CPSC MEETING LOG
UPHOLSTERED FURNITURE FLAMMABILITY

Meeting Between: CPSC staff and members of the Polyurethane Foam Association (Follow-up to 7/11/05 PFA meeting with Commissioner Nord)

Date of Meeting: July 28, 2005

Meeting Site: CPSC Headquarters, Bethesda Towers

Log Entry By: Dale R. Ray, Project Mgr., EC, 301-504-7704

Participants: Robert Leudeka, J.P. Hogan, PFA Associate Director
James McIntyre, McIntyre Law Firm, PFA Counsel
Joe Ziolkoski, UFAC

CPSC Staff:
Dale Ray, Project Mgr., Economic Analysis
Linda Fansler, Laboratory Sciences
Rik Khanna, Engineering Sciences
Gib Mullan, Compliance

Plus other staff, and representatives of related industry groups and outside organizations (see attached list)

Summary:

Mr. McIntyre requested this meeting between CPSC staff and the Polyurethane Foam Association as a follow-up to a previous meeting in July 2005 between PFA and CPSC Commissioner Nancy Nord. PFA presented information to the staff supporting PFA's concerns about the flammability test performance of polyurethane foam designed to comply with the CPSC staff's draft flammability standard for upholstered furniture. Mr. Luedeka stated PFA's position supporting the issuance of a standard that a) has no bias toward any component; b) is reproducible and technically and economically feasible; and c) provides safety for composite assemblies through component material tests. Echoing their statements at another previous meeting in May 2005, Mr. Luedeka and Mr. Ziolkowski expressed particular concern that the cotton velvet cover fabric used as a standard material in the CPSC staff's furniture mockup tests exhibited inconsistent performance, and that this could affect the ability of some lower-density polyurethane foam filling materials to meet the open flame requirements of the staff's draft standard. The industry representatives also recommended that the staff reconsider a test for cover fabrics in any draft standard incorporating open flame tests, and conduct interlaboratory studies for all tests prior to proposing any rule. They also suggested that CPSC consider proposing a rule with performance tests for smoldering ignition resistance only.

Mr. Ray agreed with PFA's general position on a standard, subject to the agency's statutory requirements. He noted that the industry-recommended fabric test, in which a plain fabric sample is tested in mid-air, does not represent the composite assembly of furniture, and accepts some fabrics that generate large amounts of heat and flame while rejecting others that burn with less intensity. He agreed that interlab testing is desirable, but not necessarily before a proposal: the staff's draft standard is based on large amounts of developmental work and experience with similar, established standards in California and the U.K.; further, the staff's draft test protocols are essentially the same as those in previous CPSC-sponsored interlab studies in 1996 and 1999.

Mr. Ray also agreed that standard test materials like cover fabric (and foam) must be carefully specified, and their performance verified, before relying on those materials in compliance tests. He noted that the CPSC lab now conducts chemical analyses and comparative performance tests on all shipments of these materials. He further characterized the standard cotton velvet fabric as a moderate-burning fabric that does not represent the worst case for a foam substrate; the CPSC staff considered a more intense burning rayon standard fabric, but opted for the cotton velvet as a reasonable compromise that would allow commercially feasible foams to comply.

Mr. Ray noted that the CPSC lab has tested a variety of flame retardant foams in the popular 1.4 – 1.8 lbs./cu. ft. range that performed well, although he agreed that some furniture using very low-density foams in the 1.0 – 1.2 pcf range may require greater flame retardant loadings to comply. Mr. Ray suggested that some of the laboratory documents recently released on CPSC's web site provide some information that is responsive to some of the industry concerns; he also invited the industry representatives to provide suggestions and supporting data on alternate standard material candidates and test procedures. Following some discussion of technical issues related to fabric physical properties, foam technology and test results, the industry and CPSC participants agreed to meet again at the CPSC Laboratory to view flammability tests and discuss test materials and methods. Mr. Ray also noted that an economic report on potential costs and benefits of the staff's draft standard and various alternatives, including a smoldering-only standard and other alternatives suggested by industry representatives, would be posted on the web site in the near future, probably in August 2005.

