



UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
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This document has been electronically
approved and signed.

DATE: December 21, 2016

BALLOT VOTE SHEET

TO: The Commission
Todd A. Stevenson, Secretary

THROUGH: Patricia H. Adkins, Executive Director
Mary T. Boyle, General Counsel

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

SUBJECT: Final Rule: Safety Standard for Sling Carriers

BALLOT VOTE DUE: Wednesday, December 28, 2016

The Office of the General Counsel is providing for Commission consideration the attached draft final rule for publication in the *Federal Register*. Staff recommends that the Commission issue the draft final rule establishing a mandatory safety standard for sling carriers pursuant to section 104 of the Consumer Product Safety Improvement Act of 2008. The draft final rule incorporates by reference the applicable voluntary standard, with one modification. In addition, the draft final rule amends 16 C.F.R. part 1112 to include the mandatory safety standard for sling carriers in the list of Commission-issued notices of requirements (NORs).

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.)

(Signature)

(Date)

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

(Signature)

(Date)

IV. Take other action. (Please specify.)

(Signature)

(Date)

Attachment: Draft *Federal Register* Notice: Final Rule to Establish a Safety Standard for Sling Carriers

Billing Code 6355-01-P

CONSUMER PRODUCT SAFETY COMMISSION

16 CFR Parts 1112 and 1228

[Docket No. CPSC-2014-0018]

Safety Standard for Sling Carriers

AGENCY: Consumer Product Safety Commission.

ACTION: Final rule.

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 issuing a safety standard for infant slings (sling carriers) in response to the direction of section 104(b) of the CPSIA. In addition, the Commission is amending its regulations regarding third party conformity assessment bodies to include the mandatory standard for slings in the list of Notices of Requirements (NOR) issued by the Commission.

DATES: This rule will become effective [INSERT DATE 12 MONTHS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]. The incorporation by reference of the publication listed in this rule is approved by the Director of the Federal Register as of [INSERT DATE 12 MONTHS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

FOR FURTHER INFORMATION CONTACT: Daniel Dunlap, Compliance Officer, U.S. Consumer Product Safety Commission, 4330 East West Highway, Bethesda, MD 20814; telephone: 301-504-7733; e-mail: *ddunlap@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 or 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)(1)(H) provides that the term “durable infant or toddler product” includes “infant carriers.”

In this document, the Commission is issuing a safety standard for sling carriers. Section 104(f)(2)(H) of the CPSIA lists “infant carriers” as one of the categories of durable infant or toddler products. As indicated by a review of ASTM’s standards and retailers’ websites, the category of “infant carriers” includes hand-held infant carriers, soft infant carriers, frame backpack carriers, and sling carriers. The Commission has issued final rules for three types of

infant carriers: hand-held infant carriers (78 FR 73415 (December 6, 2013)), soft infant carriers (78 FR 20511 (April 5, 2013)) and frame carriers (80 FR 11113 (March 2, 2015)). In the Commission's product registration card rule identifying additional products that the Commission considers durable infant or toddler products necessitating compliance with the product registration card requirements, the Commission specifically identified "infant slings," or sling carriers, as a durable infant or toddler product. 76 FR 68668 (December 29, 2009). Accordingly, 16 CFR 1130.2(a)(18) now specifically identifies "infant slings" as a durable infant or toddler product. At the notice of proposed rulemaking (NPR) stage, the staff briefing package for the proposed rule included a detailed technical analysis of the durability of sling carriers, which concluded that sling carriers are durable products. The durability of infant slings is further discussed in section VI.G of this preamble.

Because the voluntary standard on infant slings, ASTM 2907-15, *Standard Consumer Safety Specification for Sling Carriers*, refers to "infant slings" as "sling carriers," this document refers to infant slings as "sling carriers." The terms are intended to be interchangeable and have the same meaning.

On July 23, 2014, the Commission issued an NPR for sling carriers. 79 FR 42724. The NPR proposed to incorporate by reference the voluntary standard, ASTM F2907-14a, *Standard Consumer Safety Specification for Sling Carriers*, without modification.

In this document, the Commission is issuing a mandatory safety standard for sling carriers. As required by section 104(b)(1)(A), the Commission consulted with manufacturers, retailers, trade organizations, laboratories, consumer advocacy groups, consultants, and the public to develop this standard, largely through the ASTM process. The rule incorporates by

reference the most recent voluntary standard, developed by ASTM International, ASTM F2907-15, with one modification.

In addition, the final rule amends the list of NORs issued by the Commission in 16 CFR part 1112 to include the standard for sling carriers. Under section 14 of the Consumer Product Safety Act (CPSA), the Commission promulgated 16 CFR part 1112 to establish requirements for accreditation of third party conformity assessment bodies (or testing laboratories) to test for conformity with a children's product safety rule. Amending part 1112 adds to the list of children's product safety rules a NOR for the sling carriers standard.

II. Product Description

The scope section of ASTM F2907-15 defines a "sling carrier" as "a product of fabric or sewn fabric construction, which is designed to contain a child in an upright or reclined position while being supported by the caregiver's torso." These products typically are intended for children starting at full-term birth, until a weight of about 35 pounds. The designs of infant slings vary, but the designs generally range from unstructured hammock-shaped products that suspend from the caregiver's body, to long lengths of material or fabric that are wrapped around the caregiver's body. Infant slings normally are worn with the infant positioned on the front, hip, or back of the consumer, and with the infant facing toward or away from the consumer. As stated in the "sling carrier" definition, these products generally allow the infant to be placed in an upright or reclined position. However, the reclined position is intended to be used only when the infant is worn on the front of the consumer. The ability to carry the infant in a reclined position is the primary feature that distinguishes sling carriers from soft infant and toddler carriers, another subset of sling carriers. The Commission has identified three broad classes of sling carrier products available in the United States:

- Ring slings are hammock-shaped fabric products, in which one runs fabric through two rings to adjust and tighten the sling.
- Pouch slings are similar to ring slings but do not use rings for adjustment. Many pouch slings are sized, rather than designed, to be adjustable. Other pouch slings are more structured and use buckles or other fasteners to adjust the size.
- Wrap slings are generally composed of a long length of fabric, up to approximately 6 yards long, and up to 2 feet wide. A wrap sling is completely unstructured with no fasteners or other means of structure; instead, the caregiver uses different methods of wrapping the material around the caregiver's body and the child's body to support the child. Wrap-like slings mimic the manner in which a wrap supports the child, but they use fabric in other manners, such as loops, to reduce the need for caregivers to learn wrapping methods.

ASTM F2907 does not distinguish among the type of slings. The voluntary standard's requirements apply equally to all slings.

III. Market Description

In the NPR, CPSC staff reported that it had identified 47 suppliers of sling carriers to the U.S. market, including 33 companies based in the United States and 14 foreign companies that exported directly to U.S. customers via Internet sales or to U.S. retailers. The 33 U.S.-based firms included 25 manufacturers, four importers, and four firms for which the supply source was not identified. Under U.S. Small Business Administration (SBA) definitions, all but one of the 47 firms would be considered a "small business." The NPR also noted that "there may be hundreds more suppliers that produce small quantities of slings." In response to the NPR, the Commission received comments, including from the SBA, concerning the rule's potential impact

on small businesses. As explained further in section IX of this preamble, the final regulatory flexibility analysis (FRFA) uses information provided by The Baby Carrier Alliance Institute (BCIA) to expand on the discussion in the NPR and give additional information about the rule's possible effect on small businesses.

The market price of sling carriers varies, depending on the type of sling carriers. Ring slings are generally the least expensive, with prices ranging from \$40 to \$200, and an average price of \$100. Handwoven wraps have a price range of \$200 to \$800 per wrap. Machine-woven wraps range in price from \$65 to \$400, with an average price of about \$150. The BCIA provided no information on pouches, but pricing is believed to be similar to ring slings.

More recently, information provided by the BCIA confirms the role of numerous small and very small artisanal manufacturers in the sling market. The BCIA identified more than 324 U.S. manufacturers of slings, wraps, and pouches, including both members and non-members of BCIA, many of which are *very* small. The firms that the BCIA identified overlap partially with the 47 suppliers identified by CPSC staff, but the firms do not include some of the larger non-members of BCIA, some European firms that export to the United States, and a number of small Chinese firms. The BCIA has also identified some additional hand weavers. Thus, the total number of manufacturers may reach 400. According to the BCIA, about 250 of the 324 identified small sling manufacturers had annual sales revenue of less than \$10,000, and an additional 45 had revenues of greater than \$10,000, but less than \$50,000. Most of these *very* small manufacturers (especially those with sales revenue of \$50,000 or less annually) worked out of their home, and had one or no employees. In a letter to CPSC concerning the sling rulemaking, the SBA Office of Advocacy described many of these very small manufacturers as “stay-at-home moms that supplement their income by creating the slings.”

According to the BCIA, a common scenario for the development of a very small sling manufacturer starts with a mother using various slings or soft carriers and then deciding to make her own design in her home. Some of these home businesses grow into larger businesses that become more specialized and sophisticated, typically designing and marketing their own products, but having the product manufactured overseas. Based on emails with the BCIA, and CPSC staff's review of sling websites, the newer home businesses generally may not know about the sling carrier voluntary standard or realize they may be subject to existing federal regulations on children's products, such as the CPSIA regulations on product labeling and registration cards.

The BCIA reports that dollar sales for the 324 manufacturers they identified amount to approximately \$36 million annually. Unit sales for these manufacturers are estimated to be about 500,000 annually. Given the exclusion of some of the larger wrap and pouch manufacturers from the total provided by the BCIA, we estimate annual unit sales at 800,000 to 1 million and dollar sales to be about \$55 million to \$70 million annually.

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 were an estimated 7.33 million slings in U.S. households in 2013 (with 95 percent probability that the actual value is between 6.2 million and 8.5 million). The survey data also indicated that about 23.4 percent of the slings in U.S. households were currently in use (an estimated 1.72 million slings, with 95 percent probability that the actual value is between about 1.17 million and 2.26 million).

IV. Incident Data

In the NPR briefing package, CPSC staff identified a total of 122 sling carrier-related incidents, including 16 fatalities and 54 injuries that reportedly occurred from January 2003

through October 27, 2013. Since the extraction of the data for the NPR briefing package, CPSC staff has received 37 new reports (1 fatal and 36 nonfatal) related to sling carriers, reported between October 28, 2013 and September 15, 2016. Although reporting is ongoing, most of the new reports of incidents received, thus far, show a date of occurrence in 2014. Among the incidents where the age of the victim was reported, the children were 10 months old or younger. Among these new reports of incidents:

- Fatalities: The new fatality incident occurred in 2013, when a 5-month-old was severely injured due to a lack of oxygen; the child passed away in 2015.
- Nonfatal incidents: Among the 36 new nonfatal incident reports related to sling carriers, 13 reported an injury to the infant or toddler while using the product. All of the injury victims were infants ranging in age from 1 month to 10 months. Among the 13 nonfatal injuries, one required hospitalization for a leg fracture following a fall. Another skull fracture injury was reported, but hospitalization was not mentioned. Other injuries not requiring hospitalization included closed-head injuries, contusions/abrasions, lacerations/scratches, and skin rash.

The number of emergency department-treated injuries associated with sling carriers for the period covered was insufficient to derive any reportable national estimates. Therefore, reportable injury estimates cannot be calculated.

There were no new hazard patterns identified among the 37 reports received by the CPSC since publication of the sling carrier NPR; the hazards identified in the 37 new incidents are consistent with the hazard patterns identified among the incidents present in the NPR briefing package. Those hazard patterns were:

- **Consumer comments:** consumer concerns or observations about perceived safety hazards of a product, a product's noncompliance with standards, and/or contentions of unauthorized sale;
- **Caregiver missteps:** instances where the caregiver slipped, tripped, or grabbed/dropped the child during placement into/removal out of the carrier;
- **Miscellaneous product-related issues:** consumers complaints about unspecified product breakage, or the poor quality of the fabric, the ring(s), and/or the stitching used in the sling carrier;
- **Unspecified falls;**
- Problems with **positioning** the infant in the sling carrier; and
- Problems with **buckles:** releasing, slipping, or breaking of buckles, thereby causing infants to fall or nearly fall.

V. Overview of ASTM 2907

The voluntary standard for sling carriers was first approved and published in 2012, as ASTM F2907-12, *Standard Consumer Safety Specification for Sling Carriers*. ASTM has revised the voluntary standard seven times since the initial publication. The current version, ASTM F2907-15, was approved on October 15, 2015, and published in November 2015. The NPR for sling carriers proposed incorporating ASTM F2907-14a by reference; however, ASTM has revised the voluntary standard twice since then. The revisions since the NPR are listed below.

- **ASTM F2907-14b:** This revision modified the occupant-retention test pass/fail criteria, increasing from 1 inch to 3 inches the amount the ring sling attachment system may slip while still passing the standard. This ballot was open at the time of

the CPSC NPR, and the NPR requested comments on the issue. Six comments to the NPR agreed with the change ASTM had balloted and zero disagreed.

- **ASTM F2907-15:** Under this revision, the test torso for the occupant-retention test is clothed in a “tight-fitting, thermal knit or waffle-weave, cotton or cotton/polyester undershirt or equivalent.” Seven NPR comments requested a change to the NPR (which did not require any clothing on the test torso) to increase the friction characteristics of the test torso. This particular issue was brought to the subcommittee by test laboratories and small manufacturers after publication of the NPR.

VI. Response to Comments

A. Comment Overview

The NPR solicited information and comments concerning all aspects of the proposed rule. The NPR also specifically asked for comments regarding the proposed 12-month effective date, the changes that were under consideration by ASTM at the time of the NPR, and the costs of labeling. The Commission received 188 comments from 162 commenters. Twenty-seven commenters submitted two or more comments, while two comments were signed by multiple people. Staff divided the comments into 11 major topic areas, and summary responses follow. The 11 major topic areas are listed below:

- 12-month effective date;
- ASTM balloted item;
- Changes to test equipment;
- Consumer education;
- Consumer use, misuse, and user error;
- Durable product definition and wrap exemption requests;

- Economic burden;
- Existing rules: product registration card and soft infant and toddler carriers (16 CFR 1126);
- Incident data;
- Instructions and labeling;
- Periodic testing: costs, frequency, and necessity; and
- Miscellaneous other.

The full comments can be found on regulations.gov.

B. 12-month effective date

***Comment:** Six comments discussed the proposed effective date for the rule. Of these, only one comment opposed the proposed 12-month effective date. The commenter who opposed the 12-month period stated the belief “that smaller manufacturers can in fact move more quickly and can adapt to these changes as many were involved in the writing of the ASTM standard which is already published.” The remaining comments, including those from the U.S. Small Business Administration’s Office of Advocacy, agreed that 12 months was appropriate for this product.*

Response: Many of the commenters suggested that the testing requirements of the rule, which will not go into effect until the effective date of the rule, will result in a substantial economic burden to very small producers. This conclusion is supported by the analysis presented in the Final Regulatory Flexibility analysis (FRFA). Consistent with the Commission’s proposal, the final rule provides a 12-month effective date, longer than the 6-month period the Commission usually provides for rules under section 104 of the CPSIA. The 12-month effective date will give needed time for some very small producers, which are frequently home-based and

have limited experience dealing with regulatory processes. This will allow these producers additional time to learn how to comply with the testing and recordkeeping requirements, as well as spread out the testing costs over a longer period.

C. ASTM balloted item

***Comment:** Six commenters expressed support for the changes made to testing for ring slings published in ASTM F2907-14b, the version of the sling carrier standard published following CPSC's NPR, and which resulted from the ballot that was open at the time of the NPR. One commenter posed a question related to the change: "If this recommendation is being made to allow slippage up to 3 on ring slings, then would that recommendation be made on wraps as well?"*

Response: The Commission agrees with the comments favoring adopting the change. CPSC staff tested the revision in ASTM F2907, which was published as ASTM F2907-14b, and staff found that the increase from 1 inch to 3 inches did not decrease the stringency of the standard. The dual-ring lock mechanism on ring slings is unique to those products, and to maintain the strength of the dual-ring lock, the fabric must be under tension. During normal use, this tension is maintained from the weight of the child. During testing, the dual-ring lock is repeatedly exposed to tension, then release, as the test torso moves up and down. Due to the nature of the dual-ring lock, this allows the fabric to creep through the dual-ring lock. However, some fabric creep does not appear to compromise the overall ability of the sling to contain the child. The test still maintains the requirement that the dual-ring lock cannot completely release. Staff found that this fabric creep was unique to the dual-ring lock. Regarding wraps, there was generally little, if any, fabric creep; and in general, the testing only tightened the knots. Because some fabric creep is normal in a dual-ring lock but should not occur with other attachment

mechanisms, staff concluded that the change published in ASTM F2907-14b did not affect the stringency. During ASTM task group discussions before balloting this revision, the task group discussed the question of other attachment mechanisms and concluded that the change should apply only to ring slings because of the unique dual-ring lock mechanism.

D. Changes to test equipment

Comment: Seven comments addressed the surface of the test torso. Two commenters asked to “make the dummy less slippery and more accurate to real-life scenarios”; three commenters requested a fabric or fabric-covered test torso; and two commenters suggested changing the test torso pending the outcome of ASTM task group discussions.

Response: In June 2015, 8 months after the close of the NPR comment period, ASTM F15.21 balloted another change to the test methods. The proposal was to clothe the test torso in “a tight-fitting, thermal knit or waffle-weave, cotton or cotton/polyester undershirt or equivalent.” The ballot item passed and was approved by ASTM on October 15, 2015. CPSC staff repeated testing using the specified shirt and found no significant changes in the test results. Before this ballot item, the ASTM standard did not specify the surface material of the test torso. Thus, test torso surface materials varied among test labs, including wood, metal, and fiberglass. Although the ballot item rationale was based on mimicking real-life conditions in which the caregiver would be clothed when using the sling, CPSC staff expects that standardization of the test torso surface will also increase the repeatability and reliability of test results among test labs.

For these reasons, the Commission agrees with the comments and concludes that ASTM F2907-15 is the most appropriate version of the standard to codify as a final rule.

***Comment:** Two comments suggested using an anthropomorphic mannequin (i.e., a weighted doll with head, neck, arms and legs), instead of a sand bag during the occupant-retention test and a shot-filled bag during the dynamic test.*

Response: Currently, only the restraint test, Section 7.6, uses an anthropomorphic mannequin, specifically the CAMI Infant dummy. For the occupant-retention and dynamic tests, test masses provide the flexibility to fit into a variety of slings, no matter the configuration of the sling. As discussed in the briefing package and public hearing accompanying the NPR, staff and the ASTM committee investigated using a more anthropomorphic mannequin and found that the readily available anthropomorphic mannequin used in many ASTM standards (i.e., the CAMI mannequin) cannot accurately represent the manner in which a child sits in a sling. Developing a new mannequin that is flexible enough to fit into all types of slings would be time- and resource-intensive, without necessarily increasing the stringency or repeatability of the standard.

E. Consumer education

***Comment:** Twenty-six comments expressed that education was all that was needed, instead of regulation or product testing. Sixteen comments discussed the critical role education plays in the safe use of sling carriers, and many of these comments identified education as a key component of preventing user error. Twelve additional comments made more general statements that the focus should be on education, or else they expressed a general sentiment supporting education. One specific commenter (-0137) supported consumer education, but felt “this should be a discussion amongst creators and the safety groups. This should not just be a decision made by the CPSC...”*

Response: The Commission agrees that educating caregivers who use sling carriers is extremely important. The Commission acknowledges that most sling carriers, and especially

wrap carriers, require the caregiver to position the child and the fabric in ways that are both practical and safe, and that the skill needed to use a sling properly is not necessarily intuitive to many caregivers. The Commission also agrees that excellent instructions, training, and support are available from baby-wearing educators and other persons with experience and knowledge of the safe use of the product. However, section 104 of the CPSIA requires CPSC to: (1) examine and assess voluntary safety standards for durable infant or toddler products, and to (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. Therefore, an educational program, alone, would not satisfy the direction in section 104. The Commission concludes that the requirements for the instructions and product labeling provide a framework that each manufacturer can tailor to the recommended-use positions for their specific slings. This will require that each sling includes the minimum information needed for proper use of the product and that the required on-product positioning label will follow the product throughout its lifecycle.

***Comment:** Seven commenters specifically mentioned the baby-wearing community (e.g., local baby-wearing groups, Facebook baby-wearing groups, or Babywearing International, a nonprofit organization whose mission is to promote baby-wearing education and support) as a resource available for new caregivers to learn about the use of sling carriers.*

Response: The Commission agrees that the groups mentioned provide a valuable resource to promote the safe use of sling carriers and encourages the groups to continue their work. Staff urges members and groups to become involved with the ASTM International F15.21 subcommittee on sling carriers, which currently includes members representing sling

manufacturers, sling industry groups, testing laboratories, and child-safety advocates. Through this voluntary standards consensus process, all voices can be heard in the effort to develop a robust voluntary standard, which forms the basis of the mandatory standards promulgated by CPSC under the Danny Keysar Child Product Safety Notification Act.

***Comment:** Ten commenters suggested a joint public educational campaign among the CPSC and manufacturers, industry groups, or the baby-wearing community. One comment suggested an educational campaign, but did not mention partnering. One comment specifically suggested that the Commission sponsor an educational campaign in conjunction with the final rule and that the informational campaign focus on “specific risks that can only be addressed through proper usage and close attention to the infant” (-0172).*

Response: Although an educational campaign is outside the scope of the rule, a joint informational campaign may be an avenue to provide safety information to sling users.

***Comment:** Six commenters suggested standardizing and regulating education materials and packaging, with two commenters saying that such standardization and regulation of education materials should be the only requirement. One additional commenter expressed general support for ASTM requirements for instructional materials, and another commenter suggested requiring informational brochures.*

Response: The rule incorporates by reference ASTM F2907-15; section 9 of ASTM F2907-15 requires instructions to be provided with each sling and for these instructions to include some standard content, including information on assembly, adjustment, restraint systems (if applicable), maintenance, cleaning, storage, and use. However, education alone does not address the hazards posed by material failures, such as ripped fabric and broken hardware, nor does an educational program require that all sling carriers be sold with instructions and on-

product warning labels that will follow the product through its lifecycle. The rule, by referencing ASTM F2907-15, requires instructions to contain images of each manufacturer's recommended carrying position, all warnings that are required to be on the product, and additional safety-related instructions and information, such as the minimum and maximum weight of the child for which the sling is intended, the importance of checking for damaged seams and hardware, and the warning never to use the sling when balance or mobility is impaired.

F. Consumer use, misuse, and user error

***Comment:** Seventy-one comments discussed consumer use or the role of user error in the reported incidents. Sixty-four comments made general statements asserting that injuries resulted from user error; five comments suggested that manufacturers were not responsible for misuse; and three comments discussed the benefits of using sling carriers. In addition, several commenters raised other issues related to consumer use or user error.*

Response: CPSC agrees that many incidents suggest that caregiver behavior plays a vital role in the proper use of sling carriers. In addition, the Commission agrees that, due to the unique nature of sling carrier products, educating caregivers is the primary method to address user error. The Commission concludes that the warnings and instruction requirements are the best way, within CPSC's authority, to educate consumers. In addition, reasonably foreseeable misuse is one of the factors that CPSC must consider. The Commission encourages manufacturers to provide the best instructions and warnings to address foreseeable misuses of their products. For products where a design change could prevent a possible misuse, that is preferable; however, for sling carriers, education, including instructions and warnings, may be the best way to address certain foreseeable user errors. Finally, although it is difficult to quantify

the benefits mentioned in these comments, the Commission appreciates the examples that commenters provided.

***Comment:** One commenter (-0185) suggested that the reclined position should not be a recommended-use position; another commenter (-0041) recommended not showing “advanced carries” in instructions, and instead, recommended having the instructions show “an unsafe carry.”*

Response: The ability to use a sling in the reclined position is one of the key factors differentiating soft infant and toddler carriers from sling carriers. The unstructured nature of many sling carriers suggests that it could be reasonable and foreseeable that caregivers will place a child in a position other than perfectly upright. The instructions and warnings are key to giving caregivers the information they need to position a child properly, including positions with a slight recline. In addition, the on-product label requirement in ASTM F2907-15 calls for examples of improper positioning.

G. “Durable product” definition and wrap exemption requests

***Comment:** Numerous commenters requested that wraps be exempted from any new regulations on sling carriers. Eight commenters suggested that slings should not be considered durable products.*

Response: The Commission considered the possibility of exempting wraps and other all-fabric carriers without load-bearing hardware or seams. However, exclusion of wraps would preclude any educational or labeling requirements for these products, along with third party testing requirements. A large number of commenters stressed the importance of educational materials, which CPSC considers to include instructions and warnings. In addition, the NPR included an analysis explaining why the Commission concluded that sling carriers, including

wraps, are a type of infant carrier, a product specifically identified as a “durable infant or toddler product” in section 104(f)(2)(H) of the CPSIA. Specifically, the Commission considered the following factors in the initial determination:

- Age of children carried in sling carriers
 - One reported incident victim was 3 years old, which demonstrates that these products are used past the first year of life.
 - The voluntary standard (F2907) defines a “sling carrier” for use up to 35 pounds. Three-year-old children are likely to still be within this weight limit, and some 4- and 5-year-old children may be less than 35 pounds.
- Durability of sling carrier parts
 - Although wraps and pouch slings are all-fabric products, ring slings, modifications of wraps and pouch slings, and other products that meet the definition of a “sling carrier” also contain parts that are considered durable from an engineering perspective and suggest that they were selected for long-term use. In addition, the test methods in ASTM F2907 combine to ensure that slings meet a minimum level of durability.
- Reuse of sling carriers
 - Two incidents involved a hand-me-down sling carrier. One sling was reported to have been received from a relative, and the other sling carrier was reported to have been used for the infant’s older sibling.
 - Preliminary data from CPSC’s durable nursery product survey indicate that only 4 percent of respondents throw away used sling carriers; and 96 percent of respondents save the sling carrier for later use, sell the sling carrier, or give away

the sling carrier. In addition, the CPSC's durable nursery products survey indicated that approximately one-fifth of sling carrier frequent users obtain their sling carrier second hand.

- With 96 percent of survey respondents to CPSC's durable nursery products survey indicating that the sling carrier was saved or otherwise passed on to another caregiver, it is foreseeable that some sling carriers are likely to be used by more than one child. In addition, sling carriers appear to be bought and sold on resale markets.
- Recalls of sling carriers
 - CPSC issued a recall in March 2008, regarding a certain sling carrier that was manufactured in March and April 2007. CPSC received reports of incidents involving sling carriers subject to the recall more than 5 years after the recall announcement.
 - CPSC issued a recall in March 2010, regarding a different sling carrier that was sold from 2003 to 2010. That recall was reissued as a safety alert 2 years later because the sling carriers subject to the recall were found in the marketplace.

No commenters provided data suggesting that slings, or specifically wraps, are not infant carriers, or are single-use/single-user products that are categorically used for short periods of time only, or are otherwise intended to have a very short lifespan. Therefore, the Commission concludes that wraps are infant carriers that meet the definition of "durable nursery products" under CPSIA section 104. Additional discussion of these issues is included in the FRFA.

H. Economic burden

Comment: *According to the SBA Office of Advocacy (Advocacy), “the CPSC’s assumptions [regarding] the number [of firms affected by the proposed rule] and impact [of the proposed rule] on affected small carrier manufacturers is based on inadequate data and analyses.” According to Advocacy, the CPSC provides “the public with some data on the sling carrier market, but it is an inadequate basis for the CPSC’s analyses as described in the IRFA.” Advocacy’s comment concluded: “Advocacy recommends the CPSC gather more information on small sling carrier manufacturer’s market share as well as the number of accidents that can be attributed to them. If the CPSC is unable to obtain this information because of the uncertainty inherent in its analysis, Advocacy recommends the CPSC present a range of potential costs instead of one point estimate.”*

Response: For the NPR, CPSC staff prepared an initial regulatory flexibility analysis (IRFA) examining the impact the NPR could have on small business. The IRFA identified 47 suppliers of slings to the U.S. market, but noted that there might be hundreds more suppliers that produce small quantities. For the FRFA, staff expanded the discussion of firms to include 324 firms identified by the BCIA, an industry trade association. According to the BCIA, about 250 of the 324 identified firms had total annual sales revenues of less than \$10,000, and an additional 45 had revenues of greater than \$10,000, but less than \$50,000. These identified firms with revenues less than \$50,000 annually were characterized in our analysis as “very small firms.” The expanded discussion in the FRFA includes: (1) additional information on the characteristics of the firms, (2) estimates of annual industry-wide sales, (3) estimates of the numbers of slings in use, and (4) estimates of the market share of the very small firms.

The FRFA also includes an expanded discussion of sling injuries and injury rates, and what we know about the injuries involving slings produced by small and very small firms. This discussion is included in the section of the FRFA titled, “Sling Injuries and Risk Estimates.”

Finally, the FRFA substantially expanded the discussion of the likely impacts of the rule on small and very small sling producers. Based largely on the information from the BCIA, as well as some information provided in the comments from Advocacy, staff developed four hypothetical “representative” producers: (1) a hand weaver, (2) a ring sling producer, (3) a machine weaver, and (4) a mass producer. For each of these producers, staff developed estimates of annual sales, average unit sales prices, and the number of style/fabric combinations likely to be produced by the firms, all of which will affect the estimated costs of the rule. For the very small representative firms (*i.e.*, the hand weaver and ring sling producer), the estimated annual testing costs that would be triggered by the rule amounted to about 16 percent to 36 percent of total revenues. For the machine weaver, the annual testing costs amounted to an estimated 2.4 percent to 4.7 percent of revenues. Only the mass producer (with annual revenues of about \$2.7 million) had annual expected costs of less than 1 percent. The FRFA concludes that the final rule would have a significant adverse impact on a substantial number of small businesses and could cause numerous small producers to exit (or not to enter) the market. In addition, there may be significant additional impacts on small manufacturers, including the need to provide instructional materials. We cannot rule out the potential for compliance costs to be high enough that they could lead to significant economic impacts, especially for very small manufacturers.

Comment: Advocacy recommended that the CPSC expand and improve its discussion of alternatives that may reduce the costs of the rule on small businesses.

Response: As recommended, the FRFA substantially expanded the discussion of alternatives the Commission could choose that would reduce the impact of the rule on small businesses. These alternatives are discussed in detail in the FRFA (Tab D) and under Analysis of Alternatives in this briefing memorandum. The options include:

- Determining that slings are not durable infant or toddler products and terminate rulemaking;
- Delaying the effective date of the requirements;
- Exempting wraps (a specific type of sling made entirely of fabric) from the requirements of standard;
- Allowing a small batch exemption for small manufacturers (this alternative would require a change in a federal statute);
- Amending the existing CPSC regulation at 16 CFR part 1107 to reduce the frequency of periodic testing required for small or home-based sling producers; or
- Adopting ASTM F2907-15 with no changes, and directing staff to work with ASTM to address the staff-recommended change.

Comment: More than 100 of the 188 comments received in response to the NPR focused on the economic burden that the rule and testing requirements would impose on very small producers of slings. Some of these commenters said that they recognized the need for some product safety regulation for slings, but they also expressed concern about the impact of the rule on very small businesses. Many of the comments said that the costs resulting from the testing requirements would drive small producers out of business. Some of the commenters, who are very small sling producers, suggested that the rule would be cost prohibitive and would probably

result in their exit from the sling market. Several users expressed concern that the proposed rule would reduce the availability of slings in the marketplace.

Response: The Commission agrees that the rule and associated testing requirements will pose a significant economic burden on many small producers and has discussed these possible impacts in the FRFA. The FRFA discussion of alternatives has been expanded to include additional alternatives that were not discussed in the IRFA and could reduce the negative impact of the rule on small businesses. Despite the expected impact, the Commission is promulgating the final rule for sling carriers in order to comply with Congressional direction regarding durable infant and toddler products and the Commission designation in the product registration card rule of infant carriers as such products. The Commission also believes that a mandatory standard is necessary despite the costs to small business because the standard would address mechanical or fabric failure hazards and impose warning and instruction requirements that would address suffocation hazards. The staff's briefing package notes that, of the six sling recalls since 2001, four involved small manufacturers, of which two may have been *very* small with sales revenue of less than \$50,000 annually. One recall initiated after a death (a 10-day old-boy) appears to have involved a very small manufacturer. The recall was for 40 slings sold over an 8-month period, or five slings per month. Another recall, for a potentially hazardous defect in the stitching (fall hazard), involved 165 slings sold over a 4-month period, or 41 slings per month. A third recall involved defective aluminum rings, also a potential fall hazard, with 1,200 ring slings sold over a 9-month period, or about 133 slings per month. The largest recall involving a small business concerned 5,000 slings with defective rings sold over a 7-month period, roughly 700 per month. The remaining two recalls involved the same large firm. Additionally, staff's briefing package

includes information regarding production test plans that could reduce the frequency of testing for manufacturers that implement a product test plan, which could reduce the testing costs.

Comment: Three commenters reported that information in the IRFA did not reflect the true number of small businesses that would be affected by the rule or the significant financial impact that would be imposed on small producers. These commenters provided additional information on the number and size of the very small producers and the likely financial impact of the rule.

Response: The Commission agrees that the discussion of the market and market impact of the sling proposed rule was not fully descriptive of the very small manufacturers in the marketplace or of the full economic burden that would be imposed by the rule. The information provided by the commenters was used to develop estimates of annual sales, average unit sales prices, and the number of style/fabric combinations likely to be produced by the firms; all of this information will affect the estimated testing costs of the rule. The information has been incorporated into the FRFA's description of the sling market and in the discussion of cost impacts on small and very small businesses.

I. Existing rules: product registration card and soft infant and toddler carriers (16 CFR part 1126)

*Comment: Three commenters requested reconsideration of the product registration card requirement or specific aspects of it (e.g., “*perforated* registration cards is silly in my opinion”). Three other commenters specifically mentioned that they agreed that the product registration card requirement was necessary to conduct product recalls. One commenter specifically suggested “an online registration system so that the carrier’s owner can be continuously updated.”*

Response: The requirements of the product registration rule (which are set out at 16 CFR part 1130) are outside the scope of this rulemaking on sling carriers. We note that the rule does provide for online registration; however, “electronic/email registration does not replace the mandatory requirement stated in section 104(d)(1)(A) of the CPSIA that each manufacturer of a durable infant or toddler product must provide consumers with a postage-paid consumer registration form with each such product.”

