UNITED STATES
CONSUMER PRODUCT SAFETY COMMISSION
WASHINGTON, DC 20207

OFFICE OF THE SECRETARY
2003 JUL -9 A 9:19

Memorandum

DATE: JUL 8 2003

TO: The Commission
Todd A. Stevenson, Secretary

THRU: W.H. DuRoss, III, General Counsel
Steve Lemberg, Assistant General Counsel for Administrative Law

FROM: Lowell F. Martin, Attorney-Advisor, GCAL (ext. 7628)

SUBJECT: Advance Notice of Proposed Rulemaking (ANPR) on Ignition of Upholstered Furniture by Small Open Flames and Smoldering Cigarettes.

VOTE SHEET

The attached staff briefing package recommends that the Commission issue an ANPR to commence rulemaking under the Flammable Fabrics Act (FFA) that could result in a mandatory flammability standard addressing upholstered furniture ignition by both small open flames and smoldering cigarettes. The Commission issued an ANPR in 1994 on small open flame ignition of upholstered furniture. 59 FR 30735. Since that time, the staff has been developing a draft flammability standard for upholstered furniture ignition by small open flame sources such as matches, lighters, and candles.

The action recommended by the staff would implement a Commission decision to address both smoldering cigarette and small open flame ignition of upholstered furniture in a single proceeding. It is the opinion of the Office of the General Counsel that the information in the staff briefing package supports taking this course of action.

Please indicate your vote on the following options.

I. Commence a regulatory proceeding to address both small open flame and cigarette ignition of upholstered furniture by issuing the ANPR as drafted.

CPSA 6 (b)(1) Cleared RTP

(Signature) 7/8/03 (Date)

No Mfrs/PrvtLblrs or Products Identified

X Excepted by Rulemaking

Firms Notified,

Comments Processed.

NOTE: This document has not been reviewed or accepted by the Commission.

Initial MH Date 7/8/03

II. Commence a regulatory proceeding to address both small open flame and cigarette ignition of upholstered furniture by issuing the ANPR with changes. (Please specify.)

_____

_____

_____

_____ _____
(Signature) (Date)

III. Do not commence a regulatory proceeding addressing both small open flame and cigarette ignition of upholstered furniture.

_____ _____
(Signature) (Date)

IV. Take other action. (Please specify).

_____

_____

_____

_____ _____
(Signature) (Date)

Attachment: *Cigarette Ignition of Upholstered Furniture: Commission Options*, memorandum from Dale R. Ray, Project Manager, Directorate for Economic Analysis, to the Commission, July **[(?)]** , 2003

CIGARETTE IGNITION OF UPHOLSTERED FURNITURE: COMMISSION OPTIONS

July 2003

For further information contact:

Dale R. Ray, Project Manager
Directorate for Economic Analysis
U.S. Consumer Product Safety Commission
4330 East-West Highway
Bethesda, MD USA 20814-4408
(301) 504-7704
dray@cpsc.gov

CONTENTS

Executive Summary

The U.S. Consumer Product Safety Commission (CPSC) is considering possible action to address fire risks associated with ignitions of upholstered furniture. The CPSC staff recommends that the Commission publish an advance notice of proposed rulemaking (ANPR) to initiate a regulatory proceeding under the Flammable Fabrics Act (FFA) covering the two principal fire risks: ignition by smoldering cigarettes and ignition by small open flame sources (e.g., lighters, matches and candles).

The Commission issued an ANPR in 1994 covering the risk of small open flame-ignited furniture fires. The CPSC staff developed a draft standard addressing this risk. However, a substantial majority - about 80 percent - of upholstered furniture-related annual residential fire losses are related to cigarette ignitions, as are most of the projected benefits of the staff's draft standard. The staff believes it is reasonable to expand the agency's proceeding with an ANPR to cover both risks directly.

At the CPSC staff's June 2002 public meeting on upholstered furniture flammability issues, a number of industry groups expressed support for a mandatory federal rule addressing upholstered furniture flammability. In a May 2003 letter, the American Furniture Manufacturers Association (AFMA) reiterated its support for a uniform federal standard that would a) assure adequate compliance among manufacturers and importers, and b) pre-empt potentially conflicting state regulations. The Fabric Coalition, a group of six major upholstery fabric manufacturers, also recently expressed support for a national mandatory standard.

Publishing an ANPR would allow the Commission to consider whether to propose a rule addressing either small open flame ignition, cigarette ignition, or both, and to solicit public comment. If the Commission publishes an ANPR, the staff would then prepare a briefing package of regulatory alternatives to address both risks for Commission consideration.

United States
CONSUMER PRODUCT SAFETY COMMISSION
Washington, D.C. 20207

MEMORANDUM

DATE: JUL 8 2003

TO : The Commission
Todd A. Stevenson, Secretary

Through: W.H. DuRoss, III, General Counsel
Patricia Semple, Executive Director

FROM : Jacqueline Elder, Assistant Executive Director
for Hazard Identification & Reduction
Dale R. Ray, Project Manager, Directorate for
Economic Analysis, (301)504-7704

SUBJECT: Cigarette Ignition of Upholstered Furniture

The U.S. Consumer Product Safety Commission (CPSC) is considering possible action to address fire risks associated with ignitions of upholstered furniture. This memorandum presents a review of information on the specific risk of residential fire from ignition of upholstered furniture by smoldering cigarettes, and options to address that risk. CPSC's recent activities have focused chiefly on the risk of small open flame-ignited furniture fires; however, the agency's ongoing regulatory proceeding could be expanded to include the cigarette ignition risk.

The topic of cigarette-ignited fires was discussed in previous CPSC staff briefing packages on upholstered furniture.[1] Some of the data and conclusions from those packages are reiterated here. The staff is developing another decision package for Commission consideration of whether to proceed with a notice of proposed rulemaking (NPR) on small open flame ignition, or take other action. However, the staff is presenting options on cigarette ignition now to give the Commission maximum flexibility in addressing both upholstered furniture fire risks.

---

[1] "Upholstered Furniture Flammability: Analysis of Comments from the CPSC Staff's June 2002 Public Meeting," February 2003; "Briefing Package on Upholstered Furniture Flammability: Regulatory Options," October 2001; "Upholstered Furniture Flammability: Regulatory Options for Small Open Flame & Smoking Material Ignited Fires," October 1997; "Briefing Package on Petition FP 93-1, Upholstered Furniture Flammability," April 1994.

I. Background

Cigarette ignitions of upholstered furniture have long been a leading cause of residential fire deaths, injuries and property damage. The Commission has extensively investigated this risk since the 1970s, when the CPSC staff prepared a draft proposed cigarette ignition standard based on a method developed for CPSC by the National Bureau of Standards (now the National Institute for Standards & Technology)[2]. In 1977, a furniture industry group, the Upholstered Furniture Action Council (UFAC), established a voluntary industry program as an alternative to CPSC rulemaking. The UFAC voluntary guidelines were amended in 1983, and are widely followed among manufacturers today.

Based on a 1996 CPSC survey, more than 85 percent of currently manufactured upholstered furniture (including products from non-UFAC member firms) reportedly meets the UFAC guidelines. Further, based on sales-weighted estimates of CPSC laboratory test results, the staff estimates that more than 80 percent of currently produced furniture resists cigarette ignition. This estimate reflects a gradual increase in the use of inherently cigarette-resistant upholstery fabrics and filling materials, and represents about a 70 percent improvement in cigarette ignition resistance since 1980. However, as noted below, laboratory testing and market data indicate that cigarette-ignited fires involving upholstered furniture *not* made with cigarette-resistant materials constitute a substantial proportion of the overall furniture fire losses.

The staff has also monitored mandatory regulations in California (issued in 1975) and the United Kingdom (issued in 1988) that included provisions addressing cigarette ignition. Upholstered furniture products meeting the existing California regulation, Technical Bulletin (TB) 117, offer a level of cigarette ignition resistance comparable to that of products conforming to the UFAC construction criteria. In 1998, the California Bureau of Home Furnishings and Thermal Insulation (BHF) initiated a project to upgrade the small open flame resistance provisions of TB-117. The cigarette resistance provisions of TB-117 are not being revised.

In 1994, the Commission considered a petition (FP 93-1) from the National Association of State Fire Marshals (NASFM) requesting rulemaking under the Flammable Fabrics Act (FFA) to address all

---

[2] The Commission issued a Finding of Need for a Standard in 1977, but did not publish the CPSC/NBS method as a proposed rule. The method was incorporated into a 1983 National Fire Protection Association voluntary fire test (NFPA 261).

upholstered furniture fire risks, including cigarette ignition as well as small and large open flame ignition. The Commission granted that petition in part, and issued an advance notice of proposed rulemaking (ANPR) on the specific risk of small open flame-ignited fires. The Commission denied the petition with respect to large open flame-ignited fires, and deferred action with respect to cigarette-ignited fires pending a CPSC staff evaluation of the existing voluntary industry program, including a) the level of conformance to the guidelines, and b) the overall level of cigarette ignition resistance among products on the market.

The staff subsequently developed a draft small open flame standard for residential upholstered furniture that would prevent or limit fire growth following exposure to a small open flame. The staff's draft standard contains flammability performance tests for seating areas and dust covers, as well as requirements for production testing and recordkeeping. The first draft of the standard was released in 1996. A revised draft appears in the staff's October 2001 briefing package.

The staff's draft standard contains no performance tests for cigarette ignition resistance. CPSC laboratory testing suggested, however, that flame retardant (FR) upholstery fabrics - identified by manufacturers as a likely means of limiting fire growth - would also reduce the risk of upholstered furniture fires ignited by smoldering cigarettes. While the cigarette ignition risk is attributable to a relatively small proportion of currently produced upholstered furniture, the projected societal costs associated with this risk are large. Based on the staff's 2001 analysis, about 80 percent of the projected safety benefits of a possible small open flame standard consist of reductions in cigarette fire losses.

In 1998, the Commission voted to defer action on a possible proposed rule while the agency gathered additional information on possible health risks associated with FR chemical treatments that might be used to meet a standard. CPSC held a public hearing on this issue in May 1998, and received comments and scientific data from interested parties.

