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

BALLOT VOTE SHEET

Date: OCT 13 2010

TO : The Commission
Todd Stevenson, Secretary

THROUGH: Kenneth R. Hinson, Executive Director KRH

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

SUBJECT : Proposed Technical Amendment to Standard for the Flammability of Mattresses and Mattress Pads, 16 C.F.R. Part 1632, to Revise Specification of Ignition Source

BALLOT VOTE DUE: OCT 20 2010

The staff is forwarding to the Commission a briefing package, along with a draft notice of proposed rulemaking proposing to amend the Commission's flammability standard for mattresses and mattress pads, codified at 16 C.F.R. part 1632. The proposed rule would revise the specification of the ignition source at 16 C.F.R. section 1632.4(a)(2) so that it would specify a standard reference material ("SRM") cigarette developed by the National Institute of Standards and Technology ("NIST").

Please indicate your vote on the draft proposed rule by selecting one of the following options.

I. Approve publication in the *Federal Register* of the draft proposed rule without changes.

_____ _____
Signature Date

RH 10/13/2010
CLEARED FOR PUBLIC RELEASE
UNDER CPSA 6(b)(1)

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

II. Approve publication in the *Federal Register* of the draft proposed rule with changes (please specify changes):

_____

_____

_____

_____ _____

Signature Date

III. Do not approve publication in the *Federal Register* of the draft proposed rule.

_____ _____

Signature Date

IV. Take other action (please specify):

_____

_____

_____

_____ _____

Signature Date

Staff Briefing Package

Draft Proposed Technical Amendment to 16 CFR Part 1632 *Standard for the Flammability of Mattresses and Mattress Pads*

October 13, 2010

For further information contact:

Patricia K. Adair, Project Manager
Directorate for Engineering Sciences
U.S. Consumer Product Safety Commission
(301) 504-7536

EXECUTIVE SUMMARY

The *Standard for the Flammability of Mattresses and Mattress Pads* (hereinafter referred to as the Standard) was issued by the Department of Commerce in 1972 under the authority of the Flammable Fabrics Act ("FFA"). When the U.S. Consumer Product Safety Commission (CPSC) was created, the responsibility for issuing and amending flammability standards under the FFA was transferred to the Commission.

The Standard, codified at 16 CFR part 1632, sets forth a test to determine the ignition resistance of a mattress or mattress pad when exposed to a smoldering cigarette. Lighted cigarettes are placed at specified locations on the surface of a mattress (or mattress pad). The ignition source is specified in the Standard by physical properties that were originally selected to represent an unfiltered Pall Mall cigarette, which was identified as the most severe smoldering ignition source. The Standard establishes pass/fail criteria for the tests. The Standard also requires manufacturers to maintain records demonstrating compliance with the testing requirements.

On June 23, 2005, the Commission issued an Advance Notice of Proposed Rulemaking (ANPR) soliciting comments on revoking or amending 16 CFR part 1632. This action was in response to several commenters who suggested that 16 CFR part 1633 *Standard for the Flammability (Open-Flame) of Mattress Sets* would render the cigarette ignition Standard burdensome and unnecessary. The ANPR does not address the specification of the cigarette ignition source; however, two commenters on the ANPR expressed concern about the future availability of the test cigarette and urged the CPSC to address the issue.

In January 2008, CPSC staff learned that the manufacturer of conventional (non-reduced ignition propensity, or "non-RIP") unfiltered Pall Mall cigarettes, the R.J. Reynolds Tobacco Company, planned to cease production of the non-RIP version of this cigarette in February 2008. Manufacturers and testing organizations soon expressed concerns to CPSC staff that the unavailability of the specified test cigarette would hinder compliance testing of covered products. Development of a new ignition source to meet the Standard was needed urgently.

To fill the need for a consistent-performing "standard" ignition source, the National Institute of Standards and Technology (NIST) developed a Standard Reference Material (SRM) cigarette under an Interagency Agreement (IAG) with the CPSC. The purpose of developing an SRM cigarette is to enhance repeatability of test results without changing the level of fire safety provided by the Standard. The resulting SRM cigarette has the approximate ignition strength of the original unfiltered Pall Mall. CPSC staff recommends that an SRM cigarette have this ignition strength to provide for continuity of fire performance.

The SRM cigarette (SRM 1196) developed by NIST is a short term solution to a longer term issue. Anticipating the need for a longer term solution, CPSC has entered into a new IAG with NIST to develop a surrogate ignition source, with development to begin at NIST in FY2011.

CPSC staff considers the SRM cigarette to be a reasonably equivalent ignition source for tests of smolder resistance based on the testing and development program conducted by NIST. Staff's suggested technical amendment incorporates the new SRM cigarette ignition source developed by NIST. This suggested technical amendment would not change the level of safety provided by the Standard and would not impose a significant cost burden on testing firms and manufacturers. Staff recommends that the Commission publish a notice of proposed rulemaking (NPR) to solicit public comment on staff's suggested technical amendment to 16 CFR part 1632 *Standard for the Flammability of Mattresses and Mattress Pads.*

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

This document has been electronically approved and signed.

Memorandum

Date: October 13, 2010

TO : The Commission
Todd Stevenson, Secretary

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

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

SUBJECT : Proposed Technical Amendment to 16 CFR Part 1632 *Standard for the Flammability of Mattresses and Mattress Pads*

I. INTRODUCTION

This memorandum presents information on staff's draft proposed technical amendment to 16 Code of Federal Regulations (CFR) part 1632 *Standard for the Flammability of Mattresses and Mattress Pads* and supporting materials. The technical amendment relates to the ignition source used to determine ignition resistance.

II. BACKGROUND

a. *Standard for the Flammability of Mattresses and Mattress Pads*

The *Standard for the Flammability of Mattresses and Mattress Pads* (hereinafter referred to as the Standard) appears at 16 CFR part 1632. The Standard was issued by the U.S. Department of Commerce in 1972 under the authority of the Flammable Fabrics Act (FFA). When the U.S. Consumer Product Safety Commission (CPSC) was created, the responsibility for issuing and amending flammability standards under the FFA was transferred to the Commission.

The Standard sets forth a test to determine the ignition resistance of a mattress or mattress pad when exposed to a smoldering cigarette. Lighted cigarettes are placed at

specified locations on the surface of a mattress (or mattress pad).[1] The ignition source cigarette is specified in the Standard by physical properties representing the ignition strength of an unfiltered Pall Mall cigarette, which was originally identified as the most severe smoldering ignition source.[2] The Standard establishes pass/fail criteria for the tests. The Standard also requires manufacturers to maintain records demonstrating compliance with the testing requirements.

b. *Summary of Test Procedure*

The test procedure for the Standard is summarized in section 1632.4-5. The test procedure requires that a number of cigarettes (the number determined by the test performed) be exposed to the test substrate in a specific position (the position determined by the test performed and the construction of the specimen) and either burn their full length or self-extinguish.

For mattresses[3] and mattress pads[4] (mattress pads are tested on a glass fiber board substrate), the specimen is divided into two halves. One end of the specimen is tested in a bare state. The other end is tested with two layers of a standard sheeting material covering the specimen (the cigarettes are placed between the layers). Eighteen cigarettes are placed on each specimen test surface; nine on the bare end and nine on the sheeting end. Cigarettes are placed on the specimen according to the specimen construction features. For specimens with two surface features (smooth and tape edge), four cigarettes are placed individually on the smooth surface and five are placed along the tape edge. For specimens with three or more surface features (smooth, tape edge, quilted, or tufted), three cigarettes are placed individually on each type of surface feature (i.e., there would be three different tuft locations with a cigarette placed on each one). Cigarettes are allowed to burn their entire length. If a cigarette self-extinguishes during testing, it must be replaced with a cigarette in another location of the same type of construction feature. The test is complete when one of the following criteria has been met: (1) eighteen cigarettes have burned their entire length, (2) eighteen cigarettes have self-extinguished, or (3) a char length greater than two inches occurs at any test location.

On June 23, 2005, the Commission issued an Advance Notice of Proposed Rulemaking (ANPR) soliciting comments on revoking or amending the Standard. This action was in response to comments from several interested parties who suggested when 16 CFR part 1633, *Standard for the Flammability (Open Flame) of Mattress Sets,* became

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[1] On March 15, 2006, the Office of Compliance and Field Operations issued an Interim Enforcement Policy for Mattresses Subject to 16 CFR parts 1632 and 1633 to reduce testing from six mattress sleep surfaces to two mattress sleep surfaces for each new prototype created to comply with 16 CFR part 1633. http://www.cpsc.gov/BUSINFO/InterimMattress.pdf.

[2] Loftus, Joseph J., "*Results of Temperature Measurements Made on Burning Cigarettes and Their Use as a Standard Ignition Source for Mattress Testing*," NBS Memo Report, National Bureau of Standards, June 18, 1971; and Loftus, Joseph J., "*Back-Up Report for the Proposed Standard for the Flammability (Cigarette Ignition Resistance) of Upholstered Furniture*," PFF 6-76, NBSIR 78-1438, National Bureau of Standards, Gaithersburg, MD, June 1978.

[3] 16 CFR part 1632.4.

[4] *Id.* at 1632.5.

effective on July 1, 2007 that the cigarette ignition Standard would become burdensome and unnecessary. The ANPR does not address the specification of the cigarette ignition source; however, two commenters on the ANPR expressed concern about the future availability of the test cigarette and urged the CPSC to address the issue.

In response to the ANPR, the Sleep Products Safety Council (SPSC), a safety division of the International Sleep Products Association (ISPA), began a research project at the National Institute of Standards and Technology (NIST) to develop a potential small scale test for smoldering ignition of mattresses and to determine if the Standard was still needed after 16 CFR part 1633 was in effect.[5] In 2009, ISPA ended the research project at NIST due to problems with controlling standard test materials; the research was not completed, and no data were provided to the CPSC from this project.

c. Relevant Voluntary, Mandatory, and Proposed Standards

In addition to the Standard, the Interim Safety Standard for Cellulose Insulation (16 CFR part 1209), the laboratory manual for the fireworks regulations (16 CFR parts 1500 and 1507), and a proposed regulation for upholstered furniture (73 F R 11702 (March 4, 2008)), specify a cigarette as a source of ignition that meets the same specifications as the ignition source in the Standard.

The State of California requires that furniture sold in the state comply with *CA Technical Bulletin 117* (TB 117), part of which requires a similarly specified cigarette. The same ignition source is used in the voluntary ASTM E 1352 *Standard Test Method for Cigarette Ignition Resistance of Mock-Up Upholstered Furniture Assemblies.* It is also used inthe NFPA 260 *Standard Methods of Tests and Classification System for Cigarette Ignition Resistance of Components of Upholstered Furniture* test methods, which are embodied in the current industry voluntary standard for upholstered furniture, *Standard Methods of Tests and Classification System for Cigarette Ignition Resistance of Components of Upholstered Furniture,* established by the Upholstered Furniture Action Council (UFAC) and adopted by the Business and Institutional Furniture Manufacturers Association (BIFMA).

d. Reduced Ignition Propensity Cigarettes

Since 2004, states have been implementing regulations to require cigarettes to be of "reduced ignition propensity" (RIP). A RIP (also referred to as "fire safe" or FSC) cigarette is designed to be less likely to ignite soft furnishings when left unattended. Currently, regulations are in effect in forty-three states and Canada, with six additional state regulations coming into effect in 2010, and one remaining state regulation coming into effect in 2011. In January 2008, CPSC staff learned that the manufacturer of conventional (non-RIP) unfiltered Pall Mall cigarettes, the R.J. Reynolds Tobacco Company, planned to cease production of the non-RIP version of this cigarette in February 2008. Manufacturers and testing organizations soon expressed concerns to CPSC staff that the unavailability of the specified test cigarette would hinder compliance

[5]http://www.cpsc.gov/LIBRARY/FOIA/meetings/mtg06/MattressOct20.pdf.

testing of covered products. Development of a new ignition source to meet the Standard was needed urgently.

III. TECHNICAL RATIONALE

a. Residential Fires Involving Smoldering Ignition of Mattresses and Bedding

The latest fire loss estimates for mattresses and bedding show that smoking material ignitions of mattresses or bedding still lead to a large number of fire deaths and injuries (**see Tab A**). The most recently available estimates of fires, deaths, injuries, and property loss, where mattresses or bedding was the item first ignited and smoking materials provided the heat source, are given in the table below.

2005 – 2007 Annual Average Fires and Losses From Fires Where Mattress or Bedding Was the *Item First Ignited*

Heat Source	Fires	Deaths	Injuries	Property Loss (in $Millions)
Total	9,900	370	1,230	344
Smoking Materials	**2,100**	**170**	**350**	**57**
Open Flame	2,400	50	350	92
Other	5,400	150	530	195

Note: Fires are rounded to the nearest hundred, deaths and injuries to the nearest ten, and property loss to the nearest million dollars. Detail may not add to total due to rounding.

