failed. ASTM F1235-15 includes three different performance tests to help address this hazard pattern: the chair drop test, the static load test, and the seat/seat back disengagement test. Additionally, warning and instructional literature improvements included in the last revision of the standard will help prevent snaps or Velcro from unintentionally detaching due to foreseeable misuse and abuse. CPSC believes that ASTM F1235-15 adequately addresses this hazard pattern.

D. Other

ASTM F1235-15 includes revised requirements for marking and labeling and instructional literature. These improvements are intended to help reduce incidents of misuse, such as attaching a hook-on chair to a table for which it was not intended. CPSC believes that the standard contains adequate and clear warnings related to known hazards associated with hook-on chairs.

VII. Proposed CPSC Standard for Hook-On Chairs

As explained in the previous section of this preamble, the Commission concludes that ASTM F1235-15 adequately addresses the hazards associated with hook-on chairs. Thus, the Commission proposes to incorporate by reference ASTM F1235-15 without any modifications.

VIII. Amendment to 16 CFR part 1112 to Include NOR for Hook-On Chairs Standard

The CPSA establishes certain requirements for product certification and testing. 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-enforced requirements. 15 U.S.C. 2063(a). Certification of children's products subject to a children's product safety rule must be based on testing conducted by a CPSC-accepted third party conformity assessment body. *Id*. 2063(a)(2). The Commission must publish an NOR for the accreditation of third party conformity assessment bodies to assess conformity with a children's product safety rule to which a children's product is subject. *Id.* 2063(a)(3). Thus, the proposed rule for 16 CFR part 1233, *Safety Standard for Portable Hook-On Chairs*, if issued as a final rule, would be a children's product safety rule that requires the issuance of an NOR.

The Commission published a final rule, *Requirements Pertaining to Third Party Conformity Assessment Bodies*, 78 FR 15836 (March 12, 2013), codified at 16 CFR part 1112 ("part 1112") and effective on June 10, 2013, which establishes requirements for accreditation of

third party conformity assessment bodies to test for conformity with a children's product safety rule in accordance with section 14(a)(2) of the CPSA. Part 1112 also codifies all of the NORs issued previously by the Commission.

All new NORs for new children's product safety rules, such as the hook-on chair standard, require an amendment to part 1112. To meet the requirement that the Commission issue an NOR for the proposed hook-on chair standard, as part of this NPR, the Commission proposes to amend the existing rule that codifies the list of all NORs issued by the Commission to add hook-on chairs to the list of children's product safety rules for which the CPSC has issued an NOR.

Test laboratories applying for acceptance as a CPSC-accepted third party conformity assessment body to test to the new standard for hook-on chairs would be required to meet the third party conformity assessment body accreditation requirements in part 1112. When a laboratory meets the requirements as a CPSC-accepted third party conformity assessment body, the laboratory can apply to the CPSC to have 16 CFR part 1233, *Safety Standard for Portable Hook-On Chairs*, included in the laboratory's scope of accreditation of CPSC safety rules listed for the laboratory on the CPSC website at: www.cpsc.gov/labsearch.

IX. Incorporation by Reference

Section 1233.2(a) of the proposed rule incorporates by reference ASTM F1235-15. The Office of the Federal Register ("OFR") has regulations concerning incorporation by reference. 1 CFR part 51. The OFR recently revised these regulations to require that, for a proposed rule, agencies must discuss in the preamble of the NPR ways that the materials the agency proposes to incorporate by reference are reasonably available to interested persons or how the agency

worked to make the materials reasonably available. In addition, the preamble of the proposed rule must summarize the material. 1 CFR 51.5(a).

In accordance with the OFR's requirements, section V.B. of this preamble summarizes the provisions of ASTM F1235-15 that the Commission proposes to incorporate by reference. ASTM F1235-15 is copyrighted. By permission of ASTM, the standard can be viewed as a read-only document during the comment period on this NPR, at: http://www.astm.org/cpsc.htm. Interested persons may also purchase a copy of ASTM F1235-15 from ASTM International, 100 Bar Harbor Drive, P.O. Box 0700, West Conshohocken, PA 19428; http://www.astm.org/cpsc.htm. One may also inspect a copy at CPSC's Office of the Secretary, U.S. Consumer Product Safety Commission, Room 820, 4330 East West Highway, Bethesda, MD 20814, telephone 301-504-7923.

X. 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. 5 U.S.C. 553(d). The Commission is proposing an effective date of six months after publication of the final rule in the *Federal Register*. Without evidence to the contrary, CPSC generally considers six months to be sufficient time for suppliers to come into compliance with a new standard, and a six-month effective date is typical for other CPSIA section 104 rules. Six months is also the period that the Juvenile Products Manufacturers Association ("JPMA") typically allows for products in the JPMA certification program to transition to a new standard once that standard is published.

We also propose a six-month effective date for the amendment to part 1112. We ask for comments on the proposed six-month effective date.

XI. Regulatory Flexibility Act

A. Introduction

The Regulatory Flexibility Act ("RFA") requires that agencies review a proposed rule for the rule's potential economic impact on small entities, including small businesses. Section 603 of the RFA generally requires that agencies prepare an initial regulatory flexibility analysis ("IRFA") and make the analysis available to the public for comment when the agency publishes an NPR. 5 U.S. C. 603. Section 605 of the RFA provides that an IRFA is not required if the agency certifies that the rule will not, if promulgated, have a significant economic impact on a substantial number of small entities. As explained in this section, the Commission concludes that the standard for hook-on chairs, if promulgated as a final rule, will not have a significant economic impact on a substantial number of small entities. 5 U.S.C. 605(b).

B. Market Description

The Commission has identified 10 firms supplying hook-on chairs to the U.S. market, typically priced at $40 to $80 each. These firms specialize in the manufacture and/or distribution of durable nursery products and represent only a small segment of the juvenile products industry. All but two of these firms are represented by the JPMA which, according to its website, represents 95 percent of the North American industry or about 250 companies. Nine of the 10 known firms are domestic (including 3 manufacturers and 6 importers). The remaining firm is a foreign manufacturer.

Hook-on chairs represent only a small proportion of each firm's overall product line; on average, each firm supplies one hook-on chair model to the U.S. market annually. This reflects hook-on chairs' relative lack of popularity when compared with substitute products such as high chairs and booster chairs. In 2013, the CPSC conducted a Durable Nursery Product Exposure Survey ("DNPES") of U.S. households with children under age 6. Data from the DNPES

indicate that there are an estimated 2.04 million hook-on chairs in U.S. households with children under the age of 6. The number of high chairs and booster chairs was each more than four times higher with an estimated 9.74 million and 8.91 million in U.S. households with children under age 6, respectively.

C. Impact of Proposed 16 CFR Part 1233 on Small Businesses

We are aware of approximately 10 firms currently marketing portable hook-on chairs in the United States, 9 of which are domestic firms. Under U.S. Small Business Administration ("SBA") guidelines, a manufacturer of hook-on chairs is small if it has 500 or fewer employees, and importers and wholesalers are considered small if they have 100 or fewer employees. We limit our analysis to domestic firms because SBA guidelines and definitions pertain to U.S.-based entities. Based on these guidelines, six of the nine domestic suppliers are small—two domestic manufacturers and four domestic importers. Staff expects that the hook-on chairs of nine of the 10 firms are compliant with ASTM F1235 because they are either: (1) certified by the JPMA (three firms); or (2) the supplier claims compliance with the voluntary standard (six firms). It is unknown at this time whether the hook-on chairs supplied by the remaining firm, the foreign manufacturer, comply with the ASTM voluntary standard.

The costs of compliance with the proposed standard, if any, are expected to be negligible for all known small firms, all of which have hook-on chairs compliant with the ASTM voluntary standard currently in effect for testing purposes (F1235-14). These firms are expected to remain compliant with the voluntary standard as it evolves, because they follow (and most of these firms actively participate in) the standard development process. Therefore, compliance with the voluntary standard is part of an established business practice. ASTM F1235-15, the version of the voluntary standard that the Commission proposes to adopt without modification as the

mandatory hook-on chair standard, will be in effect for testing purposes by the time the mandatory standard becomes final. These firms are likely to be in compliance by the rule's effective date, based on their history.

Under section 14 of the CPSA, once the new hook-on chair requirements become effective, all manufacturers will be subject to the third party testing and certification requirements under the testing rule, *Testing and Labeling Pertaining to Product Certification* (16 CFR part 1107) ("1107 rule"). Importers will also be subject to these requirements if their supplying foreign firm(s) does not perform third party testing. Third party testing will include any physical and mechanical test requirements specified in the final hook-on chairs rule. Manufacturers and importers of hook-on chairs should already be conducting required lead or phthalates testing for hook-on chairs. Any costs associated with third party testing are in addition to the direct costs of meeting the hook-on chair standard.

Additional testing costs for manufacturers are expected to be small because all hook-on chairs in the U.S. market are currently tested to verify compliance with the ASTM standard, though not necessarily via third party. According to estimates from suppliers, testing to the ASTM voluntary standard typically costs about $600-$1,000 per model sample. Based on an examination of firm revenues from recent Dun & Bradstreet or ReferenceUSAGov reports, the impact of third party testing to ASTM F1235-15 is unlikely to be economically significant for small manufacturers (*i.e.,* testing costs will be less than 1 percent of gross revenue). Although it is unknown how many samples will be needed to meet the "high degree of assurance" criterion required in the 1107 rule, over 35 units per model would be required to make testing costs exceed one percent of gross revenue for the small manufacturer with the lowest gross revenue. Note that this calculation assumes the rule would generate *additional* testing costs in the $600-

$1,000 per model sample range. Given that all firms are conducting some testing already, this likely overestimates the impact of the rule on testing costs.

Likewise, we expect the cost of third party testing to the proposed rule to be small for small importers. Again, all hook-on chairs are currently tested to verify compliance with the ASTM standard. Discussions with one importer indicate that this testing is currently conducted by their foreign supplier. Second, as with manufacturers, any costs would be limited to the incremental costs associated with third party testing over the current testing regime, to the extent there are any additional costs.

Both the costs of compliance and the incremental costs of testing due to the 1107 rule are not expected to be economically significant for manufacturers and importers of hook-on chairs. However, even if the costs were significant, the affected firms have diverse product lines, only a minor part consisting of hook-on chairs; an economically feasible option is to discontinue the product line and remain in business.

The analysis above shows that there are only a few small suppliers of hook-on chairs, and these few firms represent only a small segment of the juvenile products industry. Moreover, this product is only one of many in each firm's product line and is unlikely to be of particular importance to a firm's overall market plan. All of the hook-on chairs supplied by these firms comply with the voluntary standard and are expected to continue to do so. Consequently, the costs of compliance, if any, are expected to be negligible. Third party testing costs are expected to be very small and economically insignificant (*i.e.*, less than one percent of gross revenue for affected firms), given that all of the hook-on chairs supplied by these firms are already being tested to the ASTM voluntary standard. For these reasons, the Commission certifies that the

proposed hook-on chair rule will not have a significant impact on a substantial number of small entities.

D. Impact of Proposed 16 CFR Part 1112 Amendment on Small Businesses

This proposed rule would also amend part 1112 to add hook-on chairs to the list of children's products for which the Commission has issued an NOR. As required by the RFA, staff conducted a Final Regulatory Flexibility Analysis ("FRFA") when the Commission issued the part 1112 rule (78 FR 15836, 15855-58). Briefly, the FRFA concluded that the accreditation requirements would not have a significant adverse impact on a substantial number of small test laboratories because no requirements were imposed on test laboratories that did not intend to provide third party testing services. The only test laboratories that were expected to provide such services were those that anticipated receiving sufficient revenue from the mandated testing to justify accepting the requirements as a business decision. Moreover, a test laboratory would only choose to provide such services if it anticipated receiving revenues sufficient to cover the costs of the requirements.

Based on similar reasoning, amending 16 CFR part 1112 to include the NOR for the hook-on chairs standard will not have a significant adverse impact on small test laboratories. Moreover, based upon the number of test laboratories in the United States that have applied for CPSC acceptance of accreditation to test for conformance to other mandatory juvenile product standards, we expect that only a few test laboratories will seek CPSC acceptance of their accreditation to test for conformance with the hook-on chair standard. Most of these test laboratories will have already been accredited to test for conformity to other mandatory juvenile product standards, and the only costs to them would be the cost of adding the hook-on chairs standard to their scope of accreditation. For these reasons, the Commission certifies that the

NOR amending 16 CFR part 1112 to include the hook-on chairs standard will not have a significant impact on a substantial number of small entities.

XII. Environmental Considerations

The Commission's regulations address whether the agency is required to prepare an environmental assessment or an environmental impact statement. Under these regulations, a rule that has "little or no potential for affecting the human environment," is categorically exempt from this requirement. 16 CFR 1021.5(c)(1). The proposed rule falls within the categorical exemption.

XIII. 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. 3501–3521). In this document, pursuant to 44 U.S.C. 3507(a)(1)(D), we set forth:

- a title for the collection of information;
- a summary of the collection of information;
- a brief description of the need for the information and the proposed use of the information;
- a description of the likely respondents and proposed frequency of response to the collection of information;
- an estimate of the burden that shall result from the collection of information; and
- notice that comments may be submitted to the OMB.

Title: Safety Standard for Portable Hook-On Chairs

Description: The proposed rule would require each hook-on chair to comply with ASTM F1235-15, *Standard Consumer Safety Specification for Portable Hook-On Chairs*. Sections 8 and 9 of ASTM F1235-15 contain requirements for marking, labeling, and instructional literature. These requirements fall within the definition of "collection of information," as defined in 44 U.S.C. 3502(3).

Description of Respondents: Persons who manufacture or import hook-on chairs.

Estimated Burden: We estimate the burden of this collection of information as follows:

Table 3 – Estimated Annual Reporting Burden

16 CFR Section	Number of Respondents	Frequency of Responses	Total Annual Responses	Hours per Response	Total Burden Hours
1233.2(a)	10	1	10	1	10

Our estimate is based on the following:

Section 8.1 of ASTM F1235-15 requires that the name and the place of business (city, state, and mailing address, including zip code) or telephone number of the manufacturer, distributor, or seller be marked clearly and legibly on each product and its retail package. Section 8.2 of ASTM F1235-15 requires a code mark or other means that identifies the date (month and year, as a minimum) of manufacture.

Ten known entities supply hook-on chairs to the U.S. market may need to make some modifications to their existing labels. We estimate that the time required to make these modifications is about 1 hour per model. Based on an evaluation of supplier product lines, each

entity supplies an average of one model of hook-on chairs;[1] therefore, the estimated burden associated with labels is 1 hour per model x 10 entities x 1 models per entity = 10 hours. We estimate the hourly compensation for the time required to create and update labels is $30.09 (U.S. Bureau of Labor Statistics, "Employer Costs for Employee Compensation," Dec. 2014, Table 9, total compensation for all sales and office workers in goods-producing private industries: http://www.bls.gov/ncs/). Therefore, the estimated annual cost to industry associated with the labeling requirements is $300.90 ($30.09 per hour x 10 hours = $300.90). No operating, maintenance, or capital costs are associated with the collection.

Section 9.1 of ASTM F1235-15 requires instructions to be supplied with the product. Hook-on chairs are complicated products that generally require use and assembly instructions. Under the 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 required to comply are "usual and customary." We are unaware of hook-on chairs that generally require use instructions but lack such instructions. Therefore, we tentatively estimate that no burden hours are associated with section 9.1 of ASTM F1235-15, because any burden associated with supplying instructions with hook-on chairs would be "usual and customary" and not within the definition of "burden" under the OMB's regulations.

Based on this analysis, the proposed standard for hook-on chairs would impose a burden to industry of 10 hours at a cost of $313.20 annually.