The Commission's 1999 appropriation (issued in mid-1998) prohibited the agency from taking further action on upholstered furniture, pending a National Academy of Sciences (NAS) study of 16 FR chemicals. The NAS final report, published in mid-2000, identified eight compounds that could be used without presenting health risks to consumers and recommended further study for eight others. The NAS conclusions were similar to those of the CPSC staff's FR chemical risk assessment. The staff has been working

with the U.S. Environmental Protection Agency (EPA) and the National Institute for Occupational Safety and Health (NIOSH) to ensure that a flammability standard for upholstered furniture would not have significant adverse environmental or worker safety effects.

The staff's October 2001 briefing package presented options for possible continuing Commission action. These options included a notice of proposed rulemaking, or NPR, on the small open flame ignition risk, and a new ANPR on the cigarette ignition risk.

In June 2002, the CPSC staff held a public meeting to obtain comments from stakeholders on all aspects of the Commission's proceeding on upholstered furniture, including the options presented in the October 2001 briefing package. The staff made some revisions to the draft small open flame standard in response to the comments and recommendations received. At the public meeting, the American Furniture Manufacturers Association (AFMA) stated their view that the Commission should promulgate a uniform national flammability standard for upholstered furniture. This view was reported in the staff's February 2003 briefing package.

In a May 2, 2003 letter to Chairman Stratton, AFMA reiterated its support for a uniform national mandatory standard for upholstered furniture flammability. AFMA recommended that a CPSC standard include requirements for cigarette ignitability, and offered the UFAC voluntary test method (specifically the fabric classification method, ASTM E-1353) as a means of measuring cigarette ignition performance. A copy of the AFMA letter is attached to this memorandum at **Tab A**.

AFMA cited two principal factors guiding its position: 1) the likelihood of potentially conflicting state regulations (a CPSC rule issued under the FFA would generally pre-empt non-identical state rules addressing the risk of fire); and 2) the likelihood that voluntary conformance may be inadequate to reduce the risk, especially among imported furniture (AFMA reports that imports, especially from China, account for a rapidly increasing share of the residential upholstered furniture market).

In a June 27, 2003 letter to Chairman Stratton, a group of six upholstery fabric manufacturers (the "Fabric Coalition") also expressed support for a national mandatory flammability standard for upholstered furniture. The Coalition recommended that CPSC issue small open flame performance and certification requirements for furniture components, including polyurethane foam and other filling materials as well as fabrics and barriers. The Coalition

asserted that its approach would address both cigarette- and open flame-related fire losses. The Fabric Coalition letter is attached at **Tab B**. The CPSC staff will consider these and other recommendations regarding a possible proposed rule, and will continue to discuss with affected groups the full range of possible alternatives to address upholstered furniture flammability.

II. Possible Need for Action on Cigarette Ignition

The Commission may initiate action, by publishing an ANPR, to address the cigarette ignition risk directly. The large proportion of fire losses resulting from cigarette ignitions of furniture, the importance of reducing this risk in any effective remedial action, the likely feasibility of risk-reducing remedies, and the adequacy of existing voluntary standards to address the risk are all factors that may be considered in determining whether to take action.

A. Fire Hazard Data

Fires involving ignitions of upholstered furniture constitute a leading cause of residential fire losses. Furniture fires killed more people in 1998 (the latest year for which data are available) than did fires involving any other category of consumer products under the Commission's jurisdiction. About four-fifths of the estimated addressable deaths and about two-thirds of the addressable injuries were from smoldering ignition by smoking materials (almost always cigarettes), as shown below. In addition, about four-fifths of the estimated societal costs ($1.9 billion out of $2.4 billion) of all upholstered furniture fires were cigarette ignition-related.

Estimated 1998 Addressable* Upholstered Furniture Fire Losses

	Fires	Deaths	Injuries	Property Loss ($mil)
Total Addressable	6,200	420	1,080	$120
Smoking Materials	4,700	340	730	87
Small Open Flame	1,500	80	350	32

*Addressable losses from National Fire Incident Reporting System (NFIRS) cases identified as upholstered furniture, with appropriate coding for type of material ignited, area of origin, ignition factor, and equipment involved; excludes out-of-scope or inconsistently coded cases, including incendiary and suspicious fires.
Source: CPSC / Directorate for Epidemiology, CPSC 2001 briefing package.

Although cigarette-ignited furniture fire deaths have declined by about 70 percent over the past two decades, recent years' data suggest the decline may be leveling off. Even at the 1998 level, the number of deaths is large, and the potential economic benefits of reducing the $1.9 billion in societal costs are substantial.

B. Feasibility of Risk-Reducing Remedies

The technology for imparting smolder resistance in upholstered furniture is well known and widely used in current products. Upholstery cover fabrics containing significant amounts of synthetic fibers, such as polyester and other thermoplastics, are generally cigarette ignition resistant. Synthetic filling materials, such as flexible polyurethane foam cushioning and polyester batting, are also cigarette resistant.

Some upholstered furniture constructed with predominantly cellulosic fiber (primarily heavier-weight cotton) cover fabrics can be particularly susceptible to ignition from cigarettes. These products tend to smolder and progress to flaming combustion, even in combination with synthetic filling materials. Increasing the thermoplastic fiber content of these fabrics would increase cigarette ignition resistance. CPSC laboratory testing indicates that FR treatments may also increase cigarette resistance for some cellulosics, although these treatments are not used in U.S. residential furniture fabrics today (FR-treated fabrics are used to meet the small open flame requirements of the U.K. Regulations).

Fire-blocking barriers may also provide protection for furniture filling materials in the event of cigarette ignition. The application of barriers as a possible cigarette ignition remedy would complement ongoing industry development of barriers to help meet possible small open flame standards for furniture and mattresses.

FR treatments are also available for various furniture filling materials. Futon manufacturers have used boric acid-treated cotton batting to meet the Commission's mattress regulation for cigarette ignition resistance (16 CFR 1632); today virtually all cotton batting is FR-treated. Upholstered furniture manufacturers have added bromine- or phosphorus-containing FR chemicals to flexible polyurethane foams to meet California TB-117 component requirements for small open flame resistance. However, the effectiveness of these FR foams (compared to non-FR foams) at reducing fire growth from upholstered furniture cigarette ignitions is uncertain. FR fillings generally are only minimally effective at reducing the

small open flame risk, and are not needed to meet existing California or U.K. requirements for cigarette resistance.

Some commenters at the CPSC staff's June 2002 public meeting discussed the relationship between cigarette and small open flame ignition. As discussed in the February 2003 staff briefing package, the staff has considered this relationship in developing possible performance requirements. The staff's draft small open flame standard limits smoldering combustion as well as flaming combustion; both types can result from either cigarette or small open flame ignition. The staff concluded that a flammability standard could reduce the risk from small open flame ignitions without increasing - in fact, probably decreasing - the risk from smoldering cigarette ignitions.

C. Existing Standards

1. UFAC Program

The UFAC voluntary program contains six cigarette ignition performance tests for different upholstered furniture components (cover fabrics, interior fabrics, 'barriers' (i.e., batting), decking/filling/padding materials, decorative trim and welt cord) as well as certification and product labeling provisions. The UFAC guidelines encourage the use of the inherently smolder-resistant materials that have become popular on the market.

The UFAC fabric classification test (now embodied in ASTM voluntary test method E-1390) denotes upholstery cover fabrics as either Class I or Class II. Class I fabrics are less cigarette ignition-prone, exhibiting a char of less than 44 millimeters (1.75 inches) in the fabric-and-foam-filling mockup test. Class II fabrics are more cigarette ignition-prone, exhibiting a longer char or causing obvious flaming ignition of the foam. To conform to the UFAC guidelines, Class II fabrics may only be used in constructions with batting (or other materials that conform to the UFAC 'barrier' test) between the fabric and interior materials of the furniture. Thus, even the worst performing cover fabrics are allowable under the UFAC program.

As noted in the Background section above, the CPSC staff's estimate of the level of voluntary UFAC conformance among manufacturers and currently manufactured furniture products is high (over 85 percent). The prevalence of cigarette ignition resistant furniture, independent of UFAC affiliation, is also high (over 80 percent). Industry conformance to the UFAC guidelines has

contributed to the observed gradual reduction in upholstered furniture fire losses.

UFAC component conformance does not, however, guarantee cigarette resistance of the finished article. The cigarette ignition behavior of a finished article of furniture involves complex interactions among the various components; the tests in the UFAC program do not consistently predict the effect of these interactions. The CPSC laboratory's testing of actual, full scale chairs demonstrated that UFAC-conforming products made with smolder-prone fabrics can ignite and burn even when polyester batting or other ignition resistant fillings are present. CPSC could consider elements of the UFAC guidelines in developing a possible federal rule, perhaps with modifications to ensure an adequate level of safety for furniture with Class II fabrics.

The May 2003 AFMA letter expressed concern that voluntary industry action on upholstered furniture flammability "is unlikely to achieve satisfactory levels" of conformance. This concern echoes AFMA's statements supporting a possible small open flame standard at the June 2002 public meeting, and is largely related to recent and projected increases in shipments of imported furniture, chiefly from China. AFMA has reported that their concern also extends to the levels of UFAC conformance and cigarette ignition resistance among imported furniture products.

2. California Technical Bulletins

California Technical Bulletin 117, which is mandatory for all upholstered furniture sold in the state, contains component performance tests for cigarette ignition resistance of fibrous/loose fill and cellular foam filling materials. In the fibrous/loose fill 'sandwich' test, the filling material is wrapped around a lit cigarette; charring may not exceed 25 millimeters (1 inch) in any direction. In the cellular (foam) test, the lit cigarette is placed on a seating mockup stand with foam and a standard cotton cover fabric; tested foam specimens may not exceed 20 percent weight loss. Upholstered furniture sold in California must also be labeled as complying with the TB-117 performance requirements.

Like the UFAC voluntary program, TB-117 is comprised of component tests that may not adequately predict full-scale performance. Another California standard, TB-116, is available to manufacturers on a voluntary basis. TB-116 incorporates a full-scale (or optional small-scale composite mockup) cigarette test; manufacturers whose products meet this standard may use labels

stating that the products provide a higher level of protection against smoldering cigarettes. TB-116 is conceptually similar to the 1977 CPSC staff/NBS draft cigarette ignition standard.