There are an estimated annual average of 2,100 fires in which smoking materials ignite mattresses or bedding. These lead to an estimated 170 deaths, 350 injuries, and $57 million in property loss per year. These fires and losses are predominantly cigarette fires and not pipe or cigar.

b. Ignition Source Specification

As specified in the Standard at section 1632.4(a)(2), the ignition source *"shall be cigarettes without filter tips made from natural tobacco, 85±2 mm long with a tobacco packing density of 0.270±0.02 g/cm^3 and a total weight of 1.1±0.1 g."* This specification was meant to describe a conventional unfiltered Pall Mall cigarette. According to research conducted by the National Bureau of Standards (now NIST) on commercially available cigarettes, the purpose of the original specification was to replicate the most severe smoldering ignition source for testing mattresses and mattress pads under the Standard.[6]

The purpose of developing the Standard Reference Material (SRM) ignition source is to enable continued ignition resistance testing with a consistent ignition source without changing the level of fire safety provided by the Standard. For development of a potential

[6] Loftus, 1971. Op. cit.

new SRM smoldering ignition source, staff's goal was to replicate the thermal characteristics of the unfiltered Pall Mall cigarette upon which the specification at section 1632.4(a)(2) was based.

The SRM cigarette represents an interim solution to the recognized long term need for a reliable smoldering ignition source. The CPSC staff has initiated work on a separate project to develop a surrogate (non-cigarette) ignition source that may provide a more permanent solution.

IV. NIST RESEARCH

In August 2008, the CPSC entered into an Interagency Agreement (IAG) with NIST to develop a new cigarette smoldering ignition source SRM that has the ignition strength of the test cigarette mandated for use in the Standard. [7] There are no cigarette ignition test data to characterize the ignition propensity of cigarettes from 1972, when the Standard was promulgated. In the absence of such data, NIST sought to identify the highest ignition strength cigarette, consistent with the intent of the original Standard.

NIST evaluated Pall Mall cigarettes of different vintages (1992 through 2008) to determine the ignition strengths of the cigarettes that have been used to test soft furnishings. NIST had previously determined that cigarettes manufactured from 1992 to 2003, taken from a storage freezer and then conditioned per ASTM E 2187,[8] showed the same ignition properties as they had shown originally.[9] It is very likely that the ignition strength was very similar for these vintage ignition source cigarettes.

Although SRM cigarettes are now becoming available, sufficient quantities of previous (1992 through 2003) cigarettes no longer exist to perform any comparative studies of ignition propensity. The NIST research strongly indicates, however, that the SRM is equivalent in ignition strength to the highest known strength previous unfiltered Pall Mall cigarette. Further, NIST research under the Fire Safe Cigarette Act of 1990 demonstrated that results of cigarette ignition strength tests under the method embodied under ASTM E 2187 correlated with ignition propensity on soft furnishings.[10]

After developing a standardized procedure for determining the ignition strength of high ignition propensity cigarettes and assessing different vintage cigarettes, NIST recommended to CPSC staff that the new SRM cigarette meet the following specifications:

- nominal length: 83 mm ± 2mm,
- tobacco packing density: 0.270 g/cm3 ± 0.020g/cm3,

[7] CPSC-I-08-0015; August 14, 2008.

[8] ASTM E 2187-04 *Standard Test Method for Measuring the Ignition Strength of Cigarettes*. ASTM International.

[9] Gann, R.G. and Guthrie, W.F., "Robustness of Measuring the Ignition Strength of Cigarettes with ASTM Method E2187-02b," NIST Technical Note 1454, National Institute of Standards and Technology, Gaithersburg, MD, (2003).

[10] Ohlemiller, T.J., et al. Test Methods for Quantifying the Propensity of Cigarettes to Ignite Soft Furnishings. NIST Special Publication 851, August 1993.

- mass: 1.1 g ± 0.1 g,
- ignition strength: 70 Percent Full Length Burn (PFLB) to 95 PFLB using ASTM E 2187, as modified in Section 4.2 of NIST Technical Note 1627, and
- non-Fire Safe Cigarette (FSC).

The first three descriptors are subsumed by those required of the current standard test cigarette. The recommended ignition strength range reflects the three oldest vintages of the Pall Mall cigarette tested by NIST. The earlier vintages reflect the intent of the Standard to incorporate a worst-case ignition source. The new SRM cigarette is designated SRM 1196.

In June 2009, NIST provided CPSC staff with a report on their research, "*NIST Technical Note 1627: Modification of ASTM E 2187 for Measuring the Ignition Propensity of Conventional Cigarettes.*"[11] The research described in this report was used to help develop an SRM ignition source that may be incorporated into possible amendments to existing and proposed flammability regulations. Based on the NIST research, staff's draft proposed technical amendment would establish specific parameters for the standard cigarette ignition source used in the smoldering performance tests contained in 16 CFR part 1632. Staff's draft proposed technical amendment incorporates the new SRM cigarette ignition source.

V. SUMMARY OF COMMENTS ON NIST TECHNICAL NOTE 1627

In July 2009, the Commission posted NIST Technical Note 1627 on its website to keep stakeholders informed on the progress of this research. The Commission received three substantive comments, all from industry trade associations representing manufacturers, importers, and retailers affected by the smolder-resistance requirements of the existing and proposed rules. These industry groups, the International Sleep Products Association (ISPA), the National Cotton Council (NCC), and the National Textile Association (NTA), chiefly provided general comments and recommendations on the applicability of any eventual SRM to the regulations. There were no comments on NIST's technical methods and conclusions. The commenters generally recommended that the CPSC consider using an SRM ignition source that approximates the ignition strength of either: (1) reduced ignition propensity (RIP) cigarettes that are coming onto the U.S. market, or (2) the lowest-known-strength, non-RIP cigarettes in the U.S. market.

The commenters also posed some questions on various technical issues discussed in the NIST Technical Note. The summary below presents the CPSC staff's preliminary evaluation of the public comments.

[11] Gann, R.G., and Hnetkovsky E.J., *Modification of ASTM E 2187 for Measuring the Ignition Propensity of Conventional Cigarettes,* Technical Note 1627, National Institute of Standards and Technology, Gaithersburg, MD, 20899, 2009.

***Comment**: The fire performance of old cigarettes is irrelevant to current real world conditions.*

***Response**:* The test cigarette specified in the Standard was not selected to reflect the ignition performance of the typical cigarette of the era. The cited NBS (NIST) research indicate that the specification was meant to be a cigarette with the highest potential to ignite soft furnishings. Thus, the cigarette test provided a substantial level of safety for soft furnishings.

***Comment**: To the extent that the ignition strength of the real world cigarette changed over time, 16 CFR part 1632 was, in effect, a "living" standard that allowed for the use of such a variable test material. Therefore, based on the purpose and terms of part 1632, the cigarette ignition test should be applied using currently available non-filtered RIP cigarettes, given that they meet the ignition source specifications set in section 1632.4(a)(2), and virtually all cigarettes sold in the United States are of this type.*

Response: 16 CFR part 1632 does not contain any philosophy of intent regarding the potential variability in ignition strength of the cigarettes used in the Standard. The purpose of the SRM development is to enable continued testing for cigarette ignition resistance without changing the level of safety provided by the original Standard.

***Comment**: The proposed ignition strength requirement does not reflect the fact that state laws have been changed to allow the sale of RIP cigarettes only. These laws are in effect now, or will be within the next two years, in [all 50] states. RIP cigarettes have the potential for greatly reducing the problem. The CPSC should develop an SRM cigarette that reflects "fire safe cigarette" performance.*

***Response**:* It still is necessary to continue testing mattresses and mattress pads for cigarette ignition resistance using a test cigarette that has the same ignition propensity as the old Pall Malls. Since there are no studies of RIP cigarette effectiveness, staff does not have any data reflecting the correlation between use of RIP cigarettes and reduction in fire losses where soft furnishings, such as mattresses, are the first item ignited. In 2007, the Commission began a limited research project to examine the ignition propensity of several brands of non-RIP and RIP cigarettes. This project was deferred in FY 2008, FY 2009, and FY 2010 due to resource constraints presented by the Consumer Product Safety Improvement Act; but staff plans to resume this work in FY 2011.

According to the model legislation found on the National Fire Protection Association (NFPA) Coalition for Fire Safe Cigarettes website,[12] testing of RIP cigarettes shall be conducted in accordance with the American Society of Testing and Materials ("ASTM") Standard E 2187-04, "*Standard Test Method for Measuring the Ignition Strength of Cigarettes*." The model state legislation requires that "no more than 25 percent of the cigarettes tested in a test trial in accordance with this section shall exhibit full-length

[12] http://firesafecigarettes.org.

burns."[13] In other words, the test method allows for 25 percent of the cigarettes tested to burn their full length, like non-RIP cigarettes. This suggests that, even with full compliance to state laws, it may be expected that some RIP cigarettes may burn like non-RIP cigarettes. In addition, only eight of the fifty states with enacted or soon-to-be-enacted legislation mandating RIP cigarettes require auditing to confirm compliance with ASTM E 2187-04 for RIP cigarettes sold in their states.[14] Thus, the extent of potential RIP-related fire safety gains remains uncertain.

Staff agrees that the movement toward RIP cigarettes is a positive development and may reduce the incidence of cigarette-ignited mattress and bedding fires. However, it is important that future mattresses do not become more susceptible to cigarette ignition than the mattresses that have been sold over the past three decades. Testing mattresses and mattress pads with a RIP cigarette or conventional cigarette with weaker ignition strength may result in the use of materials that are more susceptible to cigarette ignition than those materials used over the past three decades. Since the conventional unfiltered Pall Mall was selected as the most severe ignition source cigarette available, and since it is not known which RIP cigarette has the strongest ignition strength, it is possible that the use of a RIP cigarette to test mattresses and mattress pads could have some adverse impact on fire safety to the extent that manufacturers or importers may use less smolder-resistant materials.

The proposed new SRM cigarette is not a more severe insult than originally intended by the Standard. It is designed to have approximately the same ignition strength as test cigarettes that were used for more than thirty years.

***Comment**: NIST departed from its intended course to develop an equivalent surrogate ignition source following the replacement of the existing ignition source with RIP cigarettes. Rather than attempt to maintain the status quo as of 2008, NIST's recommendations exclude the characteristics of the discontinued cigarette, and instead base the recommended percent full-length burn (PFLB) value on cigarettes produced as much as sixteen years earlier. As a result, the NIST recommendations do not reflect the existing real world ignition risks that 16 CFR part 1632 was intended to address or even the real world conditions that existed in 2008, when RIP cigarettes replaced the ignition source then in use. Instead, NIST recommends an SRM that would have fire characteristics more severe than the discontinued cigarette.*

***Response**:* The CPSC staff directed NIST to develop an SRM cigarette that would be "safety-neutral." This term means that the fire performance of future tested furnishings should be the same as, or at least no worse than, furnishings that comply with existing standards.

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[13] http://www.firesafecigarettes.org/itemDetail.asp?categoryID=56&itemID=1111&URL=Model%20legislation/Text%20of%20the%20model%20legislation.

[14] http://firesafecigarettes.org/itemDetail.asp?categoryID=130&itemID=2053&URL=Legislative%20updates/How%20states%20are%20implementing%20the%20legislation/States%20A-L.

Further, the current test cigarette was not selected to reflect the ignition performance of typical cigarettes of the era. The test cigarette was expected to be the cigarette with the highest potential to ignite soft furnishings. Thus, the Standard provided a substantial level of safety for mattresses and mattress pads. To the extent that other cigarettes were less prone to ignite these products, the Standard provides an extra margin of safety for consumers.

***Comment**: A surrogate equivalent to the discontinued non-RIP cigarette is needed quickly, given that those materials are no longer being produced; to specify a non-equivalent SRM as NIST recommends would require the CPSC to conduct a lengthy rulemaking procedure to amend 16 CFR part 1632.*

***Response**:* The new SRM cigarette is designed to be equivalent to the original test cigarette. In their report, NIST recommended a replacement cigarette that is as close as possible to the original test cigarette as specified in the Standard. The purpose of developing the SRM cigarette is to enhance repeatability of test results without changing the level of fire safety provided by the Standard.

***Comment**: The data on ignition strength suggests that assumptions and analyses in current rulemaking may be inaccurate.*

***Response**:* Staff believes this commenter is referring to the upholstered furniture rulemaking (*73 Fed. Reg. 11702 (March 4, 2008)*). Staff's ongoing research on the flammability of upholstered furniture is taking into account potential impacts of differences between ignition sources.