[1] This number was derived during the market research phase of the initial regulatory flexibility analysis by dividing the total number of hook-on chairs supplied by all hook-on chair suppliers by the total number of hook-on chair suppliers.

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 the OMB for review. Interested persons are requested to submit 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 the ADDRESSES section at the beginning of this notice).

Pursuant to 44 U.S.C. 3506(c)(2)(A), we invite comments on:

- whether the collection of information is necessary for the proper performance of the CPSC's functions, including whether the information will have practical utility;
- 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;
- ways to enhance the quality, utility, and clarity of the information to be collected;
- ways to reduce the burden of the collection of information on respondents, including the use of automated collection techniques, when appropriate, and other forms of information technology; and
- the estimated burden hours associated with label modification, including any alternative estimates.

XIV. Preemption

Section 26(a) of the CPSA, 15 U.S.C. 2075(a), provides that when a consumer product safety standard 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." Therefore, the preemption provision of section 26(a) of the CPSA would apply to a rule issued under section 104.

XV. Request for Comments

This NPR begins a rulemaking proceeding under section 104(b) of the CPSIA to issue a consumer product safety standard for hook-on chairs, and to amend part 1112 to add hook-on chairs to the list of children's product safety rules for which the CPSC has issued an NOR. We invite all interested persons to submit comments on any aspect of the proposed mandatory safety standard for hook-on chairs and on the proposed amendment to part 1112. Specifically, the Commission requests comments on the costs of compliance with, and testing to, the proposed hook-on chair safety standard, the proposed six-month effective date for the new mandatory hook-on chair safety standard, and the proposed amendment to part 1112. During the comment period, the ASTM F1235-15, Standard Consumer Safety Specification for Portable Hook-On Chairs, is available as a read-only document at: http://www.astm.org/cpsc.htm.

Comments should be submitted in accordance with the instructions in the **ADDRESSES** section at the beginning of this notice.

List of Subjects

16 CFR Part 1112

Administrative practice and procedure, Audit, Consumer protection, Reporting and recordkeeping requirements, Third party conformity assessment body.

16 CFR Part 1233

Consumer protection, Imports, Incorporation by reference, Infants and children, Labeling, Law enforcement, and Toys.

For the reasons discussed in the preamble, the Commission proposes to amend Title 16 of the Code of Federal Regulations as follows:

PART 1112—REQUIREMENTS PERTAINING TO THIRD PARTY CONFORMITY ASSESSMENT BODIES

1. The authority citation for part 1112 continues to read as follows:

Authority: 15 U.S.C. 2063; Pub. L. 110-314, section 3, 122 Stat. 3016, 3017 (2008).

2. Amend § 1112.15 by adding paragraph (b)(40) to read as follows:

§ 1112.15 When can a third party conformity assessment body apply for CPSC acceptance for a particular CPSC rule and/or test method?

***** ***** ***** ***** *****

(b) * * *

(40) 16 CFR part 1233, Safety Standard for Portable Hook-On Chairs.

* * * * *

3. Add part 1233 to read as follows:

PART 1233-SAFETY STANDARD FOR PORTABLE HOOK-ON CHAIRS

Sec.

Authority: The Consumer Product Safety Improvement Act of 2008, Pub. L. 110-314, § 104, 122 Stat. 3016 (August 14, 2008); Pub. L. 112-28, 125 Stat. 273 (August 12, 2011).

§ 1233.1 Scope.

This part establishes a consumer product safety standard for portable hook-on chairs.

§ 1233.2 Requirements for portable hook-on chairs.

(a) Each portable hook-on chair must comply with all applicable provisions of ASTM F1235-15, Standard Consumer Safety Specification for Portable Hook-On Chairs, approved on May 1, 2015. 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, P.O. Box 0700, West Conshohocken, PA 19428; http://www.astm.org/cpsc.htm. You may inspect a copy at the Office of the Secretary, U.S. Consumer Product Safety Commission, Room 820, 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.

Dated: _____

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

Staff Briefing Package

Notice of Proposed Rulemaking for Portable Hook-On Chairs

June 17, 2015

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Briefing Memorandum

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

This document has been electronically approved and signed.

Memorandum

June 17, 2015

TO: The Commission
Todd Stevenson, Secretary

THROUGH: Stephanie Tsacoumis, General Counsel
Patricia H. Adkins, Executive Director
Robert J. Howell, Deputy Executive Director for Safety Operations

FROM: George A. Borlase, Ph.D., P.E. Assistant Executive Director
Office of Hazard Identification and Reduction

Patricia Edwards, Project Manager
Directorate for Engineering Sciences

SUBJECT: Notice of Proposed Rulemaking for Portable Hook-On Chairs and Related Notice of Requirements

I INTRODUCTION

Section 104 of the Consumer Product Safety Improvement Act of 2008 ("CPSIA") is the Danny Keysar Child Product Safety Notification Act. This Act requires the U.S. Consumer Product Safety Commission ("CPSC" or "Commission") to: (1) examine and assess voluntary safety standards for certain infant or toddler products, and (2) promulgate mandatory consumer product safety standards that are substantially the same as the voluntary standards or more stringent than the voluntary standards if the Commission determines that more stringent standards would further reduce the risk of injury associated with these products. The list of products in section 104 includes hook-on chairs.

This briefing package pertains to products that are included in the scope of the current voluntary standard for portable hook-on chairs, ASTM F1235-15, *Standard Consumer Safety Specification for Portable Hook-On Chairs*, and reviews the incident data and assesses the effectiveness of ASTM F1235-15. The package also discusses the potential impact of staff's recommendations on small businesses, reviews recent recalls associated with hook-on chairs, and provides staff's recommendations to the Commission.

Specifically, staff is recommending that the Commission publish a notice of proposed rulemaking ("NPR") that incorporates by reference the voluntary standard, ASTM F1235-15, without modification, as the new consumer product safety standard for hook-on chairs. The draft

NPR also includes a notice of requirements (NOR), which explains how test laboratories could become CPSC-accepted third party conformity assessment bodies to test hook-on chairs to the new safety standard.

II BACKGROUND

A. Product Review

ASTM F1235-15 defines a portable hook-on chair as: "[u]sually a legless seat constructed to locate the occupant at a table in such a position and elevation so that the surface of the table can be used as the feeding surface for the occupant . . . [s]upported solely by the table on which it is mounted." The standard specifies the appropriate ages and weights for children using portable hook-on chairs as "between the ages of six months and three years and who weigh no more than 37 lb. (16.8 kg) (95th percentile male at three years)."

Typical hook-on chair construction consists of fabric over a lightweight frame. All hook-on chairs have a device to mount the seat to a support surface (*i.e.*, a table or counter). Some brands fold for easy storage or transport, and some include a removable tray that can be used with a table. To meet the requirements of the voluntary standard, the chairs must have a passive crotch restraint and a 3-point restraint system; a few products employ a shoulder harness. Figure 1 includes a few examples.

Figure 1: Examples of Hook-On Chairs

B. Incident Data

As outlined in the Memorandum from the Directorate for Epidemiology (Tab A), CPSC staff is aware of one fatality, 50 injuries, and 38 non-injury incidents, for a total of 89 incidents associated with portable hook-on chairs for the period January 1, 2000 to October 31, 2014. The 50 reported injuries include 31 cases from the National Electronic Injury Surveillance System ("NEISS"). For portable hook-on chairs in this period, the NEISS data are not sufficient to report national estimates.[1]

[1] Due to the low number of NEISS-reported incidents for portable hook-on chairs, the NEISS data can only support national estimates when considering at least 20 years prior. The following estimate may be conservative because it is based only on cases with sufficiently detailed

Fatalities

The only known fatality occurred in 2002, when a 12-month-old child slid down in his portable hook-on chair and his head and neck became wedged between the seat and the table edge. The cause of death was ruled anoxic brain injury due to near asphyxia. No restraints were attached to this chair at the time of the incident.

Nonfatal Injury Incidents

No hospitalizations were reported for the 50 nonfatal injuries. Of the 50 injuries, 15 were not medically treated, and the remaining 35 medically treated injuries were all classified as "treated and released" from hospital emergency rooms. The reported injuries included two skull fractures, two concussions, two broken or fractured collarbones, one femur fracture, and two instances of fingertips being crushed and/or severed. One injured adult is included among the 50 nonfatal injuries. The other 49 nonfatal injuries involved children between the ages of 5 months and 3 years. Only one of the injured children (age 5 months) was outside the ASTM recommended user age range of 6 months to 3 years. The average age of the injured children was reported to be 14 months.

Five of the 50 nonfatal injuries involved head or neck entrapment (similar to the scenario of the reported fatality). None of these entrapments resulted in death because the child was released quickly from the entrapment by a caregiver.

Incidents with No Injury Reported

Thirty-eight incidents reported no injury. No specific age was reported for eight of these incidents. Of the 30 incidents for which the age of the potential victim was specified, the age range was between 5 months and 3 years. Only one of the children (age 5 months) reportedly was outside of the ASTM-recommended user age range. Three out of the 38 non-injury incidents involved head or neck entrapment.

C. Hazard Patterns

CPSC staff considered all 89 incidents to identify hazard patterns associated with hook-on chair-related incidents. For most of the NEISS injury cases related to falls, the level of detail is only sufficient to differentiate whether the hook-on chair partially or fully detached and fell from the table, or whether the child fell out of the attached hook-on chair. Therefore, to characterize the hazard pattern distributions, NEISS data and non-NEISS data are first grouped separately.

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comments recorded to enable staff to classify them as involving portable hook-on chairs. Based on 40 such NEISS cases treated from 1994 to 2013, it is estimated that U.S. emergency departments treated an estimated 1,300 injuries over these 20 years. Although the distribution cannot be broken down into individual years, this reflects an average of 65 injuries per year for that period.

NEISS Injury Cases

Staff identified 31 NEISS emergency department-treated injuries for the period January 1, 2000 to October 31, 2014. Most of these injury cases described some kind of fall. However, it is not always clear from the brief narrative descriptions whether the chair or the child fell, or another scenario. Staff assessed each case to determine which scenario was most consistent with the description. Based on staff's best interpretation, the cases from NEISS are classified as follows:

- The ***chair fell from the attached counter or table*** in 14 (45%) of the cases. In these incidents, the chair's attachment to the counter or table somehow became compromised.

- **C*hildren fell or slipped out of the chair (partially or completely)*** in 11 (35%) cases. These incidents most likely involved issues with the restraints or other means of containment. However, given the limited information available, CPSC staff cannot be sure that the chairs remained attached securely to the table or that other product-related issues played a role. The only case in which the fall was determined to be partial, rather than complete, is one in which a child was found hanging by his neck and trapped in the chair.

- ***Fall of unknown type*** characterizes the remaining 6 cases (19%). Although each of these cases appears to be related to some kind of fall affecting the child, the descriptions are not sufficiently clear to allow staff to determine the type of fall that occurred.

Non-NEISS Incidents

The hazard scenarios in these 58 reported incidents were mostly attributed to a failure/defect or potential design flaw in the product. This category includes 1 fatality and 19 nonfatal injuries. Listed below are the reported problems, beginning with the most frequently reported concerns:

- The security of the chair's ***attachment*** to the table was the most common problem reported. Attachment to the table was compromised in 31 out of 58 reported incidents (53%). In a majority of these cases (17 out of 31), the chair did not completely separate from the table, either because the chair remained partially secured to the table, or a parent took action before the chair detached completely. In some partial detachment incidents, the seat may have rotated, swung, pitched, or otherwise deviated from its intended position. Four injuries are included among the 17 incidents in which the chair did not detach completely. The two most severe of these injuries involved crushed or severed fingertips caught between a part of the chair and the clamp that remained engaged with the table. Five injuries are included among the 14 incidents in which the chair fell completely from the table, including one broken collarbone. In total, attachment issues resulted in 9 injuries (47% of the 19 nonfatal injuries reported by non-NEISS sources).

- Issues with ***restraints or containment*** were reported in 11of the 58 incidents (19%), including 1 fatality and 5 nonfatal injuries. Thus, more than half of the restraint incidents resulted in injury or death (5 nonfatal injuries and 1 death). Children slipping and becoming entrapped by the neck in the leg well, or between the table and the chair, was the most common scenario, characterizing seven incidents (1 fatal, 3 injured, and 3 uninjured). One incident resulted in a child who slipped but got caught at the shoulders by the waist strap restraint. The remaining three incidents all involved the child getting up or out over the sides of the chair. In one of these incidents, the child was able to escape his three-point harness and stand up in the chair before being removed entirely from the chair by his mother. In the other two incidents, the children got up over the sides of the chair and fell out. However, only one of the two was injured because a parent of the uninjured child was able to catch the child's legs, preventing impact with the floor.

- Issues with ***seat fabric separation due to the unintended release of snaps or Velcro straps*** were reported in 6 of the 58 incidents (10%), which included 3 injuries. These chairs, assembled by consumers, relied on snaps (1 incident) or Velcro straps (5 incidents) to hold the seat fabric onto the attachment arms or chair frame. Unintended release of these fastenings allowed the seat fabric to shift from its intended position; therefore, the fabric did not support the child as intended. Impacts with the supporting structure (table) were the cause of two of the injuries. The third injury resulted when the child started to fall, but his neck became caught against the restraints.

- Issues with ***seat fabric separation due to torn or broken components*** were reported in 3 of the 58 incidents (5%), including 1 injury. The injury occurred when a child fell completely out of the chair after the fabric ripped at the seams.

- Other ***broken components*** affecting structural integrity contributed to 6 of the 58 incidents (10%), including 1 injury. Locking pins reportedly separated in 4 incidents, including 1 injury to an adult who scratched her knee on the sharp protrusion. Two other incidents were associated with a broken release mechanism and a broken chair base, respectively, without resulting in injuries.

- One ***other*** incident involved a child creating enough motion to tip over a small pedestal table to which the chair had been attached.

Tab B, the Memorandum from the Directorate for Health Sciences ("HS"), discusses the incident data and the resulting injuries in more detail.

D. ASTM F1235, Standard Consumer Safety Specification for Portable Hook-On Chairs

In May 1984, ASTM formed a task group to develop a standard for hook-on chairs. The initial version of the standard was approved and published in 1989. Since that time, ASTM has revised the standard seven times. The first four editions contained either no changes (the versions were

reapprovals of earlier versions), or had nonsignificant revisions. In 2013, staff provided recommendations to the ASTM subcommittee regarding the adequacy of the standard. Those recommendations resulted in three revisions to the standard. Those changes, as seen in the last three editions of ASTM F1235, are below:

2014 Edition	Requirements for a mandatory passive crotch restraint, leg openings, and side openings, as well as test procedures for the latter two requirements were added.
2014a Edition	A scissoring, shearing, and pinching disengagement test was added.
2015 Edition	The definition for a "passive crotch restraint" was added, as well as a requirement for testing openings in front of the occupant. The openings test procedure was simplified by combining the test procedure for leg openings, openings in front of the occupant, and side openings into one test. Lastly, the provisions for marking, labelling, and instructional literature also were revised.

The current version of the ASTM standard, F1235-15, was approved on May 1, 2015, and was published in early June 2015.

ASTM F1235-15 addresses numerous hazards and specifies several general requirements, most of which are also found in the other ASTM juvenile product standards:

- Sharp points
- Small parts
- Lead in paint
- Wood parts
- Latching and locking mechanisms
- Scissoring, shearing, and pinching (including during detachment from the table support surface[2])
- Exposed coil springs
- Openings
- Labeling
- Protective components.

In addition to the general requirements listed above, ASTM F1235-15 contains marking and labeling and instructional literature requirements. The standard also contains several performance requirements and test methods specific to hook-on chairs:

[2] The disengagement requirement, although listed in the general requirements section, is specific to hook-on chairs and was added to reduce the likelihood that children could be injured when a hook-on chair rotates after one side (clamp) of the chair detaches from the table.