TB-116 and 117 are not national standards; however, some manufacturers, importers and retailers offer TB-117-compliant products for nationwide distribution. CPSC could consider elements of TB-116 in developing a possible federal rule.

3. Fire Safe Cigarette Legislation

As described in the staff's February 2003 briefing package, New York State passed legislation requiring 'fire-safe,' i.e., lower ignition propensity (IP), cigarettes by mid-2003. The State Fire Administrator proposed implementing regulations in April 2003, but has not yet issued final regulations. Lower-IP cigarettes will presumably reduce fire losses in New York, including those involving upholstered furniture. However, while one cigarette manufacturer is marketing one brand of lower-IP cigarettes nationwide, the extent to which firms will market other lower-IP cigarettes outside of New York is uncertain.

Several pieces of federal fire-safe cigarette legislation calling for adoption of the New York regulation have been introduced (unsuccessfully) since 2002. In April 2003, Senator Hollings (D-SC) announced another, more comprehensive fire safety bill for possible introduction in 2003.

The CPSC staff is monitoring these developments, and plans to obtain lower-IP cigarettes from New York for testing on upholstered furniture. The extent to which lower-IP cigarettes may reduce the fire risk for furniture and other home furnishings is unknown.

D. Conclusions

The staff concludes from the foregoing discussion that:

- The risk to the public associated with the 15-20 percent of currently produced upholstered furniture that does not resist cigarette ignition is quite large overall; a standard could significantly reduce the risk.
- Existing standards could provide a basis for CPSC action to reduce the cigarette ignition risk. The UFAC voluntary program and the California mandatory regulation (TB-117) have some technical shortcomings inherent in component-only cigarette test schemes. Other tests (e.g., California TB-116

or the CPSC staff/NBS draft) exist that measure composite performance of a finished article of upholstered furniture.

- The potential effectiveness of efforts to reduce fire risks via state or possible federal legislation on cigarettes is unknown.

III. Options

The issue before the Commission in this briefing memorandum is whether to initiate regulatory action to address the risk of fire associated with ignitions of upholstered furniture by smoldering cigarettes.

A. Advance Notice of Proposed Rulemaking

If the Commission preliminarily determines that cigarette ignitions of upholstered furniture may present an unreasonable risk of fire-related death, injury or property damage to the public, the Commission may publish an ANPR in the *Federal Register* announcing that determination and soliciting public comment. The ANPR would also describe regulatory alternatives under consideration by the Commission to address both cigarette and small open flame ignition risks; these alternatives may include performance requirements for products or components, product labeling, information and education programs, or a voluntary standard.

The staff has developed information in recent years describing the risk, possible product modifications that may reduce the risk, potential benefits that may accrue to the public from a standard, and the effectiveness of the existing UFAC voluntary industry program. This information could serve as a basis for an ANPR. The Commission could then consider (or solicit public comment on) cigarette- and small open flame-related issues together, such as the inter-relationship of cigarette and small open flame ignition physics, potential overlapping benefits, pre-emption of state regulations, etc.

B. Defer / No Action

The Commission could find that currently available information does not support a preliminary determination that cigarette ignitions of upholstered furniture present an unreasonable risk to the public, and that no agency action is necessary to address the risk. This finding could be supported by information indicating that the risk would be adequately addressed by a number of other means, including the UFAC voluntary program, the proposed New York

(and possibly federal) fire-safe cigarette legislation, and a possible CPSC small open flame standard for which the staff's analysis has projected significant reductions in both cigarette and small open flame losses.

If the Commission selects this option, the staff would continue its development of a small open flame performance standard, and continue to work with outside government, industry and fire safety groups. The staff would then present a draft standard and supporting information for Commission consideration as soon as possible.

IV. Staff Recommendation

The staff recommends that the Commission expand the proceeding on upholstered furniture by publishing an ANPR on cigarette- and small open flame-ignited fires. The staff notes the following:

- Cigarette-ignited furniture fires account for a substantial majority of total furniture fire losses. Even though cigarette fire deaths have declined substantially, the number of deaths is still very large. The potential value of the benefits of reducing this risk is one of the highest of any action in CPSC's history.

- The 1994 ANPR addresses the risk of small open flame-ignited upholstered furniture fires. Since a majority of the likely benefits of a small open flame standard would be secondary benefits associated with reductions in cigarette fire losses, the staff believes it is reasonable to address both fire risks directly in a single proceeding by publishing an ANPR addressing cigarette and small open flame ignition.

- The recent AFMA and Fabric Coalition letters signal those industry groups' support for a CPSC mandatory standard addressing both cigarette and small open flame risks. Expanding the proceeding to cover both risks would reflect the agency's continued willingness to work cooperatively with industry to develop effective and reasonable risk reduction measures.

Publishing an ANPR will allow the Commission to collect information for use in considering whether to propose a rule addressing either small open flame ignition, cigarette ignition, or both, and to solicit public comment. The Office of the General Counsel has prepared for Commission consideration a draft *Federal Register* notice consistent with the staff's recommendation.

List of Attachments

TAB A: Letter to CPSC Chairman Stratton from Andy Counts, Executive Vice-President, American Furniture Manufacturers Association, May 2, 2003.

TAB B: Letter to CPSC Chairman Stratton from Larry Liebenow, President and CEO, Quaker Fabric Corporation, and other members of the Fabric Coalition, June 27, 2003.

Tab A

AFMA

May 2, 2003

The Honorable Hal Stratton
Chairman
U.S. Consumer Product Safety Commission
Washington, DC 20207

Re: Upholstered Furniture Flammability

Dear Chairman Stratton:

The American Furniture Manufacturers Association respectfully provides the following recommendations for Commission action on reducing the flammability risk of residential upholstered furniture. We hope this guidance will assist the Commission in resolving the upholstered furniture project in a manner that meaningfully advances safety, while providing for flexible compliance, workable enforcement, and preemption of potentially conflicting state standards.

Introduction

For a number of years, the American Furniture Manufacturers Association (AFMA) has worked with CPSC and other stakeholders to identify a sensible regulatory approach to reducing the flammability risk associated with upholstered furniture. Like the other participants, we have at times felt confounded by the complexity of this issue and the elusiveness of a straightforward, effective solution that would account for the variety of fabrics, cushioning materials, ignition sources, and patterns of human behavior underlying this hazard.

At last year's public hearing, I urged the stakeholders in this debate to recognize that any regulatory approach to this issue will fall short of perfection, and to focus instead on improving the reasonable and well-thought-out framework that CPSC staff proposed in 2001. Based on the information presented at the hearing, as well as the staff's recently published analysis of the public comments, we would now like to offer more specific recommendations for refining that framework. We believe these modifications will broaden the universe of ignition risks addressed, provide greater compliance flexibility, simplify enforcement, and allow furniture construction to evolve along with advances in fire science and materials technology.

American Furniture Manufacturers Association
317 W. High Ave., 10th Floor ▪ Post Office Box HP-7 ▪ High Point, North Carolina 27261 ▪ 336-884-5000 ▪ Fax 336-884-5303
▪ http://www.afma4u.org

Specifically, we recommend:

- That the Commission promulgate a mandatory federal standard addressing flammability risks from upholstered furniture;

- That the current ANPR, as approved by the Commission on June 15, 1994, be amended to address risks from cigarette ignition of upholstered furniture, in addition to risks from small open flame (SOF) ignition of upholstered furniture;

- That any resulting standard provide, along with the two compliance methods already identified in the staff briefing package of October 2001 – flame retardant (FR) treatment of outer fabrics and use of fire resistant barriers—a third compliance option based on resistance to smoldering ignition.

- That any resulting standard set forth a staggered timetable for compliance that accounts for the current knowledge base of manufacturers, and the availability of component technology, production, and testing capacity.

Discussion

1. Desirability of a Uniform National Standard

There is broad consensus among stakeholders in support of a national flammability standard for upholstered furniture that would preempt conflicting state initiatives. Multiple and perhaps conflicting regulatory requirements could frustrate compliance efforts and undermine economies of scale in manufacturing, testing, and component production. At CPSC's June 2002 public hearing, witnesses appearing on behalf of AFMA, NASFM, UFAC, FRCA, INDA, and Zoltek all expressed support for a national approach.[1] More recently, the California Furniture Manufacturers Association and the California Fire Chiefs Association have written to you in support of a national standard.[2] These groups cited the competitive disadvantages and enforcement difficulties likely to be encountered in the absence of a uniform federal standard. In 2000, a Task Force established by the State of Louisiana to study approaches to upholstered furniture regulation reached a similar conclusion. [3] Further support for a uniform national standard can be found in the legislation establishing the Commission, which states that among the Act's purposes is "to develop uniform safety standards for consumer products and to minimize conflicting State and local regulations."[4]

---

[1] U.S. CPSC, *Upholstered Furniture Flammability: Analysis of Comments from the CPSC Staff's June 2002 Public Meeting*, p. 20.

[2] CFMA/CFCA, Joint Letter to CPSC Chairman Hal Stratton, January 29, 2003.

[3] State of Louisiana, *Final Report of the Task Force on Flammability of Upholstered Furniture*, 2000.

[4] Section 2 (b)(3) of the *Consumer Product Safety Act* (15 U.S.C. 2051)

2. Need for a Mandatory Standard

The U.S. upholstered furniture industry is highly fragmented and competitive, operates on relatively small margins, and faces increasing competition from imports. There are approximately 1,000 upholstered furniture manufacturers across the country,[5] with 69 percent of sales divided among the top 50 firms.[6] Profit margins have ranged from 0.6 to 4.0 percent over the period 1990 through 1999.[7] Upholstered furniture imports exceeded $1.4 billion in 2002, growing at a compound annual rate of 21 percent since 1996,[8] and this pace is expected to increase.[9] Many of these foreign producers lack familiarity with U.S. consumer safety standards and often are not members of national trade or industry organizations that commonly disseminate information on technology, standards, and industry "best practices." Given the characteristics of the industry, a voluntary approach to flammability is unlikely to achieve satisfactory levels of compliance going forward. In similar situations, the CPSC has relied upon mandatory rules to increase the involvement of retailers, distributors, local authorities, and the U.S. Customs Service in policing import compliance.[10] Seeking to improve foreign compliance with U.S. safety standards is especially timely, given the dramatic increase in residential furniture imports in recent years, and your own observation before Congress last September that "[m]any imported products do not meet our safety standards."[11]

3. Need for Separate Compliance Options

Throughout the process to develop a reasonable, effective flammability standard for residential upholstered furniture, "CPSC staff has recognized the need to explore alternate performance requirements."[12] This approach responded to the previously noted array of ignition sources, behaviors, and materials, and the inability of a single test method or performance requirement to address them. To cite just one example, interliners were found to be effective in conjunction with a number of outer fabrics, but not with certain thermoplastics.[13] Instead, these

---

[5] U.S. Bureau of the Census, *Upholstered Household Furniture Manufacturing, Economic Census 1997.*

[6] U.S. Bureau of the Census, *Concentration Ratios in Manufacturing, Economic Census 1992.*

[7] Mark Berkman, *Assessing the Need for a Federal Small Open Flame/Cigarette Ignition Upholstered Furniture Flammability Standard,* NERA, February 16, 2001, p. 85.

