LOG OF MEETING

SUBJECT: Mattress Open Flame Testing

DATE OF MEETING: January 6, 1999

DATE OF LOG ENTRY: January 7, 1999

PERSON SUBMITTING LOG: James F. Hoebel

LOCATION: CPSC, Bethesda, MD

CPSA 6 (b)(1) Cleared
2/22/99
No Mfrs/PrvtLblrs or Products Identified
___Excepted by_____
___Firms Notified,
Comments Processed.

CPSC ATTENDEE(S): James F. Hoebel, Engineering Sciences
Margaret Neily, Engineering Sciences
Dale Ray, Economic Analysis

NON-CPSC ATTENDEE(S): Harrison Murphy, Ventex
Ryu Maruyama, Kaneka America Corp.
Pat Martin, Sleep Products Safety Council
Patricia Adair, American Textile Manufacturers Institute

SUMMARY OF MEETING: Mr. Murphy's company, Ventex, manufactures a product intended to reduce the risks presented by burning mattresses. The product used a barrier approach to reduce the rate of heat released when mattresses burn. This product, a Kevlar-based fabric, is installed directly under the mattress ticking.

Mr. Murphy's presentation consisted of several charts containing test results and a videotape. Copies of the information contained in the charts are attached. The videotape consisted of depictions of mattresses burning with and without the Ventex product and a Wisconsin television news story on mattress fires. The information demonstrated an apparent dramatic reduction in heat release rate, and increase in time to peak heat release.

Mattress Flammability Testing – Results and Analysis

A Presentation by Harrison Murphy, President of Ventex Inc.

to

The Consumer Products Safety Commission

Wednesday, January 6, 1999

VENTEX
a unique venture in textiles

Ventex Inc.
PO Box 1038
Great Falls VA 22066

Phone: (703) 406-4030

www.ventexfabrics.com

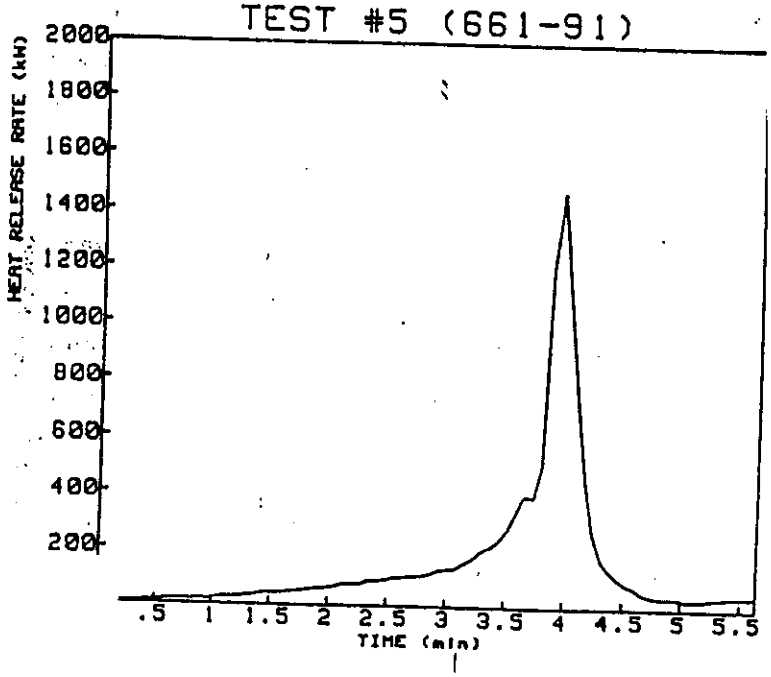
The Story of Test #5

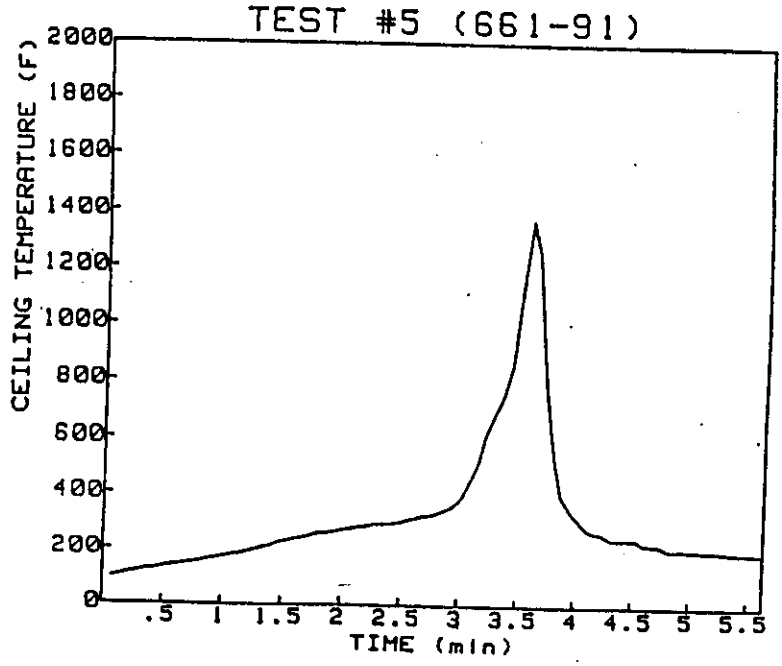
Samples 5, 6, 7 and 31	Mattress - innerspring - 37.25 lbs
Quilt	1" polyurethane (1.1-1.25 pcf) - nonwoven quilt backing
Ticking	Jacquard damask (blend - 100 ends x 34 picks)
Upholstery	1/2" polyurethane (1.1-1.25 pcf)
Insulator Pad	Bonded shredded polyester pad (2 oz)
Border	1/4" x 6" polyurethane (1.1-1.25 pcf) - nonwoven quilt backing

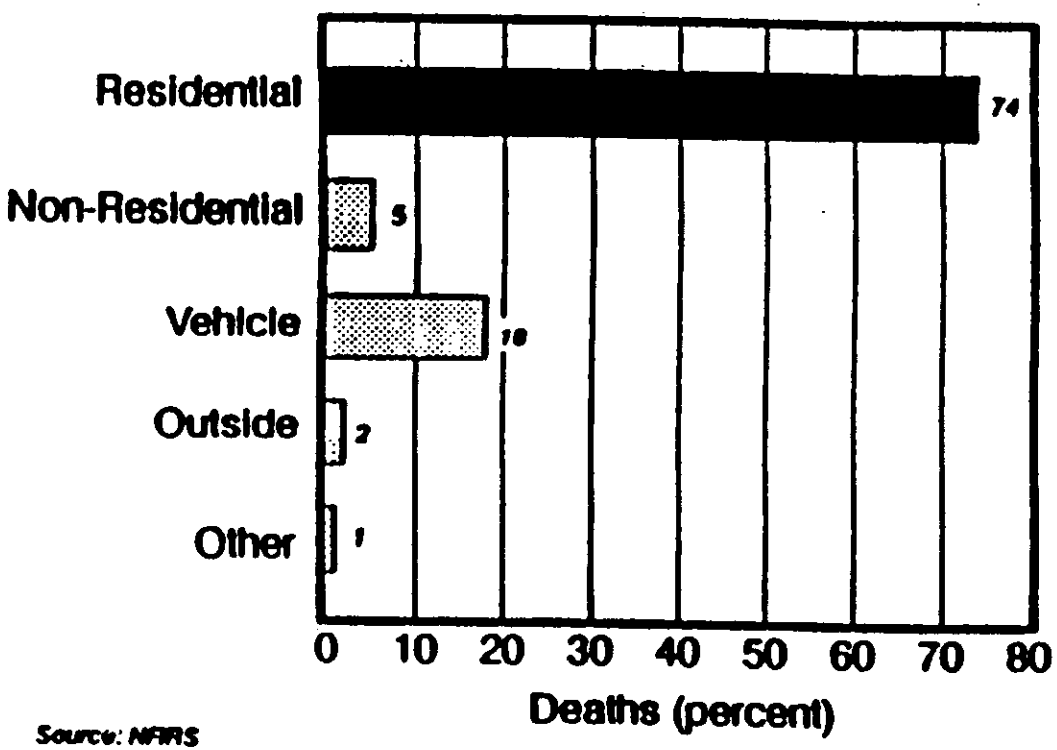
Bedding System Fire Tests - Data Summary

TEST	RHR (max) kW	T_c (max) °F	T_{cc} (max) °F	T_{4ft} (max) °F	T_{dr} (max) °F	T_{ed} (max) °F	CO (max) ppm	WL (10min) lbs
5 (Note 2)	1469	1366	702	1479	854	463	>10000	4.6 (3:38)

Note 2
Due to severe combustion conditions which resulted in the test room being at or near flashover these tests were terminated with water.