- Chair drop test
- Static load test
- Seat and seat back disengagement test
- Chair bounce test
- Chair pull/push test
- Restraint system performance requirements and tests, and
- Openings and passive crotch restraint system.

Descriptions about these requirements and their associated test methods can also be found in Tab C, the Directorate for Engineering Sciences ("ES") Memorandum.

E. Other Relevant Standards

Staff researched other standards that apply to hook-on chairs, specifically the European National Standard EN1272-1998. This standard is titled, Child Care Articles - Table Mounted Chairs - Safety Requirements and Test Methods. The most recent version of the EN standard became effective on July 10, 1998.

The EN1272-1998 standard has requirements for:

- Chemical and flammability material properties;
- General construction, such as small parts, sharp edges and openings;
- Structural integrity, including static and dynamic tests;
- Restraints; and
- Labeling.

Staff compared ASTM F1235-15 requirements that address chair-to-table attachment incidents and restraint/containment incidents to the equivalent EN 1272-1998 requirements. These types of incidents resulted in the most serious injuries and the death. Tab C provides a detailed comparison of the two standards. As seen in Tab C, the EN standard lacks many of the requirements in ASTM F1235-15, including most of the recent requirements added to the standard that are derived from CPSC staff recommendations.

Based on the comparison of the standards, staff believes that ASTM F1235-15 is more comprehensive than EN1272-1998 and will better address more of the types of incidents that have been identified.

F. Compliance Recalls

Tab D, a Memorandum from the Office of Compliance, outlines the product safety recalls and defect investigations conducted by the Office of Compliance and Field Operations and the associated injuries involving hook-on chairs. The table below contains a summary of the hook-on chair recalls since the year 2000.

Hook-On Chair Recalls
January 1, 2000 to Present

Recall Date	Firm	Reason	Injuries/ Deaths	# Recalled	# Incidents Reported
06/21/2001	Inglesina USA, Inc.	Fall Hazard	1/0	780	1
08/17/2011	phil&teds USA, Inc.	Fall Hazard/ Amputation Hazard	5/0	54,000	19
Total			**6/0**	**54,780**	**20**

The Inglesina recall involved products that were sold without a seat belt, posing a risk of injury to children who climb out of the seat. At the time of the recall, Inglesina had received one report of a 10-month-old girl who fell from a table seat and bruised her back.

The other recall involved phil&teds "metoo" hook-on chairs. The "metoo" hook-on chairs were recalled because the friction pads under the attachment clamps failed to hold the chair onto the table properly, which resulted in the chair detaching from its supporting surface and creating a fall hazard. In seven cases, one clamp detached, which allowed the chair to pivot around the remaining undetached clamp and drop suddenly. Two children suffered fingertip amputations and crush injuries caused from the scissoring action between the rigid framework on the front of the chair and the vertical component of the clamp.

III DISCUSSION

A. Adequacy of F1235-15 Requirements

As required by section 104 of the CPSIA, staff began consulting with stakeholders regarding the hook-on chair standard in 2013. Since the consultation process started, ASTM F1235 was revised three times to address staff concerns. As concluded in Tabs B, C, and E (Memorandum from the Division of Human Factors), CPSC staff believes that the current voluntary standard, ASTM F1235-15, sufficiently addresses the hazard patterns identified by staff from the incident data. This section discusses how each of the identified hazard patterns is addressed by the current voluntary standard, ASTM F1235-15.

Fabric- and Component-Related Incidents

Several incidents were reported in which the unintended release of snaps or Velcro caused the fabric on/around the seat to separate. Incidents of seat fabric separation due to tears or broken components also occurred. Lastly, other broken components (not related to the fabric seat structure) were reported. Injuries associated with these incidents included impacts with the table resulting in lacerations.

ASTM F1235-15 includes three different performance tests to help address this hazard pattern: the chair drop test, the static load test, and the seat/seat back disengagement test. In addition, many of the general requirements are intended to reduce the hazards associated with component failures. In incidents where snaps or Velcro unintentionally detached, improved requirements for warnings and instructional literature, included in the last revision of the standard, should help prevent foreseeable misuse and abuse.

Staff believes ASTM F1235-15 is adequate to address this hazard pattern.

Head and Neck Entrapment

One fatal incident involving hook-on chairs was reported to CPSC. The fatality resulted from an entrapment in the leg opening of the chair, between the seat bottom and the table support structure. Similar nonfatal incidents were also reported to CPSC. In addition, incidents of children standing, then slipping and becoming trapped between the table and the hook-on chair were reported.

Following these reported incidents, staff worked with an ASTM task group to create provisions requiring hook-on chairs to contain a passive crotch restraint; in addition, staff contributed to a provision requiring a related leg openings performance requirement and test method. Before the 2014 version of the voluntary standard, the standard did not require a passive crotch restraint. The openings requirement and test methods evolved after the 2014 version was published. Currently, the standard covers leg openings, side openings, and any completely bounded openings forward of the occupant. This latter opening provision addresses entrapment between the leading edge of the chair and the supporting table surface. All openings comply with the requirement if passage of the wedge block[3] is prevented when a 25-lb. force is applied.

Staff believes ASTM F1235-15 adequately addresses head and neck entrapment hazards.

Scissoring/Shearing Due to Partial Detachment

The incident data included several reported cases of partial detachment of hook-on chairs. These incidents involved sleeves or grip pads on the arm/frame members that rest on the support surface and form part of the attachment mechanism of the chair (*e.g.*, the upper part of a clamp). Because the sleeves and pads provide friction, they help prevent movement of the chair. The incidents reported these components failing on one side, allowing the hook-on chair to detach from the table. With one recalled product, several incidents occurred in which the clamp on one side of the hook-on chair detached from the table, allowing the chair to pivot downward suddenly about the remaining attached clamp. Two children suffered fingertip amputations and crush injuries from the scissoring action of the metal bar forming the front of the chair and the vertical component of the clamp.

[3] The wedge block test device is based on the anthropometry of a child's lower torso; if the torso cannot pass through the opening, the body cannot pass through and be trapped at the neck.

At CPSC staff's request, ASTM formed a task group to address this hazard. Staff and the task group developed performance requirements specifying that, should the chair disengage partially, scissoring, shearing, and pinching hazards between rigid component of the chair, and between rigid components of the chair and the support surface to which it is attached would be prevented. These new requirements were incorporated in the ASTM F1235-14a version of the standard. They are also contained in the current version.

Staff believes ASTM F1235-15 is adequate to address this hazard pattern.

Miscellaneous Falls

Falls were the most common type of incident, comprising more than half of the reported hook-on chair-related cases, and resulting in a number of serious injuries. Falls occurred when hook-on chairs partially or fully detached from the supporting table surface, or when occupants fell out of attached chairs. Some cases were attributed to the integrity of a chair component, such as the failure of fabric or hook-and-loop fasteners that allowed the child to fall through the chair. In most instances, however, the exact cause of the fall was unknown.

Each version of the voluntary standard has included provisions that attempt to minimize falls through performance requirements and instructions, as well as warnings communicating correct use of the chairs. During our initial assessment of the standard, staff found on-product warnings and instruction manuals to be inadequate in communicating information to consumers. This was true as well for information on packaging and website images. Details included in a small number of the non-NEISS reports[4] reinforced these findings, indicating that some caregivers apparently misinterpreted the warnings or instructions, or seemed unaware that they had used the product incorrectly. For instance, consumers reported attaching the chair to a support structure not intended to be used with the product.

Because these hazards are linked to caregiver behavior, the hazards are addressable primarily through warnings and instructions. At staff's request, ASTM formed a task group in 2013 to review the sections of the hook-on-chair voluntary standard that address warnings and instructions. Staff proposed revising these sections to include: (a) simplified language based on the original content for warnings on the product and in the instructions; (b) a standard format, with example labels, to make the warnings more conspicuous and easier to read; (c) a required listing of product use limitations on the primary display panel of the retail packaging; and (d) package depictions that are limited to table styles and support surfaces with which the product can be used safely. ASTM balloted these modifications and approved them to be included in the current version of the standard, F1235-15. Staff believes that the performance requirements contained in the current version of the voluntary standard appear adequate to address most identified causes of falls related to product failures.

In summary, ASTM F1235 has been revised three times at CPSC staff's request:

[4] By their nature, non-NEISS reports are anecdotal and cannot be considered representative of hook-on chair incidents in general. However, because they include greater detail than NEISS reports, they are suggestive of the factors, not included in brief NEISS reports that may play a role in incidents.

- ASTM F1235-14 – A new passive crotch restraint requirement was added to the performance requirements section. This revision also included a related leg opening requirement and test procedure, and a requirement for other bounded openings (sides of the chairs) along with an associated test method. In addition, some general clarifications, corrections, and editorial changes were made throughout the standard.
- ASTM F1235-14a – A new general requirement (and related test method) was added to the existing scissoring, shearing, and pinching requirement. This added requirement addresses hazards that can occur when a hook-on chair becomes partially separated from the table to which it is attached. This new requirement has an associated test procedure that was also added to the standard.
- ASTM F1235-15 – A revision was made to the bounded openings test procedure (the one that was added in ASTM F1235-14) to address the potential for entrapment in a bounded opening between the hook-on chair and the supporting table. In addition, the markings and labeling and instructional literature sections were revised to make warning labels and instructions clearer and more visible.

Considering the numerous changes that occurred to the standard in the last three revisions, it is unlikely that any of the hook-on chairs involved in the incidents reviewed would have met all of the requirements of F1235-15. Staff believes that the revisions approved by the ASTM committee may have prevented many of the reported incidents.

Based on the recent changes made to the standard, staff believes that ASTM F1235-15 adequately addresses the hazards associated with the incident data.

B. Impact on Small Businesses

Staff has identified 10 firms supplying portable hook-on chairs to the U.S. market, typically priced at $40 to $80 each. These 10 firms specialize in manufacturing and/or distributing durable nursery products, and the firms represent only a small segment of the juvenile products industry. Based on U.S. Small Business Administration guidelines, six of the 10 firms are small businesses, including two domestic manufacturers and four domestic importers.

The potential economic impact of the staff-recommended proposed standard on these small firms is described in the Directorate for Economic Analysis Memorandum (Tab E). The analysis shows that the small suppliers of hook-on chairs represent only a small segment of the juvenile products industry. Moreover, hook-on chairs are only one of many items in each firm's product line and are unlikely to be of particular importance to the firms' overall market plan. All of the hook-on chairs supplied by these firms reportedly comply with the voluntary standard and are expected to remain compliant. Consequently, the costs of compliance, if any, are expected to be negligible. Third party testing costs are expected to be small and economically insignificant (*i.e.*, less than 1 percent of gross revenue for affected firms), given that all of the hook-on chairs supplied by these firms are already being tested to the ASTM voluntary standard. For these reasons, the Commission could certify that the staff-recommended hook-on chair rule will not have a significant impact on a substantial number of small entities.

IV NOTICE OF REQUIREMENTS

Section 14(a) of the CPSA requires that any children's product subject to a consumer product safety rule under the CPSA must be certified as complying with all applicable CPSC-enforced requirements. The children's product certification must be based on testing conducted by a CPSC-accepted third party conformity assessment body (test laboratory). The CPSA requires the Commission to publish a notice of requirements ("NOR") for the accreditation of third party test laboratories to determine compliance with a children's product safety rule to which a children's product is subject. A proposed rule for hook-on chairs, if issued as a final rule, would be a children's product safety rule that requires the issuance of an NOR.

The Commission published a final rule, *Requirements Pertaining to Third Party Conformity Assessment Bodies*. 16 C.F.R. part 1112 (78 Fed. Reg. 15836 (March 12, 2013)) (referred to here as "part 1112"). This rule took effect on June 10, 2013. Part 1112 establishes the requirements for accreditation of third party testing laboratories to test for compliance with a children's product safety rule. The final rule also codifies all of the NORs that the CPSC has published, to date, for children's product safety rules. All new children's product safety rules, such as the proposed hook-on chair standard, would require an amendment to part 1112 to create an NOR. Therefore, staff recommends that the Commission propose to amend part 1112 to include hook-on chairs in the list of children's product safety rules for which the CPSC has issued NORs.

V EFFECTIVE DATE

Staff recommends the Commission propose an effective date of 6 months following publication of the final rule. Six months is typical for other CPSIA section 104 rules and is also the period that the Juvenile Products Manufactures Association ("JPMA") typically allows for products in their certification program to shift to a new standard once that new standard is published. Therefore, juvenile product manufacturers are accustomed to adjusting to new standards within this time frame. In addition, staff believes that all of the small domestic firms identified already comply with the ASTM standard and are expected to continue to remain compliant. Because staff is not recommending modifications to the ASTM standard, the final rule is not expected to cause any significant changes to existing products.

VI STAFF RECOMMENDATIONS

CPSC staff recommends that the Commission publish an NPR that incorporates by reference the voluntary standard, ASTM F1235-15, *Standard Consumer Safety Specification for Hook-On Chairs,* with no modifications. Staff also recommends that the NPR propose to amend the Commission's rule that establishes requirements for testing laboratories, 16 C.F.R. part 1112, to include hook-on chairs.

Staff is also recommending an effective date of 6 months after publication of the final rule.

TAB A: Portable Hook-On Chair-Related Deaths, Injuries, and Potential Injuries; 2000 –October 2014

TAB A

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

Memorandum

Date: Feb 10, 2015

TO : Patricia L. Edwards
Project Manager, Portable Hook-On Chairs
Directorate for Engineering Sciences

THROUGH: Kathleen Stralka,
Associate Executive Director
Directorate for Epidemiology

Stephen Hanway
Director, Division of Hazard Analysis
Directorate for Epidemiology

FROM : John Topping
Division of Hazard Analysis
Directorate for Epidemiology

SUBJECT : Portable Hook-On Chair-Related Deaths, Injuries, and Potential Injuries; 2000 –October 2014[5]

I. Introduction

This memorandum provides the number of deaths and injuries and the types of hazards associated with portable hook-on chairs over a period of more than 14 years, beginning in 2000.[6] Incident counts are based on reports received by Consumer Product Safety Commission ("CPSC") staff. The ASTM voluntary standard F1235, *Standard Consumer Safety Specification for Portable Hook-On Chairs*, defines a "portable hook-on chair" as "[u]sually a legless seat constructed to locate the occupant at a table in such a position and elevation so that the surface of the table can be used as the feeding surface for the occupant . . . [s]upported solely by the table on which it is mounted." The standard specifies the appropriate ages and weights for children using portable hook-on chairs as "between the ages of six months and three years and who weigh no more than 37 lb. (16.8 kg) (95th percentile male at three years)." ASTM F1235 was first

[5] This analysis was prepared by CPSC staff. It has not been reviewed or approved by, and may not necessarily reflect the views of, the Commission.
[6] 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 nonfatalities reported to CPSC staff.

approved in 1989. For this analysis, CPSC staff reviewed data from the year 2000 forward, so that the rulemaking effort is based on a sufficient volume of incidents reviewed by CPSC staff.

Portable hook-on chairs are categorized within CPSC data using the product code 1556 (attachable high chairs). However, portable hook-on chairs are not the only kind of attachable high chair. For example, booster seats that attach onto an adult chair are also categorized under the product code 1556. Therefore, CPSC staff has included in this memorandum only incident reports with very specific information, such as make and model, photos, or a sufficiently detailed description of portable hook-on chairs. Accordingly, this memorandum may be conservative in its identification of reported portable hook-on chair incidents.

