1999 - 2003 Residential Fire Loss Estimates*

U.S. National Estimates of Fires, Deaths, Injuries, and Property Losses from Unintentional Fires

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Executive Summary

This report presents estimates of product-related fire losses that occurred in U.S. residential structure fires attended by the fire service. The estimates were derived from data for 1999 through 2003 provided by the U.S. Fire Administration's (USFA) National Fire Incident Reporting System (NFIRS) and the National Fire Protection Association's (NFPA) Annual Survey of Fire Losses.

During the period covered in this report, some fire departments reported incidents using the new NFIRS 5.0 system, others reported using the older NFIRS 4.1 system, and some transitioned from NFIRS 4.1 to NFIRS 5.0. The new system is a major revision that captures much more detail about the incident and the fire losses. Data reported in NFIRS 4.1 were converted to NFIRS 5.0 by specially designed computer programs so that the USFA could release data in a single format. Because of major changes introduced by the new system in the area of coding specificity, limitations encountered in converting data reported under the old system to the new system, the creation of an entirely new class of fire incidents not defined under the old system, and a resulting substantial increase in missing data for important analysis variables, CPSC staff recommends against comparing fire loss estimates from the old system with those of the new system. Rather, the estimates in this report are best viewed as reflecting estimates from a substantially different reporting system which, because of the inherent system design differences, cannot be compared to estimates reported from pre-1999 years.

The fire and fire loss estimates presented in this report pertain to residential structure fires, resulting in civilian deaths and injuries. These estimates show that there were:

- 338,100 fires, 2,400 deaths, 14,590 injuries, and $4.24 billion in property loss in 1999,
- 337,600 fires, 2,720 deaths, 15,740 injuries, and $4.78 billion in property loss in 2000,
- 361,200 fires, 2,570 deaths, 14,040 injuries, and $4.39 billion in property loss in 2001,
- 369,000 fires, 2,270 deaths, 12,870 injuries, and $5.32 billion in property loss in 2002, and
- 374,700 fires, 2,740 deaths, 13,120 injuries, and $5.31 billion in property loss in 2003.

The property losses include property and content losses. For convenience, they are referred to as "property loss" only in this report. Fire departments provide a rough estimate for this figure. As such, these property loss estimates are based on crude estimates themselves and the significance of variations in these estimates is ambiguous.

For each year from 1999 through 2003, the relative ranking of the greatest contributors to fire loss has remained unchanged. For example:

- Cooking equipment (Table 1) accounted for the largest percentage of fires, averaging about 30.7% of total fires. The corresponding death estimates varied from a high of 12.9% in 1999 to a low of 6.2% of total deaths in 2002. The resulting injury estimates remained steady, averaging about 27.4% of the total injuries. Most of these losses were associated with range and oven fires.

- Heating and cooling equipment fires accounted for an average of 14.7% of the total fires. The 1999, 2000, and 2002 death estimates pertaining to heating and cooling equipment were similar at around 13.0% of total deaths. There was a drop to 8.6% of total deaths in 2001, and again a drop to 9.1% of total deaths in 2003. The corresponding injury estimates for all five years averaged 8.2% of the total injuries.

- For 1999 and 2000, an average of 10.8% of total fires was attributable to electrical distribution system components (e.g., wiring, lighting, etc.). From 2001 through 2003, these components accounted for

about 6.3% of the total fires. The corresponding death estimates varied between a high of 11.4% of total deaths in 2000 and a low of 4.4% in 2002. The injury estimates showed a slight drop from 1999 (7.3%) to 2003 (4.0%).

- By item first ignited (Table 2b), upholstered furniture ignition was involved in the greatest number of deaths, accounting for an average of 20.8% of the total deaths associated with residential structure fires. Mattress or bedding ignitions accounted for 15.0% of the total deaths.

- By heat source, smoking materials were the largest contributor to deaths, accounting for an average of 27.5% of fire deaths. Death estimates from lighter fires varied between a low of 1.6% (in 2001) and a high of 6.3% (in 2000) of total deaths. Candles were responsible for 3.3% of total deaths in 1999; that proportion went up to 7.8% in 2001, dropped back to 5.7% in 2002 and rose again to 7.3% in 2003. Matches were responsible for an average of 1.6% of total deaths over the five years.

Introduction

CPSC staff strongly discourages comparisons of post 1998 estimates with estimates from earlier years because of changes in the data system and urges the reader to keep in mind the fluctuation in the data structure when comparing the estimates between the years 1999 and 2003. These changes are discussed below.

