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The American Home Furnishings Alliance (AHFA) represents manufacturers and importers of residential furnishings that include upholstered furniture, wood furniture, home office, and decorative accessories. AHFA companies participate in a highly competitive global market characterized by ever-changing style preferences, margin pressures, and the tendency of consumers to postpone big-ticket purchases if their perceptions of value and function are not satisfied.

The AHFA respectfully submits these comments regarding the effectiveness of upholstered furniture flammability standards and flame retardant chemicals.

Background Information

There is currently one mandatory flammability standard for residential upholstered furniture in the United States. That standard, California Technical Bulletin 117 (TB-117), is required for all upholstered furniture sold in the State of California.

Before we begin our discussion on the effectiveness of upholstered furniture flammability standards, we want to share with you several hard-learned facts based on 40+ years of experience with this topic. First, fire testing is not a precise science. Today's modern fire testing methodology suffers from three important weaknesses. First, none of the present test methods have been reconciled with what actually happens in real-world fire scenarios, either qualitatively or quantitatively. Second the precision of today's fire tests is reprehensibly poor with testing errors commonly exceeding 50% to 100%. Finally, computer models are only as good as the data driving them. As noted above, the precision and bias of the data is deficient so standard fire tests often lack the repeatability that agencies expect with mandatory standards. This makes a flammability standard extremely difficult to enforce.

Second, definition of the objective is 50% of the solution. There is no such thing as fire-proof furniture and it simply is not a realistic or practical goal. The CPSC did not conceive this at the beginning and therefore the objective of its rulemaking was not clearly defined. Initially it appeared that the agency wanted to prevent any ignition of the cover fabrics. This proved to be unattainable because everything will burn and each fire is unique. Later, the agency moved away from "no ignition" towards "slowing" the progression of the fires and thereby allow more egress time. The later is an achievable goal and one which we continue to believe can be met.

Third, there are no quick fixes or silver bullets when it comes to upholstered furniture flammability. There are a myriad number of configurations, fabrics and fillings that are utilized by our industry to satisfy the consumer's needs and tastes. And the issue is counterintuitive. The materials that are most resistant to smolder ignition tend to be poor performers when it comes to resisting open

flame ignition and vice versa. These three facts have compounded the difficulties CPSC has encountered in this complex rulemaking.

The National Discussion

The issue of upholstered furniture flammability has been a topic of discussion and debate at the U.S. Consumer Product Safety Commission (CPSC) since it inherited the Flammable Fabrics Act from the Department of Commerce and the Federal Trade Commission in 1973. Since this time the CPSC has considered several petitions on the issue and released multiple draft standards to address the flammability of upholstered furniture in 1997, 2001, 2004, and 2005. A proposed rule was finally promulgated in 2008. As these proposals progressed, the agency's objective has moved from the risk of small open flame ignition to the risks of small open flame ignition and smolder ignition, and finally to the risk of smolder ignition only.

We welcomed the 2008 proposal because it was the first to focus solely on the risk of smolder ignition which is the predominant flammability hazard associated with upholstered furniture. Consistently over time, CPSC statistics show that 90% of upholstered furniture fires result from smolder ignition. Each year, there are approximately five times as many incidents of smolder ignitions as there are small open flame related incidents.[1]

According to a recent National Fire Protection Association (NFPA) report,[2] "the long-term trend in smoking-material fires has been down, by 73% from 1980 to 2010." More importantly for this discussion, the trend line for upholstered furniture as the first item ignited by smoking materials is also declining. In 1980, NFPA estimated that there were 21,500 fires caused by smolder ignition of upholstered furniture and by 2010 that number had been reduced to 1,500.[3] Likewise, civilian deaths due to smolder ignition of upholstered furniture have decreased from 1,030 in 1980 to 210 in 2010.[4] Finally, civilian injuries have declined from 1,910 in 1980 to 260 in 2010.[5]

The Upholstered Furniture Action Council (UFAC)

The downward trend in fire statistics involving smoking materials and residential upholstery is, to some degree, the result of a successful industry fire standard. This voluntary program was developed by the Upholstered Furniture Action Council (UFAC) in 1977. It has demonstrated that fabric and yarn changes along with the use of substrates between fabric and foam yield improved smolder performance. Unlike TB-117, the UFAC program does not require the use of any

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[1] U.S. CPSC, Regulatory Options Briefing Package, October 28, 1997, p. 153.
[2] John R Hall Jr., *The Smoking-Material Fire Problem*, March 2012, p. i.
[3] Id. at 21.
[4] Id. at 22.
[5] Id. at 23.

flame retardant chemicals. Also unlike TB-117, the UFAC program has undergone round robin testing and has shown to be repeatable and reproducible. Because of this, the UFAC construction criteria were adopted by both the American Society for Testing and Materials (ASTM E 1353) and the NFPA (NFPA 260).

