



**UNITED STATES  
CONSUMER PRODUCT SAFETY COMMISSION  
WASHINGTON, DC 20207**

**Memorandum**

		Date:	November 22, 2005
TO	:	Margaret L. Neily, Project Manager for Mattress Flammability Directorate for Engineering Sciences	
THROUGH:		Russell Roegner, Ph.D., Associate Executive Director Directorate for Epidemiology	
FROM	:	David Miller Division of Hazard Analysis	
SUBJECT	:	Mattress and Bedding Fire Loss Estimates for 1999 - 2002 <sup>1</sup>	

## **Introduction**

On January 13, 2005, CPSC published a Notice of Proposed Rulemaking (NPR) for a Standard for the Flammability (Open Flame) of Mattresses and Mattress/Foundation Sets. This memo provides updated estimates of fires and fire losses associated with mattresses and bedding that support the need for a standard. The estimates used in the Briefing Package for the January 2005 NPR were for the years 1995 – 1999<sup>2</sup>. This memorandum provides estimates for the years 1999 – 2002 for mattress fires and associated losses.

There are two sets of estimates included. One set is for all mattress and bedding fires and associated losses. The second set is for those fires deemed potentially addressable by the proposed standard. Some fires started by certain heat sources or equipment are deemed out of scope. The criterion for determining whether a fire is a mattress fire and whether it is also an addressable mattress fire is provided in the Methodology section as well as in Appendix Tables A-1 and A2.1 – A2.3.

## **Results**

Table 1 provides the four-year annual average estimates of mattress/bedding fires, deaths, injuries, and property loss for fire department-attended fires. The estimates are broken down by ignition source and addressability.

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<sup>1</sup> This analysis was prepared by the CPSC staff, has not been reviewed or approved by, and may not necessarily reflect the views of, the Commission.

<sup>2</sup> L. Smith and D. Miller, Residential Fires Involving Mattresses and Bedding, U.S. Consumer Product Safety Commission, 2004, p. 12 – 16.

**Table 1**  
**Estimated Residential Fires and Fire Losses Involving**  
**Mattresses/Bedding, Attended by the Fire Service,**  
**1999 – 2002 Annual Average**

Heat Source	Fires	Deaths	Injuries	Property Loss in Millions
<b>Total Mattress/Bedding</b>	<b>15,300</b>	<b>350</b>	<b>1,750</b>	<b>\$295.0</b>
<b>Total Fire Losses Potentially Addressable</b>	<b>14,300</b>	<b>330</b>	<b>1,680</b>	<b>\$281.5</b>
<b>Smoking Material – Potentially Addressable</b>	<b>4,400</b>	<b>180</b>	<b>520</b>	<b>81.6</b>
Smoking Material – Not Addressable	*	*	*	0.1
<b>Candles, Matches, Lighters – Potentially Addressable</b>	<b>4,900</b>	<b>60</b>	<b>730</b>	<b>\$103.5</b>
Candles, Matches, Lighters – Not Addressable	*	*	*	\$0.8
<b>Additional Small Open Flame – Potentially Addressable</b>	<b>1,900</b>	<b>40</b>	<b>160</b>	<b>\$37.5</b>
Additional Small Open Flame – Not Addressable	*	*	*	\$0.8
<b>Other In Scope Ignition – Potentially Addressable</b>	<b>3,100</b>	<b>50</b>	<b>270</b>	<b>\$59.0</b>
Other In-Scope Ignition – Not Addressable	100	*	*	\$0.4
Out of Scope Ignition Sources – Not Addressable	800	20	60	\$11.4

All estimates rounded to nearest 100 fires, nearest 10 deaths or injuries, and nearest tenth of a million in property loss. Detail may not add due to rounding. Estimates include residential structure fires and associated losses only and exclude arson fires and arson fire losses.

\* Denotes rounded fire estimates of less than 100 and death or injury estimates of less than 10.

Source: U.S. Consumer Product Safety Commission/EPHA. Based on data from the U.S. Fire Administration and the National Fire Protection Association.