Attachments

PFA / CPSC STAFF MEETING 7/28/05
UPHOLSTERED FURNITURE FLAMMABILITY

Name	Organization	Phone
Patty Adair	CPSC – Engineering	301-504-7536
Debbie Aiken	CPSC – Economics	301-504-7703
Russ Batson	Amer. Home Furnishings Alliance	202-466-7362
Mark Buczek	American Fire Safety Council	914-269-5989
Patty Davis	CPSC – Public Affairs	301-504-7601
Quin Dodd	CPSC – Ofc. of Comm. Nord	301-504-7630
Frank Dunmore	CPSC – Lab Sciences	301-424-6421
Jacquie Elder	CPSC – Haz. ID & Reduction	301-504-7645
Linda Fansler	CPSC – Lab Sciences	301-424-6421
Bob Franklin	CPSC – Economics	301-504-7708
Filippo Gavelli	Exponent, Inc.	301-464-4069
Scott Heh	CPSC – Haz. ID & Reduction	301-504-7646
Rik Khanna	CPSC – Engineering	301-504-7546
Ed Krawiec	CPSC – Lab Sciences	301-424-6421
Bob Luedeka	Polyurethane Foam Ass'n.	865-690-4648
Elan Martin	Nat'l. Ass'n of State Fire Marshals	202-727-3240
Lowell Martin	CPSC – General Counsel	301-504-7628
Jim McIntyre	PFA Counsel / McIntyre Law Firm	202-659-3900
J. Gib Mullan	CPSC – Compliance	301-504-7626
Margaret Neily	CPSC – Engineering	301-504-7530
Sean Oberle	Product Safety Letter	703-289-9432
Barbara Parisi	CPSC – Ofc. of Comm. Nord	301-504-7879
Dale Ray	CPSC - Economics	301-504-7704
Ed Richards	Ofc. of Chairman Stratton	301-504-7887
David Ryan	Craftex / Nat'l. Textile Ass'n.	570-366-0534
Greg Rodgers	CPSC – Economics	301-504-7702
Chuck Smith	CPSC – Economics	301-504-7701
Mary Toro	CPSC – Compliance	301-504-7586
Joe Ziolkowski	Up Furn Action Council	336-885-5065

07/11/2005
Robert Luedeka
James McIntyre

Meeting with Commissioner Nancy Nord

The Polyurethane Foam Association (PFA) is the national trade association for manufacturers of flexible polyurethane foam (FPF). The PFA was established in 1980 in part to address flammability issues and other technical matters related to the manufacture and sale of FPF. The mission of the PFA is to educate customers and other groups about flexible polyurethane foam and to promote its use in manufactured and industrial products. This includes providing facts on environmental, health, and safety issues related to polyurethane foam to the membership of PFA, flexible polyurethane foam users, regulatory officials, business leaders, and the media. The PFA also provides its members and their customers with technical information on the performance of FPF in consumer and industrial products.

In 1972, U.S. flexible polyurethane foam manufacturers and chemical suppliers to the industry entered into a consent order with the Federal Trade Commission agreeing to refrain from representing that FPF will not burn and agreeing to spend substantial sums of money to perform research projects on the flammability of flexible polyurethane foam. The industry spent several million dollars from 1975 to 1979 on flammability research. After its establishment, the PFA focused on fire safety and promoting good science in the development of fire-safety criteria with respect to flexible polyurethane foam. In general, the Polyurethane Foam Association has supported improved product safety and

encouraged the development of a performance-based, composite product standards that are appropriate to the risk of ignition without bias toward any component and which are reproducible, economical, and technically feasible. However, due to the wide variety of upholstered furniture products and the thousands of possible component combinations, the PFA would support component testing that can be demonstrated to show, that when the complying components are used together, the final composite product is made safer.

PFA strongly supported the Fabric Coalition's proposal for a five-second fabric test, along with the use of cushioning materials that will meet California Technical Bulletin 117 proposed revisions, and other filling materials that pass BS 5852 Source 2 flammability criteria. We believe that full-scale testing of furniture items made to the Fabric Coalition specifications will document significant improvements in escape time (rate of heat release) and in survivability (maximum heat release).

The CPSC Test Proposals Are Unworkable

There has been no round-robin testing of the CPSC draft protocol. While we recognize that the CPSC is not required to conduct round-robin testing, it is simply good science to do so. In fact, ASTM E691 establishes criteria for round-robin testing to determine if a proposed standard is reproducible and repeatable in different laboratories. Some of PFA's members have conducted laboratory tests based upon their understanding of the draft CPSC protocol and routinely have received inconsistent results, particularly in the open-flame testing portion of the draft protocol proposal.