J. Incident data

Comment: *Thirty-two commenters raised issues relating to incident data. In general, most of these comments expressed one or two opinions. First, a majority of the comments regarding incidents claim that most injuries and deaths cited in the NPR briefing package result from positioning errors and caregiver missteps. Second, many commenters claimed that no injury or death in the incident data presented was related to the issue of fabric strength.*

Response: For the incidents in which sufficient information was available, caregiver missteps were often cited in the reports; however, there were many incidents with insufficient information. The lack of information is not evidence that product-related defects (for example, fabric weakness) were absent in the incidents.

Comment: *A number of commenters suggested that the injuries are not “the result of manufacturer defects” (e.g., -0011) or not related to structural integrity (e.g., -0063, -0070).*

Response: The Commission disagrees with this comment. Of the 54 injuries, nine were product-related (three buckle-related and six miscellaneous product-related) incidents. Of the 52 non-injury incidents, 12 were product-related (nine buckle-related and three miscellaneous product-related) incidents. An additional 25 reported incidents, including seven fatalities and 15 injuries (including two hospitalizations) under the *undetermined* or *unspecified* category, did not

provide enough information for staff to make a determination on the cause(s) leading to the incident. This lack of information is not the same as conclusive evidence that no manufacturer issues were involved in these incidents. In addition, although voluntary recalls are not necessarily associated with findings of a defect, the NPR discussed three recalls between 2005 and 2007, for structural integrity issues, one associated with four injuries, including a skull fracture. Finally, the updated data provided in Tab A discuss four new incident reports related to fabrics, rings, and stitching, including a minor injury that occurred when fabric ripped.

Comment: Several comments (-0011) raised issues related to risk and relative risk of slings. One specific question was: “How does the rate of injury/death for sling carriers compare to other modes of carrying children?” In addition, comments (e.g., -0011, -0079) suggested that, compared to carrying a child in the caregiver’s arms, the risk of carrying a child in a sling carrier was the same or lower.

Response: CPSC has not compared the rate of injury/death for sling carriers with the rates for similar modes of infant carriers. Such a comparative analysis is not relevant for the purposes of this rulemaking. The Commission does not state that sling carriers are more or less dangerous than other infant carriers, and regulation mandated under section 104 of the CPSIA does not require such a comparison.

Comment: “[The] non-incident, non-injury comments helped to inflate the perceived danger of both sling carriers and SITCs.”

Response: For briefing packages on section 104 rules, staff reports on *all* relevant data reported to CPSC. Because the non-injury comments were not used as the basis for any new requirements for a standard, including them in the briefing package does not affect the issuance of a Section 104 rule.

***Comment:** Several commenters suggested that “there was an overall lack of information associating injuries with specific makes and models of sling carriers,” (-0011) or that all deaths were due to one type of carrier (e.g., “deaths due to improper use (of what I would imagine were bag style slings). . .” -0087). One commenter’s point, that several other commenters copied and included in their comments, also suggested that “. . .bag style sling carriers are notoriously (anecdotally?) more dangerous than ring slings or woven wraps. . .” and that staff should attempt to correlate data “with a specific brand or general type of sling carrier.”*

Response: CPSC staff intentionally omitted make and model information in the NPR briefing package because many of the products involved in incidents were not identifiable in that manner. Providing the information for only the known manufacturers would unfairly identify those entities. The purpose of the rulemaking is to encompass the product class, not specific makes and models of slings of which CPSC staff is aware. When staff observes a pattern of deaths or injuries involving “a specific brand,” that data is investigated by the CPSC’s Office of Compliance. Regarding the request to correlate data with a general type of carrier, staff reviewed the 17 deaths reported in the two briefing packages associated with this rulemaking (16 in the NPR, plus one additional death noted in this final rule package) to identify the type of sling involved in each death. Six deaths were associated with bag-type slings, four with wrap or wrap-like slings, three with ring slings, and one with a pouch sling. There was not enough information to identify the sling type involving the three remaining deaths.

***Comment:** One comment (-0179) suggested that “suffocation-related incidents are understated. In addition, the commenter suggested that staff “mischaracterizes incidents . . .” by categorizing some incidents as “undetermined” or “unspecified cause,” instead of identifying*

the incidents as involving positional asphyxia, and excluding SIDS cases on the basis that they are position-related incidents.

Response: The Commission disagrees. For each rulemaking, CPSC staff, as a team, makes a deliberate decision on the most relevant period to gather data. Usually this period starts from when the latest major version of the relevant ASTM standard occurred. For sling carriers, the very first ASTM standard, F2907–12, was developed using CPSC data from 2003 forward. The NPR covered the period from 2003 forward. Moreover, consistent with other durable product briefing packages, certain incidents (*e.g.*, those with an official cause of death of SIDS, with no additional definitive information) were considered out-of-scope cases. In addition, the commenter cites sling-related data and analysis from CPSC from prior years. The data extraction criteria for those earlier years were different because the data were analyzed for a different purpose (*e.g.*, it may have been a search for *all* fatalities in sling carriers that have been reported to CPSC). The discrepancy is not an attempt to understate the dangers of suffocation associated with the use of sling carriers.

K. Instructions and labeling

Comment: *One commenter requested on-product labeling for products that are manufactured after the effective date, so that consumers can clearly identify products that meet the mandatory standard. An additional comment (-0172) requested that the product include a marking that clearly indicates that a compliant product meets the mandatory standard.*

Response: The Commission is not making any changes to the proposed rule based on this comment because manufacturers are already allowed to label compliant products under section 14 of the CPSA and 16 CFR part 1107. In addition, section 8.1.3 of ASTM F2907 – 15 and the product registration card rule (16 CFR 1130.4) already include requirements that slings

bear a code mark or other means to identify the date of manufacture. Additionally, manufacturers or importers may voluntarily label compliant products with the words: “Meets CPSC Safety Requirements,” under section 14 of the CPSA and 16 CFR part 1107. Thus, adding a requirement in the final rule for sling carrier manufacturers to mark their products would be redundant.

***Comment:** Nineteen comments generally discussed the effectiveness of warnings and instructions in addressing the hazards. The most common argument advanced by commenters is that, in the context of sling carriers, labeling, instructions, and similar approaches are superior to performance requirements or to the proposed material testing requirements because the hazards with slings result from user error, infant positioning, or similar behavioral issues. Some comments (e.g., -0043, -0063, -0095) assert that warnings and instructions are all that are needed or that warnings and instructions are the only requirements that are likely to avoid injuries. In contrast, one comment (-0179) argues that warnings are not likely to address the hazard effectively, as demonstrated by recent deaths, and that instructing consumers to “check often” is an unreasonable expectation.*

Response: Improper infant positioning accounts for the majority of fatalities associated with these products. Staff generally recommends designing the hazard out of a product or guarding the consumer from the hazard, rather than employing warnings, because a warning’s effectiveness depends on persuading consumers to alter their behavior to avoid the hazard. Nevertheless, as discussed in the NPR briefing package, staff was unable to develop performance tests or requirements that could address the infant positioning hazard; and therefore, staff concluded that the “last resort” measure of warning about proper and improper infant positioning was the only feasible hazard-mitigation strategy (see Smith, 2014). Staff continues to believe that

this is the only viable way of addressing the infant positioning hazard, short of a ban on slings. However, staff does not agree that warnings and instructions are all that is needed to address injuries with sling carriers. Consequently, the Commission incorporates by reference ASTM F2907-15, which includes performance requirements that are intended to address hazards other than infant positioning.

***Comment:** Sixteen comments address the content of the warning label and instructions, generally in terms of consumer comprehension of the information. These include comments about the importance of the labels and instructions to be understood easily, clear, accurate, pertinent, and to include all necessary information, including information about what to avoid.*

Response: The warnings and instructions must be accurate, comprehensive, and easy to understand, and the Commission believes that the requirements for sling carriers accomplish these goals. Staff worked extensively with the ASTM Subcommittee on Sling Carriers to improve the requirements for warnings and instructions from the original 2012 version of the voluntary standard to address more effectively the sling hazards that cannot be addressed by performance requirements. The current requirements for warning and instructional content adequately address key information about the nature of the hazards, the consequences of exposure to the hazards, and appropriate behaviors in which consumers can and should engage—or not engage—to avoid these hazards. Thus, no revisions to the content requirements are necessary.

***Comment:** Seven comments suggested specific items that should be included in the warnings. Specifically:*

- *Two comments (-0016 & -0058) proposed warning against the use of slings with infants younger than a certain age (i.e., 4 months or 6 months).*

- *Two comments (-0031 & -0118) stated that the warning should include or highlight images of proper positioning, including the acronym TICKS.*
- *One comment (-0079) stated that consumers should be aware of the recommendation to check stitching and fabric for wear.*
- *Two comments (-0038 & -0041) argued that some companies currently include dangerous instructions or positioning information.*
- *One comment (-0172) stated that the current warning does not sufficiently describe the suddenness with which suffocation can occur and the need for constant mindfulness and monitoring. The comment also stated that the fall hazard is not described sufficiently.*

Response: The Commission agrees that the items proposed by the commenters should be included on sling warning labels and concludes that each item is already sufficiently addressed by the warning currently required in ASTM F2907-15. The warning label requirements in ASTM F2907-15, which are incorporated by reference into the final rule, address most issues pertaining to unsafe positioning, by specifying both proper and improper infant positioning in the warning and instructional language and in the warning pictogram.

Comment: *One comment (-0179) states that the warning’s direction to keep the “face uncovered” is weaker than previous warnings by CPSC, and does not address concerns that sling-type carriers can cause infants whose heads are below the rim of the sling to assume a curled posture.*

Response: The Commission disagrees with the assertion that the directive to keep the face uncovered is weaker than an instruction to keep the head above the rim of the sling. CPSC staff and the ASTM Subcommittee considered a reference about keeping the baby’s head above the rim of the sling, but concluded that consumers might have difficulty assessing when an

infant's head would be considered "above the rim." Furthermore, young infants may need head support when carried in a sling, and this would require the sling to pass around the back of the baby's head. This scenario is illustrated in Figure 1. Although this graphic, which appears in the "example pictogram" of the ASTM standard, is intended to show a proper position, consumers may consider the



FIGURE 1. Portion of pictogram example from ASTM F2907 - 14a (Figure 5, referenced in Section 8.3.4).

infant's head to be "below the rim," and therefore, conclude incorrectly that such a position is improper. Given that the warnings already instruct consumers to make sure the infant's body does not curl into a chin-to-chest position, the Subcommittee and CPSC staff agree that warning language instructing consumers to make sure that the infant's face is uncovered and fully visible is sufficient to address the risk of positional asphyxia, and would minimize confusion.

***Comment:** Fifteen comments specifically discuss the size or length of the warning label and instructions. Many of the comments argued that smaller, shorter, or more "concise" labels and instructions are superior to larger or longer ones, but they provided no particular evidence or rationale to support their arguments. One comment (-0179) stated that manufacturers are producing "unreasonably long" instructions. Two comments (-0003 & -0008) stated that large warning labels hurt the aesthetics of the product; and some comments simply expressed dislike of the idea of a "huge" label (e.g., -0070) or thought that some of the information in the label seemed "a tad much" (-0132). Two comments (-0025 & -0096) claimed that shorter labels and instructions are more effective because they are more likely to be read, understood, noticed, or followed. Two comments (-0019, -0057) argued that large labels are more likely to be removed by the consumer; and one of these comments (-0019) specifically identified "free-hanging"*

labels as labels that are likely to be accidentally torn or ripped off, intentionally cut off or removed, or rolled and sewn against a hem to keep it out of the way.

Response: Warnings generally should be physically large, but brief. However, a concise warning is unlikely to be effective if it does not convey all key information pertaining to the hazards—namely, a description of the nature of the hazard, consequences of exposure to the hazard, and how to avoid the hazard. Brevity is only one factor that must be considered by a warning designer, and CPSC staff worked with the ASTM Subcommittee to develop effective warning language that is comprehensive, yet reasonably concise. Staff recognizes that a large label may detract from the aesthetics of the product and that some consumers may feel compelled to remove such a label from the product. However, the alternative would be to create a warning that blends into the product or goes unnoticed by consumers, which would likely offer little-to-no safety benefit. Although the standard requires that warning labels be permanent, CPSC agrees that so-called “free-hanging” labels—that is, labels that are affixed to the product at only one end of the label—are more likely to be torn or ripped off, or otherwise altered by the consumer, and that this would eliminate the potential safety benefit of the label. Additionally, the standard proposed in the NPR does not prohibit such labels or prevent manufacturers from affixing labels to the products in this way. Thus, the final rule includes a requirement that prevents label attachment along a single edge of the label.

The ASTM F2907-15 requirements that are most relevant to this issue are those pertaining to warning label permanency. Section 8.3 of ASTM F2907-15 states that warning labels shall be permanent, and section 5.7 specifies that warning label permanence is determined by testing in accordance with section 7.3, which includes requirements for labels attached with a seam. Section 5.7 includes two subsections that address permanency requirements for labels that

are applied directly to the surface of the sling (5.7.1; e.g., via hot stamping or heat transfer) and a requirement that non-paper labels shall not liberate small parts (5.7.2). The Commission concludes that the following additional subsection (which is included in the final rule) would appropriately address the “free-hanging” label issue:

“5.7.3 Warning labels that are attached to the fabric with seams shall remain in contact with the fabric around the entire perimeter of the label, when the sling is in all manufacturer-recommended use positions.”

On December 14, 2016, staff received a letter from the chair of the ASTM subcommittee indicating the group would be considering this requirement as quickly as possible.

***Comment:** Five comments addressed issues related to the medium through which the warnings and instructions are to be delivered to consumers. Some comments (-0003, -0095, -0172) suggested that the Internet (e.g., the manufacturer's website) should be used to communicate warning and instructional information. One of these (-0003) stated that this approach, combined with providing this information in materials that are supplied with the product, is sufficient, adding that warnings do not need to be on the product at all. Another one of these (-0172) specifically suggested requiring video instructions, available both online and on a CD from the manufacturer, and that the label should include a website address that refers the reader to online instructions. Another (-0058) suggested instructional DVDs and pamphlets as options. One comment (-0016) suggested that the instructions could be a “simple printable card.”*

Response: The Internet or other media, such as CDs or DVDs, can be a useful means of communicating safe baby-wearing information to consumers. However, the Commission believes it is preferable to communicate this information on the product itself, through warning

labels, so that such information would be available to consumers throughout the product's full lifecycle, regardless of their access to these other media forms of information. Furthermore, the instructional requirements in ASTM F2907-15 do not specify the media form that the instructions must take; they only specify: "Instructions shall be provided with the sling" (Section 9.1). Thus, instructions may be provided in other than a traditional paper form. Because not all manufacturers maintain an online presence, the rule does not include a mandatory label that requires online instructions; however, there is nothing to prevent a manufacturer from including this information on their label.

***Comment:** Three comments (-0005, -0177, & -0188) stated that there should be a standard instruction manual or set of guidelines, perhaps ASTM-approved, for all manufacturers. One of these (-0005) seemed to suggest that the current standard already required this.*

Response: Sling carriers vary substantially in design, and certain products offer an enormous degree of adjustability. "Wraps," for example, are a type of sling that consists solely of a long length of material that must be tied or knotted, and these products can be wrapped and tied around the caregiver's body in myriad ways. Thus, the Commission does not believe that a standard, universal instruction manual could be developed and applied to all sling carriers. However, section 9 of ASTM F2907-15 (which the rule incorporates by reference) does require instructions to be provided with each sling and for these instructions to include some standard content, including information on assembly, adjustment, restraint systems (if applicable), maintenance, cleaning, storage, and use. The final rule also requires instructions to contain images of each manufacturer's recommended carrying position, all warnings that are required to be on the product, and additional safety-related instructions and information, such as the

minimum and maximum weight of the child for which the sling is intended, the importance of checking for damaged seams and hardware, and a warning never to use the sling when balance or mobility is impaired.

***Comment:** One comment (-0175) stated that section 8.1.1 of ASTM F2907 – 15, for clarity and consistency, should match the corresponding requirement in ASTM F2236 – 14, Standard Consumer Safety Specification for Soft Infant and Toddler Carriers.*

Response: CPSC agrees that consistency among the various juvenile product standards is beneficial to manufacturers and consumers. Staff has worked with the ASTM Ad Hoc Wording Task Group (Ad Hoc task group), consisting of members of the various subcommittees affected by the durable nursery products rules, whose stated mission is to develop uniform and consistent language to be applied to similar portions of various ASTM juvenile product standards. The Ad Hoc task group recently completed draft recommended language for portions of the “Marking and Labeling” section for ASTM juvenile product standards, and the final recommendations are now posted on the ASTM website for consideration by the individual subcommittees.

For uniformity, and to avoid confusion, CPSC staff ordinarily would recommend that the final rule include a provision that differs from section 8.1.1 of ASTM F2907-15 so that it is consistent with the Ad Hoc task group recommendation. However, the current voluntary standard includes a requirement that the product be marked with the website, if applicable. The analogous Ad Hoc task group requirement includes no such mandate. One possible resolution would be to use the Ad Hoc task group recommendation, but add the website as an additional required element. However, this change would result in a requirement whose content is identical to the current voluntary standard requirement. Given this finding and staff’s belief that retaining the

website marking requirement is important, staff did not recommend that the mandatory rule differ from this section of ASTM F2907. Staff believes that it would be more appropriate to refrain from incorporating the Ad Hoc task group recommendations until the ASTM subcommittee considers future revisions to the standard. The final rule follows this approach.

L. Periodic testing: costs, frequency, and necessity

Comment: *Because of the large economic burden of the testing requirements for low-volume producers, several commenters (e.g., -0099, -0177, -0166, -0178, -0175) suggested that the Commission consider a testing schedule based on production interval (e.g., every 500 slings), rather than on an annual timeline (e.g., every year). These commenters suggested that because of the low volumes of the very small producers, safety did not require annual testing.*

Response: As described in the FRFA, small manufacturers that establish production testing plans, which need not be complicated, would be required to conduct periodic testing every 2 years, rather than every year. The FRFA also discusses other regulatory alternatives for Commission consideration that could further limit periodic testing for low-volume manufacturers, and that could substantially reduce periodic testing costs. One alternative discussed in the FRFA would require, for manufacturers *with established production testing plans*, would require third party periodic testing only after a certain number of units of a product had been produced, even if it meant that periodic third party tests would be conducted less often than every 2 years. However, although this regulatory alternative could substantially reduce the costs of periodic testing, it would require a modification in the testing and certification rule (16 CFR part 1107) before it could be implemented.

Comment: *Three comments requested that the government provide financial assistance to small businesses to cover third party testing costs or for “taxpayer-funded” testing.*

Response: Congress has not provided CPSC with the authority to conduct premarket testing or to provide government assistance for manufacturers' test programs.

Comment: Two comments suggested that small businesses should be allowed, as a group, to submit fabric for testing. This means that the group could "submit a SINGLE testing piece for each category and have the approval apply to each business so that the cost of testing can be shared." (-0189)

Response: Commenters, such as the ones above, may be confusing the testing that would be required by ASTM F2907 with other CPSC testing requirements for children's products. In the case of lead and phthalates, component testing and certification are allowed. However, ASTM F2907 establishes performance test requirements for the product as a whole because it is more than a simple fabric strength test. Other factors that may contribute to a sling passing or failing the performance tests include: the size and shape of the sling, any hardware, and the instructions that accompany the sling (because the tests are "per manufacturer instructions").

Comment: One comment suggested "pricing [the 3rd party testing] according to output would make sure out [sic] pieces follow regulations while keeping big and small manufacturers running." (-0149)

Response: The price charged by third party testing laboratories is not set or regulated by CPSC.

Comment: Eleven comments requested specific changes to the periodic testing requirements. Four commenters specifically requested testing bi-annually (e.g., "allowing for testing every 2 years or only when there is a material change," noting: "It's possible to tweak the testing requirements in ways that would not be overly onerous to small business owners (testing every other year, only when there is a change of materials, etc.)")

Six commenters, including the four previous commenters, suggested testing should be required only when a material change occurs. One commenter requested testing every 3 years (“testing should be limited to a manufacturing level achieved by a large manufacturer, or every three years, whichever comes sooner.”); and four commenters suggested a period less frequent than annually, but with no specific timeframe suggested (e.g., “Third party testing should not need to occur yearly”; “require testing either every year OR every 500 wraps. . .”; “modifying the testing schedule so that testing does not need to be re-done annually for established manufacturers who don't have a material change in the supply chain”).

One commenter suggested bulk testing of fibers and woven fabric. One commenter suggested: “basic licensure or proof of competency per manufacturer/weaver,” in lieu of periodic testing. Two commenters stated that they were unsure what would constitute a material change.

Response: CPSC agrees that testing every other year (instead of annual testing) represents a potentially meaningful reduction in the burden of third party testing costs. Such an approach is already permitted under an existing CPSC regulation, if certain basic conditions are satisfied. Subpart C of 16 CFR part 1107 requires periodic testing of children’s products, including the third party certification testing for durable nursery products. This testing must be conducted at a minimum of 1-, 2-, or 3-year intervals, depending upon whether the manufacturer has a periodic testing plan (1 year), a production testing plan (2 years), or plans to conduct continued testing using an accredited ISO/IEC 17025:2005 laboratory (3 years). Periodic testing is required even if no material changes have occurred in the children’s product. Regarding the suggestion to conduct third party testing after a fixed production volume (*i.e.*, 500 units), third party testing is required on a 1-, 2-, or 3-year period, irrespective of the production volume.

The commenter suggesting bulk testing of fibers and woven fabric is referring to component part testing, which is allowed and described in 16 CFR part 1109, Conditions and Requirements for Relying on Component Part Testing or Certification, or Another Party's Finished Product Testing or Certification, to Meet Testing and Certification Requirements. Third party test results of bulk component material may be used for certification purposes for all products using the bulk material to which the tests apply.

Additionally, 16 CFR 1107.23 requires that the certification testing be repeated whenever the manufacturer makes a material change in the product. A material change is defined in 16 CFR 1107.2 as:

“ . . . any change in the product's design, manufacturing process, or sourcing of component parts that a manufacturer exercising due care knows, or should know, could affect the product's ability to comply with the applicable rules, bans, standards, or regulations.”

As described in 16 C FR1107.21(c)(2), a production testing plan is a written plan describing actions taken by a manufacturer, other than third party testing, to help ensure continued compliance of a children's product. This written plan would include a description of the actions, (*e.g.*, incoming inspection of raw materials, first party testing, in-factory quality assurance/quality control (QA/QC) systems) that a manufacturer uses to control for potential variability in its production process that could affect the product's compliance. Although some testing is still required in a production testing plan, the test methods employed are not required to be CPSC-accepted test methods, nor must the testing be completed by a CPSC-accepted laboratory. 16 CFR 1107(a)(2). Additionally, 16 CFR part 1107 does not require manufacturers necessarily to use destructive tests and permits manufacturers to “tailor” the tests to the needs of

the product. For commenters who specifically requested biannual testing, or who suggested testing yarns and fabrics, rather than whole products, annually, the application of a production test plan is an option currently available provided they establish a production test plan that meets the requirements of 16 CFR part 1107(c)(2).

All product changes are not necessarily material changes. Only changes that a manufacturer, exercising due care, knows, or should know, could affect the product's ability to comply with the requirements are material changes. Therefore, for a hand weaver, this requirement may mean that a change in yarn alone is not necessarily a material change, unless the new yarn could affect the compliance of the finished product. For example, sourcing yarn from a different supplier is considered a material change because the hand weaver cannot assume that the new yarn has the same mechanical properties as previously used yarns. Furthermore, only the rules affected by a material change require third party testing. For example, if a hand weaver changes the color of a yarn, unless the coloring process affects the mechanical strength of the yarn, material change testing to ASTM F2907 section 7.1, Static Load Test, is not required.

Periodic testing frequency is determined outside this particular rule by 16 CFR part 1107, which is outside the current rulemaking effort.

Regarding the comment requesting “basic licensure or proof of competency per manufacturer/weaver,” this is not an option available to the Commission because it is not within the jurisdiction of the CPSC to conduct pre-market testing or certify manufacturers for any industry. Consequently, the final rule does not make such a change.

Comment: One commenter proposed, and several others referenced or quoted the comment, that CPSC should: “Require specific recordkeeping. Manufacturers would need to

keep a record of these compliant materials for review” as a “quicker [sic], less costly, and less destructive way to maintain compliance.”

Response: Record keeping related to the testing and certification of children’s products is already required under 16 CFR 1107.26.

Comment: *Eleven commenters requested that the Commission consider exemptions for certain types of fabrics or provide a guideline for fiber content, yarn weights, thread count, weave structures and fabric weights to be used for slings.*

Specifically, one comment (CPSC-2014-0018-0070) stated: “There are already weight standards in place that determine whether a textile shall be tested for flammability. This is because previous tests have determined that a fabric over a certain weight does not pose a flammability risk. I believe a similar standard could be determined to provide a guideline for what characteristics of cloth (sett, ppi, fiber content) make for a suitable textile to be used as an infant sling. Anything produced outside these tested and approved parameters could be tested to insure [sic] compliance with the standard.”

Response: Although the Standard for the Flammability of Clothing Textiles (16 CFR part 1610) provides exemptions from flammability testing for certain types of fabrics, such as “plain surface fabrics, regardless of fiber content, weighing 2.6 ounces per square yard or more,” the exemptions in 16 CFR part 1610 are based on years of test experience and data. CPSC staff tested approximately 40 slings, to date. However, at this time, these tests do not provide sufficient data to determine guidelines or exemptions regarding fabric integrity for the fabrics to be used for slings. CPSC could consider this issue in the future, when more test experience and sufficient data are gathered.

***Comment:** We received one comment regarding flammability testing. This comment (-0014) stated: “I question the need for the flammability testing. None of the injuries or fatalities was related to fire. In any event, we are just talking about woven pieces of cloth here, no different than other, less regulated, fabrics used for ordinary clothing.”*

Response: ASTM F2907-15 states:

- (a) Flammability—There shall be no Class 2 or 3 fabrics used in the construction of a sling carrier when the product is evaluated against the requirements of 16 CFR part 1610.

The regulation at 16 CFR part 1610 is the standard that regulates clothing textile flammability, Standard for the Flammability of Clothing Textiles. Woven fabrics used for slings are in the same category of clothing textiles. Accordingly, they also need to pass the clothing flammability standard. Part 1610 provides exemptions for certain types of fabrics, and the majority of fabrics used for slings are heavier and of the type already exempted from flammability testing. Therefore, a sling that uses plain-surface fabric weighing 2.6 oz./sq. yard or more, or fabrics derived from any of the following fibers or created entirely from a combination of these fibers: acrylic, modacrylic, nylon, olefin, polyester, and wool, will meet the requirements of the standard without flammability testing. Only products that are “incapable of being evaluated to the requirements of 16 CFR 1610” are required to undergo flammability tests under 16 CFR 1500.3(c)(6)(vi).

M. Miscellaneous other

***Comment:** One comment questioned the estimate that staff determined under the Paperwork Reduction Act. The commenter stated: “It may not be accurate to call the time and costs associated with preparing instructional literature usual and customary. To date baby sling*

manufacturers have not be [sic] required to supply instructional literature. Many BCIA Members provide BCIA babywearing safety information with their products in lieu of instructional literature, so it may be fair to say that this literature will need to be developed due to the implementation of this standard.”

Response: The rule requires manufacturers to provide instructional material. Sling manufacturers that already provide such information, estimated by the BCIA to be about one-third of the industry (about 135 manufacturers), may have to modify their existing instructions to make sure that the instructions have all the content required by ASTM. The additional effort would probably be modest, an estimated 5 hours, if estimates for revisions to instructions for other children’s products are comparable. Using an hourly rate of \$33.29 to calculate these costs, the total compensation for sales and office workers in private industry in goods-producing industries would amount to about \$166 ($\33.29×5) per firm.

The BCIA estimated that firms that had not previously prepared instructions would require 30 to 60 hours of labor, and/or paid consultants, as well. If the remaining 265 firms require 45 hours, on average, then the impact per-firm would be about \$1,500 ($\33.29×45). Thus, the cost could average \$166 for firms that already provide the literature and \$1,500 for those that do not. Once the literature has been created, it would not need to be modified, unless the manufacturer makes changes to a model that renders portions of the literature obsolete. However, the cost of subsequent modifications to the literature is likely to be less than the cost of its initial design.

Comment: *Seven comments requested variations of a ban. Specifically:*

- *Two comments requested a ban of all sling carriers;*

- *Four comments requested bans of certain types of sling carriers. Three of these mentioned “bag style” sling carriers), urging: “[i]t would make the most sense to ban the manufacture of all bag slings (as in the type of sling involved in the Infantino recall) rather than punish those making perfectly safe wraps and ring slings with unnecessary regulation” (-0085) and “[a]pprove specific bans on dangerous types of carriers. As stated previously, bag style sling carriers are notoriously (anecdotally?) more dangerous than ring slings or woven wraps,” (-0131).*
- *One comments requested a ban on buckles used in sling carriers, specifically: “[b]an buckles in this class of carrier, as well as the bag style slings.”(-0087).*

Response: Section 104 of CPSIA does not permit the Commission to ban products. In addition, although there was a recall related to deaths in one certain type of “bag-style” sling, this is not the only type of sling for which fatal incidents have been reported. Fatal incidents have also been reported in wrap and ring slings. Regarding the request specifically to ban buckles “in this class of carriers,” the test methods in the standard are designed to test any hardware for slings, including buckles. Some designs use buckles for adjustment, and the standard is designed to identify buckles that are not strong enough.

VII. Final Rule

A. Final Rule for Part 1228 and Incorporation by Reference

Section 1228.2(a) of the final rule provides that sling carriers must comply with ASTM F2907-15. The rule incorporates the ASTM standard by reference with one modification. The rule modifies the ASTM standard to address concerns about the ease with which required warning labels can be removed if attached by only one seam. The Commission determines that

this modification to ASTM F2907-15 is more stringent than the voluntary standard and would further reduce the risk of injury associated with sling carriers.

The Office of the Federal Register (OFR) has regulations concerning incorporation by reference. 1 CFR part 51. These regulations require that, for a final rule, agencies must discuss in the preamble of the rule the way that the materials the agency incorporates by reference are reasonably available to interested persons and how interested parties can obtain the materials. In addition, the preamble of the rule must summarize the material. 1 CFR 51.5(b).

In accordance with the OFR's requirements, the discussion in this section summarizes the provisions of ASTM F2907-15. Interested persons may purchase a copy of ASTM F2907-15 from ASTM, either through ASTM's website, or by mail at the address provided in the rule. A copy of the standard may also be inspected at the CPSC's Office of the Secretary, U.S. Consumer Product Safety Commission, or at NARA, as discussed above. We note that the Commission and ASTM arranged for commenters to have "read-only" access to ASTM F2907-15 during the NPR's comment period.

ASTM F2907-15 contains requirements covering:

- Laundering;
- Hazardous sharp points or edges;
- Small parts;
- Lead in paint;
- Wood parts;
- Locking and latching mechanisms;
- Warning labelling;
- Openings;

- Scissoring, shearing, and pinching;
- Monofilament threads; and
- Flammability.

The standard additionally contains test methods that must be used to assess conformity with these requirements, as were discussed in detail in section IV.B.1. of the sling carrier NPR.

B. Amendment to 16 CFR Part 1112 to Include NOR for Sling Carriers

The final rule amends part 1112 to add a new section 1112.15(b)(39), which lists 16 CFR part 1228, *Safety Consumer Safety Specification for Sling Carriers*, as a children's product safety rule, for which the Commission has issued an NOR. Section XIII of this preamble provides additional background information regarding certification of sling carriers and issuance of an NOR.

VIII. 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). Without evidence to the contrary, CPSC generally considers 6 months to be sufficient time for suppliers to come into compliance with a new standard; and a 6-month effective date is typical for other CPSIA section 104 rules. Six months is also the period that JPMA typically allows for products in the JPMA certification program to transition to a new standard once that standard is published.

However, given the large number of very small suppliers who will potentially experience significant economic impacts, in addition to the lack of established history of compliance with the voluntary standard, the rule provides a 12-month effective date. The Commission proposed a 12-month effective date in the NPR, and received six comments on the proposed effective date; all but one agreed that 12 months was an appropriate effective date for this product. Notably,

comments supporting the proposed 12-month effective date included comments from the SBA's Office of Advocacy.

The safety standard for sling carriers and the corresponding changes to part 1112 regarding requirements for third party conformity assessment bodies will become effective 12 months after publication of the final rule in the Federal Register.

IX. Regulatory Flexibility Act

A. Introduction

The Regulatory Flexibility Act (RFA), 5 U.S.C. 601-612, requires that agencies review a proposed rule and a final rule for the rule's potential economic impact on small entities, including small businesses, and identify alternatives that may reduce such impact. Section 604 of the RFA generally requires that agencies prepare a final regulatory flexibility analysis (FRFA) when promulgating final rules, unless the head of the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. The NPR included an initial regulatory flexibility analysis (IRFA), describing the possible impacts of the proposed rule on small entities. Specifically, the FRFA must contain:

- A statement of the need for, and objectives of, the rule.
- A statement of the significant issues raised by the public comments in response to the IRFA. A statement of the assessment of the agency of such issues, and a statement of any changes made in the proposed rule as a result of such comments.
- The response of the agency to any comments filed by the Chief Counsel for Advocacy of the Small Business Administration in response to the proposed rule and a detailed statement of any change made to the proposed rule in the final rule as a result of the comments.

- A description of and an estimate of the number of small entities to which the rule will apply or an explanation of why no such estimate is available.
- A description of the projected reporting, recordkeeping, and other compliance requirements of the rule, including an estimate of the classes of small entities necessary for preparation of the report or record.
- A description of the steps the agency has taken to minimize the significant economic impact on small entities consistent with the stated objectives of applicable statutes, including a statement of the factual, policy, and legal reasons for selecting the alternative adopted in the final rule and why each of the other significant alternatives
- to the rule considered by the agency which affect the impact on small entities was rejected.