Table 2 shows annual estimates for fires and associated losses from fire department-attended fires for addressable mattress/bedding fires only.

**Table 2**  
**Estimated Residential Addressable Fires and Fire Losses Involving**  
**Mattress/Bedding, Attended by the Fire Service**

<b>Year</b>	<b>Fires</b>	<b>Deaths</b>	<b>Injuries</b>	<b>Property Loss in Millions</b>
1999	16,400	310	1,940	\$284.4
2000	15,200	360	2,120	\$310.5
2001	13,700	270	1,490	\$261.9
2002	11,900	380	1,170	\$269.2
<b>Average</b>	<b>14,300</b>	<b>330</b>	<b>1,680</b>	<b>\$281.5</b>

All estimates rounded to nearest 100 fires, nearest 10 deaths or injuries, and nearest tenth of a million in property loss. Averages are taken of unrounded numbers and then rounded. Detail may not add due to rounding. Estimates include residential structure fires and associated losses only and exclude arson fires and arson fire losses.

Source: U.S. Consumer Product Safety Commission/EPHA. Based on data from the U.S. Fire Administration and the National Fire Protection Association.

Tables 3 to 6 give estimates for fires, deaths, injuries, and property loss from addressable mattress/bedding fires broken down by ignition source.

**Table 3**  
**Estimated Addressable Mattress/Bedding Fires, Attended by the Fire**  
**Service**

<b>Year</b>	<b>Smoking Material Ignition</b>	<b>Candle, Match, or Lighter Ignition</b>	<b>Other Small Open Flame Ignition</b>	<b>Other Addressable</b>	<b>Total</b>
1999	5,200	5,700	1,900	3,500	16,400
2000	4,800	5,300	1,800	3,300	15,200
2001	4,300	4,500	2,000	2,900	13,700
2002	3,400	3,900	1,900	2,600	11,900
<b>Average</b>	<b>4,400</b>	<b>4,900</b>	<b>1,900</b>	<b>3,100</b>	<b>14,300</b>

All estimates rounded to nearest 100 fires. Averages are taken of unrounded numbers and then rounded. Detail may not add due to rounding. Estimates include residential structure fires only and exclude arson fires.

Source: U.S. Consumer Product Safety Commission/EPHA. Based on data from the U.S. Fire Administration and the National Fire Protection Association.

**Table 4**  
**Estimated Addressable Mattress/Bedding Fire Civilian\* Deaths,**  
**Attended by the Fire Service**

<b>Year</b>	<b>Smoking Material Ignition</b>	<b>Candle, Match, or Lighter Ignition</b>	<b>Other Small Open Flame Ignition</b>	<b>Other Addressable</b>	<b>Total</b>
1999	150	70	50	40	310
2000	190	80	10	90	360
2001	180	60	30	10	270
2002	210	50	80	50	380
<b>Average</b>	<b>180</b>	<b>60</b>	<b>40</b>	<b>50</b>	<b>330</b>

All estimates rounded to nearest 10 deaths. Averages are taken of unrounded numbers and then rounded. Detail may not add due to rounding. Estimates include deaths from residential structure fires only and exclude deaths from arson fires.

Source: U.S. Consumer Product Safety Commission/EPHA. Based on data from the U.S. Fire Administration and the National Fire Protection Association.

\* Excludes firefighter deaths.

**Table 5**  
**Estimated Addressable Mattress/Bedding Fire Civilian\* Injuries,**  
**Attended by the Fire Service**

<b>Year</b>	<b>Smoking Material Ignition</b>	<b>Candle, Match, or Lighter Ignition</b>	<b>Other Small Open Flame Ignition</b>	<b>Other Addressable</b>	<b>Total</b>
1999	530	950	170	290	1,940
2000	690	920	150	350	2,120
2001	460	630	170	230	1,490
2002	400	440	140	200	1,170
<b>Average</b>	<b>520</b>	<b>730</b>	<b>160</b>	<b>270</b>	<b>1,680</b>

All estimates rounded to nearest 10 injuries. Averages are taken of unrounded numbers and then rounded. Detail may not add due to rounding. Estimates include injuries from residential structure fires only and exclude injuries from arson fires.