Beginning with 1999 data, a major revision to the NFIRS data coding system was implemented. In 1999, 5% of the residential fire data was coded by fire departments in the new NFIRS version 5.0; in 2000, 20% was coded in version 5.0. The proportion increased to 50% in 2001, 70% in 2002, and to 80% in 2003. In order to produce a dataset entirely in version 5.0 format, where some of the source data was originally coded in version 4.1, data elements were converted. The conversion was done completely by computer programs. However, since version 5.0 has many more data fields than version 4.1 and some of the new data fields have many more choices than in 4.1, the converted data is not the same as data that is originally coded in version 5.0.

A direct effect of the conversion process has been the combining of codes for "Other" and "Unknown" values within sub-groups of several variables. This has resulted in larger estimates for "Other" categories and smaller estimates for some specific product categories.

Beginning with version 5.0, NFIRS has introduced newly created codes to identify certain kinds of confined fires (those that do not spread beyond the originating item). To encourage the reporting of these fires, NFIRS requires only limited information on these fires. From 1999 through 2003, as the use of version 5.0 increased, an increasingly larger number of confined fires were reported. In 1999, about 2% of residential fires were reported as confined; by 2003, almost 40% of fires reported to NFIRS were confined fires. However, this is also accompanied by a large increase in missing data since very few data elements are required to be reported for confined fires.

Some apparent decreases in estimates, for example for ranges and chimneys, are related to the increase in the reported confined fires. Because it is not required information, in some confined fire cases it is not possible to determine the type of equipment involved. When a fire is a confined cooking fire, it is not possible to separate ranges from other cooking products. Thus, the estimates include confined cooking fires only at the general level of "cooking equipment" totals. However, since ranges undoubtedly are involved in confined fires, evaluation of the range-related hazard needs to take confined fires into account. A similar problem affects fires involving chimneys.

Identification of child play fires now requires the combination of several variables (such as factors contributing to ignition, human factors contributing to ignition, and age of the fire starter; see Methodology section for detailed discussion) which often remain unreported in the data system. As a result, estimates for child play are considered to be unreliable at this time and are not included in this report. It is hoped that recent changes to the data system will improve this situation and allow presentation of such estimates in the future. More detail on these and other issues is included in the Methodology section.

In keeping with reports from previous years, there are five main tables in this report. Each numbered table (1-5) has four tables associated with it; table "a" presents the fire estimates, "b" presents the death estimates, "c" presents the injury estimates, and "d" presents the property loss estimates. As in previous years, only selected product-specific estimates are included in these tables. Therefore, the detail may not add to the totals that appear in the headings. All the product categories in the tables, with the exception of smoking materials, contain products within the jurisdiction of the U.S. Consumer Product Safety Commission (CPSC). Intentionally set fires, which include the deliberate misuses of heat sources or fires

of an incendiary nature, are excluded from the estimates. Injury and death estimates pertain to civilian casualties only.

In Tables 1, 3, 4, and 5, equipment codes were used to identify the products, while in Table 2 either the heat source or the item first ignited was the primary means of identifying the product. As such, some estimates provided in the different sections of the tables overlap. For example, in Table 2, estimates of fires involving cigarette ignition of upholstered furniture are included in estimates for cigarettes (by heat source) and estimates for upholstered furniture-smoking material ignition (by item first ignited). Additional details about the estimates and the data system are included in the Methodology section of this report.

In order to maintain consistency with the later years, the estimates for 1999 were revised in the November 2005 edition of the Residential Fire Loss Estimates report. The estimates for 1999 through 2002 that are presented here remain unchanged from that earlier report.

CPSC analysts remind the reader again that the changes and the gradual implementation of the changes in the NFIRS data system have affected the estimates since 1998 and between the years 1999 and 2003 considerably.