II. Incident Data[7]

CPSC staff is aware of 1 fatality, 50 injuries, and 38 non-injury incidents associated with portable hook-on chairs for the period January 1, 2000 to October 31, 2014. Reporting is ongoing, and thus, the number of reported fatal, injury, and non-injury incidents may change in the future. The 50 reported injuries include 31 cases from the National Electronic Injury Surveillance System ("NEISS"). NEISS is a probability sample of hospitals in the United States and its territories, from which the total number of injuries in hospital emergency rooms nationwide can be estimated for various products. However, for portable hook-on chairs in this period, the NEISS data are not sufficient to report national estimates.[8] Given that many reports from other non-NEISS sources are anecdotal and that reporting is incomplete, CPSC staff does not encourage conclusions about any year-to-year increases or decreases that may seem apparent in the reported data. The reported incidents are broken down by year in Table 1 and by age in Table 2.

[7] For this memorandum, CPSC staff searched the Consumer Product Safety Risk Management System ("CPSRMS"), 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 neither a complete count of all that occurred during this time period, nor a sample of known probability of selection. However, the incident reports do provide a minimum number of deaths and incidents occurring during this time period and illustrate the circumstances involved in the incidents related to portable hook-on chairs.

CPSC staff's last date of extraction for reported incident data was October 31, 2014. Staff examined all data coded under product code 1556 to identify potentially in-scope cases. As a secondary measure, CPSC staff searched for keywords suggestive of portable hook-on chairs from product codes 1555 (high chairs), 1518 (youth chairs), and 4074 (chairs, other or not specified).

[8] The NEISS data indicative of portable hook-on chairs, in particular, can only support national estimates when considering at least 20 years prior. The following estimate may be conservative because it is based only on cases with sufficiently detailed comments recorded to enable staff to classify them as involving portable hook-on chairs. Based on 40 such NEISS cases treated from 1994-2013, CPSC staff estimates that U.S. emergency departments treated an estimated 1,300 injuries over these 20 years. Although the distribution cannot be broken down into individual years, this reflects an average of 65 injuries per year for that period.

Table 1: Portable Hook-On Chair-Related Reported Incidents by Year 2000 through October 2014

Incident Year	Number of Reported Incidents			
	Fatal	Nonfatal Injury	No Injury	Total Reported Incidents
2000	-	3	1	4
2001	-	5	3	8
2002	1	3	1	5
2003	-	1	-	1
2004	-	1	-	1
2005	-	-	2	2
2006	-	1	1	2
2007	-	1	4	5
2008	-	2	4	6
2009	-	8	4	12
*2010**	-	*4*	*7*	*11*
*2011**	-	*7*	*3*	*10*
*2012**	-	*5*	*3*	*8*
*2013**	-	*4*	*5*	*9*
*2014****	-	*5*	-	*5*
Total	***1***	***50***	***38***	***89***

Source: Consumer Product Safety Commission's epidemiological databases CPSRMS, IPII, INDP, DTHS, and NEISS.
Notes: * Data collection from IPII, INDP, and DTHS is not complete for the 4 years 2010−2013 and for the partial year 2014. NEISS data collection is complete for all years except the partial year 2014. Counts in italics may change in the future due to ongoing reporting.

Table 2: Portable Hook-On Chair-Related Reported Incidents by Age Group 2000 through October 2014

Age Group	Number of Reported Incidents			
	Fatal	Nonfatal Injury	No Injury	Total Reported Incidents
Under 6 months	-	*1*	*1*	*2*
6-11 months	-	*17*	*8*	*25*
12-17 months	*1*	*18*	*12*	*31*
18-23 months	-	*9*	*4*	*13*
2 Years	-	*2*	*4*	*6*
3 Years	-	*2*	*1*	*3*
Adult*	-	*1*	-	*1*
Unknown	-	-	*8*	*8*
Total	***1***	***50***	***38***	***89***

Source: Consumer Product Safety Commission's epidemiological databases CPSRMS, IPII, INDP, DTHS, and NEISS.
Notes: *Seat occupied by uninjured child tended to by adult who received minor laceration.
Data collection is not complete for this period; therefore, these counts may change in the future and are presented in italics.

A. Fatalities

The only known fatality occurred in 2002, when a 12-month-old child slid down in his portable hook-on chair and his head and neck became wedged between the seat and table edge. The cause of death was ruled anoxic brain injury due to near asphyxia. The portable hook-on chair associated with this death came from a neighbor secondhand and was missing the original restraint system.

B. Nonfatal Injury Incidents

The 50 nonfatal injuries include 15 that were not medically treated. The 35 medically treated injuries were all treated and released from emergency room hospitals (4 reported by non-NEISS sources and 31 reported from NEISS emergency rooms). No hospitalizations were reported. However, these injuries include two skull fractures, two concussions, two broken or fractured clavicles, one femur fracture, and two instances of fingertips crushed and/or severed. One injured adult is included among the 50 nonfatal injuries. A 23-year-old daycare worker received a minor laceration while attending to a child using the seat. The age of the uninjured child occupying the seat was not reported, and the adult was not medically treated. The other 49 nonfatal injuries happened to children between the ages of 5 months and 3 years. Only one of the injured children (age 5 months) was outside the ASTM-recommended user range of 6 months to 3 years. The average reported age of the injured children was 14 months.

Note that 5 out of the 50 nonfatal injuries involved head or neck entrapment (similar to the scenario of the reported fatality), and the injuries occurred before an adult could assist the child getting out of the chair. After the child was released from entrapment, the nonfatal entrapment injuries generally involved redness, marks on neck, neck pain, and bruises and scratches. Only one of these five injuries was medically treated for neck pain.

C. Incidents with No Injury Reported

Thirty-eight (38) incident reports did not indicate any injury. However, these reports may illustrate the potential for a serious injury, or even death, from using portable hook-on chairs. No specific age was reported for eight incidents. Of the 30 incidents for which the age of the potential victim was specified, the age range was between 5 months and 3 years. Thus, only one of the children (5 months) in the incident reports was outside of the ASTM-recommended user age range. Three out of the 38 non-injury incidents involved head or neck entrapment.

III. Hazard Pattern Identification

CPSC staff considered all 89 incidents to identify hazard patterns associated with portable hook-on chair-related incidents. For some of the non-NEISS incidents, detailed information is available; whereas, for the NEISS injury cases, the level of detail is generally only sufficient to differentiate, whether the hook-on chair fell, or whether the child fell out of the hook-on chair. For the purpose of characterizing the hazard pattern distributions, NEISS data and non-NEISS data are grouped separately.

A. NEISS Injury Cases

Staff identified 31 NEISS emergency department-treated injuries. Most of these injury cases described some kind of a fall. However, it is not always clear from the brief narrative descriptions whether it was the chair or the child falling, or some other scenario. Staff assessed each case to determine which scenario was most likely consistent with the description. Based on staff's best interpretation, the cases are classified as follows:

- The ***chair fell from the attached counter or table*** in 14 (45%) cases. In these incidents, the attachment to the counter or table somehow became compromised.

- C***hildren fell or slipped out of the chair (partially or completely)*** in 11 (35%) cases. These incidents most likely involved issues with the restraints or other means of containment. However, given the limited information available, CPSC staff cannot be sure that the chairs remained securely attached to the table or that other product-related issues did not play a role. The only case in which the fall could be determined to be partial, rather than complete, is one in which a child was found hanging by his neck, caught in the chair.

- ***Fall of unknown type*** characterizes the remaining 6 cases (19%). Although each of these cases appears to be related to some kind of fall affecting the child, the descriptions are not sufficiently clear to allow staff to determine the type of fall that occurred.

B. Non-NEISS Incidents

The hazard scenarios in 58 non-NEISS reported incidents were mostly attributed to some sort of failure/defect or a potential design flaw in the product. This category includes 1 fatality and 19 nonfatal injuries. Listed below are the reported problems, beginning with the most frequently reported concerns:

- The security of the chair's ***attachment*** to the table was the most common problem reported. Attachment to the table was compromised in 31 out of 58 reported incidents (53%). In a majority of these cases (17 out of 31), the chair did not completely separate from the table, either due to the chair remaining partially secured to the table, or due to a parent taking action before full detachment. In some of the incidents in which the chair partially detached, the seat may have rotated, swung, pitched, or

otherwise shifted from its intended position. Four injury incidents are included among the 17 incidents in which the chair did not detach completely. The two most severe of these injuries involved crushed or severed fingertips caught between arm rests and the opposite clamp still engaged with the table, with the other clamp having fully disengaged. Five injury incidents are included among the 14 incidents in which the chair fell completely from the table, including one broken collarbone.[9] In total, attachment issues resulted in 9 injuries (47% of the 19 nonfatal injuries and reported by non-NEISS sources).

- Issues with ***restraints or containment*** were reported in 11 incidents (19%), including 1 fatality (100%) and 5 nonfatal injuries (26%). Thus, more than half of the restraint incidents resulted in injury or death (5 nonfatal injuries and 1 death). The fatality is the only portable hook-on chair-related death of which CPSC staff is aware. The restraints were entirely missing in this fatality incident. Children slipping and becoming entrapped by the neck in the leg well, or between the table and chair, was the most common scenario, characterizing seven incidents (1 fatal, 3 injured, and 3 uninjured). In one other incident a child slipped, but his shoulders were caught by the waist strap, leaving him without serious injury. The remaining three incidents all involved the child getting up or out over the sides of the chair. In one of these incidents, the child was able to escape his three-point harness and stand up before being removed from the chair by his mother. In each of the other two incidents, the children got themselves up over the sides of the chair and fell out. However, only one of the two was injured because a parent of the uninjured child was able to catch the child's legs and prevent impact with the floor.

- Issues with ***seat fabric separation, due to the unintended release of snaps or Velcro straps*** were reported in 6 incidents (10%), which include three injuries (16%). These chairs, as assembled by consumers, relied on snaps (1 incident) or Velcro straps (5 incidents) to hold the seat fabric onto the paddle arms or chair frame. Unintended release of these fastenings created opportunities for the seat fabric to shift from its intended position, and therefore, not support the child as intended. In the one metal snaps incident, the child slid forward and hit his face on the table after the metal snaps on each side popped open. In one of the five Velcro incidents, separating fabric allowed the child to drop, but his neck became caught against the restraints. In another, the child fell forward hitting her chin against the table before she became suspended upside down and then fell face-first onto the ground. In a third fall incident, the child was uninjured. In the remaining two non-injury incidents, the Velcro released and produced separation of the seat fabric without the child slipping or falling.

[9] When examining only the Non-NEISS incidents, we find only one injury involving a broken collarbone. However, within the NEISS data, there is a fractured collarbone (clavicle) associated with the chair falling from the table (thus, consistent with the attachment hazard scenario).

- Issues with ***seat fabric separation, due to torn or broken components,*** were reported in 3 incidents (5%), including 1 injury (5%). Two incidents involved ripped or unraveling fabric, and the other involved a broken clip. The only injury occurred when a child fell completely out of the chair after the fabric ripped at the seams. A lack of fabric or clip integrity was observed in the other two non-injury incidents, neither of which caused the child to fall or slip.

- Other ***broken components*** affecting structural integrity contributed to 6 (10%) of the incidents and 1 (5%) of the injuries. Locking pins reportedly separated in 4 incidents, including 1 injury of an adult, who scratched her knee on the sharp protrusion. Two other incidents were associated with a broken release mechanism and a broken chair base, respectively, neither resulting in injuries.

- One ***other*** incident involved a child creating enough motion to tip over a small pedestal table to which the parent had secured the chair.

The distribution of the 31 NEISS injury cases and 58 non-NEISS incidents, by the hazard patterns described in sections A and B above, are shown in Tables 3 and 4, respectively.

Table 3: Suspected NEISS Hazard Patterns Associated with Portable Hook-On Chairs
Date of Treatment: 2000–October 2014

Suspected Hazard Pattern	***NEISS Injury Cases***	
	Count	*Percentage*
Chair detached and fell with child	14	45%
Child fell or slipped out of chair	11	35%
Fall of unknown type	6	19%
Total	**31**	**100%**

Source: Consumer Product Safety Commission's NEISS epidemiological database.
Note: The percentages have been rounded to the nearest integer and may not add up exactly to 100 percent.

Table 4: Distribution of Non-NEISS Reported Portable Hook-On Chair Incidents
By Product-Related Issues or Hazard Patterns
Date of Incident: 2000–October 2014

Product-Related Issues or Hazard Patterns	***Total Reports***		***Reported Injuries***		***Reported Deaths***	
	Count	*Percentage*	*Count*	*Percentage*	*Count*	*Percentage*
Attachment to Table Compromised	31	53%	9	47%		
(chair did not fall from table)	*(17)*		*(4)*			
(chair fell from table)	*(14)*		*(5)*			
Restraints or Containment	11	19%	5	26%	1	100%
(child slipped down, entrapping neck)	*(7)*		*(3)*		*(1)*	
(child slipped partially, but shoulder caught by waist straps)	*(1)*		*(1)*			
(child able to get up and possibly fall out of chair)	*(3)*		*(1)*			
Seat Fabric Separation Due to Unintended Release of Snaps or Straps	6	10%	3	16%		
(child slipped forward and head struck table after metal snaps opened)	*(1)*		*(1)*			
(child slipped and neck became trapped after Velcro opened)	*(1)*		*(1)*			
(child fell entirely out of chair after Velcro opened)	*(2)*		*(1)*			
(child remained seated despite Velcro opening)	*(2)*					
Seat Fabric Separation Due to Torn or Broken Components	3	5%	1	5%		
(child fell entirely out of chair after fabric seam ripped)	*(1)*		*(1)*			
(child remained seated despite broken clip or fabric)	*(2)*					
Miscellaneous Broken Components	6	10%	1	5%		
(locking pin)	*(4)*		*(1)*			
(release mechanism)	*(1)*					
(base of chair)	*(1)*					
Other	1	2%	0	0%		
(tip over of table hooked upon)	*(1)*					
Total	**58**	**100%**	**19**	**100%**	**1**	**100%**

Source: Consumer Product Safety Commission's epidemiological databases CPSRMS, IPII, INDP, and DTHS.
Note: The percentages have been rounded to the nearest integer and shown for totals and subtotals only. Subtotals do not necessarily add to heading totals.

TAB B: Health Sciences Analysis of Portable Hook-On Chair Deaths and Injuries

TAB B

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

Memorandum

Date: May 2, 2015

TO : Patricia L. Edwards
Portable Hook-On Chairs Project Manager
Division of Mechanical Engineering
Directorate for Engineering Sciences

THROUGH: Alice Thaler, Associate Executive Director
Directorate for Health Sciences

Jacque Ferrante, Ph.D., Division Director
Division of Pharmacology and Physiology

FROM : Stefanie Marques, Ph.D., Physiologist
Division of Pharmacology and Physiology

SUBJECT : Health Sciences Analysis of Portable Hook-On Chair Deaths and Injuries

I. Introduction

Section 104 of the Consumer Product Safety Improvement Act of 2008 ("CPSIA"), known as the Danny Keysar Child Product Safety Notification Act, requires the U.S. Consumer Product Safety Commission ("CPSC" or "Commission"), in conjunction with consumer groups, juvenile product manufacturers, and independent child product engineers and experts, to assess the effectiveness of voluntary consumer product safety standards for durable infant and toddler products and to promulgate mandatory safety standards. Portable hook-on chairs are specifically included as a durable nursery product in the CPSIA. Therefore, as part of the requirement, the Commission is charged with promulgating a consumer product safety standard that is substantially the same as the voluntary standard for portable hook-on chairs or more stringent than the voluntary standard if the Commission determines that a more stringent standard would further reduce the risk of injury associated with portable hook-on chairs.

ASTM voluntary standard F1235-15 describes a portable hook on chair as a legless seat that is constructed to locate the seat occupant at the table surface for the purposes of feeding and that is solely supported by the table to which it is mounted.

This memorandum provides information on deaths and injuries associated with the use of portable hook-on chairs. Staff searched four CPSC databases[10] for incidents involving portable hook-on chairs, covering the period from January 1, 2000 through October 31, 2014. CPSC used the product code 1556 for attachable high chairs, which was refined to exclude booster seats, which also fall under the same product code. [11] Eighty-nine (89) incidents related to portable hook-on chairs, including 31 cases from NEISS. Of the 89 incidents determined to be associated with a portable hook-on chair, 1 fatality and 49 injuries occurred involving children 3 years old and younger. Additionally, one report involved a minor injury to an adult caregiver.