Source: U.S. Consumer Product Safety Commission/EPHA. Based on data from the U.S. Fire Administration and the National Fire Protection Association.

\* Excludes firefighter injuries.

**Table 6**  
**Estimated Addressable Mattress/Bedding Fire Property Loss**  
**(\$ Millions), Attended by the Fire Service**

<b>Year</b>	<b>Smoking Material Ignition</b>	<b>Candle, Match, or Lighter Ignition</b>	<b>Other Small Open Flame Ignition</b>	<b>Other Addressable</b>	<b>Total</b>
1999	88.8	117.6	27.0	51.0	284.4
2000	94.9	119.6	33.8	62.3	310.5
2001	65.1	85.9	45.1	65.8	261.9
2002	77.7	90.7	44.0	56.7	269.2
<b>Average</b>	<b>81.6</b>	<b>103.5</b>	<b>37.5</b>	<b>59.0</b>	<b>281.5</b>

All estimates rounded to nearest tenth of a million dollars in property loss. Averages are taken of unrounded numbers and then rounded. Detail may not add due to rounding. Estimates include property loss from residential structure fires only and exclude property loss from arson fires.

Source: U.S. Consumer Product Safety Commission/EPHA. Based on data from the U.S. Fire Administration and the National Fire Protection Association.

Tables 7 and 8 show four-year annual average estimates of mattress/bedding fire deaths and injuries respectively broken down by victim's age.

**Table 7**  
**Estimated Addressable Mattress/Bedding Fire Civilian\* Deaths,**  
**Attended by the Fire Service by Age of Victim (1999 – 2002 Average)**

<b>Age of Victim</b>	<b>Smoking Material Ignition</b>	<b>Small Open Flame Ignition</b>	<b>Other Addressable</b>	<b>Total</b>
Less than 5	10	40	10	70
5 – 14	0	20	0	20
15 – 64	120	30	20	160
65+	50	20	10	80
<b>Total</b>	<b>180</b>	<b>110</b>	<b>50</b>	<b>330</b>

All estimates rounded to nearest 10 deaths. Detail may not add due to rounding. Estimates include deaths from residential structure fires only and exclude deaths from arson fires.

Source: U.S. Consumer Product Safety Commission/EPHA. Based on data from the U.S. Fire Administration and the National Fire Protection Association.

\* Excludes firefighter deaths.

**Table 8**  
**Estimated Addressable Mattress/Bedding Fire Civilian\* Injuries,**  
**Attended by the Fire Service, by Age of Victim (1999 – 2002 Average)**

<b>Age of Victim</b>	<b>Smoking Material Ignition</b>	<b>Small Open Flame Ignition</b>	<b>Other Addressable</b>	<b>Total</b>
Less than 5	20	110	20	150
5 – 14	20	150	30	190
15 – 64	390	580	180	1,160
65+	90	50	40	180
<b>Total</b>	<b>520</b>	<b>890</b>	<b>270</b>	<b>1,680</b>

All estimates rounded to nearest 10 injuries. Detail may not add due to rounding. Estimates include injuries from residential structure fires only and exclude injuries from arson fires.

Source: U.S. Consumer Product Safety Commission/EPHA. Based on data from the U.S. Fire Administration and the National Fire Protection Association.

\* Excludes firefighter injuries.

## Methodology

Estimates for mattress/bedding fires and associated losses are produced in a manner that follows the general methodology that CPSC staff uses to produce fire loss estimates for many consumer products. This methodology is explained in a report titled *1999 Revised – 2002 Residential Fire Loss Estimates*<sup>3</sup>. The mattress/bedding estimates reported in this memo are derived from the same National Fire Incident Reporting System (NFIRS) residential structure files, use the same weights derived from the National Fire Protection Association's (NFPA) annual survey, and rely on raking to allocate unknowns. Fires and losses from intentionally set fires are excluded from the estimates just as in the Residential Fire Loss Estimates. There are some minor distinctions in the methodology for deriving the mattress/bedding estimates reported in this memo.