[8] U.S. International Trade Administration, *SIC 2512 Customs Value U.S. Imports For Consumption,* 2003.

[9] *China's Next Target: Upholstery,* Greensboro News & Record, March 1, 2003.

[10] See U.S. CPSC, *Briefing Package for Bunk Bed Final Rule,* November 1999, p. 9; U.S. CPSC, *Final Rule on Metal-Cored Candlewicks,* 68 Fed. Reg. 19145, April 18, 2003.

[11] House Subcommittee on Commerce, Trade and Consumer Protection, Hearing on Chairman's Agenda, September 4, 2002 (from prepared testimony).

[12] U.S. CPSC, *Upholstered Furniture Flammability: Analysis of Comments from the CPSC Staff's June 2002 Public Meeting,* p. 30.

[13] Ibid, p. 47.

fabrics may be more appropriate candidates for the FR treatment option. Alternative compliance options provide manufacturers with a greater degree of flexibility to pursue the most appropriate approach for their type of product. To encourage this, CPSC should make clear in its rulemaking that each option is legally sufficient under the proposed regulation, and work diligently with industry organizations to develop compliance guidelines aimed at helping producers choose the most effective approach for each class of product. The CPSC Project Manager for Upholstered Furniture has previously expressed interest in publishing compliance guidance in conjunction with a regulation. [14]

In establishing these alternative compliance options, CPSC should identify aggressive but realistic compliance timetables that account for the current knowledge base of manufacturers, and the availability of component technology, production, and testing capacity. We believe that the cigarette ignition and SOF labeling provisions can be implemented on an expedited basis, as soon as **60 days** after the publication of a final rule. For the fabric SOF resistance requirement, we propose an effective date of **24 months** after publication. This timetable recognizes that compliance with this provision rests on existing technology, but that FR treatment capacity in this country is presently negligible. For the barrier provision, we recommend an effective date of **36 months** from publication of the rule. This time frame is designed to provide for the development, commercialization, and scaled production of a range of fabric and fiber barrier products. We have discussed such a staggered approach with the Project Manager, and he has indicated a willingness to consider it further.

4. Precedent for Multi-Prong Compliance Framework

Numerous examples of flexible, multi-pronged safety regulations exist. For example, in a 2001 Notice of Proposed Rulemaking (NPR), the U.S. Department of Transportation (DOT) proposed requiring owners of certain recreational boats to install (1) a propeller guard; (2) a jet propulsion system; or (3) a swim ladder interlock, combined with an ignition cut-off switch and an aft visibility device.[15] In providing an array of compliance options, DOT noted the many factors that contribute to propeller injuries, as well as the variety of boat and engine configurations. The agency recognized that the proposed options entailed varying degrees of cost and retrofitting, and it established compliance deadlines accordingly.[16]

With regard to upholstered furniture, we recommend the following combination of compliance options would be appropriate:

a. Option 1: Fabric Treatment

First proposed by CPSC staff in 1997, FR treatment of outer fabrics provides relatively cost-effective resistance to small open flame (SOF) and cigarette ignition for some fabrics. This

[14] Dale R. Ray, CPSC Staff Briefing on Upholstered Furniture, December 18, 1997.

[15] U.S. DOT, *Rule on Propeller Injury Avoidance Measures*, 33 CFR Part 175, *Federal Register*, December 10, 2001, p. 63645.

[16] Ibid, p. 63648.

approach could represent a preferred option for companies whose fabrics are already backcoated for durability, as well as for companies that currently backcoat fabrics on upholstered furniture products destined for sale in the British market. However, some fabrics cannot be reliably treated to resist ignition, while others lose aesthetic qualities, such as softness, that are critical to acceptance by segments of the consumer marketplace.[17] Further, there are cases identified in the record of treated fabrics gaining SOF resistance, but losing cigarette ignition resistance.[18] Other authorities have suggested that the performance of FR treatments could be compromised by wear and tear, cleaning or by the installation of slipcovers.[19]

b. Option 2: Barriers

The limitations of FR treatment of outer fabrics led CPSC staff to provide an alternative compliance option under which seating pieces can be constructed with a qualified barrier material placed between the outer fabric and the foam cushioning. Barriers could be fiber, fabric, or any material that passes the Crib 5 ignition test outlined in the Briefing Package. This option would preserve access to fabrics that cannot be successfully FR treated, and offers a more sensible approach to dealing with limited-run fabrics and instances when consumers provide their own fabrics, commonly known as "customer's own merchandise" (COM). By utilizing barriers, furniture manufacturers and consumers who are especially concerned about chemical content would have access to flame resistant product that contains no chemical flame retardants. This could be advantageous in markets where consumer preference, labeling initiatives, or regulations discourage or bar the use of flame retardants.

Most barriers currently on the market were developed in response to California's flammability standards for public occupancy furniture (TB-133) and/or mattresses (TB-129). These materials tend to be cost-prohibitive for most residential furniture applications, and also lack important performance characteristics such as loft, resiliency and neutral color, which are critical for the residential market. Many industry participants expect that the performance and affordability of barriers will improve over time, particularly with the signaling function that a federal regulation will provide to companies that manufacturer such components. However, initial production capacity is expected to be consumed by pending California and federal mattress regulations, so the compliance window must be designed to allow ample time for the research, commercialization and production of Crib 5-compliant barriers.

---

[17] Excellent presentations on this topic were made at the June 2002 hearing by representatives of Calico Corners, Joan / Mastercraft, Kravet, and other textile producers.

[18] Janet L. Brady, *A Study of the Effects of FR Backcoating on Selected Upholstery Fabrics*, Philadelphia College of Textiles, June 16, 1999.

U.S. CPSC, *Upholstered Furniture Flammability: Analysis of Comments from the CPSC Staff's June 2002 Public Meeting*, p. 13.

[19] Ibid.

c. Option 3: Cigarette Ignition/SOF Warning Labels

The proposed inclusion of a third compliance option addressing smoldering ignition and hazard labeling recognizes that dropped cigarettes remain the most common source of ignition for upholstered furniture. Each year, there are approximately five times as many incidents of this type as there are SOF-related incidents.[20] Writing in the *NFPA Journal*, one analyst stated that "any serious program aimed at reducing U.S. fire deaths must address smoking-material fires." [21]

Under the UFAC standard (ASTM E 1353), cover fabrics are classified into two categories based on their ignition propensity when exposed to a burning cigarette. This classification in turn determines which filling materials can be used with a particular fabric. In some cases, manufacturers must incorporate barriers between filling materials and more ignition-prone fabrics. The standard also address such items as welt cords, interior fabrics, and decking materials. Agency testing revealed that compliance with UFAC provides reliable protection against cigarette ignition. CPSC found that 92% of individual cigarettes placed on currently manufactured furniture did not produce ignition of the product.[22]

The cigarette resistance and labeling provisions can also be implemented on an accelerated time frame due to manufacturers' greater familiarity with UFAC-type requirements and the ready availability of complying components in the marketplace. From a procedural standpoint, we believe that cigarette ignition provisions could be implemented by amending the pending June 15, 1994 ANPR to "identify" the risks associated with smoldering ignition, summarize the regulatory alternatives being considered, and providing interested parties with appropriate time to submit comments on the amended ANPR. [23] This approach appears necessary because action on the cigarette ignition portion of the NASFM petition was deferred pending staff review of the UFAC program, and the subsequent (October 5, 2001) withdrawal of that petition arguably terminated the cigarette ignition project.[24]

Incorporation of ASTM E 1353 into a mandatory standard should help maintain and increase current high levels of compliance with these provisions. Industry organizations have expended considerable time and resources to reach compliance levels that CPSC has estimated at around 90 percent of production.[25] However, a rising tide of imports produced in foreign plants having little involvement with U.S. furniture-related trade organizations may make those levels difficult to sustain or enhance.

---

[20] U.S. CPSC, *Regulatory Options Briefing Package*, October 28, 1997, p. 153.

[21] Alison L. Miller, *Where There's Smoking There's Fire,"* NFPA Journal, January/February 1991, p.86.

[22] U.S. CPSC, *Regulatory Options Briefing Package*, October 28, 1997, p. 6.

[23] See 15 U.S.C. 1193(g).

[24] U.S. CPSC, *Regulatory Options Briefing Package*, 2001, p. 68.

[25] U.S. CPSC, *Regulatory Options Briefing Package on Upholstered Furniture Flammability*, October 28, 1997, p. 7.