***Comment**: It is not possible to know that the performance of the older vintages can be replicated in a new SRM without development and testing.*

Response: NIST's research involved substantial development and testing of candidate test cigarettes, and identified the desirable properties of an SRM. The vendor selected to produce SRM 1196 will provide cigarettes that meet both the physical and ignition strength requirements characteristic of the test cigarette. NIST has a Standard Reference Material program that provides for testing and certification of all their SRMs. NIST currently has more than 1,300 SRMs. A NIST SRM meets NIST-specific certification criteria and is issued with a certificate of analysis that reports the results of its characterizations and provides information regarding the appropriate use(s) of the material (NIST SP 260-136).[15]

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[15] NIST Special Publication 260-136. *Standard Reference Materials Definitions of Terms and Modes Used at NIST for Value-Assignment of Reference Materials for Chemical Measurements.* W. May, R. Parris, C. Beck, J. Fassett, R. Greenberg, F. Guenther, G. Kramer, and S. Wise, Analytical Chemistry Division, T. Gills, J. Colbert, R. Gettings, and B. MacDonald Standard Reference Materials Program, Technology Services. National Institute of Standards and Technology, Gaithersburg, MD 20899-8390. Also available at: http://ts.nist.gov/MeasurementServices/ReferenceMaterials/upload/SP260-136.PDF.

Comment: *The projected cost of the new SRM is also an enormous issue for the small jacquard weavers who make up the upholstery fabrics sector that will be impacted mostly by the proposed [furniture] standard. We understand that a standard carton (10 packs) of SRM cigarettes will sell for approximately $188. Overall, the SRM cost alone will be approximately $1 per cigarette, a cost exceedingly high compared to the previous standard cigarette and a cost that is enormously high for small textile companies that are suffering economically from the business downturn and each with an enormous number of stock-keeping units (SKUs).*

Response. This comment appears to refer to potential costs associated with testing that may be performed on behalf of upholstery fabric producers. These costs are discussed in the Commission's preliminary regulatory analysis of the proposed upholstered furniture rule. For mattresses, individual ticking fabrics are generally not tested; rather, testing of assembled mattresses is typically performed by third-party testing laboratories (upholstery fabrics would also likely be tested by third-party laboratories). As discussed below, the draft proposed technical amendment to 16 CFR part 1632 could increase industry testing costs by up to about 10 percent, a relatively minor impact.

VI. PRELIMINARY REGULATORY ANALYSIS

The Directorate for Economic Analysis (EC) prepared a Preliminary Regulatory Analysis of the proposed technical amendment requiring the use of the SRM cigarette for testing new prototypes or ticking substitutions (see **Tab B**). Since the amendment is intended to be "safety-neutral," it would not affect the flammability performance of currently-produced, complying mattresses. The proposal would not significantly affect the benefits or costs associated with the existing Standard.

The expected benefits associated with the proposed amendment would consist of reduced test variability and industry uncertainty about which cigarette to use and about the comparability of test results; this could reduce the potential for unnecessary additional testing. The costs of the proposal would be a small increase in testing costs that would result when mattress producers either (a) establish prototypes for new mattress constructions, or (b) make ticking substitutions on existing, complying constructions.

Mattress testing generally consumes about two packs of cigarettes per new prototype and one pack per ticking substitution. The increased costs associated with the use of SRM cigarettes are projected to be $38 per prototype (about 6 percent of total prototype testing costs) and $19 per ticking substitution (about 38 percent of total ticking substitution testing costs). These costs are allocated over production runs of complying mattresses; over a range of typical firms and production runs, the projected increase is estimated at one to three cents ($0.01 to $0.03) per mattress. Aggregate testing costs may increase by roughly $70,000 per year. This represents a minor impact (about 10 percent) on total testing and certification costs currently associated with the Standard (estimated at roughly $700,000). It is unlikely that wholesale or retail prices of complying mattresses would increase as a result of the proposed technical amendment.

While almost all of the businesses subject to the Standard are small, with average gross revenues of about $4 million per year, the likely cost of the proposed amendment per small firm would amount to substantially less than one percent of those firms' gross revenues. Thus, it is unlikely that there would be any significant impact on small firms or other small entities. Further, there would be no significant environmental impacts associated with the draft proposed technical amendment.

VII. CONCLUSIONS

Staff concludes that it is appropriate to amend the Standard to describe the ignition source in 16 CFR part 1632 as NIST Standard Reference Material 1196. The purpose of specifying the SRM cigarette is to enhance repeatability and reproducibility of smoldering ignition test results without changing the level of fire safety provided by the Standard. The proposed amended specification would replace the current specification for the ignition source.

VIII. RECOMMENDATION

Staff recommends that the Commission publish a Notice of Proposed Rulemaking in the *Federal Register* as drafted by staff for a seventy-five day public comment period to reflect the removal of the specifications of the standard ignition source *"shall be cigarettes without filter tips made from natural tobacco, 85±2 mm long with a tobacco packing density of 0.270±0.02 g/cm^3 and a total weight of 1.1± 0.1gm"* and to replace the current physical specifications with *"NIST Standard Reference Material 1196, available for purchase from the National Institute of Standards and Technology, 100 Bureau Drive, Gaithersburg, MD, 20899.*

In addition, staff believes that a one-year effective date is appropriate to ensure sufficient time to allow for manufacturing and testing cycles and continuing availability of SRM 1196 from NIST. Therefore, staff recommends that the proposed amendment to the ignition source provision of the Standard become effective one year after final publication of the amendment in the *Federal Register.*

IX. OPTIONS

1. Publish a Notice of Proposed Rulemaking to solicit public comment on the recommended changes.

2. Make no change to amend 16 CFR part 1632 *Standard for the Flammability of Mattresses and Mattress Pads.*

TAB A:

Directorate for Epidemiology Memorandum:

2005-2007 Fire Loss Estimates for Mattresses and Bedding

T
A
B

A

UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
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Memorandum

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SUBJECT: 2005–2007 Fire Loss Estimates for Mattresses and Bedding

This memorandum provides the 2005–2007 annual average estimates of fires and fire losses from residential structure fires where a mattress or bedding was the *item first ignited.* It is in support of the CPSC staff's proposed technical amendment to 16 Code of Federal Regulations (CFR) part1632, the *Standard for the Flammability of Mattresses and Mattress Pads* and supporting materials.

Based on data from the National Fire Incident Reporting System (NFIRS) and the National Fire Protection Association's (NFPA) Annual Survey of Fire Losses, CPSC staff produces estimates of fires and fire losses associated with specific consumer products. These estimates are for fire department-attended fires only. They exclude fires and losses from intentionally[16] set fires and include only civilian casualties.

NFIRS has separate *item first ignited* codes for mattresses and bedding:

31 – Mattress, pillow
32 – Bedding; blanket, sheet, comforter

They are combined to form one estimate because, in a "mattress fire," it is difficult to determine which product ignited first.

[16] If the data indicates that a fire was caused by child play, it is not excluded.

The NFIRS *heat source* codes for mattress and bedding fires are categorized as follows:

Smoking Materials

61 – Cigarette
62 – Pipe or cigar
63 – Heat from undetermined smoking material

Open Flame

64 – Match
65 – Cigarette lighter
66 – Candle

Other

All other *heat source* codes.[17]

2005–2007 Annual Average Fires and Losses From Fires Where Mattress or Bedding Was the *Item First Ignited*

Heat Source	Fires	Deaths	Injuries	Property Loss (in $Millions)
Total	9,900	370	1,230	344
Smoking Materials	**2,100**	**170**	**350**	**57**
Open Flame	2,400	50	350	92
Other	5,400	150	530	195

Note: Fires are rounded to the nearest hundred, deaths and injuries to the nearest ten, and property loss to the nearest million dollars. Detail may not add to total due to rounding.

Smoking materials igniting a mattress or bedding account for an estimated average of 2,100 fires, 170 deaths, 350 injuries, and $57 million in property loss per year. These fires and losses are predominantly cigarette fires and losses and not pipe or cigar.

[17] A wide range of heat source codes contribute to this category. Two of the codes that comprise many of the fires are '12 – Radiated, conducted heat from operating equipment' and '13 – Arcing'.

TAB B:

Directorate for Economic Analysis Report, "Preliminary Regulatory Analysis: Smoldering Ignition Source Draft Proposed Technical Amendment to the Flammability Standard for Mattresses and Mattress Pads (16 CFR Part 1632)"

Directorate for Economic Analysis Memorandum, "Environmental Review of Draft Proposed Mattress Rule (16 CFR Part 1632) Ignition Source Amendment"

Preliminary Regulatory Analysis:

Smoldering Ignition Source

Draft Proposed Technical Amendment to the

Flammability Standard for Mattresses and Mattress Pads

(16 CFR Part 1632)

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Executive Summary

The U.S. Consumer Product Safety Commission (CPSC) is considering proposing a technical amendment to the *Standard for the Flammability of Mattresses and Mattress Pads* (16 CFR part 1632). This Standard was originally issued in 1972 by the U.S. Department of Commerce under the Flammable Fabrics Act (FFA); authority for administering FFA standards was transferred to the CPSC upon creation of the Commission. The proposed amendment would revise the specification for the cigarette used as the smoldering ignition source in the flammability performance test of the Standard.

Since the mattress Standard became effective, compliance testing was generally performed using an unfiltered Pall Mall cigarette. This cigarette was identified as the most severe available smoldering ignition source. In 2008, the manufacturer discontinued production of this cigarette. Industry tests have since been conducted using leftover inventories of the unfiltered Pall Mall, or in some cases using a "reduced ignition propensity" (RIP) replacement version that is in current production. Recent research has revealed that the ignition strength of cigarettes may vary significantly, even within brands and packings. Thus, uncertainty about the repeatability of test results exists among firms subject to or certifying compliance with the mattress Standard.

To fill the need for a consistent-performing "standard" ignition source, the National Institute of Standards and Technology (NIST) prepared a Technical Report and developed a Standard Reference Material (SRM) cigarette under an Interagency Agreement (IAG) with the CPSC. The SRM cigarette is designed to have the approximate ignition strength of the original unfiltered Pall Mall. This SRM is specified in the proposed technical amendment. The amendment is intended to be "safety-neutral" (i.e., it would not affect the flammability performance of currently-produced, complying mattresses). The amendment, if issued on a final basis, would not significantly affect the benefits or costs associated with the Standard. The expected potential benefit consists of reduced test variability and industry uncertainty about which cigarette to use and

about the comparability of test results. The potential cost consists of a small increase in testing costs that would result when mattress producers either (a) establish prototypes for new mattress constructions, or (b) make ticking substitutions on existing, complying constructions. Increased resource costs associated with the use of SRM cigarettes are projected to be $38 per prototype (an increase of about six percent over existing prototype testing costs) and $19 per ticking substitution (an increase of about 38 percent over existing ticking substitution testing costs); these costs are allocated over production runs of complying mattresses. Among the approximately 400 firms affected, averageincreased testing costs would range from about $133 to $475 per firm. Aggregate testing costs may increase by about 10 percent, or roughly $70,000 per year. This represents a minor impact on total testing and certification costs. It is unlikely that wholesale or retail prices of complying mattresses would noticeably increase as a result of the proposed amendment.

The Commission considers potential impacts on small businesses that may be affected by the proposed amendment. While almost all of the businesses subject to the Standard are small, with average gross revenues of about $4 million per year, the likely cost of the proposed amendment per small firm would amount to substantially less than one percent of those firms' gross revenues. Thus, it is unlikely that there would be any significant impact on small firms or other small entities associated with the proposed technical amendment.

The Commission received three substantive public comments on the NIST Technical Report. These comments generally favored a standard cigarette ignition source that is more like the RIP cigarettes currently in widespread distribution. The Commission could consider a different (as yet unspecified) low ignition propensity SRM cigarette as an alternative to the proposed amendment; however, this alternative would not be "safety-neutral" (i.e., it could allow more smolder-prone materials to be used in complying mattresses). The Commission could also take no action; under this alternative, testing costs would not increase, but the need for a consistent ignition source would not be addressed.

Preliminary Regulatory Analysis of the Proposed Technical Amendment to 16 CFR Part 1632 Standard for Mattresses

Introduction

The U.S. Consumer Product Safety Commission (CSPC) administers two flammability rules on mattresses and mattress pads: the *Standard for the Flammability of Mattresses and Mattress Pads* (16 CFR part 1632, promulgated in 1972 by the U.S. Department of Commerce) and the *Standard for the Flammability (Open Flame) of Mattress Sets* (16 CFR part 1633, promulgated in 2006 by the CPSC). Both Standards were issued under the authority of the Flammable Fabrics Act (FFA). The Standards reduce the risk of fires resulting from ignitions of mattresses by smoldering cigarettes (16 CFR part 1632) and by open flame sources (16 CFR part 1633).

In 2005, the Commission published in the *Federal Register* an advance notice of proposed rulemaking (ANPR) initiating a proceeding to consider a range of possible changes to 16 CFR part 1632. The Commission is considering a proposed amendment to revise the specifications for the cigarette used as the smoldering ignition source in the Standard's performance test. The 16 CFR part 1633 open flame Standard would not be affected in any way by such an amendment.