B. Reason for Agency Action and Legal Basis for the Final Rule

The Danny Keysar Child Product Safety Notification Act, section 104 of the CPSIA, requires the CPSC to promulgate mandatory standards for nursery products that are substantially the same as, or more stringent than, the voluntary standard. The Commission worked closely with ASTM to develop the new requirements and test procedures that have been incorporated into ASTM F2907–15, which the Commission incorporates by reference.

C. Compliance Requirements of the Rule

The Commission is incorporating by reference the current voluntary standard, with one modification regarding label attachment, to form the final rule. Some of the more significant requirements of the current voluntary standard for sling carriers (ASTM F2907–15) include static and dynamic load testing to check structural integrity of the sling carriers, and occupant-retention

testing to check that the child is not ejected from the sling carrier. The standard requires that the buckles, fasteners, and knots that secure the sling carrier remain in position before and after these three performance tests. There is also a separate restraint-system test to help ensure that any restraints used by the sling do not release while in use.

The voluntary standard also includes requirements to address the following issues:

- Sharp points and edges,
- small parts,
- marking and labeling requirements,
- flammability requirements,
- requirements for the permanency and adhesion of labels, and
- requirements for instructional literature.

The rule requires warning labels with specific language in the warnings and specifications for the size and color of the labels. The updated warning statements are intended to provide additional details of the fall and suffocation hazards in an effort to address those hazards. The rule requires manufacturers to provide with their slings instructional literature containing additional warnings not required on labels; the rule does not specify the format of the instructions.

D. Other Federal Rules

CPSC has not identified any federal or state rule that either overlaps or conflicts with the final rule.

E. Impact on Small Businesses

In the NPR, CPSC reported that it had identified 47 suppliers of sling carriers to the U.S. market, including 33 companies based in the United States and 14 foreign companies that

exported directly to the U.S. customers via Internet sales or sales to U.S. retailers. The 33 U.S.-based firms included 25 manufacturers, four importers, and four firms for which the supply source was not identified. The NPR also noted that “there may be hundreds more suppliers that produce small quantities of slings.” Since the NPR, information provided by the BCIA confirms the role of numerous small and very small artisanal manufacturers in the sling market. The BCIA has identified more than 324 U.S. manufacturers of slings, wraps, and pouches, including both members and non-members of BCIA. The firms identified by BCIA overlap only partially with the 47 suppliers identified by CPSC staff. The BCIA has also identified some additional hand weavers. Thus, the total number of manufacturers may be about 400.

Because SBA guidelines pertain to U.S.-based entities, this analysis is limited to domestic firms. Under SBA guidelines, a manufacturer of sling carriers is “small” if it has 500 or fewer employees; and importers and wholesalers are “small” if they have 100 or fewer employees. Based on these guidelines, all of the manufacturers, except one (with a large parent corporation), appear to be small businesses. These small businesses consist of approximately 400 U.S. based manufacturers and an unknown number of importers. In addition, there is a subset of these small businesses that we describe as “very small businesses,” which are manufacturers with a single person or a couple working out of the home, with annual revenues of less than \$50,000. For analysis, we refer to these suppliers as “very small manufacturers” to distinguish them from the more established manufacturers; however, this is not an official SBA designation.

The Juvenile Products Manufacturers Association (JPMA) and the BCIA have offered assistance to member manufacturers on testing and compliance with the ASTM sling carrier standards. However, the ASTM F2907 sling carrier standards are relatively new, and therefore, there is no established history of conformance to the standard among manufacturers. An email

from the head of the BCIA on October 27, 2015 confirms the irregular nature of conformance with various provisions of the F2907 standard.

As of October 2016, only one manufacturer is listed on the JPMA website as certified compliant. Some manufacturers claim to be “CPSIA compliant,” but that may refer only to requirements for lead, flammability, labeling, small parts, and sharp edges and not necessarily the ASTM standard. Based on our review of small firm websites, a conversation with a small ring sling manufacturer, and a draft magazine article by a small nursing wrap producer, we have identified three additional firms that have conducted testing to some version of the ASTM standard, for a total of four firms. If these four firms already comply fully with the ASTM standard, they should not need to make any additional product changes due to the rule.

For manufacturers that do not already conform, it is difficult to assess the cost impact of the physical changes required for compliance with the standard; this will vary with different product designs and materials. Some of the fabrics currently used in slings include cotton, linen, polyester, modal (a cellulosic-like rayon), silk, bamboo, and various blends of fibers. There are a variety of different designs, some patented. At least one firm has redesigned its products to be subject to the soft carrier standard, rather than the sling standard. Currently, the precise cost of product changes necessary to satisfy testing under the ASTM standard is unknown. Additionally, according to the SBA, stakeholders that contacted the SBA do not agree that the costs to meet the requirements of the ASTM standard will necessarily be minimal. Consequently, we cannot rule out the potential for costs associated with the physical changes to lead to significant economic impacts, especially for very small manufacturers.

In addition to complying with the mechanical requirements of the rule, under section 14 of the CPSA, sling carriers will be subject to third party testing and certification. Once the new

requirements become effective, all manufacturers will be subject to the additional costs associated with third party testing and certification requirements under the testing rule, *Testing and Labeling Pertaining to Product Certification* (16 CFR part 1107). These costs will include any physical and mechanical tests required by the final rule. Lead and phthalates testing, if applicable, are already required; hence, lead and phthalates testing are not part of this analysis.

The majority of the costs associated with the rule will likely be related to testing. Few of the sling carrier manufacturers have the technical capability or the equipment in-house to conduct many of the tests required by the standard, especially the dynamic-load, occupant-retention, and restraint-system tests. Therefore, most small and very small manufacturers will likely have to rely on third party testing during product development and could incur significant testing costs by simply pre-testing to determine initially whether their products comply with the standard and then retesting their products if the designs have to be modified to comply.

According to a BCIA representative, third party testing to the ASTM sling carrier voluntary standard, under the requirements of the *Testing and Certification Rule*, could cost around \$510–\$1,050 per model sample. Third party testing costs consists of two parts: (1) the testing costs unique to F2907 associated with the dynamic-load test, the static-load test, the occupant-retention test, and the restraints test; and (2) the general testing costs associated with testing for flammability, small parts, sharp edges, instructions, and labels. The testing costs unique to sling carriers vary widely, from \$210 to \$650, depending on whether the testing is done in China or in the United States, and on whether a discount, such as those negotiated by the BCIA for its members, is applied. The general testing costs may amount to \$300 to \$400 per test. The very small firms that manufacture in the United States will likely also test in the United States to avoid logistical difficulties, thus incurring higher costs.

Because very small firms likely will have their products tested in the United States, their costs will be higher than the minimum testing cost of \$510 per model sample. Therefore, we use a testing fee of \$700 per sample to conduct our analysis of impacts. The \$700 would cover all elements of the required testing, including flammability, small parts, sharp edges, instructions, and labels. However, the cumulative effect of the various physical tests, which will be done on a single sample in the order specified in the standard, will render the tested sling unsellable, which adds to the impact of the rule. One commenter estimated that there are 100 domestic hand weavers and 50 foreign hand weavers of slings. For hand-woven slings, for example, the hand weaver will lose the revenue from a \$200 to \$800 sling, due to the destructive nature of testing. The loss of revenue represents a direct cost of testing and must be considered when evaluating impacts.

Section 9 of ASTM F2907 requires instructions to be provided with each sling and for these instructions to include some standard content, including information on contacting the manufacturer, assembly, adjustment, restraint systems (if applicable), maintenance, cleaning, storage, and use. The final rule also requires instructions to contain images of each manufacturer's recommended carrying position, all warnings that are required to be on the product, and additional safety-related instructions and information, such as the minimum and maximum weight of the child for which the sling is intended, the importance of checking for damaged seams and hardware, and never using the sling when balance or mobility is impaired.

Sling carrier manufacturers that already provide such information, estimated by the BCIA to be at about one-third of the industry, or approximately 135 manufacturers, may have to modify their existing instructions to make sure the instructions have all the content required by ASTM. The additional effort would probably be modest, estimated at 5 hours, if estimates for

revisions to instructions for other children's products are comparable. Using an hourly rate of \$33.29 to calculate these costs, the total compensation for sales and office workers in private industry in goods-producing industries would amount to about \$166 (\$33.29 per hour X 5 hours) per firm.

The BCIA estimated that firms that had not previously prepared instructions would require 30 to 60 hours of labor, and possibly outside advice, as well. If the remaining 265 firms require 45 hours, on average, then the impact per firm would be about \$1,500 (\$33.29 per hour X 45 hours). Thus the cost could average \$166 for firms that already provide the literature and \$1,500 for those that do not. Once the literature has been created, it would not have to be modified, unless the manufacturer makes changes to a model that render portions of the literature obsolete. The cost of subsequent modifications to the literature is likely to be less than the cost of its initial design.

Based upon our analysis of data provided by the BCIA, the initial certification tests, the periodic tests (individually and in combination), and the cost of instructional material are likely to have a significant impact on all but mass producers of slings, and could cause numerous very small producers to exit the market. Similarly, small importers will also be subject to third party testing and certification requirements. Consequently, these importers will experience the associated costs of compliance. The resulting costs could have a significant impact on these small importers. Additionally, according to the SBA, stakeholders that contacted the SBA do not agree (as suggested in the initial regulatory flexibility analysis) that the costs to meet the requirements of the ASTM standard will necessarily be minimal. Accordingly, we conclude that the final rule will likely have a significant impact on a substantial number of small entities.

F. Alternatives

The Commission has considered several alternatives that may potentially reduce the impact of the final rule on small businesses. These alternatives are:

- *Adopting the voluntary standard without change and working with ASTM to improve durability/attachment of warning labels in a future revision of the voluntary standard.* This alternative could marginally reduce the impact of the rule on small businesses. Section 104 of the CPSIA requires that the Commission promulgate a standard that is either substantially the same as the voluntary standard, or more stringent if the Commission determines that a more stringent standard would further reduce injuries associated with the product. Therefore, adopting ASTM F2907-15, with no modifications, would be the least stringent rule allowable; however, the modification to the standard regarding label attachment would further reduce the risk of injury associated with sling carriers.
- *Delaying the effective date of the requirements beyond 12 months.* Typically, the Commission provides a 6-month effective date for durable nursery product rules. For this rule, the Commission proposed a 12-month effective date, and provides that period in the final rule. One alternative that could reduce the impact on small firms would be to set an effective date later than 12 months. Implementing a later effective date could mitigate the effects of the rule on small businesses by delaying the need to conduct third party certification tests and allowing the businesses to spread the costs of bringing their slings into conformance over a longer period. This alternative, however, would only delay, not alleviate the

effects of the rule. Moreover, commenters generally favored the 12-month effective date.

- *Exempting wraps from the standard.* Although the testing conducted by Laboratory Sciences has been very limited, laboratory staff found no wraps (*i.e.*, simple rectangular pieces of woven or knitted fabric) that fail tests for static- and dynamic-load testing, which check for structural integrity, nor did staff find any wraps that failed the tests for occupant retention, which are used to check that the child is not ejected from the sling carrier. No injuries involving wraps have been identified that involve structural fabric weaknesses. Given that improper infant positioning is the primary hazard associated with sling carriers and that this hazard is addressed in the rule exclusively through the use of warnings, staff concludes that excluding wraps from education, instruction, and labeling may be ill-advised.
- *Providing an exemption for small batch manufacturers from the testing requirements proposed under the rule,* if permissible, this approach would exempt from the rules testing requirements for the large number of very small businesses in the sling market. Under Section 14(d)(4)(C)(ii) of the CPSA, however, the Commission cannot “provide any alternative requirements or exemption” from third party testing for “durable infant or toddler products,” as defined in section 104(f) of the Consumer Product Safety Improvement Act of 2008.
- *Amending 16 part 1107 to reduce the frequency of periodic testing for small or home based sling producers.* Currently, under the requirements of 16 CFR 1107.21, small home-based businesses that produce sling carriers must conduct

periodic third party tests every year, or, if they have a formal production testing plan, every two years. The testing costs associated with third party *periodic* testing could be substantially reduced if the Commission amended existing regulations to allow small home based sling producers to conduct periodic testing less frequently. The details of this option that the Commission could consider at a later date would need to be determined by the Commission separately; it might apply to all nursery products, or it might be limited to sling carriers. However, all home-based firms would still be required to: (1) produce conforming products; (2) conduct the initial certification tests (16 CFR 1107.20); (3) re-certify whenever there is a material change to the product (16 CFR 1107.23); and (4) implement a production testing plan and conduct on going production tests (16 CFR 1107.21(c)). This is not an alternative to the rule, but a possible additional action.

- *Determining that Slings are not Durable Products.* The Commission could determine that sling carriers, or some subset of sling carriers such as wraps, do not constitute a durable infant or toddler product. The definition of what constitutes a durable product, and the degree to which empirical and anecdotal evidence on sling carriers conforms to these definitions was discussed in the 2014 NPR briefing package. Because the Commission has previously issued a regulation defining “durable infant or toddler product” to include sling carriers, this alternative would require additional Commission regulatory action. Under this alternative, while there would be no mandatory standard, the voluntary standard would still exist and enforcement actions, such as recalls under Section 15 of the CPSA, would still be available. Notwithstanding, for the reasons stated in the 2014 NPR

briefing package and reiterated herein, because the Commission has previously issued a regulation defining “durable infant or toddler product” to include “infant slings,” and staff conducted a lengthy analysis at the notice of proposed rulemaking staged which concluded that sling carriers are durable infant carriers, the Commission believes that not regulating would not meet the requirements under Section 104 to promulgate a standard that is substantially the same or more stringent than the current voluntary standard.

X. 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 final rule falls within the categorical exemption.

XI. Paperwork Reduction Act

This rule contains information collection requirements under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501–3521). The preamble to the proposed rule discussed the information collection burden of the proposed rule and specifically requested comments on our estimates. Sections 8 and 9 of ASTM F2907-15 contain requirements for marking, labeling, and instruction literature. These requirements fall within the definition of “collection of information,” as defined in 44 U.S.C. 3502(3).

The Commission received one comment on regarding the information collection of this rule, discussed in section VI.M of this document.

OMB has not yet assigned a control number to this information collection. We will publish a notice in the **Federal Register** providing the number when we receive approval from OMB. This final rule makes modifications regarding the information collection burden because the number of estimated suppliers subject to the information collection burden has increased since publication of the NPR. Accordingly, the estimated burden of this collection of information is modified as follows:

Table 1 – Estimated Annual Third-Party Disclosure Burden

	16 CFR Section	Number of Respondents	Frequency of Responses	Total Annual Responses	Hours per Response	Total Burden Hours
	1228	400	3	1200	11.5	13,800

XII. Preemption

Section 26(a) of the CPSA provides that when a consumer product safety standard is in effect and applies to a risk of injury associated with a consumer product, no state (or political subdivision) may establish or continue a provision of a standard or regulation that prescribes requirements for the performance, composition, contents, design, finish, construction, packaging, or labeling of the product 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.

XIII. Amendment to 16 CFR Part 1112 to Include Notice of Requirements (NOR) for Sling Carriers

Section 14(a) of the CPSA imposes the requirement that products subject to a consumer product safety rule under the CPSA, or to a similar rule, ban, standard, or regulation under any other Act enforced by the Commission, must be certified as complying with all applicable CPSC-enforced requirements. 15 U.S.C. 2063(a). Section 14(a)(2) of the CPSA requires that certification of children's products subject to a children's product safety rule be based on testing conducted by a CPSC-accepted, third party conformity assessment body. Section 14(a)(3) of the CPSA requires the Commission to publish a NOR for the accreditation of third party conformity assessment bodies (or laboratories) to assess conformity with a children's product safety rule to which a children's product is subject. The *Standard Consumer Safety Specification for Sling Carriers*, to be codified at 16 CFR 1228, is 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), which is codified at 16 CFR part 1112 (referred to here as part 1112). This rule became effective on June 10, 2013. Part 1112 establishes requirements for accreditation of third-party conformity assessment bodies (or laboratories) to test for conformance with a children's product safety rule in accordance with section 14(a)(2) of the CPSA. Part 1112 also codifies a list of all of the NORs that the CPSC had published at the time part 1112 was issued. All NORs issued after the Commission published part 1112, such as the standard for sling carriers, require the Commission to amend part 1112. Accordingly, the Commission is now amending part 1112 to include the standard for

sling carriers in the list of other children's product safety rules for which the CPSC has issued NORs.

Laboratories applying for acceptance as a CPSC-accepted third-party conformity assessment body to test to the new standard for sling carriers would be required to meet the third-party conformity assessment body accreditation requirements in 16 CFR part 1112, *Requirements Pertaining to Third-Party Conformity Assessment Bodies*. 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 1228, *Standard Consumer Safety Specification for Sling Carriers*, included in its scope of accreditation of CPSC safety rules listed for the laboratory on the CPSC Web site at: www.cpsc.gov/labsearch.

As required by the RFA, staff conducted a 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 sling carriers 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 sling carrier 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 sling carrier standard to their scope of accreditation. For these reasons, the Commission certifies that the NOR amending 16 CFR part 1112 to include the sling carriers standard will not have a significant impact on a substantial number of small entities.

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 1228

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

For the reasons discussed in the preamble, the Commission amends 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)(39) 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) * * *

(39) 16 CFR part 1228, Safety Standard for Sling Carriers.

* * * * *

3. Add part 1228 to read, as follows:

PART 1228-SAFETY STANDARD FOR SLING CARRIERS

Sec.

1228.1 Scope.

1228.2 Requirements for sling carriers.

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).

§ 1228.1 Scope.

This part establishes a consumer product safety standard for sling carriers.

§ 1228.2 Requirements for sling carriers.

(a) Except as provided in paragraph (b) of this section, each sling carrier must comply with all applicable provisions of ASTM F2907-15, Standard Consumer Safety Specification for Sling Carriers, approved on October 15, 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.

(b) In addition to complying with section 5.7.2 of ASTM F2907-15, comply with the following:

(1) 5.7.3 Warning labels that are attached to the fabric with seams shall remain in contact with the fabric around the entire perimeter of the label, when the sling is in all manufacturer recommended use positions.

(2) [Reserved]

Dated: _____

Todd A. Stevenson,
Secretary, Consumer Product Safety Commission



Staff Briefing Package

Draft Final Rule for Sling Carriers¹ Under the Danny Keysar Child Product Safety Notification Act

December 21, 2016

¹ Also known as Infant Slings.

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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

Date: December 15, 2016

TO: The Commission
Todd A. Stevenson, Secretary

THROUGH: Patricia H. Adkins, Executive Director
DeWane Ray, Deputy Executive Director for Safety Operations
Mary T. Boyle, General Counsel

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

Hope E J. Nesteruk, Project Manager for Infant Sling Carriers
Division of Mechanical Engineering and Combustion, Directorate for Engineering
Sciences

SUBJECT: Sling Carriers, also known as Infant Slings, Section 104 of the Consumer Product
Safety Improvement Act of 2008, Final Rule

I. INTRODUCTION

The Danny Keysar Child Product Safety Notification Act, Section 104 of the Consumer Product Safety Improvement Act of 2008 (CPSIA), requires the U.S. Consumer Product Safety Commission (CPSC or the 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 Commission issued a notice of proposed rulemaking (NPR) on July 23, 2014,² proposing a standard for sling carriers under section 104 of the CPSIA.

² 79 Federal Register 42724.

Section 104(f) of the CPSIA defines “durable infant or toddler products” as “durable products intended for use, or that may be reasonably expected to be used, by children under the age of 5 years” and identifies “infant carriers” as a durable infant or toddler product.³ The infant carrier category covers a variety of products, including hand-held infant carriers, soft infant and toddler carriers, and frame child carriers. For all types of infant carriers, the majority of children carried are under age 5.

The Commission has undertaken rulemaking for three different kinds of infant carriers: a final rule for hand-held infant carriers,⁴ a final rule for soft infant carriers,⁵ and a final rule for frame carriers.⁶ The Commission specifically identified “infant slings” as a “durable infant or toddler product” in the Commission’s product registration card rule under section 104(d).⁷

Because the voluntary standard on infant slings, ASTM F2907-15, *Standard Consumer Safety Specification for Sling Carriers*, refers to “infant slings” as “sling carriers,” the briefing package refers to infant slings as “sling carriers.” The terms are intended to be interchangeable and have the same meaning.

Section 104 of the CPSIA also requires the Commission to consult with representatives of consumer groups, juvenile product manufacturers, and independent child product engineers and experts to examine and assess the effectiveness of the voluntary standards. This consultation process commenced in spring 2012, with staff participation in task groups within ASTM International (ASTM) Subcommittee F15.21 – Sling Carriers.

This briefing package includes staff’s responses to comments received in response to the sling carrier NPR. This package also assesses the current sling carrier voluntary standard and changes made since the NPR; discusses the potential impact on small business; and provides staff’s recommendations for a draft final rule to address potential hazards associated with these products.

While staff recognizes that this rule could have a potentially significant impact on small businesses, staff has concluded that sling carriers are infant carriers, as specified in Section 104(f)(2)(H), and the Commission has previously determined that “infant slings” are durable nursery products requiring a product registration card (16 C.F.R. § 1130.4). Therefore, the staff recommends that the Commission issue a final rule that incorporates by reference the voluntary

³ Section 104(f)(2)(H).

⁴ 78 Fed. Reg. 73415 (December 6, 2013).

⁵ 78 Fed. Reg. 20511 (April 5, 2013).

⁶ 80 Fed. Reg. 11113 (March 2, 2015).

⁷ 76 Fed. Reg. 68668 (December 29, 2009).

standard, ASTM F2907-15, *Standard Consumer Safety Specification for Sling Carriers*, with a single change to address warning labels attached along one edge (a.k.a. “free hanging” labels).

II. BACKGROUND

A. Product Review

The voluntary standard, ASTM F2907, *Standard Consumer Safety Specification for Sling Carriers*, defines “sling carrier” as “a product of fabric or sewn fabric construction, which is designed to contain a child in an upright or reclined position while being supported by the caregiver’s torso” (Section 1.3). These products generally are intended for children starting at full-term birth, until a weight of about 35 pounds. The designs of slings vary, but they generally range from unstructured hammock-shaped products that suspend from the caregiver’s body, to long lengths of material or fabric that are wrapped around the caregiver’s body. Slings normally are worn with the infant positioned on the front, hip, or back of the caregiver, and with the infant facing toward or away from the caregiver. Carrying a child attached to the caregiver’s torso is often referred to as “babywearing” in many communities. As stated in the “sling carrier” definition, these products generally allow the infant to be placed in an upright or reclined position. However, the reclined position is used only when the infant is carried on the front of the caregiver. The ability to carry the infant in a reclined position is the primary feature that distinguishes sling carriers from soft infant and toddler carriers.

Staff identified three broad classes of sling carrier products available in the United States. Figure 1 shows examples of each sling type. ASTM F2907 does not distinguish between the type of slings, and the voluntary standard’s requirements apply to all slings, regardless of type.

- Ring slings are the quintessential “sling” one pictures when discussing this product group. This is a hammock-shaped fabric product, in which fabric is threaded through two rings that are used to adjust and tighten the sling.
- Pouch slings are similar to ring slings, but do not use rings for adjustment. Many pouch slings are fixed in size and cannot be adjusted to fit different-size caregivers. Other pouch slings are more structured and use buckles or other fasteners to adjust the size. The key feature staff identified in pouch slings is the hammock-like attribute that contains the child within the pouch. This is the broadest type of sling carrier product, which also includes certain products that some may refer to as “bag slings.”
- Wrap slings are generally composed of a long length of fabric, upwards of 6 yards long and generally between 2 and 4 feet wide. A wrap sling is completely unstructured, with no fasteners or other means of structure; instead, the caregiver uses different methods of wrapping and tying the material around the caregiver’s body and the child’s body to support the child. Wrap-like slings mimic the manner in which a wrap sling supports the

child but use fabric in other manners, such as loops, to reduce the need for caregivers to learn wrapping methods.



Ring sling



Pouch sling



Wrap and wrap-like slings



Figure 1. Examples of sling carrier types

The child shown in Figure 1 demonstrates the use of sling carriers with an upright child over the age of 1 year. Each of the products shown can be used with younger infants, often by changing the position of the child. In addition, there are other sling carriers that, due to their design, are more appropriate for infants only. Figure 2 shows a wrap and other types of sling carriers used in the reclined position for infants.



Figure 2: Reclined infant positions for slings

B. ASTM Voluntary Standard Overview

The voluntary standard for sling carriers was first approved and published as ASTM F2907-12, *Standard Consumer Safety Specification for Sling Carriers*, in 2012. ASTM has revised the voluntary standard seven times since then. The current version, ASTM F2907-15, was approved on October 15, 2015, and published in November 2015. The NPR for sling carriers proposed adopting ASTM F2907-14a by reference; however, ASTM has revised the voluntary standard twice since then. The revisions since the NPR are listed below.

ASTM F2907-14b (approved on July 1, 2014, published September 2014)

This revision modified the occupant-retention test pass/fail criteria by increasing from 1 inch to 3 inches the amount the ring sling attachment system may slip while still passing the standard.

This ballot was open at the time of the CPSC NPR, and the NPR requested comments on the issue. Six comments to the NPR agreed with the change ASTM had balloted and none disagreed.

ASTM F2907-15 (approved on October 15, 2015, published November 2015)

Under this revision, the test torso for the occupant-retention test is clothed in a “tight-fitting, thermal knit or waffle-weave, cotton or cotton/polyester undershirt or equivalent.”

Seven NPR comments requested a change to the NPR to increase the friction characteristics of the test torso. This particular issue was brought to the subcommittee by test laboratories and small manufacturers after the publication of the NPR.

C. Juvenile Products Manufacturers Association (JPMA) Certification

The Juvenile Products Manufacturers Association (JPMA) has a certification program for a variety of juvenile products, including infant slings. To obtain JPMA certification, manufacturers submit their products to an independent test laboratory for conformance testing to the most current ASTM voluntary standard. Although there were two manufacturers that sold JPMA-certified infant slings in November 2015, as of July 2016, only one manufacturer is listed on the JPMA certified products page: <http://www.jpma.org/search/newsearch.asp>.

III. DISCUSSION

A. Overview of New Incident Data (Tab A)

In the NPR briefing package, CPSC staff from the Directorate for Epidemiology identified a total of 122 sling carriers-related incidents, including 16 fatalities and 54 injuries that were reported to have occurred from January 2003 through October 27, 2013. Since the extraction of the data for the NPR briefing package, CPSC staff has received 37 new reports (1 fatal and 36 nonfatal) related to sling carriers that were reported between October 28, 2013 and September 15, 2016. While reporting is ongoing, most of the new reports of incidents received thus far show a date of occurrence in 2014. Among the incidents where the age of the victim was reported, the children were 10 months old or younger.

1. Fatalities

One suffocation incident occurred in 2013; at the time, the 5-month-old was severely injured due to a lack of oxygen. The child later died in 2015.

2. Nonfatal Incidents

Among the 36 new, nonfatal incident reports related to sling carriers, 13 reported an injury to the infant or toddler during the use of the product. All of the injury victims were infants ranging in age from 1 month to 10 months old.

Among the 13 nonfatal injuries, one required hospitalization for a leg fracture, resulting from a fall. An additional skull fracture injury was reported, but hospitalization was not mentioned. Other non-hospitalized injuries included closed-head injuries,⁸ contusions/abrasions, lacerations/scratches, and skin rash.

⁸ According to staff from the Directorate for Health Sciences, a closed-head injury is a head injury where the skull remained intact but it can range in severity from a minor bump to a severe life-threatening traumatic brain injury.

3. National Injury Estimates

The number of emergency department-treated injuries associated with slings for the time frame covered was insufficient to derive any reportable national estimates.⁹ Hence, reportable injury estimates cannot be calculated.

B. Hazard Pattern Identification (Tab A)

There was no new hazard pattern identified among the 37 reports received by CPSC staff since the sling carrier NPR. In order of frequency of incident reports, the hazard patterns identified in the new data were grouped into following categories:

1. **Consumer comments:** Seventeen reports consisted of consumer concerns or observations about perceived safety hazards of a product, a product's noncompliance with standards, and/or contentions of unauthorized sale. None of these reports indicated that any incident had actually occurred or that the consumer owned the product.
2. **Caregiver missteps:** Eleven of the incidents occurred when the caregiver slipped, tripped, or grabbed/dropped the child during placement into/removal out of the carrier. Nine of the incidents resulted in an injury, such as a skull fracture, closed-head injury, or nursemaid's elbow.
3. **Miscellaneous product-related issues:** In four of the five incident reports in this category, consumers complained about unspecified breakage or the poor quality of the fabric, the ring(s), and/or the stitching used in the sling carrier. One minor injury was reported when an infant fell through the sling due to ripped fabric. An additional incident of an infant developing skin rash due to the use of a wrap sling carrier was also reported.
4. **Unspecified falls:** Three of the incidents reported falls, without specifying the cause. Two of the three incidents were reported through hospital emergency departments with very little scenario-specific information. One of these two injuries required hospitalization for a leg fracture, while the other was a closed-head injury. The third incident did not mention any injuries.
5. Problem with **positioning** the infant in the sling carrier: According to the single fatal incident report, the sling carrier's design made it difficult to safely position the infant and caused a severe permanent injury that later led to her death.

⁹According to the NEISS publication criteria, an estimate must be 1,200 or greater, the sample size must be 20 or greater, and the coefficient of variation must be 33 percent or smaller for the estimate to be reportable.

IV. THE NOTICE OF PROPOSED RULEMAKING (NPR)

On July 23, 2014, the Commission published an NPR (79 Federal Register 42727) proposing a safety standard for infant sling. The NPR reviewed incident data related to positioning, caregiver missteps, falls, buckles and other hardware failures, and miscellaneous issues. In the NPR, the Commission proposed a rule that would incorporate by reference the voluntary standard, ASTM F2907-14a, *Standard Consumer Safety Specification for Sling Carriers*, with an effective date 12 months after publication of the final rule.

V. COMMENTS AND RESPONSES

A. Comment overview

The NPR solicited information and comments concerning all aspects of the proposed rule. The NPR also specifically asked for comments regarding the proposed 12-month effective date, the changes that were under consideration by ASTM at the time of the NPR, and the costs of labeling. The Commission received 189 comments from 162 unique commenters in response to the NPR. Twenty-seven commenters submitted two or more comments, while two comments were signed by multiple people (-0172, 4 people; -0178, 55 people). The full comments can be found on regulations.gov.¹⁰ CPSC staff's responses can be found in Tabs A through F. The comments were divided into 11 major topic areas and summary responses follow. The 11 major topic areas are:

1. 12-month effective date
2. ASTM balloted item
3. Changes to test equipment
4. Consumer education
5. Consumer use, misuse, and user error
6. Durable product definition and wrap exemption requests
7. Economic burden
8. Existing rules: product registration card and soft infant and toddler carriers (16 C.F.R. 1126)
9. Incident data
10. Instructions and labeling
11. Other: black market creation, definition of wraps, design standard, paperwork reduction act, product ban, support industry groups, and wrap conversions

¹⁰ <https://www.regulations.gov/docket?D=CPSC-2014-0018>

12. Periodic testing: costs, frequency, and necessity

B. 12-month effective date

Comments: Six comments discussed the proposed effective date for the rule. Of these, only one comment opposed the proposed 12-month effective date. The one commenter who opposed the 12-month period stated that they “believe that smaller manufacturers can in fact move more quickly and can adapt to these changes as many were involved in the writing of the ASTM standard which is already published.” The remaining comments, including those from the U.S. Small Business Administration’s Office of Advocacy, agreed that 12 months was appropriate for this product.

CPSC Staff Response: Many of the commenters suggested that the testing requirements of the rule, which will not go into effect until the effective date of the rule, will result in a substantial economic burden to very small producers. This conclusion is supported by the analysis presented in the Final Regulatory Flexibility analysis (FRFA). Consistent with the Commission’s proposal, staff recommends that the final rule provide a 12-month effective date. The extra time provided by the staff’s recommended 12-month effective date will give needed time for some very small producers, which are frequently home-based, with limited experience dealing with matters of regulatory processes, to learn how to comply with the testing and recordkeeping requirements, as well as to spread out the relatively large testing costs over a longer period of time.

Staff recommends that the effective date for the final rule be set at 12-months after the date of publication, as proposed.

C. ASTM balloted item

Comment: Six commenters expressed support for the changes made to testing for ring slings that were published in ASTM F2907-14b, which is the version of the sling carrier standard published following CPSC’s NPR and resulted from the ballot that was open at the time of the NPR. One commenter posed a question related to the change: “If this recommendation is being made to allow slippage up to 3 inches ring slings, then would that recommendation be made on wraps as well?”

CPSC Staff Response: Staff agrees with the comments favoring adopting the change. CPSC staff tested the revision in ASTM F2907 that was published as ASTM F2907-14b, and staff found that the increase from 1 inch to 3 inches did not decrease the stringency of the standard. The dual-ring lock mechanism on ring slings is unique to those products and, to maintain the strength of the dual-ring lock, the fabric must be under tension. During normal use, this tension is maintained from the weight of the child. During testing, the dual-ring lock is repeatedly

exposed to tension, then release, as the test torso moves up and down. Due to the nature of the dual-ring lock, this allows the fabric to creep through the dual-ring lock. However, some fabric creep does not appear to compromise the overall ability of the sling to contain the child. The test still maintains the requirement that the dual-ring lock cannot completely release. Staff found that this fabric creep was unique to the dual-ring lock. Regarding wraps, there was generally little, if any, fabric creep, and in general, the testing only tightened the knots. Because some fabric creep is normal in a dual-ring lock, but should not occur with other attachment mechanisms, staff concluded the change published in ASTM F2907-14b did not affect the stringency. During ASTM task group discussions prior to balloting this revision, the question of other attachment mechanisms was discussed. The task group felt the change should apply only to ring slings because of the unique dual-ring lock mechanism.