The SOF labeling provision of the proposed third option stems from a recognition that changes in furniture construction will enter the nation's stock of furniture only gradually. It is estimated that 645 million seating pieces are currently in use in the U.S.[26], and that the replacement rate is 4.7 percent annually. The replacement rate in households at the greatest risk of upholstered furniture fires, those with incomes below $20,000, is only 2.5 percent.[27]

SOF labeling can serve as a mechanism to more immediately address upholstered furniture fire risks. Conspicuous warning labels present at the point of sale potentially provide an educational function, even to consumers who do not purchase a particular item. Warning labels concerning the burning behavior of polyurethane foam were the subject of a 1999 petition by the National Association of State Fire Marshals (NASFM). The agency denied that petition, stating that "a label focusing only on foam or other fillings would probably not be very effective at reducing the fire risks to consumers." In a much earlier proceeding, however, CPSC staff did recommend warning labels as part of a proposed regulation of upholstered furniture.[28]

The experience of UFAC's labeling component suggests that appropriate labeling can indeed play a constructive role. While UFAC's construction criteria deal specifically with cigarette ignition, the warnings on the gold hangtag address the risk of ignition from both cigarettes and small open flame sources. These warnings appear to have had an impact. During the life of the UFAC program, the number of small open flame-ignited furniture fires has fallen substantially faster than small open flame fires generally.[29]

The UFAC hangtag was developed under the guidance of a noted authority on hazard labeling. It features explicit, straightforward discussion of the dangers of ignition and resulting flame spread and smoke production. The gold hangtag warns of the risk of "fires from candles, lighters, matches or other smoking materials" which can cause upholstery to "burn rapidly, with toxic gas and thick smoke." It also recommends that consumers equip their homes with properly placed smoke detectors and maintain them regularly. We believe this language would serve as a useful starting point for developing an SOF label in this area. Should the commission pursue this alternative, we would fully cooperate with the agency on the appropriate language for such a label.

Conclusion

In evaluating this proposed framework for regulation, it is important to keep in mind that a federal upholstery regulation will not operate in isolation. Many other policies are already reducing – and will continue to reduce – upholstery fire risks. These include the cigarette lighter

---

[26] Berkman (2001).

[27] Ibid.

[28] U.S. CPSC Press Release, *CPSC Staff Recommends Safety Standard for Flammable Upholstered Furniture*, November 29, 1978.

[29] Berkman (2001).

and multi-purpose lighter safety regulations already promulgated by the CPSC;[30] anticipated voluntary standards addressing the safety of candles and candle assemblies; a decline in the ignition propensity of cigarettes in response to regulations in New York State and elsewhere; cigarette smoking rates that continue to fall in response to health education, smoking restrictions and higher tobacco taxes (with the concomitant reduction in the household use of cigarettes, matches, and lighters);[31] the increasing popularity of less flammable leather upholstery; and more widespread use and maintenance of properly placed smoke detectors.[32] AFMA believes the regulatory changes discussed in this document will work in concert with these developments to meaningfully reduce the risks presented by ignition of residential upholstered furniture.

If you have any questions or concerns, please do not hesitate to contact me.

Sincerely,

Andy S. Counts
Executive Vice President

cc: The Hon. Thomas Moore
The Hon. Mary Sheila Gall
Mr. Dale R. Ray

[30] CPSC estimates that the first standard has already reduced lighter-started fatal fires by about 65 percent. See Linda E. Smith, et al., *Fires Caused by Children Playing with Lighters, An Evaluation of the CPSC Standard for Cigarette Lighters*, CPSC, September 2000.

[31] Berkman (2001) found that declining cigarette consumption were very highly correlated with declines in the incidence of upholstered furniture fires.

[32] Many jurisdictions now require smoke detectors in new and/or existing residences, and set standards for performance and battery life. See Marty Ahrens, *Batteries Not Included*, NFPA Journal, May/June 1998.

Tab B

June 27, 2003

Chairman Hal Stratton
U.S. Consumer Product Safety Commission
Washington, D.C. 20207

Dear Chairman Stratton:

Re: National Furniture Flammability Proposal

This marks the tenth year since the National Association of State Fire Marshals (NASFM) first petitioned the CPSC to issue mandatory rules intended to reduce the number of injuries and deaths attributable to furniture fires caused by cigarettes, small open flames (SOFs) and large open flames. And next year will mark the ten-year anniversary of the CPSC's ANPR on this very important issue. While all of the stakeholders that would be affected by a national standard are universally supportive of the effort being made to ensure that consumers are able to benefit from furniture with improved flame retardancy characteristics, the fundamental obstacle to the development of a consensus on exactly **how** to accomplish that objective has been the inability of those stakeholders to agree on a standard that reflects appropriate balance. More specifically, to achieve the required balance, the final standard must:

The Objectives

1. Be effective in reducing the frequency and severity of upholstered furniture fires;
2. Employ technologies that are currently available to every stakeholder in the furniture supply chain;
3. Allocate the burden of compliance, in an equitable way, among all of the stakeholders in the chain;
4. Involve implementation and ongoing administrative costs that are economically feasible for the furniture industry and its suppliers to absorb – without further weakening the industry or the U.S. economy;
5. Have minimal impact on the price the consumer would ultimately pay for compliant furniture;
6. Ensure that U.S. consumers will continue to be able to select from among a broad range of fabric and furniture styles;
7. Meet consumer expectations with respect to both the look and the feel of upholstered furniture products;
8. Avoid the kind of unintended consequences that can sometimes follow initiatives like these, such as the potential for unforeseen risks to human health or the environment resulting from the manufacture or use of compliant furniture, e.g., health risks from exposure to the flame retardant (FR) chemicals involved; and.
9. Complement the results currently being achieved through the voluntary UFAC program.
10. Provide for a level playing field among domestic and foreign fabric and upholstered furniture manufacturers.

The upholstery fabric manufacturers who have signed this letter (the "Fabric Coalition"), representing 50% to 60% of total domestic upholstery fabric industry revenues, believe that the following approach to the development of a national standard addressing furniture flammability meets each of the objectives set forth above (collectively, the "Objectives.") And after many months of research and work, we are very excited by the simplicity, flexibility, and most importantly, the life-saving effectiveness of our approach.

The Fabric Coalition's Proposal

To achieve the Objectives, the Fabric Coalition strongly believes that the solution must incorporate both FR properties in the fabric and IR properties in the foam and filling materials – because this will make it far less likely that furniture will ignite in the first instance, or in those cases where ignition does occur, it will burn more slowly, affording those in the area more egress time. This is because, as the NASFM has long recognized, it is the foam and filling materials that present the greatest risk when it comes to furniture fire-related injuries and deaths and thus, for a national standard to meet the Objectives, it must be directed at reducing the flammability of both the filling materials and the cover fabrics used in the manufacture of upholstered furniture. In addition, it is important that any new national standard in this area call for components to be tested independently, i.e., on a component-by-component basis, so that the suppliers of these components can certify their compliance with the standard to their customers in the furniture manufacturing industry. Further, the technology required to enable those suppliers to meet the standard's testing protocols must already exist. And finally, to ensure uniform adherence to this standard by both U.S. and non-U.S. based manufacturers, all importers of: fabric, furniture and cut and sewn upholstery fabric kits/furniture parts would be required to demonstrate compliance with this standard by arranging for the initial certification and ongoing testing of their products to be done by an accredited US testing facility (see Appendix A for details).. Accordingly, the Fabric Coalition is proposing that the CPSC move forward with a standard incorporating the following five key elements.

1. **Foam** – All furniture would be assembled using foam and filling materials in full compliance with the requirements set forth in California's proposed (2002) TB-117 standard (i.e., SFR PUF – standard fire retardant polyurethane foam) and the foam and filling materials would have to be certified by either an accredited third party U.S.-based testing facility or an accredited testing facility operated by a domestic foam manufacturer.
2. **Fabric** – FR cover fabrics would be required to meet either of the following two criteria, after being subjected to a five second SOF, by either an accredited third party U.S.-based testing facility or an accredited testing facility operated by a domestic fabric manufacturer. (See Appendix A for details)
   2.1. Fails to ignite, or self-extinguishes,
   2.2. Average flame spread is slower than 30.0 seconds (using the current 5.0 inch TB-117 fabric test rig)
3. **Barrier** – An FR barrier, passing a crib-5 flame source testing protocol and inserted between a non-FR cover fabric and the IR foam/filling materials, could be substituted for cover fabrics meeting the FR requirement set forth in 2 above, as long as the foam and filling requirements were still met.
4. **Imported Furniture** – Furniture imported into the U.S. must comply with this standard. Therefore, importers would be required to maintain appropriate records, including documentation demonstrating that each furniture SKU (i.e., each unique furniture and

fabric cover combination) has been initially certified by an accredited U.S. testing facility and that appropriate control procedures have been put in place to ensure ongoing compliance with the standard. (See Appendix A for further details.)

5. **Furniture Treatments** – Consumers must be warned that any subsequent chemical treatments, such as Retail Applied Fabric Treatments (RAFT), professional cleaning services and the like may diminish the FR properties of their furniture piece.

While a number of different proposals have been advanced by the various groups involved in these deliberations over the past ten years, the Fabric Coalition believes the proposal it is advancing to be superior to the other two standards currently under consideration, i.e., the CPSC and AFMA proposals.

The CPSC Proposal and the UK Experience

The CPSC – SOF standard, because it is based on the United Kingdom's BS 5852 standard, would not meet the Objectives for the following reasons:

1. It presumes the BS 5852 standard has been working well in the UK, when, in fact, the reality is that random compliance checks reflect only 50% pass rates.
2. The BS 5852 standard's testing protocol involves the evaluation of these FR fabrics atop non-IR foam, while the UK regulation itself demands that IR foam be used in all upholstered furniture.
3. The testing protocol also calls for an unrealistically long flame exposure time of twenty seconds. Twenty seconds is well beyond real world accidental SOF exposure times. At the other extreme, those intent on burning a piece of upholstered furniture would clearly be willing to expose an SOF for "as long as it takes" to gain ignition – and would certainly not stop after only twenty seconds.
4. Heavy amounts of FR chemicals are necessary to enable some fabrics to eventually pass, some of the time – but their pass rates are not statistically predictable.
5. Fabric selection would be necessarily limited and fabric costs would increase significantly, due to the intense engineering effort necessary to get each of the estimated 500,000 fabric SKUs currently sold in the U.S. market to "pass" – on a color-by-color basis.
6. The cost of furniture at the consumer level would increase dramatically due to the significant investment initially required to prepare the industry for compliance (see Appendix H) and the annual cost of compliance thereafter (see Appendix G).
7. Implementation and compliance with this proposed standard would cost more than the annual profits of the five companies making up the Fabric Coalition, taken as a whole, by a factor of 20 - representing costs that are not sustainable, further weakening the U.S. economy and the nation's textile industry, and literally costing thousands of American textile workers their jobs. (See Appendices G and H.)