TABLE 1a
ESTIMATED RESIDENTIAL STRUCTURE FIRES
SELECTED EQUIPMENT, 1999 – 2003

Equipment	1999	2000	2001	2002	2003
Total Residential[1]	**338,100**	**337,600**	**361,200**	**369,000**	**374,700**
Total Heating and Cooling Equipment[1]	**46,600**	**49,000**	**51,800**	**55,800**	**58,000**
Local Fixed Heater	7,400	7,100	6,000	5,700	4,200
Portable Heater	3,800	3,800	2,900	2,800	2,400
Central Heating	7,600	6,900	4,800	3,700	2,700
Fireplace, Chimney, Chimney Connector[1]	15,600	18,800	21,700	26,300	25,600
Water Heater	6,200	5,900	5,300	4,400	3,500
Air Conditioning	2,200	1,900	2,200	1,800	1,500
Other[1]	3,900	4,600	8,800	11,200	18,000
Total Cooking Equipment[1]	**95,600**	**93,500**	**109,000**	**117,700**	**132,800**
Range / Oven	75,800	65,200	50,300	39,900	30,400
Gas	*22,200*	*19,800*	*14,100*	*11,700*	*7,400*
Electric	*51,600*	*43,900*	*34,400*	*26,800*	*22,400*
Other	*2,000*	*1,500*	*1,900*	*1,400*	*600*
All Other Cooking	15,700	14,600	13,500	11,600	7,900
Gas	*2,800*	*2,400*	*2,400*	*1,700*	*1,200*
Electric	*11,800*	*11,100*	*9,800*	*8,700*	*6,000*
Other	*1,100*	*1,100*	*1,400*	*1,100*	*600*
Total Electric Distribution	**38,700**	**34,600**	**27,900**	**23,300**	**17,800**
Installed Wiring	13,700	12,300	9,700	8,100	6,400
Cord, Plug	6,600	5,700	4,400	3,700	3,000
Receptacle, Switch	3,200	3,200	3,300	2,800	1,900
Lighting	8,400	7,500	5,900	4,900	3,700
Other	6,800	6,000	4,600	3,800	2,800
Other Selected Equipment	**23,900**	**21,000**	**17,000**	**14,700**	**11,800**
Audio / Visual Equipment	1,600	1,500	1,300	1,100	800
Clothes Dryer	14,600	12,700	10,600	9,500	7,600
Washing Machine	1,400	1,100	800	600	500
Torch	4,500	3,800	2,700	2,000	1,700
Refrigerator / Freezer	900	800	800	800	600
Shop / Garden Tool	1,000	1,000	900	700	700

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the U.S. Fire Administration and NFPA.
Note: Fire estimates are rounded to the nearest 100. Selected categories presented; subtotals do not necessarily add to heading totals. Estimates exclude losses from fires identifiable as intentionally set.

[1] There are confined fire estimates included in *Total Residential*, *Total Heating and Cooling Equipment*, *Fireplace, Chimney, Chimney Connector*, *Other*, and *Total Cooking Equipment* categories. See Table 7a on pg 29 for details.

TABLE 1b
ESTIMATED RESIDENTIAL STRUCTURE FIRE DEATHS
SELECTED EQUIPMENT, 1999 - 2003

Equipment	1999	2000	2001	2002	2003
Total Residential[1,2]	**2,400**	**2,720**	**2,570**	**2,270**	**2,740**
Total Heating and Cooling Equipment[1]	**300**	**370**	**220**	**290**	**250**
Local Fixed Heater	90	80	50	80	110
Portable Heater	100	150	50	140	40
Central Heating	20	30	30	10	10
Fireplace, Chimney, Chimney Connector	40	50	40	20	50
Water Heater	10	20	20	10	20
Air Conditioning	20	*	10	*	10
Other[1]	20	30	20	20	10
Total Cooking Equipment[2]	**310**	**190**	**310**	**140**	**240**
Range / Oven	260	140	250	120	170
Gas	*100*	*70*	*80*	*30*	*70*
Electric	*150*	*60*	*170*	*70*	*100*
Other	*10*	*	*10*	*10*	*
All Other Cooking	50	50	60	20	60
Gas	*20*	*10*	*10*	*10*	*10*
Electric	*20*	*40*	*50*	*10*	*40*
Other	*	*	*	*	*10*
Total Electric Distribution	**180**	**310**	**190**	**100**	**130**
Installed Wiring[3]	40	60	50	10	50
Cord, Plug	80	140	40	70	40
Receptacle, Switch[3]	10	20	20	*	10
Lighting	30	50	30	10	20
Other	20	40	50	*	*
Other Selected Equipment	**60**	**30**	**30**	**20**	**10**
Audio / Visual Equipment	40	*	10	*	10
Clothes Dryer	*	20	10	20	*
Washing Machine	*	*	*	*	*
Torch	10	*	*	*	*
Refrigerator / Freezer	10	10	*	*	*
Shop / Garden Tool	*	*	*	*	*

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the U.S. Fire Administration and NFPA.
Note: Death estimates are rounded to the nearest 10. Estimates less than 10 are denoted by an asterisk (*). Selected categories presented; subtotals do not necessarily add to heading totals. Estimates exclude losses from fires identifiable as intentionally set.

[1] Includes an estimated 10 deaths in 2002 from fires that were confined to the fire box of a burner/boiler.
[2] Includes an estimated 10 deaths in 2003 from confined cooking fires.
[3] Deaths from installed wiring and receptacle/switch were allocated in the same proportion as the fires. See discussion in Methodology section for details.