D. Changes to test equipment (Tab B)

***Comment:** Seven comments addressed the surface of the test torso. Two commenters asked to “make the dummy less slippery and more accurate to real-life scenarios,” three commenters requested a fabric or fabric covered test torso, and two commenters suggested changing the test torso pending the outcome of ASTM task group discussions.*

CPSC Staff Response: In June 2015, 8 months after the close of the comment period, ASTM F15.21 balloted another change to the test methods. The proposal was to clothe the test torso in a “tight-fitting, thermal knit or waffle-weave, cotton or cotton/polyester undershirt or equivalent.” The ballot item passed and was approved by ASTM on October 15, 2015. CPSC staff repeated testing using the specified shirt with no significant changes in the test results. Before this ballot item, the ASTM standard did not specify the surface material of the test torso. Thus, test torso surface materials varied among test labs, including wood, metal, and fiberglass. Although the ballot item rationale was based on mimicking real-life conditions where the caregiver would be clothed when using the sling, CPSC staff expects that standardization of the test torso surface will also increase the repeatability and reliability of test results among test labs.

For the reasons stated above, CPSC staff agrees with the comments and concludes that ASTM F2907-15 is the most appropriate version for the Commission to codify as a final rule.

***Comment:** Two comments suggested using an anthropomorphic mannequin (i.e., a weighted doll with head, neck, arms and legs), instead of a sand bag during the occupant retention test and a shot-filled bag during the dynamic test.*

CPSC Staff Response: Currently, only the restraint test, Section 7.6, uses an anthropomorphic mannequin, specifically the CAMI Infant dummy. For the occupant-retention and dynamic tests, test masses provide the flexibility to fit into a variety of slings, no matter the configuration of the

sling. As discussed in the briefing package and public hearing accompanying the NPR, staff and the ASTM committee investigated using a more anthropomorphic mannequin and found that the readily available anthropomorphic mannequin used in many ASTM standards (*i.e.*, the CAMI mannequin) cannot accurately represent the manner in which a child sits in a sling. Developing a new mannequin that is flexible enough to appropriately fit into all types of slings would be time- and resource-intensive, without necessarily increasing the stringency or repeatability of the standard.

E. Consumer education (Tab C)

Comments: Twenty-six comments expressed that education was all that was needed, instead of regulation or product testing. Sixteen comments discussed the critical role education plays in the safety of sling carriers, and many of these comments identified education as a key component for preventing user error. Twelve additional comments made more general statements that the focus should be on education or else expressed a general sentiment that they support education. One specific commenter (-0137) supported consumer education, but felt “this should be a discussion amongst creators and the safety groups. This should not just be a decision made by the CPSC...”

CPSC Staff Response: Staff agrees that educating caregivers who use sling carriers is extremely important. Staff acknowledges that most sling carriers, and especially wrap carriers, require the caregiver to position the child and the fabric in ways that are both practical and safe, and that the skill needed to use a sling properly is not necessarily intuitive to many caregivers. Staff also agrees that excellent instructions, training, and support are available from baby-wearing educators and other persons with experience and knowledge of the safe use of the product. However, education alone does not address the hazards posed by material failures, such as ripped fabric and broken hardware, nor does an educational program require that all sling carriers be sold with instructions and on-product warning labels that will follow the product through its lifecycle. In addition, section 104 of the CPSIA requires CPSC to: (1) examine and assess voluntary safety standards for durable infant or toddler products, and to (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. Therefore, although staff cannot recommend a specific educational program under this authority, we can require products to include instructions and warnings at the point of sale. CPSC staff has concluded that the requirements for the instructions and product labeling provide a framework that each manufacturer can tailor to the recommended use positions for their specific slings. This will require that each sling includes the minimum information needed for proper use of the product, and the required on-product positioning label, will follow the product throughout its lifecycle.

***Comments:** Seven commenters specifically mentioned the baby-wearing community (e.g., local baby-wearing groups, Facebook baby-wearing groups, or Babywearing International, a non-profit organization whose mission is to promote babywearing education and support) as a resource available for new caregivers to learn about the use of sling carriers.*

CPSC Staff Response: Staff agrees that the groups mentioned are a valuable resource to promote the safe use of sling carriers and encourages the groups to continue their work. Staff encourages members and groups to become involved with ASTM International F15.21 subcommittee on sling carriers, which currently includes members representing sling manufactures, sling industry groups, testing laboratories, and child-safety advocates. Through this voluntary standards consensus process, all voices can be heard to develop a robust voluntary standard, which forms the basis of the mandatory standards promulgated by CPSC under the Danny Keysar Child Product Safety Notification Act

***Comments:** Ten commenters suggested a joint public educational campaign among the CPSC and manufacturers, industry groups, or the babywearing community. One comment suggested an educational campaign with no mention of partnering. One comment specifically suggested that the Commission sponsor an educational campaign in conjunction with the final rule and that the informational campaign focus on “specific risks that can only be addressed through proper usage and close attention to the infant,” (-0172).*

CPSC Staff Response: Although an educational campaign is outside the scope of the proposed rule, CPSC staff has passed the suggestions for a joint informational campaign to CPSC’s Office of Communication to consider. In addition, staff is available to provide information on proper use of sling carriers for the Office of Communications to consider using in potential press releases that may be issued should the Commission vote to finalize the proposed rule.

***Comments:** Six commenters suggested standardizing and regulating education materials and packaging, with two of these saying this should be the only requirement. One additional commenter expressed general support for ASTM requirements for instructional materials, and another commenter suggested requiring informational brochures.*

CPSC Staff Response: Staff recommends that the Commission issue a final rule that would incorporate by reference ASTM F2907-15. Section 9 of ASTM F2907-15 requires instructions to be provided with each sling and for these instructions to include some standard content, including information on assembly, adjustment, restraint systems (if applicable), maintenance, cleaning, storage, and use. However, education alone does not address the hazards posed by material failures, such as ripped fabric and broken hardware, nor does an educational program require that all sling carriers be sold with instructions and on-product warning labels that will follow the product through its lifecycle. The draft rule, by referencing ASTM F2907 – 15,

requires instructions to contain images of each manufacturer's recommended carrying position, all warnings that are required to be on the product, and additional safety-related instructions and information, such as the minimum and maximum weight of the child for which the sling is intended, the importance of checking for damaged seams and hardware, and the warning never to use the sling when balance or mobility is impaired.

F. Consumer use, misuse, and user error (Tab C)

Comments: Seventy-one comments discussed consumer use or the role of user error in the reported incidents. Sixty-four comments made general statements asserting that injuries resulted from user error, five comments suggested that manufacturers were not responsible for misuse, and three comments discussed the benefits of using sling carriers. In addition, several commenters raised other issues related to consumer use or user error.

CPSC Staff Response: CPSC staff agrees that many incidents suggest that caregiver behavior plays a vital role in the proper use of sling carriers. In addition, staff agrees that due to the unique nature of sling carrier products, educating caregivers is the primary method to address user error. Staff has concluded that the warnings and instruction requirements are the best way, within CPSC's jurisdiction, to educate consumers. In addition, reasonably foreseeable misuse is one of the factors that CPSC staff must consider in all of its analyses. Staff encourages manufacturers to provide the best instructions and warnings to address foreseeable misuses of their products. For products where a design change could prevent a possible misuse, that is preferable; however, for sling carriers, education, including instructions and warnings, may be the best way to address certain foreseeable user errors. Finally, although it is difficult to quantify the benefits mentioned by these commenters, staff appreciates the examples that commenters provided, which described possible benefits of sling use.

Comment: One commenter (-0185) suggested that the reclined position should not be a recommended-use position. Another commenter (-0041) recommended not showing "advanced carries" in instructions, and also recommended that the instructions show "an unsafe carry."

CPSC Staff Response: The ability to use a sling in the reclined position is one of the key factors differentiating soft infant and toddler carriers and sling carriers. The unstructured nature of many sling carriers suggests that it could be reasonable and foreseeable that caregivers will place a child in a position other than perfectly upright. The instructions and warnings are key to giving caregivers the information they need to position a child properly, including positions with a slight recline. In addition, the on-product label requirement in ASTM F2907-15 calls for examples of improper positioning.

G. "Durable product" definition and wrap exemption requests

Comments: Numerous commenters requested that wraps be exempted from any new regulations on sling carriers. Eight commenters suggested that slings should not be considered durable products.

CPSC Staff Response: Staff considered the possibility of exempting wraps and other all-fabric carriers without load-bearing hardware or seams. However, exclusion of wraps would preclude any educational or labeling requirements for these products, along with third party testing requirements. A large number of commenters stressed the importance of educational materials, which staff considers to include instructions and warnings. In addition, the NPR included analysis explaining why staff concluded that sling carriers, including wraps, are a type of “infant carrier,” which is a product specifically identified as a “durable infant or toddler product” in section 104(f)(2)(H) of the CPSIA. Specifically, staff considered the following factors in the initial determination:

- Age of children carried in sling carriers
 - One reported incident victim was 3 years old, which demonstrates that these products are used past the first year of life.
 - The voluntary standard (F2907) defines a “sling carrier” for use up to 35 pounds. Three-year-old children are likely to still be within this weight limit, and some 4- and 5-year-old children may weigh less than 35 pounds.
- Durability of sling carrier parts
 - Although wraps and pouch slings are all-fabric products, ring slings, modifications of wraps and pouch slings, and other products that meet the definition of a “sling carrier” also contain parts that are considered durable from an engineering perspective and suggest that they were selected for long-term use. In addition, the test methods in ASTM F2907 combine to ensure that slings meet a minimum level of durability.
- Reuse of sling carriers
 - Two incidents involved a hand-me-down sling carrier. One sling was reported to have been received from a relative, and the other sling carrier was reported to have been used for the infant’s older sibling.
 - Preliminary data from CPSC’s durable nursery product survey indicate that only 4 percent of respondents throw used sling carriers away, and that 96 percent of respondents save the sling carrier for later use, sell the sling carrier, or give the sling carrier away. In addition, the CPSC’s durable nursery products survey indicated that approximately one-fifth of sling carrier frequent users obtain their sling carrier second hand.

- With 96 percent of survey respondents to CPSC’s durable nursery products survey indicating that the sling carrier was saved or otherwise passed on to another caregiver, it is foreseeable that some sling carriers are likely to be used by more than one child. In addition, sling carriers appear to be bought and sold on resale markets.
 - Recalls of sling carriers
 - CPSC issued a recall in March 2008, regarding a certain sling carrier that was manufactured in March and April 2007.¹¹ CPSC received reports of incidents involving sling carriers subject to the recall more than 5 years after the recall announcement.
 - CPSC issued a recall in March 2010 regarding a different sling carrier that was sold from 2003 to 2010.¹² That recall was reissued as a safety alert 2 years later because the sling carriers subject to the recall were found in the marketplace.

No commenters provided data suggesting that slings, or specifically wraps, are not infant carriers. In addition, no comments suggested that slings are single-use/single-user products, are categorically used for short periods of time only, or are otherwise intended to have a very short lifespan. Therefore, staff concludes that wraps are infant carriers that meet the definition of “durable nursery products” under CPSIA section 104. However, staff has provided additional discussion of the issues for the Commission to consider in the Final Regulatory Flexibility Analysis (FRFA).

H. Economic burden (Tab D)

Comment: According to the U.S. Small Business Administration’s (SBA) Office of Advocacy (Advocacy), “the CPSC’s assumptions [regarding] the number [of firms affected by the proposed rule] and impact [of the proposed rule] on affected small carrier manufacturers is based on inadequate data and analyses.” According to Advocacy, the CPSC provides “the public with some data on the sling carrier market, but it is an inadequate basis for the CPSC’s analyses as described in the IRFA.” Advocacy’s comment concluded: “Advocacy recommends the CPSC gather more information on small sling carrier manufacturer’s market share as well as the number of accidents that can be attributed to them. If the CPSC is unable to obtain this information because of the uncertainty inherent in its analysis, Advocacy recommends the CPSC present a range of potential costs instead of one point estimate.”

¹¹ Lot numbers 03/07 and 07/04 per [recall notice](#).

¹² Per [recall notice](#).

CPSC Staff Response: For the NPR, CPSC staff prepared an initial regulatory flexibility analysis (IRFA) examining the impact the NPR could have on small business. The IRFA identified 47 suppliers of slings to the U.S. market, but noted that there might be hundreds more suppliers that produce small quantities. For the Final Regulatory Flexibility Analysis (FRFA), we have expanded the discussion of firms to include 324 firms identified by the Baby Carrier Industry Alliance (BCIA), an industry trade association. According to BCIA, about 250 of the 324 identified firms had total annual sales revenues of under \$10,000, and an additional 45 had revenues of greater than \$10,000, but less than \$50,000. These identified firms with revenues under \$50,000 annually were characterized in our analysis as very small firms. The expanded discussion in the FRFA includes: (1) additional information on the characteristics of the firms, (2) estimates of annual industry-wide sales, (3) estimates of the numbers of slings in use, and (4) estimates of the market share of the very small firms.

The FRFA also includes an expanded discussion of sling injuries and injury rates, and what we know about the injuries involving slings produced by small and very small firms. This discussion is included in the section of the FRFA titled, ‘Sling Injuries and Risk Estimates.’

Finally, we have substantially expanded our discussion of the likely impacts of the rule on small and very-small sling producers. Based largely on the information from the BCIA, as well as some information provided in the comments from Advocacy, we developed four hypothetical “representative” producers: (1) a hand weaver, (2) a ring sling producer, (3) a machine weaver, and (4) a mass producer. For each of these producers, we developed estimates of annual sales, average unit sales prices, and the number of style/fabric combinations likely to be produced by the firms, all of which will affect the estimated costs of the rule. For the very small representative firms (*i.e.*, the hand weaver and ring sling producer), the estimated annual testing costs that would be triggered by the rule amounted to about 16 percent to 36 percent of total revenues.¹³ For the machine weaver, the annual testing costs amounted to an estimated 2.4 percent to 4.7 percent of revenues. Only the mass producer (with annual revenues of about \$2.7 million) had annual expected costs of less than 1 percent. Our conclusion was that the final rule would have a significant adverse impact on a substantial number of small businesses and could cause numerous small producers to exit (or not to enter) the market. In addition, there may be significant additional impacts on small manufacturers from the need to provide instructional materials, and we cannot rule out the potential for costs associated with the physical changes necessary to comply to be high enough to lead to significant economic impacts, especially for very small manufacturers.

¹³ These costs do not include the manufacturing or labeling costs that would be required to bring non-conforming slings into conformance to the standard.

Comment: Advocacy recommended that the CPSC expand and improve its discussion of alternatives that may reduce the costs of the rule to small businesses.

CPSC Staff Response: As recommended, we substantially expanded our discussion of alternatives that the Commission could choose that would reduce the impact of the rule on small businesses. These alternatives are discussed in detail in the FRFA (Tab D) and under Analysis of Alternatives in this briefing memorandum. The options include:

1. Determining that slings are not durable products and terminate rulemaking;
2. Delaying the effective date of the requirements;
3. Exempting wraps (a specific type of sling made entirely of fabric) from the requirements of standard;
4. Allowing a small batch exemption for small manufacturers (this alternative would require a change in a federal statute);
5. Amending the existing CPSC regulation at 16 CFR part 1107 to reduce the frequency of periodic testing required for small or home-based sling producers; or
6. Adopting ASTM F2907-15 with no changes, and directing staff to work with ASTM to address the staff recommended change.

Comment: More than 100 of the 188 comments received in response to the NPR focused on the economic burden that the rule and testing requirements would impose on very small producers of slings. Some of these commenters said that they recognized the need for some product safety regulation for slings, but they also expressed concern about the impact of the rule on very small businesses. Many of the comments said that the costs resulting from the testing requirements would drive small producers out of business. Some of the commenters, who are very small sling producers, suggested that the rule would be cost prohibitive and would probably result in their exit from the sling market. Several users expressed concern that the proposed rule would reduce the availability of slings in the marketplace.

CPSC Staff Response: Staff agrees that the rule and associated testing requirements will pose a significant economic burden on many small producers and has discussed these possible impacts in the FRFA. Staff has also expanded the FRFA discussion of alternatives to include additional alternatives that were not discussed in the IRFA and could reduce the negative impact of the rule on small businesses. Despite the expected impact, staff is recommending that the Commission promulgate the final rule for sling carriers in order to comply with Congressional direction regarding durable infant and toddler products and the Commission designation in the product registration card rule of infant carriers as such products Staff also believes that a mandatory standard is necessary despite the costs to small business because the standard would address mechanical or fabric failure hazards and impose warning and instruction requirements that would address suffocation hazards. Additionally, staff has included information in this package

regarding production test plans that could reduce the frequency of testing for manufacturers that implement a product test plan, which could reduce the testing costs.

***Comment:** Three commenters reported that information in the IRFA was not reflective of the true number of small businesses that would be affected by the rule or the significant financial impact that would be imposed on small producers. These commenters provided additional information on the number and size of the very small producers and the likely financial impact of the rule.*

CPSC Staff Response: Staff agrees that the discussion of the market and market impact of the sling proposed rule was not fully descriptive of the very small manufacturers in the marketplace or of the full economic burden that would be imposed by the rule. The information provided by the commenters was used to develop estimates of annual sales, average unit sales prices, and the number of style/fabric combinations likely to be produced by the firms; all of this information will affect the estimated testing costs of the rule. The information has been incorporated into the FRFA's description of the sling market and in the discussion of cost impacts on small and very small businesses.

I. Existing rules: product registration card

***Comments:** Three commenters requested reconsideration of the product registration card requirement or specific aspects of it (e.g., “*perforated* registration cards is silly in my opinion”). Three other commenters specifically mentioned that they agreed that the product registration card requirement was necessary to conduct product recalls. One commenter specifically suggested “an online registration system so that the carrier’s owner can be continuously updated.”*

CPSC Staff response: The requirements of the product registration rule (which are set out at 16 C.F.R. part 1130) are outside the scope of this rulemaking on sling carriers. We note that the rule does provide for online registration;¹⁴ however, “electronic/email registration does not replace the mandatory requirement stated in section 104(d)(1)(A) of the CPSIA that each manufacturer of a durable infant or toddler product must provide consumers with a postage-paid consumer registration form with each such product.”¹⁵

J. Existing regulations: Soft infant and toddler carriers (16 C.F.R. 1126)

¹⁴ 16 C.F.R. § 1130.7.

¹⁵ 74 Fed. Reg. 68668 (December 29, 2009).

***Comment:** One comment (-0011) asked to “revisit the SITC [Soft Infant and Toddler Carrier] rule as well. Mei-tai style carriers are not regulated under the sling carrier rule, but the SITC rule. Yet they are often produced in a similar very-small manufacturer business model and sometimes by very-small sling carrier manufacturers. Similar divisions for very-small batch exemptions would help save quite a few businesses.”*

CPSC Staff Response: Staff agrees that some of the issues faced by very small manufacturers of sling carriers may also apply to very small manufacturers of SITCs. However, the SITC rule was promulgated in 2014, with notice and comment, and is outside the scope of this rulemaking on sling carriers. Manufacturers of SITC have the same options under 16 C.F.R. part 1107 for production test plans as outlined in this memorandum. In addition, should the Commission consider modifying 16 C.F.R. 1107 to allow sling carriers a periodic testing option by number of units manufactured (e.g., every 500 units) in addition to time (e.g., every two years, regardless of manufacturing volume), the Commission could also consider other products for which that may be an appropriate option.

***Comment:** One comment (-0118) requested “regulations that require carriers (specifically buckle style carriers) to be ergonomically safe as well - a wide seat so hips are properly position, rather than narrow and allowing a baby's legs to dangle.”*

CPSC Staff Response: CPSC staff believes that the commenter’s reference to “buckle style carriers” and dangling legs implies that the commenter is referring to SITCs. SITCs hold the child upright only and typically have leg openings. Sling carriers are typically hammock-shaped or unstructured fabric, with which the caregiver creates the structure through wrapping the sling fabric around their body. Sling carriers do not have defined leg openings, and the wide fabrics allow the caregiver to position the child on a wide seat. Therefore, staff believes that this comment is out of scope of the current sling carrier rulemaking.

K. Incident data

***Comment:** Thirty-two commenters raised issues relating to incident data. In general, most of these comments expressed one or two opinions. First, a majority of the incident comments claim that most injuries and deaths cited in the NPR briefing package result from positioning errors and caregiver missteps. Second, many commenters claimed that no injury or death in the incident data presented was related to the issue of fabric strength.*

CPSC Staff Response: CPSC staff agrees that for the incidents where sufficient information was available, caregiver missteps were often cited in the reports; however, there were many incidents with insufficient information. The lack of information is not evidence that product-related defects (for example, fabric weakness) were absent in the incidents.

Comment: A number of commenters suggested that the injuries are not “the result of manufacturer defects” (e.g., -0011) or not related to structural integrity (e.g., -0063, -0070).

CPSC Staff Response: Staff disagrees with this comment. Of the 54 injuries, nine were product-related (three buckle-related and six miscellaneous product-related) incidents. Of the 52 non-injury incidents, 12 were product-related (nine buckle-related and three miscellaneous product-related) incidents. An additional 25 reported incidents, including seven fatalities and 15 injuries (including two hospitalizations) under the *undetermined* or *unspecified* category, did not provide enough information for staff to make a determination on the cause(s) leading to the incident. This lack of information is not the same as conclusive evidence that no manufacturer issues were involved in these incidents. In addition, although voluntary recalls are not necessarily associated with findings of a defect, the NPR discussed three recalls between 2005 and 2007, for structural integrity issues, one of which was associated with four injuries, including a skull fracture.¹⁶ Finally, the updated data provided in Tab A discuss four new incident reports related to fabrics, rings, and stitching, including a minor injury when fabric ripped.

Comment: Several comments (-0011) raised issues related to risk and relative risk of slings. One specific question was: “How does the rate of injury/death for sling carriers compare to other modes of carrying children?” In addition, comments (e.g., -0011, -0079) suggested that, compared to carrying a child in the caregiver’s arms, the risk in a sling carrier was the same or lower.

CPSC Staff Response: CPSC staff has not compared the rate of injury/death for sling carriers with the rates for similar modes of infant carriers. Such a comparative analysis is not relevant for the purposes of this briefing package. Staff does not claim that sling carriers are more or less dangerous than other infant carriers, and regulation mandated under section 104 of the CPSIA does not require such a comparison.

Comment: “[The] non-incident, non-injury comments helped to inflate the perceived danger of both sling carriers and SITCs.”

CPSC Staff Response: For briefing packages on section 104 rules, staff reports on *all* relevant data reported to CPSC. Because the non-injury comments were not used as the basis for recommending any new requirements for a standard, their inclusion in the briefing package does not affect the issuance of a Section 104 rule.

¹⁶ <http://www.cpsc.gov/en/recalls/2007/infantino-recalls-infant-sling-carriers-due-to-fall-hazard/>.

Comment: Several commenters suggested that “. . . there was an overall lack of information associating injuries with specific makes and models of sling carriers. . .” (-0011) or that all deaths were due to one type of carrier (e.g., “. . . deaths due to improper use (of what I would imagine were bag style slings). . .” -0087). One commenter’s point, that several other commenters copied and included in their comments, also suggested that “. . . bag style sling carriers are notoriously (anecdotally?) more dangerous than ring slings or woven wraps . . .,” and that staff should attempt to correlate data “with a specific brand or general type of sling carrier.”

CPSC Staff Response: CPSC staff intentionally omitted make and model information in the briefing package. Because many of the products involved in incidents were not identifiable by make and model, providing the information only for the known ones would unfairly target those manufacturers. The purpose of the NPR is to cover the product class, not specific makes and models of slings of which CPSC staff is aware. When staff observes a pattern of deaths or injuries with “a specific brand,” that data is investigated by the CPSC’s Office of Compliance and Field Operations. Regarding the request to correlate data with a general type of carrier, staff reviewed the 17 deaths reported in the two briefing packages associated with this rulemaking (16 in the NPR plus one addition in this final rule package) to identify the type of sling involved in each death. Six deaths were associated with bag-type slings, four with wrap or wrap-like slings, three with ring slings, and one with a pouch sling. There was not enough information to identify the sling type for the three remaining deaths.

Comment: One comment (-0179) suggested that “suffocation-related incidents are understated. In addition, the commenter suggests that staff “mischaracterizes incidents...” by categorizing some incidents as “undetermined” or “unspecified cause,” instead of positional asphyxia, and not including SIDS cases as position-related incidents.

CPSC Staff Response: Staff disagrees. For each briefing package, CPSC staff, as a team, makes a deliberate decision on the most relevant period to gather data. Usually this period starts from when the latest major version of the relevant ASTM standard occurred. For sling carriers, the very first ASTM standard, F2907–12, was developed using CPSC data from 2003 forward. The NPR briefing package covered the period from 2003 forward. Moreover, consistent with other durable product briefing packages, certain incidents (e.g., those with an official cause of death of SIDS, with no additional definitive information) were considered out-of-scope cases. In addition, the commenter cites sling-related data and analysis from CPSC from prior years. The data extraction criteria for those earlier years were different because the data were analyzed for a different purpose (e.g., it may have been a search for *all* fatalities in sling carriers that have been reported to CPSC). The discrepancy was not an attempt to understate the dangers of suffocation associated with the use of sling carriers.

L. Instructions and labeling (expanded response in Tab C)

***Comment:** One commenter requested on-product labeling for products that are manufactured after the effective date, so that consumers can clearly identify products that meet the mandatory standard. An additional comment (-0172) requested that the product include a marking that clearly indicates that a compliant product meets the mandatory standard.*

CPSC Staff Response: CPSC staff does not recommend a change to the proposed rule based on this comment because manufacturers are already allowed to label compliant products pursuant to section 14 of the CPSA and 16 C.F.R. part 1107. In addition, section 8.1.3 of ASTM F2907 – 15 and the product registration card rule (16 C.F.R. § 1130.4) include requirements that slings have a code mark or other means that identifies the date of manufacture. Additionally, manufacturers or importers may voluntarily label compliant products with “Meets CPSC Safety Requirements,” pursuant to section 14 of the CPSA and 16 C.F.R. part 1107. Thus, adding a requirement to mark products in the draft final rule for sling carriers would be redundant.

***Comment:** Nineteen comments generally discussed the effectiveness of warnings and instructions in addressing the hazards. The most common argument advanced by commenters is that, in the context of sling carriers, labeling, instructions, and similar approaches are superior to performance requirements or the proposed material testing requirements, because the hazards with slings are the result of user error, infant positioning, or similar behavioral issues. Some comments (e.g., -0043, -0063, -0095) assert that warnings and instructions are all that is needed or are the only requirements that are likely to avoid injuries. In contrast, one comment (-0179) argues that warnings are not likely to address the hazard effectively, as demonstrated by recent deaths, and that instructing consumers to “check often” is an unreasonable expectation.*

CPSC Staff Response: Improper infant positioning accounts for the majority of fatalities associated with these products. Staff generally recommends designing the hazard out of a product or guarding the consumer from the hazard, rather than employing warnings, because a warning’s effectiveness depends on persuading consumers to alter their behavior in some way to avoid the hazard. Nevertheless, as discussed in the NPR briefing package, staff was unable to develop performance tests or requirements that could address the infant positioning hazard; and therefore, staff concluded that the “last resort” measure of warning about proper and improper infant positioning was the only feasible hazard-mitigation strategy (see Smith, 2014). Staff continues to believe that this is the only viable way of addressing the infant positioning hazard, short of a ban on slings. However, staff does not agree that warnings and instructions are all that is needed to address injuries with sling carriers. Consequently, staff recommends that the Commission incorporate by reference ASTM F2907-15, which includes performance requirements that are intended to address hazards other than infant positioning.

***Comment:** Sixteen comments address the content of the warning label and instructions, generally in terms of consumer comprehension of the information. These include comments about the importance of the labels and instructions to be easily understood, clear, accurate, pertinent, and to include all necessary information, including information about what to avoid.*

CPSC Staff Response: Staff agrees that the warnings and instructions must be accurate, comprehensive, and easy to understand, and believes that the proposed requirements for sling carriers accomplish these goals. Staff worked extensively with the ASTM Subcommittee on Sling Carriers to improve the requirements for warnings and instructions from the original 2012 version of the voluntary standard to address more effectively the sling hazards that cannot be addressed by performance requirements. Staff believes that the current requirements for warning and instructional content adequately address key information about the nature of the hazards, the consequences of exposure to the hazards, and appropriate behaviors in which consumers can and should engage—or not engage—to avoid these hazards. Thus, staff does not believe that revisions to the content requirements are necessary.

***Comment:** Seven comments suggested specific items that should be included in the warnings. Specifically:*

- *Two comments (-0016 & -0058) propose warning against the use of slings by infants younger than a certain age (i.e., 4 months or 6 months).*
- *Two comments (-0031 & -0118) state that the warning should include or highlight images of proper positioning, including the acronym TICKS.¹⁷*
- *One comment (-0079) states that consumers should be aware of the recommendation to check stitching and fabric for wear.*
- *Two comments (-0038 & -0041) argue that some companies currently include instructions or positioning information that the commenters consider dangerous.*
- *One comment (-0172) states that the current warning does not sufficiently describe the suddenness with which suffocation can occur and the need for constant mindfulness and monitoring. The comment also states that the fall hazard is not described sufficiently.*

CPSC Staff Response: Staff agrees that the items proposed by the commenters should be included on sling warning labels and concludes that each item is already sufficiently addressed by the warning currently required in ASTM F2907-15. CPSC staff concludes that the warning label requirements in ASTM F2907-15, which are incorporated by reference into the draft final rule, address most issues pertaining to unsafe positioning, by specifying both proper and improper infant positioning in the warning and instructional language and in the warning

¹⁷ “TICKS,” is commonly used in the babywearing community to refer to (1) Tight, (2) In view at all times, (3) Close enough to kiss, (4) Keep chin off chest, and (5) Supported back.

pictogram. Please see Tab C for full discussion of each item and how it is addressed by ASTM F2907-15.

Comment: *One comment (-0179) states that the warning’s direction to keep the “face uncovered” is weaker than previous warnings by CPSC, and does not address concerns that sling-type carriers can cause infants whose heads are below the rim of the sling to assume a curled posture.*

CPSC Staff Response: Staff disagrees with the assertion that the directive to keep the face uncovered is weaker than an instruction to keep the head above the rim of the sling. CPSC staff and the ASTM Subcommittee considered a reference about keeping the baby’s head above the rim of the sling, but concluded that consumers might have difficulty assessing when an infant’s head would be considered “above the rim.” Furthermore, young infants may need head support when carried in a sling, and this would require the sling to pass around the back of the baby’s head. This scenario is illustrated in Figure 3. Although this graphic, which appears in the “example pictogram” of the ASTM standard, is intended to show a proper position, consumers may consider the infant’s head to be “below the rim,” and therefore, conclude incorrectly that such a position is improper. Given that the warnings already instruct consumers to make sure the infant’s body does not curl into a chin-to-chest position, the Subcommittee and CPSC staff agreed that warning language instructing consumers to make sure that the infant’s face is uncovered and fully visible is sufficient to address the risk of positional asphyxia, and would minimize confusion.



Comment: *Fifteen comments specifically discuss the size or length of the warning label and instructions. Many of the comments argue that smaller, shorter, or more “concise” labels and instructions are superior to larger or longer ones, but provide no particular evidence or rationale to support their arguments. One comment (-0179) states that manufacturers are producing “unreasonably long” instructions. Two comments (-0003 & -0008) state that large warning labels hurt the aesthetics of the product. and some comments simply express a dislike fthe idea of a “huge” label (e.g., -0070) or think some of the information in the label seems “a tad much” (-0132). Two comments (-0025 & -0096) claim that shorter labels and instructions are more effective because they are more likely to be read, understood, noticed, or followed. Two comments (-0019, -0057) argue that large labels are more likely to be removed by the consumer, and one of these comments (-0019) specifically identifies “free-hanging” labels as ones that are*

likely to be accidentally torn or ripped off, intentionally cut off or removed, or rolled and sewn against a hem to keep it out of the way.

CPSC Staff Response: As discussed in Tab C, warnings generally should be physically large, but brief. However, a concise warning is unlikely to be effective if it does not convey all key information pertaining to the hazards—namely, a description of the nature of the hazard, consequences of exposure to the hazard, and how to avoid the hazard. Brevity is only one factor that must be considered by a warning designer, and CPSC staff worked with the ASTM Subcommittee to develop effective warning language that is comprehensive, yet reasonably concise. Staff recognizes that a large label may hurt the aesthetics of the product and that some consumers may feel compelled to remove such a label from the product. However, the alternative would be to create a warning that blends into the product or is unnoticed by consumers, which would likely offer little to no safety benefit. Although the proposed standard requires that warning labels be permanent, CPSC staff agrees that so-called “free-hanging” labels—that is, labels that are affixed to the product at only one end of the label—are more likely to be torn or ripped off, or otherwise altered by the consumer, and that this would eliminate the potential safety benefit of the label to future users of the product. Additionally, staff notes that the standard proposed in the NPR does not prohibit such labels or prevent manufacturers from affixing labels to the products in this way. Thus, staff recommends that the final rule include a requirement that prevents label attachment along a single edge of the label.

The ASTM F2907 – 15 requirements that are most relevant to this issue are those pertaining to warning label permanency. Section 8.3 of ASTM F2907 – 15 states that warning labels shall be permanent, and section 5.7 specifies that warning label permanence is determined by testing in accordance with section 7.3, which includes requirements for labels attached with a seam. Section 5.7 includes two subsections that address permanence requirements for labels that are applied directly to the surface of the sling (5.7.1; *e.g.*, via hot stamping or heat transfer) and a requirement that non-paper labels shall not liberate small parts (5.7.2). Staff concludes that the following additional subsection would appropriately address the “free-hanging” label issue and recommends its inclusion in the final rule:

“5.7.3 Warning labels that are attached to the fabric with seams shall remain in contact with the fabric around the entire perimeter of the label, when the sling is in all manufacturer-recommended use positions.”

On December 14, 2016, staff received a letter from the chair of the ASTM subcommittee indicating the group would be considering this requirement as quickly as possible.

Comment: *Five comments addressed issues related to the medium through which the warnings and instructions are to be delivered to consumers. Some comments (-0003, -0095, -0172) suggested that the Internet (e.g., the manufacturer's website) should be used to communicate*

warning and instructional information. One of these (-0003) stated that this approach, combined with providing this information in materials that are supplied with the product, is sufficient, adding that warnings do not need to be on the product at all. Another one of these (-0172) specifically suggested requiring video instructions, available both online and on a CD from the manufacturer, and that the label should include a website address that refers the reader to online instructions. Another (-0058) suggested instructional DVDs and pamphlets as options. One comment (-0016) suggested that the instructions could be a “simple printable card.”