The existing 16 CFR part 1632 Standard specifies the smoldering ignition source in terms of physical characteristics that affect ignition strength. The test cigarette is unfiltered and of specified length, packing density, and weight. These physical properties were chosen to represent the most severelevel of ignition strength. An unfiltered, 85 millimeter Pall Mall™ cigarette has long been used as the "standard" cigarette for compliance testing and other flammability research by the CPSC and by manufacturers and other testing laboratories. Two comments received in response to the 2005 ANPR expressed concern about potential variability in the ignition

characteristics of commercial cigarettes, and recommended that the CPSC address the issue.

In 2008, the R.J. Reynolds Tobacco Company (RJR) discontinued production of the conventional Pall Mall cigarette in response to increasingly widespread state legislation requiring "reduced ignition propensity" (RIP) or so-called "fire-safe" cigarettes designed to reduce the risk of cigarette-ignited fires. R.J. Reynolds subsequently began production of an RIP version of its Pall Mall product line; industry tests have since been conducted using existing inventories of conventional, pre-RIP Pall Malls, or, in some cases, the RIP replacements.

Upon learning of RJR's plan to discontinue the conventional Pall Mall, the CPSC staff entered into an Interagency Agreement (IAG) with the National Institute of Standards and Technology (NIST) to conduct research needed to establish a standard test cigarette that would (a) afford continuity of supply for the CPSC and for industry, and (b) be of sufficient ignition strength to prevent a potential reduction in the level of safety provided by 16 CFR part 1632. The CPSC posted the NIST Technical Note for public comment in 2009. The proposed technical amendment specifies an SRM cigarette, NIST SRM 1196, developed in 2010, based on NIST's research.

A key factor in developing a new standard test cigarette was NIST's research finding that the ignition strength of cigarettes can vary significantly, depending on various manufacturing parameters that are subject to change over time. While it is likely that the average ignition strength of conventional Pall Malls fluctuated significantly since the mattress Standard was issued in 1972, no data on ignition strength were available for cigarettes produced between 1972 and the early 1990s. The SRM cigarette is designed to approximate closely the early-1990s model; thus, tests conducted with the SRM cigarette may be considered equivalent to tests using the original, early-production Pall Mall. The proposed amendment is therefore "safety-neutral" (i.e., it is intended neither to raise nor to lower the level of fire protection provided by 16 CFR part 1632).

Requirements of Applicable Statutes

The FFA requires that the Commission prepare a preliminary regulatory analysis of any proposed regulation. The analysis must include:

- a preliminary description of the potential benefits and potential costs of the proposed regulation, including any benefits or costs that cannot be quantified in monetary terms, and an identification of those likely to receive the benefits and bear the costs; and
- a description of any reasonable alternatives to the proposed regulation, together with a summary description of their potential benefits and costs, and a brief explanation of the reasons why these alternatives were not chosen.

In this case, interested parties also submitted written comments on a NIST Technical Note published by the Commission in 2009. These comments provided some additional information on potential costs of regulatory alternatives.

Additionally, under the Regulatory Flexibility Act of 1980 (RFA), the Commission is required to describe potential effects of the amendment on small businesses and other small entities. This preliminary report presents an analysis of potential impacts in accordance with both applicable statutes, the FFA and the RFA.

Market/Industry Information

Domestic manufacturers of mattresses and related sleep products (e.g., mattress pads, box springs, innerspring cushions, and air-flotation sleep systems) are classified under the 2002 North American Industry Classification System (NAICS) in Sector Code 337910, Mattress Manufacturing. This group includes firms classified under the 1997 Standard Industry Classification (SIC) category 2515. Available U.S. Economic Census data show estimated total value of shipments for this category of about $5 billion in recent years. Domestic employment is estimated at about 20,000 workers.

Industry estimates indicate that the number of mattresses (including unconventional items such as futons, crib and juvenile mattresses, and sleep sofa inserts) shipped in the U.S. residential market is roughly 25 million units annually. About 5 to 10 percent of this total is comprised of imported products, including some imports marketed by the domestic manufacturers. The proportion of imports for mattress pads is higher.

An estimated 150–200 domestic firms produce new mattresses or mattress pads in U.S. manufacturing facilities. An unknown but potentially similar number of U.S. firms sell renovated mattresses, which may account for 2.5–5 million units, or between 10 to 20 percent of mattresses sold. Thus, there may be up to about 400 manufacturing firms subject to 16 CFR part 1632. These firms comprise more than 600 production establishments. Larger manufacturers may offer dozens of models (not counting different size designations, such as twin, full, queen, or king) at any given time, and new models may be introduced once or twice per year. Many smaller firms market only a few models and make few, if any, construction changes in a year.

The Mattress Standard

The mattress Standard at 16 CFR part 1632 requires pre-market, full-scale prototype testing for each new mattress design. Prototype testing must also be performed for each change in materials of an existing design that may affect cigarette ignition resistance. Under the Standard, a minimum of 18 cigarettes are consumed per mattress surface. Under the Commission's 2006 interim enforcement policy, two mattress surfaces must be tested (the Standard itself specifies that six surfaces must be tested; however, current reported practice is to test two surfaces). For two-sided, traditional mattresses, one mattress is consumed per prototype. With the market trend in recent years toward single-sided mattresses (i.e., those designed not to be flipped), it is much more common that two mattresses are consumed per prototype. In either case, at least 36 cigarettes (about two packs) are consumed per prototype.

No post-prototype, periodic testing is required under 16 CFR part 1632; however, the Standard allows the use of "subordinate" prototypes based on a confirmatory test of a complying model, such that multiple producers can market that same complying product (e.g., one that differs from the prototype in certain acceptable ways and that may be made in different production facilities or under different brand names) under a single prototype. This practice is common in the industry among licensees, and especially among smaller firms that manufacture models based on qualified prototypes developed and tested for certification of compliance with both 16 CFR part 1633 and part 1632 by larger firms or "prototype developers." Further, 16 CFR part 1632 allows substitutions of cover or "ticking" materials, based on a set of small-scale classification tests in lieu of new prototypes for each ticking. In this test, nine to eighteen cigarettes are consumed. Equivalency of performance for a majority of new mattress models is demonstrated using this optional ticking substitution test.

Some manufacturers perform 16 CFR part 1632 tests in their production facilities. Most, however, use third party testing laboratories since the advent of 16 CFR part

1633 in 2006 (the 16 CFR part 1633 open flame test is more complex and costly, and requires more specialized equipment than the 16 CFR part 1632 smoldering test).

Potential Benefits and Costs

The SRM cigarette described in the proposed amendment would share approximately the same ignition strength characteristics as originally intended by the Standard. The use of SRM cigarettes would not alter the stringency of the flammability performance tests in the Standards, and the test method itself would not be amended.

Potential Benefits

Since the proposed amendment is "safety-neutral," mattresses that passed or failed under the existing Standard would be expected to generate similar results when the NIST-developed SRM is used. The level of protection provided by the Standard would neither increase nor decrease as a result. Thus, there would be no impact on the level or value of fire safety benefits derived from the Standard.

There would, however, be potential benefits associated with the proposed amendment that are not readily quantifiable. Presently, manufacturers and testing laboratories do not have access to continued supplies of test cigarettes other than RIP Pall Malls. Existing inventories of conventional Pall Malls have been depleted or exhausted. Many industry representatives have requested guidance on the issue of which cigarette to use in testing.

Even if continuing supplies of conventional test cigarettes were available, the variability in cigarette performance described in the NIST research may lead to an unacceptably low level of test outcome reproducibility. This is causing uncertainty among testing firms and among manufacturers and importers certifying compliance with the Standard, and these firms have expressed concern that tests conducted by the CPSC and by industry may not be comparable. This inconsistency could lead to

unnecessary additional testing. The proposed amendment to incorporate an SRM cigarette would reduce inconsistency and uncertainty for industry, testing laboratories, and the CPSC.

Potential Costs

Manufacturers currently incur testing costs related to 16 CFR part 1632 whenever new mattress models are introduced that either a) are of new construction, or b) have new tickings that may influence cigarette ignition resistance. Larger manufacturers may introduce 20 or more new constructions or ticking substitutions each year. Smaller producers and renovators probably introduce fewer items, or rely on prototype developers for multiple models. Assuming that qualified prototypes are developed for all new constructions and ticking substitutions to demonstrate compliance, a range of estimates for annual prototypes and ticking substitutions can be used to project potential costs associated with the proposed amendment to incorporate SRM cigarettes into the Standard.

Pre-Amendment Testing Costs

For most mattress models that require some kind of testing, the testing cost per model to manufacturers is comprised chiefly of:

- the resource costs of producing the mattresses used for destructive testing, including shipping to a test laboratory, and
- the laboratory's fee for the testing service, which includes photographic and other records prepared by the test laboratory as well as the cigarettes consumed in testing.

The cost of mattresses consumed in prototype testing may amount to about $400 for a typical two-mattress test series (although the range can go much higher, to more than $1,000 per mattress for low-volume, specialty items). Prototype test charges reported by third-party testing laboratories can vary widely, especially by location. For

example, charges for tests performed in China tend to be significantly lower than charges for tests performed in the U.S. Overall, these charges, which include the cost of the test cigarettes consumed in the test, may average about $250 per prototype (labor and material costs for manufacturers to perform their own tests may be similar). Thus, the current average total cost per mattress prototype may be roughly $400 + $250 = $650. A ticking substitution test is simpler and much less expensive, requiring only small samples of ticking material, a reusable small scale test apparatus, and a smaller number of cigarettes. The average total cost per ticking substitution test may be around $50.

Testing costs incurred for prototypes and ticking substitutions can be allocated over a production run of mattresses. The cost per unit may vary with production volume, the mix of tests performed, and other factors. The examples below incorporate assumptions based on discussions with industry representatives and illustrate some possible baseline cost differences for larger *vs.* smaller firms:

Typical example for a medium-to-large producer:

- 20 new models: 5 new constructions + 15 new tickings
- 5 prototype tests @ $650 = $3,250
- 15 ticking substitution classification tests @ $50 = $750
- Total base year cost = $3,250 + $750 = $4,000
- Baseline testing cost for production run of 50,000 units = $0.08 per unit

Typical example for a smaller producer:

- 5 new models: 2 new constructions + 3 new tickings
- 2 prototype tests @ $650 = $1,300
- 3 ticking substitution classification tests@ $50 = $150
- Total base year cost = $1,300 + $150 = $1,450
- Baseline testing cost for production run of 5,000 units = $0.29 per unit

These examples reflect the likely average annual testing costs to industry, assuming reasonably full compliance with 16 CFR part 1632. Thus, approximate baseline testing costs for the 50 largest mattress manufacturers would be about 50 X $4,000 = $200,000 annually. Testing costs for the remaining 350 firms would be about 350 X $1,450 = $507,500. Thus, total estimated baseline testing costs may be about $200,000 + $507,500 = $707,500 per year.

Costs Per Firm Associated With the Proposed Amendment

The only cost increase associated with the proposed amendment is related to the SRM cigarettes themselves. The anticipated list price of SRM cigarettes from NIST is about $240 per carton (a carton contains 200 cigarettes, or 10 packs of 20), plus shipping. Shipping may range from $10 to $55 per order, and would be about $1 to $5 per carton for a typical 10-carton order. Thus, the estimated total average cost of the SRM cigarettes would be up to about $245 per carton. Testing laboratories and others can obtain (RIP) Pall Mall cigarettes currently on the market for regionally varying prices of $60 to $100 per carton; thus, the cost of cigarettes to parties performing tests may increase from approximately $6 to $10 per pack to approximately $25 per pack, representing an increase of about $15 to $19 per pack.

Under the protocol in 16 CFR part 1632, new packs of cigarettes are opened for each test sequence. A new prototype or confirmatory test consumes about two packs and a ticking substitution test consumes about one pack. Assuming an increased cost per pack of $25 – 6 = $19, the average cost of performing the tests could increase by 2 X $19 = $38 per prototype and $19 per ticking substitution. This represents a 6 percent increase ($38 / $650) in average total resource costs per prototype, and a 38 percent increase ($19 / $50) in average resource costs per ticking substitution.

In the above "typical producer" examples, the larger firm with 20 new models would incur increased prototype costs of 5 X $38 = $190, plus increased ticking substitution costs of 15 X $19 = $285, for a total annual increase of $190 + $285 = $475

(about 12 percent of the firm's overall $4,000 annual testing cost). Over a 50,000 unit production run, the cost would be $0.0095 (i.e., less than one cent) per unit. The smaller firm with five new models would incur increased prototype costs of 2 X $38 = $76 and increased ticking substitution costs of 3 X $19 = $57, for a total annual increase of $76 + $57 = $133 (about 9 percent of the firm's overall $1,450 annual testing cost). Over a 5,000 unit production run, the increased testing cost would be $0.027 (i.e., less than three cents) per mattress.

In summary, the expected additional cost of testing related to the proposed amendment may range from about $133 to $475 per firm, or about one to three cents per mattress produced. The distribution of this projected cost among manufacturers and testing laboratories is uncertain, since some test laboratories may choose to pass increased costs on in the form of higher test fees, while others may not. Even if all such costs were passed on to manufacturers, it is unlikely that there would be a noticeable effect on wholesale or retail mattress prices.