TABLE 1c
ESTIMATED RESIDENTIAL STRUCTURE FIRE INJURIES
SELECTED EQUIPMENT, 1999 – 2003

Equipment	1999	2000	2001	2002	2003
Total Residential[1]	**14,590**	**15,740**	**14,040**	**12,870**	**13,120**
Total Heating and Cooling Equipment[1]	**1,250**	**1,350**	**1,030**	**1,040**	**1,090**
Local Fixed Heater	240	230	220	240	220
Portable Heater	280	380	290	260	250
Central Heating	140	160	100	90	80
Fireplace, Chimney, Chimney Connector[1]	120	160	110	60	80
Water Heater	300	250	150	140	190
Air Conditioning	60	40	70	50	40
Other[1]	100	130	100	200	220
Total Cooking Equipment[1]	**3,970**	**4,220**	**3,950**	**3,510**	**3,590**
Range / Oven	3,330	3,340	2,600	2,050	1,990
Gas	*730*	*910*	*440*	*420*	*290*
Electric	*2,530*	*2,340*	*1,980*	*1,570*	*1,680*
Other	*70*	*80*	*180*	*60*	*20*
All Other Cooking	590	680	570	540	450
Gas	*70*	*110*	*100*	*60*	*80*
Electric	*460*	*490*	*400*	*420*	*320*
Other	*50*	*80*	*70*	*50*	*40*
Total Electric Distribution	**1,060**	**1,100**	**840**	**600**	**530**
Installed Wiring[2]	200	240	210	170	160
Cord, Plug	350	460	250	210	150
Receptacle, Switch[2]	50	60	70	60	50
Lighting	300	190	170	100	130
Other	170	150	130	70	40
Other Selected Equipment	**700**	**530**	**570**	**430**	**380**
Audio / Visual Equipment	140	60	90	70	40
Clothes Dryer	290	330	270	240	190
Washing Machine	*	*	10	10	10
Torch	170	90	120	60	70
Refrigerator / Freezer	70	20	50	10	20
Shop / Garden Tool	20	20	50	30	40

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the U.S. Fire Administration and NFPA.

Note: Injury estimates are rounded to the nearest 10. Estimates less than 10 are denoted by an asterisk (*). Selected categories presented; subtotals do not necessarily add to heading totals. Estimates exclude losses from fires identifiable as intentionally set.

[1] There are confined fire injury estimates included in *Total Residential*, *Total Heating and Cooling Equipment*, *Fireplace, Chimney, Chimney Connector*, *Other*, and *Total Cooking Equipment* categories. See Table 7b on pg 30 for details.

[2] Injuries from installed wiring and receptacle/switch were allocated in the same proportion as the fires. See discussion in Methodology section for details.

TABLE 1d
ESTIMATED RESIDENTIAL STRUCTURE FIRE PROPERTY LOSS (In Millions)
SELECTED EQUIPMENT, 1999 – 2003

Equipment	1999	2000	2001	2002	2003
Total Residential[1]	**$4,239.5**	**$4,780.5**	**$4,390.0**	**$5,321.1**	**$5,311.5**
Total Heating and Cooling Equipment[1]	**$555.3**	**$637.1**	**$575.7**	**$846.9**	**$543.3**
Local Fixed Heater	$98.9	$118.2	$70.4	$91.2	$93.8
Portable Heater	$90.1	$117.7	$57.1	$146.5	$75.6
Central Heating	$72.6	$66.3	$45.4	$64.8	$54.9
Fireplace, Chimney, Chimney Connector[1]	$145.9	$159.7	$108.1	$148.6	$142.9
Water Heater	$60.4	$74.5	$52.8	$60.1	$59.8
Air Conditioning	$26.0	$27.1	$171.7	$218.8	$22.7
Other[1]	$61.3	$73.6	$70.3	$117.0	$93.7
Total Cooking Equipment[1]	**$497.1**	**$540.0**	**$386.6**	**$453.1**	**$449.2**
Range / Oven	$340.0	$350.0	$246.1	$292.4	$287.0
Gas	*$48.2*	*$64.2*	*$30.1*	*$39.7*	*$43.9*
Electric	*$272.8*	*$279.3*	*$203.4*	*$243.0*	*$239.3*
Other	*$19.0*	*$6.5*	*$12.6*	*$9.8*	*$3.7*
All Other Cooking	$148.8	$180.8	$129.7	$138.4	$136.1
Gas	*$34.7*	*$30.3*	*$22.4*	*$27.2*	*$38.8*
Electric	*$96.1*	*$131.7*	*$85.5*	*$90.9*	*$86.1*
Other	*$18.1*	*$18.8*	*$21.8*	*$20.3*	*$11.3*
Total Electric Distribution	**$732.7**	**$723.5**	**$568.1**	**$491.0**	**$503.8**
Installed Wiring	$294.4	$267.5	$240.2	$166.0	$204.4
Cord, Plug	$135.9	$120.1	$92.1	$95.4	$101.6
Receptacle, Switch	$39.9	$62.6	$44.5	$54.6	$35.0
Lighting	$127.2	$130.3	$96.9	$83.2	$72.5
Other	$135.3	$143.1	$94.4	$91.7	$90.3
Other Selected Equipment	**$247.3**	**$238.6**	**$186.2**	**$203.7**	**$244.9**
Audio / Visual Equipment	$28.0	$34.0	$22.4	$17.8	$22.2
Clothes Dryer	$87.4	$99.4	$70.5	$77.0	$107.3
Washing Machine	$4.2	$3.8	$1.6	$4.1	$2.1
Torch	$99.6	$62.3	$52.3	$75.9	$69.4
Refrigerator / Freezer	$11.2	$21.4	$20.0	$15.7	$18.3
Shop / Garden Tool	$17.0	$17.9	$19.5	$13.2	$25.8