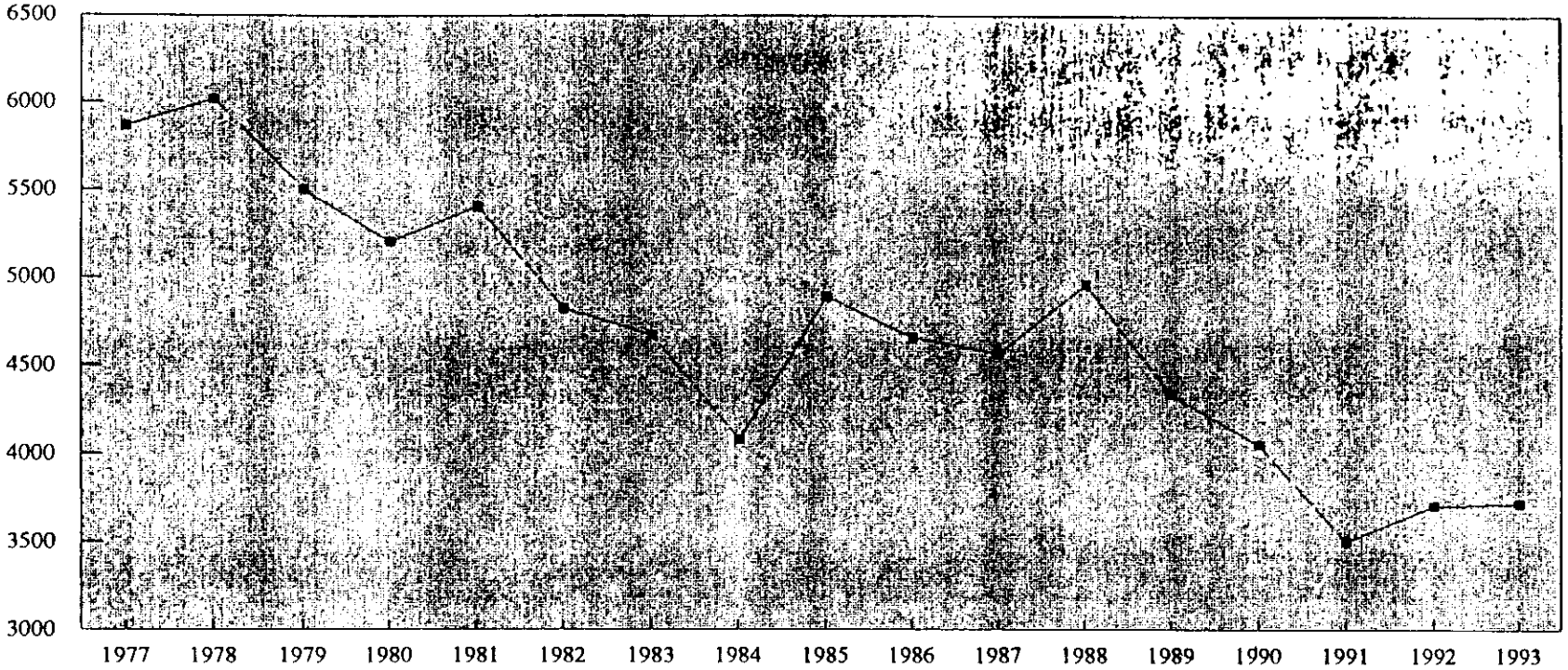


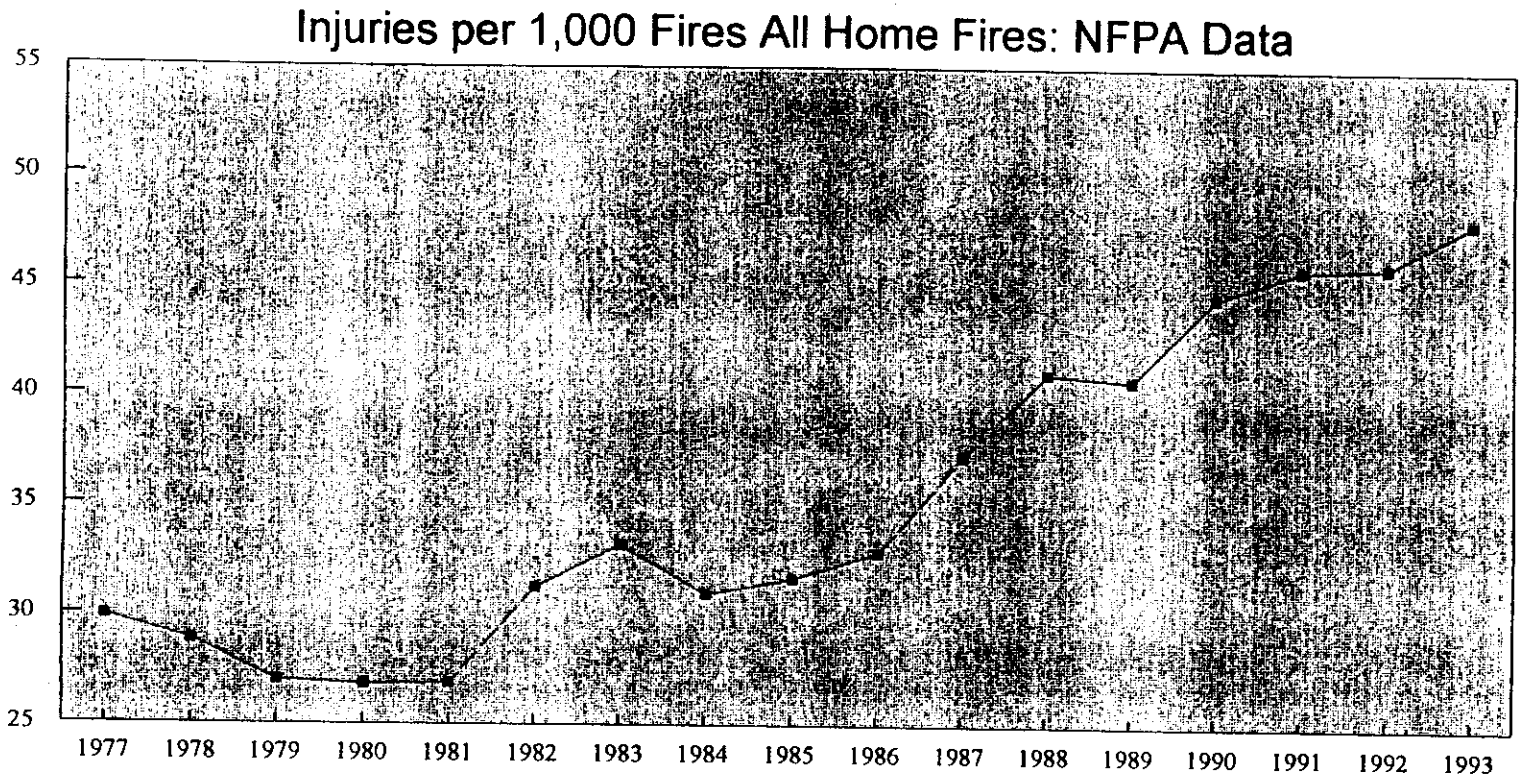


Source: NFIRS

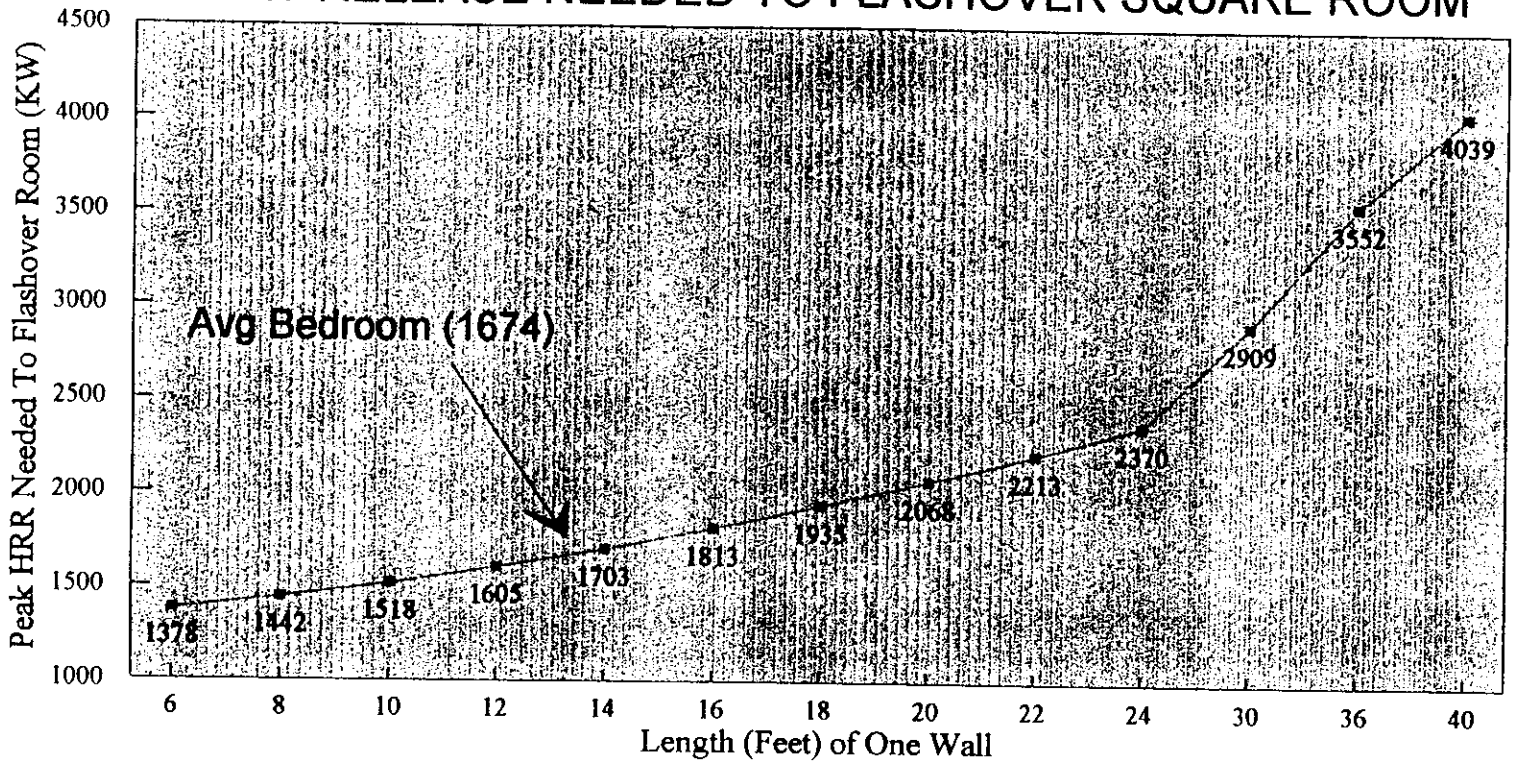
Property Types— Fire Deaths

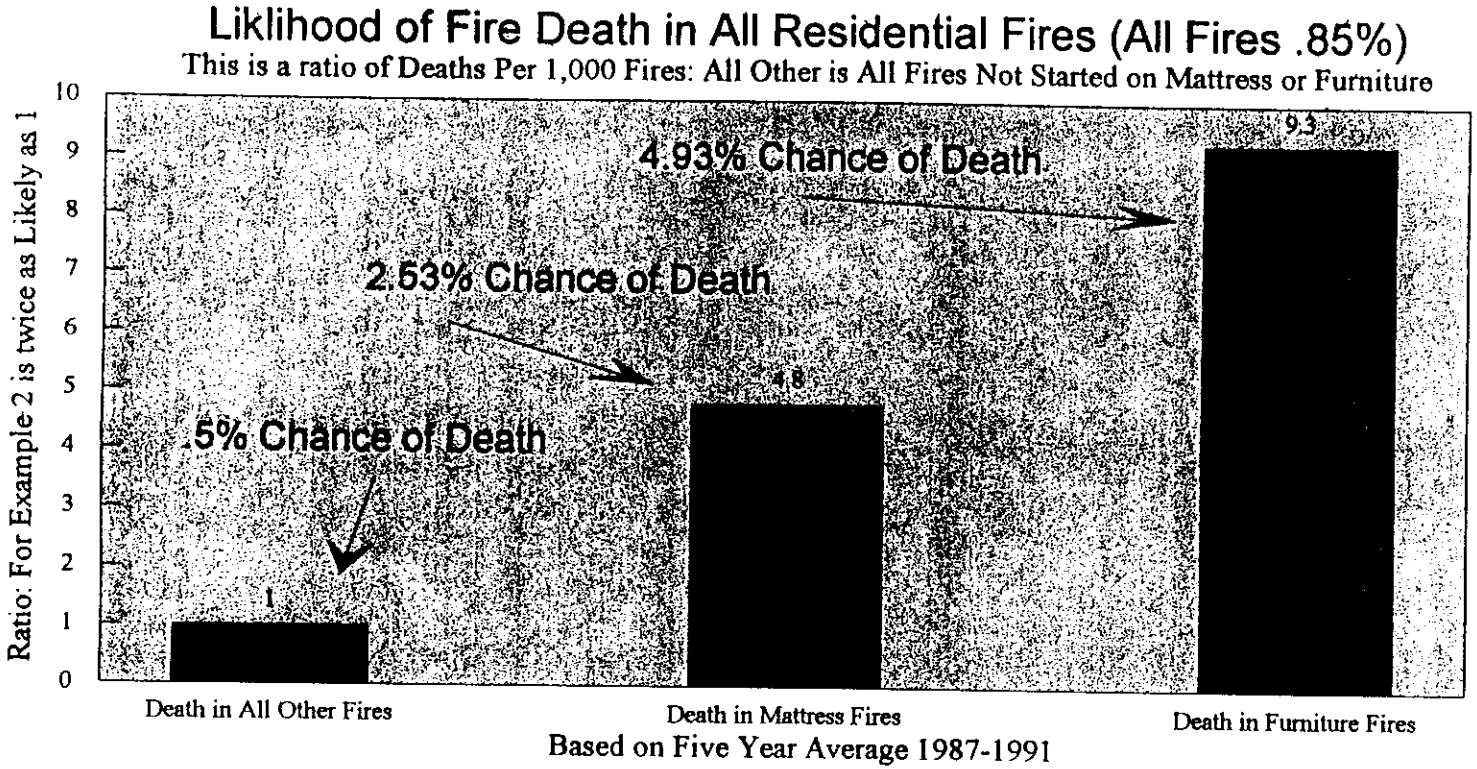
A Decline in All Home Fire Deaths: 17 Years of NFPA Data