Aggregate Costs Associated With the Proposed Amendment

There may be about 200 new-product manufacturers and 200 renovators, for a total of about 400 firms. The largest 50 firms are assumed to have 20 new models (50 X 20 = 1,000 models to be tested), and the remaining 350 firms to have five new models (350 X 5 = 1,750 models to be tested), for a total of 1,000 + 1,750 = 2,750 models to be tested. The aggregate annual cost of the proposed amendment will vary with the number of new prototypes and ticking substitutions. A point estimate can be developed using the pre-amendment baseline examples above and the best available information on these variables.

Using the baseline assumptions for new prototypes vs. ticking substitutions, the 50 largest firms would have an average of five prototypes each (for a total of 5 X 50 = 250) and the remaining 350 smaller firms would have two prototypes each (for a total of 2 X 350 = 700); thus, the overall number of prototypes to be performed would be 250 +

700 = 950. The number of ticking substitutions would be 15 each for the larger firms (for a total of 15 X 50 = 750) and three each for the smaller firms (for a total of 3 X 350 = 1,050); the overall number of ticking substitutions would be 750 + 1,050 = 1,800.

At two packs of cigarettes per prototype and one pack per ticking substitution, the estimated quantity consumed in testing would be 2 X 950 = 1,900 for prototypes and 1,800 for ticking substitutions, for a total of 1,900 + 1,800 = 3,700 packs. At an increase of $19 per pack, the estimated total resource cost would be 3,700 X $19 = $70,300. This point estimate represents an unweighted average increase of about 10 percent of the estimated $707,500 aggregate annual industry testing costs related to 16 CFR part 1632.

In addition to the projected costs to industry, the CPSC and other government agencies (e.g., the California Bureau of Home Furnishings & Thermal Insulation, the Canadian Ministry of Health) would likely purchase small quantities of SRM cigarettes from NIST for compliance testing and related research. Thus, the proposed amendment would also add minor costs to federal and other government agencies, depending on the numbers of tests these organizations may perform in any given year.

The proposed effective date of the amendment is one year from the date of publication of a final amendment in the *Federal Register*. New mattress models are typically introduced once or twice per year. The proposed effective date would allow this product cycle to proceed without disruption or additional testing costs. It would also help ensure continuing availability of an adequate supply of SRM cigarettes from NIST to testing laboratories and manufacturers.

In summary, the proposed amendment to specify the SRM cigarette is not anticipated to have a significant impact on expected benefits or costs of the 16 CFR part 1632 Standard. Resource costs may amount to roughly $70,000 per year. The amendment would, however, reduce test variability and uncertainty among manufacturers subject to the Standard and among testing organizations. Both the

expected benefits and likely economic costs of the amendment are small, and the likely effect on testing costs per new prototype mattress or ticking substitution would be minor, especially when the projected cost is allocated over a production run of complying mattresses.

Regulatory Alternatives

The Commission could consider two basic alternatives to the proposed amendment:

1. propose that the standard test cigarette be based on a different SRM, with the approximate lower ignition strength of an RIP cigarette; or
2. take no action on the smoldering ignition source issue.

While neither the proposed amendment nor either of these two alternatives would likely have a substantial economic impact, there would be some relative differences in terms of resource costs and potential effects on the level of benefits afforded by the Standard. The advantages and disadvantages of these two basic alternatives are discussed below.

Alternate SRM

Under this first alternative, the Commission could direct the CPSC staff to incorporate into the standard a different, lower ignition propensity SRM cigarette. Such an SRM would presumably be closer in ignition strength to the "worst-case" RIP cigarettes currently on the market.

Advantages:

- The problem of test repeatability and reproducibility would be addressed, as it is under the proposed amendment.
- An alternative SRM might better approximate the fire risk associated with cigarettes currently available to consumers in the U.S.

- There currently exists a low ignition propensity SRM (1082) developed by NIST for use by state regulators in assessing the compliance of RIP cigarettes. These SRM cigarettes are currently available at a price, including typical shipping, of approximately $195 per carton, compared to the $245 projected average price for the SRM 1196 cigarette envisioned for the proposal. Thus, resource costs to manufacturers and testing laboratories (including the CPSC) to adopt a readily-available alternate SRM could be somewhat lower than under the proposed amendment, although it is likely that any new alternate SRM would be priced at least comparably with the proposed SRM 1196.

Disadvantages:

- In comparison to the proposed SRM, a low ignition propensity SRM would not be considered equivalent or "safety-neutral" under the presumption that the use of such cigarettes would result in a less stringent flammability test. While no data are available to describe the extent of this potential difference, it is quite possible that more mattress construction prototypes would pass the test using a lower ignition propensity SRM than do currently with commercial cigarettes. This may result in an unknown but potentially adverse impact on the level of safety benefits provided by the standard.
- Two known technical approaches to developing a lower ignition propensity SRM appear to be incompatible with the test in 16 CFR part 1632:
    - Under existing state regulations, all known commercial RIP cigarettes incorporate banded paper designed to impede full length burns. The test in CFR part 1632 measures mattress ignitions resulting from full length cigarette burns, and allows up to three re-lights per cigarette to achieve a full length burn. It is likely that either (a) many low ignition propensity cigarettes would be wasted in completing the test; or (b) the test could not be reliably completed using banded-paper, self-extinguishing cigarettes.
    - While the existing SRM 1082 does not use banded-paper technology, it would have the same impracticalities as the banded-paper cigarette under the current standard. The low ignition propensity design of the existing

SRM 1082 is intended to yield a 12 to 15 percent full length burn rate, i.e., the cigarettes are made to self-extinguish 85 to 88 percent of the time. Since this SRM is intended to be used as a calibration tool for cigarette manufacturers subject to state regulations, it is purposely designed to represent a minimal ignition propensity target, rather than a typical or representative RIP ignition propensity. It would clearly not represent a "worst-case" RIP cigarette. Further, SRM 1082 does not meet the specified physical criteria for cigarette length and density, so these cigarettes are physically unlike the current test cigarette or current RIP cigarettes.

- The properties of a new SRM that would mimic the ignition behavior of RIP cigarettes have not been characterized. The "worst case" RIP cigarette would be one that burns its full length, and therefore, may be similar to its non-RIP counterpart. Insufficient research exists to support a new and different, reduced ignition propensity SRM. A variety of as-yet-unknown modifications to the test method in 16 CFR part 1632 would also likely be needed to incorporate such an SRM. The time and cost to develop a new SRM is undetermined, but the existing concern about the short-term availability of a consistent ignition source would not be resolved.

Thus, while a lower ignition strength SRM cigarette may be technically feasible, there is no readily available SRM alternative that would address the need for a consistent, "safety-neutral" ignition source.

No Action

Under the second alternative, the test cigarette specifications in the standard would remain unchanged. Manufacturers and testers would remain free to conduct tests with any available cigarettes, including RIP Pall Malls, which meet the existing physical parameters.

Advantage:

- The projected minor increase in resource costs of testing would not be incurred.

Disadvantage:

- The basic issue of test result variability due to differences in cigarettes would not be addressed, and the uncertainty and confusion surrounding the reliability of 16 CFR part 1632 compliance tests would not be reduced. Manufacturers and testing firms may continue to conduct tests that are either wasteful (in terms of extra RIP cigarettes required to complete a test) or have irreproducible results.

In summary, there are no readily available, technically feasible alternatives that would have lower estimated costs and still address the need for a consistent ignition source that retains the "safety-neutral" approach of the proposed amendment.

Small Business Considerations

The Commission considers the potential impacts of regulatory actions on small businesses that may be affected. Further, under the Regulatory Flexibility Act (RFA), agencies are required to assess and consider whether rules may have a significant effect on a substantial number of small entities, including small businesses and small government entities. The proposed amendment would keep the current mattress test procedure in place but would require that entities performing cigarette ignition tests (including the CPSC and other state agencies, as well as industry testing organizations) purchase and use SRM cigarettes at a higher cost than commercial, non-SRM cigarettes. No additional actions would be required of small entities. The costs associated with the proposed amendment would essentially be borne by mattress manufacturers and importers that perform (or pay fees for) compliance testing.

The latest available (2002) U.S. Census Bureau Statistics of U.S. Businesses and (2003) Economic Census data on this industry sector reported more than 500 firms and more than 600 manufacturing establishments in NAICS Sector Code 337910,

Mattress Manufacturing. More recent industry estimates suggest that the number of firms, including renovators, is closer to 400. The few industry-leading manufacturers are large firms with annual gross revenues of more than $1 billion and 3,000 to 5,000 employees each; however, the vast majority of producers, including all renovators, are much smaller, with annual gross revenues of under $20 million and fewer than 100 employees each. Many smaller manufacturers serve regional markets and do not have nationwide distribution. The Economic Census reported that all but the largest 12 mattress producing firms, more than 95 percent, had fewer than 500 employees; these would be considered small businesses under the definition used by the Small Business Administration for this industry.

The larger firms are often comprised of multiple small manufacturing establishments. The average gross revenue of the small manufacturing establishments enumerated in 2002 was about $8.1 million. Excluding small establishments with more than 100 employees from this average provides a reasonable approximation of small firms that are independent of the major producers. This approach reduces the average gross revenue to about $4 million. This $4 million average can be used to illustrate the potential effect of the proposed amendment on small firms.

As discussed in the cost analysis section above, added testing and certification costs related to the proposed technical amendment may average about $133 per small firm, or less than three cents per unit. This represents about $133 / $4 million = .0033% (i.e., less than one-hundredth of one percent) of small firms' average gross revenues. Even using the $475 increased cost estimate presented in the analysis for larger firms, the impact on small firms' average gross revenue would be only $475 / $4 million = .012% (i.e., about one-hundredth of one percent).

Based on this information, the proposal would likely have little or no effect on small producers, since it is expected that the design and construction of existing, compliant mattress products would remain unchanged, and since the resource cost increase of using SRM cigarettes would represent a minimal increase in total testing

costs. Consequently, issuing the amendment on a final basis would not be expected to have significant economic consequences on a substantial number of small entities.

Conclusions

If the Commission issued the proposed amendment to the flammability standards for mattresses and mattress pads:

- the current industry testing procedure would continue without interruption;
- the effectiveness of the standard would be unaffected;
- testing costs to manufacturers and importers would not significantly increase;
- the net impact on benefits and costs would be negligible; and
- there would be no significant impacts on small firms or other small entities.

UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
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BETHESDA, MARYLAND 20814

Memorandum

DATE: May 27, 2010

TO: Patricia Adair, Project Manager, ESFS

Through: Gregory Rodgers, PhD., AED / Economic Analysis

FROM: Dale R. Ray, EC

SUBJECT: Environmental Review of Draft Proposed Mattress Rule (16 CFR part 1632) Ignition Source Amendment

Under the National Environmental Policy Act (NEPA), the Commission is required to consider potential environmental impacts associated with regulatory actions, including the draft proposed ignition source technical amendment to the *Standard for the Flammability of Mattresses and Mattress Pads*. This memorandum summarizes the available information on this matter.

The proposed amendment specifies a new, standard cigarette for use in compliance testing under the Standard. Manufacturers, importers and testing laboratories (including the CPSC and other government entities) would use this new, standard cigarette in place of current, commercially-purchased cigarettes. Current industry test practice would continue under the proposed amendment, without any additional testing requirements or effects on cigarette consumption.

The proposed amendment is not expected to have an impact on the production processes developed by manufacturers. There is no expected impact on the amounts of materials used in the manufacture, packaging, labeling or testing of mattresses. The proposed amendment would not render finished goods inventories, or works in progress, unusable. Thus, there would likely be no significant impacts on air or water quality, or other aspects of the environment, if the proposed technical amendment were issued as a final rule.

Draft *Federal Register* Notice
Standard for the Flammability of Mattresses and Mattress Pads;
Proposed Technical Amendment

[Billing Code 6355-01-P]

CONSUMER PRODUCT SAFETY COMMISSION

16 CFR Part 1632

CPSC Docket No. CPSC-2010-_____

Standard for the Flammability of Mattresses and Mattress Pads; Proposed Technical Amendment

AGENCY: Consumer Product Safety Commission.

ACTION: Proposed rule.

SUMMARY: The Consumer Product Safety Commission ("CPSC" or "Commission") is proposing to amend its standard for the flammability of mattresses and mattress pads (16 CFR part 1632). The ignition source cigarette specified in the standard for use in the mattress standard's performance tests is no longer being produced. The Commission is proposing to amend the mattress standard to require a standard reference material cigarette, which was developed by the National Institute of Standards and Technology, as the ignition source for testing to the mattress standard.

DATES: Comments on the proposal should be submitted no later than [**insert date 75 days after date of publication in the FEDERAL REGISTER**].