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the U.S. Fire Administration and NFPA.

Note: Property loss estimates are rounded to the nearest tenth of a million dollars. Selected categories presented; subtotals do not necessarily add to heading totals. Estimates exclude losses from fires identifiable as intentionally set.

[1] There are confined fire property loss estimates included in *Total Residential, Total Heating and Cooling Equipment, Fireplace, Chimney, Chimney Connector, Other,* and *Total Cooking Equipment* categories. See Table 7c on pg 30 for details.

TABLE 2a
ESTIMATED RESIDENTIAL STRUCTURE FIRES
SELECTED PRODUCTS, 1999 – 2003

Product	1999	2000	2001	2002	2003
Total Residential[1]	**338,100**	**337,600**	**361,200**	**369,000**	**374,700**
By Heat Source					
Cigarette, Other Tobacco Products	**24,600**	**23,700**	**20,900**	**16,900**	**13,600**
Match	**5,100**	**4,300**	**3,900**	**3,000**	**1,900**
Lighter	**5,800**	**5,300**	**4,200**	**3,600**	**3,100**
Candle	**15,100**	**15,300**	**15,900**	**14,800**	**13,700**
By Item First Ignited					
Upholstered Furniture	**9,300**	**9,000**	**9,100**	**8,600**	**7,500**
Smoking Material Ignition	4,400	4,200	3,500	3,000	2,500
Open Flame Ignition	1,700	1,500	1,500	1,400	1,200
Other	3,100	3,300	4,100	4,200	3,800
Mattress, Bedding	**18,000**	**16,700**	**15,800**	**13,700**	**12,200**
Smoking Material Ignition	5,200	4,700	4,000	3,400	2,700
Open Flame Ignition	5,700	5,400	4,800	4,000	3,600
Other	7,100	6,600	7,000	6,300	5,900
Other Materials					
Cooking Materials[1]	81,100	81,200	99,100	112,000	130,200
Electric Cable Insulation	27,700	25,900	23,200	22,100	18,900
Interior Wall Covering	13,100	13,000	12,700	11,500	10,800
Wearing Apparel-Worn	500	500	500	400	400
Wearing Apparel-Not Worn	12,800	11,700	10,600	9,400	8,100
Floor Covering	7,000	6,900	6,200	5,800	5,200
Curtains, Drapes	3,400	3,400	3,000	2,900	2,700
Magazines, Newspaper	3,400	3,000	3,300	3,200	2,500
Thermal Insulation	4,600	4,700	5,900	6,200	5,800
Cabinet, Desk	6,800	6,700	7,000	7,000	6,300
Trash, Rubbish[1]	20,300	21,900	20,100	18,000	20,300
Toy, Game	600	600	500	400	300
Box, Carton, Bag, Basket, Barrel	4,600	4,300	3,600	3,300	2,900

Source: U. S. Consumer Product Safety Commission/EPHA, from data obtained from the U. S. Fire Administration and NFPA.

Note: Fire estimates are rounded to the nearest 100. Selected product categories presented; subtotals do not necessarily add up to heading totals. Estimates exclude losses from fires identifiable as intentionally set.

[1] There are confined fire estimates included in *Total Residential*, *Cooking Materials*, and *Trash, Rubbish* categories. See Table 7a on pg 29 for details.