The test fabric specified for use in the open-flame portion of the draft proposal has been found to be particularly inconsistent and results in unpredictable open-flame test

results. The test fabric appears to burn at various speeds and the heat release is inconsistent and often exacerbates the ignition source for the cushioning material.

Sample testing of the J. B. Martin Pattern 8500 cotton velvet fabric (the test fabric) should be conducted to determine consistency from roll to roll and lot to lot looking for significant variations in air flow, pile height, weight per linear yard, tear strength, thread count, and possible contamination. Any of these factors can affect the speed of combustion and heat release during the open flame test. To be confident that a foam will pass the open flame test using the specified cotton velvet fabric, it is necessary to use FPF products with high concentrations of flame retardant additives.

In addition to reported problems with the velvet test fabric, excluding the upholstering cover fabric from the open flame ignition standard tends to place the entire burden of compliance on the cushioning material. Since the covering material usually is the first component to ignite in an upholstered furniture fire, it seems only reasonable that the covering fabric material should bear some burden to help reduce the ignitability of the furniture article.

The CPSC Staff Proposal Would Eliminate a Number of Flexible Foam Products from the Marketplace

Significantly higher density FPF products would be required to meet the proposed standard, resulting in the elimination of the use of economically attractive, lower-density products now used in the majority of upholstered furniture. To make sure that all foam cushion materials meet the proposed test protocol would necessitate adding significantly higher concentrations of flame-retardant additives (initial studies indicate about 40% combustion modifier additives by weight would be required). This coupled with the

much higher density requirements will result in adding significant cost to foam cushioning materials and will also result in eliminating most foams below 2.2 pounds density. Foam physical properties, such as strength, comfort, shape retention and durability, will also suffer as a result of the high concentrations of flame retardant additives required.

Flexible polyurethane foam cushioning is already the second-highest variable cost in the construction of upholstered furniture, second only to the covering material. The principal difference between popular, moderate, and medium-priced furniture is the seat cushioning foam density and so, furniture manufacturer and retailer distribution, marketing and merchandising will be affected.

Furniture price points likely would be altered, blending promotional and moderate price points as a result of eliminating the use of lower-density foam products. Not only would this situation disrupt retail furniture distribution, but it might also cause existing furniture to be kept in households longer, depriving individuals of the improved products.

Given the option of using costly, highly-modified FPF products, or using a barrier fabric beneath the cover with a resulting increase in furniture manufacturing labor, manufacturers of low to medium-priced upholstered furniture may choose the barrier fabric option. So, the open flame portion of the draft proposal could result in thousands of U.S. jobs lost to foreign manufacturing competitors who can provide barrier upholstery at much lower costs.

The Proposed Smolder Standard Makes the Most Sense

Current fire statistics demonstrate that most deaths, injuries, and property damage occur from smolder-initiated fires. Open-flame fires account for only 10 percent of fire

deaths involving upholstered furniture. Thus, if the smolder standard were adopted, it would achieve the greatest benefits in saving lives and economically. Thus, PFA recommends that the CPSC focus on adopting the smolder standard and defer its efforts to adopt a small open-flame standard until further testing and scientific development can occur.

Summary

1. The Fabric Coalition provided a proposal that should improve escape time and increase survivability of household fires involving upholstered furniture.
2. The reproducibility of the test procedures contained in the CPSC draft proposal should be verified using the ASTM E691 protocol before publication of a proposed standard.
3. The cotton velvet test fabric appears to be inconsistent in composition and causes great variation in test results. Fabric consistency needs to be examined.
4. Not including the cover fabric in the open flame portion of the test proposal unfairly places the burden of combustion performance entirely on the seat cushion core content, which is not the first item to catch fire.
5. The fuel source provided by the cotton velvet test fabric in the open flame portion of the draft proposal is significant and, based on the draft open flame proposal, will require that FPF products contain high concentrations of combustion-modification additives.