ADDRESSES: You may submit comments, identified by Docket No. [insert CPSC docket number], by any of the following methods:

Electronic Submissions

Submit electronic comments in the following way:

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

To ensure timely processing of comments, the Commission is no longer accepting comments submitted by electronic mail (email) except through www.regulations.gov.

Written Submissions

Submit written submissions in the following way:

Mail/hand delivery/courier (for paper, disk, or CD-ROM submissions), preferably in five copies, to: Office of the Secretary, Consumer Product Safety Commission, Room 820, 4330 East West Highway, Bethesda, MD 20814; telephone (301) 504-7923.

Instructions: All submissions received must include the agency name and docket number for this rulemaking. All comments received may be posted without change, including any personal identifiers, contact information, or other personal information provided, to http://www.regulations.gov. Do not submit confidential business information, trade secret information, or other sensitive or protected information electronically. Such information should be submitted in writing.

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

FOR FURTHER INFORMATION CONTACT: Patricia K. Adair, Directorate for Engineering Sciences, Consumer Product Safety Commission, 4330 East West Highway, Bethesda, MD 20814-4408; telephone (301) 504-7536; padair@cpsc.gov.

SUPPLEMENTARY INFORMATION:

A. Background

1. The Current Standard and the Need for Amendment

The Standard for the Flammability of Mattresses and Mattress Pads ("the Standard"), 16 CFR part 1632, was initially issued by the U.S. Department of Commerce in 1972 under the authority of the Flammable Fabrics Act ("FFA"), 15 U.S.C. 1191 *et seq.* When the Consumer Product Safety Act ("CPSA") created the Consumer Product Safety Commission, it transferred to the Commission the authority to issue flammability standards under the FFA.

The Standard sets forth a test to determine the ignition resistance of a mattress or mattress pad when exposed to a lighted cigarette. Lighted cigarettes are placed at specified locations on the surface of a mattress (or mattress pad). The Standard establishes pass/fail criteria for the tests. The Standard currently specifies the ignition source for these tests by its physical properties. These properties were originally selected to represent an unfiltered Pall Mall cigarette, which was identified as the most severe smoldering ignition source.

In January 2008, CPSC staff learned that the R.J. Reynolds Tobacco Company planned to stop producing unfiltered Pall Mall cigarettes (although it would continue to make a reduced ignition propensity or "RIP" version). The CPSC staff, mattress manufacturers, and testing organizations were concerned about testing to the Standard if the specified ignition source cigarettes were unavailable. Under an Interagency Agreement ("IAG") with the CPSC, the National Institute of Standards and Technology ("NIST") developed a standard reference material ("SRM") cigarette that could be used as the ignition source in the Standard.

2. Incident Data

Recent fire loss estimates for mattresses and bedding indicate that smoking material ignitions of mattresses or bedding lead to a large number of fire deaths and injuries. The most recently available estimates are from 2005 through 2007. For that time period, there was an estimated annual average of 2,100 fires in which smoking materials ignited mattresses or bedding. These led to an estimated annual average of 150 deaths, 350 injuries, and $57 million in property loss.

B. Statutory Provisions

The FFA sets forth the process by which the Commission can issue or amend a flammability standard. In accordance with those provisions, the Commission is proposing to amend the Standard to specify the SRM cigarette developed by NIST as the ignition source to be used for testing under the Standard. As required by the FFA, the proposed rule contains the text of the amendment, alternatives that the Commission has considered, and a preliminary regulatory analysis. 15 U.S.C. 1193(i). Before issuing a final rule, the Commission must prepare a final regulatory analysis and make certain findings concerning any relevant voluntary standard, the relationship of costs and benefits of the rule, and the burden imposed by the regulation. *Id.* 1193(j). In addition, the Commission must find that the standard: (1) is needed to adequately protect the public against the risk of the occurrence of fire leading to death, injury, or significant property damage; (2) is reasonable, technologically practicable, and appropriate; (3) is limited to fabrics, related materials, or products which present unreasonable risks; and (4) is stated in objective terms. *Id.* 1193(b).

The Commission also must provide an opportunity for interested persons to make an oral presentation concerning the rulemaking before the Commission may issue a final

rule. *Id.* 1193(d). The Commission requests that anyone who would like to make an oral presentation concerning this rulemaking please contact the Commission's Office of the Secretary (see the ADDRESS section of this notice) within 45 days of publication of this notice. If the Commission receives requests to make oral comments, a date will be set for a public meeting for that purpose, and notice of the meeting will be provided in the *Federal Register*.

C. Description of the Proposed Amendment

1. NIST's Research

Currently, the Standard requires that the ignition source for testing mattresses "shall be cigarettes without filter tips made from natural tobacco, 85 ± 2 mm long with a tobacco packing density of 0.270 ± 0.02 g/cm^3 and a total weight of 1.1 ± 0.1 g." 16 CFR 1632.4(a)(2). This specification was intended to describe a conventional unfiltered Pall Mall cigarette that was available when the Standard was developed. This specification was chosen in order to replicate the most severe smoldering ignition source for testing mattresses and mattress pads.

When the CPSC learned in January 2008 that R.J. Reynolds would be stopping production of the unfiltered Pall Mall cigarettes, the CPSC sought to find an alternate ignition source that would have the same burning characteristics as the ignition source specified in the Standard so that mattresses could be tested in accordance with the Standard and so that the safety level of the Standard would not be changed. In August 2008, the CPSC entered into an IAG with NIST to develop a new cigarette ignition source SRM that would have the ignition strength of the test cigarette required in the Standard.

There are no cigarette ignition test data to characterize the ignition propensity of cigarettes from 1972, when the Standard was promulgated. In the absence of such data, NIST sought to identify the highest ignition strength cigarette, consistent with the intent of the original Standard. NIST evaluated Pall Mall cigarettes of different vintages (1992 through 2008) to determine the ignition strengths of the cigarettes that had been used to test soft furnishings, such as mattresses. Although SRM cigarettes are now becoming available, sufficient quantities of previous (1992 through 2003) cigarettes no longer exist to perform any comparative studies of ignition propensity. The NIST research strongly indicated, however, that the SRM is equivalent in ignition strength to the previous highest known strength unfiltered Pall Mall cigarette. After developing a standard procedure for determining the ignition strength of cigarettes and assessing different vintage cigarettes, NIST recommended to CPSC staff that the new SRM cigarette meet the following specification:

- Nominal length: 83 mm ± 2mm
- Tobacco packing density: 0.270 g/cm3 ± 0.020g/cm3
- Mass: 1.1 g ± 0.1 g
- Ignition Strength: 70 Percent Full Length Burn (PFLB) to 95 PFLB using ASTM E 2187, as modified in Section 4.2 of NIST Technical Note 1627
- Non "Fire Safe Cigarette" (FSC)

The first three descriptors restate the physical requirements listed in the Standard for the ignition source. The recommended ignition strength range reflects the three oldest vintages of the Pall Mall cigarette tested by NIST and represents a worst-case ignition source.

In June 2009, NIST provided CPSC staff with a report on its research, "*NIST Technical Note 1627: Modification of ASTM E 2187 for Measuring the Ignition Propensity of Conventional Cigarettes*" (Ref. 1). The CPSC used NIST's research described in this report as the basis to establish specific parameters for a new ignition source specified in the Standard. Therefore, the proposed rule would amend 16 CFR 1632.4(a)(2) to specify the use of an SRM cigarette, developed in 2010 based on NIST's research. The new SRM cigarette would be designated SRM 1196, and the proposed amendment also would state that SRM 1196 is available for purchase from the National Institute of Standards and Technology, 100 Bureau Drive, Gaithersburg, MD, 20899

2. Issues Raised by Comments on NIST's Report

The Commission posted *NIST Technical Note 1627* on its website in July 2009. The Commission received three comments, all from industry trade associations. The principal issues raised by the comments that are relevant to this rulemaking and the Commission's responses are discussed below.

Comment: Some comments stated that the cigarette specified in the Standard does not reflect real-world conditions and argued that the CPSC should not try to replicate it in establishing a new ignition source.

Response: The intent of the Standard was not to represent the typical cigarette of that time, but to specify a cigarette with the highest potential to ignite soft furnishings in order to provide a high level of safety. The Commission intends to specify an ignition source that is close to the original specification, to maintain the level of safety established by the Standard.

Comment: Some comments noted that many states are requiring RIP cigarettes, and, because these will be widely in use, the ignition source in the Standard should be a RIP cigarette.

Response: The CPSC has no data indicating a correlation between the use of RIP cigarettes and reduction in fire losses where soft furnishings, such as mattresses, are the first item to ignite. The National Fire Protection Association's ("NFPA's") model state legislation calls for testing RIP cigarettes in accordance with ASTM standard E 2187-04, "*Standard Test Method for Measuring the Ignition Strength of Cigarettes*." This model legislation requires that no more than 25 percent of cigarettes tested in a trial test burn their full length. This means that even with full compliance, some RIP cigarettes may be expected to burn like non-RIP cigarettes. Moreover, only 8 of the 50 states that have enacted (or soon will enact) legislation mandating RIP cigarettes require auditing to confirm compliance with ASTM E 2187-04. Thus, the extent of fire safety gains due to RIP cigarettes is uncertain. Under these circumstances, specifying a RIP cigarette as the ignition source in the Standard could reduce the level of fire safety provided by the Standard.

Comment: One comment expressed concern about the cost of SRM cigarettes for small manufacturers, such as upholstery fabric manufacturers.

Response: As discussed in greater detail in the preliminary regulatory analysis summarized in section D of this preamble, the Commission does not anticipate that the cost of SRM cigarettes will add significantly to testing costs for mattresses. The CPSC estimates that using SRM cigarettes at up to $245 per carton would increase total annual testing costs for mattresses by about $70,000 or approximately 10 percent. The CPSC

notes that, for mattresses, individual ticking fabrics generally are not tested; instead, testing of the assembled mattress is usually performed by a third party laboratory. Also, existing qualified designs and constructions of mattresses would not have to be retested.

As for the impact on upholstered furniture fabric makers, the cost of SRM cigarettes would be one aspect of testing costs that the Commission would consider in evaluating the costs and benefits of an upholstered furniture flammability standard in the context of that rulemaking. (In the *Federal Register* of March 4, 2008, the Commission published a proposed rule that would establish flammability standards for residential upholstered furniture under the FFA (73 FR 11702), and CPSC staff is in the process of testing and evaluation to support a possible final upholstered furniture flammability rule.)

Comment: One comment stated that a surrogate equivalent to the discontinued non-RIP cigarette is needed quickly, given that those materials are no longer being produced. The commenter opined that to specify a nonequivalent SRM as NIST recommends would require the CPSC to conduct a lengthy rulemaking procedure to amend 16 CFR part 1632.

Response: The new SRM cigarette is designed to be equivalent to the original test cigarette. In its report, NIST recommended a replacement cigarette that is as close as possible to the original test cigarette specified in the Standard. The purpose of developing the SRM cigarette is to enhance repeatability of test results without changing the level of fire safety provided by the Standard.

D. Preliminary Regulatory Analysis

Section 4(i) of the FFA requires that the Commission prepare a preliminary regulatory analysis when it proposes to issue or amend a flammability standard under the

FFA and that the analysis be published with the proposed rule. 15 U.S.C. 1193(i). The following discussion extracted from the staff's memorandum entitled "Preliminary Regulatory Analysis: Smoldering Ignition Source Proposed Technical Amendment to the Flammability Standard for Mattresses and Mattress Pads (16 CFR Part 1632)" (Ref. 2) addresses this requirement.

1. Market/Industry Information

Domestic manufacturers of mattresses and related sleep products (for example, mattress pads, box springs, innerspring cushions, and air-flotation sleep systems) are classified under the 2002 North American Industry Classification System (NAICS) in sector code 337910, Mattress Manufacturing. This group includes firms classified under the 1997 Standard Industry Classification (SIC) category 2515. Available U.S. Economic Census data show an estimated total value of shipments for this category of about $5 billion in recent years. Domestic employment is estimated at about 20,000 workers. Industry estimates indicate that the number of mattresses (including unconventional items such as futons, crib and juvenile mattresses, and sleep sofa inserts) shipped in the United States residential market is roughly 25 million units annually. About 5 to 10 percent of this total is comprised of imported products, including some imports marketed by the domestic manufacturers. The proportion of imports for mattress pads is higher.

An estimated 150 to 200 domestic firms produce new mattresses or mattress pads in manufacturing facilities in the United States. An unknown but potentially similar number of firms in the United States sell renovated mattresses, which may account for 2.5 to 5 million units, or between 10 and 20 percent of mattresses sold. Thus, there may be as many as approximately 400 manufacturing firms subject to 16 CFR part 1632.

These firms comprise more than 600 production establishments. Larger manufacturers may offer dozens of models (not counting different size designations, e.g., twin, full, queen, king) at any given time; new models may be introduced once or twice per year. Many smaller firms market only a few models and make few, if any, construction changes in a year.