Unlike the Residential Fire Loss Estimates where there are many consumer products involved, the formatting for the *Item First Ignited* variable for the mattress/bedding analysis divides all fires into either 'Mattress, Bedding', 'Not Mattress, Bedding' or 'Unknown'. As with the Residential Fire Loss Estimates, the variables *Cause of Ignition* (Intentional vs. Unintentional), *Heat Source* (Smoking Material, Open Flame, Other), and *Item First Ignited* (Mattress/Bedding vs. Not Mattress/Bedding) are used in this analysis.

Some variables have been added to the process of producing the mattress/bedding specific estimates. Two variables, *Area of Origin* and *Type of Material First Ignited*, are included for the purpose of editing. There are values for these variables that signify that a fire is not a mattress/bedding fire even if the code for *Item First Ignited* is 'Mattress/Bedding'. An example is if the Area of Origin code indicates that the fire

<sup>3</sup> R. Chowdhury, M. Green, D. Miller, and L. Smith, 1999 Revised – 2002 Residential Fire Loss Estimates, U.S. Consumer Product Safety Commission, 2005.

started in a ‘Dumbwaiter or elevator shaft’. See Appendix Tables A-2.1 – A-2.3 for further details about this editing.

There are other variables that are part of the analysis to determine if a mattress/bedding fire is addressable by the proposed standard. These variables are *Factors Contributing to Ignition* and *Equipment Involved in Ignition*. There are some values for these variables that determine that a mattress/bedding fire is not addressable. There are also some values for *Heat Source* that can lead to a mattress/bedding fire being considered not addressable (e.g., if the *Heat Source* for the fire is ‘Lightning’). See Appendix Table A-1 and Tables A-2.1 – A-2.3 for the details about what codes mean a fire is addressable and which codes mean a fire is not addressable.

All of the variables have unknown values. All of the variables are included in the raking procedure which is referenced in the *1999 Revised – 2002 Residential Fire Loss Estimates*. After the raking, the editing is applied, the determinations of addressability are made, and the intentional fires are excluded.

The estimates for total mattress/bedding fires, deaths, injuries, and property loss in this mattress/bedding specific analysis differ from the mattress/bedding estimates in the Residential Fire Loss Estimates report because of the editing that is done. The editing leads to slightly smaller estimates.

**Appendix**  
**NFIRS Version 5.0 Codes Used to Identify Mattress and Bedding Fires**

**Table A-1**  
**Standard Codes Used in Mattress and Bedding Fire Loss Estimates, Without**  
**Regard to Addressability**

<b>Heat Source</b>	<b>NFIRS Version 5.0 Codes</b>
Smoking Materials	Cigarette (61) Pipe or cigar (62) Heat from undetermined smoking material (63)
Traditional Small Open Flame Sources	Match (64) Cigarette lighter (65) Candle (66)
Additional Small Open Flame Sources	Spark, ember or flame from operating equipment (11) Arcing (13) Hot ember or ash (43) Fireworks (54)
Other In-scope Heat Sources	Heat from powered equipment, other (10) Radiated, conducted heat from operating equipment (12) Hot or smoldering object, other (40) Heat, spark from friction (41) Molten, hot material (42) Model and amateur rockets (55) Heat from other open flame or smoking materials (60) Backfire from internal combustion engine (68) Chemical, natural heat source, other (70) Sunlight (71) Chemical reaction (72) Other static discharge (74)
Out-of-Scope Heat Sources	Heat source, other (00) Explosive, fireworks, other (50) Munitions (51) Blasting agent (53) Incendiary device (56) Lightning (73) Heat spread from another fire, other (80) Heat from direct flame, convection currents (81) Radiated heat from another fire (82) Flying brand, ember, spark (83) Conducted heat from another fire (84) Multiple heat sources including multiple ignitions (97)
Unknown Heat Sources	‘UU’, blank
<b>Form of Material First Ignited</b>	
Mattress, Bedding	31 – Mattress, pillow 32 – Bedding; blanket, sheet, comforter
Not Mattress, Bedding	All codes except 31, 32, ‘UU’, and blank
Unknown Form of Material First Ignited	‘UU’, blank



