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CPSC MEETING LOG

1998 MAY 29 P 4:11

Meeting Between: CPSC staff and attendees at the Washington Textile Roundtable

Date of Meeting: May 19, 1998

Meeting Topic: Upholstered Furniture

Log Entry By: Dale R. Ray, EC *[Signature]*
Project Mgr., Upholstered Furniture

Attendees: CPSC: Marilyn Borsari, CA
Dale Ray, EC

Others: Phillip Wakelyn, Nat'l. Cotton Council
Patty Adair, National Cotton Council
Robert Barker, American Fiber Mfrs Assn
Carol Skelly, Dep't. of Agriculture
Steven McDonald, Dep't. of Agriculture
Ronald Dombrowski, Albright & Wilson
Duncon Nixon, Sharretts Paley Carter & Blauvelt
Karen Addis, American Textile Mfrs Assn
Alan Terhar, Cotton Council Int'l.
Allyson Tenney, independent consultant

Sam Christy, Product Safety Letter
Rupert Welch, Furniture Today magazine

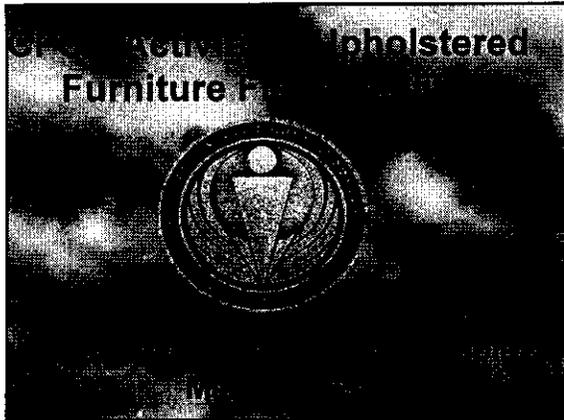
Summary:

The Washington Textile Roundtable is a small group of 15-20 members interested in regulatory issues affecting the textile industry. The group meets bi-monthly to discuss or receive a presentation on a different issue.

At the May 19, 1998 meeting, Mr. Ray presented an overview of CPSC activities regarding upholstered furniture flammability, including a summary of the staff's test work on different fabrics and the Commission's May 5-6 public hearing on flame retardant chemical toxicity. The group discussed a number of questions regarding FR treatments and their durability and toxicity. A copy of Mr. Ray's presentation outline handout is attached.

Attachment





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Upholstered Furniture Fire Hazards

- **Smoldering Ignition**
 - Smoking Materials, Chiefly Cigarettes
- **Small Open Flame Ignition**
 - Lighters, Matches, Candles

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Latest CPSC Action

- **Defer Regulatory Action**
- **Hold Public Hearing on FR Chemical Toxicity Issues**

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Overview

- **NASFM Petition -- requested California Standards**
- **Standards Development: Small Open Flame Ignition**
- **Performance/Conformance Evaluation: Cigarette Ignition**
- **Commission vote March 2, 1998; Public Hearing May 5-6, 1998**

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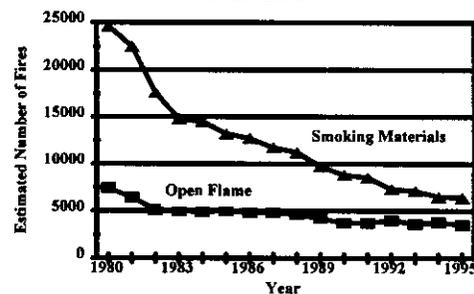
1995 Estimated Fire Loss Estimates for Upholstered Furniture

| IGNITION SOURCE | FIRES | DEATHS | INJURIES | PROPERTY LOSS \$MM |
|-------------------|--------|--------|----------|--------------------|
| ALL SOURCES | 13,600 | 670 | 1,710 | \$244.1 |
| SMOKING MATERIALS | 6,400 | 500 | 880 | \$110.9 |
| SMALL OPEN FLAMES | 3,500 | 90 | 490 | \$62.0 |
| OTHER / UNKNOWN | 3,700 | 80 | 340 | \$72.1 |

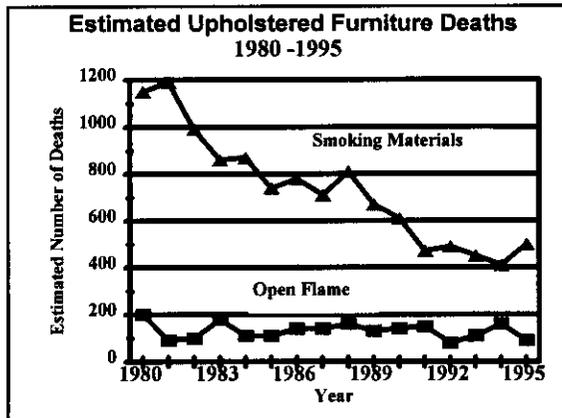
Total Societal Cost = \$4 billion

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Estimated Upholstered Furniture Fires 1980 -1995