6. Such high concentrations of combustion-modification additives present onerous problems in terms of furniture physical performance, durability and economics.
7. The economic impact of such highly-modified FPF products will significantly affect the costs of upholstered furniture for manufacturers, retailers and consumers.
8. To avoid the use of costly, heavily-combustion modified FPF products, the barrier fabric assembly option can be selected. This will likely result in the loss of up to 70% of U.S. upholstered manufacturing (popular and low-medium priced lines) jobs to foreign concerns offering lower labor costs.
9. The smoldering ignition portion of the draft proposal addresses 90% of residential upholstered furniture fires without excessive cost, loss of furniture performance and without interference with manufacturer and retail business efforts. It will not encourage use of offshore manufacturing resources.
10. The smoldering ignition protocol should be able to be adopted with minimal difficulty once scientific reproducibility has been established.

Exhibits

Draft Economic Comparison – FPF Products Typically Used in Upholstered Furniture

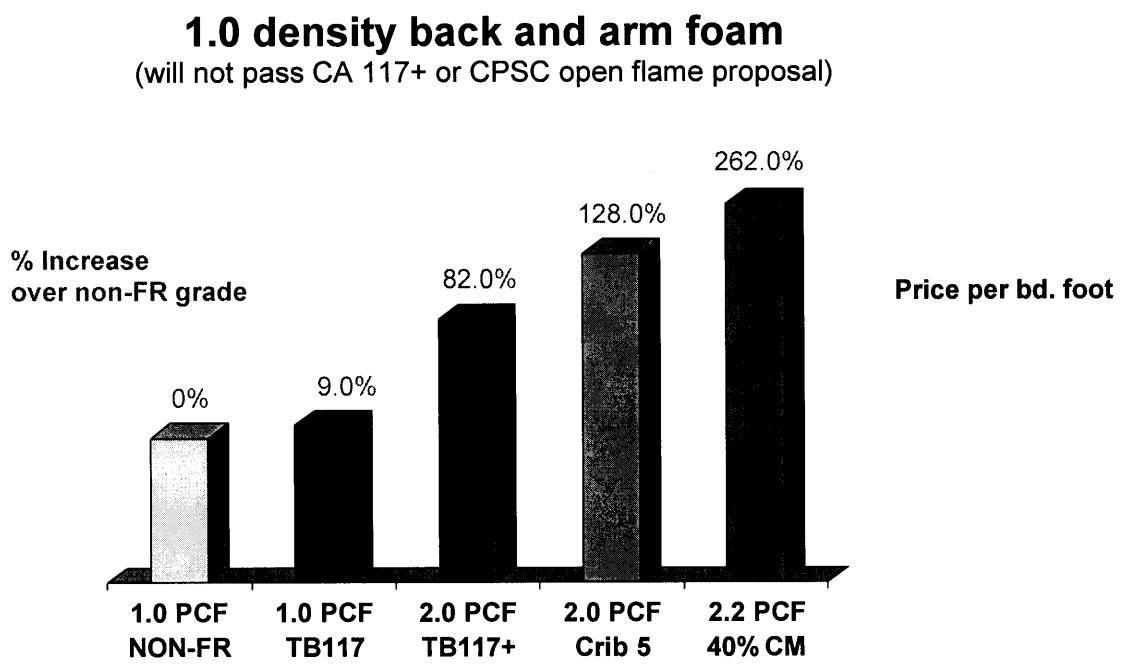

Figure 1: Economic impact of upgrading from 1.0 PCF non-FR foam to 2.2 PCF combustion-modified products