CPSC Staff Response: Staff agrees that the Internet or other media, such as CDs or DVDs, can be a useful means of communicating safe babywearing information to consumers. However, communicating this information on the product itself, through warning labels, would mean that such information would be available to consumers who use slings throughout the product’s full lifecycle, regardless of their access to these other media forms of information. Furthermore, the instructional requirements in ASTM F2907-15 do not specify the media form that the instructions must take; they only specify: “Instructions shall be provided with the sling” (Section 9.1). Thus, instructions may be provided in other than a traditional paper form. Because not all manufacturers maintain an online presence, staff does not recommend a mandatory label that requires online instructions; however, there is nothing to prevent a manufacturer from including this information on their label.

Comment: *Three comments (-0005, -0177, & -0188) stated that there should be a standard instruction manual or set of guidelines, perhaps ASTM-approved, for all manufacturers. One of these (-0005) seemed to suggest that the current standard already required this.*

CPSC Staff Response: Sling carriers vary substantially in design, and certain products offer an enormous degree of adjustability. “Wraps,” for example, are a type of sling that consists solely of a long length of material that must be tied or knotted, and these products can be wrapped and tied around the caregiver’s body in myriad ways. Thus, staff does not believe that a standard, universal instruction manual could be developed and applied to all sling carriers. However, section 9 of staff’s ASTM F2907-15 does require instructions to be provided with each sling and for these instructions to include some standard content, including information on assembly, adjustment, restraint systems (if applicable), maintenance, cleaning, storage, and use. The draft final rule also requires instructions to contain images of each manufacturer’s recommended carrying position, all warnings that are required to be on the product, and additional safety-related instructions and information, such as the minimum and maximum weight of the child for which the sling is intended, the importance of checking for damaged seams and hardware, and a warning never to use the sling when balance or mobility is impaired.

***Comment:** One comment (-0175) stated that section 8.1.1 of ASTM F2907 – 15, for clarity and consistency, should match the corresponding requirement in ASTM F2236 – 14, Standard Consumer Safety Specification for Soft Infant and Toddler Carriers.*

CPSC Staff Response: CPSC staff agrees that consistency among the various juvenile product standards is beneficial to manufacturers and consumers. Staff has worked with the ASTM Ad Hoc Wording Task Group (“Ad Hoc task group”), consisting of members of the various subcommittees affected by the durable nursery products rules, whose stated mission is to develop uniform and consistent language to be applied to similar portions of various ASTM juvenile product standards. The Ad Hoc task group recently completed draft recommended language for portions of the “Marking and Labeling” section for ASTM juvenile product standards, and the final recommendations are now posted on the ASTM website for consideration by the individual subcommittees.

For uniformity, and to avoid confusion, CPSC staff ordinarily would recommend that the final rule include a provision that differs from section 8.1.1 of ASTM F2907 – 15 so that it is consistent with the Ad Hoc task group recommendation. However, as discussed in Tab C, the current voluntary standard includes a requirement that the product be marked with the website, if applicable. The analogous Ad Hoc task group requirement includes no such requirement. One possible resolution would be to use the Ad Hoc task group recommendation, but add the website as an additional required element. However, this change would result in a requirement whose content is identical to the current voluntary standard requirement. Given this finding and staff’s belief that retaining the website marking requirement is important, staff does not recommend, at this time, that the mandatory rule differ from this section of ASTM F2907. Staff believes that it would be more appropriate to hold off on incorporating the Ad Hoc task group recommendations until the ASTM subcommittee considers future revisions to the standard.

M. Other: black market creation

***Comment:** Seven comments suggested that promulgation of a federal rule on sling carriers will create a “black market” for sling carriers. Within these seven comments, two commenters suggested that consumers would resort to “do-it-yourself” carriers; one if the two also noted that table cloths are a popular do-it-yourself wrap carrier. One comment suggested that consumers will purchase sling carriers from overseas.*

CPSC Staff Response: Staff is aware of reports through saferproducts.gov that suggest consumers are becoming familiar with the regulations for infant products—for example, consumers have reported that a sling carrier that does not meet the standard is being sold. Through outreach to the industry and consumers, staff expects this awareness to grow. If the Commission finalizes the rule, and it goes into effect, staff would encourage the commenters to

report anyone manufacturing or selling a product that is not tested through saferproducts.gov. In addition, CPSC has a strong program of import surveillance designed to prevent regulated products that do not meet U.S. standards from entering the country.

N. Other: definition of “wrap sling”

Comment: “The definition of a wrap sling given under the third bullet point needs updating to reflect that wraps are up to 3 feet wide. They should [be] more than 2 feet wide as a wrap this narrow would not generally be considered wide enough, though I know some stretchy wraps are more narrow than woven wraps.”

CPSC Staff Response: The text to which the commenter refers was intended to describe the general categories of slings that CPSC staff had identified. The text was not intended to be the regulatory definition of “slings.” The discussion of general characteristics of wraps in the current package states the updated the length and width of wraps.

O. Other: design standard

Comment: Three comments requested the creation of a design standard or to provide design guidelines in an annex. In addition, two commenters spoke of poor design as related to misuse. The commenters did not provide any specific proposals.

CPSC Staff Response: Staff encourages the commenters to become involved in ASTM and to bring specific suggestions for a design standard to the ASTM subcommittee for consideration. Because there was no specific design standard for staff to evaluate, we cannot make a determination from this comment concerning a specific design guideline or specific aspect of “poor design.”

P. Other: Paperwork Reduction Act

Comment: One comment questioned the estimate the staff determined under the Paperwork Reduction Act. The commenter stated: “It may not be accurate to call the time and costs associated with preparing instructional literature usual and customary. To date baby sling manufacturers have not be [sic] required to supply instructional literature. Many BCIA Members provide BCIA babywearing safety information with their products in lieu of instructional literature, so it may be fair to say that this literature will need to be developed due to the implementation of this standard.”

CPSC Staff Response: The rule would require manufacturers to provide instructional material. Sling manufacturers that already provide such information, estimated to be about one-third of the

industry (about 135 manufacturers) by the BCIA,¹⁸ may have to modify their existing instructions to make sure that the instructions have all the content required by ASTM. The additional effort would probably be modest, an estimated 5 hours, if estimates for revisions to instructions for other children's products are comparable. Using an hourly rate of \$33.29 to calculate these costs, the total compensation for sales and office workers in private industry in goods-producing industries¹⁹ would amount to about \$166 ($\$33.29 * 5$) per firm.

The BCIA estimated that firms that had not previously prepared instructions would require 30 to 60 hours of labor, and/or paid consultants as well. If the remaining 265 firms require 45 hours, on average, then the impact per-firm would be about \$1,500 ($\$33.29 * 45$). Thus, the cost could average \$166 for firms that already provide the literature and \$1,500 for those that do not. Once the literature has been created, it would not need to be modified, unless the manufacturer makes changes to a model that renders portions of the literature obsolete. However, the cost of subsequent modifications to the literature is likely to be less than the cost of preparing instructional literature for the first time.

Q. Other: product ban

Comment: Seven comments requested variations of a ban. Specifically,

- *Two comments requested a ban of all sling carriers;*
- *Four comments requested bans of certain types of sling carriers. Three of these mentioned "bag style" sling carriers), such as: "[i]t would make the most sense to ban the manufacture of all bag slings (as in the type of sling involved in the Infantino recall) rather than punish those making perfectly safe wraps and ring slings with unnecessary regulation" (-0085) and "[a]pprove specific bans on dangerous types of carriers. As stated previously, bag style sling carriers are notoriously (anecdotally?) more dangerous than ring slings or woven wraps," (-0131).*
- *One comments requested a ban on buckles used in slings carriers, specifically "[b]an buckles in this class of carrier, as well as the bag style slings."(-0087).*

CPSC Staff Response: Section 104 of CPSIA does not provide for the Commission to ban products. In addition, although there was a recall related to deaths in one certain type of "bag style" sling, these are not the only type of sling for which fatal incidents have been reported. Fatal incidents have also been reported in wrap and ring slings. Regarding the request to specifically ban buckles "in this class of carriers," the test methods in the standard are designed

¹⁸ Email from BCIA, July 22, 2016.

¹⁹ From Table 9 of the most recent Bureau of Labor Statistics publication Employer Costs for Employee Compensation (ECEC), which can be found at: <http://www.bls.gov/ncs>.

to test any hardware for slings, including buckles. Some designs use buckles for adjustment, and the standard is designed to identify buckles that are not strong enough.

R. Other: support industry groups

Comment: Two commenters suggested: “[m]embership in the BICA or another babywearing professional organization would keep the very-small manufacturers informed of necessary certification requirements, changes in regulation, new hazard mitigation strategies, and provide information or discounts on resources to gain/maintain compliance.”

CPSC Staff Response: The commenters proposed this as one of several “compromises”; however, it is unclear whether they were suggesting that manufacturers should join an industry group, which staff agrees could provide manufacturers guidance; or whether they were suggesting that CPSC require membership in an industry group, in lieu of regulation, which is outside CPSC’s authority.

S. Other: wrap conversions

Comment: Three comments expressed concerns that manufacturers who use existing wrap carriers as the base fabric to manufacture another type of sling carrier, e.g., ring slings, will be unable to continue operating.

CPSC Staff Response: The so called “wrap converters,” described by the comments, are a subset of manufacturers who use fabric sold as a wrap to produce other types of infant carriers, most commonly ring slings and mei tais (a SITC). In some cases, the customer provides the fabric, in the form of wrap. In other cases, the manufacturer obtains the wrap and sells products created from the fabric. In both cases, the “wrap converter” is a manufacturer and one of the raw goods used in manufacture of the product is fabric that was previously sold as a wrap. Staff suggests that a manufacturer of wrap conversions should also read the response on periodic testing and material changes to become familiar with the requirements. Staff acknowledges that the testing costs may affect some types of low-volume manufacturers; however, under Section 14(d)(4)(C)(ii) of the Consumer Product Safety Act, the Commission cannot “provide any alternative requirements or exemption” from third party testing for durable infant or toddler products.

T. Periodic testing: costs

Comment: Because of the large economic burden of the testing requirements for low-volume producers, several commenters (e.g., -0099, -0177, -0166, -0178, -0175) suggested that the Commission consider a testing schedule based on production interval (e.g., every 500 slings),

rather than on an annual timeline (e.g., every year). These commenters suggested that because of the low volumes of the very small producers, safety did not require annual testing.

CPSC Staff Response: As described in the FRFA, small manufacturers that establish production testing plans, which need not be complicated, would be required to conduct periodic testing every 2 years, rather than every year. The FRFA also discusses other regulatory alternatives for Commission consideration that could further limit periodic testing for low-volume manufacturers, and that could substantially reduce periodic testing costs. One alternative discussed in the FRFA would require, for manufacturers *with established production testing plans*, third party periodic testing only after a certain number of units of a product had been produced, even if it meant that periodic third party tests would be conducted less than every 2 years. However, although this regulatory alternative could substantially reduce the costs of periodic testing, it would require a modification in the testing and certification rule (16 C.F.R. 1107) before it could be implemented.

Comment: *Three comments requested that the government provide financial assistance to small businesses to cover third party testing costs or for “taxpayer funded” testing.*

CPSC Staff Response: Congress has not provided CPSC the authority to conduct premarket testing or provide government assistance for manufacturers’ test programs.

Comment: *Two comments suggested that small businesses should be allowed to submit fabric for testing as a group. That is, the group could “submit a SINGLE testing piece for each category and have the approval apply to each business so the cost can be shared.” (-0189)*

CPSC Staff Response: Staff believes that commenters, such as the ones above, may be confusing the testing that would be required by ASTM F2907 and other CPSC testing requirements for children’s products. In the case of lead and phthalates, component testing and certification are allowed. However, ASTM F2907 establishes performance test requirements for the product as a whole, because it is more than a simple fabric strength test. Other factors that may contribute to a sling passing or failing the performance tests include: the size and shape of the sling, any hardware, and the instructions that accompany the sling (because the tests are “per manufacturer instructions”).

Comment: *One comment suggested “pricing [the 3rd party testing] according to output would make sure out [sic] pieces follow regulations while keeping big and small manufacturers running.” (-0149)*

CPSC Staff Response: The price charged by third party testing laboratories is not set or regulated by CPSC.

U. Periodic testing: frequency (expanded response in Tab E)

Comment: *Eleven comments requested specific changes to the periodic testing requirements. Four commenters specifically requested testing bi-annually (e.g., “allowing for testing every 2 years or only when there is a material change,” and “It’s possible to tweak the testing requirements in ways that would not be overly onerous to small business owners (testing every other year, only when there is a change of materials, etc.)”)*

Six commenters, including the four previous commenters, suggested testing should be required only when a material change occurs. One commenter requested testing every 3 years (“testing should be limited to a manufacturing level achieved by a large manufacturer, or every three years, whichever comes sooner.”), and four commenters suggested a period less frequent than annually, but with no specific timeframe suggested (e.g., “Third party testing should not need to occur yearly,” “require testing either every year OR every 500 wraps.”, “modifying the testing schedule so that testing does not need to be re-done annually for established manufacturers who don't have a material change in the supply chain”).

One commenter suggested bulk testing of fibers and woven fabric.

One commenter suggested “basic licensure or proof of competency per manufacturer/weaver,” in lieu of periodic testing. Two commenters stated that they were unsure what would constitute a material change.

CPSC Staff Response: CPSC staff agrees that testing every other year (instead of annual testing) represents a potentially meaningful reduction in the burden of third party testing costs, and such an approach is already permitted under an existing CPSC regulation, if certain basic conditions are satisfied. Subpart C of 16 C.F.R. part 1107 requires periodic testing of children’s products, including the third party certification testing for durable nursery products. This testing must be conducted at a minimum of 1-, 2-, or 3-year intervals, depending upon whether the manufacturer has a periodic testing plan (1-year), a production testing plan (2-years), or plans to conduct continued testing using an accredited ISO/IEC 17025:2005 laboratory (3-years). Periodic testing is required even if no material changes have occurred in the children’s product. Regarding the suggestion to conduct third party testing after a fixed production volume (*i.e.*, 500 units), third party testing is required on a 1-, 2-, or 3-year period, irrespective of the production volume.

The commenter suggesting bulk testing of fibers and woven fabric is referring to component part testing, which is allowed and described in 16 C.F.R. part 1109²⁰, Conditions and Requirements for Relying on Component Part Testing or Certification, or Another Party's Finished Product Testing or Certification, to Meet Testing and Certification Requirements. Third party test results of bulk component material may be used for certification purposes for all products using the bulk material to which the tests apply.

Additionally, 16 C.F.R. § 1107.23 requires that the certification testing be repeated whenever the manufacturer makes a material change in the product. A material change is defined in 16 C.F.R § 1107.2 as:

... any change in the product's design, manufacturing process, or sourcing of component parts that a manufacturer exercising due care knows, or should know, could affect the product's ability to comply with the applicable rules, bans, standards, or regulations.

As described in 16 C.F.R § 1107.21(c)(2), a production testing plan is a written plan describing actions taken by a manufacturer, other than third party testing, to help ensure continued compliance of a children's product. This written plan would include a description of the actions, (e.g., incoming inspection of raw materials, first party testing, in-factory quality assurance/quality control (QA/QC) systems) that a manufacturer uses to control for potential variability in its production process that could affect the product's compliance. Although some testing is still required in a production testing plan, the test methods employed are not required to be CPSC-accepted test methods; nor must the testing be completed by a CPSC-accepted laboratory. 16 C.F.R. § 1107(a)(2). Additionally, 16 C.F.R. part 1107 does not require manufacturers to necessarily use destructive tests and permits manufacturers to "tailor" the tests to the needs of the product. For commenters who specifically requested biannual testing, or who suggested testing yarns and fabrics, rather than whole products, annually, the application of a production test plan is an option that is currently available for them, provided they establish a production test plan that meets the requirements of 16 C.F.R. part 1107(c)(2).

All product changes are not necessarily material changes. Only changes that a manufacturer, exercising due care, knows, or should know, could affect the product's ability to comply with the requirements are material changes. Therefore, for a hand weaver, this requirement may mean that a change in yarn alone is not necessarily a material change, unless the new yarn could affect the compliance of the finished product. For example, sourcing yarn from a different supplier is considered a material change because the hand weaver cannot assume that the new yarn has the same mechanical properties as previously used yarns. Furthermore, only the rules affected by a

²⁰ <https://www.gpo.gov/fdsys/granule/CFR-2012-title16-vol2/CFR-2012-title16-vol2-part1109>.

material change require third party testing. For example, if a hand weaver changes the color of a yarn, unless the coloring process affects the mechanical strength of the yarn, material change testing to ASTM F2907 section 7.1, Static Load Test, is not required.

Periodic testing frequency is determined in 16 C.F.R. part 1107, which is outside the current rulemaking effort.

Regarding the comment requesting “basic licensure or proof of competency per manufacturer/weaver,” this is not an option that is available to the Commission because it is not within the jurisdiction of the CPSC to conduct pre-market testing or certify manufacturers for any industry. Consequently, staff recommends no change in the final rule based on these comments.

Comment: *One commenter proposed, and several others referenced or quoted the comment, that CPSC should: “Require specific recordkeeping. Manufacturers would need to keep a record of these compliant materials for review” as a “quicker [sic], less costly, and less destructive way to maintain compliance.”*

CPSC Staff Response: Record keeping related to the testing and certification of children’s products is already required under 16 C.F.R. § 1107.26.

V. Periodic testing: necessity (expanded response Tab F)

Comment: *Eleven commenters requested that the Commission consider exemptions for certain type of fabrics or provide a guideline for fiber content, yarn weights, thread count, weave structures and fabric weights to be used for slings.*

Specifically, one comment (CPSC-2014-0018-0070) stated: “There are already weight standards in place that determine whether a textile shall be tested for flammability. This is because previous tests have determined that a fabric over a certain weight does not pose a flammability risk. I believe a similar standard could be determined to provide a guideline for what characteristics of cloth (sett, ppi, fiber content) make for a suitable textile to be used as an infant sling. Anything produced outside these tested and approved parameters could be tested to insure compliance with the standard.”

CPSC Staff Response: Although the Standard for the Flammability of Clothing Textiles (16 C.F.R. part 1610) provides exemptions from flammability testing for certain types of fabrics, such as “plain surface fabrics, regardless of fiber content, weighing 2.6 ounces per square yard or more,” the exemptions in 16 C.F.R. part 1610 are based on years of test experience and data. CPSC staff tested approximately 40 slings, to date. However, this does not provide staff with

sufficient data at this time to determine guidelines or exemptions regarding fabric integrity for the fabrics to be used for slings. Staff could consider this issue in the future, when more test experience and sufficient data are gathered.

Comment: One comment was received regarding the flammability testing. This comment (-0014) stated: "I question the need for the flammability testing. None of the injuries or fatalities were related to fire. In any event, we are just talking about woven pieces of cloth here, no different than other, less regulated, fabrics used for ordinary clothing."

CPSC Staff Response: ASTM F2907-15 states:

- a. Flammability—There shall be no Class 2 or 3 fabrics used in the construction of a sling carrier when the product is evaluated against the requirements of 16 C.F.R. part 1610.

The regulation at 16 C.F.R. part 1610 is the standard that regulates clothing textile flammability, Standard for the Flammability of Clothing Textiles. Woven fabrics used for slings are in the same category of clothing textiles. Accordingly, they also need to pass the clothing flammability standard. Part 1610 provides exemptions for certain types of fabrics, and the majority of fabrics used for slings are heavier and of the type already exempted from flammability testing. Therefore, a sling that uses plain-surface fabric weighing 2.6 oz./sq. yard or more, or fabrics derived from any of the following fibers or created entirely from a combination of these fibers: acrylic, modacrylic, nylon, olefin, polyester, and wool, will meet the requirements of the standard without flammability testing. Only products that are "incapable of being evaluated to the requirements of 16 CFR 1610" are required to undergo flammability tests under 16 C.F.R. § 1500.3(c)(6)(vi).

VI. RECENT COMPLIANCE ACTIVITY

Six recalls of sling carriers for issues involving structural integrity, falls, and suffocation have occurred since January 1, 2001. The most recent recall was in 2010. There have been no additional recalls for sling carriers since the Sling Carrier NPR in 2014.

VII. POTENTIAL SMALL BUSINESS IMPACT (TAB D)

Under SBA guidelines, a manufacturer of sling carriers is "small" if it has 500 or fewer employees, and importers and wholesalers are "small" if they have 100 or fewer employees. Based on these guidelines, all sling carrier manufacturers, except one (with a large parent

corporation), appear to be small businesses.²¹ These small businesses consist of approximately 400 U.S.-based manufacturers and an unknown number of importers. In addition, there is a subset of these small businesses described as “very small businesses.” BCIA has identified 250 manufacturers of slings, wraps, or pouches with annual sales revenue under \$10,000 and an additional 45 with revenues greater than \$10,000, but less than \$50,000. Advocacy²² has described many of these small sling manufacturers as “stay-at-home moms that supplement their income by creating the slings.” To respond to Advocacy, the FRFA defines “very small manufacturers” as manufacturers with a single person or a couple working out of the home, with annual revenues under \$50,000.

The majority of the costs associated with the draft standard will probably be related to testing. Few of the sling carrier manufacturers have the technical capability or the equipment in-house to conduct many of the tests required by the standard, especially the dynamic load, occupant retention, and restraint system tests. Therefore, most small and very small manufacturers probably will have to rely on third party testing during product development, and thus, they could incur significant testing costs by simply pre-testing to determine initially whether their products comply with the draft standard, and retesting their products if the designs have to be modified to comply.

The data provided by BCIA indicate that the initial certification tests and the periodic tests (individually and in combination) are likely to have a significant negative impact on all but mass producers of slings, and the testing requirements could cause numerous very small producers to exit the market. Additionally, according to Advocacy, stakeholders that contacted the Advocacy do not agree (as suggested in the initial regulatory flexibility analysis (IRFA)) that the costs to meet the requirements of the ASTM standard will necessarily be minimal. Consequently, we conclude that the draft final rule will likely have a significant impact on a substantial number of small entities.

VIII. ANALYSIS OF ALTERNATIVES AND OTHER OPTIONS

The project team for the sling rulemaking recommends that the final rule adopt F2907 – 15, with one change, to address “free-hanging” labels and provide a 12-month effective date. The project team considered a number of alternatives and other options proposed by the Directorate for Economics (Tab C) and other staff, and the Commission could consider in reducing the impact of

²¹ The IRFA noted two large sling producers. However, one of the two large firms that had previously produced slings has converted to producing a soft structured carrier, also called a soft infant and toddler carrier.

²² February 12. Email from BCIA in response to a CPSC request for information on the number, size, and types of sling manufacturers and importers selling slings in the U.S., February 12, 2015

the rule on small businesses. A discussion of each option and staff's analysis of each option are below.

A. Determine that slings are not durable products and terminate rulemaking

Staff recommends promulgating the draft final rule. For the reasons stated in the 2014 NPR briefing package and reiterated above in the response to comments, staff concludes that all types of sling carriers are infant carriers under section 104 and recommends proceeding. Commission regulations currently include infant slings in the definition of "durable infant or toddler product." 16 C.F.R. § 1130.2(a). The Commission, however, could reverse its previous determination and revise the product registration rule to remove "infant slings" from the definition of "durable infant or toddler product" in 16 C.F.R. § 1130.2(a). The Commission could base this decision on several factors, including that sling carriers consist primarily of fabrics and are generally used for a brief period of time. If the Commission determines that slings are not infant or toddler products, the Commission would not be required to issue a product safety rule for slings under section 104(b) of the CPSIA.

Under this alternative, although there would be no mandatory infant sling standard, the voluntary standard would still exist; additionally, enforcement actions, such as recalls under Section 15 of the CPSA, would still be available. Because the Commission has previously issued a regulation defining "durable infant or toddler product" to include "infant slings," and staff conducted a lengthy analysis at the notice of proposed rulemaking staged which concluded that sling carriers are durable infant carriers, staff believes that not regulating would not meet the requirements under Section 104 to promulgate a standard that is substantially the same or more stringent than the current voluntary standard. Therefore, staff does not recommend this option.

B. Delay the effective date of the requirements

Staff is recommending a 12-month effective date for the draft final rule. The Commission could consider a longer effective date to further mitigate the effects of the rule on small businesses. This would provide small businesses with additional time to conduct third party certification tests (*e.g.*, to use foreign testing firms, which are less expensive than domestic firms) and permit these businesses to spread the costs of conforming to the rule over a longer time period. Staff does not recommend this alternative because this would only delay, not alleviate the burden. Moreover, commenters generally favored the 12-month effective date.

C. Exempt wraps from the standard

A wrap is a single, rectangular piece of woven or knitted fabric, with no load bearing hardware or seams. Although Laboratory Sciences conducted limited testing, staff has not found any wraps that fail the tests for structural integrity or occupant retention. Nor did staff identify any injuries associated with structural fabric weaknesses in wraps. However, wraps have been involved in suffocation incidents. The draft final rule is expected to have a negative impact on approximately

150 to 200 small and very small businesses that produce wraps. If wraps are exempt from the standard, this might allow some very small businesses to remain in the sling market, if they can convert their production to wraps and find a market for their product.

If the rule excludes wraps, wraps would not be subject to the rule's labeling and third party testing requirements. Although the efficacy of using labels to warn against hazardous behaviors is uncertain, numerous comments addressed the vital importance of education, instructions, and labeling for sling carriers.

Therefore, staff is recommending that all types of sling carriers, including wraps, be covered by the final rule. However, the Commission could decide to exclude wraps from the requirements of the standard.

D. Small Batch Exemption

Given the large number of very small businesses in the sling market, exempting small batch manufacturers from third party testing requirements might appear to be an alternative to address the impact of a sling rule on small businesses. However, under Section 14(d)(4)(C)(ii) of the CPSA, the Commission cannot "provide any alternative requirements or exemption" from third party testing for "durable infant or toddler products," as defined in section 104(f) of the Consumer Product Safety Improvement Act of 2008. Consequently, staff can not recommend a small batch exemption absent a statutory change.

E. Amend 16 C.F.R. part 1107 to reduce the frequency of periodic testing for small or home-based sling producers

The Commission could amend 16 C.F.R. part 1107 to reduce the frequency of periodic testing for small home-based businesses that produce sling carriers. Currently, under the requirements of 16 C.F.R. § 1107.21, these firms need to conduct periodic third party tests annually, or, if they have a formal production testing plan, every 2 years. For manufacturers with established product testing plans, one option the Commission could consider at a later date would be to require third party periodic testing only after a certain number of units of a product had been produced, even if it meant that periodic third party tests would be conducted less than every 2 years. Under this alternative, firms would still be required to: (1) produce conforming products; (2) conduct the initial certification tests (16 C.F.R. § 1107.20); (3) re-certify whenever there is a material change to the product (16 C.F.R. § 1107.23); and (4) implement a production testing plan and conduct ongoing production tests (16 C.F.R. § 1107.21(c)). This option is not a true alternative to regulating sling carriers; therefore, staff is presenting no recommendation. However, if the Commission wished to consider adding a low-volume option to the periodic testing regulation at some point after promulgation of the sling carrier rule, the option could reduce the testing burden on low-volume manufacturers.

F. Adopt ASTM F2907-15, *Standard Consumer Safety Specification for Sling Carriers*, with no changes, and direct staff to work with ASTM to improve durability/attachment of warning labels in a future revision of the voluntary standard.

The Commission could publish a final rule that incorporates by reference ASTM F2907-15, with no changes, and then direct staff to work with ASTM to develop a requirement to address the commenter's concern that: "free-hanging" labels are likely to be accidentally torn or ripped off, intentionally cut off or removed, or rolled and sewn against a hem to keep the label out of the way. This alternative allows input from stakeholders on the best ways to address this issue. However, staff does not recommend this option because the uncertainty this option will create with small businesses, given the 12-month effective date, could result in an update to ASTM F2907 before the rule goes into effect.

IX. EFFECTIVE DATE

Unless there are specific reasons justifying a longer effective date, staff generally considers 6 months to be sufficient time for suppliers to come into compliance with a durable infant and toddler product rule. Additionally, 6 months is the period JPMA typically allows for products in their certification program to shift to a new voluntary standard once that new voluntary standard is published. Therefore, juvenile product manufacturers are accustomed to adjusting to new voluntary standards within this time frame.

Nevertheless, given the large number of very small suppliers who will potentially experience significant economic impacts, in addition to the lack of established history of compliance with the voluntary standard, staff is recommending the 12-month effective date proposed in the NPR to minimize the impact on small businesses.

X. STAFF RECOMMENDATIONS

Because the Commission has previously determined that "infant slings" are durable nursery products requiring a product registration card (16 C.F.R. § 1130.4) and are therefore subject to the requirements of section 104 of the CPSIA, staff recommends proceeding with finalizing the proposed rule despite the potentially large impact to small businesses affected by the rule. Accordingly, CPSC staff recommends that the Commission publish the draft final rule that incorporates by reference the voluntary standard, ASTM F2907-15, *Standard Consumer Safety Specification for Sling Carriers*, with a single change to add the following new subsection to address concerns about the ease with which the required warning labels can be removed if attached by only one seam:

5.7.3 Warning labels that are attached to the fabric with seams shall remain in contact with the fabric around the entire perimeter of the label, when the sling is in all manufacturer-recommended use positions.

CPSC staff believes that the modification to ASTM F2907 - 15 will reduce the number of deaths and injuries to infants from infant slings and recommends that the Commission adopt staff's draft final rule for infant slings with an effective date of 12 months after publication for products manufactured or imported on or after that date.

TAB A: Sling Carriers-Related Deaths, Injuries, and Potential Injuries Reported Between October 28, 2013 and September 15, 2016

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

Memorandum

Date: October 6, 2016

TO: Hope Nesteruk
Sling Carriers Project Manager
Division of Mechanical and Combustion Engineering
Directorate for Engineering Sciences

THROUGH: Kathleen Stralka
Associate Executive Director
Directorate for Epidemiology

Stephen Hanway
Division Director, Division of Hazard Analysis
Directorate for Epidemiology

FROM: Risana Chowdhury
Division of Hazard Analysis
Directorate for Epidemiology

SUBJECT: Sling Carriers-Related Deaths, Injuries, and Potential Injuries Reported
Between October 28, 2013 and September 15, 2016²³

I. Introduction

This memorandum updates the data in the sling carriers' notice of proposed rulemaking (NPR) briefing package presented to the Commission in June 2014, and the memorandum also provides responses to public comments related to incident data presented in the NPR. The date of extraction for the earlier data was October 28, 2013, and the period covered was January 1, 2003 to October 27, 2013. This memorandum

²³ 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.

includes sling carrier-related incident data reported to CPSC staff since October 27, 2013 through September 15, 2016.²⁴ The number of emergency department-treated injuries associated with slings for the period covered was insufficient to derive any reportable national estimates.²⁵ Hence, injury estimates are not presented in this memorandum. Instead, the emergency department-treated injuries are included in the total count of reported incidents presented.

II. Incident Data²⁶

In the NPR briefing package, CPSC staff from the Directorate for Epidemiology identified a total of 122 incidents, including 16 fatalities and 54 injuries related to sling carriers that were reported to have occurred from January 2003 through October 2013. Since the extraction of the data for the NPR briefing package, CPSC staff has received 37 new reports (1 fatal and 36 nonfatal) related to sling carriers. Although reporting is ongoing, most of the new reports show a date of occurrence in 2014. Among the incidents where the age of the victim was reported, the children were 10 months old or younger. Age was not reported in 20 incidents because no injury was involved or the age of the victim was unknown.

A. Fatalities

²⁴ Not all of these incidents are addressable by an action the CPSC could take. It is not the purpose of this memorandum, however, to evaluate the addressability of the incidents, but rather, to quantify the number of fatalities and injuries reported to CPSC staff and to provide, when feasible, estimates of emergency department-treated injuries.

²⁵ According to the NEISS publication criteria, an estimate must be 1,200 or greater, the sample size must be 20 or greater, and the coefficient of variation must be 33 percent or smaller before the estimate can be published.

²⁶ 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). The 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 sling carriers.

Date of extraction for reported incident data was 09/20/16. The incident reports involving carriers do not always clearly specify the type of the carrier involved. As such, all data coded under product codes 1527/1548/1549 and age range 0-4 years was extracted, yielding a very large initial data pool. Upon careful joint review with CPSC's Directorates for Engineering Sciences, Economic Analysis, and Health Sciences staff, many cases were considered out-of-scope for the purposes of this memorandum. For example, cases with SIDS or other pre-existing medical conditions as official cause of death or cases where a child was outside a carrier at the time of injury, were excluded. However, all incidents where hazardous environments in and around the sling carrier resulted in a fatality, injury, or near-injury incident were retained. With the exception of incidents occurring in United States military bases, all incidents that occurred outside of the United States have been excluded. To prevent any double-counting, when multiple reports of the same incident were identified, they were consolidated and counted as one incident.

One suffocation incident occurred in 2013; at the time, the 5-month-old was severely injured due to a lack of oxygen. The child later died in 2015. An in-depth follow-up investigation could not be completed due to non-response from the law firm that filed the original incident report.

B. Nonfatal Incidents

Among the 36 nonfatal incident reports related to sling carriers, 13 reported an injury to the infant or toddler while using the product. All of the injury victims were infants ranging in age from 1 month to 10 months.

Among the 13 nonfatal injuries, one required hospitalization for a leg fracture from a fall. An additional skull fracture injury was reported, but hospitalization was not mentioned. Other non-hospitalized injuries included closed-head injuries,²⁷ contusions/abrasions, lacerations/scratches, and skin rash.

III. Hazard Patterns

Staff did not identify any new hazard patterns among the 37 reports received by CPSC staff since the sling carrier NPR. In order of frequency of incident reports, the hazard patterns identified in the new data were grouped into following categories:

- Consumer comments
- Caregiver missteps
- Miscellaneous product related issues
- Unspecified falls
- Positioning

1. **Consumer comments:** Seventeen reports consisted of consumer concerns or observations about perceived safety hazards of a product, its noncompliance with standards, and/or contentions of unauthorized sale. None of these reports indicated that any incident had actually occurred, or that the consumer owned the product.