Perhaps the greatest contribution of the UFAC program has been to remove smolder prone materials from the market and replace them with safer ones. Padding materials such as untreated cotton batting, sisal pads, loose sisal, jute pads, rubberized horsehair, and kapok could not pass any of the UFAC criteria and consequently disappeared from the marketplace.

Likewise, UFAC has contributed to the development of safer materials. In addition to inventing heat conducting welt cords, it effectively set the standards for polyurethane foam and Class 1 fabrics. Seating grade and padding grade flexible polyurethane foams must pass the UFAC filling and padding test method. As a result, non-compliant foam is gone from the market. With respect to fabric covers, the UFAC test methods accelerated the use of thermoplastic fibers. This expanded the number of Class I fabrics, the type most resistant to smolder ignition, and reduced the number of Class II fabrics which require the use of a smolder resistant barrier material. While it is estimated that 90% of domestic furniture shipments comply with the UFAC standard, the net result has been to afford low income consumers the benefit of the UFAC program even if their manufacturers are not participating in UFAC. That is because these safer materials are the only ones that can be found in the marketplace.

In the course of the current CPSC rulemaking, UFAC reviewed TB-117 promising CPSC to incorporate the best aspects of TB-117 as part of UFAC's construction criteria. However, when testing was completed, UFAC concluded that TB-117 foam was not more effective than the conventional foam required by UFAC. Therefore, it declined to modify its construction criteria. CPSC later tested TB-117 foam and confirmed that it demonstrated no significant added protection in small open flame scenarios compared to UFAC complying upholstered furniture products.

Small Open Flame Research

The current emphasis on smolder ignition is a sensible response to the technical difficulties associated with the small open flame approaches considered during the course of the rulemaking. Early in the project, CPSC staff found that reformulated foam cushions used to comply with TB-117 did not meaningfully improve small open flame performance. Subsequent testing of so-called 'TB-117 plus' foam revealed it performed worse than conventional foam and was inferior in some smoldering scenarios.

A 2001 proposal allowed the use of flame-blocking barriers as protection against open flame ignition. However, CPSC staff found that barrier materials perform inconsistently depending on the cover fabrics and ignition source. Some barriers were effective in conjunction with a number of outer fabrics but not with others. Those failing fabrics were more appropriate candidates for a flame retardant chemical treatment option.[6]

Currently available barrier technology utilized to meet California's standard for public occupancy furniture (TB-133) and to meet the federal mattress standard (16 CFR 1633) is not well-suited for application to residential upholstered furniture. In addition to the complexities created by the various geometries and spatial relationships of furniture, existing barriers would negatively impact the hand, drape, and seat of residential upholstered furniture. These barriers also lack important performance characteristics such as loft, resiliency and neutral color, which are critical for the residential upholstered furniture market.

Research and Regulation of Flame Retardants

TB-117 is the only reason flame retardant chemicals are found in upholstered furniture. The focus on smolder ignition minimizes the reliance on flame retardant chemical treatments. Unlike smolder ignition, small open flame resistance generally requires the treatment of fabrics and cushioning materials with halogenated compounds (i.e. bromine or chlorine). The widespread application of these chemicals to produce upholstered furniture components would certainly have resulted from the prescribed test methods proposed in the 1997, 2001, 2004 and 2005 CPSC briefing packages.

During the time that CPSC has been considering furniture flammability, evidence about the potential ecotoxicity and bioaccumulation of halogen flame retardants have reshaped the thinking regarding fire and chemical risks. Restrictions on flame retardant use and production are depleting the compliance toolbox of compounds equipped to achieve open flame resistance in furniture and to meet TB-117.

In 2004, the AHFA (then the American Furniture Manufacturers Association or AFMA) co-chaired and participated with other key industry stakeholders in a project sponsored by EPA's 'Design for the Environment' (DfE). The scope of this project was to develop an assessment tool to evaluate emerging flame retardant chemistry that could potentially be used to replace existing chemical solutions used to meet existing flammability standards. The focus was to develop a science based matrix to evaluate and screen the potential risk of emerging flame retardant chemicals to human health and the environment. The resulting matrix did not provide the absolute certainty needed to determine if the flame retardant chemistry was safe and effective.

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

In January 2010, the U.S. Environmental Protection Agency (EPA) added polybrominated diphenyl ethers (PBDE's) – used as flame retardants in a wide range of products, including fabrics and foam – to its "chemicals of concern" list, meaning it considers them substances that "may present an unreasonable risk of injury to health and the environment." The furniture industry had already voluntarily phased out the use of these chemicals in 2005. The only PBDE still on the market in North America, is deca BDE, a fabric flame retardant effective across a full spectrum of fiber types. Critics of deca often cite evidence that it can degrade (debrominate) into more hazardous congeners that are already the subject of regulatory action.