2. The Mattress Standard

The mattress standard at 16 CFR part 1632 requires premarket, full-scale prototype testing for each new mattress design. Prototype testing also must be performed for each change in materials of an existing design that may affect cigarette ignition resistance. Under the Standard, a minimum of 18 cigarettes (i.e., about one pack) are consumed per mattress surface. Under the CPSC's 2006 interim enforcement policy, two mattress surfaces must be tested (the Standard specifies that six surfaces must be tested; however, current reported practice is to test two surfaces). For two-sided, traditional mattresses, one mattress is consumed per prototype. With the market trend in recent years toward single-sided mattresses (i.e., those designed not to be flipped), it is much more common that two mattresses are consumed per prototype. In either case, at least 36 cigarettes (i.e., about two packs) are consumed per prototype.

No post-prototype, periodic testing is required under 16 CFR part 1632. However, the Standard allows the use of "subordinate" prototypes (i.e., a mattress that differs from the prototype in certain acceptable ways and therefore does not need to be tested) based on a confirmatory test of a complying model, such that multiple producers can market that same complying product in different production facilities or under different brand names. This practice is common in the industry among licensees, and

especially among smaller firms that manufacture models based on qualified prototypes developed and tested for certification of compliance with both 16 CFR part 1633 and part 1632 by larger firms or "prototype developers." Further, 16 CFR part 1632 allows substitutions of cover or "ticking" materials, based on a set of small scale classification tests in lieu of new prototypes for each ticking. In this test, 9 to 18 cigarettes (approximately one half to one full pack) are consumed. Equivalency of performance for a majority of new mattress models is demonstrated using this optional ticking substitution test.

Some manufacturers perform tests pursuant to 16 CFR part 1632 in their production facilities. Most, however, use third party testing laboratories since the advent of 16 CFR part 1633 in 2006.

3. Potential Benefits and Costs

The SRM cigarette described in the proposal would have approximately the same ignition strength characteristics as originally intended by the Standard. The use of SRM cigarettes would not alter the stringency of the flammability performance tests in the Standard, so the proposal would not amend the test method itself.

i. Potential Benefits

Because the proposed amendment is "safety-neutral," mattresses that passed or failed under the existing Standard would be expected to generate similar results when the NIST-developed SRM is used. The level of protection provided by the Standard would neither increase nor decrease as a result. Thus, there would be no impact on the level or value of fire safety benefits derived from the 16 CFR part 1632 Standard.

There would, however, be potential benefits associated with the proposed amendment that are not readily quantifiable. Currently, manufacturers and testing laboratories do not have access to continued supplies of test cigarettes other than RIP Pall Mall cigarettes. Existing inventories of conventional Pall Mall cigarettes have been depleted or exhausted. Many industry representatives have requested guidance on the issue of which cigarette to use in testing.

Even if continuing supplies of conventional test cigarettes were available, the variability in cigarette performance described in the NIST research may lead to an unacceptably low level of test outcome reproducibility. This is causing uncertainty among testing firms, and ~~among~~ manufacturers and importers certifying compliance with the Standard; these firms have expressed concern that tests conducted by the CPSC and by industry may not be comparable. This inconsistency could lead to unnecessary additional testing. The proposed amendment specifying an SRM cigarette would reduce inconsistency and uncertainty for industry, testing laboratories, and the CPSC.

ii. Potential Costs

Currently, manufacturers incur testing costs related to 16 CFR part 1632 whenever new mattress models are introduced that either: (1) are of new construction, or (2) have new tickings that may influence cigarette ignition resistance. Larger manufacturers may introduce 20 or more new constructions or ticking substitutions each year. Smaller producers and renovators probably introduce fewer items or rely on prototype developers for multiple models. Assuming that qualified prototypes are developed for all new constructions and ticking substitutions to demonstrate compliance, a range of estimates for annual prototypes and ticking substitutions can be used to project

potential costs associated with the proposed amendment to incorporate SRM cigarettes into the Standard.

Pre-Amendment Testing Costs. For most mattress models that require some kind of testing, the testing cost per model to manufacturers is comprised chiefly of: (1) the resource costs of producing the mattresses used for destructive testing, including shipping to a test laboratory; and (2) the laboratory's fee for the testing service, which includes photographic and other records prepared by the test laboratory as well as the cigarettes consumed in testing.

The cost of mattresses consumed in prototype testing may amount to approximately $400 for a typical two-mattress test series (although the range can go much higher, to more than $1,000 per mattress for low-volume, specialty items). Prototype test charges reported by third party testing laboratories can vary widely, especially by location. For example, charges for tests performed in China tend to be significantly lower than charges for tests performed in the United States. Overall, these charges, which include the cost of the test cigarettes, may average about $250 per prototype (labor and material costs for manufacturers to perform their own tests may be similar). Thus, the current average total cost per mattress prototype may be roughly $400 + $250 = $650. A ticking substitution test is simpler and much less expensive, requiring only small samples of ticking material, a reusable small-scale test apparatus, and a smaller number of cigarettes; the average total cost may be around $50.

Testing costs incurred for prototypes and ticking substitutions can be allocated over a production run of mattresses. The cost per unit may vary with production volume, the mix of tests performed, and other factors. The examples below incorporate

assumptions based on discussions with industry representatives. These examples illustrate some possible baseline cost differences for larger versus smaller firms:

Typical example for a medium-to-large producer:

- 20 new models: 5 new constructions + 15 new tickings
- 5 prototype tests @ $650 each = $3,250
- 15 ticking substitution classification tests @ $50 each = $750
- Total base year cost = $3,250 + $750 = $4,000
- Baseline testing cost for production run of 50,000 units = $0.08 per unit

Typical example for a smaller producer:

- 5 new models: 2 new constructions + 3 new tickings
- 2 prototype tests @ $650 each = $1,300
- 3 ticking substitution classification tests @ $50 each = $150
- Total base year cost = $1,300 + $150 = $1,450
- Baseline testing cost for production run of 5,000 units = $0.29 per unit

These examples reflect the likely average annual testing costs to industry, assuming reasonably full compliance with 16 CFR part 1632. Thus, approximate baseline testing costs for the largest 50 mattress manufacturers would be about 50 x $4,000 = $200,000 annually; testing costs for the remaining 350 firms would be about 350 x $1,450 = $507,500. Thus, total estimated baseline testing costs may be about $200,000 + $507,500 = $707,500 per year.

Costs Per Firm Associated With The Proposed Amendment. The only cost increase associated with the proposed amendment is related to the SRM cigarettes. The anticipated price of SRM cigarettes from NIST is about $245 per carton, including estimated typical shipping (a carton contains 200 cigarettes, i.e., 10 packs of 20). Testing laboratories and others can obtain (RIP) Pall Mall cigarettes currently on the market for prices ranging from $60 to $100 per carton, depending on the geographic region. Thus, the cost of cigarettes for parties performing tests may increase from as little as approximately $6 to $10 per pack, to as much as approximately $25 per pack, representing an increase of $15 to $19 per pack.

Under the protocol in 16 CFR part 1632, new packs of cigarettes are opened for each test sequence. A new prototype or confirmatory test consumes about two packs, and a ticking substitution test consumes about one pack. Assuming an increase in price per pack of $19, the average cost of performing the tests could increase by 2 x $19 = $38 per prototype and $19 per ticking substitution. This represents a 6 percent increase ($38 / $650) in average total resource costs per prototype, and a 38 percent increase ($19 / $50) in average resource costs per ticking substitution.

In the above "typical producer" examples, the larger firm with 20 new models would incur increased prototype costs of 5 x $38 = $190 plus increased ticking substitution costs of 15 x $19 = $285, for a total annual increase of $190 + $285 = $475 (about 12 percent of the firm's overall $4,000 annual testing cost). Over a 50,000 unit production run, the cost would be $0.0095 (i.e., less than one cent) per unit. The smaller firm with five new models would incur increased prototype costs of 2 x $38 = $76 and increased ticking substitution costs of 3 x $19 = $57, for a total annual increase of $76 +

$57 = $133 (i.e., about 9 percent of the firm's overall $1,450 annual testing cost). Over a 5,000 unit production run, the increased testing cost would be $0.027 (i.e., less than three cents) per mattress.

In summary, the expected additional cost of testing related to the proposal may range from about $133 to $475 per firm, or about one to three cents per mattress produced. The distribution of this projected cost among manufacturers and testing laboratories is uncertain because some test laboratories may choose to pass their increased costs— in the form of higher test fees—on to manufacturers, while others may not. Even if all such costs were passed on to manufacturers, it is unlikely that there would be a noticeable effect on wholesale or retail mattress prices.

Aggregate Costs Associated With The Proposed Amendment. There may be as many as 200 new product manufacturers and 200 renovators, for a total of about 400 firms. The largest 50 firms are assumed to have 20 new models (50 x 20 = 1,000 models to be tested), and the remaining 350 firms to have five new models (350 x 5 = 1,750 models to be tested), for a total of 1,000 + 1,750 = 2,750 models to be tested. The aggregate annual cost of the proposed amendment will vary with the number of new prototypes and ticking substitutions. A point estimate can be developed using the pre amendment baseline examples above and the best available information on these variables.

Using the baseline assumptions for new prototypes versus ticking substitutions, the 50 largest firms would have an average of five prototypes each (for a total of 5 x 50 = 250) and the remaining 350 smaller firms would have two prototypes each (for a total of 2 x 350 = 700); thus, the overall number of prototypes to be performed would be 250 +

700 = 950. The number of ticking substitutions would be 15 each for the larger firms (for a total of 15 x 50 = 750) and three each for the smaller firms (for a total of 3 x 350 = 1,050); the overall number of ticking substitutions would be 750 + 1,050 = 1,800.

At two packs of cigarettes per prototype and one pack per ticking substitution, the estimated quantity consumed in testing would be 2 x 950 = 1,900 for prototypes and 1,800 for ticking substitutions, for a total of 1,900 + 1,800 = 3,700 packs. At an increase of $19 per pack, the estimated total resource cost would be 3,700 x $19 = $70,300. This point estimate represents an unweighted average increase of about 10 percent of the estimated $707,500 aggregate annual industry testing costs related to 16 CFR part 1632.

In addition to the projected costs to industry, the CPSC and other government agencies (for example, the California Bureau of Home Furnishings & Thermal Insulation and the Canadian Ministry of Health) would likely purchase small quantities of SRM cigarettes from NIST for compliance testing and related research. Thus, the proposal also would have minor costs to federal and other government agencies, depending on the numbers of tests these organizations may perform in any given year.

The proposed effective date of the amendment is one year from the date of publication of a final rule in the *Federal Register*. New mattress models are typically introduced once or twice per year. The proposed effective date would allow this product cycle to proceed without potential disruption or additional testing costs. It would also help ensure continuing availability of an adequate supply of SRM cigarettes to testing laboratories and manufacturers from NIST.

In summary, the proposed amendment to specify the SRM cigarette is not expected to have a significant impact on expected benefits or costs of the Standard in 16

CFR part 1632. Resource costs may amount to roughly $70,000 per year. The amendment would, however, reduce test variability and uncertainty among manufacturers subject to the Standard and among testing organizations. Both the expected benefits and likely economic costs of the amendment are small, and the likely effect on testing costs per new prototype mattress or ticking substitution would be minor, especially when the projected cost is allocated over a production run of complying mattresses.

4. Regulatory Alternatives

The Commission could consider two basic alternatives to the proposed amendment: (1) base the standard test cigarette on a different SRM, with the approximate lower ignition strength of an RIP cigarette; or (2) take no action on the smoldering ignition source issue.

Neither the proposed amendment nor either of these two alternatives would likely have a substantial economic impact. There would, however, be some relative differences in terms of resource costs and potential effects on the level of benefits the Standard affords. The advantages and disadvantages of these two basic alternatives are discussed immediately below.

a. Alternate SRM

Under this first alternative, the Commission could amend the Standard to specify a different, lower ignition propensity SRM cigarette. Such an SRM would presumably be closer in ignition strength to the "worst-case" RIP cigarettes currently on the market.

There are three possible advantages to specifying an alternative SRM: (1) the problem of test repeatability and reproducibility would be addressed, as it is under the proposed amendment; (2) an alternative SRM would, in theory, better approximate the

fire risk associated with cigarettes currently available to consumers in the United States; and (3) currently, there is a low ignition propensity SRM (SRM 1082) developed by NIST for use by state regulators in assessing the compliance of RIP cigarettes. These SRM cigarettes are currently available at a price, including estimated typical shipping, of $195 per carton (compared to the projected price for the proposed SRM 1196 cigarette of $245 per carton). Thus, resource costs to manufacturers and testing laboratories (including the CPSC) to adopt a readily-available alternative SRM could be somewhat lower than under the proposed amendment; although it is likely that any new alternate SRM would be priced at least comparably to the proposed SRM 1196.