The British standard attempts to provide consumers with two-part protection. An FR fabric barrier provides the first line of defense against SOF ignitions. When the FR fabric barrier is breached, the IR foam requirement at the very minimum, affords the consumer increased egress times. Although implementation of the BS 5852 regulation has had a positive impact on the incidence of upholstered furniture fires, manufacturers have not been able to be fully compliant with the intentions of the standard. Specifically, the requirements in the regulation applicable to cover fabrics are not being met on a consistent basis. The reason for this is that,

to this day, the chemical and processing technologies needed to treat effectively the complete universe of upholstery fabric types being sold into the U.K. market do not exist. While all of the fabrics being sold into that market are being aggressively treated with FR chemicals in an attempt to comply with the BS 5852 regulation, the actual "pass rates" of these fabrics are well below 100% - and in fact, actual, real-world pass rates are believed to be no better than 50%. Partially compensating for this shortcoming, however, is the fact that all of the furniture being sold into the U.K. market is being consistently assembled with compliant IR foam. As a result, a detailed study of the U.K. experience in this area would likely reveal that furniture being sold in the UK would have effective compliance levels falling somewhere between the current TB –117 standard and the BS 5852 standard, as intended. Net, net, the UK has a stringent standard that is loosely enforced, as opposed to a reasonable standard that is strictly enforced. At the end of the day, the system the UK has adopted, which works well in their social and political environment, has no doubt resulted in a reduction in the rate of deaths and injuries arising out of upholstered furniture-related fires in Britain.

The AFMA Proposal and the Importance of IR Foam and Filling Materials:

The AFMA's current proposal fails to meet the Objectives because it fails to take into consideration the importance of the foam and filling materials when it comes to fire safety. As the NASFM has stated for years, when it comes to reducing injuries and deaths from fires involving upholstered furniture, the most important thing is to keep the foam and filling materials from igniting, because in any piece of upholstered furniture it is these materials that represent the "most significant potential fuel source."[1] As it is inevitable that these filling materials will ultimately ignite, the NASFM has recommended that they at least exhibit some flame retardancy characteristics, so that potential victims have a greater chance of evacuating the area. For some time, the NASFM has been recommending that the CPSC do nothing more than adopt California's current TB –117 upholstered furniture standard. Studies conducted by both the NASFM and the CPSC clearly demonstrate that the rate of fires involving upholstered furniture is significantly lower in California than in other U.S. states.[2] What's more, the severity of those fires is significantly less. The California experience, if it were nationalized, could be expected to reduce the number of upholstered furniture fires in the U.S. by as much as 4,000 fires per year – and to reduce the number of fatalities arising out of those fires by as many as 500. This compares very favorably to the fewer than 100 lives the current CPSC proposal could be expected to save, as it is only addresses upholstered furniture fires arising out of small open flames. In contrast, the Coalition's proposal addresses both cigarette ignitions (which represent 80% of the opportunity for saving lives nationally) **and** the significantly smaller percentage of furniture fires caused by small open flames.

The reality is that the success of the California experience is purely a function of the flame retardant characteristics of the foam and filling materials involved. Or, put somewhat differently, it is important to understand that, as a factual matter, 95% of the fabric sold in the U.S. today is already in compliance with California's TB 117 standard. Accordingly, the only difference between "the California experience" and the experiences in this area of the other 49 U.S. states is in the FR nature of the foam and the filling materials mandated by California law. Everything else about the furniture sold in California is exactly the same as it is in every other state.

California has had its upholstered furniture standard in place for over 25 years. Undoubtedly, furniture manufacturers determined to sell into the California market initially tried to manage

two sets of inventory – one set made from TB-117 compliant filling materials for California and one set for "everywhere else." A generation has since passed, and several of the nation's larger furniture manufacturers now offer California-compliant furniture nationwide. This because, after 25 years, the technology has finally advanced to the point where the cost differential between the two foams is less than the incremental cost of wrestling with the supply chain issues raised by having to source, purchase, inventory, schedule, produce and ship those two different foams. It is time for the rest of the furniture industry to acknowledge that.

The Benefits of the Fabric Coalition's Proposal

The benefits of the Fabric Coalition's proposal include:

1. A national standard that is five fold superior to California's current TB-117 (see Appendix B for details) and that, when implemented, can be expected to replicate the California experience on a national level over time - saving more than 500 lives per year.[2]
2. A national standard that takes advantage of currently available technology and is minimally disruptive to furniture and textile manufacturers.
3. A national standard that shares the burden of compliance equitably among all of the stakeholders in the furniture supply chain.
4. A national standard that will have the least financial impact on the consumer, compared to the other options currently under consideration. (See Appendix C for details.)
5. A national standard that is both economically responsible and economically feasible to implement and administer – with minimal risk of further job losses and bankruptcies within the industry.
6. A national standard that will continue to allow the upholstered furniture industry the opportunity to offer consumers a wide range of fabric choices and furniture that has the look and feel they have come to expect. (See Appendix D for diverse product testing details – and, as noted in Appendix D, additional testing continues)
7. A national standard that, in comparison to the other options currently under consideration, reduces seven to eight fold consumers' exposures to FR chemicals. (See Appendix E.)
8. A national standard that produces results which are the equivalent of current UFAC performance levels. (See Appendix F – and, as noted in Appendix F, additional testing continues.)

In short, the proposal being advanced in this letter satisfies each and every Objective and it is, therefore, strongly endorsed by each of the companies indicated below. The Coalition believes that once the standard is agreed upon that it will take the industry approximately 36 months to prepare for its implementation. Accordingly, the Coalition would recommend that the standard be adopted with an effective date 36 months following issuance of the final standard. We would welcome the chance to work with you and your technical staff to bring this rulemaking process to a close, so that the benefits of the work that has been done in this area by each of the stakeholders involved can be realized by the consumers all of us are committed to serving and protecting.

Very truly yours,

_____/s/_____
Larry A. Liebenow
President and CEO
Quaker Fabric Corporation

_____/s/_____
Elkin McCallum
President and CEO
Joan Fabrics Corporation/
Mastercraft Fabrics LLC

_____/s/_____
Roger L. Berkley
President and CEO
Weave Corporation

_____/s/_____
Robert M. Blum
President and CEO
Craftex Mills, Inc. of
Pennsylvania

_____/s/_____
Robert G. Culp, III
President and CEO
Culp, Inc.

_____/s/_____
Henry Truslow, Jr.
President and CEO
Sunbury Textile Mills, Inc.

cc: James Fuller – CPSC
Patty Adair – ATMI
Andy Counts – AFMA
Peter Mayberry – INDA – Association of the Non-woven Fabric Industry
Joel Mazelis – API, Alliance for the Polyurethanes Industry
Lou Peters – PFA, Polyurethane Foam Association
Bob Barker – American Fiber Manufacturers Association
Joe Ziolkowski - UFAC

1. Daily Report for Executives, No. 119, "Furniture Firms Back Flammability Standard, But Demand Requirements Must Be Practical," pp. A-10.
2. CPSC, "California Upholstery Furniture Fires vs. the rest of the US," Bea Harwood, retired statistician, U.S. CPSC

Mydocuments: cpsccoalitionFINALclg

Appendix A.
Fabric Testing Protocol
Product Certification
Product Compliance
CPSC–SOFUPH-2003

I. New Product Certification - Imported and Domestically Produced

A. Fabric – Domestic and Imported

1. All products must be initially certified.
2. The results of all initial certification tests must be certified by either an accredited third party U.S.-based testing facility or an accredited testing facility operated by a domestic fabric manufacturer. Examples of accreditation bodies include: American Association of Laboratory Accreditation (A2LA), American National Standards Institute (ANSI), American National Standards Institute/Registrar Accreditation Board (ANSI/RAB), National Institute of Standards and Technologies (NIST), National Voluntary Laboratory Accreditation Program (NVLAP)
3. Condition samples for 24 hours, under the following ambient conditions: 70 +/- 10 degrees Fahrenheit, 50 +/- 10% R.H.
4. Test 10 total specimens, 5 each in both the warp and filling direction, face-up
5. If 8 of the 10 specimens ***self-extinguish*** (SE) or ***do not ignite*** (DNI) – pattern can be classified as a CPSC Class I
6. If < 8 specimens SE or DNI then calculate the average flame spread time. If average flame spread time is > 30.0 seconds, then pattern is classified as a CPSC Class I
7. If neither 5. nor 6. criteria are met, fabric is classified as a CPSC Class II, and all associated furniture must be assembled with a certified Crib 5 barrier.
8. Invoices, shipping manifests and related documentation must reflect the CPSC classification status of each SKU
9. Test records must be maintained within the United States by the manufacturer or the fabric importer (1630.32 – CPSC Carpets)
10. Records shall be kept for a minimum of 3 years beyond the date of production (1632.31 – Mattresses)
11. Failed and/or untreated fabrics must be upholstered in combination with a Crib 5 compliant barrier.

B. Furniture Parts (Cut/Sewn Upholstery Fabric Kits) - Imported

1. All product must be initially certified (fabric and fabric/kit combinations)
2. The results of all initial certification tests must be certified by either an accredited third party U.S.-based testing facility or an accredited

testing facility operated by a domestic manufacturer. Examples of accreditation bodies include: American Association of Laboratory Accreditation (A2LA), American National Standards Institute (ANSI), American National Standards Institute/Registrar Accreditation Board (ANSI/RAB), National Institute of Standards and Technologies (NIST), National Voluntary Laboratory Accreditation Program (NVLAP)

3. Exporters to provide the necessary number of additional "test kits" within each shipment for testing.
4. Condition samples for 24 hours under the following ambient conditions: 70 +/- 10 degrees Fahrenheit, 55 +/- 10% R.H.
5. Test 10 total specimens, 5 each in both the warp and filling direction, face-up
6. If 8 of the 10 specimens ***self-extinguish*** (SE) or ***do not ignite*** (DNI) – pattern can be classified as a CPSC Class I.
7. If < 8 specimens SE or DNI then calculate the average flame spread time. If average flame spread time is > 30.0 seconds, then pattern is classified as a CPSC Class I
8. If neither 6. nor 7. criteria are met, fabric is classified as a CPSC Class II., and all associated furniture must be assembled with a certified Crib 5 barrier.
9. Invoices, shipping manifests and related documentation must reflect the CPSC classification status of each SKU
10. Test records must be maintained within the United States by the importer (1630.32 – CPSC Carpets)
11. Records shall be kept for a minimum of 3 years beyond the date of production (1632.31 – Mattresses)
12. Appropriate quality systems must be installed to prevent Class II products from inadvertently being shipped with Class I designations. (See ISO 9001:2000)

C. Assembled Furniture – Imported

1. All furniture and furniture/fabric combinations must be initially tested and certified.
2. The results of all initial certification tests must be certified by either an accredited third party U.S.-based testing facility or an accredited testing facility operated by a domestic manufacturer. Examples of accreditation bodies include: American Association of Laboratory Accreditation (A2LA), American National Standards Institute (ANSI), American National Standards Institute/Registrar Accreditation Board (ANSI/RAB), National Institute of Standards and Technologies (NIST), National Voluntary Laboratory Accreditation Program (NVLAP)
3. For testing purposes, extra "Test Cushions," representing each furniture and fabric style combination must be included within each shipment.
4. Condition samples for 24 hours, under the following ambient conditions: 70 +/- 10 degrees Fahrenheit, 50 +/- 10% R.H.