TABLE 2b
ESTIMATED RESIDENTIAL STRUCTURE FIRE DEATHS
SELECTED PRODUCTS, 1999 – 2003

Product	1999	2000	2001	2002	2003
Total Residential[1,2]	**2,400**	**2,720**	**2,570**	**2,270**	**2,740**
By Heat Source					
Cigarette, Other Tobacco Products	**770**	**760**	**750**	**560**	**650**
Match	**40**	**40**	**40**	**30**	**50**
Lighter	**90**	**170**	**40**	**90**	**80**
Candle	**80**	**130**	**200**	**130**	**200**
By Item First Ignited					
Upholstered Furniture	**430**	**580**	**620**	**460**	**560**
Smoking Material Ignition	330	340	380	200	310
Open Flame Ignition	30	120	50	30	20
Other	70	120	190	230	220
Mattress, Bedding	**330**	**410**	**330**	**440**	**380**
Smoking Material Ignition	170	180	190	220	170
Open Flame Ignition	70	80	60	60	100
Other	100	150	80	160	110
Other Materials					
Cooking Materials[2]	170	130	150	90	90
Electric Cable Insulation	100	130	70	50	60
Interior Wall Covering	90	130	200	140	200
Wearing Apparel-Worn	140	160	60	90	100
Wearing Apparel-Not Worn	50	60	60	60	50
Floor Covering	110	100	80	90	130
Curtains, Drapes	20	10	40	10	30
Magazines, Newspaper	30	50	20	40	50
Thermal Insulation	*	10	*	10	10
Cabinet, Desk	30	60	40	40	60
Trash, Rubbish	30	110	20	40	30
Toy, Game	*	10	*	*	*
Box, Carton, Bag, Basket, Barrel	40	30	30	20	*

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the U.S. Fire Administration and NFPA.

Note: Death estimates are rounded to the nearest 10. Estimates less than 10 are denoted by an asterisk (*). Selected product categories presented; subtotals do not necessarily add to heading totals. Estimates exclude losses from fires identifiable as intentionally set.

[1] Includes an estimated 10 deaths in 2002 from fires that were confined to the fire box of a burner/boiler.
[2] Includes an estimated 10 deaths in 2003 from confined cooking fires.

TABLE 2c
ESTIMATED RESIDENTIAL STRUCTURE FIRE INJURIES
SELECTED PRODUCTS, 1999 – 2003

Product	1999	2000	2001	2002	2003
Total Residential[1]	**14,590**	**15,740**	**14,040**	**12,870**	**13,120**
By Heat Source					
Cigarette, Other Tobacco Products	**1,770**	**2,130**	**1,560**	**1,230**	**1,220**
Match	**500**	**400**	**340**	**280**	**200**
Lighter	**1,100**	**900**	**670**	**600**	**590**
Candle	**1,480**	**1,760**	**1,410**	**1,300**	**1,280**
By Item First Ignited					
Upholstered Furniture	**1,090**	**1,120**	**1,020**	**940**	**890**
Smoking Material Ignition	570	580	460	360	360
Open Flame Ignition	300	330	250	280	180
Other	220	200	310	300	340
Mattress, Bedding	**2,100**	**2,250**	**1,690**	**1,310**	**1,470**
Smoking Material Ignition	550	700	460	380	380
Open Flame Ignition	1,060	980	740	490	620
Other	490	570	500	440	470
Other Materials					
Cooking Materials[1]	3,440	3,790	3,750	3,440	3,680
Electric Cable Insulation	590	600	440	410	400
Interior Wall Covering	410	600	490	370	410
Wearing Apparel-Worn	150	190	120	120	90
Wearing Apparel-Not Worn	670	530	460	420	450
Floor Covering	310	400	270	330	250
Curtains, Drapes	310	360	190	190	260
Magazines, Newspaper	220	160	190	200	160
Thermal Insulation	80	70	80	120	90
Cabinet, Desk	400	440	370	400	330
Trash, Rubbish[1]	350	430	320	280	285
Toy, Game	90	40	40	40	30
Box, Carton, Bag, Basket, Barrel	180	240	170	140	160

Source: U. S. Consumer Product Safety Commission/EPHA, from data obtained from the U. S. Fire Administration and NFPA.

Note: Injury estimates are rounded to the nearest 10. Selected product categories presented; subtotals do not necessarily add to heading totals. Estimates exclude losses from fires identifiable as intentionally set.

[1]There are confined fire injury estimates included in *Total Residential*, *Cooking Materials*, and *Trash, Rubbish* categories. See Table 7b on pg 30 for details.