Deca has been banned or substantially restricted in Washington State, Maine and the European Union. Asian countries and other U.S. states are considering similar legislation. Without deca, fabric mills indicate that achieving open flame resistance would require the commercialization and testing of more specialized chemical formulations geared to particular fabric types. Environmental authorities and policy makers now appear to be moving toward restrictions on bromine and chlorine flame retardant chemicals generally.

Last year in California, the Office of Environmental Health Hazard Assessment (OEHHA) added TDCPP (Tris (1,3-dichloro-2-propyl) phosphate), a flame retardant chemical commonly used in furniture applications, to its list of chemicals subject to Proposition 65. Governor Brown recently issued a statement directing the state's Bureau of Home Furnishings and Thermal Insulation (BHFTI) to revise TB-117 to end the reliance on flame retardant chemicals. In the present federal rulemaking, environmental advocates have urged CPSC to forego regulatory approaches that would encourage such chemical use.

As a result of the Governor Brown directive a draft revised California standard (TB-117 2012) has recently been released that will focus solely on smolder ignition and take a similar approach to the 2008 proposed CPSC standard.

Other Trends Shaping Fire Statistics

Any current discussion of this issue should be made in the context of fire statistics that have improved significantly in response to a number of trends. In addition to the impact of voluntary industry standards such as UFAC, Americans are smoking less and are increasingly protected by working smoke and carbon monoxide detectors. Small open flame statistics are being driven downward by the use of child-resistant lighters pursuant to CPSC regulations finalized in 1993 and a CPSC-sponsored voluntary performance standard for candles. In addition, all states have enacted requirements for reduced ignition propensity (RIP) cigarettes. The March 2012 NFPA study on smoking material fires estimates that RIP cigarettes alone will reduce fire deaths 30% from 2003,

the last year before any state implemented this legislation.[7] All of these developments can be expected to further reduce residential fires associated with upholstered furniture.

Conclusion and Recommendations

We understand the frustration some have expressed about the pace of progress on this issue. However, we shouldn't disregard the technical challenges associated with achieving improved fire resistance for a product that is typically covered in fabric and filled with plastics, cellulosics and other cushioning materials. Add to this the differential performance of the tens of thousands of upholstery fabrics on the market; the synergy between fabrics and filling materials; and you begin to understand the challenge CPSC has shouldered.

Upholstered furniture flammability encompasses not only fire science, but consumer preferences, behavioral factors, the competitiveness of domestic industries and the increasing scrutiny of chemicals that may pose a risk to human health and the environment.

Our industry is committed to supporting government and private sector solutions based on three criteria: safe, effective, and saleable. To be "safe", a solution must not introduce new risks to consumers, workers or the environment and not undermine the existing level of resistance to smolder ignition. To be "effective", a solution must reduce the number of residential fires involving upholstered furniture and must not create a false sense of security to the consumer. To be "saleable", a solution must result in furniture that is attractive, comfortable, durable, and affordable. A solution that meets the criteria of safe, effective, and saleable continues to form the basis for an industry supported federal standard for residential upholstered furniture.

An approach that addresses only smolder ignition is not perfect, but represents what is achievable at this point given these sometimes competing factors. We recommend that the CPSC immediately move to adopt ASTM 1353 to address the primary smolder ignition risk from upholstered furniture. That will provide CPSC with the time it needs to further investigate the feasibility of its barrier for smolder prone fabrics and to submit its draft test methods to the necessary round robin laboratory analysis to insure good repeatability and reproducibility. This round robin analysis is essential to the development of an enforceable standard.

After finalization of a standard that addresses smolder ignition, CPSC Resources can then be concentrated on determining if potential solutions to small open flame risk exist and are justified. This effort must provide multiple options for compliance and a mechanism for identifying safe and effective flame retardant chemistry.

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[7] Hall, *supra at 11*.

Any mandatory flammability standard must also rely on the use of compliant components and not the use of composite testing. Furniture manufacturers are assemblers of components provided by third party suppliers. The combination of these various components results in thousands of SKU's. This volume makes the testing of full scale or mockup composites not only unreasonable but impossible.

Finally, cost must be a consideration. The statistics of residential fires have told us repeatedly over the years that the residential fire problem in the United States primarily lies in households with lower incomes, less education, and a higher proportion of single parents. This segment of the population is the most sensitive to cost increases, yet this segment is clearly the most in need of the protection that safer upholstery will provide. Furniture that meets ASTM 1353 is proven to provide an acceptable level of fire protection at price points that will primarily benefit them and the firefighters charged with saving their lives.

We look forward to working with the CPSC on this important issue and to assist our members with the compliance obligations they will face once a new rule is finalized.