2. **Caregiver missteps:** Eleven of the incidents occurred when the caregiver slipped, tripped, or grabbed/dropped the child while placing or removing the child from

²⁷ According to staff from the Directorate for Health Sciences, a closed-head injury is a head injury where the skull remained intact but it can range in severity from a minor bump to a severe life-threatening traumatic brain injury.

the carrier. Nine of the incidents resulted in an injury, such as a skull fracture, closed-head injury, or nursemaid's elbow.

3. **Miscellaneous product-related issues:** In four of the five incident reports in this category, consumers complained about unspecified breakage or the poor quality of the fabric, the ring(s), and/or the stitching used in the sling carrier. One minor injury was reported when an infant fell through the sling due to ripped fabric. An additional incident of an infant developing skin rash due to the use of a wrap sling carrier was also reported.
4. **Unspecified falls:** Three of the incident reports mentioned falls, without specifying the cause. Two of the three incidents were reported through hospital emergency departments, with very little scenario-specific information. One of these two injuries required hospitalization for a leg fracture, while the other was a closed-head injury. The third incident report did not mention any injuries.
5. Problem with **positioning** the infant in the sling carrier: According to the single fatal incident report, the sling carrier's design made it difficult to safely position the infant and caused a severe permanent injury that later led to her death.

IV. Responses to Notice of Proposed Rulemaking Public Comments

In general, most of the incident data-related comments expressed one or two opinions. First, a majority of the comments claim that most injuries and deaths cited in the NPR briefing package are from positioning errors and caregiver missteps. Second, many commenters claim that in the incident data presented no injury or death was related to the issue of fabric strength. CPSC staff agrees that for the incidents for which sufficient information was available, caregiver missteps were often cited in the reports; however, there were many incidents with insufficient information. The lack of information is not evidence that product-related defects (for example, fabric weakness) were absent in the incidents.

There were a few commenters who went into specific details of the data presented in the NPR package. These are discussed below.

CPSC-2014-0018-0011

1. *Comment:* "The reported injuries are not the result of manufacturer defects."

Response: Staff disagrees with this comment. Of the 54 injuries, nine were product-related (three buckle-related and six miscellaneous product-related). Of the 52 non-injury incidents, 12 were product-related (nine buckle-related and three miscellaneous

product-related). An additional 25 reported incidents, including seven fatalities and 15 injuries (including two hospitalizations) under the *undetermined* or *unspecified* category, did not provide enough information for staff to make a determination on the cause(s) leading to the incident. This lack of information is not the same as conclusive evidence that no manufacturer defects were involved in these incidents.

2. *Comment*: “How does the rate of injury/death for sling carriers compare to other modes of carrying children?”

Comment: “There is enough evidence to suggest that using a sling carrier is far safer than holding an infant. To enact a rule which eliminates carriers from the population would place more children at risk.”

Response: CPSC staff has not compared the rate of injury/death for sling carriers with the rate for other similar modes. However, a comparative analysis is not relevant for this briefing package. Staff does not claim that sling carriers are more or less dangerous than other infant carriers; and regulation mandated under CPSIA does not require this comparison.

3. *Comment*: “[The] non-incident, non-injury comments helped to inflate the perceived danger of both sling carriers and SITCs.”

Response: For briefing packages on section 104 rules, staff reports on *all* relevant data reported to CPSC. Because the non-injury comments are not used as the basis for recommending any new requirements for a standard, their inclusion in the briefing package does not affect the issuance of a section 104 rule.

4. *Comment*: “. . . there was an overall lack of information associating injuries with specific makes and models of sling carriers”

Response: CPSC staff intentionally omitted information on product make and model in the briefing package. Because many of the products involved in incidents were not identifiable by make and model, providing the information only for the known ones would unfairly target those manufacturers. The purpose of the NPR is to cover the product class, not certain makes and models of which CPSC staff is aware.

CPSC-2014-0018-0179

1. *Comment*: One comment suggested that suffocation-related incidents are understated.

Response: Staff disagrees. For each briefing package, CPSC staff, as a team, makes a deliberate decision about the most relevant period from which to include the data. Usually this period starts from the date of the latest major revision of the relevant ASTM standard. For sling carriers, the very first ASTM standard, F2907–12, was developed using CPSC data from 2003 forward. This briefing package covered the period from

2003 forward. Moreover, consistent with other durable product briefing packages, certain incidents (*e.g.*, those with an official cause of death of SIDS and with no additional definitive information) were considered out of scope. The commenters cite sling-related data and analysis from CPSC from prior years. The data inclusion criteria were different because the purposes were different. The discrepancy was not an attempt to understate the dangers of suffocation associated with using sling carriers.

2. *Comment:* Another comment suggested that staff mischaracterizes incidents by categorizing some incidents as “undetermined” or “unspecified cause,” instead of positional asphyxia and excluding SIDS as a position-related incident.

Response: The hazard pattern in the incident data, as presented by the Directorate for Epidemiology, must be based solely on information provided in the incident reports, and it cannot be based on inferences using expert opinion. When sufficient information was unavailable, Epidemiology staff characterized the incident as “unspecified cause”; when conflicting or unclear information was provided, the incident was characterized as “undetermined.” Staff of the Directorate for Health Sciences presented expert opinion in the exposition. Importantly, suffocation due to positioning has already been identified as the major hazard in the fatal incidents.

Data inclusion/exclusion criteria are *not* the same for all CPSC analysis. For all CPSIA section 104 packages, we excluded fatalities with an official cause of death of SIDS, and no additional information; we applied the same protocol to sling carriers data.

**TAB B: Engineering Response to Public Comments
Received on the Noticed of Proposed Rulemaking
(NPR) for Safety Standard for Sling Carriers.**

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

Memorandum

Date: November 3, 2016

TO : Hope Nesteruk, Sling Carrier Project Manager
Division of Mechanical and Combustion Engineering
Directorate for Engineering Sciences

THROUGH: Andrew Stadnik, Associate Executive Director
Directorate for Laboratory Science

Michael Nelson, Director
Division of Mechanical Engineering

FROM : Maxwell Sanborn, Mechanical Engineer
Division of Mechanical Engineering
Directorate for Laboratory Science

SUBJECT : Engineering Response to Public Comments Received on the Noticed of
Proposed Rulemaking (NPR) for Safety Standard for Sling Carriers

Introduction

The Division of Mechanical Engineering was tasked with addressing the comments related to performance testing methods and testing equipment on the NPR for the safety standard for sling carriers. The draft final rule is based on the voluntary standard developed by ASTM International, ASTM F2907 – 15, *Standard Consumer Safety Specification for Sling Carriers*. However, the standard at the time the NPR was published was ASTM F2907-14a; so the comments may not reflect the substantial changes made to the standard since then. Many comments were amended during the public comment period to reflect the commenter's change of mind. In those instances, the amended position will take precedence over the original comment.

Comments on test methods: There are three non-amended comments regarding test methods.

CPSC-2014-0018-0011 is a 12-page letter stating: "The purpose of this rebuttal is to identify and enumerate the severe effects this rule will levy against new and very-small manufacturers and propose changes for to [*sic*] the rule which will ensure proper safety regulation while encouraging competition and new business growth." The commenter quotes extensively from the proposed rule and from statements made by former Commissioner Nancy Nord. The discussion pertaining to test methods states that the Occupant Retention Test does not accurately separate good ring slings from poorly constructed ring slings.

CPSC Hotline: 1-800-638-CPSC(2772) ★ CPSC Web Site: <http://www.cpsc.gov>

Response: The voluntary standard was changed in the -14b version to address this concern, allowing a maximum of 3” of slippage for ring slings. The previous version allowed only 1 inch of slippage. CPSC staff tested the revision in ASTM F2907, which was published as ASTM F2907-14b; staff found that the increase from 1 inch to 3 inches did not decrease the stringency of the standard. The dual-ring lock mechanism on ring slings is unique to those products; and to maintain the strength of the dual-ring lock, the fabric must be under tension. During normal use, this tension is maintained from the weight of the child. During testing, the dual-ring lock is exposed repeatedly to tension, then release; and the test torso is moved up and down. Due to the nature of the dual-ring lock, this allows the fabric to creep through the dual-ring lock. However, some fabric creep does not appear to compromise the overall ability of the sling to contain the child. The test still maintains the requirement that the dual-ring lock shall not release completely. Staff found that this fabric creep was unique to the dual-ring lock.

CPSC-2014-0018-0019 and CPSC-2014-0018-0111 express the concern that the performance tests are conducted by individuals who have no knowledge of safe babywearing.

Response: The voluntary standard instructs test personnel to: “Fasten the sling carrier to a test torso as directed in the instruction manual supplied with the product.” The product’s instructions should be clear enough so that a user or tester can correctly put a sling on themselves or a test torso. As such, staff believes that this procedure best replicates an inexperienced consumer and should be retained.

Comments on fabric testing: CPSC-2014-0018-0126 suggested that woven wraps should not be required to be performance tested if they are constructed out of fabrics with known tensile/mechanical properties.

Response: The tensile properties of a fabric are not the only properties that determine whether a sling carrier poses a safety hazard, even for a wrap. A fabric may have high tensile strength, like silk, but may also be very smooth and allow a knot to slip easily.

Comments on test equipment: There were four comments regarding testing equipment.

CPSC-2014-0018-0178 wrote that the performance tests should use a weighted doll with arms, legs, and a head, and a fabric mannequin with arms, neck, waist and hips (the “mannequin” is assumed to mean the test torso. This is addressed later in the memo). CPSC-2014-0018-0182 suggests that the tests be performed with an “appropriately weighted doll.”

Response: F2907-15 calls for a 35 lb. 6-inch to 8-inch diameter bag filled with shot for the dynamic test. This is the same dynamic test as in F2236, *Standard Consumer Safety Specification for Soft Infant and Toddler Carriers*. Using a unique testing mass would increase costs and be technically difficult because this test mass must be lifted and dropped 1,000 times for each test. The static load test (again, same test as in F2236) requires a mass of three times the manufacturer's maximum weight. A doll weighing that much most likely would not fit in a sling. For the occupant retention test, F2907 calls for a test mass consisting of a bag of flexible material filled with sand, with a mass of 20 lbs. or 35 lbs., depending on the product’s stated maximum weight limit. These sand test masses are inexpensive and easily made. Their primary purpose is

to apply a load to the sling, and they move around quite a bit during testing. Using a weighted doll would increase test costs, and weighted dolls are not anticipated to change the results.

CPSC-2014-0018-0175 suggests putting a shirt on the test torso or, preferably, using the test torso from ASTM F2236, also known as the BOB (Boxing Opponent Bag) torso. The BOB torso is a commercially available item, sold for around \$300. The BOB torso is a piece of sports equipment used in boxing and martial arts as a striking target. It is made of soft rubber and foam and designed to appear like the torso of a man. The torso specified in F2907-15 is not commercially available at this time and must be fabricated using the dimensions specified in the voluntary standard.

CPSC-2014-0018-0180 wrote: “We also support the consideration of a change in the testing mannequin, pending the outcome of the ASTM task group.” Again, the mannequin is assumed to be the test torso, more specifically, using BOB instead of the current torso.

Response: The voluntary standard was changed in the -15 version to require that a shirt be worn on the test torso. Regarding the use of the BOB torso, CPSC staff tested nine new slings from eight different firms (two slings came from the same firm but were different sizes) to the Occupant Retention Test from F2907 using the BOB torso to determine how the testing may vary and to compare the results with previous tests. The results for the tests are below:

Sample #	Type	3" Slippage after 100 cycles	Remain Attached after 1000 cycles	Comments
16-440-0019	Ring Sling	Pass	Fail	Test mass fell out of sling at 5:40
16-440-0020	Ring Sling	Pass	Pass	
16-440-0021	Ring Sling	Pass	Pass	
16-440-0022	Wrap	not tested	not tested	Could not get test mass to stay in wrap
16-440-0023	Ring Sling	Pass	Pass	
16-440-0024	Ring Sling	Pass	Pass	
16-440-0025	Ring Sling	Pass	Pass	
16-440-0026	Ring Sling	Pass	Fail	Sling fabric ruptured at 4:30
16-440-0027	Loop	n/a	Pass	This sample has no fasteners or adjustments

The results from the Occupant Retention Tests with the BOB torso are similar to previous tests performed by CPSC staff. One notable exception is sample 16-440-022, a wrap. This sample could not be tested because the test mass could not be loaded properly into the wrap. Although loading the test mass into a wrap on the currently used test torso isn't necessarily easy, it is possible. Difficulties using the BOB torso may be because of the higher friction of the soft rubber outer surface and the morphology of the torso. The higher friction surface does not allow the test mass to slide down the torso into the wrap seating area like the current torso does. Additionally, the BOB torso is meant to resemble a muscular man with well-developed pectoral muscles. These obstructive muscles require the test personnel to load the test mass at an awkward, unnatural angle. LSM staff would not discourage using the BOB torso in F2907; however, testers should explore easier techniques to use the BOB torso with wraps.

**TAB C: Human Factors Staff Response to NPR Comments
and Revised Warning Requirements for Sling Carriers
(CPSIA Section 104)**

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UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
ROCKVILLE, MD 20850

MEMORANDUM

DATE: November 3, 2016

TO: Hope E J. Nesteruk, Project Manager, Sling Carriers Rulemaking,
Division of Mechanical and Combustion Engineering, Directorate for Engineering
Sciences

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

Rana Balci-Sinha, Ph.D., Director,
Division of Human Factors, Directorate for Engineering Sciences

FROM: Timothy P. Smith, Senior Human Factors Engineer, and
Hope E J. Nesteruk, Children's Program Manager,
Directorate for Engineering Sciences

SUBJECT: Human Factors Staff Response to NPR Comments and Revised Warning
Requirements for Sling Carriers (CPSIA Section 104)

BACKGROUND

The ASTM International (ASTM) voluntary standard ASTM F2907, *Consumer Safety Specification for Sling Carriers*, establishes requirements for sling carriers, commonly referred to simply as slings. ASTM developed this standard in response to incident data supplied by staff of the U.S. Consumer Product Safety Commission (CPSC or Commission). The first version of the standard was published in 2012, and the most current, approved version is ASTM F2907 – 15. Section 8 of the standard specifies marking and labeling requirements, which include warning statements that must appear on each sling. Section 9 specifies the instructional literature that must accompany slings.

On June 11, 2014, CPSC staff delivered a draft notice of proposed rulemaking (NPR) to the Commission for publication in the *Federal Register*, along with a briefing package assessing the effectiveness of the ASTM voluntary standard and presenting staff's draft proposed rule for sling carriers. In the briefing package, staff recommended that the Commission publish an NPR that incorporates by reference ASTM F2907 – 14a, which was the version of the voluntary standard in effect at the time, without revisions. On July 9, 2014, the Commission voted unanimously (3–0) to approve publication of the NPR, as drafted. The NPR appeared in the *Federal Register* on July 23, 2014 (79 FR 42724).

CPSC Hotline: 1-800-638-CPSC(2772) ★ CPSC Web Site: <http://www.cpsc.gov>

The public comment period for the NPR closed on October 6, 2014, and CPSC received 183 comments. Of these, 119 comments addressed human factors issues pertaining to education, user error, and the proposed warning, labeling, and instructional requirements, at least partially. This memorandum, prepared by staff of CPSC's Directorate for Engineering Sciences, Division of Human Factors²⁸ (ESHF), responds to these issues and discusses revised requirements intended to address these issues.

DISCUSSION

PUBLIC COMMENTS

Of the 119 public comments that address human factors-related issues associated with the NPR, 50 comments raise issues pertaining to the proposed warning and instructional requirements, 71 comments raise issues pertaining to education, and 71 comments discuss issues associated with user error and the misuse of sling carriers. Many comments raised multiple issues.

Warning and Instructional Requirements

Fifty public comments raise issues associated with the proposed warning, labeling, or instructional requirements. Of these 50 comments, 15 generally support the proposed warning label and instructional requirements. More specific comments and issues are discussed below.

Nineteen comments generally discuss the effectiveness of warnings and instructions in addressing the hazards. The most common argument advanced by commenters is that, in the context of sling carriers, labeling, instructions, and similar approaches are superior to performance requirements, or the proposed material testing requirements, because the hazards with slings result from user error, infant positioning, or similar behavioral issues. Some comments (e.g., -0043, -0063, -0095) assert that warnings and instructions are all that is needed, or are the only requirements that are likely to prevent injuries. In contrast, one comment (-0179) argues that warnings are not likely to address the hazard effectively, as demonstrated by recent deaths, and that instructing consumers to "check often" is an unreasonable expectation.

Improper infant positioning accounts for the majority of fatalities associated with these products. ESHF staff generally recommends designing the hazard out of a product or guarding the consumer from the hazard, rather than employing warnings, because a warning's effectiveness depends on persuading consumers to alter their behavior to avoid the hazard. Nevertheless, as discussed in the NPR briefing package, staff was unable to develop performance tests or requirements that could address the infant positioning hazard; therefore, staff concluded that the "last resort" measure of warning about proper and improper infant positioning was the only feasible hazard-mitigation strategy (see Smith, 2014). Staff continues to believe that this is the only viable way of addressing the infant positioning hazard, short of a ban on slings. However, staff does not agree that warnings and instructions are all that are needed to address injuries with

²⁸ At the time this memorandum was originally drafted, Ms. Nesteruk was a Human Factors Engineer in the Division of Human Factors.

sling carriers. Accordingly, staff supports the standard's inclusion of performance requirements that are intended to address hazards other than infant positioning.

Sixteen comments address the content of the warning label and instructions, generally in terms of consumer comprehension of the information. These include comments about the how the labels and instructions should be easy to understand, clear, accurate, pertinent, and should include all necessary information, including what behavior to avoid.

ESHF staff agrees that the warnings and instructions must be accurate, comprehensive, and easy to understand. Staff believes that the proposed requirements for sling carriers accomplish these goals. Staff worked with the ASTM Subcommittee on Sling Carriers to improve the requirements for warnings and instructions, from what appeared in the original 2012 version of the voluntary standard, to more effectively address the sling hazards that performance requirements cannot address. Staff believes that the current ASTM standard requirements for warning and instructional content adequately address key information about the nature of the hazards, the consequences of exposure to the hazards, and appropriate behaviors in which consumers can and should engage—or not engage—to avoid these hazards. Thus, staff does not believe that revisions to the content requirements are necessary. Regarding specific content-related issues raised by the commenters:

- *Two comments (-0016 & -0058) propose discouraging the use of slings with infants younger than a certain age (i.e., 4 months or 6 months). The proposed warning already identifies infants “younger than 4 months” to be at risk of suffocation in slings if the baby’s face is pressed tightly against the wearer’s body (ASTM F2907 – 15, Section 8.3.3). The warning also identifies an increased risk of suffocation to babies who are born prematurely or have respiratory problems. These criteria are supported by the available fatal incident data and the prior incident data analysis by staff of CPSC’s Directorate for Health Sciences (HS) (see Wanna-Nakamura, 2014).*
- *Two comments (-0031 & -0118) state that the warning should include or highlight images of proper positioning. One of these comments (-0031) refers to TICKS to describe such positioning, and the other (-0118) suggests showing the importance of keeping an open airway. The proposed warning already requires a “pictogram comparing proper infant positioning with improper infant positioning” (ASTM F2907 – 15, Section 8.3.4), similar to what commenters are requesting. The acronym referred to in one comment, “TICKS,” is commonly used in the babywearing community to refer to: (1) Tight, (2) In view at all times, (3) Close enough to kiss, (4) Keep chin off chest, and (5) Supported back. Staff and the ASTM Subcommittee on Sling Carriers considered the individual items in this acronym when developing the proposed warning language and example pictogram, and most of these issues are addressed in the current requirements. For example, the warning instructs consumers to “check often” to make sure the baby’s face is “uncovered” and “clearly visible” (the “I” in TICKS). The warning also instructs consumers to make sure the baby does not “curl into a position with the chin resting on or near baby’s chest” because: “[t]his position can interfere with breathing, even when nothing is covering the nose or mouth” (the “K” and “S” in TICKS). CPSC staff and the ASTM Subcommittee felt that certain items, such as keeping the baby “tight” and “close enough to kiss,” were either redundant or not key independent factors for safe*

babywearing. For example, the “T” in TICKS refers to keeping the baby tight and close to the wearer; however, positioning the baby’s face tight against the wearer can lead to suffocation. Thus, the proposed warning specifically instructs consumers to make sure the baby’s face is away from, and *not* pressed tight against, the wearer. The Subcommittee also considered adding warning language or pictograms instructing consumers on how to keep the child close enough to kiss (the “C” in TICKS). However, the Subcommittee was unable to make a compelling case for why a lower position would be less safe if the consumer complied with the other recommendations. Thus, for brevity, the Subcommittee omitted this instruction, and CPSC staff concurs.

- *Two comments (-0038 & -0041) argue that some companies currently include instructions or positioning information that the commenters consider dangerous. One of these comments (-0041) states that the instructions should not show parents doing “advanced carries” with infants without proper head control, and furthermore states that unsafe carries should be shown (and presumably identified as such). CPSC staff believes that the proposed requirements should address most issues pertaining to unsafe positioning, by specifying both proper and improper infant positioning in the warning and instructional language and in the warning pictogram.*
- *One comment (-0079) states that consumers should be aware of the recommendation to check stitching and fabric for wear. Staff is unclear whether the commenter is stating that consumers should be made aware of this information or should already be aware of this information. However, staff notes that the proposed requirements already specify that the instructional literature tells consumers to “check for ripped seams, torn straps or fabric, and damaged hardware before each use,” and to “stop using carrier” if such conditions are found (Section 9.3.3).*
- *One comment (-0172) states that the current warning does not sufficiently describe the suddenness with which suffocation can occur and the need for constant mindfulness and monitoring. The comment also states that the fall hazard is not sufficiently described, that the label should include a website address that refers the reader to online instructions, and that the product should include a marking that clearly indicates that a compliant product meets the mandatory standard. Regarding the suffocation hazard, the proposed warning states that consumers should “check often to make sure baby’s face is uncovered, clearly visible, and away from the caregiver’s body at all times” (emphasis added), which stresses the frequency with which the consumer should check on the child and the importance of never allowing the infant’s face to become covered. Regarding the fall hazard, staff is unclear how the hazard description is insufficient, and the commenter does not elaborate. The proposed warning states: “leaning, bending over, or tripping can cause baby to fall” (Section 8.3.3); these scenarios are supported by the available incident data. Although ESHF staff supports the idea of providing instructions in various ways and formats, including online, some manufacturers may not have an online presence. Staff believes that these alternative instructional resources should supplement the mandatory warnings and instructions that will accompany each sling carrier. Regarding the commenter’s proposed addition of a marking that would identify slings that comply with the applicable mandatory standard, staff does not recommend that addition at this*

time. Section 8.1.3 of ASTM F2907 – 15 and the product registration card rule, 16 C.F.R. § 1130.4 already include requirements for slings to have a code mark or other means to identify the date of manufacture. In addition, manufacturers or importers may voluntarily label compliant products with “Meets CPSC Safety Requirements,” pursuant to section 14 of the Consumer Product Safety Act (CPSA) and 16 C.F.R. part 1107. Thus, adding a marking a requirement to the final rule for sling carriers would be redundant.

- *One comment (-0179) states that the warning's direction to keep the "face uncovered" is weaker than previous warnings by CPSC, and does not address concerns that sling-type carriers can cause infants whose heads are below the rim of the sling to assume a curled posture.* ESHF staff disagrees with the assertion that the directive to keep the face uncovered is weaker than an instruction to keep the head above the rim of the sling. ESHF staff and the ASTM Subcommittee considered a reference to keeping the baby's head above the rim of the sling, but concluded that consumers might have difficulty assessing when an infant's head would be considered “below the rim.” Furthermore, young infants may need head support when carried in a sling, and this would require the sling to pass around the back of the baby's head. This scenario is illustrated in Figure 1. Although this graphic, which appears in the “example pictogram” of the ASTM standard, is intended to show a proper position, consumers may consider the infant's head to be “below the rim” and thus, conclude incorrectly that the position is improper. Because the warnings already instruct consumers to make sure the infant's body does not curl into a chin-to-chest position, the Subcommittee and CPSC staff agreed that warning language instructing consumers to make sure the face is uncovered and fully visible is sufficient to address the risk of positional asphyxia and will minimize confusion.



Fifteen comments specifically discuss the size or length of the warning label and instructions. Many of the comments argue that smaller, shorter, or more "concise" labels and instructions are superior to larger or longer ones, but provide no particular evidence or rationale to support their arguments. One comment (-0179) states that manufacturers are producing "unreasonably long" instructions. Two comments (-0003 & -0008) state that large warning labels hurt the aesthetics of the product, and some simply state that they do not like the idea of a "huge" label (e.g., -0070) or think some of the information in the label seems "a tad much" (-0132). Two comments (-0025 & -0096) claim that shorter labels and instructions are more effective because they are more likely to be read, understood, noticed, or followed. Two comments (-0019, -0057) argue that large labels are more likely to be removed by the consumer, and one of these comments (-0019) specifically identifies “free-hanging” labels as ones that are likely to be accidentally torn or ripped off, intentionally cut off or removed, or rolled and sewn against a hem to keep it out of the way.

Although warning size and length interact, and a lengthy warning (*i.e.*, one that has more content) generally is likely to be larger than a warning with less content, size and length are not

synonymous, and warnings of the same length can differ substantially in size. Research has examined the influence of warning size and length on warning effectiveness. A warning that is physically large is more likely to be conspicuous, and therefore, more likely to capture the attention of a consumer than a small warning (Wogalter & Vigilante, 2006). Shorter warnings are more likely than lengthier ones to be read completely, before the consumer switches attention elsewhere, thereby allowing the consumer to extract the necessary content from the warning (Wogalter & Vigilante, 2006). However, this does not necessarily mean that smaller warnings are more likely to be read, because other warning features that improve readability and motivate consumers to read tend to increase warning size. For example, warnings with larger text tend to be easier to read because larger text is more legible than small text. This is especially helpful for people with visual deficits. Warnings formatted in outline or list format facilitate visual search for information, improve memory of the information, and are perceived to be more effective than cautionary material presented as a continuous paragraph of text (Desaulniers, 1987; Frascara, 2006; Lesch, 2006). Such formatting tends to result in larger warning labels. Similar issues apply to product instructions.

Thus, in terms of size and length, warnings generally should be physically large, but brief. However, a concise warning is unlikely to be effective if it does not convey all key information pertaining to the hazards—namely, a description of the nature of the hazard, consequences of exposure to the hazard, and how to avoid the hazard. Brevity is only one factor that must be considered by a warning designer, and ESHF staff worked with the ASTM Subcommittee to develop effective warning language that is comprehensive, yet reasonably concise.

Staff recognizes that a large label may hurt the aesthetics of the product and that some consumers may feel compelled to remove the label from the product. However, the alternative would be to create a warning that blends into the product or goes unnoticed by consumers, which would likely provide little-to-no safety benefit. Although the proposed standard requires that warning labels be permanent, ESHF staff agrees that so-called “free-hanging” labels—that is, labels that are affixed to the product at only one end of the label—are more likely to be torn or ripped off, or otherwise altered by the consumer, and this would eliminate the potential safety benefit of the label for future users of the product. Staff further notes that the standard proposed in the NPR does not prohibit these labels or prevent manufacturers from affixing labels to the products in this way. Given that improper infant positioning is the primary hazard associated with sling carriers and that this hazard is addressed in the draft final rule exclusively through the use of warnings, staff believes that the warnings must be made as permanent as possible and discourage easy removal. Thus, staff recommends that the final rule include a requirement that prevents label attachment along a single edge of the label.

The ASTM F2907 – 15 requirements that are most relevant to this issue pertain to warning label permanency. Section 8.3 of ASTM F2907 – 15 states that warning labels shall be permanent, and section 5.7 specifies that warning label permanence is determined by testing in accordance with section 7.3, which includes requirements for labels attached with a seam. Section 5.7 includes two subsections that address permanence requirements for labels that are applied directly to the surface of the sling (5.7.1; *e.g.*, via hot stamping or heat transfer) and a requirement that non-paper labels shall not liberate small parts (5.7.2). ESHF staff believes that the following additional subsection would appropriately address the “free-hanging” label issue:

“5.7.3 Warning labels that are attached to the fabric with seams shall remain in contact with the fabric around the entire perimeter of the label, when the sling is in all manufacturer-recommended use positions.”

During ESHF staff’s examination of new sling samples, staff noted that some samples already had warning labels attached in a way that would meet this proposed requirement. Furthermore, staff believes that the samples that would not meet this requirement could easily be made to comply, by stitching the remaining edges of the label to the sling fabric.

Five comments addressed issues related to the medium through which the warnings and instructions are to be delivered to consumers. Some comments (-0003, -0095, -0172) suggested that the Internet (e.g., the manufacturer's website) should be used to communicate warning and instructional information. One of these (-0003) stated that this approach, combined with providing this information in materials that are provided with the product, is sufficient, and asserted that warnings do not need to be on the product at all. Another comment (-0172) specifically suggested requiring video instructions, available both online and on a CD from the manufacturer. Another (-0058) suggested instructional DVDs and pamphlets as options. One comment (-0016) suggested that the instructions could be a “simple printable card.”

ESHF staff agrees that the Internet or other media, such as CDs or DVDs, can be a useful means of communicating safe babywearing information to consumers. However, communicating this information on the product itself, through warning labels, would mean that the information would be available to consumers who use slings throughout the product’s lifecycle, regardless of their access to other forms of media. Furthermore, the current instructional requirements do not specify the media that the instructions must take; rather, the requirements merely specify: “Instructions shall be provided with the sling” (Section 9.1 of ASTM F2907 – 15). Thus, instructions may be provided in other than a traditional paper form, such as in the mediums described by commenters.

Three comments (-0005, -0177, & -0188) stated that there should be a standard instruction manual or set of guidelines, perhaps ASTM-approved, for all manufacturers. One of these (-0005) seemed to suggest that the current standard already required this.

Sling carriers vary substantially in design, and certain products offer an enormous degree of adjustability. “Wraps,” for example, are a type of sling that consist solely of a long length of material that must be tied or knotted, and these products can be wrapped and tied around the caregiver’s body in myriad ways. Thus, ESHF staff does not believe that a standard, universal instruction manual could be developed and applied to all sling carriers. However, section 9 of F2907 – 15, which staff recommends that the Commission adopt in a final rule, does require instructions to be provided with each sling, and furthermore, requires these instructions to include some standard content, including information on assembly, adjustment, restraint systems (if applicable), maintenance, cleaning, storage, and use. The draft final rule also would require instructions to contain images of each manufacturer’s recommended carrying position, all warnings that are required to be on the product, and additional safety-related instructions and information, such as the minimum and maximum weight of the child for which the sling is intended, the importance of checking for damaged seams and hardware, and a warning to never use the sling when balance or mobility is impaired.

One comment (-0175) stated that section 8.1.1 of ASTM F2907 – 15 should match the corresponding requirement in ASTM F2236 – 14, Standard Consumer Safety Specification for Soft Infant and Toddler Carriers, for clarity and consistency.

As CPSC has proceeded through the mandate of Section 104(b) of the Consumer Product Safety Improvement Act of 2008 (CPSIA), and promulgated mandatory standards for durable nursery products that are the same as or more stringent than industry voluntary standards, several members of the ASTM Committee F15 on Consumer Products raised concerns about consistency among various durable nursery product rules. For this reason, the ASTM subcommittees independently formed an ASTM Ad Hoc Wording Task Group (“Ad Hoc task group”), consisting of members of the various subcommittees affected by the durable nursery products rules, whose stated mission is to develop uniform and consistent language to be applied to similar portions of various ASTM juvenile product standards. CPSC staff has played a key and active role in this task group.

The Ad Hoc task group completed draft recommended language for portions of the “Marking and Labeling” section for ASTM juvenile product standards, and on March 24, 2016, ASTM issued a letter ballot to the main F15 committee with these recommendations, including proposed language for the requirement identified in the comment above. The ballot, F15 (16-04), closed on April 28, 2016, and since that time, the Ad Hoc task group has met and addressed all negatives and comments on the ballot. The final recommendations are now posted on the ASTM website for consideration by the individual subcommittees. The current requirement and the analogous requirement from the Ad Hoc task group recommendations, appear below.

Current ASTM F2907 – 15 requirement:

“8.1.1 Name and principal place of business (city, state, and mailing address, including zip code and telephone number) and website, if applicable, of either the manufacturer, importer, distributor, or seller.”

Ad Hoc task group recommendations requirement:

“8.1.1 The name, place of business (city, state, and mailing address, including zip code), and telephone number of the manufacturer, distributor, or seller.”

For uniformity, and to avoid confusion, ESHF staff normally would recommend that the final rule include a provision that changes section 8.1.1 of ASTM F2907 – 15 to be consistent with the Ad Hoc task group recommendation. However, as shown above, the current voluntary standard requirement states that the product must list the website, if applicable. The analogous Ad Hoc task group requirement includes no such requirement. One possible resolution would be to use the Ad Hoc task group recommendation, but insert the website as an additional required element. Yet, this change would result in a requirement whose content is identical to the current voluntary standard requirement. Given this finding and staff’s belief that retaining the website marking requirement is important, staff does not recommend at this time making such a modification in the draft final sling rule. Staff believes that it would be more appropriate to wait until the ASTM subcommittee considers future revisions to the standard to incorporate the Ad Hoc task group recommendations.

Education

Seventy-one comments discussed the role of education for the safe use of slings. All 71 of the comments expressed the belief that education played a key role in the safe use of sling carriers, although the comments varied in content and specifics. While all 71 comments stressed the important role of education, some comments suggested educational campaigns; in general, opinions varied from those who felt that education was the only answer, to those who felt education played an important role with other performance tests. Both general and specific comments are discussed below.

Seven comments specifically mentioned the babywearing community (e.g., local babywearing groups, Facebook babywearing groups, or Babywearing International, a non-profit organization whose mission is to promote babywearing education and support) as a resource for new caregivers to learn about the use of sling carriers. One additional comment (-0137) supported consumer education, but felt: “this should be a discussion amongst creators and the safety groups. This should not just be a decision made by the CPSC...”