TABLE 2d
ESTIMATED RESIDENTIAL STRUCTURE FIRE PROPERTY LOSS (In Millions)
SELECTED PRODUCTS, 1999 – 2003

Product	1999	2000	2001	2002	2003
Total Residential[1]	**$4,239.5**	**$4,780.5**	**$4,390.0**	**$5,321.1**	**$5,311.5**
By Heat Source					
Cigarette, Other Tobacco Products	**$355.5**	**$397.9**	**$334.6**	**$364.0**	**$353.2**
Match	**$66.7**	**$74.9**	**$71.0**	**$80.0**	**$46.3**
Lighter	**$112.9**	**$104.3**	**$96.3**	**$102.7**	**$85.4**
Candle	**$272.0**	**$313.4**	**$280.0**	**$362.7**	**$352.9**
By Item First Ignited					
Upholstered Furniture	**$230.8**	**$268.5**	**$217.3**	**$251.7**	**$246.6**
Smoking Material Ignition	$99.3	$131.3	$87.1	$65.6	$67.8
Open Flame Ignition	$41.2	$51.1	$54.5	$61.8	$42.8
Other	$90.3	$86.1	$75.8	$124.3	$136.0
Mattress, Bedding	**$300.2**	**$340.2**	**$313.6**	**$288.2**	**$360.8**
Smoking Material Ignition	$89.9	$98.4	$67.3	$76.5	$74.2
Open Flame Ignition	$110.8	$125.4	$111.4	$92.1	$135.8
Other	$99.5	$116.5	$135.0	$119.6	$150.9
Other Materials					
Cooking Materials[1]	$287.1	$353.0	$275.6	$351.1	$391.3
Electric Cable Insulation	$311.1	$312.5	$275.4	$330.5	$321.9
Interior Wall Covering	$289.4	$331.8	$292.7	$262.6	$313.9
Wearing Apparel-Worn	$6.1	$8.4	$3.1	$5.3	$6.0
Wearing Apparel-Not Worn	$134.4	$128.1	$105.4	$134.7	$133.5
Floor Covering	$122.4	$126.3	$96.1	$143.1	$139.9
Curtains, Drapes	$45.1	$57.4	$40.0	$71.0	$52.7
Magazines, Newspaper	$45.2	$50.3	$51.5	$65.9	$59.3
Thermal Insulation	$61.3	$61.0	$65.3	$106.2	$117.1
Cabinet, Desk	$96.7	$119.0	$106.5	$208.1	$158.7
Trash, Rubbish[1]	$108.0	$104.6	$80.3	$120.8	$98.4
Toy, Game	$7.7	$7.6	$10.1	$5.4	$5.1
Box, Carton, Bag, Basket, Barrel	$58.9	$70.4	$47.9	$60.9	$74.8

Source: U. S. Consumer Product Safety Commission/EPHA, from data obtained from the U. S. Fire Administration and NFPA.

Note: Property loss estimates are rounded to the nearest tenth of a million dollars. Selected product categories presented; subtotals do not necessarily add to heading totals. Estimates exclude losses from fires identifiable as intentionally set.

[1] There are confined fire property loss estimates included in *Total Residential, Cooking Material,* and *Trash, Rubbish* categories. See Table 7c on pg 30 for details.

TABLE 3a
ESTIMATED RESIDENTIAL STRUCTURE FIRES
HEATING AND COOLING EQUIPMENT, 1999 – 2003

Equipment	1999	2000	2001	2002	2003
Total Residential[1]	**338,100**	**337,600**	**361,200**	**369,000**	**374,700**
Total Heating and Cooling Equipment[1]	**46,600**	**49,000**	**51,800**	**55,800**	**58,000**
Solid Fuel	**14,800**	**14,400**	**8,300**	**6,600**	**4,800**
Fixed Heater	2,600	2,400	1,800	1,400	800
Portable Heater	*	*	*	*	*
Fireplace, Chimney, Chimney Connector	11,800	11,700	6,400	5,000	3,800
Central Heating	100	100	*	100	100
Water Heater	*	*	*	*	*
Other	300	200	100	100	*
Gas-Fired	**10,400**	**9,900**	**7,600**	**6,900**	**5,400**
Fixed Heater	1,800	1,900	1,700	1,600	1,100
Portable Heater	600	600	500	300	300
Fireplace, Chimney, Chimney Connector	700	600	400	400	300
Central Heating	2,500	2,100	1,200	1,300	1,100
Water Heater	4,200	4,100	3,400	2,600	2,300
Fixed, Central Air Conditioning	*	*	*	*	*
Other	500	600	400	500	300
Electric	**14,300**	**13,900**	**13,600**	**13,200**	**10,900**
Fixed Heater	2,300	2,200	2,100	2,300	2,100
Portable Heater	2,500	2,400	2,000	2,000	1,600
Central Heating	3,100	2,900	1,900	1,700	1,200
Water Heater	1,700	1,600	1,700	1,600	1,100
Fixed, Central Air Conditioning	1,300	1,200	1,500	1,200	1,000
Portable Air Conditioner	900	700	700	500	500
Other	2,600	2,800	3,800	4,000	3,400
Liquid Fuel	**4,200**	**3,700**	**3,000**	**1,800**	**1,400**
Fixed Heater	700	600	400	200	200
Portable Heater	600	700	500	500	500
Fireplace, Chimney, Chimney Connector	500	300	200	200	100
Central Heating	1,900	1,800	1,700	700	400
Water Heater	300	200	200	200	100
Other	100	100	100	100	100
All Other Fuel	*****	**100**	**200**	**200**	**200**