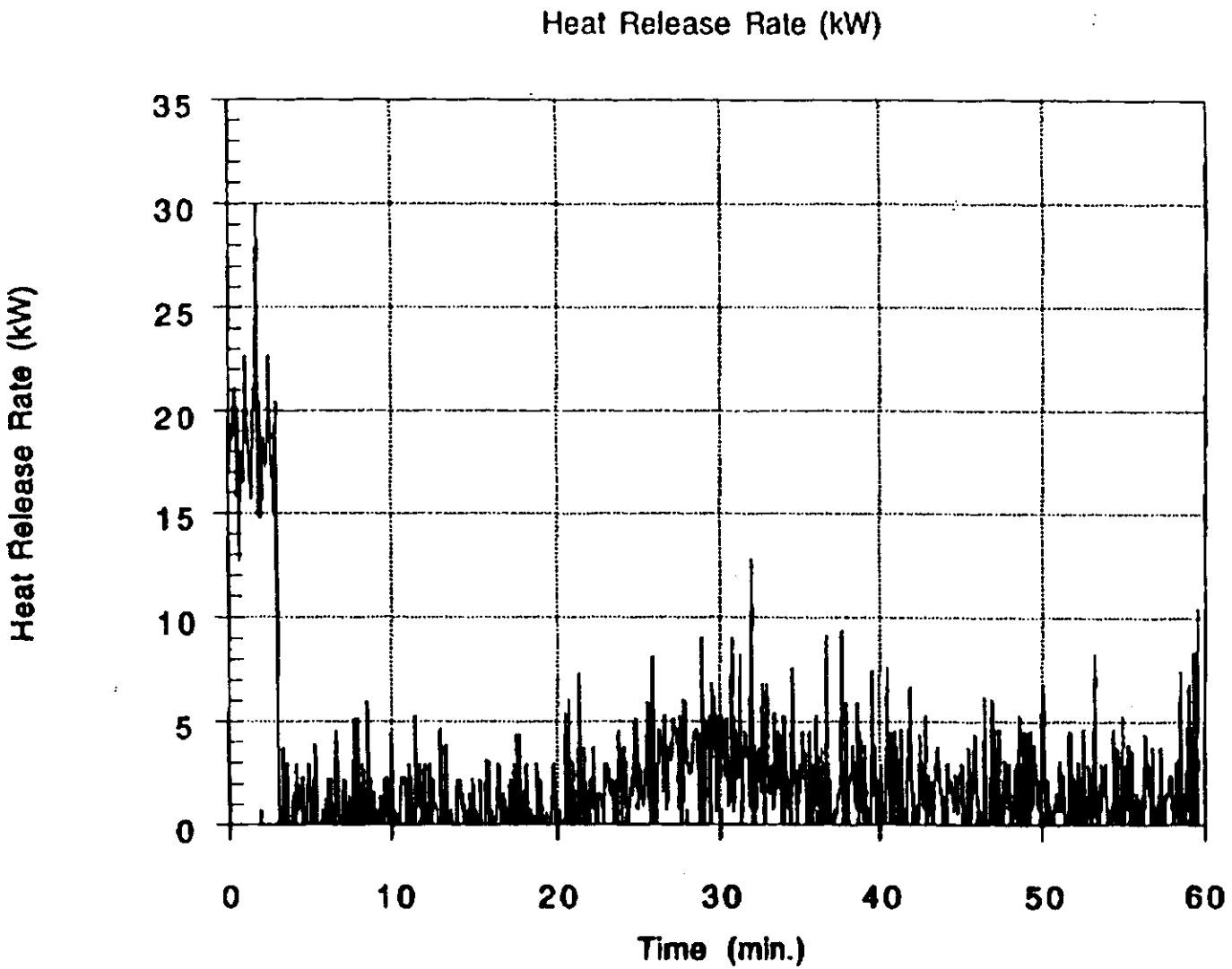



Injuries per 1,000 Fires All Home Fires: NFPA Data
55
50
45
40
35
30
25
1977
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993

HEAT RELEASE NEEDED TO FLASHOVER SQUARE ROOM

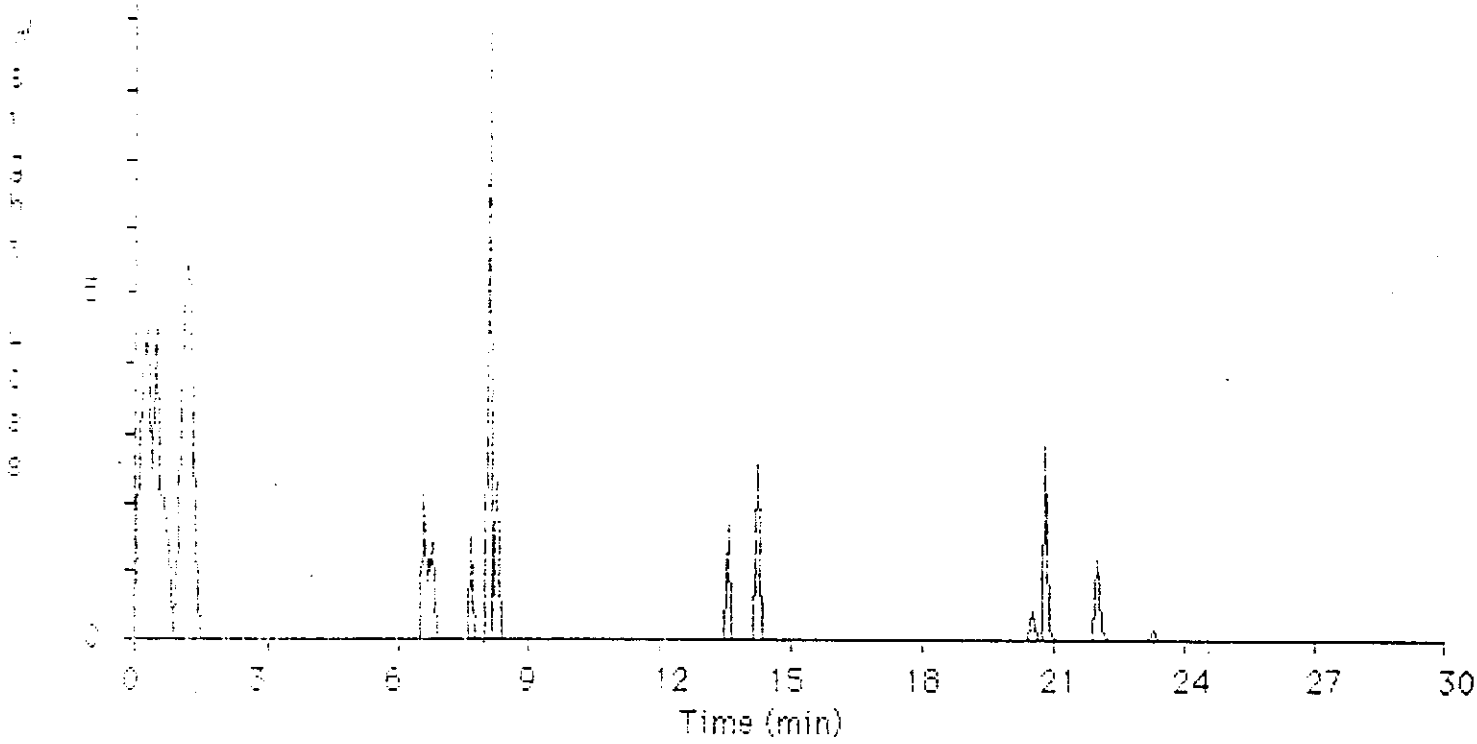



Liklihood of Fire Death in All Residential Fires (All Fires .85%)
This is a ratio of Deaths Per 1,000 Fires: All Other is All Fires Not Started on Mattress or Furniture
Ratio: For Example 2 is twice as Likely as 1
10
9
8
7
6
5
4
3
2
1
0
4.93% Chance of Death
2.53% Chance of Death
.5% Chance of Death
1
4.8
9.3
Death in All Other Fires
Death in Mattress Fires
Death in Furniture Fires
Based on Five Year Average 1987-1991