5. Test 10 total fabric specimens, 5 each in both the warp and filling direction, face-up
6. If 8 of the 10 fabric specimens ***self-extinguish*** (SE) or ***do not ignite*** (DNI) – pattern can be classified as a CPSC Class I
7. If < 8 fabric specimens SE or DNI then calculate the average flame spread time. If average flame spread time is > 30.0 seconds, then pattern is classified as a CPSC Class I
8. If neither 6. nor 7. criteria are met, fabric is classified as a CPSC Class II, and furniture must be assembled with a Crib 5 barrier.
9. Invoices, shipping manifests and related documentation must reflect the CPSC classification status of each SKU
10. Test records must be maintained within the United States by the importer (1630.32 – CPSC Carpets)
11. Records must be kept for a minimum of 3 years beyond the date of production (1632.31 – Mattresses)
12. Failed and/or untreated fabrics must have been upholstered in combination with a Crib 5 compliant barrier.
13. See TB-117 (2002) for testing protocol for foam and filling materials.

II. Compliance Testing

A. Fabric – Domestic and Imported

1. The results of all compliance testing must be certified by either an accredited third party U.S.-based testing facility or an accredited testing facility operated by a domestic manufacturer. Examples of accreditation bodies include: American Association of Laboratory Accreditation (A2LA), American National Standards Institute (ANSI), American National Standards Institute/Registrar Accreditation Board (ANSI/RAB), National Institute of Standards and Technologies (NIST), National Voluntary Laboratory Accreditation Program (NVLAP)
2. Condition samples for 24 hours, under the following ambient conditions: 70 +/- 10 degrees Fahrenheit, 50 +/- 10% R.H.
3. Test 4 total specimens/test sample, 2 specimens each in warp and filling direction, face-up
4. IF 3 of the 4 specimens *self-extinguish* (SE) or *do not ignite* (DNI) – classify as CPSC Class I.
5. If < 3 specimens SE or DNI then calculate the average flame spread time. If average flame spread time is > 30.0 seconds, sample is classified as a CPSC Class I.
6. If neither 4. nor 5. above criteria are met, then fabric is designated as Class II, and associated furniture must be manufactured with a Crib 5 barrier.
7. Reasonable and representative tests must be conducted to ensure a state of statistical process control. As FR properties will be controlled through the application of an FR latex

backing system, one approach would be to develop a sample plan based on sampling random finishing range volumes, where 1.0 test (4 specimens of one fabric sku) could be taken per (25,000 yards tightened inspection, 50,000 yards normal inspection or 100,000 yards reduced inspection) of production (1632.31 carpets and rugs). This sample plan assumes homogeneity of each finishing range's FR production volume population.

8. An alternative sampling plan would be to randomly sample from weave shop orders (as opposed to finishing runs). Here ANSI/ASQC Z1.4-1993 provides guidance. Assuming a weekly unique shop order level, ranging between 1,200 and 3,200 60-yard pieces, the samples per week needing to be tested would be (200 tightened inspection, 125 normal inspection, and 20 reduced inspection). For an AQL of 2.5%, the respective Accept/Reject levels would be 10/11 – tightened, 5/6 – normal, and ¼ - reduced.
9. An appropriate sampling plan for importers of fabric (rolls, bolts, etc), might include the following, based on a typical container size of 250 to 500 pieces (nominal 60 yards/piece): (8 reduced, 50 normal, 80 tightened), with 0/2, 3/4, and 3/4 respective Accept/Reject levels, at an AQL level of 2.5%.
10. Invoices, shipping manifests, and related documentation must reflect the CPSC Classification status of each SKU.
11. Test records must be maintained within the United States by the manufacturer or importer (1630.32 – CPSC Carpets).
12. Records shall be kept for a minimum of 3 years beyond the date of production (1632.31 – Mattresses)
13. Quality systems must be installed, to prevent Class II products from inadvertently being shipped with Class I designations. (See ISO 9001:2000)

B. Furniture Parts (Cut/Sewn Upholstery Fabric Kits) - Imported

1. The results of all compliance testing must be certified by either an accredited third party U.S.-based testing facility or an accredited testing facility operated by a domestic manufacturer. Examples of accreditation bodies include: American Association of Laboratory Accreditation (A2LA), American National Standards Institute (ANSI), American National Standards Institute/Registrar Accreditation Board (ANSI/RAB), National Institute of Standards and Technologies (NIST), National Voluntary Laboratory Accreditation Program (NVLAP).
2. Importers to provide a sufficient number of "extra test kits" to support a statistically appropriate level of sampling.
3. Condition samples for 24 hours, under the following ambient conditions: 70 +/- 10 degrees Fahrenheit, 50 +/- 10% R.H.
4. Test 4 total fabric specimens/test sample, 2 specimens each in warp and filling direction, face-up.
5. IF 3 of the 4 specimens *self-extinguish* (SE) or *do not ignite* (DNI) – classify as CPSC Class I.
6. If < 3 specimens SE or DNI then calculate the average flame spread time. If average flame spread time is > 30.0 seconds, sample is classified as a CPSC Class I.
7. If neither 5. nor 6. criteria are met, furniture manufactured from kits must be assembled with a Crib 5 barrier.
8. A sampling plan for importers of fabric pieces would necessarily need to assume homogeneity of the shipment and, therefore, a lot sampling plan (ANSI/ASQC Z1.4-1993) would be required. An appropriate sampling plan for importers of fabric (rolls, bolts, etc), might include the following, based on a typical container size of 500 to 1200 kits (cut/sewn furniture parts): (13 reduced, 80 normal, 125 tightened), with 1/3, 5/6, and 5/6 respective Accept/Reject levels, at an AQL level of **2.5%.**
9. U.S. accredited testing labs must conduct all tests, and all test records must be maintained within the U.S.
10. Quality systems must be installed, to prevent Class II products from inadvertently being shipped with Class I designations. (See ISO 9001:2000).

C. Furniture Compliance Testing - Imported

1. The results of all compliance testing must be certified by either an accredited third party U.S.-based testing facility or an accredited testing facility operated by a domestic manufacturer. Examples of accreditation bodies include: American Association of Laboratory Accreditation (A2LA), American National Standards Institute (ANSI), American National Standards Institute/Registrar Accreditation Board (ANSI/RAB), National Institute of Standards and Technologies (NIST), National Voluntary Laboratory Accreditation Program (NVLAP)

2. Importers to provide a sufficient number of "extra test cushions" to support a statistically appropriate level of sampling. Test cushions should represent each furniture and fabric type included within any given shipment.
3. Assuming an average shipment size of 26 to 50 pieces of furniture, and using ANSI/ASQC Z1.4-1993, the following would represent a typical sample plan

Inspection Level	**Sample Size**	
Accept/Reject		
I. – Reduced	2	0,1
II. Normal	8	1,2
III. Tightened	13	1,2

4. Condition samples for 24 hours, under the following ambient conditions: 70 +/- 10 degrees Fahrenheit, 50 +/- 10% R.H
5. Test 4 total fabric specimens, 2 each in both the warp and filling direction, face-up
6. If 3 of the 4 fabric specimens ***self-extinguish*** (SE) or ***do not ignite*** (DNI), pattern can be classified as a CPSC Class I
7. If < 3 fabric specimens SE or DNI then calculate the average flame spread time. If average flame spread time is > 30.0 seconds, then fabric is classified as a CPSC Class I
8. If neither 6. nor 7. criteria are met, fabric is classified as a CPSC Class II, and furniture must be assembled with a Crib 5 barrier.
9. Invoices, shipping manifests and related documentation must reflect the CPSC classification status of each SKU
10. Test records must be maintained within the United States by the importer (1630.32 – CPSC Carpets)
11. Records must be kept for a minimum of 3 years beyond the date of production (1632.31 – Mattresses)
12. See TB-117 (2002) for testing protocol for foam and filling materials.
13. Quality systems must be installed, to prevent non-conforming furniture from entering the stream of commerce within the U.S. (See ISO 9001:2000.)

III. CPSC Audits for Compliance

a) The CPSC shall establish an audit system for purposes of monitoring compliance with the standard.