**Table A-2.1**  
**Mattress and Bedding Fire Edits to Define Addressability When Heat Source =**  
**Traditional Small Open Flame (Candles, Matches, Lighters) or Smoking Material**

<b>Variable</b>	<b>Mattress/Bedding - Addressable (In-scope)</b>	<b>Mattress/Bedding – Not Addressable (Out-of-Scope)</b>	<b>Not Mattress/Bedding</b>
<b>Type of Material First Ignited</b>	Other type of material ignited (00) Plastic (41) Natural product, other (50) Rubber, excluding synthetic rubbers (51) Leather (53) Grain, natural fiber, (preprocess) (55) Fabric, textile, fur, other (70) Fabric, fiber, cotton, blends, rayon, wool (71) Fur, silk, other fabric (74) Plastic coated fabric (77)		Flammable Gas (10 – 15) Flammable, Combustible Liquid (20 – 27) Volatile Solid or Chemical (30 – 38) Cork (52) Hay, straw (54) Coal, coke, briquettes, peat (56) Food, starch, excluding fat and grease (57) Tobacco (58) Wood or Paper - Processed (60 – 68) Wig (75) Human hair (76) Material compounded with oil, other (80) Linoleum (81) Oilcloth (82) Asphalt treated material (86) Multiple types of material first ignited (99)
<b>Area of Origin</b>	Area of origin, other (00) Corridor, mall (01) Exterior stairway, ramp, or fire escape (02) Interior stairway or ramp (03) Entrance way, lobby (05) Egress/exit, other (09) Assembly, Sales Areas (Groups or People) (10 – 17) Function Area (20 – 28) Technical Processing Areas (30 – 38) Storage area, other (40) Storage room, area, tank, or bin (41) Closet (42) Storage: supplies or tools; dead storage (43) Records storage room, storage vault (44) Shipping/receiving area; loading area, dock or bay (45) Vehicle storage area; garage, carport (47) Service facilities, other (50) Display window (56) Service, Equipment Areas (60 – 67) Structural area, other (70) Substructure area or space, crawl space (71) Exterior balcony, unenclosed porch (72) Ceiling & floor assembly, crawl		Escalator, exterior, interior (04) Chute/container – trash, rubbish, waste (46) Dumbwaiter or elevator shaft (51) Conduit, pipe, utility, or ventilation shaft (52) Light shaft (53) Chute; laundry or mail, excluding trash chutes (54) Duct: hvac, cable, exhaust, heating or AC (55) Conveyor (58) Awning (78) Transportation, Vehicle Area (80 – 86)

	space between stories (73) Attic: vacant, crawl space above top story, cupola (74) Wall assembly (75) Wall surface: exterior (76) Roof surface: exterior (77) Other Area of Origin (90 – 98)		
<b>Factors Contrib. to Ignition</b>	Factor contributing to ignition, other (00) No factor contributing to ignition (NN) Misuse of material or product, other (10) Abandoned or discarded materials or products (11) Heat source too close to combustibles (12) Improper container or storage (18) Playing with heat source (19) Mechanical failure, malfunction, other (20) Automatic Control Failure (21) Manual control failure (22) Leak or break (23) Worn out (25) Improper fuel used (27) Water caused short-circuit arc (31) Short circuit arc from mechanical damage (32) Short circuit arc from defective, worn insulation (33) Arc from faulty contact, broken conductor (35) Arc, spark from operating equipment (36) Fluorescent light ballast (37) Installation Deficiency (40 – 44) Operational deficiency, other (50) Collision, knock down, run over, turn over (51) Accidentally turned on, not turned off (52) Equipment unattended (53) Failure to clean (55) Improper startup (56) Equipment used for not intended purpose (57) Equipment not being operated properly (58) Animal (66) Fire spread or control, other (70) Outside/open fire for debris or waste disposal (73) Outside/open fire for warming or cooking (74) Agriculture or land management (75)	Cutting, welding too close to combustible (13) Flammable liquid or gas spilled (14) Improper fueling technique (15) Flammable liquid used to kindle fire (16) Washing part, painting with flammable liquid (17) Backfire (26) Electrical failure, malfunction, other (30) Unspecified short-circuit arc (34) Equipment overloaded (54) Natural condition, other (60) High wind (61) Storm (62) High water including floods (63) Earthquake (64) Volcanic action (65) Exposure fire (71) Rekindle (72)	