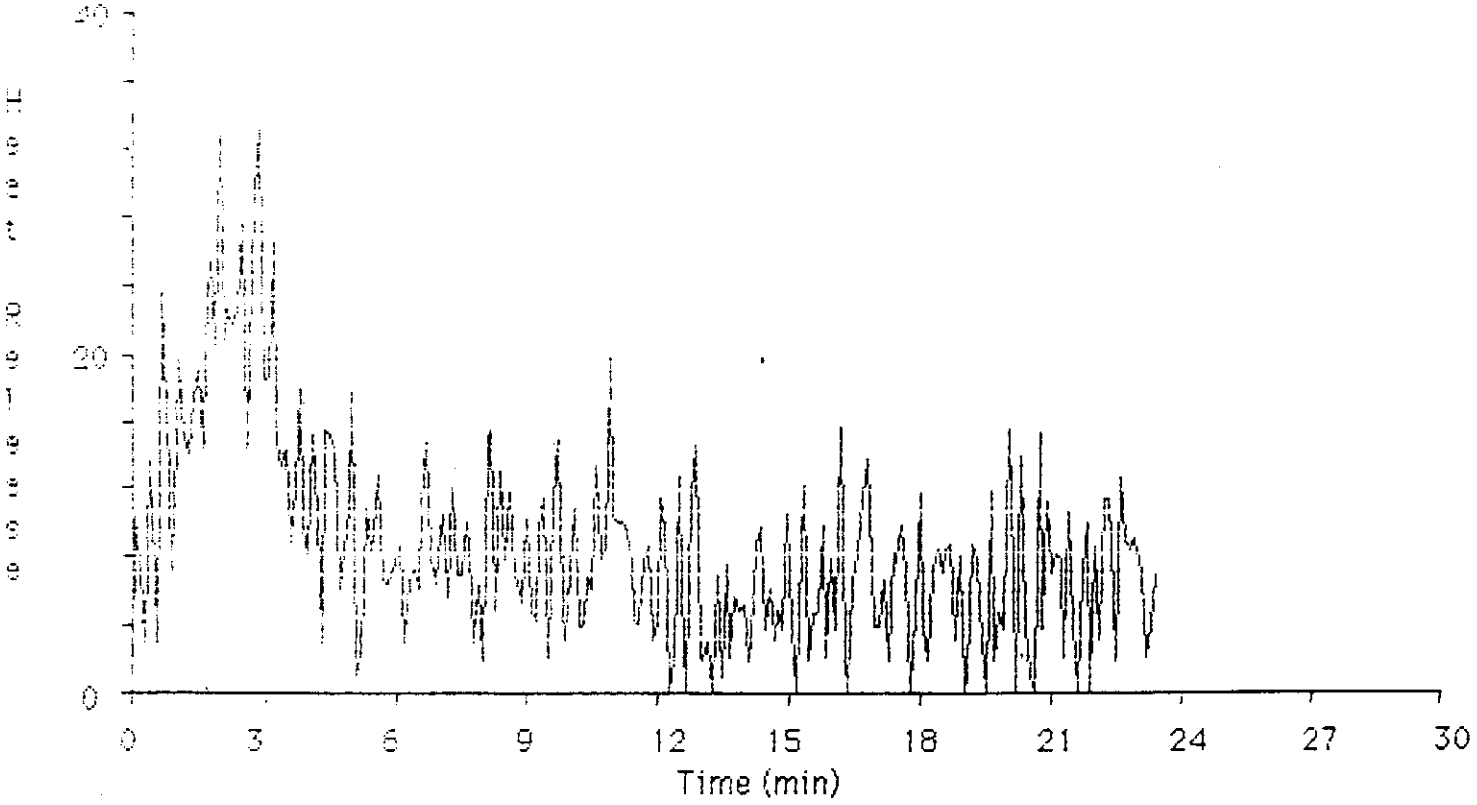


Spungold N then ONLY

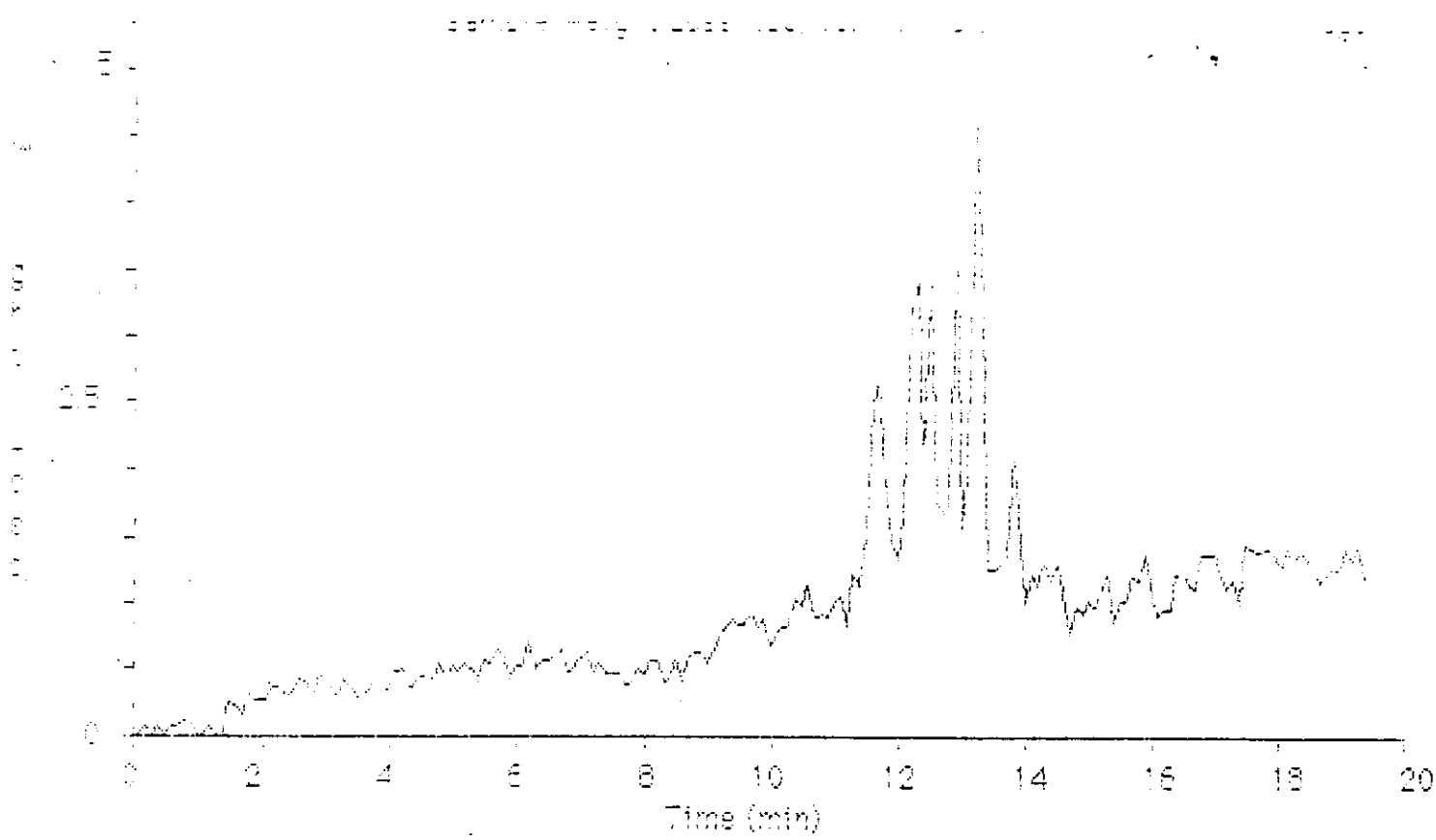
Sample Weight Loss (lbs) for



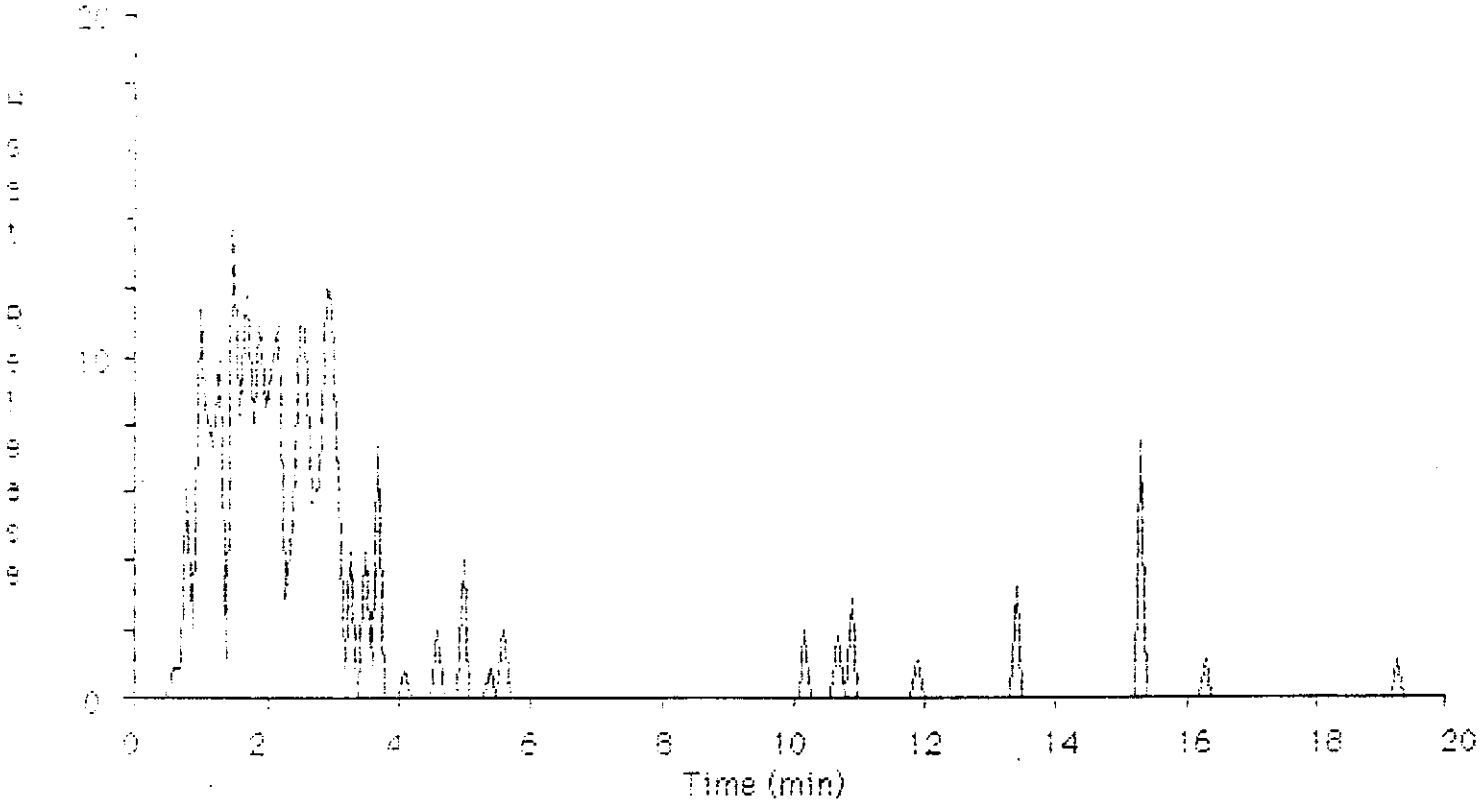
Heat Release Rate (kW) for



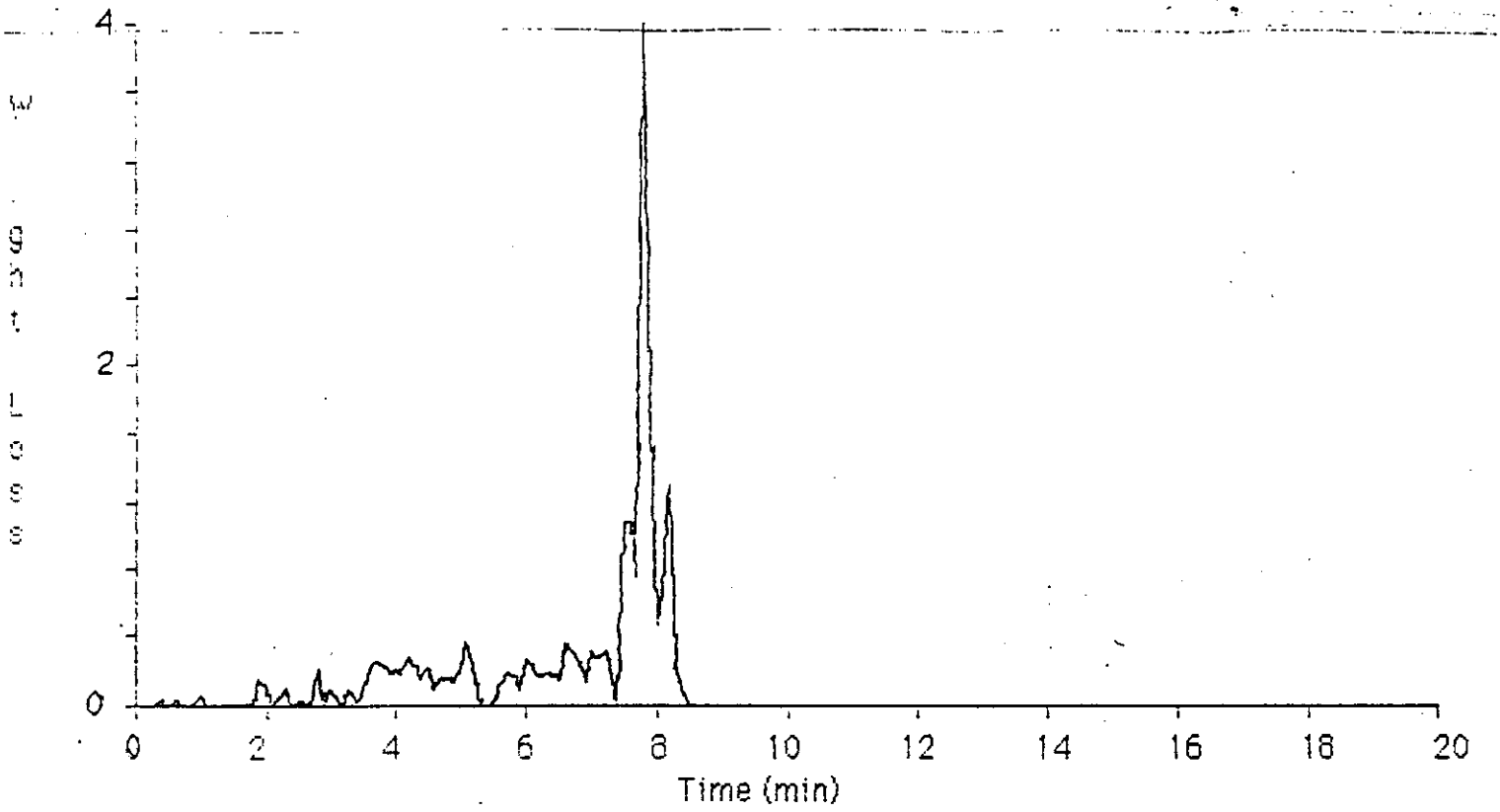
SPUNGOLD MATTRESS ONLY



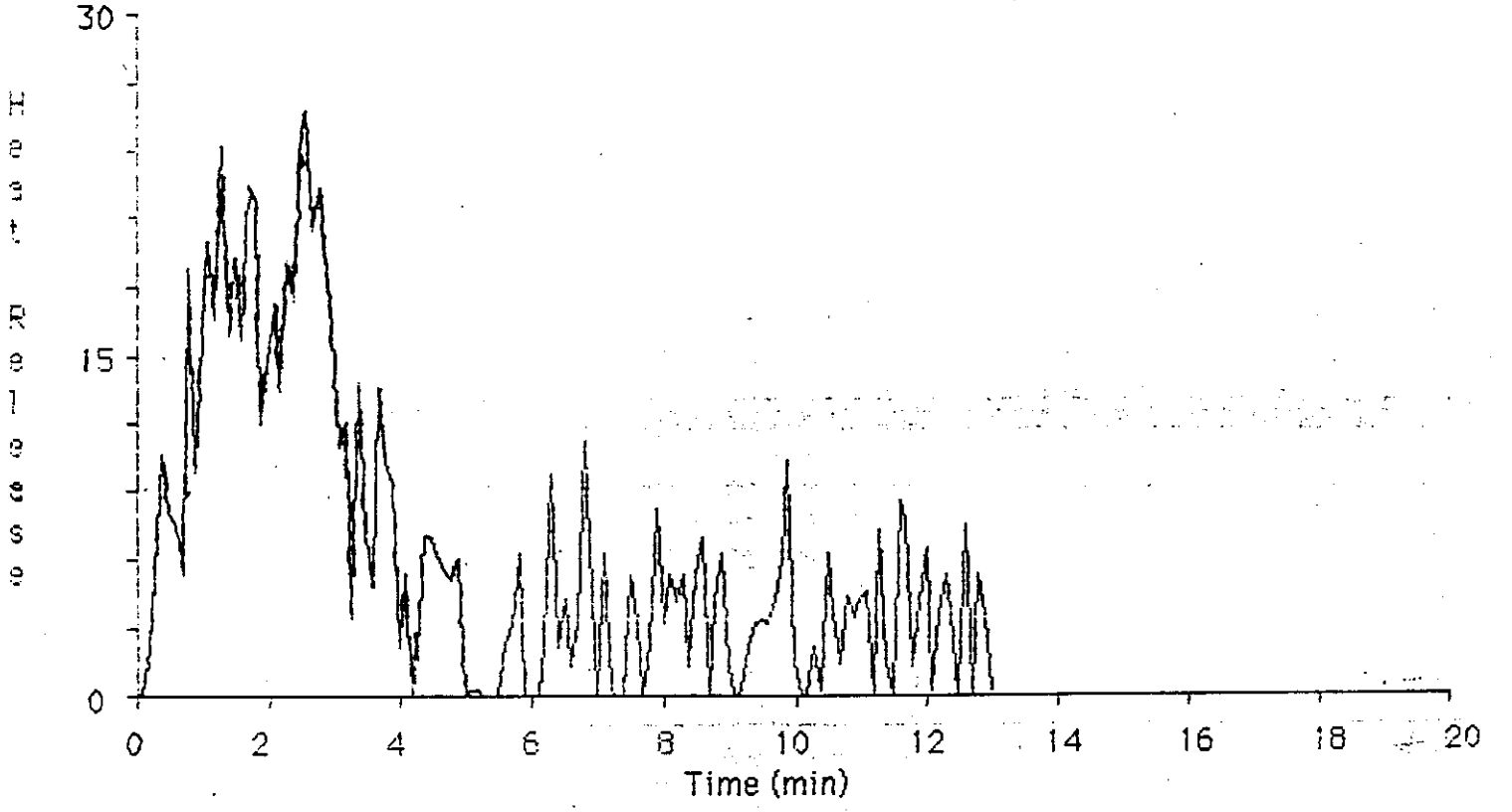
Heat Release Rate (kW) for



SPUNGOLD MATTRESS ONLY



Heat Release Rate (kW) for



SPUN GOLD - MATTRESS ONLY

VENTEX
a unique venture in textiles

SpunGold RESIDENTIAL FIRE BARRIER

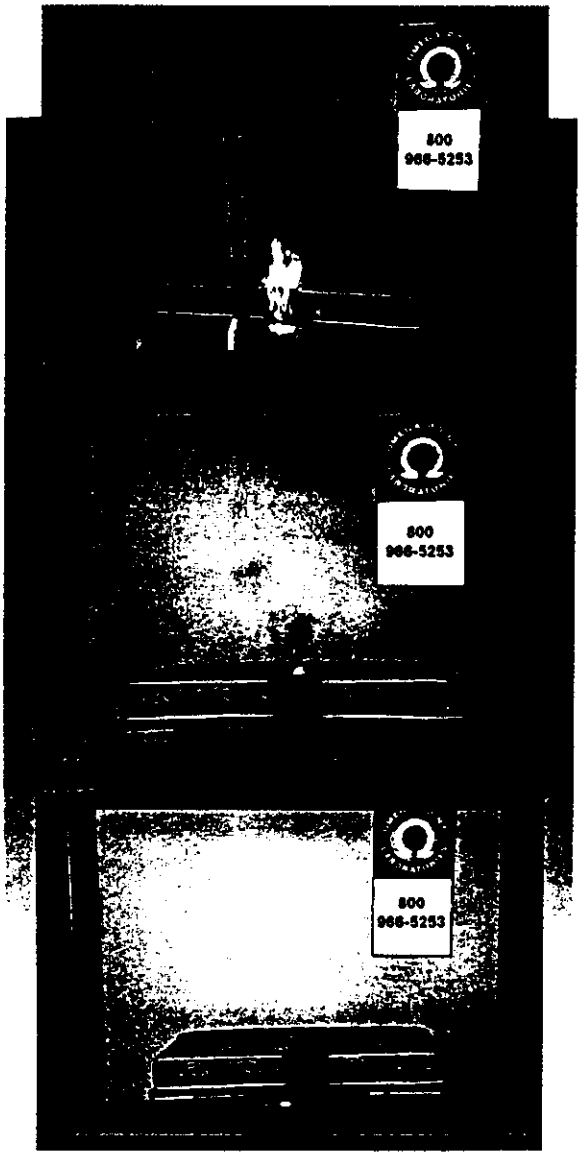
Unmatchable Safety™ Unmatchable Comfort™ Unmatchable Peace of Mind™

• Quiltable Fire Barrier • No Fiberglass • No Chemical Flame Retardants