II. Health Sciences analysis of the portable hook-on chair related death and injuries

It is HS staff's opinion that the one portable hook-on chair fatality that occurred on December 2, 2002 was due to a hazardous opening located between the seat base and the table. In that incident, a 12-month-old male infant was placed in a metal portable hook-on chair attached to a table in the kitchen. The consumer received the hook-on chair secondhand from a neighbor; and, according to the IDI investigator, the chair was "old and worn and apparently has been passed down from family to family." The restraints of the hook-on chair had been removed; and photos of the hook-on chair show that the chair also did not have a passive restraint system (Figure 1), as required by the current ASTM portable hook-on chair standard. The infant's mother left the child in the hook-on chair in the kitchen and went to the living room to feed another infant. While feeding the other infant, the mother fell asleep, leaving the child in the portable hook-on chair in the kitchen unattended for approximately 10 minutes. When the mother woke up, she entered the kitchen and found the child had slipped into the opening between the seat and the table and was unresponsive. The medical examiner's report states that the child's injuries were consistent with being wedged between the hard surface of the table and the seat of the hook-on chair. The child's cause of death was ruled "anoxic brain injury due to compressive near asphyxia."

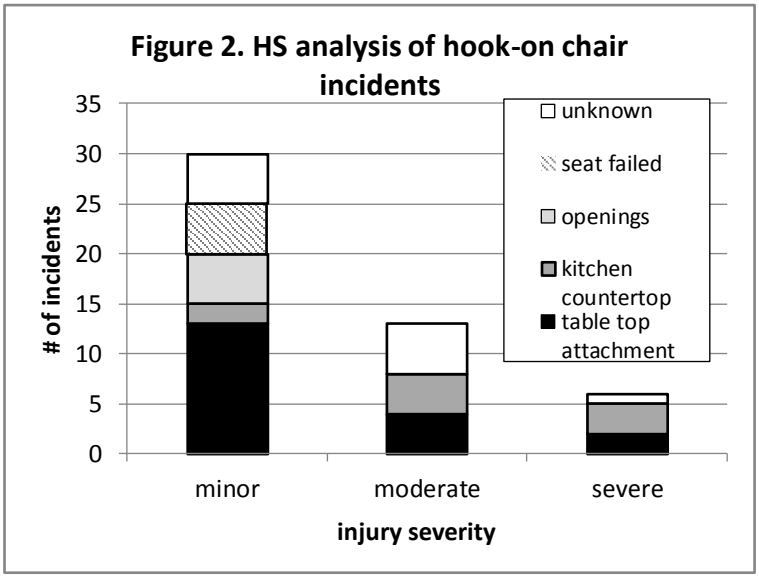
Figure 1. Photo of the hook-on chair involved in the death of a 12 month child occupant clearly shows that the product does not have both an active and passive restraint system.

Figure 2 illustrates HS staff's analysis of the 49 injuries (including the 31 NEISS incidents) related to portable hook-on chairs involving children 3 years old and younger. Thirty (30) minor injuries (including 15 NEISS cases) involved bruises, bumps, scrapes, and red marks. In HS staff's opinion, that attachment of the hook-on chair to the table top resulted in most of the minor injuries; 13 minor injury incidents involved both the chair and the child occupant falling causing

[10] 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 hook-on chairs.

[11] Topping, J. (2014). Portable hook-on chair-related deaths, injuries, and potential injuries; 2000–October 2014. Memorandum to Patricia L. Edwards. Bethesda, MD: Directorate for Epidemiology, Division of Hazard Analysis, U. S. Consumer Product Safety Commission.

injury. Five minor injuries involved the child occupant falling through an opening between the table and the seat. In those incidents, the child was hanging or entrapped by the head or neck in an opening between the table and the seat (2 incidents); the leg opening (2 incidents); or an unspecified opening between the table and the seat (1 incident). Five minor injuries resulted from the child occupant falling to the floor when the hook-on chair seat failed. Two minor injuries resulted from the child occupant falling to the floor from a hook-on chair attached to a kitchen countertop.



In the remaining 5 minor injuries, insufficient information exists to determine the cause of the incident.

Thirteen moderate injuries (including 12 NEISS cases) involved closed-head injuries[12], fractured collarbones, and fractured limbs. In HS staff's opinion, two issues are most associated with moderate injuries: (1) attachment of the hook-on chair to the table top fails, causing the chair and child occupant to fall (4 incidents); and (2) the child occupant falls out of the hook-on chair attached to kitchen countertop (4 incidents). In the remaining 5 moderate injury incidents, insufficient information exists to determine the cause of the incident.

Six severe injuries (including 4 NEISS cases) involved fractured skulls, concussions, and severed fingertips. In HS staff's opinion, the issue most associated with severe injuries was the child occupant falling out of hook-on chairs attached to kitchen countertops; all three of these incidents resulted in the child sustaining a significant head injury (2 fractured skulls and 1 concussion). Two severe injuries were sustained as a result of the hook-on chair partially

[12] Closed-head injuries refer to a head injury in which the skull and scalp remain intact. They can range from mild injuries to severe traumatic brain injury and could include concussions, intracranial hematoma and cerebral contusion.

detaching from the table; in these incidents, the child occupant's fingertip was severed when it became entrapped in the clamp area still attached to the table. For the remaining severe injury, which involved the child occupant falling from the hook-on chair and sustaining a concussion, insufficient information exists to determine the cause of the incident.

III. Conclusion

HS staff determined that the opening between the table and the hook-on chair seat was a major contributor to the hook-on chair incidents. In the case of the one hook-on chair fatality, no passive restraint existed between the table and the hook-on chair seat; this, combined with the fact that the child occupant was left unsupervised, led to the death of the 12-month-old child. Similar incidents of the child occupant falling through openings between the table and the hook-on chair or the leg openings of the hook-on chair resulted in only minor injuries, most likely because the child was supervised by a caregiver who was able to free the child before the child sustained more serious injuries. It is HS staff's opinion that, most likely, none of the chairs involved in these opening-type incidents would have passed the current ASTM voluntary standard F1235-15. The current standard requires all completely bounded openings forward of the child occupant preclude passage of the wedge block probe applied with 25 lbf. HS staff believes that incidents of the child occupant falling through openings between the table and seat will be reduced significantly with hook-on chairs that meet the current standard.

Staff identified three additional issues that were significant contributors to incidents that resulted in moderate and severe injuries:

- ***hook-on chairs partially detaching from the table*** resulting in the child in the seat severing a fingertip because of a shearing hazard between the partially detached chair and the table top, or between two members of the partially detached chair. Incidents occurred when one clamp or engagement point between the hook-on chair and the table detached, allowing the chair to rotate downward, around the other clamp/attachment point. In the injury incidents, CPSC's Office of Compliance issued a recall for that problem in August 2011. ASTM recently added a new shearing and scissoring performance requirement to the hook-on chair voluntary standard to address these incidents.
- ***hook-on chairs completely detaching from the table*** resulting in the child and the chair falling and the child sustaining a fractured collarbone and closed head injuries.
- ***child occupant falling out of hook-on chair attached to a kitchen countertop*** resulting in the child occupant sustaining severe head injuries, including fractured skull and concussion.

In HS staff's opinion, the latter two issues (*i.e.*, detachment of the chair from the table and falls from chairs attached to kitchen countertops) are related to improper placement and installation of the hook-on chair.

ASTM F1235-15, the current version of the hook-on chair voluntary standard, contains a revised warnings section. The warning statements in the current standard clearly inform the consumer what surfaces are appropriate for their specific hook-chair and even specify the thickness of the table top that is required for proper hook-on chair placement and installation. It is HS staff's

opinion that the recently updated warning requirements can help improve the placement and installation of the hook-on chairs and reduces the likelihood that these types of fall incidents will occur. In addition, the shearing and scissoring requirements in the current standard will greatly reduce the likelihood that a child's finger will become severed if a hook-on chair should partially detach.

For these reasons, HS staff recommends that the Commission issue a proposed rule for hook-on-chairs that incorporates by reference ASTM F1235 – 15, without modification.

TAB C: Staff's Review and Evaluation of ASTM F1235-15, Standard Consumer Safety Specification for Portable Hook-On Chairs

TAB C

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

Memorandum

Date: May 1, 2015

TO : Patricia L. Edwards
Project Manager, Portable Hook-On Chairs Rulemaking Project

THROUGH: Joel R. Recht, Ph.D.
Associate Executive Director
Directorate for Engineering Sciences

Mark Kumagai, P.E.
Director, Division of Mechanical Engineering
Directorate for Engineering Sciences

FROM : John Murphy, Mechanical Engineer
Division of Mechanical Engineering
Directorate for Engineering Sciences

SUBJECT : Staff's Review and Evaluation of ASTM F1235-15, *Standard Consumer Safety Specification for Portable Hook-On Chairs*

I INTRODUCTION

Section 104 of the Consumer Product Safety Improvement Act of 2008 ("CPSIA") is the Danny Keysar Child Product Safety Notification Act. This act requires the U.S. Consumer Product Safety Commission ("CPSC" or "Commission") to: (1) examine and assess voluntary safety standards for certain infant or toddler products, and (2) promulgate mandatory consumer product safety standards that are substantially the same as the voluntary standards or more stringent than the voluntary standards if the Commission determines that more stringent standards would further reduce the risk of injury associated with these products. The list of products in section 104 includes hook-on chairs.

This memorandum assesses the effectiveness of the current voluntary standard for hook-on chairs, ASTM F1235-15, *Standard Consumer Safety Specification for Portable Hook-On Chairs*, and recommends that the Commission propose to incorporate the standard by reference into the proposed rulemaking on hook-on chairs without modification.

II BACKGROUND

A. Product

Hook-on chairs, sometimes referred to as table mounted chairs or table top clip-on chairs, are a children's product that are supported solely by the table on which they are mounted (see Figure 1). Hook-on chairs appeared on the market in the late 1970s. Hook-on chairs do not have legs, a major feature that distinguishes them from "floor model" high chairs. Hook-on chairs are usually compact and lightweight, making them relatively portable, and these chairs are constructed to put the occupant in a position and height for the tabletop to be used as the feeding surface for the child. Hook-on chairs are intended for use by children 6 months to three years and who weigh no more than 37 lbs. (16.8 kg).

Figure 1
Typical Hook-On Chair

B. Incident Data

As outlined in the Memorandum from the Directorate for Epidemiology (Tab A), CPSC staff is aware of 89 incidents (1 fatality, 50 injuries, and 38 non-injury incidents) associated with portable hook-on chairs for the period January 1, 2000 to October 31, 2014. The 50 reported injuries include 31 cases from the National Electronic Injury Surveillance System ("NEISS"). For this period, the NEISS data are insufficient to report national estimates.[13]

The only known fatality occurred in 2002, when a 12-month-old child slid down in his portable hook-on chair and became entrapped between the seat and table edge. No restraints, passive or active, were attached to the chair at the time of the incident. Six other incidents also involved

[13] In particular, the NEISS data indicative of portable hook-on chairs can only support national estimates when at least a 20-year period is examined. Based on 40 NEISS cases treated from 1994 to 2013, it is estimated that U.S. emergency departments treated an estimated 1,300 injuries over these 20 years. This estimate may be conservative because it is based only on cases with sufficiently detailed records to enable staff to classify them as involving portable hook-on chairs. Although the distribution cannot be broken down into individual years, this reflects an average of 65 injuries per year for that period.

head or neck entrapment (similar to the scenario of the reported fatality). None of these entrapments resulted in death because the child was quickly released from the entrapment by a caregiver.

Other reported injuries staff identified in the incident data include two skull fractures, two concussions, two broken or fractured collarbones, one femur fracture, and two instances of fingertips being crushed and/or severed.

C. Hazard Patterns

CPSC staff considered all 89 incidents to identify hazard patterns associated with hook-on chair-related incidents. For most of the NEISS injury cases, the level of detail is only sufficient to differentiate, for example, in fall cases, whether the hook-on chair partially or fully detached and fell from the table, or whether the child fell out of the attached chair. Therefore, to characterize the hazard pattern distributions, NEISS data and non-NEISS data are grouped separately.

NEISS Injury Cases

Staff identified 31 NEISS emergency department-treated injuries. Most of these cases described a fall. However, it is not always clear from the brief narrative descriptions whether the chair or the child fell, or some other scenario. Staff assessed each case to determine which scenario was most consistent with the description. Based on staff's best interpretation, the cases are classified as follows:

- ***The chair fell from the attached counter or table*** - In these incidents, the attachment to the counter or table somehow became compromised.

- **C*hildren fell or slipped out of the chair (partially or completely)*** - These incidents most likely involved issues with the restraints or other means of containment. However, given the limited information available, CPSC staff cannot be sure that the chairs remained securely attached to the table, or that other product-related issues did not play a role.

- ***Fall of unknown type*** - Although each of these cases clearly appears to be related to a fall affecting the child, the descriptions are insufficient to determine the type of fall that occurred.

Non-NEISS Cases

The hazard scenarios in these 58 reported incidents were mostly attributed to a failure, defect, or potential design flaw in the product. This category included one fatality and 19 nonfatal injuries. The reported problems staff identified in the non-NEISS incident data follow:

1) Chair to Table Attachment Incidents- In a majority of these cases, the chair did not completely separate from the table. In some of the incidents in which the chair partially detached, the seat may have rotated, swung, pivoted, or otherwise shifted from its intended position. Four injury incidents are included among the 17 incidents in which the chair did not detach completely. The two most severe of these involved

crushed or severed fingertips caught between a part of the chair and the clamp that was still engaged with the table. Five injury incidents are included among the 14 incidents in which the chair fell completely from the table, including one broken collarbone.

2) Restraint/Containment Incidents- Half of the restraint incidents resulted in injury or death (5 nonfatal injuries and 1 death). Children slipping and becoming entrapped by the neck in the leg well or between the table and the chair were the most common scenarios. Another scenario included incidents in which the child stood up or got out over the sides of the chair.

3) Fabric- and Component-Related Incidents– This category includes incidents in which the unintended release of snaps or Velcro caused the fabric on/around the seat to separate. This category also includes seat fabric separation from tears or broken components. Lastly, this category includes other broken components, not related to the seat structure, such as locking pins. Injuries associated with these incidents include impacts with the table and lacerations.

4) Other Incidents– One incident involved a child creating enough motion to tip over a small pedestal table to which the parent had secured the chair.

III HISTORY OF ASTM F1235-15

ASTM F1235-15 is the current voluntary standard applicable to hook-on chairs. In May 1984, ASTM formed a task group to develop a standard for hook-on chairs, and the initial version of the standard was approved and published in 1989. Since then, ASTM has revised the standard seven times.

1989 Edition	The first edition of the standard included the chair drop test, static load test, seat and seat back disengagement test, chair bounce test, and chair pull/push test.
1993 Edition	The 1989 edition was reapproved in 1993, without changes.
1998 Edition	Sections on Terminology and General Requirements were added to the 1998 version of the standard. Figure 3, showing a 6-inch weld cap used to simulate the rear end of a child for use in hammock-type hook-on chairs, was also added to the standard.
2003 Edition	The section on Calibration and Standardization was added to the 2003 edition of the standard.
2008 Edition	The 2003 edition was reapproved in 2008, without changes.
2014 Edition	The standard was revised to include requirements for a mandatory passive crotch restraint and tests for leg and side openings. These requirements

were adapted to the hook-on chair standard from ASTM F404, *Standard Consumer Safety Specification for High Chairs*. Figure 7 shows the design drawing for the wedge block was also added to the standard. In addition, other minor clarifying edits were included in this edition.