Appendix B.
TB-117 vs. Proposed Standard Test Results Comparison

Standard

Sample #	Latex	DNI	SE	DNI + SE	Pass/Fail
1	2	0.00%	0.00%	0.00%	Fail
2	2	0.00%	0.00%	0.00%	Fail
3	2	0.00%	0.00%	0.00%	Fail
4	1	82.50%	0.00%	82.50%	Pass
5	4	0.00%	0.00%	0.00%	Fail
6	3	0.00%	0.00%	0.00%	Fail
7	2	0.00%	0.00%	0.00%	Fail
8	2	0.00%	0.00%	0.00%	Pass
9	2	0.00%	0.00%	0.00%	Fail
10	1	37.50%	62.50%	100.00%	Pass
11	1	0.00%	0.00%	0.00%	Pass
12	2	0.00%	0.00%	0.00%	Pass
13	2	0.00%	0.00%	0.00%	Fail
14	3	0.00%	0.00%	0.00%	Fail
15	2	0.00%	0.00%	0.00%	Fail
16	2	0.00%	0.00%	0.00%	Fail
17	4	0.00%	0.00%	0.00%	Fail
18	1	0.00%	0.00%	0.00%	Pass
19	1	0.00%	0.00%	0.00%	Fail
20	3	0.00%	0.00%	0.00%	Fail
21	4	0.00%	12.50%	12.50%	Fail
22	3	0.00%	0.00%	0.00%	Fail
23	1	0.00%	0.00%	0.00%	Fail
24	4	0.00%	0.00%	0.00%	Fail

Average	2.3	5.0%	3.1%	8.1%
% Pass	21%			

FR Backed

Sample #	Latex	DNI	SE	DNI + SE	Seconds	Pass/Fail
1	2	0.00%	12.50%	12.50%	37.0	Pass
2	2	0.00%	87.50%	87.50%	n/a	Pass
3	3	0.00%	50.00%	50.00%	49.0	Pass
4	1	62.50%	0.00%	62.50%	111.0	Pass
5	4	25.00%	62.50%	87.50%	n/a	Pass
6	3	0.00%	62.50%	62.50%	51.0	Pass
7	2	0.00%	50.00%	50.00%	40.0	Pass
8	2	0.00%	75.00%	75.00%	39.0	Pass
9	3	0.00%	0.00%	0.00%	55.4	Pass
10	1	62.50%	37.50%	100.00%	n/a	Pass
11	1	50.00%	0.00%	50.00%	58.0	Pass
12	2	0.00%	25.00%	25.00%	35.0	Pass
13	2	0.00%	62.50%	62.50%	32.0	Pass
14	3	0.00%	75.00%	75.00%	41.0	Pass
15	2	0.00%	50.00%	50.00%	43.0	Pass
16	2	0.00%	0.00%	0.00%	30.0	Pass
17	4	0.00%	75.00%	75.00%	43.0	Pass
18	1	50.00%	0.00%	50.00%	88.0	Pass
19	2	0.00%	0.00%	0.00%	39.8	Pass
20	3	0.00%	62.50%	62.50%	41.0	Pass
21	4	62.50%	37.50%	100.00%	n/a	Pass
22	3	0.00%	50.00%	50.00%	41.0	Pass
23	1	0.00%	0.00%	0.00%	52.0	Pass
24	4	0.00%	100.00%	100.00%	n/a	Pass

Average	2.4	13.0%	40.6%	53.6%	48.7
% Pass	100%				

% Pass Rate Improvement:	480%
% Improvement in DNI and SE rates	500%

Appendix C.
Consumer Cost Comparison

1. Cost of a sofa, at the consumer level (sorted by cost)

Standard Comparison	Foam Cost	Fabric Cost	Total Cost
AFMA – Cigarette	$0.00	$0.00	**$0.00**
California (current TB-117)	$20.00	$0.00	**$20.00**
Fabric Coalition – SOF	$20.00	$15.00 ****	**$35.00**
CPSC/AFMA – SOF	$0.00	$120.00**	**$120.00**
CPSC/AFMA – Barrier	$0.00	$120.00 ***	**$120.00**
BS 5852 - Fabric	$20.00	$120.00*	**$140.00**
BS 5852 – Barrier	$20.00	$120.00	**$140.00**
Fabric Coalition – Barrier	$20.00	$120.00	**$140.00**

* Fabric price range ($1.50-$2.50 per yard) X (15 yards/sofa) X (4 fold normal mark-up, mill to retail floor)

** Fabric price range ($1.50-$2.50 per yard) X (15 yards/sofa) X (4 fold normal mark-up, mill to retail floor)

*** Barrier price range ($3.00-$5.00 per yard) X (7.5 yards/sofa – over foam/filling areas only) X (4 fold normal mark-up, mill to retail floor)

**** Fabric price range ($0.15-$0.35 per yard) X (15 yards/sofa) X (4 fold normal mark-up, mill to retail floor)

Appendix D.
Product Variety*

Sample Number yd.)	Fiber Types	Fabric Type	Weight (oz./ln.	
1	Acrylic, PET, Olefin	Plushed	13.2	
2	Olefin, PET	Plushed	11.0	
3	Acrylic, PET, Olefin	Plushed	13.2	
4	Rayon, PET	Washed	22.0	
5	Olefin, PET, Acrylic	Backed only	11.2	
6	Acrylic, Olefin, PET	Plushed	15.1	
7	PET, Olefin	Plushed	13.6	
8	PET, Olefin	Plushed	19.9	
9	Acrylic, PET, Olefin, Cot	Plushed		15.2
10	Rayon, PET	Washed	45.5	
11	Rayon, PET, Acrylic	Washed	21.3	
12	Acrylic, PET	Napped	14.2	
13	PET, Olefin	Plushed	11.3	
14	PET, Acrylic, Olefin	Plushed	11.5	
15	Olefin, Acrylic, PET	Plushed	11.4	
16	PET, Acrylic, Olefin	Plushed	10.4	
17	PET, Acrylic, Olefin	Plushed	15.4	
18	Rayon, PET, Cotton	Washed	20.7	
19	PET, Acrylic	Plushed	18.5	
20	PET, Acrylic, Olefin	Plushed	11.5	
21	Olefin, PET	Backed only	13.4	
22	Acrylic, PET	Plushed	14.5	
23	Acrylic, Cotton, PET	Napped	15.3	
24	Acrylic, PET	Backed only	13.6	

*** Additional testing continues to ensure that all fiber types and fiber combinations are able to meet the fabric FR requirement. Other fiber types under review include:**

Cotton and cotton blends
Rayon and rayon/cotton blends
Wool and wool blends
Silk and silk blends
Others that may be requested by the Fabric Coalition

Appendix E.
Chemical Exposure

I. Comparison of relative brominated FR levels

A. CPSC/AFMA/BS5852

A.1 FR Latex (500 relative parts of brominated FR)
A.2 Latex amount (6.0 ounces/linear yard - minimum)
A.3 (500 parts)X (6 ounces) = 3000 equivalent parts

B. Fabric Coalition – SOF

B.1 FR Latex (200 relative parts of brominated FR)
B.2 Latex amount (2.0 ounces/linear yard - average)
B.3 (200)X (2 ounces) = 400 equivalent parts

C. Brominated FR Exposure Reduction

C.1 (3000 from A.3))/(400 from B.3) = 7.5

Appendix F.
UFAC Test Comparison *

Sample Number	DATE TESTED	Test Conditions	UFAC Classification
7	1/16/03	Standard fabric, standard foam	I
20	1/21/00	Standard fabric, standard foam	I
22	8/14/99	Standard fabric, standard foam	I
23	11/1/00	Standard fabric, standard foam	I
24	1/17/92	Standard fabric, standard foam	I
7a	6/9/03	FR Fabric, IR Foam	I
20a	6/9/03	FR Fabric, IR Foam	I
22a	6/9/03	FR Fabric, IR Foam	I
23a	6/9/03	FR Fabric, IR Foam	I
24a	6/9/03	FR Fabric, IR Foam	I

*** Additional testing continues to ensure that all fiber types and fiber combinations are able to meet the fabric FR requirement. Other fiber types under review include:**

Cotton and cotton blends
Rayon and rayon/cotton blends
Wool and wool blends
Silk and silk blends
Others that may be requested by the Fabric Coalition

Appendix G.
CPSC and AFMA's CPSC Cost of Compliance - SOF

Open Flame Standard - Cost Of Compliance*
US Upholstery Fabric Manufacturers

I. First Time Processing Success Rates

	Failure Rate	Success Rate	Specimen # 1	Specimen # 12	Specimen # 60
Actual BS 5852 Experience	20.000%	80.00%	80.00%	6.87%	**0.0002%**
3 sigma	0.300%	99.70%	99.70%	96.46%	**83.50%**

II. Production Compliance Testing

A. Cost of Fabric

1	Weekly Production (yards)	7,500,000
2	Weekly Samples (1/1000 yards)	7,500
3	Weekly Specimens (12 yards/sample)	90,000
4	Re-testing (100% - 6.87%)	83,817
5	Yards required for testing (c +d)	167,634
6	Yardage required for sample retention	90,000
7	Total Yards required per week	257,634
8	Average cost per yard of fabric ($5.00 + $2.00 FR)	$7.00
9	**Cost per week**	**$1,803,438**

B. Cost of Foam

1	Cost of foam per specimen	$3.02
2	Specimens per week	167,634
3	**Cost per week for foam**	**$506,255**

C. Cost of Labor

1	Specimens/hour/technician	1
2	Labor cost/hour	$17.00
3	Cost/specimen	$17.00
4	Specimens per week	167634
5	**Cost per week labor**	**$2,849,778**

D. Total Cost of Compliance

1	**Weekly**	**$5,159,471**
2	**Annual**	**$268,292,475**

* **Assumes testing and compliance protocol described in CPSC Draft SOF Standard**

Appendix H.
CPSC, and AFMA's CPSC Cost of Compliance - SOF

Open Flame Standard - Cost Of Implementation *
US Upholstery Fabric Manufacturers

I Cost of Implementation

A Cost of Processing Fabric

1	Current Finishing Processes - estimated	45
2	Loss in capacity (reduced speed for higher add-on - 6.0 oz. vs. 2.0 oz. average)	100%
3	Increased number of finishing processes (backcoating and post-finishing)	45
4	Rework levels based on sample plan	93%
5	Total increase in finishing processes	142
6	Cost per Finish range - backcoating and post-finishing	$3,000,000
7	Total cost of increased finishing capacity	$425,322,581
8	Building costs to house new capacity (15,000 sq.ft/finishing range, @ 50/foot)	$106,330,645
9	Testing facilities (1250 testing positions)	$25,000,000
10	Environmental compliance (exhaust scrubbers 187 dryers - @ $250,000)	$46,750,000
11	Cost of sample storage building (60,000 cubic feet/week - 6 years)	$54,000,000
12	Cost of land to build new facilities (8, 9, 11)	$10,000,000
12	**Total Implementation Capital**	**$667,403,226**

B Cost of Development

1	Number of SKU's to be re-engineered	500,000
2	Success rate (based on BS 5852 experience)	33%
3	Number of specimens needed (4 per sku)	6060606
4	Cost per test specimen	$31.16
5	**Total Development Costs**	**$188,848,485**

C Total Implementation Cost **$856,251,711**

* Assumes testing and compliance protocol described in CPSC Draft SOF Standard