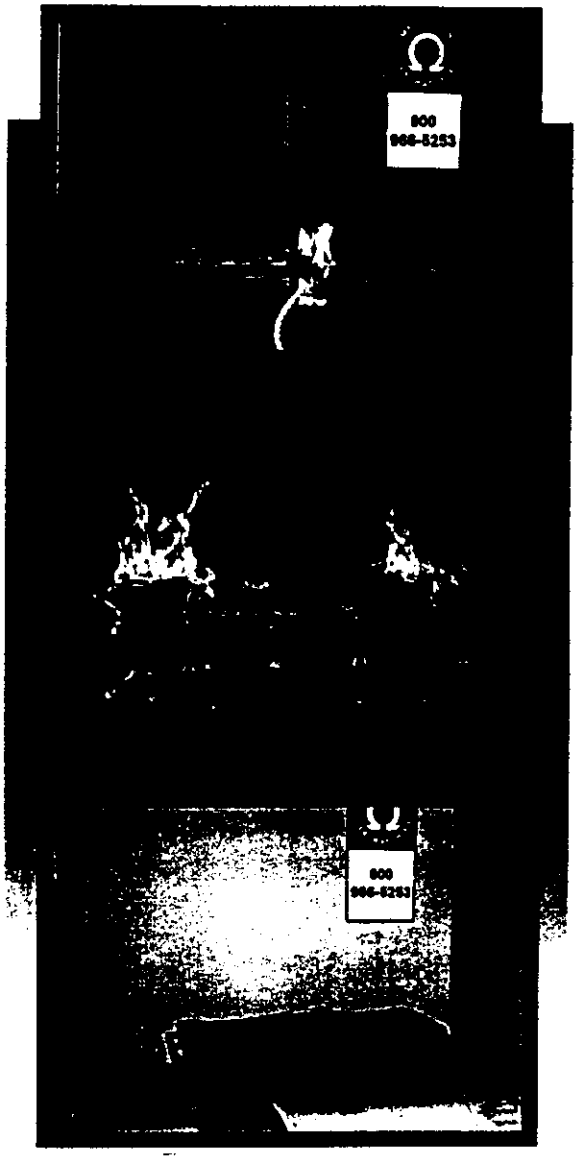
Why?

- About 75% of all fire deaths in the United States occur in private residences.
- Fire strikes most often at night while people are asleep in their beds.
- On average, over 600 people die each year in mattress and bedding fires.
- The likelihood of death in a fire increases dramatically as you age. People over 70 have over a 3 fold increase in risk.
- Of every 100 people that die in child set fires in the United States, 85 are children.

MATTRESS USING SPUNGOLD RESIDENTIAL FIRE BARRIER



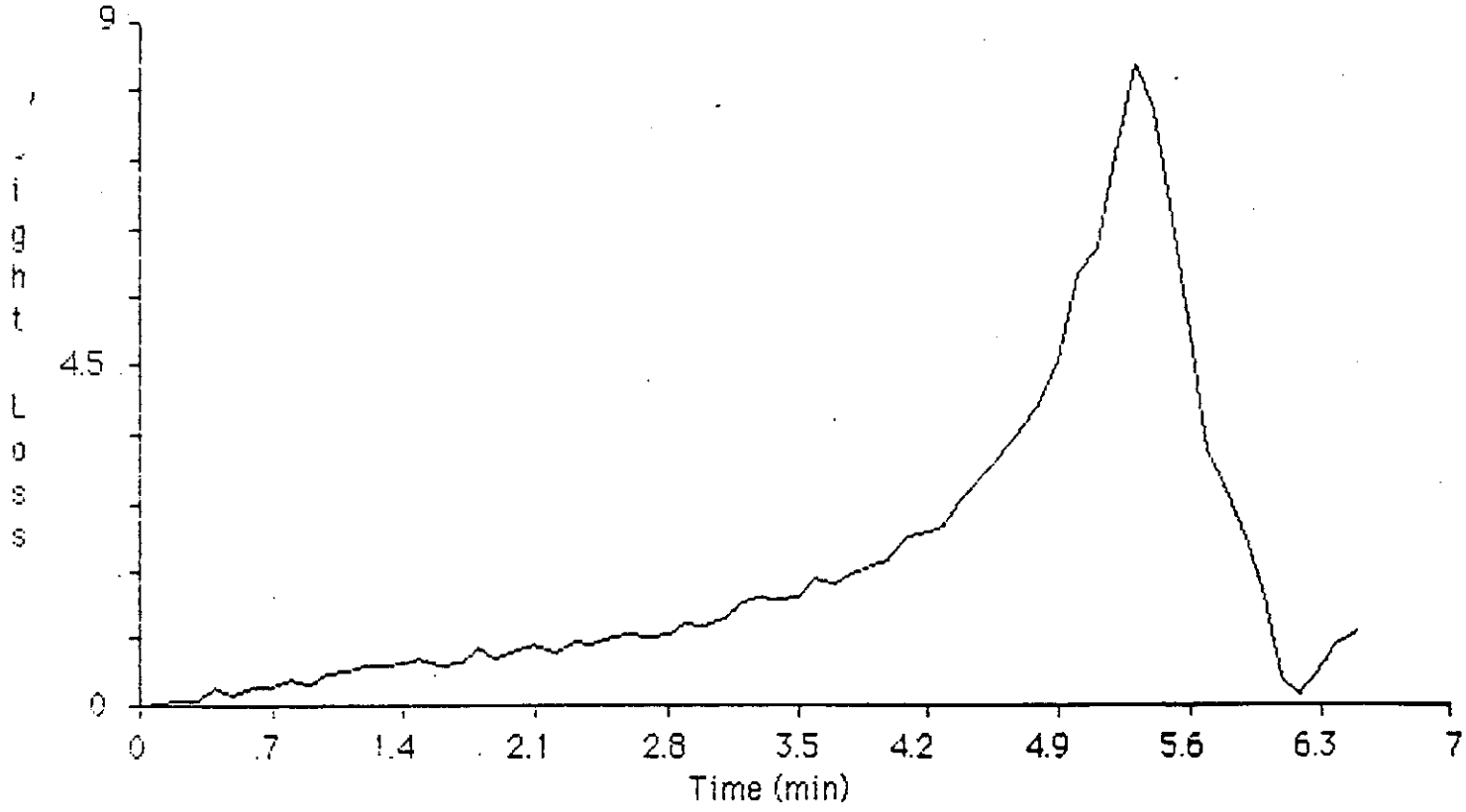
MATTRESS THAT MEETS FEDERAL FLAMMABILITY STANDARD