2014a Edition — The disengagement test was added to this edition of the standard.

2015 Edition — The definition of "passive crotch restraint" was added to this version. The 2015 edition also adds a requirement for testing openings in front of the occupant, and simplifies the openings requirements by combining the test procedure for leg openings, openings in front of the occupant, and side openings into one test. The provisions for marking, labelling, and instructional literature also were revised.

IV SIGNIFICANT PROVISIONS OF ASTM F1235-15

ASTM F1235-15 addresses numerous hazards with several general requirements, most of which are also found in the other ASTM juvenile product standards. The following are the general requirements contained in ASTM F1235-15:

- Sharp points
- Small parts
- Lead in paint
- Wood parts
- Latching and locking mechanisms
- Scissoring, shearing, and pinching (including during detachment from table support surface[14])
- Exposed coil springs
- Openings
- Labeling
- Protective components.

In addition to the general requirements listed above, ASTM F1235-15 contains requirements for marking, labeling, and instructional literature. The standard also contains several performance requirements and test methods specific to hook-on chairs. Below is a discussion of each performance requirement, as well as the specifications for the scissoring, shearing and pinching requirement listed above.

[14] The disengagement requirement, although listed in the general requirements section, is specific to hook-on chairs and was added to reduce the likelihood of children becoming injured from motion caused by the rotation of a hook-on chair when one side (clamp) detaches from the table.

- **Chair Drop Test**

The hook-on chair is dropped twice from a height of 36 inches on each of six different planes. The purpose of this performance requirement is to test that the hook-on chair does not exhibit any mechanical hazards (sharp points, sharp edges, or small parts) after a drop test has been performed.

- **Static Load Test**

The hook-on chair must support a weight of 100 pounds on both the maximum and minimum thickness test surfaces.[15] The purpose of this performance requirement is to test that the hook-on chair is strong enough to support approximately three times the weight of a child expected to be in the seat.

- **Seat and Seat Back Disengagement Test**

The seat and seat back shall remain fully attached to the frame of the chair when various forces are applied. The purpose of this performance requirement is to test that the seat and seat back are strong enough to withstand the forces they will be subject to during use.

- **Chair Bounce Test**

The chair shall remain attached to the standard test surface and allow no movement greater than 1 inch (25 mm) when a force is applied to the seat back and a weight is dropped onto the seat 50 times. The purpose of this test is to simulate a child bouncing up and down in the hook-on chair.

- **Chair Pull/Push Test**

The purpose of this test is to simulate a child's actions that might cause the chair to disengage from the table. A variety of forces and weights are used to verify that the hook-on chair does not detach from the test surface.

- **Restraint System Performance Requirements and Tests**

The standard requires that an active restraint system, such as a belt, be provided to secure a child in the seated position in each of the manufacturer's-recommended use positions. In addition, the restraint system shall include both a waist and a crotch restraint designed to require the crotch restraint to be used when the active restraint system is used. The restraint system must be attached to the chair before shipment so the system does not become released during normal use. The purpose of this performance requirement is to test that the restraint system and its closing means do not break, separate, or release the occupant when various forces are applied.

- **Openings and Passive Crotch Restraint System**

This section requires the chair to include a passive crotch restraint. In addition, to prevent consumer mis-installation or non-installation, the passive crotch restraint is required be installed on the product at the time of shipment. The leg openings must be tested, using a

[15] The test surfaces should be a smooth finish, impregnated high pressure, high-gloss laminate adhered to particle board. Their thickness is determined by the manufacturer on the retail package.

wedge block (see Figure 2), to ensure that the passive crotch restraint is effective under load. The hook-on chair is attached to a test surface and then the tapered end of the wedge block is inserted, and a 25 lb. (111 N) force is applied to the wedge block to push (or pull) the wedge block through the opening. The wedge block is modeled from the hip/torso dimensions of the youngest expected user.[16]

In addition to the leg openings, any side openings of the seat, and openings in front of the occupant (between the chair and the supporting table structure), are also tested in a similar manner. To comply with the requirement, the wedge block shall not pass completely through any opening. The purpose of these provisions is to reduce the likelihood of children getting injured or dying as a result of sliding through or becoming entrapped in an opening.

Figure 2
Wedge Block

- **Scissoring, Shearing, and Pinching Disengagement Test**

This test is intended to reduce the likelihood of children becoming injured due to motion caused by the rotation of a hook-on chair when one side (clamp) detaches from the table. One recall was conducted in cooperation with the CPSC for this issue. The firm reported that two incidents resulted in a finger amputation of the occupant in the hook-on chair.

In this test, the hook-on chair is partially attached to the minimum test surface with only one of the attachment-fastening devices firmly attached to the test surface; the other fastening device is left loose. A CAMI[17] infant dummy is placed in the hook-on chair with the restraints fastened. A force is then applied to the chair/arm frame in line with the loose fastening device in a direction that results in the rotation of the product on a horizontal plane around the other (fully tightened) attachment point (see Figure 3). When the loose attachment point is no longer supported by the test surface, the force is discontinued, and the product is allowed to rotate vertically downward from the test surface. Scissoring, shearing, or pinching that may result in injury shall not be permissible during the entire test, including when the chair is rotating downward.

[16] Per the 1975 SAE report, *Anthropometry of U.S. Infants and Children*, the 5th percentile 5- to 6-month-old's buttock depth is 3.0 in. (actually reported as 2.99 in.). Per the 1977 University of Michigan report, *Anthropometry of Infants, Children, and Youths*, the 5th percentile 6- to 8-month-old's hip breadth is 5.5 in.

[17] CAMI Infant Dummy (Mark II), Department of Transportation, Federal Aviation Administration, Cami Infant Dummy, Drawing No. SA-100I, Memorandum Report AAC-119-74-14, Revision II, by Richard F. Chandler, July 2, 1974. The CAMI (Mark II) is intended to represent a 50th percentile 6-month-old child.

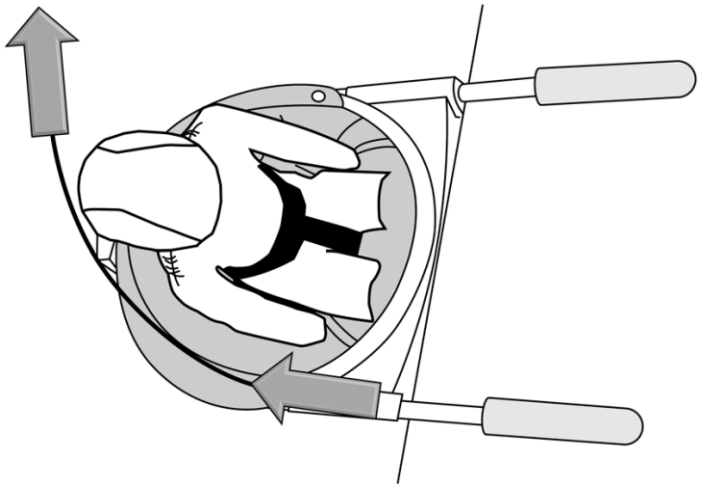


Figure 3
Disengagement Test Force Direction (Rotation is around the secured attachment point.)

V STAFF RECOMMENDATIONS THAT IMPROVED ASTM F1235

In September 2013, CPSC staff made recommendations to the ASTM subcommittee on hook-on chairs to improve the effectiveness of ASTM F1235. Most of the recommendations were based on incidents reported to the CPSC and recalls.

CPSC staff's recommendations to the subcommittee were as follows:

Editorial Clarifications to the Standard –
During staff's review of the standard, a few editorial issues required clarity. These recommended changes were balloted and approved in March 2014, and included in the 2014 revision of the standard, F1235-14.

Openings and Passive Crotch Restraint –
Staff recommended a requirement for a passive restraint and a test for leg openings that is similar to the requirement found in ASTM's high chair standard. A passive restraint reduces the possibility that a child can slip into a completely bounded leg opening and become trapped at the head or neck. In Tab A, the Directorate for Epidemiology reported one fatality in a hook-on chair from this type of entrapment. Staff's recommendations also included a requirement and associated test method for side openings, and openings in front of the occupant, between the hook-on chair and the supporting table surface. All of these recommendations, with the exception of the openings in front of the occupant, were balloted and approved in March 2014, and included in the ASTM F1235-14 revision of the standard.

In May 2014, ASTM issued another ballot containing an item to address entrapment in openings in front of the occupant, *i.e.*, openings between the hook-on chair and the supporting table. Much of the wording contained in the ballot was adapted from the high chair standard. This ballot received two negative votes. The negative voters suggested that wording from the high chair standard should not be included in the hook-on chair standard until revisions to the high chair

standard were complete. One negative voter also suggested simplifying the openings requirement by combining the test for front openings with the leg hole opening tests and side opening tests (the latter two had already been approved and included in the standard). As a result of the negatives, the ballot item was not approved and was returned to the task group for more work. The item was balloted again in August 2014 (with one negative), and in December 2014, the item was balloted again, and the item passed. The current standard, ASTM F1235-15, approved on May 1, 2015, contains the revised openings requirement.

Scissoring, Shearing, Pinching Disengagement Test -
CPSC staff also recommended a disengagement test that would help reduce pinch points that can be created when one of the supporting arms of the hook-on chair slides off the table. If the hook-on chair detaches from the table on one side only, the chair will likely rotate downward because it is still connected to the table by the other attachment point. This can create scissoring, shearing, and pinching risks between rigid parts of the chair and the table, or between two rigid parts of the chair. The Directorate for Epidemiology reported two amputation incidents due to this scenario (see Tab A), and the Office of Compliance recalled 54,000 chairs related to this issue (see Tab D). This new requirement and associated test procedure was balloted in August 2014, and passed. It was included in the version of the standard designated ASTM F1235-14a.

Warning Labels -
CPSC staff also made recommendations to the subcommittee to revise the requirements for warning labels for clarity and improved readability and understanding. The recommendations were first balloted in August 2014. The item received negative votes, and therefore, the ballot was reworked and reissued in December 2014. The revised warnings were subsequently approved by ASTM and are included in the current version of the standard, ASTM F1235-15.

VI OTHER STANDARDS

ES staff researched other standards that apply to hook-on chairs, specifically the European National Standard EN1272-1998. This standard is titled, Child Care Articles - Table Mounted Chairs - Safety Requirements and Test Methods. The most recent version of the EN standard became effective on July 10, 1998.

The EN1272-1998 standard has requirements for:

- Chemical and flammability material properties;
- General construction, such as small parts, sharp edges, and openings;
- Structural integrity, including static and dynamic tests;
- Restraints; and
- Labeling.

ES staff compared ASTM F1235-15 requirements that address Chair to Table Attachment Incidents and Restraint/Containment Incidents to the equivalent EN 1272-1998 requirements. These incidents resulted in the most serious injuries or death. Table 1 shows the comparison between ASTM F1235-15 versus EN1272-1998 requirements.

Table 1. ASTM F1235-15 vs. EN1272-1998

Provision	ASTM F1235-15 Requirements	EN1272-1998 Requirements	ES Comparison
Static Load Test Purpose: To test the structural integrity of the chair and attachment system.	Place 100 lb. mass onto the seat for 60 seconds.	Place 88 lb. mass onto seat for 24 hours.	ASTM is more stringent due to the higher load requirement.
Seat and Seat Back Disengagement Test Purpose: To test the structural integrity of the seat and seat back.	Apply 35 lb. force at various locations and directions on the seat to test the seat and seat back.	No equivalent test.	ASTM is more stringent because EN does not have an equivalent test.
Chair Pull/Push Test Purpose: To simulate a child's actions that might cause the chair to disengage from the table.	Pull on the seat back with 60 lb. Push on the seat back with 25 lb. Force is applied to the side of the chair and straight back.	Pull on the seat back with 34 lb. Force is applied straight back.	ASTM is more stringent due to the added variations in direction of the load, and higher load requirement.
Chair Bounce Test Purpose: To simulate a child bouncing up and down in the chair.	Drop a 24 lb. mass 1 inch onto a 12 lb. mass located in the seat, while pulling on the seat back with 15 lb. Repeat the drop 50 times.	Drop a 33 lb. mass, 1 inch onto a 2 inch foam pad placed in the seat. Repeat the drop 100 times.	Due to differences in testing ES cannot determine if one test is more stringent than the other. Both tests simulate a child bouncing. For this reason, ES believes both tests are acceptable to evaluate bouncing in the chair.
Restraint System Purpose: To require restraint designs that do not present a strangulation hazard and to test the structural integrity of the restraint system.	The restraint system shall include both a waist and a crotch restraint that is designed so that the crotch restraint's use is mandatory when the active restraint system (waist and crotch belt) is used.	Crotch and waist belt required. The system does **not** require that the crotch restraint use is mandatory when the restraint system (waist and crotch belt) is used.	ASTM is more stringent because EN does not require that waist strap is always used with the crotch strap.

Provision	ASTM F1235-15 Requirements	EN1272-1998 Requirements	ES Comparison
Passive Crotch Restraint Purpose: To reduce the likelihood of children sliding through or becoming entrapped if they are not using the active restraints.	A passive crotch restraint is required to be attached to the chair at time of shipment.	No requirement.	ASTM is more stringent because EN does not have this requirement.
Openings Purpose: To reduce the likelihood of children getting injured or dying as a result of sliding through or becoming entrapped in an opening.	Test any side openings and openings in front of the occupant (between the chair and the supporting table structure). Cannot pass the wedge block through the opening.	Test any side openings in the seating area, **except** for openings in front of the occupant, between the chair and the supporting table structure. Cannot pass a 4.3 inch diameter probe through the opening.	ASTM is more stringent because front openings are exempt in the EN standard.
Scissoring, Shearing and Pinching Disengagement Test Purpose: To reduce the likelihood of children becoming injured due to motion caused by the rotation of a hook-on chair when one side (clamp) detaches from the table.	Partially attach the chair with only one of the attachment-fastening devices firmly attached to the table test surface. Allow the chair to rotate away from the table and vertically downward from the table. Scissoring, shearing, or pinching conditions shall not be permissible during the entire test, including when the chair is rotating downward.	No equivalent test.	ASTM is more stringent because EN does not have this requirement.

Based on the above evaluation, ES staff believes that ASTM F1235-15 is a more complete and encompassing standard than EN1272-1998 to address the known incidents.

VII ADEQUACY OF ASTM F1235-15

This section will review the identified hazard patterns associated with the incident data and the applicable requirements found in ASTM F1235-15 that address each.

1) Chair to Table Attachment Incidents – ASTM F1235-15 contains two separate requirements intended to reduce the likelihood of a hook-on chair becoming detached from its supporting table surface, the chair bounce test and the chair pull/push test. In addition, the standard includes a new requirement to reduce injuries if a partial detachment occurs: the scissoring, shearing, and pinching disengagement test. Both the bounce test and the pull/push test attempt to remove the hook-on chair with forces that vary from 15 lbf to 60 lbf. The new disengagement test uses a force of 45 lbf to test the attachment of the hook-on chair to its supporting table. These tests and forces, when combined, appear to be adequate.

ES staff believes these performance requirements adequately address this hazard pattern.

2) Restraint/Containment Incidents – ASTM F1235-15 requires that all hook-on chairs contain a crotch and waist belt restraint system. In addition, the restraint system undergoes testing to ensure that the restraint system works as intended. Recent revisions to the standard require that chairs also contain a passive crotch restraint, in addition to the crotch/waist belt "active" restraint mentioned above. The leg openings, as well as openings around the sides of the seat, and openings in front of the seat, between the chair and the supporting table, all are tested to ensure that an occupant cannot slide through or become entrapped in the openings. The requirements are basically the same as those that are required in the ASTM F404 high chair standard. These requirements have been successful at reducing submarining incidents.

ES staff believes these recent additions to the standard adequately address this hazard pattern.