ESHF staff agrees that the groups mentioned are a valuable resource to promote the safe use of sling carriers, and staff encourages the groups to continue their work. Staff encourages members and groups to become involved with ASTM International F15.21 subcommittee on sling carriers, which currently includes members representing sling manufactures, sling industry groups (e.g., the Baby Carrier Industry Alliance, or BCIA), testing laboratories, and child safety advocates. Through this voluntary standards consensus process, all voices can be heard to develop a robust voluntary standard, which forms the basis of the mandatory standards promulgated by CPSC under the Danny Keysar Child Product Safety Notification Act.

Ten comments suggested a joint public educational campaign between the CPSC and manufacturers, industry groups, or the babywearing community. One comment suggested an educational campaign, but with no mention of partnering. One comment specifically suggested that the Commission sponsor an educational campaign in conjunction with the final rule and that the informational campaign focus on “specific risks that can only be addressed through proper usage and close attention to the infant” (-0172).

Although an educational campaign is outside the scope of the proposed rule, ESHF staff has passed the suggestions for a joint informational campaign on to CPSC’s Office of Communications to consider. In addition, staff will provide information on proper use for the Office of Communications to consider for potential press releases that may be issued should the Commission vote to finalize the proposed rule.

Sixteen comments discussed the critical roles education plays in the safety of sling carriers, and many of these comments identified education as a key component for preventing user error. Twelve additional comments made more general statements suggesting that the focus should be on education, or expressing a general sentiment indicating support for education. Examples of the comments include:

- *“Education on proper use is the only thing that will reduce the injuries that have occurred,”(-0034)*

- *“Proper babywearing education seems to be key,” (-0032)*
- *“Education is the key to preventing injuries, regardless of the manufacturer, importer, and foreign-based weavers,” (-0080)*
- *“I also believe that public outreach and education will have the greatest impact,” (-0096)*
- *“The biggest factor in ensuring safe wearing is education,” (-0019)*
- *“We need to focus on the real safety issue in baby wearing, which is educating people the proper and safest ways to wear their babies,” (-0026)*
- *“I understand the importance of safe babywearing practices, but the main focus should be on promoting proper use of the sling,” (-0115)*

Twenty-six comments expressed that education was all that was needed, in lieu of regulation or product testing. Several specific examples of these comment are:

- *“All we need is proper education on how to use!” (-0039)*
- *“Education is the way to resolve concerns about sling, carrier safety. ... money should be spent educating women on the proper use of carriers and ways they benefit mother child relationship.” (-0042)*
- *“We should instead be focusing on educating the public about babywearing education and safety instead.” (-0069)*
- *“Increased education and safety awareness would be a much better alternative! ... Perhaps the focus should be on educating the consumers.” (-0108)*
- *“I think the focus needs to be on educating consumers on proper usage, rather than on imposing these “safety standards ...” (-0185)*

ESHF staff agrees that educating caregivers who use sling carriers is extremely important. Staff acknowledges that most sling carriers, and especially wrap carriers, require the caregiver to position the child and the fabric in ways that are both practical and safe, and that the skill needed to use a sling properly is not necessarily intuitive to many caregivers. ESHF staff also agrees that excellent instructions, training, and support are available from babywearing educators and others with experience and knowledge of the safe use of the product. However, education alone does not address the hazards posed by material failures, such as ripped fabric and broken hardware, nor does an educational program require that all sling carriers be sold with instructions and on-product warning labels that will follow the product through its lifecycle. In addition, section 104 of the CPSIA requires CPSC to: (1) examine and assess voluntary safety standards for durable 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. Therefore, although staff cannot recommend a specific educational program under this authority, we can require products to include instructions and warnings at the point of sale. ESHF staff has concluded that the requirements for the instructions and product labeling provide a framework that each manufacturer can tailor to the recommended use positions for their specific slings. This will require that each sling include the minimum information needed for proper use of the product, and the required on-product positioning label, discussed above, will follow the product throughout its lifecycle.

Six comments suggested standardizing and regulating education materials and packaging, with two commenters saying this should be the only requirement. One additional comment expressed general support for ASTM requirements for instructional materials, and another commenter suggested requiring informational brochures. Examples of such comments include:

- *“I would like to see the new regulation proposals let go and instead proper education brochures and packaging be regulated, so that each and every wrap carrier made and sold will come with the same, easy to understand & follow, universal, instructions.” (-0121)*
- *“Mandating, defining, and testing educational materials distributed with wraps is of paramount importance.” (-0080)*

Section 9 of ASTM F2907 – 15, which staff recommends the Commission incorporate by reference into a final rule, requires instructions to be provided with each sling and for the instructions to include some standard content, such as information on assembly, adjustment, restraint systems (if applicable), maintenance, cleaning, storage, and use. The draft rule also requires instructions to contain images of each manufacturer’s recommended carrying position, all warnings that are required to be on the product, and additional safety-related instructions and information, such as the minimum and maximum weight of the child for which the sling is intended, the importance of checking for damaged seams and hardware, and advice about never using the sling when balance or mobility is impaired.

Consumer Use and User Error

Seventy-one comments discussed consumer use or the role of user error in the reported incidents. Sixty-four comments were general statements that injuries resulted from user error, five comments addressed foreseeable misuse, and three comments discussed the benefits of sling carrier use. In addition, several comments raised issues related to consumer use or user error, and several individual comments will be discussed separately below.

Some examples of the 64 general user error comments follow:

- *“The issue with wraps and carriers is not product malfunction but rather user error.” (-0037)*
- *“Accidents in the course of baby wearing are most frequently caused by user error.” (-0048)*
- *“Accidents that occur during the use of baby carriers is always on account of user error rather than the structure of the weave or fiber blend.” (-0063)*
- *“Ensuring slings and baby carriers are safe is at the top of each of our lists but the main reason injury occurs is due to improper use, not malfunction of the baby carrier.” (-0099)*
- *“My belief stems from the issue that the majority of injuries and fatalities stem from a general lack of knowledge on the user end (i.e., non-ideal positioning) and not from the fabric itself.” (-0114)*
- *“User error is the primary cause of injury.” (-0128)*

Epidemiology staff discussed the issue of user error as related to reported incidents in Tab A, and ESHF staff discussed the role of instructions, warnings, labeling, and education above. In summary, staff agrees that many incidents suggest that caregiver behavior plays a vital role in the proper use of sling carriers, and that, due to the unique nature of sling carrier products, educating caregivers is the primary method to address user error. In addition, staff has concluded that the warnings and instruction requirements are the best way, within our jurisdiction, to educate consumers.

Five comments felt that the manufacturer should not be held responsible for user error. The five comments are below:

- *“However, manufacturers should not be held accountable for improper use of a product.” (-0007)*
- *“All of the fatalities mentioned were due to positioning. That is something that no manufacturer has any control over.” (-0034)*
- *“We mustn't make small businesses pay for user error.” (-0036)*
- *“Please don't punish manufacturers for user-error.” (-0040)*
- *“Most babywearing incidents are solely [sic] user error and in no way the responsibility of small home based weavers.” (-0107)*

ESHF staff is often asked to assess foreseeable use because CPSC is charged with protecting the public from unreasonable risks of injury or death associated with the use and **reasonably foreseeable misuse** of consumer products under the agency's jurisdiction.²⁹ Reasonably foreseeable misuse is one of the factors that CPSC staff must consider in all our analyses, including regulatory and compliance actions. Staff encourages manufacturers to provide the best instructions and warnings to address foreseeable misuses of their products. For products where a design change could prevent possible misuse, that approach is preferable. However, in the case of sling carriers, education, including instructions and warnings, may be the best way to address certain foreseeable user errors.

Three comments discussed possible benefits of sling use, for the caregiver and the child, including:

- *“The attachment of a special needs child could benefit children with a special need. They can be close to a parent and safely contained. It also may feel good for them to have pressure on them instead of a weighted blanket. I can see uses for older children being just as abundant as they are for a newborn.” (-0068)*
- *“Safe carrier use promotes bonding, enhances emotional and physical development, can help to promote breastfeeding (which is extremely beneficial), and although there are some small risks inherent to their use, they can also reduce other risks such as positional asphyxia or injury from extended or improper car seat or stroller use, both of which are common alternatives to the use of baby carriers.” (-0096)*

²⁹ For example, the CPSC recall handbook, <http://www.cpsc.gov/PageFiles/106141/8002.pdf>, discusses reasonably foreseeable use and misuse.

- *“This does not take into account how many children's lives have been SPARED because their newborn faces were right next to mommy and she could hear that baby was having trouble breathing, or how many babies and toddlers riding in a sling or wrap do not have to bear scars on their face for life that would have been put there by the unleashed dog that would have easy access to that sweet little face at stroller level, etc.” (-0130)*

Although it is difficult to quantify the benefits mentioned by these commenters, ESHF staff appreciates the examples describing possible benefits of sling use. Nevertheless, staff does not believe that the reported benefits require a change to the rule.

One commenter (-0185) suggested that the reclined position should not be a recommended-use position. Another commenter (-0041) recommended not showing “advanced carries” in instructions, and also recommended that the instructions show “an unsafe carry.”

The ability to use a sling in the reclined position currently is one of the key differentiating factors between soft infant and toddler carriers and sling carriers. The unstructured nature of many sling carriers means that it is reasonable and foreseeable that caregivers will place a child in a position other than perfectly upright. The instructions and warnings are key to giving caregivers the information they need to position a child properly, including positions with a slight recline. In addition, the on-product label provision in ASTM F2907 – 15 requires examples of improper positioning.

CONCLUSION

ESHF staff appreciates the comments from sling carrier stakeholders and agrees with the overarching themes that education, instructions, and warnings are key elements of proper use of sling carriers and to help address foreseeable misuses of sling carrier products, but staff does not agree that education alone is sufficient to address the identified hazards. Based on the comments received, ESHF staff recommends that the Commission issue a final rule incorporating by reference ASTM F2907 – 15, with one modification. Specifically, staff recommends that the final rule address concerns about the ease with which the required warnings can be removed if attached by only one seam by including the following language:

“5.7.3 Warning labels that are attached to the fabric with seams shall remain in contact with the fabric around the entire perimeter of the label, when the sling is in all manufacturer-recommended use positions.”

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TAB D: Final Regulatory Flexibility Analysis of Staff-Recommended Final Rule for Sling Carriers

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

Memorandum

Date: November 4, 2016

TO : Hope Nesteruk,
Manager, Sling Carrier Project
Division of Mechanical and Combustion Engineering
Directorate for Engineering Sciences

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

FROM : William W. Zamula
Economist
Directorate for Economic Analysis

SUBJECT : Final Regulatory Flexibility Analysis of Draft Final Rule
for Sling Carriers

Introduction

On July 23, 2014, the CPSC published a notice of proposed rulemaking (NPR) for sling carriers (79 Fed. Reg. 42727). The NPR included an initial regulatory flexibility analysis (IRFA), describing the possible impacts of the proposed rule on small entities.

The purpose of this memorandum is to evaluate the potential economic impact of the staff-recommended final rule on small entities, including small businesses, as required by the Regulatory Flexibility Act (RFA). Section 604 of the RFA requires that agencies prepare a final regulatory flexibility analysis (FRFA) on rules that could have a significant impact on a substantial number of small entities. The FRFA must describe the impact of the rule on small entities and identify alternatives that may reduce the impact. The requirements for a FRFA, outlined in section 604(a)(1)-(6) of the RFA include:

1. A statement of the need for, and objectives of, the rule.
2. A statement of the significant issues raised by the public comments in response to the IRFA. A statement of the assessment of the agency of such issues, and a statement of any changes made in the proposed rule as a result of such comments.
3. The response of the agency to any comments filed by the Chief Counsel for

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Advocacy of the Small Business Administration in response to the proposed rule and a detailed statement of any change made to the proposed rule in the final rule as a result of the comments.

4. A description of and an estimate of the number of small entities to which the rule will apply or an explanation of why no such estimate is available.
5. A description of the projected reporting, recordkeeping, and other compliance requirements of the rule, including an estimate of the classes of small entities necessary for preparation of the report or record.
6. A description of the steps the agency has taken to minimize the significant economic impact on small entities consistent with the stated objectives of applicable statutes, including a statement of the factual, policy, and legal reasons for selecting the alternative adopted in the final rule and why each of the other significant alternatives to the rule considered by the agency which affect the impact on small entities was rejected.

The Product

As specified in ASTM F2907-15, *Standard Consumer Safety Specification for Sling Carriers*, a sling carrier is a product, normally of sewn fabric construction, that is designed to contain an infant/toddler in an upright or reclined position, while being supported by the caregiver's torso. These products are intended for infants and toddlers between full-term birth (with a weight of about 8 lbs.) and 35 lbs. The principal difference between a sling carrier and a soft infant and toddler carrier (SITC) is that a SITC is not intended to contain an infant or toddler in a reclined position. Products that fall under the sling carrier standard may be called slings, wraps, infant carriers, or pouches.

A sling carrier is not a complicated product to produce; typically, only fabric, thread, rings, (and in some cases, fasteners) and a sewing machine are required to produce sling carriers. However, some artisanal sling manufacturers weave wraps out of yarn, which requires no sewing, but a manual loom and a higher level of skill than manufacturers using purchased fabric. Looms range in price from several hundred dollars to several thousand dollars. The value added by sling weavers is much greater than sling sewers because of the additional labor to weave the cloth. Handwoven slings also tend to be more expensive than the typical mass-produced sling.

The Baby Carrier Industry Alliance, an industry trade association, provided information on the retail prices of slings, which can vary widely. Ring slings, which are pieces of fabric with two rings attached at one end, are the least expensive, with prices ranging from \$40 to \$200, and an average price of \$100. Handwoven wraps are hand-loomed pieces of cloth, with an average price of about \$110 per meter, and a length of 2 to 6 meters. Thus, handwoven wraps have a price range of \$200 to \$800 per wrap. Machine-woven wraps are woven in the same way as any commercial fabric. They range in price from \$65 to \$400, with an average price of about \$150. BCIA provided no information on pouches, but pricing is believed to be similar to ring slings.

The Market for Sling Carriers

In the NPR, CPSC staff reported that it had identified 47 suppliers of sling carriers to the U.S. market,³⁰ including 33 companies based in the United States and 14 foreign companies that export directly to the U.S. customers via Internet sales or U.S. retailers. The 33 U.S.-based firms included 25 manufacturers, four importers, and four firms, for which the supply source was not identified. According to U.S. Small Business Administration (SBA) definitions,³¹ all but one of the 47 firms would be considered a small business. The NPR also noted: “there may be hundreds more suppliers that produce small quantities of slings.”

More recently, information provided by the BCIA confirms the role of numerous small and very small artisanal manufacturers in the sling market. The BCIA identified more than 324 U.S. manufacturers of slings, wraps, and pouches, including members and non-members of BCIA, many *very* small.³² The firms identified by BCIA overlap partially with the 47 suppliers identified by staff; but they do not include some of the larger non-members of BCIA, some European firms that export to the U.S, and a number of small Chinese firms. The BCIA has identified some additional hand weavers. Thus, the total number of manufacturers may approach 400.³³ According to the BCIA, about 250 of the 324 identified small sling manufacturers had annual sales revenue of under \$10,000, and an additional 45 had revenues of greater than \$10,000, but less than \$50,000.³⁴ Most of these *very* small manufacturers (especially those with sales revenue of \$50,000 or less annually) worked out of their home, and had one or fewer employees. In a letter to CPSC concerning the sling rulemaking, the SBA Office of Advocacy described many of these very small manufacturers as “stay-at-home moms that supplement their income by creating the slings.”³⁵

According to the BCIA, typically very small sling manufacturers include mothers who have used various slings or soft carriers, who decide to make their own design at home. Some of these home businesses grow into larger businesses that become more specialized and sophisticated, typically designing and marketing their products, but having the product manufactured overseas.³⁶ Based on emails with BCIA, and CPSC staff’s review of sling websites, the newer home businesses generally are unsophisticated and may not be aware of the sling carrier voluntary standard; or they may not know that they may be subject to existing

³⁰ William W. Zamula, “Initial Regulatory Flexibility Analysis of Staff-Recommended Proposed Standard for Sling Carriers,” April 17, 2014, memorandum to Hope Nesteruk, project manager for the sling carrier project.

³¹ According to the SBA definitions, manufacturers with fewer than 500 employees and importers with fewer than 100 employees would be considered small. The Table of Small Business Size Standards is available at <https://www.sba.gov/content/small-business-size-standards>.

³² Email from BCIA in response to a CPSC request for information on the number, size, and types of sling manufacturers and importers selling slings in the U.S., February 12, 2015.

³³ Email from BCIA in response to request from CPSC staff for product breakdowns for manufacturers included in BCIA’s list of 324 manufacturers, dated December 1, 2015.

³⁴ For purposes of this analysis, we describe manufacturers with less than \$50,000 in revenue as being very small.

³⁵ Letter from the SBA Office of Advocacy, dated October 2, 2014, commenting on FR42724 (July 23, 2014), the Safety Standard for Sling Carriers.

³⁶ Personal communication with Vesta Garcia, former Executive Director of the Baby Carrier Industry Alliance, current chairman of the ASTM F2907 Standard Committee, November 19, 2013

federal regulations on children's products, such as the CPSIA regulations on product labeling and registration cards.

The BCIA reports that dollar sales for the 324 manufacturers identified amount to approximately \$36 million annually.³⁷ Unit sales for these manufacturers are estimated to be about 500,000 sling carriers annually. Given the exclusion of some of the larger wrap and pouch manufacturers from the total provided by BCIA, we estimate annual unit sales at 800,000 to 1 million sling carriers and dollar sales of about \$55 million to \$70 million annually.

In 2013, the CPSC conducted a Durable Nursery Product Exposure Survey (DNPES) of U.S. households with children under age 6.³⁸ Data from the DNPES indicate that there were an estimated 7.33 million slings in U.S. households in 2013 (with 95 percent probability that the actual value is between 6.2 million and 8.5 million). The survey data also indicate that about 23.4 percent of the slings in U.S. households were in use at the time of the survey (an estimated 1.72 million slings, with 95 percent probability that the actual value is between about \$1.17 million and \$2.26 million).

Sling Injuries and Risk Estimates

There were substantially fewer than 1,200 sling injuries treated in U.S. hospital emergency departments (ED) over the 13-year time period from 2003 through 2015. Consequently, injury estimates did not meet the publication criteria generally followed by the Directorate for Epidemiology.³⁹ Nevertheless, taken at face value, the estimated injuries reported through NEISS over this period amounted to approximately 65 ED injuries annually. Therefore, there would have been about 3.78 ED injuries per 100,000 slings in use (*i.e.*, 65 injuries per year ÷ 1.72 million slings in use × 100,000).⁴⁰

There have also been 18 reported deaths involving slings since 2003. Eleven of these deaths involved smothering; the cause of death was unknown for the remaining seven deaths.

Based on a review of the nonfatal injuries reported through the various CPSC databases, including anecdotal information, a majority of injuries appear to have resulted from falls from the carrier, most resulting from the caregiver slipping, tripping, or bending over while carrying the

³⁷ Email from BCIA in response to a CPSC staff request for information on the number, size, and types of sling manufacturers and importers selling slings in the U.S., February 12, 2015.

³⁸ Melia, K.L. and J.L. Jenkins (November 2014). *Durable Nursery Products Exposure Survey (DNPES): Final Summary Report*. U.S. Consumer Product Safety Commission, prepared by Westat.

³⁹ According to the Directorate for Epidemiology's NEISS publication criteria, a NEISS estimate must be 1,200 or greater, the sample size must be 20 or greater, and the coefficient of variation must be 33 percent or smaller before the estimate can be published (Reported in *Sling Carriers-Related Deaths, Injuries, and Potential Injuries; January 1, 2003 to October 27, 2013*, Risana Chowdhury, Directorate for Epidemiology, November 22, 2013). While the injury estimate for slings does not meet the NEISS publication criteria, the small number of injuries reported through NEISS over a 13 year period suggests that sling injuries are relatively rare. The injury estimate was derived by Directorate for Economic Analysis staff.

⁴⁰ This compares with about 128 crib-related injuries per 100,000 cribs in use in 2013, based on *Injuries and Deaths Associated with Nursery Products Among Children Younger than Age Five* (Risana Chowdhury, Directorate for Epidemiology, December 2014), and estimates from the CPSC's 2013 nursery products survey.

infant in the sling. According to the Directorate for Epidemiology, only about 20 percent of the injuries could be identified as resulting from product-related problems (Chowdhury, 2013, pp. 23-25 and Chowdhury, 2016, p.3⁴¹). Although anecdotal information cannot be used for statistical projections, it appears that most of the reported injuries would be addressed by warning labels or instructions only. Thus, the expected reduction in ED injuries that would result from the rule is uncertain, but the reduction could be estimated at 13 or fewer injuries annually.

The SBA Office of Advocacy⁴² has commented: “there is no causal data on how the small manufacturers contributed to [sling injury and fatality] accidents.” This assertion is not fully supportable. Of the six sling recalls since 2001, four involved small manufacturers, of which two may have been *very* small with sales revenue of less than \$50,000 annually.⁴³ One recall initiated after a death (a 10-day old-boy) appears to have involved a very small manufacturer. The recall was for 40 slings sold over an 8-month period, or five slings per month. Another recall, for a potentially hazardous defect in the stitching (fall hazard), involved 165 slings sold over a 4-month period, or 41 slings per month. A third recall involved defective aluminum rings, also a potential fall hazard, with 1,200 ring slings sold over a 9-month period, or about 133 slings per month. The largest recall involving a small business concerned 5,000 slings with defective rings sold over a 7-month period, roughly 700 per month. The remaining two recalls involved the same large firm.

Brand names are often missing in the injury and fatality data, but some small and very small manufacturers or importers have been identified in the slings injuries. Given BCIA’s market estimate of about \$36 million in revenue for the 324 firms identified, the 295 firms with revenues of less than \$50,000 annually would have accounted for about \$3.2 million, or 8.9 percent or less ($\$3.2 \text{ million} \div \36 million) of dollar sales. Thus, if injuries are proportional to sales, these very small manufacturers might account for as many as 1 out of 11 injuries.

Need for, and Objectives of, the Draft Final Rule

Section 104 of the CPSIA requires the CPSC to promulgate mandatory standards for durable nursery products that are substantially the same as, or more stringent than the voluntary standard. CPSC staff worked closely with ASTM to develop the new requirements and test procedures that have been incorporated into ASTM F2907-15, which forms the basis of the draft final rule.

Requirements of the Staff-Recommended Final Rule

Staff recommends that the Commission adopt the current voluntary standard, but suggests that the Commission add a requirement that the entire perimeter around the warning label be attached to the sling carrier. Some of the more significant requirements of the current voluntary standard

⁴¹ Reported in *Sling Carriers-Related Deaths, Injuries, and Potential Injuries; October 28, 2013 to September 15, 2016*, Risana Chowdhury, Directorate for Epidemiology, October 6, 2016).

⁴² Email from BCIA in response to a CPSC staff request for information on the number, size, and types of sling manufacturers and importers selling slings in the U.S., February 12, 2015.

⁴³ Memorandum from Julio Alvarado, Division of Regulatory Enforcement, dated January 15, 2014.

for sling carriers (ASTM F2907–15) include static and dynamic load testing to check structural integrity of the sling carriers and occupant retention testing to check that the child is not ejected from the sling carrier.⁴⁴ The standard requires that the buckles, fasteners, and knots that secure the sling carrier remain in position before and after these three performance tests. There is also a separate restraint system test to help ensure that any restraints used by the sling do not release while in use.

The voluntary standard also includes requirements to address the following issues:

- sharp points and edges,
- small parts,
- marking and labeling requirements;
- flammability requirements;
- requirements for the permanency and adhesion of labels; and
- requirements for instructional literature.

The draft final rule requires warning labels with specific warnings and specifications for the size and color of the labels. The updated warning statements provide additional details of the fall and suffocation hazards. The primary fatality risk associated with sling carriers is suffocation, and this hazard is intended to be addressed with these additional requirements for labeling and instructions. The draft final rule requires manufacturers to provide instructional literature with their slings that contains additional warnings not required on the labels; however, the draft rule does not specify the format of the instructions.

Other Federal Rules

CPSC staff has not identified any federal or state rule that overlaps or conflicts with the staff-recommended final rule.

Issues Raised by Comments from the Public and the SBA’s Office of Advocacy

The responses to comments submitted by the SBA’s Office of Advocacy (Advocacy) and the public are presented in the Appendix.

Impact on Small Businesses

We limit our analysis to domestic firms because U.S. Small Business Administration (SBA) guidelines pertain to U.S.-based entities. Under SBA guidelines, a manufacturer of sling carriers is “small” if it has 500 or fewer employees, and importers and wholesalers are “small” if they have 100 or fewer employees. Based on these guidelines, all of the manufacturers, except one (with a large parent corporation), appear to be small businesses.⁴⁵

⁴⁴ Memorandum from Maxwell Sanborn, Division of Mechanical Engineering, Directorate for Laboratory Sciences dated February 18, 2014.

⁴⁵ The IRFA noted two large sling producers. However, one of the two large firms that had previously produced slings has

These small businesses consist of approximately 400 U.S.-based manufacturers and an unknown number of importers. In addition, there is a subset of these small businesses, which we describe as “very small businesses.” BCIA⁴⁶ has identified 250 manufacturers of slings, wraps, or pouches with annual sales revenue under \$10,000 and an additional 45 with revenues greater than \$10,000, but less than \$50,000. Advocacy⁴⁷ has described many of these small sling manufacturers as “stay-at-home moms that supplement their income by creating the slings.” For this rulemaking, we consider “very small manufacturers” to be manufacturers with a single person, or a couple, working out of the home, with annual revenues under \$50,000.

Costs Associated with a Mandatory Rule

The Juvenile Products Manufacturers Association (JPMA) and BCIA have offered assistance to member manufacturers on testing and compliance with the ASTM sling carrier standards. However, the ASTM F2907 sling carrier standards are relatively new; and therefore, there is no established history of conformance to the standard among manufacturers. An email from the head of BCIA, dated October 27, 2015, confirms the irregular nature of conformance with various provisions of the F2907 standard.

As of July 2016, only one manufacturer is listed on the JPMA website as “certified compliant.” Some manufacturers claim to be “CPSIA compliant,” but that may refer only to requirements for lead, flammability, labeling, small parts, and sharp edges, but not necessarily compliant with the ASTM standard. Based on our review of small firm websites, a conversation with a small ring sling manufacturer, and a draft magazine article by a small nursing wrap producer, we have identified three additional firms that have conducted testing to some version of the ASTM standard, for a total of four firms. If these four firms already fully comply with the ASTM standard, they should not need to make any additional product changes due to the draft final rule.

For manufacturers who do not already conform, it is difficult to assess the cost impacts of physical changes required for compliance with the standard because costs will vary with different product designs and materials. Some of the fabrics currently used in slings include cotton, linen, polyester, modal (a cellulosic, like rayon), silk, bamboo, and various blends of fibers. There are a variety of designs too, some that are patented. At least one firm has redesigned its products to be subject to the soft carrier standard rather than the sling standard. At this time, the precise cost of product changes necessary to satisfy testing under the ASTM standard is unknown. Additionally, according to Advocacy, stakeholders that contacted Advocacy do not agree that the costs to meet the requirements of the ASTM standard will necessarily be minimal.⁴⁸ Consequently, we cannot rule out the potential for costs associated with the physical changes to be high enough to lead to significant economic impacts, especially for very small manufacturers.

In addition to complying with the mechanical requirements of the rule, under section 14 of the

converted to producing a soft structured carrier, also called a soft infant and toddler carrier.

⁴⁶ Email from BCIA in response to a CPSC request for information on the number, size, and types of sling manufacturers and importers selling slings in the U.S., February 12, 2015.

⁴⁷ Letter from the SBA Office of Advocacy, dated October 2, 2014, commenting on FR42724 (July 23, 2014), the Safety Standard for Sling Carriers.

CPSA, sling carriers will be subject to third party testing and certification. Once the new requirements become effective, all manufacturers will be subject to the additional costs associated with third party testing and certification requirements under the testing rule, *Testing and Labeling Pertaining to Product Certification* (16 C.F.R. part 1107). These costs will include any physical and mechanical tests required by the final rule. Lead and phthalates testing, if applicable, are already required; hence, lead and phthalates testing are not part of this analysis.

The majority of the costs associated with the draft standard will probably be related to testing. Few of the sling carrier manufacturers have the technical capability or the equipment in-house to conduct many of the tests required by the standard, especially the dynamic load, occupant retention, and restraint system tests. Therefore, most small and very small manufacturers probably will have to rely on third party testing during product development and could incur significant testing costs by simply pre-testing to find out initially whether their products comply with the draft standard and retesting their products if the designs have to be modified to comply.

According to a BCIA representative, third party testing to the ASTM sling carrier voluntary standard, under the requirements of the *Testing and Certification Rule*, could cost around \$510 to \$1,050 per model sample. Third party testing costs consist of two parts: (1) the testing costs unique to F2907 associated with the dynamic load test, the static load test, the occupant retention test, and the restraints test; and (2) the general testing costs associated with testing for flammability, small parts, sharp edges, instructions, and labels. The testing costs unique to sling carriers vary widely, from \$210 to \$650, depending on whether the testing is done in China or in the United States, and depending on whether a discount, such as those negotiated by the BCIA for its members, is applied. The general testing costs may amount to \$300 to \$400 per test. The very small firms that manufacture in the United States will probably also test in the United States to avoid logistical difficulties, thus incurring higher costs.

Because very small firms will probably have their products tested in the United States, their costs will be higher than the minimum testing cost of \$510 per model sample, and we use a testing fee of \$700 per sample to conduct our analysis of impacts. The \$700 would cover all elements of the required testing, including flammability, small parts, sharp edges, instructions, and labels. However, the cumulative effect of the various physical tests, which will be done on a single sample in the order specified in the standard, will render the tested sling unsalable, which adds to the impact of the rule. One commenter estimated that there are 100 domestic hand weavers and 50 foreign hand weavers of slings.⁴⁹ For hand-woven slings, for example, the hand weaver will lose the revenue from a \$200 to \$800 for each sling tested, due to the destructive nature of testing. The loss of revenue represents a direct cost of testing and needs to be considered when evaluating impacts.

Section 9 of ASTM F2907, which staff recommends that the Commission adopt in the final rule, requires instructions to be provided with each sling and for these instructions to include some standard content, including information on contacting the manufacturer, assembly, adjustment, restraint systems (if applicable), maintenance, cleaning, storage, and use. The draft rule also requires instructions to contain images of each manufacturer's recommended carrying positions, all warnings that are required to be on the product, and additional safety-related instructions, plus

⁴⁹ Comment CPSC-2014-0018-0176.

information on the minimum and maximum weight of the child for which the sling is intended, the importance of checking for damaged seams and hardware, and a warning never to use the sling when balance or mobility is impaired.⁵⁰

Sling manufacturers that already provide such information, estimated by BCIA to be about one-third of the industry, or about 135 manufacturers,⁵¹ may have to make modifications to their existing instructions to ensure that the instructions have all the content required by ASTM. The additional effort would probably be modest, estimated at 5 hours, if estimates for revisions to instructions for other children's products are comparable. Using an hourly rate of \$33.29 to calculate these costs, the total compensation for sales and office workers in private industry in goods producing industries⁵² would amount to about \$166 ($\$33.29 * 5$) per firm.

The BCIA estimated that firms that had not previously prepared instructions would require 30 to 60 hours of labor, and possibly outside advice as well. If the remaining 265 firms require 45 hours, on average, then the impact per firm would be about \$1,500 ($\$33.29 * 45$). Thus, the cost could average \$166 for firms that already provide the literature and \$1,500 for those that do not. Once the literature has been created, it would not have to be modified, unless the manufacturer makes changes to a model that render portions of the literature obsolete. However, the cost of subsequent modifications to the instructional literature is likely to be less than the cost of designing instructions for the first time.

Discussion of Cost Impacts on Small and Very Small Businesses

According to BCIA, 90 percent of its members who produce slings, wraps, or pouches will have testing costs of more than 10 percent of their annual revenues. The BCIA has provided data to support their conclusion, which we have applied in developing hypothetical "representative" producers for different size categories and production techniques to assist us in evaluating the potential economic impacts of third party testing.

As noted, destructive testing has a differential impact on testing costs, depending on the retail price of the product. Sling prices vary widely, according to BCIA.⁵³ Ring slings, which are pieces of fabric with two rings attached at one end, are the least expensive, with prices ranging from \$40 to \$200, and an average price of \$100. Handwoven wraps are hand-loomed pieces of cloth, with an average price of about \$110 per meter, and a length of 2 meters to 6 meters. Thus, handwoven wraps have a price range of \$200 to \$800 per wrap. Machine-woven wraps are woven in the same way as any commercial fabric. They range in price from \$65 to \$400, with an average price of about \$150. BCIA provided no information on pouches, but pricing is probably similar to ring slings.

Table 1 provides data for four types of representative producers: (1) a hand weaver, (2) a ring

⁵⁰ Memorandum from Tim Smith Human Factors Staff Response to NPR Comments and Revised Warning Requirements for Sling Carriers (CPSIA Section 104) dated July ??, 2016

⁵¹ Email from BCIA, July 22, 2016.

⁵² From Table 9 of the most recent Bureau of Labor Statistics publication Employer Costs for Employee Compensation (ECEC), which can be found at: <http://www.bls.gov/ncs>.

⁵³ Email from BCIA in response to a CPSC request for information on the number, size, and types of sling manufacturers and importers selling slings in the U.S., February 12, 2015.

sling producer, (3) a machine weaver, and (4) a mass producer. Economics staff constructed these representative producers using approximate averages of the data for individual producers provided by BCIA. Of these representative producers, the hand weaver and the ring sling producer are very small producers, with annual revenues of \$10,000 and \$15,000, respectively.