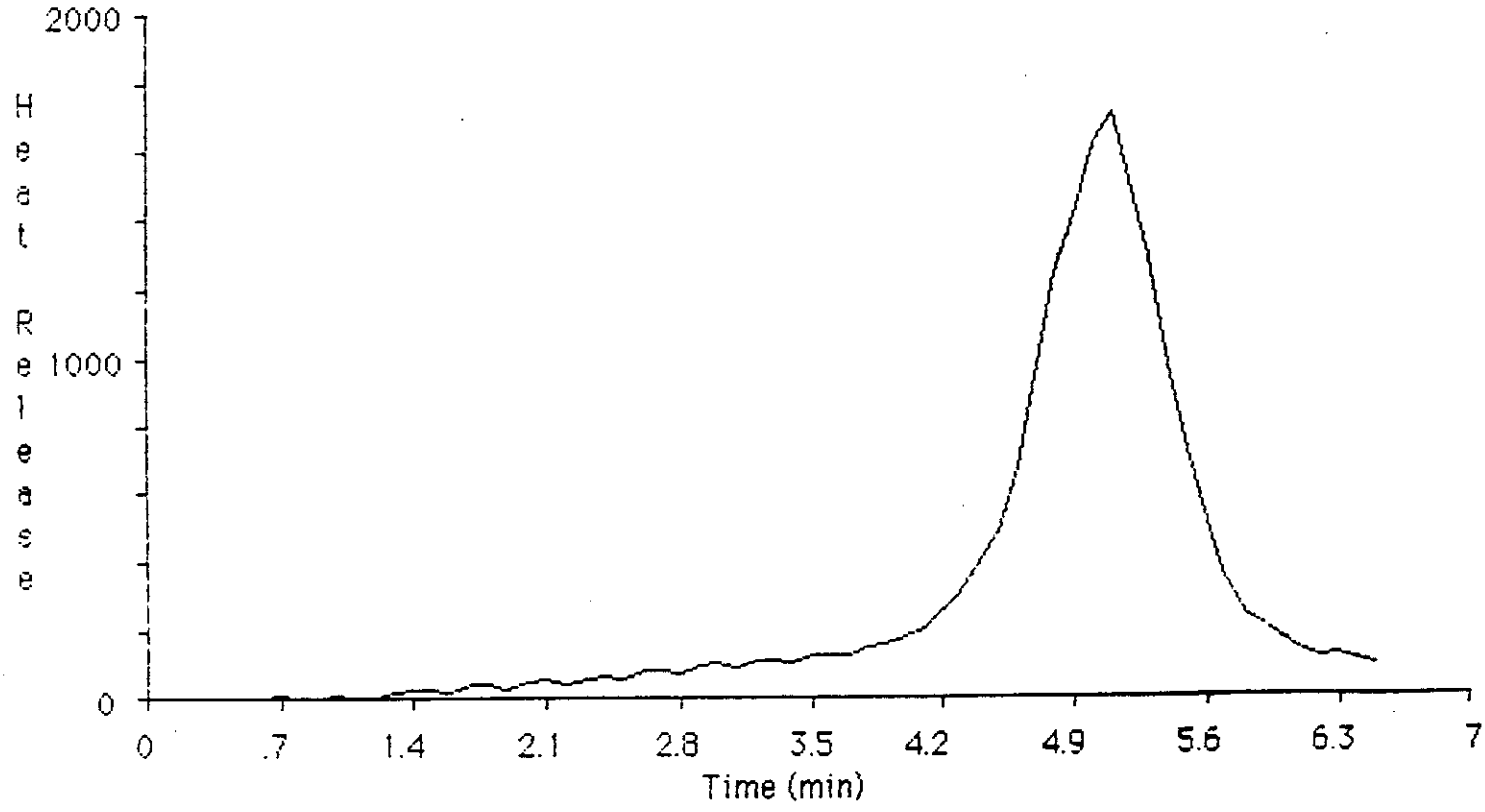
Tested by Independent Lab Omega Point Laboratories, Inc.