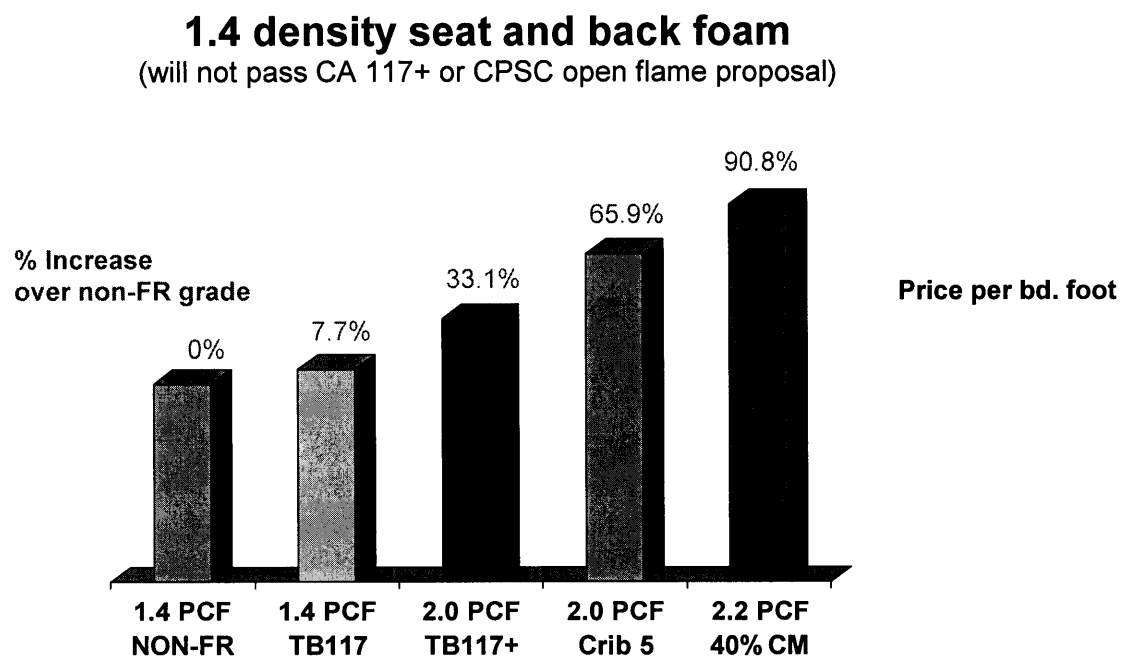

Figure 2: Economic impact of upgrading from 1.4 PCF non-FR foam to 2.2 PCF combustion-modified foam

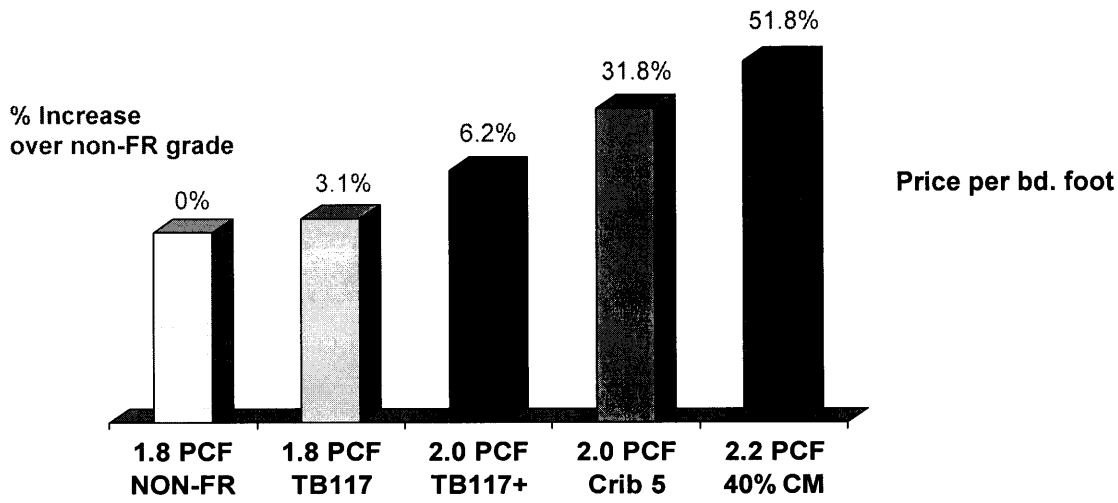

Figure 3: Economic impact of upgrading from 1.8 PCF non-FR foam to 2.2 PCF combustion-modified foam

Density by Retail Price Point

3-cushion sofa

Popular (Promotional)	< $599	approx. 40% of market	seat density range 1.2 - 1.6
Low-medium	$599 - $899	approx. 30% of market	seat density range 1.4 - 1.8
Medium	$899 - $1299	approx. 15% of market	seat density range 1.6 - 1.8
Medium High	$1299 - $1899	approx. 10% of market	seat density range 1.8 - 2.5
High	> $1899	approx. 5% of market	seat density range 1.8 - 2.5

Popular to Low-medium price

Low-medium to Medium price

Medium to Medium-high price

Figure 4: Comparison of retail price points and typical seat cushion foam density ranges