3) Fabric and Component Related Incidents – ASTM F1235-15 includes several different performance tests to help address this hazard pattern: the chair drop test, the static load test, the bounce test and the seat/seat back disengagement test. In addition, many of the general requirements are intended to reduce the hazards associated with component failures. In incidents where snaps or Velcro detach unintentionally, the warnings and instructional literature improvements will help prevent foreseeable misuse and abuse.

ES staff believes the general requirements and the performance requirements are adequate to address this hazard pattern.

4) Other Incidents – ASTM F1235-15 includes revised requirements for marking and labeling and instructional literature. These improvements are outlined in Tab E (Memorandum from the Division of Human Factors), and are intended to help reduce incidents of misuse, such as attaching a hook-on chair to a table for which it was not intended.

ES staff believes that ASTM F1235-15 contains adequate and clear warnings related to known hazards associated with hook-on chairs.

TAB D: Durable Nursery Products: Summary of Hook-On Chair Recalls from January 1, 2000 to Present

TAB D

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

Memorandum

Date: May 1, 2015

TO : Patricia Edwards, Project Manager
Directorate for Engineering Sciences

THROUGH: Howard N. Tarnoff
Acting Assistant Executive Director
Office of Compliance and Field Operations

Mary F. Toro, Director
Division of Regulatory Enforcement
Office of Compliance and Field Operations

Carolyn Manley, Team Lead
Division of Regulatory Enforcement
Office of Compliance and Field Operations

FROM : Joseph Tsai, Compliance Officer
Division of Regulatory Enforcement
Office of Compliance and Field Operations

SUBJECT : Durable Nursery Products: Summary of Hook-On Chair Recalls from January 1, 2000 to Present

PURPOSE

This memorandum summarizes the product safety recalls involving hook-on chairs completed in cooperation with the CPSC since 2000. Section 104 of the Consumer Product Safety Improvement Act of 2008, Pub. L. No. 110-314, 122 Stat. 3016 (August 14, 2008) ("CPSIA"), also known as the Danny Keysar Child Product Safety Notification Act, requires the Commission to study existing voluntary standards and develop mandatory safety standards for durable infant and toddler products, which includes hook-on chairs. CPSC staff is drafting a notice of proposed rulemaking ("NPR") for hook-on chairs for Commission consideration. A revised version of the current hook-on chair voluntary standard, ASTM F1235-15 is expected to form the basis for the proposed rule. A "hook-on chair" is defined in the ASTM standard as: (1) a seat made for the express purpose of seating and holding a child who can remain in a sitting position due to his or her own coordination; (2) usually a legless seat constructed to locate the occupant at a table in such a position and elevation so that the surface of the table can be used as the feeding surface for the occupant; and (3) supported solely by the table on which it is

mounted. These chairs are intended for use by children between the ages of six months and three years and who weigh no more than 37 lbs. (16.8 kg) (95th percentile male at three years).

COMPLIANCE RECALL INFORMATION

Since January 1, 2000, there have been two hook-on chair recalls involving two different firms (see Table 1). The first recall was in June 2001, and involved Inglesina USA hook-on chairs. The product was recalled after one report of a child who fell from the chair. The recall involved 780 units.[18] The second recall was in August 2011, and involved phil&teds USA, Inc., "metoo" clip-on chairs. This recall involved multiple hazards. The first hazard was related to missing or worn clamp pads that allowed the chairs to detach from a variety of different table surfaces, posing a fall hazard. A second hazard occurred when the chair detached; children's fingers can be caught between the bar and clamping mechanism, posing an amputation hazard. In addition, user instructions for the chairs were inadequate, increasing the likelihood of consumer misuse. There were 19 reports of the chairs falling from different table surfaces and included five reports of injuries. Two of the five reports of injuries involved children's fingers being severely pinched, lacerated, crushed or amputated. The three other reports of injury involved bruising after a chair detached suddenly and a child struck the table or floor. [19]

Table 1
Hook-On Chair Recalls
January 1, 2000 to Present

Recall Date	Firm	Reason	# Recalled	Press Release Number
06/21/2001	Inglesina USA	Fall Hazard	780	PR01-175
08/17/2011	phil&teds USA Inc.	Fall Hazard/ Amputation hazard	54, 000	PR11-306

[18] www.cpsc.gov/en/Recalls/2001/CPSC-Firms-Announce-Recall-of-Chain-Saws-and-Child-Table-Seats/

[19] http://www.cpsc.gov/en/Recalls/2011/Table-Top-Clip-on-Chair-Recalled-by-philteds-USA-Due-to-Fall-and-Amputation-Hazards/

TAB E: Human Factors Assessment of Hazard Patterns and Mitigation Strategies in Hook-On Chairs

TAB E

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

Memorandum

Date: June 11, 2015

To: Patricia L. Edwards
Hook-On Chairs Project Manager
Division of Mechanical Engineering
Directorate for Engineering Sciences

Through: Joel R. Recht, Ph.D., Associate Executive Director
Directorate for Engineering Sciences

Bonnie Novak, Director
Division of Human Factors
Directorate for Engineering Sciences

From: Catherine A. Sedney, Senior Engineering Psychologist
Division of Human Factors

Subject: Human Factors Assessment of Hazard Patterns and Mitigation Strategies in Hook-On Chairs

I. BACKGROUND

Section 104 of the Consumer Product Safety Improvement Act of 2008 ("CPSIA"), known as the Danny Keysar Child Product Safety Notification Act, requires the U.S. 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 such standards if the Commission determines that more stringent standards would further reduce the risk of injury associated with these products. Section 104(f) defines a durable infant or toddler product as "a durable product intended for use, or that may be reasonably expected to be used, by children under the age of 5 years . . .." Section 104(f) includes hook-on chairs among the products identified.

The current voluntary standard, ASTM F1235 – 15, *Standard Consumer Safety Specification for Portable Hook-On Chairs*, section 1.3 defines the product as:

1.3.1 A seat made for the express purpose of seating and holding a child who can remain in a sitting position due to his or her own coordination.

1.3.2 Usually a legless seat constructed to locate the occupant at a table in such a position and elevation so that the surface of the table can be used as the feeding surface for the occupant.

1.3.3 Supported solely by the table on which it is mounted. These chairs are intended for use by children between the ages of six months and three years and who weigh no more than 37 lb. (16.8 kg) (95th percentile male at three years).

Staff recommends that the Commission issue a proposed rule for hook-on-chairs that incorporates by reference ASTM F1235 – 15, without modification.

This memorandum summarizes the Human Factors assessment of the pertinent hazard patterns associated with hook-on chairs and the measures contained in the voluntary standard to address them.

II. DISCUSSION

A. Products

Products that fall within the scope of the voluntary standard typically consist of fabric over a lightweight frame. All have a device to mount the seat to a support surface (*i.e.*, a table or counter). Some brands fold for easy storage or transport, and some include a removable tray that can be used in conjunction with a table. Per the requirements of the voluntary standard, the chairs must have a passive crotch restraint and a three-point restraint system; a few products employ a shoulder harness. Figure 1 includes a few examples.

Figure 1. Examples of hook-on chairs.

B. Incident Data

Staff from the Directorate for Epidemiology's Division of Hazard Analysis ("EPHA") searched the Commission's NEISS[20] and non-NEISS databases (*i.e.*, IPII, INDP, DTHS, and CPSRMS;

[20] "NEISS" is the National Electronic Incident Surveillance System. Data in this system are based on incidents that resulted in visits to a representative sample of U.S. hospital emergency rooms. Non-NEISS refers to data reported in

see footnote) for incidents involving hook-on chairs (Topping, February 2015).[21] For January 1, 2000 through October 31, 2014, EPHA staff identified 89 hook-on chair-related incidents. Thirty-one cases were reported through NEISS; EPHA concluded that the number of cases that were reported in sufficient detail to be classified as involving hook-on chairs (26) was too small to form the basis for a national estimate.[22]

EPHA staff identified 58 cases, including a single fatality, in the Commission's non-NEISS databases. Incident data from the two sources are discussed below.

1. NEISS Incidents

Of the 31 children brought to emergency rooms for hook-on chair-related incidents, the reported age in 29 cases was between 5 months[23] and 24 months; the remaining two children were reported as 36 months of age.

In each case, the child was either treated and released or examined released without treatment. Thirty of the 31 incidents were falls. Per EPHA's review, in almost half of these cases, the seat fell from the surface to which it was attached, and in one third of these cases, the child fell from the seat. Whether only the child fell, or both the seat and the child fell, could not be determined in the remaining cases. Age did not appear to be a factor in the type of fall incident reported. Injuries included fractures (skull, clavicle, and femur), concussions, nonspecific head injuries, and lacerations or contusions of the head, face, mouth, or leg.

The remaining case was described as a "7 [-month-old male] . . . found hanging by neck which was caught in chair." The injury reported was neck pain.

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the Commissions databases, including the In-Depth Investigation file ("INDP"), the Injury, or Potential Injury file ("IPII"), the Death Certificate file ("DTHS"), and the Consumer Product Safety Risk Management System ("CPSRMS").

[21] There is no product code in the CPSC data system specific to the category of chairs that attach only to tables, and staff believes that the majority of chair-related incidents refer to products that are out of scope, such as booster seats that attach to chairs. EPHA staff searched chair-related product codes including 1556 (attachable high chairs), 1518 (youth chairs), 1519 (car seats for infants or children), 1555 (high chairs), 4021 (other chairs), 4022 (chairs not specified), 4074 (chairs, other or unspecified), and screened the narratives for relevant details suggestive of the products of interest. It is likely that the estimate provided is conservative because reports often lacked sufficient detail to determine the type of chair and were excluded.

[22] In a footnote, EPHA staff estimated that there were 1,300 emergency room visits for hook-on chair-related incidents for the 20-year period 1994-2013 (N = 40).

[23] The scope of the voluntary standard specifies 6 months as the minimum user age, presumably based on the age at which children can sit up unassisted. Six months, however, is the average age generally cited at which children reach this milestone, and a significant proportion will do so earlier (Bayley, 1969). Davis and colleagues reported that 50 percent of their sample (N = 351) achieved this milestone at 5 months or younger (Davis, Moon, Sachs, & Ottolini, 1998).

2. Non-NEISS (Reported) Incidents

Among the 58 non-NEISS cases were 43 children whose age was reported as 5 to 22 months; five whose age was reported as 2 years; one whose age was reported as 3 years, and eight whose age was not given. The remaining case involved an adult caregiver.

One fatality was reported. A 12-month-old died several days after he was found face down and trapped between the table and the seat of the chair.[24] The product was an older, secondhand model that had been given to the family, and the chair had no restraints at the time of the incident.

Seven other incidents occurred in which children slipped, either into an opening or between the seat and the table, and were caught: six at the neck and one at the shoulders; injuries occurred in four cases, and all were minor.

As in the NEISS emergency department data, the incidents included cases in which children fell when the chair separated from the surface to which it was attached, as well as when children fell directly from the chair. Injuries were minor with the exception of one incident in which a 19-month-old suffered a broken collar bone, and possibly a closed head injury, when the chair detached from the table. Partial detachment of the chair also was reported. In seven cases, one clamp detached, which allowed the chair to pivot about the remaining clamp and drop suddenly. Two children suffered fingertip amputations and crush injuries caused by the scissoring action of the framework forming the front of the chair and the vertical component of the clamp. In the other incidents, the children were unharmed.

C. Adequacy of the Current Voluntary Standard

The current voluntary standard (F1235 – 15) contains provisions intended to address most types of incidents identified in EPHA's data search. This includes provisions to prevent children slipping through openings in the chair; falls, including falls due to disengagement of the chair from the support surface; and, more generally, provisions to prevent foreseeable misuse and abuse through warnings and instructions. Discussed below are specific hazards or areas that staff identified and worked with ASTM to address.

1. Hazard Patterns and Mitigation Strategies

a. <u>Head and Neck Entrapment</u>

Because of revisions initiated following staff's review, F1235 – 14 contained a requirement for a passive crotch restraint and performance requirements intended to prevent entrapment in two areas of hook-on chairs, specifically, in the leg openings formed by the passive crotch restraint and in completely bounded openings that form the sides of the seating area. In response to reported incidents, staff worked with an ASTM task group to extend these requirements to completely bounded openings forward of the occupant. This addresses entrapment between the

[24] IDI 030103HCC1250.

leading edge of the chair and the supporting surface by prohibiting passage of the wedge block[25] when a 25-lbf force is applied (see Figure 2). This change is included in the current version of the voluntary standard, F1235 – 15.

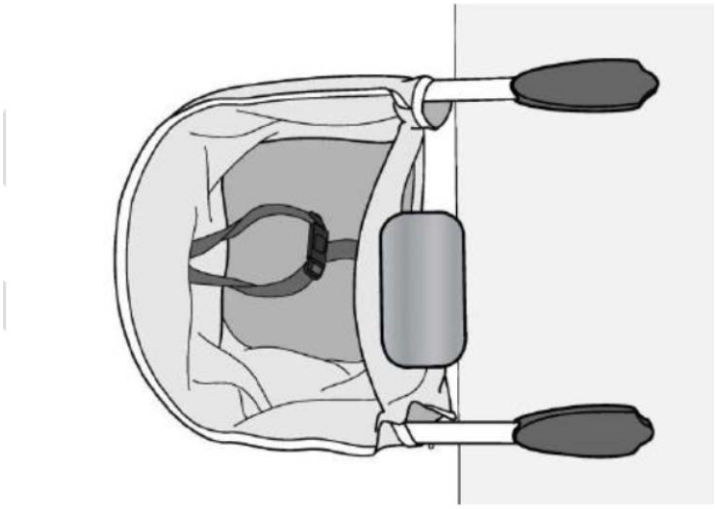

Figure 2. Test for openings forward of the occupant showing the wedge block between the seat and the support surface.

b. Scissoring/Shearing Due to Partial Detachment

Several cases of partial detachment of hook-on chairs were reported. These involved sleeves or grip pads on the frame members that rest on the support surface and that form part of the attachment mechanism of the chair (*e.g.*, the upper part of a clamp). Because these sleeves or grip pads provide friction, they help prevent movement of the chair; failure of these components on one side resulted in partial detachment in the reported incidents. In one product, which was recalled, several incidents occurred when the metal clamp detached on one side, which, because of the child's weight, allowed the chair to pivot downward suddenly about the remaining attached clamp. Two children suffered fingertip amputations and crush injuries caused by the scissoring action of the metal bar forming the front of the chair and the vertical component of the clamp.

ASTM formed a task group to address this hazard. Staff worked with the task group to develop performance requirements that, should partial disengagement of the chair occur, prevents scissoring, shearing, and pinching hazards between rigid component of the chair, and between rigid components of the chair and the support surface to which it is attached. These new requirements were incorporated in the current version of the standard.

[25] The wedge block test device is based on the anthropometry of a child's lower torso; if the torso cannot pass through the opening, the body cannot pass through and be trapped at the neck.

c. Miscellaneous Falls

Falls were the most common type of hook-on chair-related incident; they comprised more than half of the reported cases, and resulted in a number of serious injuries. EPHA staff determined that in the NEISS data, when the mode could be determined, the chair fell from the support surface in 45% (n=14) of the cases. More generally, some cases could be attributed to the failure of a chair component, such as the seat fabric, or hook-and-loop fasteners, allowing the child to fall through the chair; or, as described above, the sleeves or grip pads failed, allowing the chair to detach. Two incidents reportedly happened when the child pushed the chair off a table. In most instances, however, the exact cause of the fall was unknown.