703-709-7211 www.ventexfabrics.com

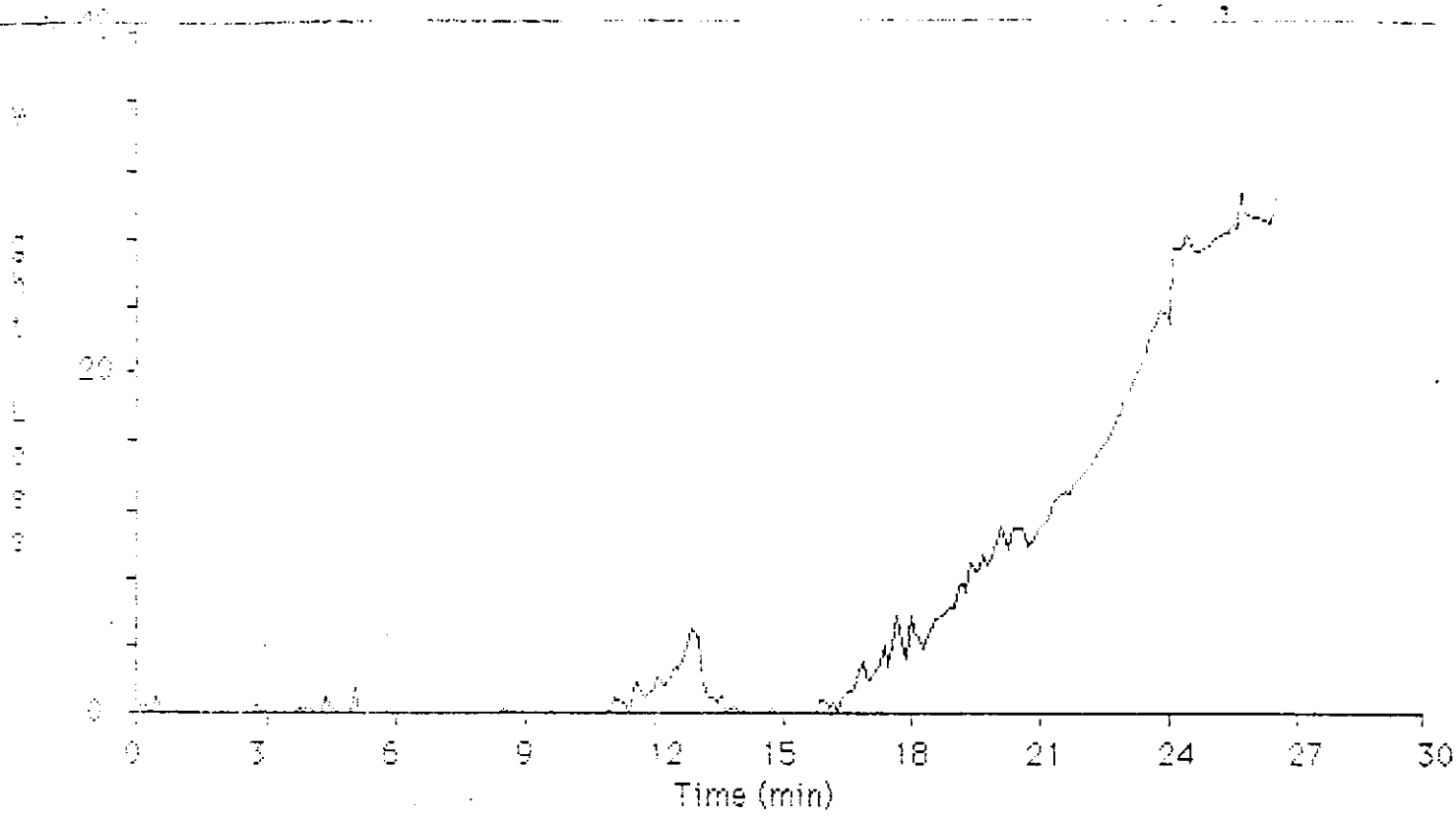
Sample Weight Loss (lbs) for



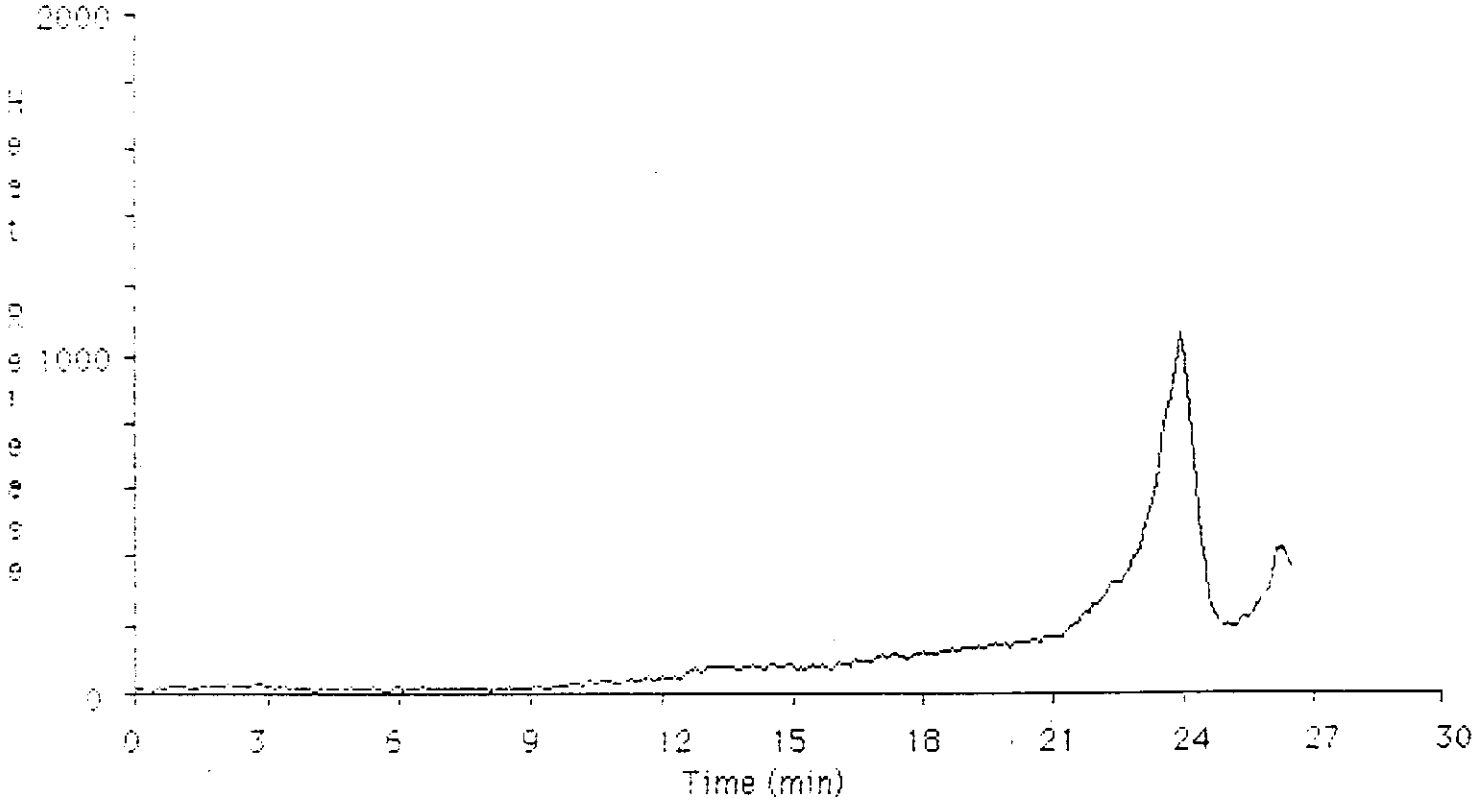
Heat Release Rate (kW) for



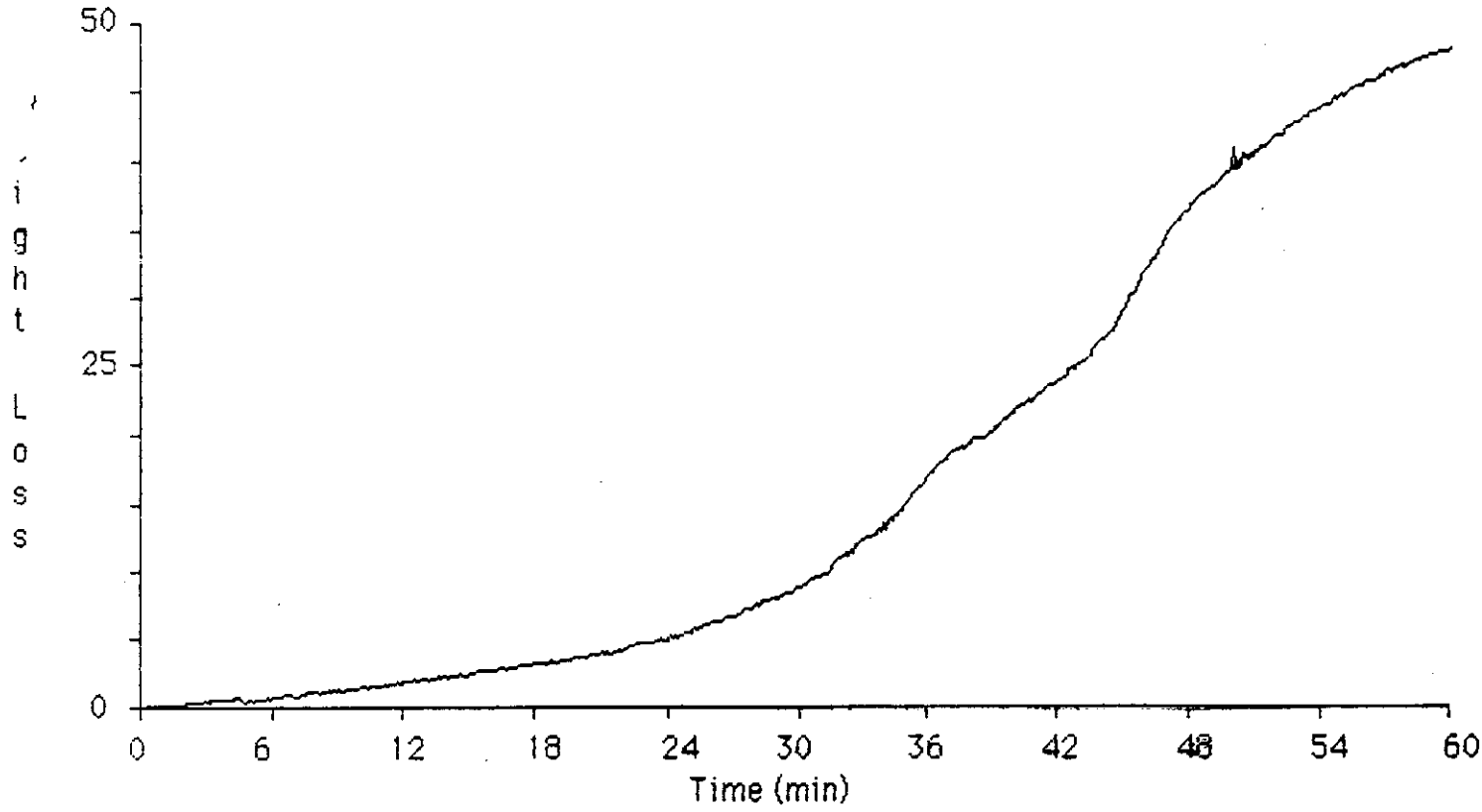
Regular Matters Only

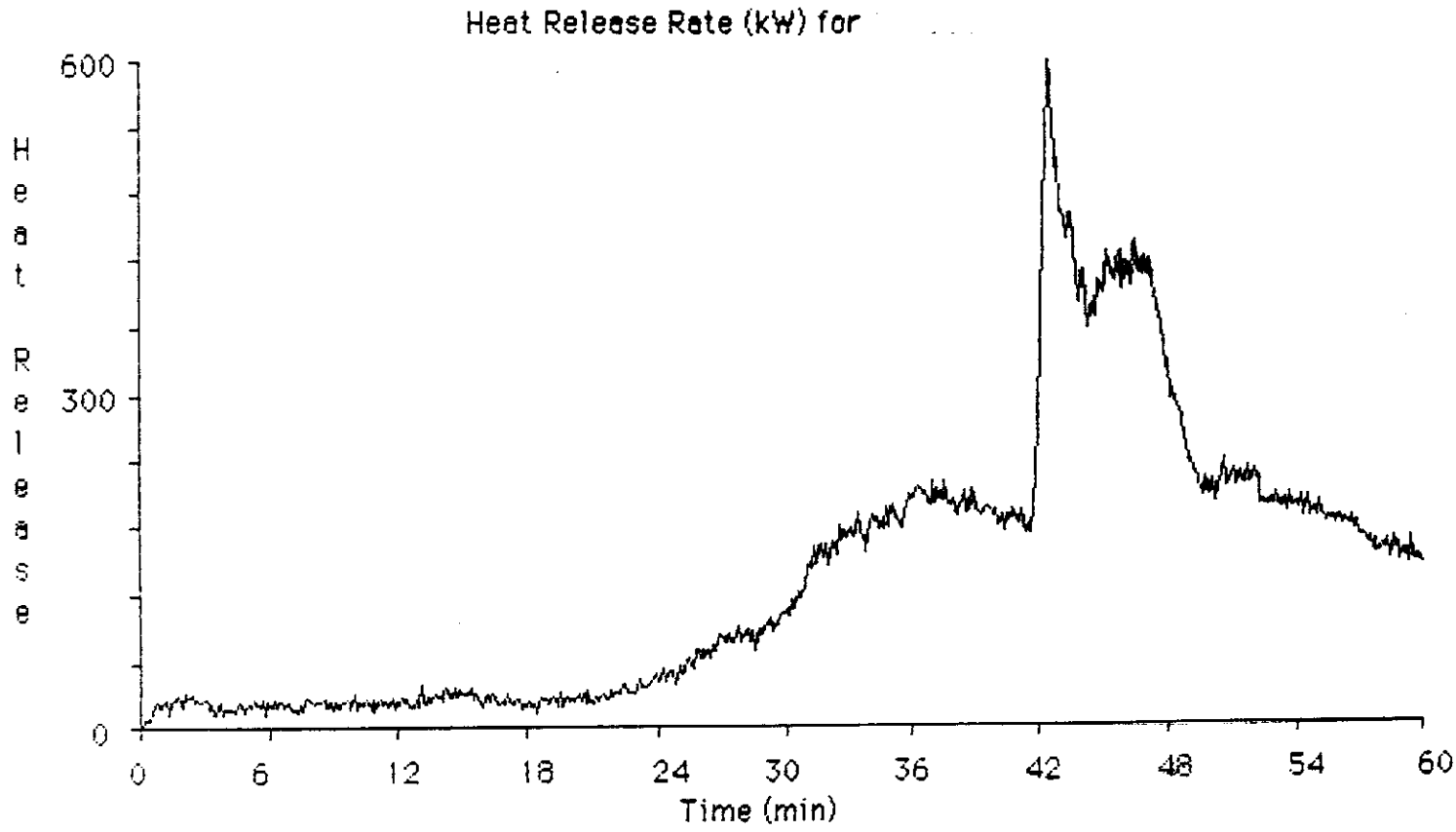


Heat Release Rate (KW) for



SPUNGOLD SET





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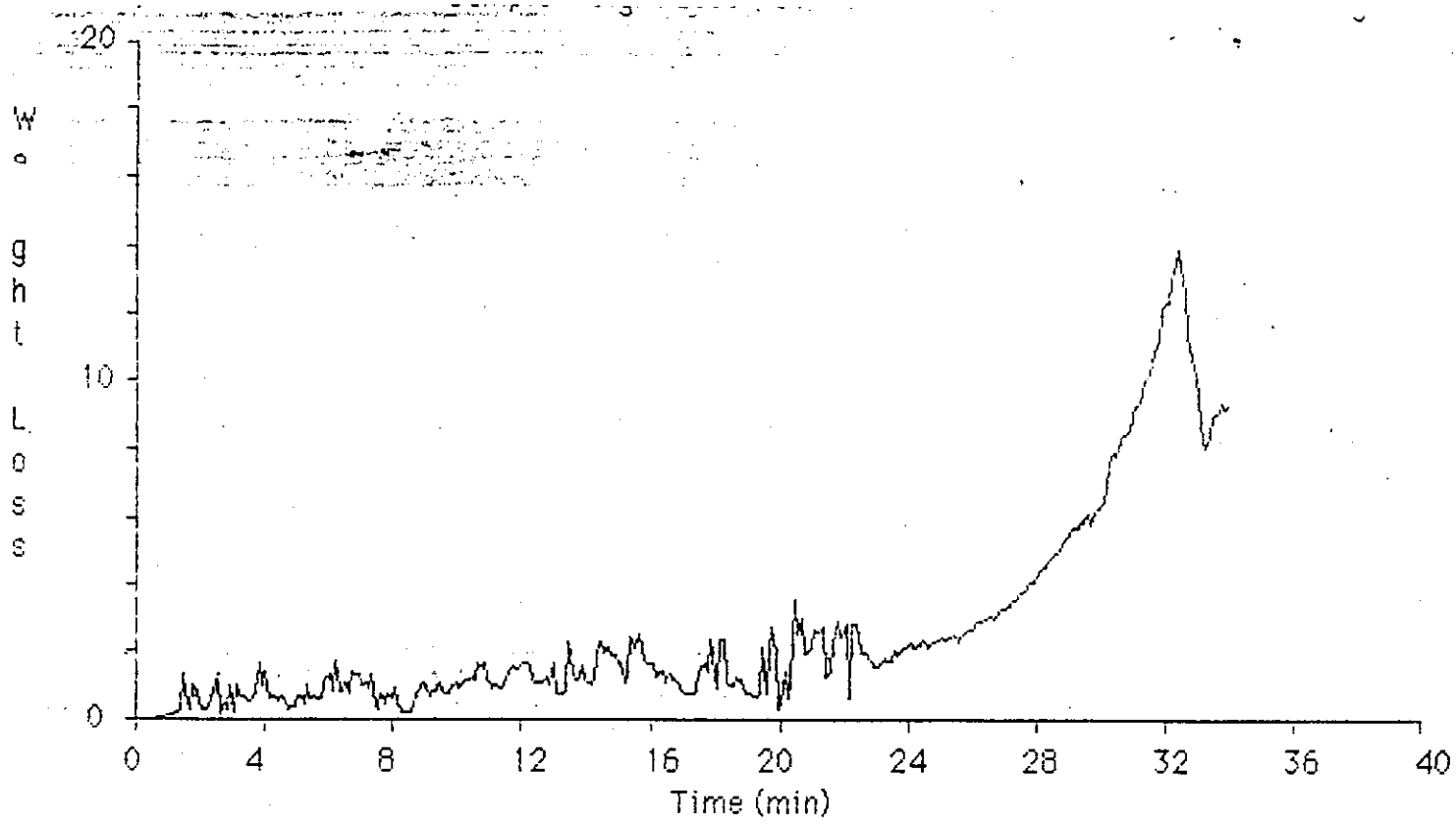
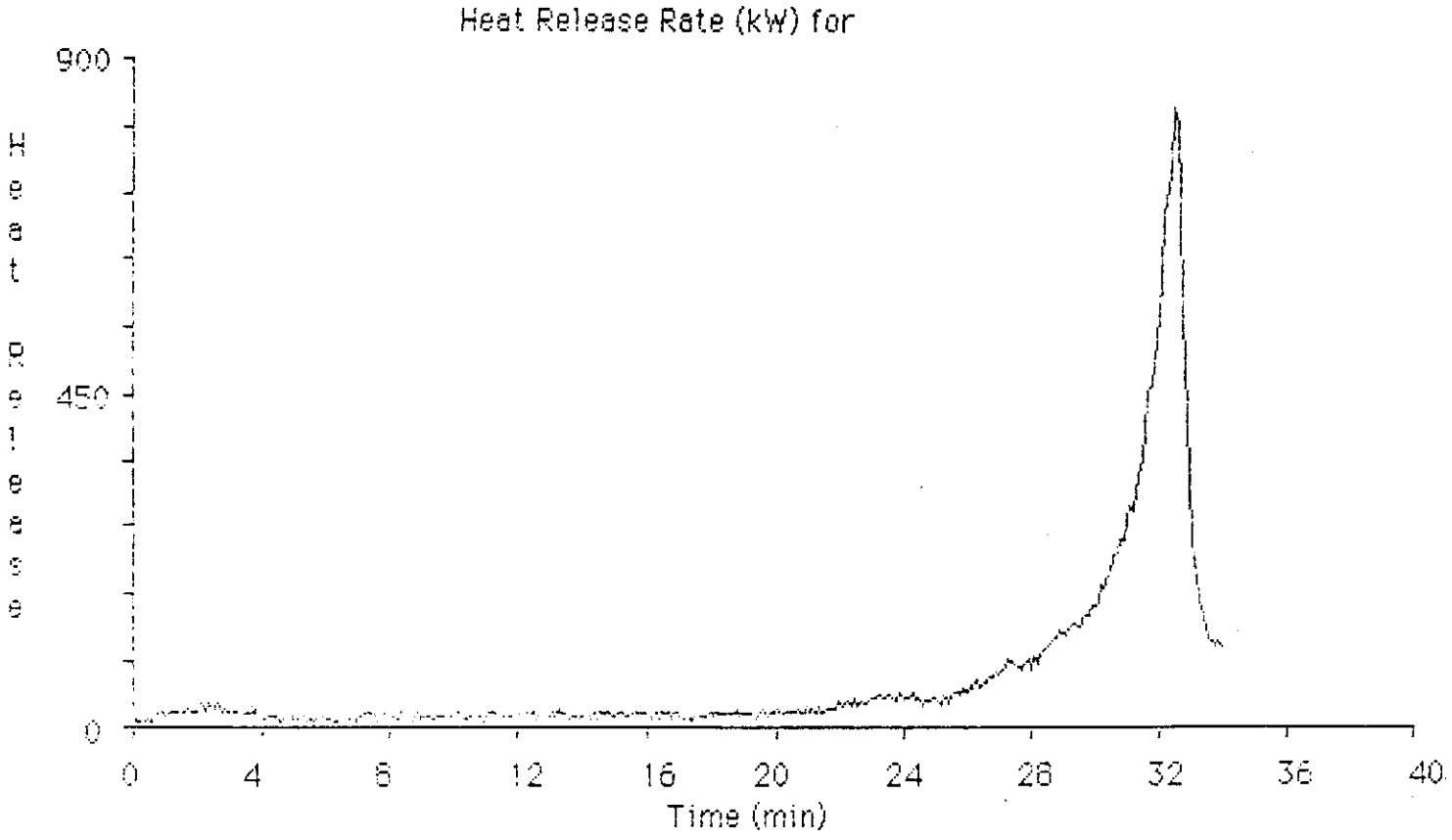
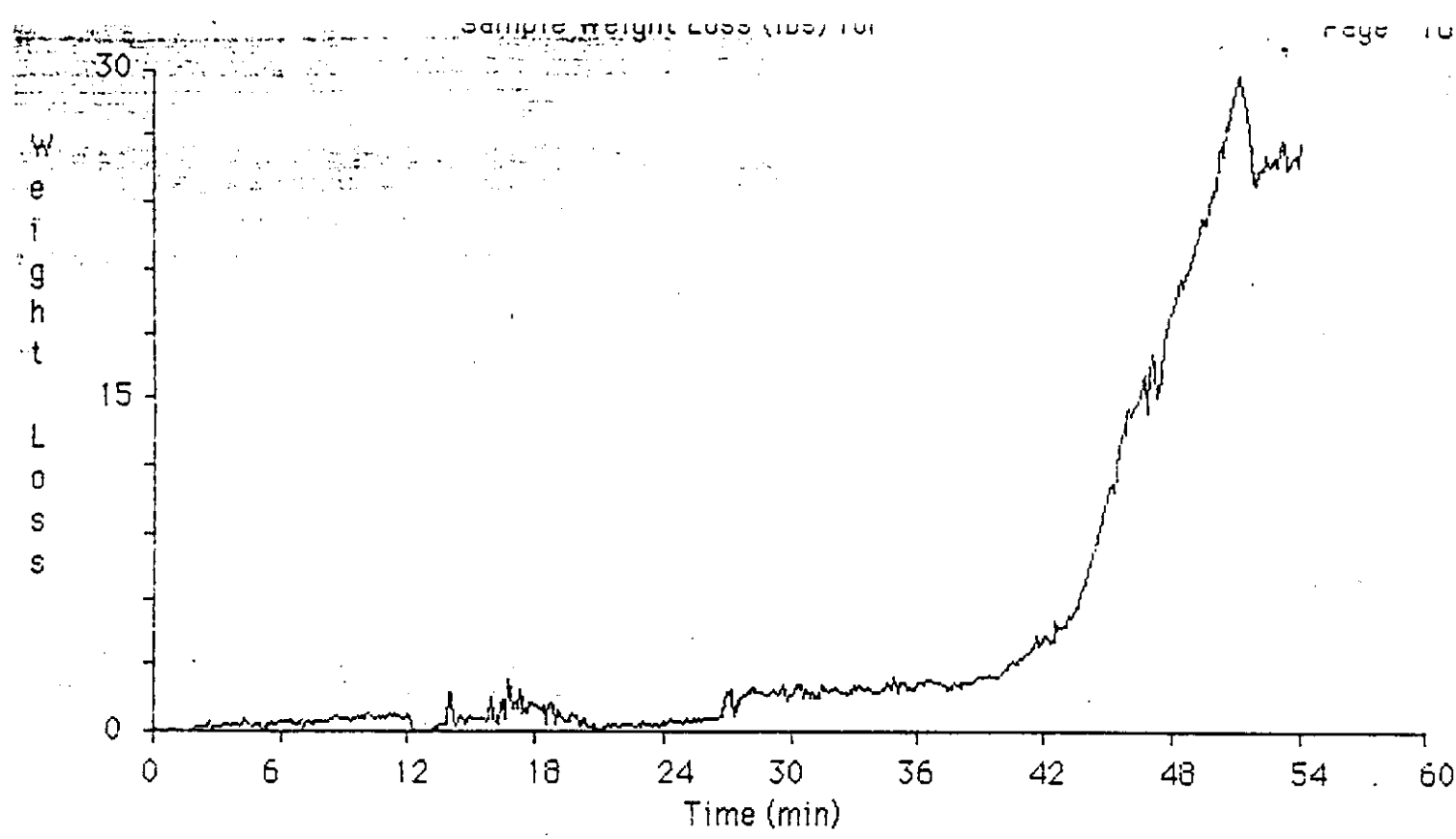
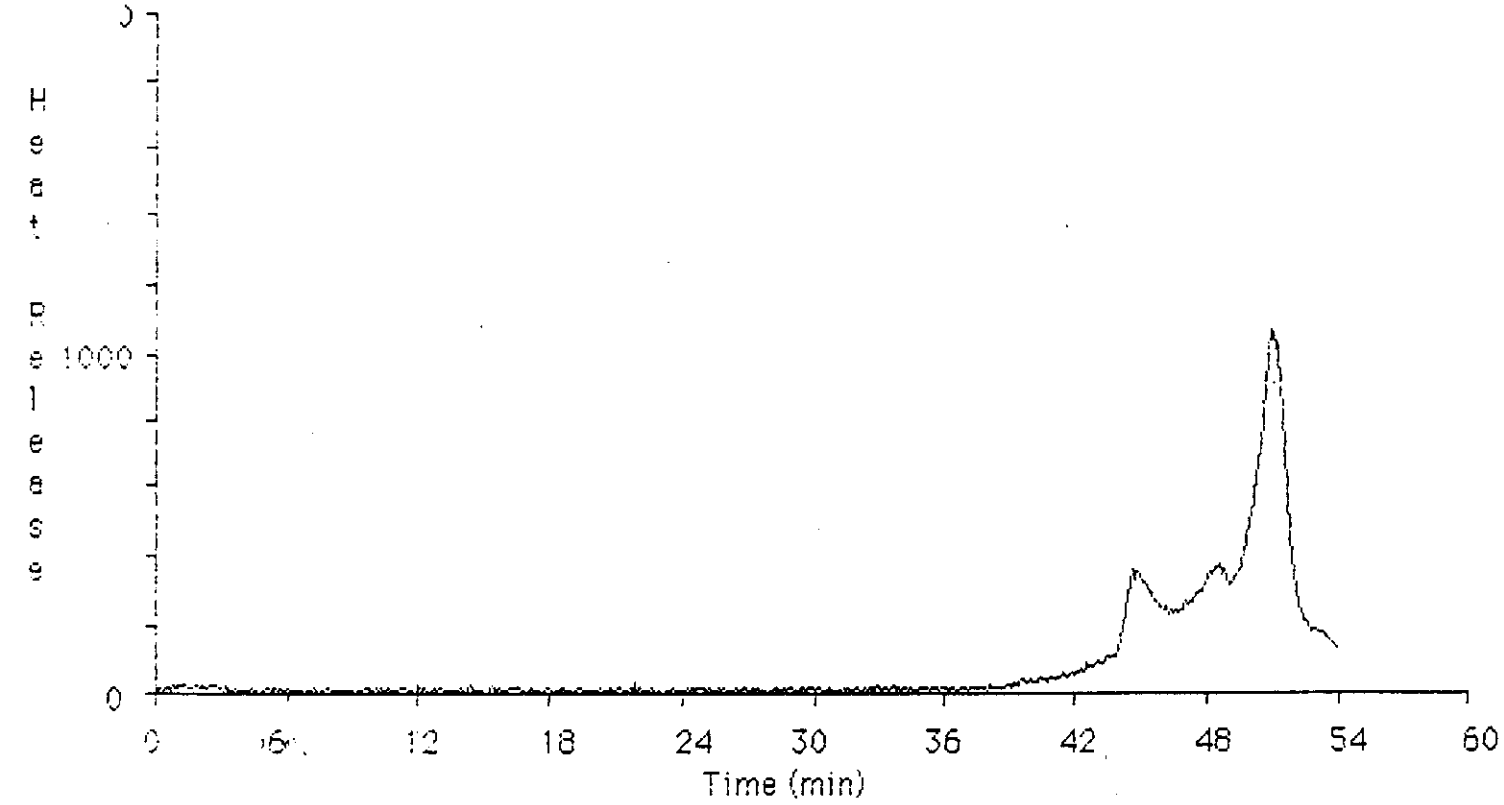




SPUNGOLD SET



Heat Release Rate (kW) for



SPUN GOLD SET

ISSUES TO ADDRESS: (page 1)

- The massive increase in fuel loads of mattresses in just the past 5 years.

- Explosion of after-market products that markedly increase the fuel load in the bedroom.

  - Foam overlays

- The proliferation of latex foam, which has proven to be very difficult to pass for contract applications

REMAINING CHALLENGES:(page 2)

- Super Heated Air in the interior of Mattresses and Box Springs

- Redesign of traditional boxspring construction may be necessary

- Pillow tops and other luxury modifications will require more design consideration for flammability impact

- Continued testing and refinement of testing approach

CONCLUSIONS:(page 3)

- Barriers are one of several effective means of reducing the peak rate of heat release and delaying flashover in a space.

- Residential Mattress designs incorporating barriers are performing very well under 129.

- Conventional materials used today can be shielded using a barrier method lowering the overall cost impact of open flame resistance.

CONCLUSIONS: (page 4)

- Performance is achieved through state of the art fibers.

- These barriers contain no chemical flame retardant additives, coatings, or baths to achieve their performance. We can get similar results in upholstered furniture without chemical flame retardant additives.