There are three possible disadvantages to specifying an alternative SRM. First, in comparison to the proposed SRM, a low ignition propensity SRM would not be considered equivalent or "safety neutral," under the presumption that the use of such cigarettes would result in a less stringent flammability test. While no data are available to describe the extent of this potential difference, it is quite possible that more mattress construction prototypes would pass a test using a lower ignition propensity SRM than do currently with commercially available cigarettes. This may result in an unknown, but potentially adverse, impact on the level of safety benefits provided by the Standard.

The second disadvantage is that the two known technical approaches to developing a lower ignition propensity SRM appear to be incompatible with the test in 16 CFR part 1632. First, under existing state regulations, all known commercial RIP cigarettes incorporate banded paper designed to impede full length burns. The current test measures mattress ignitions resulting from full length cigarette burns and allows up to three relights per cigarette to achieve a full length burn. It is likely that either: (1)

many low ignition propensity cigarettes would be wasted in completing the test; or (2) the test could not be reliably completed using banded-paper, self-extinguishing cigarettes. Second, while the existing SRM 1082 does not use banded-paper technology, it would have the same impracticalities as the banded-paper cigarette under the current Standard. The low ignition propensity design of the existing SRM 1082 is intended to yield a 12 to 15 percent full length burn rate (i.e., the cigarettes are made to self-extinguish 85 to 88 percent of the time). Because this SRM is intended to be used as a calibration tool for cigarette manufacturers subject to state regulations, it is purposely designed to represent a minimal ignition propensity target, rather than a typical or representative RIP ignition propensity. It would clearly not represent a "worst-case" RIP cigarette. Further, SRM 1082 does not meet the specified physical criteria for cigarette length and density; so these cigarettes are physically unlike the current test cigarette or current RIP cigarettes.

The third disadvantage is that the properties of a new SRM that would mimic the ignition behavior of "worst case" RIP cigarettes have not been characterized. The "worst case" RIP cigarette would be one that burns its full length and may, therefore, be similar to its non-RIP counterpart. Insufficient research exists to support a new and different, low ignition propensity SRM; and a variety of as-yet-unknown modifications to the test method in 16 CFR part 1632 would likely be needed to incorporate such an SRM. The time and cost to develop a new SRM is undetermined, but the existing concern about the short-term availability of a consistent ignition source would not be resolved.

Thus, while a lower ignition strength SRM cigarette may be technically feasible, there is no readily available SRM alternative that would address the need for a consistent, "safety-neutral" ignition source.

b. No Action

Under the second alternative, the test cigarette specifications in the Standard would remain unchanged. Manufacturers and testers would remain free to conduct tests with any available cigarettes, including RIP Pall Malls, which meet the existing physical parameters.

The possible advantage of the Commission taking no action is that the projected minor increase in resource costs of testing would not be incurred.

The possible disadvantage of the Commission taking no action would be that the basic issue of test result variability due to differences in cigarettes would not be addressed, and the uncertainty and confusion surrounding the reliability of tests for compliance with 16 CFR part 1632 would not be reduced. Manufacturers and testing firms may continue to conduct tests that are either wasteful (in terms of extra RIP cigarettes required to complete a test) or have irreproducible results.

In summary, there are no readily available and/or, technically feasible alternatives to the proposed amendment that would have lower estimated costs and still address the need for a consistent ignition source that retains the "safety-neutral" approach of the proposed amendment.

E. Regulatory Flexibility Act Certification

Under the Regulatory Flexibility Act ("RFA"), 5 U.S.C. 601 et seq., an agency that engages in rulemaking generally must prepare initial and final regulatory flexibility analyses describing the impact of the rule on small businesses and other small entities. Section 605 of the RFA provides that an agency is not required to prepare a regulatory

flexibility analysis if the head of an agency certifies that the rule will not have a significant economic impact on a substantial number of small entities.

The proposed rule would retain the current mattress test procedure, but require that entities performing cigarette ignition tests (including the CPSC, other state agencies, and industry testing organizations) purchase and use SRM cigarettes at a higher cost than commercial, non-SRM cigarettes. No additional actions would be required of small entities. The costs associated with the proposed rule would essentially be borne by mattress manufacturers and importers that perform (or pay fees for) compliance testing.

The latest available (2002) U.S. Census Bureau Statistics of U.S. Businesses and (2003) Economic Census data on this industry sector reported over 500 firms and more than 600 manufacturing establishments in NAICS sector code 337910, Mattress Manufacturing. More recent industry estimates suggest that the number of firms, including renovators, is closer to 400. The few industry-leading manufacturers are large firms with annual gross revenues of more than $1 billion and 3,000–5,000 employees each. However, the vast majority of producers–including all renovators–are much smaller, with annual gross revenues of under $20 million and fewer than 100 employees each. Many manufacturers serve regional markets and do not have nationwide distribution. The Economic Census reported that all but the largest 12 mattress producing firms—more than 95 percent—had fewer than 500 employees. These would be considered small businesses under the definition used by the Small Business Administration for this industry.

The larger firms are often comprised of multiple small manufacturing establishments. The average gross revenue of the 585 small manufacturing

establishments identified in 2002 was about $8.1 million. Excluding small establishments with more than 100 employees from this average provides a reasonable approximation of small firms that are independent of the major producers. This approach reduces the average gross revenue to about $4 million. This $4 million average can be used to illustrate the potential effect of the proposed rule on small firms.

As discussed in the cost analysis section above, added testing and certification costs related to the proposed rule may average about $133 per small firm, or less than three cents per unit. This represents about $133 / $4 million = .0033 percent (i.e., less than one percent) of small firms' average gross revenues. Even using the $475 increased cost estimate presented in the analysis for larger firms, the impact on small firms' average gross revenue would be only $475 / $4 million = .012 percent.

Based on this information, the proposal would have little or no effect on small producers because the design and construction of existing, compliant mattress products would remain unchanged and because the resource cost increase of using SRM cigarettes would represent a minimal increase in total testing costs. Thus, the Commission preliminarily concludes that the proposed rule would not have a significant impact on a substantial number of small businesses or other small entities.

F. Environmental Considerations

Pursuant to the National Environmental Policy Act, and in accordance with the Council on Environmental Quality regulations and CPSC procedures for environmental review, the Commission has assessed the possible environmental effects associated with the proposed rule.

The Commission's regulations state that amendments to rules providing performance requirements for consumer products normally have little or no potential for affecting the human environment. 16 CFR 1021.5(c)(1). Nothing in this proposed rule alters that expectation. Therefore, because the proposed amendment would have no adverse effect on the environment, neither an environmental assessment nor an environmental impact statement is required.

G. Executive Orders

According to Executive Order 12988 (February 5, 1996), agencies must state in clear language the preemptive effect, if any, of new regulations. The proposed rule, if finalized, would modify a flammability standard issued under the FFA. With certain exceptions that are not applicable in this instance, no state or political subdivision of a state may enact or continue in effect "a flammability standard or other regulation" applicable to the same fabric or product covered by an FFA standard if the state or local flammability standard or other regulations is "designed to protect against the same risk of the occurrence fire" unless the state or local flammability standard or regulation "is identical" to the FFA standard. *See* 15 U.S.C. 1476(a). The proposed rule would not alter the preemptive effect of the existing mattress standard.

Thus, the proposed rule would preempt nonidentical state or local flammability standards for mattresses or mattress pads designed to protect against the same risk of the occurrence of fire.

H. Effective Date

Section 4(b) of the FFA (15 U.S.C. 1193(b)) provides that an amendment of a flammability standard shall become effective one year from the date it is promulgated,

unless the Commission finds for good cause than an earlier or later effective date is in the public interest, and the Commission publishes the reason for that finding. Section 4(b) of the FFA also requires that an amendment of a flammability standard shall exempt products "in inventory or with the trade" on the date the amendment becomes effective, unless the Commission limits or withdraws that exemption because those products are so highly flammable that they are dangerous when used by consumers for the purpose for which they are intended. The Commission concludes that a one-year effective date is appropriate to ensure ample time for the product cycle and continuing availability of SRM cigarettes from NIST. Therefore, the Commission proposes that the amendment to the ignition source provision of the standard would become effective one year after publication of a final amendment in the *Federal Register*.

I. Proposed Findings

Section 4(a) and (j)(2) of the FFA require the Commission to make certain findings when it issues or amends a flammability standard. The Commission must find that the standard or amendment: (1) is needed to adequately protect the public against the risk of the occurrence of fire leading to death, injury, or significant property damage; (2) is reasonable, technologically practicable, and appropriate; (3) is limited to fabrics, related materials, or products which present unreasonable risks; and (4) is stated in objective terms. 15 U.S.C. 1193(b). In addition, the Commission must find that: (1) if an applicable voluntary standard has been adopted and implemented, that compliance with the voluntary standard is not likely to adequately reduce the risk of injury, or compliance with the voluntary standard is not likely to be substantial; (2) that benefits expected from the regulation bear a reasonable relationship to its costs; and (3) that the regulation

imposes the least burdensome alternative that would adequately reduce the risk of injury. Because section 4(a) of the FFA refers to proceedings for the determination of an appropriate flammability standard "or other regulation or amendment," and because this proposed rule would be a technical amendment rather than a new flammability standard, for purposes of this section of the preamble, we will refer to the proposed rule as a "proposed amendment." These findings are discussed below.

The amendment to the Standard is needed to adequately protect the public against unreasonable risk of the occurrence of fire. The current Standard specifies as the ignition source cigarettes that are no longer being produced. In order for the Standard to continue to be effective (and for labs to test mattresses and mattress pads to determine whether they comply with the Standard), it is necessary to change the ignition source specification. The proposed amendment is necessary to ensure that the testing is reliable and that results will not vary from one lab or manufacturer to another. Such variation would be likely if labs or manufacturers were able to use different ignition sources that have similar physical properties but different burning characteristics.

The amendment to the Standard is reasonable, technologically practicable, and appropriate. The proposed amendment is based on technical research conducted by NIST, which established that the SRM cigarette is capable of providing reliable and reproducible results in flammability testing of mattresses and mattress pads. The proposed SRM represents an equivalent, safety-neutral ignition source for use in testing to establish compliance with the Standard.

The amendment to the Standard is limited to fabrics, related materials, and products that present an unreasonable risk. The proposed amendment would continue to apply to the same products as the existing Standard.

Voluntary standards. There is no applicable voluntary standard for mattresses. The proposal would amend an existing federal mandatory standard.

Relationship of benefits to costs. Amending the Standard to specify SRM cigarettes as the ignition source would allow testing to the Standard to continue without interruption, would maintain the effectiveness of the Standard, and would not significantly increase testing costs to manufacturers and importers of mattresses and mattress pads. Thus, there is a reasonable relationship between benefits and costs of the proposed amendment. Both expected benefits and costs of the proposed amendment are likely to be small. The likely effect on testing costs would be minor.

Least burdensome requirement. No other alternative would allow the Standard's level of safety and effectiveness to continue. Thus, the proposed amendment imposes the least burdensome requirement that would adequately address the risk of injury.

J. Conclusion

For the reasons discussed above, the Commission preliminarily finds that amending the mattress flammability standard (16 CFR part 1632) to specify SRM cigarettes as the ignition source is needed to adequately protect the public against the unreasonable risk of the occurrence of fire leading to death, injury, and significant property damage. The Commission also preliminarily finds that the amendment to the Standard is reasonable, technologically practicable, and appropriate. The Commission

further finds that the amendment is limited to the fabrics, related materials, and products that present such unreasonable risks.

K. References

1. Gann, R.G., and Hnetkovsky E.J., *Modification of ASTM E 2187 for Measuring the Ignition Propensity of Conventional Cigarettes,* Technical Note 1627, National Institute of Standards and Technology, Gaithersburg, MD, 20899, 2009.

2. Directorate for Economic Analysis Report, *Preliminary Regulatory Analysis: Smoldering Ignition Source Draft Proposed Technical Amendment to the Flammability Standard for Mattresses and Mattress Pads* (16 CFR part 1632).

List of Subjects in 16 CFR Part 1632

Consumer protection, Flammable materials, Labeling, Mattresses and mattress pads, Records, Textiles, Warranties.

For the reasons given above, the Commission proposes to amend 16 CFR part 1632 as follows:

PART 1632 – STANDARD FOR THE FLAMMABILITY OF MATTRESSES AND MATTRESS PADS (FF 4-72, AMENDED)

1. The authority citation for part 1632 continues to read as follows:

Authority: 15 U.S.C. 1193, 1194; 15 U.S.C. 2079(b).

2. Section 1632.4 is amended to read as follows:

Sec. 1632.4 Mattress test procedure.

(a) * * *

(2) *Ignition source.* The ignition source shall be National Institute of Standards and Technology ("NIST") Standard Reference Material ("SRM") 1196, available for purchase from the National Institute for Standards and Technology, 100 Bureau Drive, Gaithersburg, MD 20899.

* * * * *

Dated: _____.

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Todd A. Stevenson, Secretary
Consumer Product Safety Commission