<b>Equipment Involved in Ignition</b>	Other equipment (000)	All other codes	
	No equipment (NNN)		
	Charcoal/utility lighter (872)		
	Cigarette/pipe lighter (873)		

**Table B-2.2**  
**Mattress and Bedding Fire Edits to Define Addressability When Heat Source =**  
**Additional Small Open Flame Sources and Other In-Scope Heat Sources**

<b>Variable</b>	<b>Mattress/Bedding - Addressable (In-scope)</b>	<b>Mattress/Bedding – Not Addressable (Out-of-Scope)</b>	<b>Not Mattress/Bedding</b>
<b>Type of Material First Ignited</b>	Other type of material ignited (00) Plastic (41) Natural product, other (50) Rubber, excluding synthetic rubbers (51) Leather (53) Grain, natural fiber, (preprocess) (55) Fabric, textile, fur, other (70) Fabric, fiber, cotton, blends, rayon, wool (71) Fur, silk, other fabric (74) Plastic coated fabric (77)		Flammable Gas (10 – 15) Flammable, Combustible Liquid (20 – 27) Volatile Solid or Chemical (30 – 38) Cork (52) Hay, straw (54) Coal, coke, briquettes, peat (56) Food, starch, excluding fat and grease (57) Tobacco (58) Wood or Paper - Processed (60 – 68) Wig (75) Human hair (76) Material compounded with oil, other (80) Linoleum (81) Oilcloth (82) Asphalt treated material (86) Multiple types of material first ignited (99)
<b>Area of Origin</b>	Area of origin, other (00) Corridor, mall (01) Exterior stairway, ramp, or fire escape (02) Interior stairway or ramp (03) Entrance way, lobby (05) Egress/exit, other (09) Assembly, Sales Areas (Groups or People) (10 – 17) Function Area (20 – 28) Technical Processing Areas (30 – 38) Storage area, other (40) Storage room, area, tank, or bin (41) Closet (42) Storage: supplies or tools; dead storage (43) Records storage room, storage vault (44)		Escalator, exterior, interior (04) Chute/container – trash, rubbish, waste (46) Dumbwaiter or elevator shaft (51) Conduit, pipe, utility, or ventilation shaft (52) Light shaft (53) Chute; laundry or mail, excluding trash chutes (54) Duct: hvac, cable, exhaust, heating or AC (55) Conveyor (58) Awning (78) Transportation, Vehicle Area (80 – 86)

	Shipping/receiving area; loading area, dock or bay (45) Vehicle storage area; garage, carport (47) Service facilities, other (50) Display window (56) Service, Equipment Areas (60 – 67) Structural area, other (70) Substructure area or space, crawl space (71) Exterior balcony, unenclosed porch (72) Ceiling & floor assembly, crawl space between stories (73) Attic: vacant, crawl space above top story, cupola (74) Wall assembly (75) Wall surface: exterior (76) Roof surface: exterior (77) Other Area of Origin (90 – 98)		
<b>Factors Contributing to Ignition</b>	Factor contributing to ignition, other (00) No factor contributing to ignition (NN) Misuse of material or product, other (10) Abandoned or discarded materials or products (11) Heat source too close to combustibles (12) Cutting, welding too close to combustible (13) Improper container or storage (18) Playing with heat source (19) Mechanical failure, malfunction, other (20) Automatic Control Failure (21) Manual control failure (22) Leak or break (23) Worn out (25) Backfire (26) Improper fuel used (27) Electrical failure, malfunction, other (30) Water caused short-circuit arc (31) Short circuit arc from mechanical damage (32) Short circuit arc from defective, worn insulation (33) Unspecified short-circuit arc (34) Arc from faulty contact, broken conductor (35)	Flammable liquid or gas spilled (14) Improper fueling technique (15) Flammable liquid used to kindle fire (16) Washing part, painting with flammable liquid (17) Natural condition, other (60) High wind (61) Storm (62) High water including floods (63) Earthquake (64) Volcanic action (65) Exposure fire (71) Rekindle (72)	