THOUGHTS ON THE NEW STANDARD: (page 5)

- The objective should be to create an even playing field that all manufacturers must meet
- Enhancing life safety should be a primary focus
- It must help protect people not intimate with ignition by "buying time".
- It must create products whose open flame resistance makes a real contribution to delaying flashover in the space and increasing egress time.
- It must test sets, not mattresses only. It must incorporate the "bedclothes" factor
- Large scale testing of full composites has proved the most reliable indicator of real performance in the field.
- Small scale tests component tests have not correlated well with large scale testing, but could be useful in allowing "switching" of top fabrics (tickings).
- You can not simulate the interaction between a mattress and a boxspring with a small scale test. The geometry and the burning behavior of bed sets are complex and not easily reproducible in small scale tests.

THOUGHTS ON THE NEW STANDARD: (page 6)

- It must be a universally required standard. It has commonly accepted notion that if it is not required of every manufacturer that the trend to the lowest common denominator will ultimately destroy the intent of the new standard.

- It must be flexible to allow any type of construction that meets the criteria.

- The standard must be designed to avoid cheating.

- Testing protocol must be practical and commonsensical and reflective of the real world.

- We can achieve 45 minute to 60 minute delays in the peak rate of heat release with today's technology. This would represent more than a 10 fold increase in egress, discovery, and fire department response times. Increased escape time means saved lives. We can achieve these type of results TODAY.

- The "Seattle Story".