Table 1: Representative Sling Producers and Selected Product/Production Characteristics

Producer Type	Annual Production (Units)	Sales Price	Annual Revenue (Units × Price)	Number of Product Styles	Number of Fabrics	Number of Style/Fabric Combinations
Hand weaver	20	\$500	\$10,000	1	3	3
Ring Sling	150	\$100	\$15,000	2	3	6
Machine Weaver	720	\$150	\$108,000	2	3	6
Mass	36,000	\$75	\$2,700,000	3	5	15

Table 2: Testing Costs for Initial Product Certification

Producer Type	(A) Per Sample Testing Cost (\$700 Testing Fee + Sample Destruction)	(B) Number of Test Samples (Styles × Fabrics)	(C) Total Testing Costs With No Failures (A) x (B)	(D) Total Testing Costs With One Failure (A) × (B) + (A)
Hand weaver	\$1,200	3	\$3,600	\$4,800
Ring Sling	\$800	6	\$4,800	\$5,600
Machine Weaver	\$850	6	\$5,100	\$5,950
Mass	\$775	15	\$11,625	\$12,400

Table 3: Testing Costs as Percent of Revenue

Producer Type	Initial Certification Tests		Periodic Tests	
	Costs with No Test Failures*	Costs with One Test Failure	Annual Costs, with Yearly Testing*	Annual Costs, with Testing Every Two Years*
Hand weaver	36.0%	48.0%	36.0%	18.0%
Ring Sling	32.0%	37.0%	32.0%	16.0%
Machine Weaver	4.7%	5.5%	4.7%	2.4%
Mass	0.4%	0.5%	0.4%	0.2%

* This estimate assumes that the testing of one sample for each style/fabric combination is sufficient to determine that the product is compliant with a high degree of confidence, and that there are no testing failures that would trigger the need for retesting.

In contrast, the machine weaver is typically larger, illustrated here as producer with annual revenues of \$108,000. A mass producer, although still likely considered small by SBA standards, is significantly larger than the other types of producers and is illustrated as a firm with \$2.7 million in annual revenues. The last three columns of Table 1 indicate the number of product styles, the number of fabrics, and the number of style/fabric combinations for the representative sling producers. The style/fabric combinations represent the number of sling models produced by each manufacturer that will need to be tested under the requirements of the *Testing and Certification Rule*. This is because the *Testing and Certification Rule* generally requires each model to be tested separately.

In accordance with 16 C.F.R. § 1107.20, once the draft final rule is in effect, all producers will need to certify based upon third party testing that their products comply with the rule. Table 2 provides estimates of testing costs associated with the *initial* certification. The lowest cost scenario (Column C) assumes that the producer will only need to test each style/fabric combination once to certify with a “high degree of assurance” that the product meets the standard. If one of the style/fabric combinations were to fail and need to be retested, testing costs would increase quite significantly, as shown by the last column in Table 2. If more than one test per style/fabric combination were needed to meet the “high degree of assurance” criteria, testing costs would increase accordingly, perhaps doubling or, quite possibly, increasing by an order of magnitude if 10 or more samples were needed.

After the initial certification, and in accordance with 16 C.F.R. § 1107.21, producers will still need to conduct *periodic third party testing* to ensure continued compliance with the standard.⁵⁴ The frequency of the periodic testing depends upon the specific manufacturer and product, but the interval must be short enough to ensure that if the sample(s) tested comply with the standard, there is a “high degree of assurance” that all untested products produced during the interval also comply with the standard. However, at a minimum, periodic third party testing must be conducted at least once a year or, alternatively, once every 2 years, *if* the manufacturer has a production testing plan.

To conduct periodic testing every 2 years, instead of every year, a manufacturer must draft and follow a “production” testing plan, as described at 16 C.F.R. § 1107.21(c). A production testing plan need not be complicated. It simply must describe ongoing tests or inspections that the manufacturer conducts to ensure that the products comply with the standard. Most small manufacturers likely already perform such tests or inspections as part of their quality assurance efforts. Therefore, to conduct periodic third party tests every 2 years, instead of every year, most small manufacturers would formally need to document the tests it will perform to ensure continuing compliance with the standard. The tests might include testing the tensile strength of the yarn used, inspecting each seam that is critical for compliance to ensure that it was sewn

⁵⁴ Additionally, 16 C.F.R. § 1107.23 requires that the certification testing be repeated whenever the manufacturer makes a material change in the product. A “material change” is a change in the product’s design, manufacturing process or sourcing of component parts that could affect the product’s compliance with the standard. Because these tests would be conducted at irregular intervals, we have excluded these testing costs from the analysis. However, they would increase testing costs.

correctly, or checking that any critical hardware was attached properly.⁵⁵

To evaluate the economic impact of the rule, we compare testing costs to revenues for the representative producer. Typically, we use 1 percent of gross revenue as a threshold for evaluating the significance of the impact; unless the impact is expected to fall below the 1 percent threshold for the small businesses evaluated, we consider the impact to be potentially significant.

Table 3 calculates testing costs as a percent of revenue for the representative sling producers.⁵⁶ Note that the estimates in the table implicitly assume no major changes in slings that would necessitate testing due to material changes in the product (see footnote 23). Additionally, as noted above, stakeholders that contacted the SBA suggested that the costs to meet the requirements of the ASTM standard will not necessarily be small for all suppliers. Consequently, this analysis does not account for two types of costs that could be significant for some manufacturers.

As shown in first column of Table 3, the initial certification impacts on revenue are 36 percent for hand weavers, 32 percent for ring sling producers, and 4.7 percent for machine weavers, respectively. This represents the minimal impact for initial certification in our example; if there is any testing failure, the impact increases significantly, as shown in the second column of Table 3. If more than one sample is needed to achieve a “high degree of assurance,” testing costs could easily exceed revenue.

The third column of Table 3 shows the impact of *periodic* testing, assuming that testing is conducted annually (and that only one test per style/fabric sample is needed and that there are no failures). If producers are able to reduce periodic testing to once every 2 years, impacts are still likely to be significant for all but the mass producers, even with no failures and only one test per sample. This is shown in the last column of Table 3, where revenue impacts are 18.0 percent for hand weavers, 12.0 percent for ring sling producers, and 2.4 percent for machine weavers.

As noted, manufacturers will have to provide instructional material, the cost of which could average \$1,500 for firms that have never prepared such literature, which may include a substantial portion of the small, home-based sling manufacturers. These costs (which are not included in the tables), by themselves, could be a substantial burden for these firms which have annual revenues of \$15,000 or less. However, unlike the cost of the third party testing, the cost of the instructional literature should not be a recurrent cost.

Based upon our analysis of data provided by BCIA, the initial certification tests, the periodic tests (individually and in combination), and the cost of instructional materials are likely to have a

⁵⁵ Manufacturers are permitted to conduct third party testing once every 3 years, if they have their own ISO/IEC-accredited laboratory. However, it seems unlikely that any small sling manufacturers would have such laboratories. Therefore, this option is not considered in this analysis.

⁵⁶ Little is known about the number or characteristics of sling importers. Importers, like manufacturers, are subject to all of the requirements of a final rule, including the third party testing and certification requirements. Consequently, the impact on the rule could be significant for some importers. However, negative financial impact on importers is likely to be less than on very small sling producers, if importers distribute and sell a more diversified product line, or if some of the costs associated with the requirement are absorbed by the foreign manufacturer.

significant impact on all but mass producers of slings, and could cause numerous very small producers to exit the market. Additionally, according to the SBA, stakeholders that contacted the SBA disagree (as suggested in the initial regulatory flexibility analysis) that the costs to meet the requirements of the ASTM standard will necessarily be minimal. Consequently, we conclude that the draft final rule will likely have a significant impact on a substantial number of small entities.

Regulatory alternatives that could reduce the Impact on Small Entities

There are several alternatives to the proposed rule that the Commission could consider to reduce the impact of the rule on small businesses.

No Change

The Commission could accept the voluntary standard without any modification and direct staff to work with ASTM to improve durability/attachment of warning labels in a future revision of the voluntary standard. This alternative could marginally reduce the impact of the rule on small businesses.

Section 104 of the CPSIA requires that the Commission promulgate a standard that is either substantially the same as the voluntary standard or more stringent. Therefore, adopting ASTM F2907-15 with no modifications is the least stringent rule allowable. This alternative would reduce the impact on all of the known small businesses supplying sling carriers to the U.S. market. If the rule were adopted, the rule should eliminate any economic impact related directly to complying with the staff-recommended proposed rule for the four known small domestic manufacturers who are thought to comply with the voluntary standard for sling carriers, all of whom are expected to comply with ASTM F2907-15 by the time the final rule becomes effective. Firms with compliant products, however, would continue to be affected by third party testing requirements. It is unknown how many of the approximately 400 other manufacturers comply with F2907-15.

Delay the Effective Date of the Requirements

Typically, staff recommends a 6-month effective date for durable nursery product rules. Staff generally considers 6 months to be sufficient time for suppliers to come into compliance with a durable infant and toddler product rule, unless there are specific reasons for a longer effective date. For this rule, the Commission proposed a 12-month effective date, and staff is recommending the same for the final rule.

One alternative that could reduce the impact on small firms would be to set an effective date later than 12 months. Implementing a later effective date could mitigate the effects of the rule on small businesses by delaying the need to conduct third party certification tests and allowing the businesses to spread the costs of bringing their slings into conformance over a longer period. For businesses that would choose to exit the sling market (rather than produce conforming slings), such a delay might also provide them with more time to consider alternative business opportunities.

Staff does not recommend this alternative, because this would only delay, not alleviate the burden. Moreover, commenters generally favored the 12 month effective date.

Exempt Wraps from the Standard

Wraps are simple rectangular pieces of woven or knitted fabrics. They contain no metal or plastic hardware that might break, nor any other mechanical components. The testing conducted by Laboratory Sciences has been very limited. Nevertheless, laboratory staff has found no wraps that failed the tests for static and dynamic load testing (which check for structural integrity), or failed the tests for occupant retention (which checks that the child is not ejected from the sling carrier). No injuries involving wraps have been identified that involve structural fabric weaknesses.

Because of these factors, the Commission could decide to exclude wraps from the requirements of the standard. If the Commission excludes wraps, wraps would not be subject to the requirements for labeling or for third party testing. Given that improper infant positioning is the primary hazard associated with sling carriers, and that this hazard is addressed in the draft final rule exclusively through the use of warnings, excluding wraps from education, instruction, and labeling may be ill-advised. An exemption for wraps might also allow some very small businesses that produce other types of non-exempted slings to remain in the sling market, despite the impact of the rule, if they can convert their production to wraps and find a market for their product.

If the Commission excludes wraps, wraps would not be subject to the requirements for labeling or third party testing. Given that improper infant positioning is the one of the primary hazards associated with sling carriers, and this hazard is addressed in the draft final rule exclusively through the use of warnings, excluding wraps from education, instruction, and labeling may be ill-advised. Therefore, staff is recommending that all types of sling carriers, including wraps, be covered by the final rule.

Small Batch Exemption

Given the large number of very small businesses in the sling market, the Commission might have been interested in exempting small batch manufacturers⁵⁷ from the testing requirements proposed under the rule. However, under Section 14(d)(4)(C)(ii) of the Consumer Product Safety Act, the Commission cannot “provide any alternative requirements or exemption” from third party testing for “durable infant or toddler products,” as defined in section 104(f) of the Consumer Product Safety Improvement Act of 2008. Consequently, staff cannot recommend a small batch exemption absent a statutory change.

⁵⁷ According to Section 14(d)(4)(E) of the Consumer Product Safety Act, small batch manufacturers means a manufacturer that has no more than \$1,000,000 in total gross revenues from sales of all consumer products in the previous calendar year. (The dollar amount is adjusted annually for inflation.) Hence, the revenues of the *very small* sling manufacturers, as used in this analysis, are substantially smaller than the limits for a small batch manufacturer.

Amend 16 C.F.R. part 1107 to reduce the frequency of periodic testing for small or home-based sling producers

The Commission could amend 16 C.F.R. part 1107 to reduce the frequency of periodic testing for small home-based businesses that produce sling carriers. Currently, under the requirements of 16 C.F.R. § 1107.21, these firms need to conduct *periodic* third party tests every year, or, if they have a formal production testing plan, every 2 years.

The testing costs associated with third party *periodic* testing could be substantially reduced if the Commission amended existing regulations to allow small home-based sling producers to conduct periodic testing less frequently. One alternative for manufacturers *with established production testing plans*, would be to require third party periodic testing only after a certain number of units of a product (to be determined at a later time) had been produced, even if it meant that periodic third party tests would be conducted less frequently than every 2 years. For a small sling manufacturer that produces an average of 500 units annually, this alternative could reduce third party periodic testing costs by about 60 percent if, for example, 2,500 units were selected. The details of this alternative would be determined by the Commission; it might apply to all nursery products, or it might be limited to sling carriers. However, all home-based firms would still be required to: (1) produce conforming products; (2) conduct the initial certification tests (16 C.F.R. § 1107.20); (3) re-certify whenever there is a material change to the product (16 C.F.R. § 1107.23); and (4) implement a production testing plan and conduct on going production tests (16 C.F.R. § 1107.21(c)).

Staff has no recommendation on this alternative.

Determine that Slings are not Durable Products

The Commission could determine that sling carriers, or some subset of sling carriers, such as wraps, do not constitute a durable infant or toddler product. Sling carriers primarily consist of fabrics and are generally used for a brief period, less than 1 year in most cases. Consequently, it is arguable that sling carriers are not durable products. (The definition of what constitutes a “durable product,” and the degree to which empirical and anecdotal evidence on sling carriers conforms to these definitions was discussed in the 2014 NPR briefing package.⁵⁸)

The Commission has previously issued a regulation defining “durable infant or toddler product” to include sling carriers. 16 C.F.R. § 1130.2. Thus, the Commission would need to revise that regulation to remove sling carriers from the definition. If the Commission determines that sling carriers are not a durable children’s product, then the Commission could not regulate slings under section 104 of the CPSIA. However, although there would be no mandatory standard, the voluntary standard would still exist, and enforcement actions, such as recalls under Section 15 of the CPSA, would still be available.

Because the Commission has previously issued a regulation defining “durable infant or toddler product” to include “infant slings,” staff believes that not regulating would not meet the

⁵⁸ Memorandum from Deborah V. Aiken, Directorate for Economic Analysis, dated March 27, 2014, included in the 2014 NPR briefing package.

requirements under Section 104 to promulgate a standard that is substantially the same or more stringent than the current voluntary standard.

Were the Commission to determine that sling carriers are not durable infant or toddler products, and therefore, not subject to regulation under section 104 of the CPSA, the option of regulating slings under sections 7 and 9 of the CPSA would be available. However, the Commission would need to make several findings, including a finding that slings present an unreasonable risk of injury, and that the voluntary standard is not adequate, or that substantial compliance is unlikely. Regulating under section 9 would be procedurally more difficult than under section 104. However, regulating under section 9 would also allow for greater flexibility in applying regulatory options to the various segments of the sling market. For example, the Commission could determine that the labeling requirement might be sufficient for some subset of the overall sling market, thereby reducing the impact on some small and very small manufacturers.

Staff Recommendation on Regulatory Alternatives to Reduce the Impact on Small Entities

Staff recommends a twelve month effective date as a way of reducing the impact on small entities. As described above, other options and alternatives could reduce the effectiveness of the standard, and/or require new legislation from Congress or new standards effort or rulings by the Commission. Any new effort is likely to delay the standard substantially.

The 1112 Rule and the Impact on Small Conformity Assessment Bodies

In accordance with section 14 of the CPSA, children's products that are subject to a children's product safety rule must be tested by one of the accredited conformity assessment bodies (*i.e.*, testing laboratories) for compliance with applicable product safety rules. These accreditation requirements have been codified for existing rules at 16 C.F.R. part 1112. Consequently, staff recommends that the Commission finalize an amendment to 16 C.F.R. part 1112 that would establish the accreditation requirements for the testing laboratories that want to test for compliance with the sling carriers final rule. The Commission proposed the amendment in the NPR. This section assesses the impact of the amendment on small laboratories.

A final regulatory flexibility analysis (FRFA) was conducted as part of the original 1112 rule (78 FR 15836, 15855-58), as required by the Regulatory Flexibility Act. Briefly, the FRFA concluded that the accreditation requirements would not have a significant adverse impact on a substantial number of small testing laboratories because no requirements were imposed on laboratories that did not intend to provide third party testing services. The only 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.

Based on similar reasoning, amending the rule to include the NOR for the sling carrier standard would not have a significant adverse impact on small laboratories. Additionally, based on 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, the only cost to them would be the cost of adding the sling carrier standard to their accreditation.

Accordingly, the Commission could certify that the NOR for the sling carrier standard will not have a significant impact on a substantial number of small entities.

Appendix: Comments and Responses

Comment:

According to the U.S. Small Business Administration's (SBA) Office of Advocacy, "the CPSC's assumptions [regarding] the number [of firms affected by the proposed rule] and impact [of the proposed rule] on affected small carrier manufacturers is based on inadequate data and analyses." According to Advocacy, the CPSC provides "the public with some data on the sling carrier market, but it is an inadequate basis for the CPSC's analyses as described in the IRFA." Additionally, "the CPSC provides data on infant injury and mortality associated with the use of sling carriers, however, there is no causal data on how small manufacturers contributed to the accidents. More specifically, CPSC does not identify the proportion of these accidents that are attributable to products placed into the stream of commerce by small manufacturers of the slings." Consequently, "Advocacy recommends the CPSC gather more information on small sling carrier manufacturer's market share as well as the number of accidents that can be attributed to them. If the CPSC is unable to obtain this information because of the uncertainty inherent in its analysis, Advocacy recommends the CPSC present a range of potential costs instead of one point estimate."

Response:

The IRFA identified 47 suppliers of slings to the U.S. market, but noted that there might be hundreds more suppliers that produce small quantities. For the FRFA, we have expanded the discussion of firms to include 324 firms identified by the Baby Carrier Industry Alliance (BCIA), an industry trade association. According to BCIA, about 250 of the 324 identified firms had total annual sales revenues of under \$10,000, and an additional 45 had revenues of greater than \$10,000, but less than \$50,000. These identified firms with revenues under \$50,000 annually were characterized in our analysis as very small firms. The expanded discussion in the FRFA includes: (1) additional information on the characteristics of the firms, (2) estimates of annual industry-wide sales, (3) estimates of the numbers of slings in use, and (4) rough estimates of the market share of the very small firms.

The FRFA also includes an expanded discussion of sling injuries and injury rates and what we know about the injuries involving slings produced by small and very small firms. This discussion is included in the section of the FRFA titled, "Sling Injuries and Risk Estimates."

Finally, we have substantially expanded our discussion of the likely impacts of the rule on small and very small sling producers. Based largely on the information from the BCIA, as well some information provided in the comments from the SBA's Office of Advocacy, we constructed four representative producers: (1) a hand weaver, (2) a ring sling producer, (3) a machine weaver, and (4) a mass producer. For each of these producers, we developed estimates of annual sales, average unit sales prices, and the number of style/fabric combinations likely to be produced by the firms, all of which will affect the estimated costs of the rule. For the very small representative firms (*i.e.*, the hand weaver and ring sling producer), the estimated annual testing costs that would be triggered by the rule amounted to about 16 percent to 36 percent of total

revenues.⁵⁹ For the machine weaver, the annual testing costs amounted to an estimated 2.4 percent to 4.7 percent of revenues. Only the mass producer (with annual revenues of about \$2.7 million), had annual expected costs of less than 1 percent. Our conclusion was that the proposed rule would have a significant adverse impact on a substantial number of small businesses, and could cause numerous small producers to exit (or not to enter) the market.

Comment:

Advocacy recommended that the CPSC expand and improve its discussion of alternatives that may reduce the costs of the rule to small businesses.

Response:

As recommended, we substantially expanded our discussion of alternatives that the Commission could choose that would reduce the impact of the rule on small businesses. These alternatives and other options included:

- (1) Delaying the effective date of the requirements;
- (2) Exempting wraps (a specific type of sling made entirely of fabric) from the requirements of standard;
- (3) Exempting small batch small manufacturers (this alternative is not feasible without a change in a federal statute);
- (4) Amending the existing CPSC regulation at 16 C.F.R. part 1107 to reduce the frequency of periodic testing required for small or home-based sling producers;
- (5) Determining that slings are not durable consumer products, and that the Commission is not required to develop a mandatory standard; and,
- (6) Adopting the current voluntary standard for slings, ASTM F2907-15, with no changes.

Comment:

More than 100 of the 188 comments received in response to the NPR focused on the economic burden that the rule and testing requirements would impose on very small producers of slings. Some of these commenters said that they recognized the need for some product safety regulation for slings, but also expressed concern about the impact of the rule on very small businesses. Many of the comments said that the costs resulting from the testing requirements would drive small producers out of business. Some of the comments came from very small sling producers who suggested that the rule would be cost prohibitive and would probably result in their exit from the sling market. Several users expressed the concern that the proposed rule would reduce the availability of slings in the marketplace.

⁵⁹ These costs do not include the manufacturing, instructions or labeling costs that would be required to bring non-conforming slings into conformance to the standard.

Response:

Staff agrees that the rule and associated testing requirements will pose a significant economic burden on many small producers. Staff discussed these possible impacts in the FRFA. Staff expanded the FRFA discussion of alternatives to include additional options that were not discussed in the initial regulatory flexibility analysis (IRFA) and could reduce the negative impact of the rule on small businesses.

Comment:

Three comments reported that information in the IRFA does not reflect the true number of small businesses that would be affected by the rule or the significant financial impact that would be imposed on small producers. These comments provided additional information on the number and size of the very small producers and the likely financial impact of the rule.

Response:

Staff agrees that the discussion of the market and market impact of the sling rule in the IRFA did not fully describe the very small manufacturers in the marketplace; nor did the discussion describe the full economic burden that would be imposed by the rule. The information provided by the commenters has been incorporated into FRFA's description of the sling market and in the discussion of cost impacts on small and very small businesses.

Comment:

Because of the large economic burden of the testing requirements for low-volume producers, several commenters (177, 166, 178, 175) suggested that the Commission consider a testing schedule based on production interval (*e.g.*, every 500 slings), rather than on an annual time line (*e.g.*, every year). These commenters suggested that because of the low volumes of the very small producers, safety did not require annual testing.

Response

As described in the FRFA, small manufacturers that establish production testing plans (which need not be complicated) would be required to conduct periodic testing every 2 years, rather than annually. The FRFA also provides a regulatory alternative for Commission consideration that would further limit periodic testing for low-volume manufacturers, and could substantially reduce periodic testing costs. As noted in the FRFA, one alternative, for manufacturers *with established production testing plans* would be to require third party periodic testing only after (for example) 2,500 units of a product had been produced, even if it meant that periodic third party tests would be conducted less frequently than every 2 years. However, although this regulatory alternative could substantially reduce the costs of periodic testing, this option would require a modification in the testing and certification rule (16 C.F.R. part 1107) before it could be implemented.

Comment:

One commenter recommended an effective date for the rule of no more than 6 months after the publication of the rule in the *Federal Register*, rather than the 12 months proposed in the NPR. The commenter suggested that the smaller manufacturers can move quickly to adapt to the requirements of the rule because many were involved in the ASTM standards-making process and because the ASTM standard has already been published.

Response:

Many of the commenters have suggested that the testing requirements of the rule, which will not go into effect until the effective date of the rule, will result in a substantial economic burden to very small producers. This conclusion is supported by the analysis presented in the FRFA. The extra time provided by the staff's recommended 12-month effective date will give needed time for some very small producers, which are frequently home-based, to learn how to comply with the testing and recordkeeping requirements, as well as spread out the relatively large testing costs over a longer period of time. Moreover, most slings will already conform to the rule, even in the absence of testing. Additionally, the number of injuries that the rule is likely to address is small.

Comment:

One commenter stated that the sling industry may experience additional costs related to preparing instructional literature because it is not customary for much of the industry to provide instructional literature with slings.

Response:

Sling manufacturers that already provide literature with their slings (estimated by the BCIA to be about one-third of the industry, or about 135 manufacturers) may have to modify their existing instructions to ensure that the instructions include all of the content required by ASTM. There are no formatting requirements for color or size of print, for example. The additional effort would probably be modest, perhaps 5 hours.

On the other hand, the remaining 265 small manufacturers that have never prepared instructional materials may have a substantially bigger burden, especially if their sling designs are one of a kind. BCIA estimates that 30 hours to 60 hours of labor may be required for some of these firms, and this estimate may include outside consultants. For these firms, the cost impact could be similar to the initial testing costs. This would increase the testing costs on these firms and might encourage additional firms to leave the industry.

However, firms with more generic designs may be able to adapt instructions from BCIA or other sling manufacturers to meet the requirements, demanding somewhat lower labor requirements than the BCIA estimate of 30 hours to 60 hours. BCIA may assist members in developing generic instructions, if there is sufficient demand.

TAB E: Periodic Testing of Sling Carriers

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

Memorandum

Date: July 14, 2016

TO : Hope Nesteruk, Sling Carrier Project Manager
Directorate for Engineering Sciences

FROM : Randy Butturini
Office of Hazard Identification and Reduction

SUBJECT : **Periodic Testing of Sling Carriers**

Introduction

On July 23, 2014, the U.S. Consumer Product Safety Commission (CPSC, or Commission) published a proposed rule in the *Federal Register*, proposing the regulation of infant sling carriers.⁶⁰ One hundred and eighty-eight comments were received on Docket CPSC–2014–0018. Several of those comments referred to the third party periodic testing requirements that would apply if the Commission finalizes the sling carrier rule. This memorandum summarizes and provides a response to the issues raised in the comments related to periodic testing.

Comment Summary

Comment: Eleven comments we received requested specific changes to the periodic testing requirements. Four commenters specifically requested testing biannually (*e.g.*, “allowing for testing every 2 years or only when there is a material change,” “It’s possible to tweak the testing requirements in ways that would not be overly onerous to small business owners (testing every other year, only when there is a change of materials, etc.)”)

Six commenters, including the four previous commenters, suggested testing should be required only when a material change occurs. One commenter requested testing every 3 years (“testing should be limited to a manufacturing level achieved by a large manufacturer, or every three years, whichever comes sooner.”), and four commenters suggested a period less frequent than

⁶⁰ <https://www.gpo.gov/fdsys/pkg/FR-2014-07-23/pdf/2014-16792.pdf>.

annually, but with no specific timeframe suggested (e.g., “Third party testing should not need to occur yearly,” “require testing either every year OR every 500 wraps,” “modifying the testing schedule so that testing does not need to be re-done annually for established manufacturers who don't have a material change in the supply chain”).

One commenter suggested bulk testing of fibers and woven fabric.

One commenter suggested “basic licensure or proof of competency per manufacturer/weaver,” in lieu of period testing. Two commenters stated that they were unsure what would constitute a material change.

Comment Response

CPSC Staff Response: CPSC staff agrees that testing every other year (instead of annual testing) represents a potentially meaningful reduction in the burden of third party testing costs, and such an approach is already permitted under an existing CPSC regulation, if certain basic conditions are satisfied. Subpart C of 16 C.F.R. part 1107 requires periodic testing of children’s products, including the third party certification testing for durable nursery products. This testing must be conducted at a minimum of 1-, 2-, or 3-year intervals, depending upon whether the manufacturer has a periodic testing plan (1 year), a production testing plan (2 years), or plans to conduct continued testing using an accredited ISO/IEC 17025:2005 laboratory (3 years). Periodic testing is required even if no material changes have occurred in the children’s product. Regarding the suggestion to conduct third party testing after a fixed production volume (i.e., 500 units), third party testing is required on a 1-, 2-, or 3-year period, irrespective of the production volume.

The commenter suggesting bulk testing of fibers and woven fabric is referring to component part testing, which is allowed and described in 16 C.F.R. part 1109,⁶¹ *Conditions and Requirements for Relying on Component Part Testing or Certification, or Another Party’s Finished Product Testing or Certification, to Meet Testing and Certification Requirements*. Third party test results of bulk component material may be used for certification purposes for all products using the bulk material to which the tests apply.

Additionally, 16 C.F.R. § 1107.23 requires that the certification testing be repeated whenever the manufacturer makes a material change in the product. A “material change” is defined in 16 C.F.R. § 1107.2 as:

... any change in the product’s design, manufacturing process, or sourcing of component parts that a manufacturer exercising due care knows, or should know, could affect the product’s ability to comply with the applicable rules, bans, standards, or regulations.

⁶¹ <https://www.gpo.gov/fdsys/granule/CFR-2012-title16-vol2/CFR-2012-title16-vol2-part1109>.

As described in 16 C.F.R § 1107.21(c)(2), “a production testing plan” is a written plan describing actions taken by a manufacturer, other than third party testing, to help ensure continued compliance of a children’s product. This written plan would include a description of the actions (*e.g.*, incoming inspection of raw materials, first party testing, in-factory quality assurance/quality control (QA/QC) systems) that a manufacturer uses to control for potential variability in its production process that could affect the product’s compliance. Although some testing is still required in a production testing plan, the test methods employed are not required to be CPSC-accepted test methods; nor must the tests be completed by a CPSC-accepted laboratory. 16 C.F.R. part 1107(a)(2). Additionally, 16 C.F.R. part 1107 does not require manufacturers to necessarily use destructive tests; and the regulation permits manufacturers to “tailor” the tests to the needs of the product. For commenters who specifically requested biannual testing, or who suggested testing yarns and fabrics, rather than whole products annually, the application of a production test plan is an option that is currently available, provided they establish a production test plan that meets the requirements of 16 C.F.R. part 1107(c)(2).

All product changes are not necessarily material changes; only changes that a manufacturer, exercising due care, knows, or should know, could affect the product's ability to comply with the requirements constitute material changes. Accordingly, for a hand weaver, this requirement may mean that a change in yarn alone is not necessarily a material change, unless the new yarn could affect the compliance of the finished product. For example, sourcing yarn from a different supplier might be considered a material change if the hand weaver cannot assume that the new yarn has the same mechanical properties as previously used yarns. Furthermore, only the rules affected by a material change require third party testing. For example, if a hand weaver changes the color of a yarn, unless the coloring process affects the mechanical strength of the yarn, material change testing to ASTM F2907 – 14a, section 7.1, *Static Load Test*, is not required.

Regarding the comment requesting “basic licensure or proof of competency per manufacturer/weaver,” this is not an option that is available to the Commission, as it is not within the authority of the CPSC to conduct pre-market testing or certify manufacturers for any industry.

Third party periodic testing less frequently than annually is already permitted when certain conditions are met; and component part testing of bulk materials is allowed. However, the Commission lacks the authority to license manufacturers. Therefore, staff recommends no change in the final rule based on the comments.

**TAB F: Response to Fabric-Related Public Comments
Received on the Notice of Proposed Rulemaking (NPR) for
Safety Standard for Sling Carriers**

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UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
BETHESDA, MD 20814

Memorandum

Date: May 9, 2016

TO : Hope Nesteruk, Manager, Sling Carrier Project
Directorate for Engineering Sciences

THROUGH: Andrew Stadnik, P.E., Associate Executive Director
Directorate for Laboratory Science

Allyson Tenney, Director
Division of Engineering

FROM : Weiyang Tao, Textile Technologist
Division of Engineering
Directorate for Laboratory Science

SUBJECT : Response to Fabric-Related Public Comments Received on the Notice of
Proposed Rulemaking (NPR) for Safety Standard for Sling Carriers

Introduction

The Consumer Product Safety Commission published a notice of proposed rulemaking (NPR) for sling carriers on July 23, 2014, to reduce the risk of injury relating to sling carriers. The proposed rule is based on the voluntary standard developed by ASTM International, ASTM F2907 – 15, *Standard Consumer Safety Specification for Sling Carriers*. One of the requirements in the ASTM standard is that no fabric tears when the product is subject to static and dynamic load tests. Another requirement calls for the fabric to meet a flammability standard. The ASTM standard requires the product to meet the requirements of 16 C.F.R. part 1610, *Standard for the Flammability of Clothing Textiles* (flammability standard). The Division of Engineering was asked to address the comments concerning fabrics that we received in response to the NPR for the safety standard for sling carriers. We received many comments regarding the requirements for fabric tear tests, and we received one comment regarding the requirement of flammability testing.

Comments on fabric integrity: We received 17 comments regarding the fabrics used for slings. The common concern expressed in these comments is that the proposed regulation/test requirements place undue economic burdens on very small businesses. The commenter claims that injury or death is mostly related to human error or improper use of the product, and not because of failure of the woven fabrics. We received 11 comments requesting the Commission to consider exemptions for certain type of fabrics or to provide guidelines for fiber content, yarn weights, thread count, weave structures and fabric weights to be used for slings.

CPSC Hotline: 1-800-638-CPSC(2772) ★ CPSC Web Site: <http://www.cpsc.gov>

One specific comment (CPSC-2014-0018-0070) stated: “There are already weight standards in place that determine whether a textile shall be tested for flammability. This is because previous tests have determined that a fabric over a certain weight does not pose a flammability risk. I believe a similar standard could be determined to provide a guideline for what characteristics of cloth (sett, ppi, fiber content) make for a suitable textile to be used as an infant sling. Anything produced outside these tested and approved parameters could be tested to insure compliance with the standard.”

Response: The Directorate for Economic Analysis addressed the economic impact on small businesses in Tab D of this briefing package. Because the causes of many injuries or deaths are undetermined, it is premature at this time to rule out fabric strength as an issue. The flammability standard provides exemptions for certain type of fabrics from flammability testing. One of the specific exemptions is for “plain surface fabrics, regardless of fiber content, weighing 2.6 ounces per square yard or more §1610.1 (d)(1).” However, the exemptions in part 1610 are based on years of test experience and data. CPSC staff tested approximately 40 slings, to date. At this time, the data are insufficient to provide guidelines or exemptions regarding fabric integrity for slings. CPSC staff could consider that issue in the future when more test experience and data are available.

Comment on flammability: We received one comment regarding the requirement for flammability testing. This comment (CPSC-2014-0018-0014) stated: “The proposed testing, registration, and labeling rules, will create an unbearable burden on a primarily home-based cottage industry as those rules relate to baby wraps. In particular, I question the need for the flammability testing. None of the injuries or fatalities were related to fire. In any event, we are just talking about woven pieces of cloth here, no different than other, less regulated, fabrics used for ordinary clothing. Regulating the baby wrap cloth will not fix stupid parents that use it wrong.”

Response: Fabrics used for slings are required to meet the flammability standard. As noted, the flammability standard provides specific exemptions for certain types of fabrics. Fabrics that meet one of the specific exemptions in §1610.1(d) do not require flammability testing to show compliance with the flammability standard. A majority of fabrics used for slings are plain surface textiles that exceed a fabric weight of 2.6 ounces per square yard and would be exempt from testing. Because many fabrics will not require testing, the economic burden is expected to be very small.