	<p>Arc, spark from operating equipment (36)</p> <p>Fluorescent light ballast (37)</p> <p>Installation Deficiency (40 – 44)</p> <p>Operational deficiency, other (50)</p> <p>Collision, knock down, run over, turn over (51)</p> <p>Accidentally turned on, not turned off (52)</p> <p>Equipment unattended (53)</p> <p>Equipment overloaded (54)</p> <p>Failure to clean (55)</p> <p>Improper startup (56)</p> <p>Equipment used for not intended purpose (57)</p> <p>Equipment not being operated properly (58)</p> <p>Animal (66)</p> <p>Fire spread or control, other (70)</p> <p>Outside/open fire for debris or waste disposal (73)</p> <p>Outside/open fire for warming or cooking (74)</p> <p>Agriculture or land management (75)</p>		
<b>Equipment Involved in Ignition</b>	<p>Other equipment (000)</p> <p>No equipment (NNN)</p> <p>HVAC (100 – 152)</p> <p>Electric Distribution, Lighting, &amp; Power Transfer (200 – 263) (except for 228 – Battery charger)</p> <p>Power tools, other (310)</p> <p>Power saw (311)</p> <p>Power lathe (312)</p> <p>Power shaper, router, jointer, planer (313)</p> <p>Power cutting tool (314)</p> <p>Power drill, screwdriver (315)</p> <p>Power sander, grinder, buffer, polisher (316)</p> <p>Power hammer, including jackhammers (317)</p> <p>Power nail gun, stud driver, stapler (318)</p> <p>Paint dipper (321)</p> <p>Paint flow coating machine (322)</p> <p>Paint mixing machine (323)</p> <p>Paint sprayer (324)</p> <p>Welding torch (331)</p> <p>Cutting torch (332)</p> <p>Hydraulic equipment, other (340)</p>	<p>Battery charger, rectifier (228)</p> <p>Shop or industrial equipment, other (300)</p> <p>Painting tools, other (320)</p> <p>Coating machine, including asphalt saturating (325)</p> <p>Burners (333)</p> <p>Soldering equipment (334)</p> <p>Atomizing equipment (343)</p> <p>Hoist, lift (346)</p> <p>Heat treating equipment (351)</p> <p>Incinerator (352)</p> <p>Industrial furnace, kiln (353)</p> <p>Tarpot, tar kettle (354)</p> <p>Casting, molding, forging equipment (355)</p> <p>Distilling equipment (356)</p> <p>Digester, reactor (357)</p> <p>Extractor, waste recovery machine (358)</p> <p>Conveyor (361)</p> <p>Power transfer equipment: ropes, cables, blocks (362)</p> <p>Power take-off (363)</p> <p>Powered valves (364)</p> <p>Bearing or brake (365)</p> <p>Printing press (376)</p> <p>Car washing equipment (377)</p> <p>Studio type TV camera (424)</p>	