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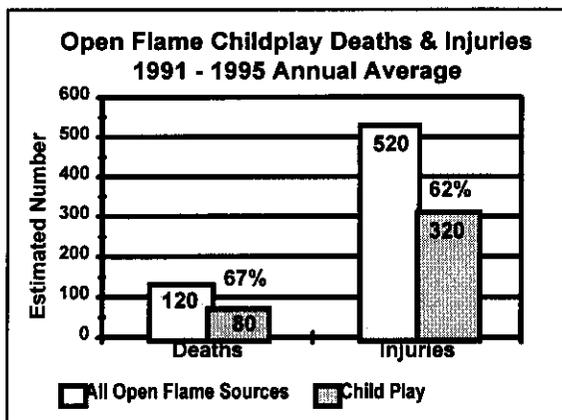
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Small Open Flame Fire Losses 1991-1995 Annual Average

| | Small Open Flame* Losses 1991-95 | Avg. % total Open Flame 1991-95 |
|--------------|----------------------------------|---------------------------------|
| Fires | 3,000 | 81 |
| Deaths | 100 | 83 |
| Injuries | 450 | 87 |
| Prop. Damage | \$48 mil. | 81 |

*Matches, lighters & candles

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- ### SUMMARY
- #### National Fire Loss Estimates
- Upholstered Furniture Fires - More Fire Deaths than any other Consumer Product
 - No Significant Decline in Open Flame Deaths
 - Most Open Flame Fire Losses Resulted from Matches, Lighters, and Candles
 - Over 50 % of Open Flame Deaths and Injuries Resulted from Child Play

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- ### ANPR -- Small Open Flame Ignition
- Possible unreasonable risk
 - CPSC to consider possible voluntary or mandatory standard
 - Alternatives solicited

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- ### Staff Activities -- Small Open Flame
- Fire Investigation Study
 - Laboratory Testing
 - Standards Development & Analysis

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Small Open Flame Upholstered Furniture Fire Investigation Study

- Portion of the Furniture First Ignited
- Age of Person Involved in Ignition of Furniture
- Source of Small Open Flame Involved in Ignition
- Total of 76 Fire Investigations

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Fire Investigation Study Conclusions

- Source of Ignition in 46 of 76 Fires - Lighter
- Area Ignited in 25 of 38 Fires - Seating Area
- Probable Cause in 65 of 76 Fires - Child Play
- Children Under 5 Years of Age Involved in 44 of 65 Child Play Fires

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Small Open Flame Technical Research

- CPSC Laboratory Testing
- Test Method Development

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CPSC Laboratory Test Program

- Study small open flame performance
- Examine the relationship of open flame & cigarette ignition
- Support the development of a possible standard

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Small Open Flame Test Program

- Full scale furniture
- Component/composite
- Bench scale
- Interlaboratory evaluation

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Full Scale Tests: Results by Chair Location

- Dust cover fabrics
 - 22 ignited, 5 did not ignite
- Skirt fabrics
 - all ignited
- Seating crevice
 - all ignited

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Component/Composite Test Results

- **Components :**
Fabrics/filling materials tested to Cal 117
- **Composite:**
Mockups tested to BS 5852

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Conclusions

- Upholstery fabric primary determinant of ignition
- Interliners did not prevent ignition
- Composite test more predictive of chair ignitions

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Bench Scale Test Protocol

- Specimens conditioned
- Mockup & component assemblies
- 20 second butane flame application
- Observations recorded

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Materials Tested (FR & non-FR)

- Fabrics
- Barriers
- Filling materials
- Dust covers

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Fabrics that Ignited/Burned at 20 Seconds

- Cellulosic (19 of 21)
- Thermoplastic (10 of 11)
- Blends (11 of 11)
- Other (19 of 31)

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Fabrics that Did Not Ignite/ Self-Extinguished at 20 Seconds

- Wool (1)
- Nylon w/wo fire blocker (2)
- Heavy wt. Cellulosic (2)
- FR treatments (13)

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Filling Material Results

- **No difference in ignition times between non-FR and FR foam, or with polyester batting**

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Dust Cover Test Results

- **Cotton/polyester blend ignited**
- **Polypropylene melted away**
- **Aramids did not ignite**

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Conclusions

- **Bench scale protocol suitable to evaluate ignition performance**
- **Most current upholstery fabrics ignite**
- **FR treatments effective**
- **Types of filling material less important**

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Flame Retardants: Potential Health Effects

- **Will flame retardant chemicals in upholstered furniture present a hazard due to toxicity?**

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Under the FHSA, CPSC must consider:

- **Toxicity -- Acute and Chronic**
- **Exposure**
- **Bioavailability**

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Fire Retardants that are not “toxic” under the FHSA:

- **Decabromodiphenyl Oxide (DBDPO)**
- **Hexabromocyclodecane (HBCD)**
- **Dimethyl (3-((hydroxymethyl) amino)-3-oxopropyl) Phosphonate (Pyrovatex™)**
- **Urea**
- **Phenyl Isopropylated Phosphate (PIP)**
- **Triphenyl Phosphate**
- **Melamine**

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Fire Retardants with limited toxicity data, low bioavailability:

- O-(4-(aminosulfonyl)phenyl) O, O-Dimethyl Phosphorothioate
- Ammonium Polyphosphate
- Tetrakis (Hydroxymethyl) Phosphonium with Urea (Proban™)

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Fire Retardants that are “toxic,” with low exposure or bioavailability:

- Boric Acid
- Ammonium Bromide
- Antimony Trioxide (AT)
- Tri (1,3-dichloroisopropyl) phosphate (TDCP, Fyrol FR-2)
- Tri (2-chloroethyl)phosphate (TRCP)

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Fire Retardant that is “toxic,” with no bioavailability data:

- Ammonium Sulfamate

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Conclusions: Toxicity Hazards

- Based on available data, a number of FR chemicals could be used in upholstered furniture without presenting a hazard to consumers
- Additional information on the potential for exposure is needed

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Combustion Toxicity

- Will smoke from flame retarded products be more harmful than smoke from non-FR products?

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- All materials produce CO when burned
- The contribution of fire-retardant chemicals to smoke toxicity is small
- **Conclusion:** Smoke from FR products no more toxic than non-FR products

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CPSC Draft Small Open Flame Standard Development

Approach - Prevent sustained combustion

- Unlikely to ignite combustibles/generate toxic smoke
- Proven Approach

Alternative - Heat release

- Toxic smoke still a concern
- Cost considerations

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Test Method: Seating area & dust cover tests

Ignition Source:

- 35 mm butane flame
- Heat output similar to typical small open flames sources
- Same as BS 5852

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Flame Exposure Time

- 20 second flame exposure time
 - Demarcates fabric performance
 - Avoid adverse effects on cigarette ignition
 - Supported by childplay information

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Performance Requirements

- Cease combustion within 2 minutes
- No flame progression to sample edges

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Effect on Cigarette Ignition

- **CPSC Testing:**
 - No significant adverse effect
 - Probable substantial cigarette ignition reduction benefits
- **European Testing**
 - Many materials that resist both small open flames & cigarettes

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Economic Considerations

- **Costs to meet small open flame standard**
 - Seating area; Dust Cover
- **Potential benefits**
 - Small open flame fires
 - Cigarette ignited fires
- **Other**
 - Small business impacts

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Probable Effects on Fabric Producers

- Apply FR treatments
- Test fabrics
- Certify to standard

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Probable Effects on Furniture Manufacturers

- Higher cost of upholstery fabric: \$1.00-\$1.25 per linear yd.
- Dust cover effects: cost of barrier or FR treatment

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Costs to Consumers

- Average cost increase of \$23 - \$30 for each affected living room/family room unit of furniture
- About \$5 for each dining chair or unit of home office furniture
- Total annual estimated cost: about \$590 million

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Benefits to Consumers (Small Open Flame Standard)

- Each year's production would avoid about 60 deaths from small open flame fires
- Compliance with open flame standard would avert about 140 deaths from cigarette ignited fires
- Total annual estimated benefit: \$890 million

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Net Benefits to Consumers

| | | |
|---------------------|----------|----------------------|
| Benefits | = | \$890 million |
| Costs | = | \$590 million |
| <hr/> | | |
| Net Benefits | = | \$300 million |

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Voluntary Activities

- ASTM E5.15 Work Group
 - Existing Test Method Review
 - CPSC Technical Information
 - Possible New Performance Test
- UFAC Voluntary Guidelines
- ASTM Voluntary Standard

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Laboratory Test Program: Cigarette Ignition

- Evaluate full scale performance
- Evaluate UFAC conformance

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Test Protocols

- CPSC/NIST Full Scale
- UFAC Component Mockup

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Conclusions from Full Scale Results

- 83% of chairs would resist ignition
- 92% of individual cigarettes would not result in ignition

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UFAC Conformance

- 86% of chairs conformed
- Both conforming and non-conforming chairs resisted ignition in full scale tests
- UFAC conformance does not assure full scale ignition resistance

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Conclusions: Open Flame

- Standard feasible, highly effective in reducing risk (including cigarette ignition risk)
- Substantial net benefits
- Incomplete FR toxic hazard data
- Voluntary action possible

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Conclusions: Cigarette Ignition

- Ignition resistance & UFAC conformance both high
- Significant, addressable risk for readily ignitable materials
- Potential benefits dependent on small open flame action

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**Commission Decision
March 2, 1998**

- **Defer Regulatory Action**
 - FR Toxicity Public Hearing
 - Additional Testing/Analysis

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**CPSC Public Hearing
on FR Toxicity**

May 5-6, 1998

- **Government, Furniture Industry, Fire officials, FR Chemical Industry**
- **Toxicity & exposure data on candidate fabric FRs**
- **No discussion of FR foams**

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**For Notice of
Proposed Rulemaking:**

- **Text of proposed rule**
- **Preliminary regulatory analysis of proposal & significant alternatives, e.g.:**
 - No action
 - Voluntary action
 - Filling material requirements
 - Cigarette ignition requirements

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**For a Final Rule, Commission
must make findings about:**

- **Applicable voluntary standards**
- **Relationship between costs and benefits**
- **Burden of requirements**

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For Further Information:

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