Each version of the voluntary standard has included ". . . attempts to minimize . . . falls due to detachment of the chair from the table or due to breakage or detachment of components; a child falling out of the chair; and chair and table tipping over" through performance requirements that, for example, simulate use-and-abuse, and challenge the attachment mechanisms and restraint devices. In addition, each version of the voluntary standard has included provisions to communicate correct use of the chairs through warnings and instructions. The current version of the voluntary standard appears to be adequate to address most identified causes of falls related to product failures. In contrast, an initial review of warnings on products and in instruction manuals, as well as examples of packaging and website images, identified significant inadequacies in communications to users. Inadequacies in the warning labels and instructions were substantiated by details included in a small number of the non-NEISS reports[26] in which caregivers apparently misinterpreted the warnings or instructions, or seemingly were unaware that they had used the product incorrectly. The vertical support of an island countertop, for example, is likely to be close enough that children can push against it with their feet. Similarly, it may not be possible to secure some products to round tables or tables with aprons[27] that may leave too narrow an edge for complete engagement of some support devices. These details, in at least some of the cases, appear to be a factor in detachment of the product.

Because these hazards are linked to caregiver behavior, they are addressable primarily through warnings and instructions. In 2013, ASTM formed a task group to review the sections of the hook-on-chair voluntary standard that address warnings and instructions. Staff proposed revised sections to include: (a) simplified language based on the original content for warnings on the products and in the instructions; (b) a standard format, with example labels, to make the warnings more conspicuous and easier to read; (c) required listing of product use limitations on the primary display panel of the retail packaging; and (d) package depictions that are limited to table styles and support surfaces with which the product can be used safely. These modifications were balloted by ASTM and approved for inclusion in the current version of the standard, F1235-15.

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[26] By their nature, non-NEISS reports are anecdotal, and cannot be considered representative of hook-on chair incidents in general. However, because they include greater detail than NEISS reports, they are suggestive of the factors, not included in brief NEISS reports that may play a role in incidents.

[27] A vertical component typically positioned a few inches from the outer edge of the table and extending downward which connects the legs to the top. For examples, see http://www.tablelegs.com/Aprons.aspx (accessed 12/18/14).

The number of hook-on chair cases available for evaluation is small, and as noted, often these cases provide limited information. Nonetheless, the data suggest two areas for further consideration as additional information becomes available. First, as EPHA staff reported, children fell out of the chair in more than one-third of the NEISS cases. Across the two data sources, there are reports that describe children who stood up or climbed out (or tried to), and two children (an 8-month-old and a 13-month-old) who pushed themselves up and out of their three-point restraints. In most incidents, whether the restraints were used at the time it is not reported. Three-point restraints do not restrain the upper body, and may be inadequate to help prevent certain types of falls. The potential severity of fall-related injuries warrants monitoring of fall data, and if deemed necessary, exploration of additional performance requirements to prevent falls that do not introduce additional hazards.

A related issue that bears monitoring is reports of falls from counter surfaces. These presumably are island counters, as ordinary kitchen counters typically do not afford either the attachment surface or the leg space for use of a hook-on chair. As discussed above, chair detachments may be related to the design of island counters, and placement of children near a vertical surface against which they can push with their feet. Depiction of this scenario was noted on the packaging and websites for some hook-on chair brands. The Directorate for Health Sciences ("HS") staff noted that three severe head injuries (of four total severe head injuries) were related to children falling from hook-on chairs attached to counters. This may be related to the surface height, which is generally higher than tables. The data set is small, and staff recommends that fall-related hook-on chair incidents be monitored in terms of the attachment surface to determine whether further requirements should be considered.

III. CONCLUSION

Staff reviewed 89 hook-on chair-related incidents for the period January 1, 2000 through October 31, 2014; examined products, their packaging, and warnings and instructions; and assessed the then-current version of the voluntary standard. Hazards of two specific types, head and neck entrapment forward of the occupant, and scissoring/shearing due to partial detachment of the chair, were identified; and the staff worked with ASTM to develop performance requirements to address them. These revisions have been incorporated into the current voluntary standard, F1235 – 15.

Many incidents fit the category of miscellaneous falls. Performance measures in earlier versions of the standard that addressed product-related failures leading to falls appeared adequate; however, requirements for communicating safe use of the product to adult users to help prevent falls, did not comply with best practices. Staff worked with ASTM to improve these sections of the standard, and revisions have since been incorporated.

It seems likely that few, if any, of the hook-on chairs involved in the incidents reviewed would have fully met the requirements of F1235 – 15; revisions approved by the ASTM committee may have prevented some, and perhaps many, of the reported incidents. HF staff recommends that the Commission issue a proposed rule that would incorporate by reference, the voluntary standard for hook-on-chairs, ASTM F1235 – 15, without modification.

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TAB F: Staff-Recommended Proposed Standard for Hook-On Chairs: Impact on Small Businesses

TAB F

UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
BETHESDA, MD 20814

Memorandum

Date: May 2, 2015

TO : Patricia L. Edwards
Project Manager, Hook-On Chairs
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 : Staff-Recommended Proposed Standard for Hook-On Chairs: Impact on Small Businesses

I. Introduction

In accordance with section 104 of the Consumer Product Safety Improvement Act ("CPSIA"), also known as the Danny Keysar Child Product Safety Notification Act, staff recommends that the U.S. Consumer Product Safety Commission ("CPSC" or "Commission") issue a proposed rule for portable hook-on chairs, as described in the briefing memorandum. The CPSC hook-on chairs team officially began reviewing the voluntary standard and consulting "with representatives of consumer groups, juvenile product manufacturers, and independent child product engineers and experts" per the requirements in section 104 of the CPSIA in August 2013.[28]

[28]Detailed information about the changes to the voluntary standard since August 2013 may be found in the memorandum from John Murphy, Division of Mechanical Engineering, Directorate for Engineering Sciences, dated May 1, 2015, Subject: Staff's Review and Evaluation of ASTM F1235-15, *Standard Consumer Safety Specification for Portable Hook-On Chairs* and the memorandum from Catherine A. Sedney, Division of Human Factors, Directorate for Engineering Sciences, dated May 2, 2015, Subject: Human Factors Assessment of Hazard Patterns and Mitigation Strategies in Hook-On Chairs.

The Regulatory Flexibility Act ("RFA") generally requires that agencies review proposed rules for their potential economic impact on small entities, including small businesses. Section 603 of the RFA calls for agencies to prepare and make available for public comment an initial regulatory flexibility analysis describing the impact of the proposed rule on small entities and identifying impact-reducing alternatives. Section 605 of the RFA, however, states that this requirement does not apply if the head of the agency certifies that the rule, if promulgated, will not have a significant economic impact on a substantial number of small entities and the agency provides an explanation for that conclusion. This memorandum outlines the economic impact that the staff-recommended hook-on chairs proposed rule is expected to have on small firms. In sum, the rule is not expected to have a significant impact on a substantial number of small entities and EC staff believes that the Commission could certify to that effect.

II. The Product

ASTM F1235-15, *Standard Consumer Safety Specification for Portable Hook-On Chairs*, describes hook-on chairs as children's seats first appearing on the market in the late 1970s. The appendices to the standard further note that the product's "quick attachment and removal," combined with their "lightness and compactness makes them a relatively portable product." Hook-on chairs do not have legs, relying instead on the table to which it is mounted via "cantilever-style suspension" for support. Mounting the chair to the table in this manner places the occupant in a position and at an elevation that allows the child to use the "surface of the table" as a "feeding surface." Hook-on chairs are intended for children "who can remain in a sitting position due to his or her own coordination," generally "children between the ages of six months and three years and who weigh no more than 37 lb." A typical hook-on chair is illustrated in Figure 1.

Figure 1: Illustration of a typical hook-on chair

III. The Market for Hook-On Chairs And Impacts of Proposed Rule

Staff has identified 10 firms supplying portable hook-on chairs to the U.S. market, typically priced at $40 to $80. These 10 firms specialize in the manufacture and/or distribution of durable

nursery products and represent only a small segment of the juvenile products industry. All but two of these firms are represented by the Juvenile Products Manufacturers Association ("JPMA") which, according to its website, represents 95 percent of the North American industry or about 250 companies.[29] Nine of the 10 known firms are domestic (including 3 manufacturers and 6 importers). The remaining firm is a foreign manufacturer.[30]

Hook-on chairs represent only a small proportion of each firm's overall product line; on average, each firm supplies one hook-on chair model to the U.S. market annually. This is reflective of their relative lack of popularity when compared with substitute products such as high chairs and booster chairs. In 2013, the CPSC conducted a Durable Nursery Product Exposure Survey ("DNPES") of U.S. households with children under age 6. Data from the DNPES indicate that there are an estimated 2.04 million hook-on chairs in U.S. households with children under the age of 6. The number of high chairs and booster chairs were each more than four times higher with an estimated 9.74 million and 8.91 million in U.S. households with children under age 6, respectively.

Staff expects that the hook-on chairs of nine of the 10 firms are compliant with ASTM F1235 because they are either: (1) certified by the JPMA (three firms); or (2) the supplier claims compliance with the voluntary standard (six firms).[31] It is unknown at this time whether the hook-on chair supplied by the remaining firm, the foreign manufacturer, is compliant with the ASTM voluntary standard.

Under U.S. Small Business Administration ("SBA") guidelines, a manufacturer of hook-on chairs is small if it has 500 or fewer employees, and importers and wholesalers are considered small if they have 100 or fewer employees. We limit our analysis to domestic firms because SBA guidelines and definitions pertain to U.S.-based entities. Based on these guidelines, six of the nine domestic suppliers are small—two domestic manufacturers and four domestic importers.

The costs of compliance with the staff-recommended proposed standard, if any, are expected to be negligible for all known small firms, all of whom have hook-on chairs compliant with the ASTM voluntary standard currently in effect for testing purposes (F1235-14).[32] These firms are expected to remain compliant with the voluntary standard as it evolves, because they follow (and most actively participate in) the standard development process. Therefore, compliance with the

[29] See http://jpma.org/content/about/about-jpma (accessed on 4/23/15).
[30] Determinations were made using information from Dun & Bradstreet and ReferenceUSAGov, as well as firm websites.
[31] JPMA typically allows six months for products in their certification program to shift to a new standard once it is published. The version of the standard that firms are likely testing to currently is ASTM F1235-14, although at some point during May 2015, firms are expected to start testing to ASTM F1235-14a. A newer version of the standard (F1235-15) was recently published, but will not become effective for JPMA certification purposes earlier than December 2015. The majority of hook-on chair suppliers are expected to be compliant with ASTM F1235-14a and F1235-15 when they become effective, as they are compliant with ASTM F1235-14 and are, therefore, likely to remain compliant as the standard evolves.
[32] In this case, one of the firms is JPMA-certified and the others claim compliance with the ASTM standard on their websites or in their other marketing materials. As already noted, the effective ASTM standard for hook-on chairs testing is expected to become version ASTM F1235-14a sometime in May 2015, but the point discussed here remains valid regardless of which standard is currently in effect for testing purposes.

voluntary standard is part of an established business practice. ASTM F1235-15, the version of the voluntary standard that staff recommends the Commission adopt without modification as the mandatory hook-on chair standard, will be in effect for testing purposes by the time the mandatory standard becomes final. These firms are likely to be in compliance by the rule's effective date, based on their history.

Under section 14 of the CPSA, once the new hook-on chair requirements become effective, all manufacturers will be subject to the third party testing and certification requirements under the testing rule, *Testing and Labeling Pertaining to Product Certification* (16 C.F.R. part 1107) ("1107 rule"). Importers will also be subject to these requirements if their supplying foreign firm(s) does not perform third party testing. Third party testing will include any physical and mechanical test requirements specified in the final hook-on chairs rule. Manufacturers and importers of hook-on chairs should already be conducting required lead or phthalates testing for hook-on chairs. Any costs associated with third party testing are in addition to the direct costs of meeting the hook-on chair standard.

Additional testing costs for manufacturers are expected to be small since all hook-on chairs in the U.S. market are currently tested to verify compliance with the ASTM standard, though not necessarily via third party. According to estimates from suppliers, testing to the ASTM voluntary standard typically costs about $600-$1,000 per model sample. Based on an examination of firm revenues from recent Dun & Bradstreet or ReferenceUSAGov reports, the impact of third party testing to ASTM F1235-15 is unlikely to be economically significant for small manufacturers (*i.e.*, testing costs will be less than 1 percent of gross revenue). Although it is unknown how many samples will be needed to meet the "high degree of assurance" criterion required in the 1107 rule, over 35 units per model would be required to make testing costs exceed one percent of gross revenue for the small manufacturer with the lowest gross revenue. Note that this calculation assumes the rule would generate *additional* testing costs in the $600-$1,000 per model sample range. Given that all firms are conducting some testing already, this likely overestimates the impact of the rule on testing costs.

Likewise, we expect the cost of third party testing to the staff-recommended proposed rule to be small for small importers. Again, all hook-on chairs are currently tested to verify compliance with the ASTM standard. Discussions with one importer indicate that this testing is currently conducted by their foreign supplier. Second, as with manufacturers, any costs would be limited to the incremental costs associated with third party testing over the current testing regime, to the extent there are any additional costs.

Both the costs of compliance and the incremental costs of testing due to the 1107 rule are not expected to be economically significant for manufacturers and importers of hook-on chairs. However, even if the costs were significant, the affected firms have diverse product lines, a minor part consisting of hook-on chairs; an economically feasible option is to discontinue the product line and remain in business.

IV. Summary of Impacts

The analysis above shows that there are only a few small suppliers of hook-on chairs, and these few firms represent only a small segment of the juvenile products industry. Moreover, this product is only one of many in each firm's product line and is unlikely to be of particular importance to their overall market plan. All of the hook-on chairs supplied by these firms are in compliance with the voluntary standard and are expected to remain so. Consequently, the costs of compliance, if any, are expected to be negligible. Third party testing costs are expected to be very small and economically insignificant (*i.e.,* less than one percent of gross revenue for affected firms), given that all of the hook-on chairs supplied by these firms are already being tested to the ASTM voluntary standard. For these reasons, the Commission could certify that the staff-recommended hook-on chair rule will not have a significant impact on a substantial number of small entities.

V. Impact on Small Testing Laboratories

Section 14(a)(2) of the Consumer Product Safety Act ("CPSA") requires the third party testing of children's products to be conducted by CPSC-accepted laboratories. Section 14(a)(3) of the CPSA requires the Commission to publish a notice of requirements ("NOR") for the accreditation of third party conformity assessment bodies (*i.e.,* testing laboratories) to test for conformance with each children's product safety rule. These NORs are set forth in the *Requirements Pertaining to Third Party Conformity Assessment Bodies* (16 C.F.R. part 1112) ("1112 rule").

Testing laboratories that want to conduct this testing must meet the NOR pertaining to third party conformity testing. NORs have been codified for existing rules in the 1112 rule. Consequently, staff recommends that the Commission propose an amendment to the 1112 rule that would establish the NOR for those testing laboratories that want to test for compliance with the hook-on chair final rule.

Amending the 1112 rule to include the NOR for the hook-on chair standard will not have a significant adverse impact on small laboratories because it would not impose any requirements on laboratories that do not intend to provide third party testing services. The only laboratories that would provide such services would be those that anticipated receiving sufficient revenue from the mandated testing to justify accepting the requirements as a business decision.[33]

Moreover, based upon the number of laboratories in the United States that have applied for CPSC acceptance of the accreditation to test for conformance to other juvenile product standards, we expect that only a few laboratories will seek CPSC acceptance of their accreditation to test for conformance with the hook-on chair standard. Most of these laboratories will have already been accredited to test for conformance to other juvenile product standards, and the only costs to them would be the cost of adding the hook-on chair standard to their scope of accreditation, a

[33] Note that this follows the logic of the original Final Regulatory Flexibility Analysis ("FRFA") conducted as part of the promulgation of the 1112 rule (78 FR 15836, 15855-58) as required by the RFA.

cost that test laboratories have indicated is extremely low when they are already accredited for other section 104 rules. For this reason, the Commission could certify that the NOR for the hook-on chair standard will not have a significant impact on a substantial number of small entities.