	<p>Air compressor (341)  Gas compressor (342)  Atomizing equipment (343)  Pump (344)</p> <p>Wet/dry vacuum (shop vacuum) (345)  Powered jacking equipment (347)  Drilling machinery or equipment (348)  Picking, carding, weaving machine (371)  Testing equipment (372)  Gas regulator (373)  Motor – separate (374)  Internal combustion engine (non-vehicular) (375)  Commercial or medical equipment, other (400)  Dental, medical, or other powered bed or chair (411)  Dental equipment, other (412)  Dialysis equipment (413)  Medical imaging equipment (414)  Medical monitoring equipment (415)  Oxygen administration equipment (416)  Radiological equipment, X-ray, radiation therapy (417)  Sterilizer: medical (418)  Therapeutic equipment (419)  Transmitter (421)  Telephone switching gear, including PBX (422)  TV monitor array (423)  Vending machine (443)  Kitchen &amp; Cooking Equipment (600 – 656) (except for 653 – Garbage disposer)  Electronic and Other Electrical Equipment (700 – 757) (except for 723 – Cash register and 727 – Postage, shipping meter equipment)  Personal &amp; Household Equipment (800 – 897) (except for 861 – Automatic door opener, 872 – Charcoal Lighter, and 873 – Cigarette lighter, pipe lighter)</p>	<p>Studio type sound recording/modulating equipment (425)  Radar equipment (426)  Amusement ride equipment (431)  Ski lift (432)  Elevator or lift (433)  Escalator (434)  Microfilm, microfiche viewing equipment (441)  Photo processing equipment (442)  Vending machine (443)  Non video arcade game (444)  Water fountain, water cooler (445)  Telescope (446)</p>	
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**Table A-2.3**  
**Mattress and Bedding Fire Edits to Define Addressability When Heat Source =**  
**Out-of-Scope Heat Sources**

<b>Variable</b>	<b>Mattress/Bedding - Addressable (In-scope)</b>	<b>Mattress/Bedding – Not Addressable (Out-of-Scope)</b>	<b>Not Mattress/Bedding</b>
<b>Type of Material First Ignited</b>		Other type of material ignited (00) Plastic (41) Natural product, other (50) Rubber, excluding synthetic rubbers (51) Leather (53) Grain, natural fiber, (preprocess) (55) Fabric, textile, fur, other (70) Fabric, fiber, cotton, blends, rayon, wool (71) Fur, silk, other fabric (74) Plastic coated fabric (77)	Flammable Gas (10 – 15) Flammable, Combustible Liquid (20 – 27) Volatile Solid or Chemical (30 – 38) Cork (52) Hay, straw (54) Coal, coke, briquettes, peat (56) Food, starch, excluding fat and grease (57) Tobacco (58) Wood or Paper - Processed (60 – 68) Wig (75) Human hair (76) Material compounded with oil, other (80) Linoleum (81) Oilcloth (82) Asphalt treated material (86) Multiple types of material first ignited (99)
<b>Area of Origin</b>		Area of origin, other (00) Corridor, mall (01) Exterior stairway, ramp, or fire escape (02) Interior stairway or ramp (03) Entrance way, lobby (05) Egress/exit, other (09) Assembly, Sales Areas (Groups or People) (10 – 17) Function Area (20 – 28) Technical Processing Areas (30 – 38) Storage area, other (40) Storage room, area, tank, or bin (41) Closet (42) Storage: supplies or tools; dead storage (43) Records storage room, storage vault (44) Shipping/receiving area; loading area, dock or bay (45) Vehicle storage area; garage, carport (47) Service facilities, other (50)	Escalator, exterior, interior (04) Chute/container – trash, rubbish, waste (46) Dumbwaiter or elevator shaft (51) Conduit, pipe, utility, or ventilation shaft (52) Light shaft (53) Chute; laundry or mail, excluding trash chutes (54) Duct: hvac, cable, exhaust, heating or AC (55) Conveyor (58) Awning (78) Transportation, Vehicle Area (80 – 86)

		Display window (56) Service, Equipment Areas (60 – 67) Structural area, other (70) Substructure area or space, crawl space (71) Exterior balcony, unenclosed porch (72) Ceiling & floor assembly, crawl space between stories (73) Attic: vacant, crawl space above top story, cupola (74) Wall assembly (75) Wall surface: exterior (76) Roof surface: exterior (77) Other Area of Origin (90 – 98)	
<b>Factors Contributing to Ignition</b>		All codes	
<b>Equipment Involved in Ignition</b>		All codes	