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the U.S. Fire Administration and NFPA.
Note: Fire estimates are rounded to the nearest 100. Estimates less than 100 are denoted by an asterisk (*). Selected product categories presented; subtotals do not necessarily add to heading totals. Estimates exclude losses from fires identifiable as intentionally set.

[1] There are confined fire estimates included in *Total Residential*, and *Total Heating and Cooling Equipment* categories. See Table 7a on pg 29 for details.

TABLE 3b
ESTIMATED RESIDENTIAL STRUCTURE FIRE DEATHS
HEATING AND COOLING EQUIPMENT, 1999 – 2003

Equipment	1999	2000	2001	2002	2003
Total Residential[1,2]	**2,400**	**2,720**	**2,570**	**2,270**	**2,740**
Total Heating and Cooling Equipment[1]	**300**	**370**	**220**	**290**	**250**
Solid Fuel	**50**	**70**	**70**	**20**	**80**
Fixed Heater	20	20	30	*	30
Portable Heater	*	*	*	*	*
Fireplace, Chimney, Chimney Connector	30	50	40	20	50
Central Heating	*	*	*	*	*
Water Heater	*	*	*	*	*
Other	*	*	10	*	*
Gas-Fired	**110**	**100**	**20**	**70**	**70**
Fixed Heater	50	40	10	40	50
Portable Heater	10	*	*	10	*
Fireplace, Chimney, Chimney Connector	10	*	*	*	*
Central Heating	20	20	*	*	*
Water Heater	10	20	10	10	20
Fixed, Central Air Conditioning	*	*	*	*	*
Other	10	20	*	*	*
Electric	**100**	**130**	**70**	**140**	**80**
Fixed Heater	10	*	20	30	30
Portable Heater	50	120	30	90	30
Central Heating	10	*	*	10	*
Water Heater	*	*	10	*	*
Fixed, Central Air Conditioning	*	*	*	*	*
Portable Air Conditioner	20	*	*	*	10
Other	*	10	10	10	10
Liquid Fuel	**40**	**70**	**60**	**50**	**20**
Fixed Heater	*	20	*	10	*
Portable Heater	30	40	20	40	10
Fireplace, Chimney, Chimney Connector	*	*	*	*	*
Central Heating	*	20	30	*	10
Water Heater	*	*	*	*	*
Other	10	*	*	*	*
All Other Fuel	*****	*****	*****	*****	*

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the U.S. Fire Administration and NFPA.
Note: Death estimates are rounded to the nearest 10. Estimates less than 10 are denoted by an asterisk (*). Selected product categories presented; subtotals do not necessarily add to heading totals. Estimates exclude losses from fires identifiable as intentionally set.

[1] Includes an estimated 10 deaths in 2002 from fires confined to the fire box of a burner/boiler but fuel type was unknown.
[2] Includes an estimated 10 deaths in 2003 from confined cooking fires.

TABLE 3c
ESTIMATED RESIDENTIAL STRUCTURE FIRE INJURIES
HEATING AND COOLING EQUIPMENT, 1999 – 2003

Equipment	1999	2000	2001	2002	2003
Total Residential[1]	**14,590**	**15,740**	**14,040**	**12,870**	**13,120**
Total Heating and Cooling Equipment[1]	**1,250**	**1,350**	**1,030**	**1,040**	**1,090**
Solid Fuel	**130**	**170**	**110**	**60**	**80**
Fixed Heater	20	30	30	10	20
Portable Heater	*	*	*	10	*
Fireplace, Chimney, Chimney Connector	90	140	80	40	50
Central Heating	*	*	*	*	10
Water Heater	*	*	*	*	*
Other	10	10	*	*	*
Gas-Fired	**540**	**560**	**310**	**300**	**290**
Fixed Heater	50	110	90	90	50
Portable Heater	70	50	40	10	10
Fireplace, Chimney, Chimney Connector	30	20	10	*	*
Central Heating	80	140	40	60	60
Water Heater	260	240	130	130	160
Fixed, Central Air Conditioning	*	*	*	*	*
Other	50	20	*	10	10
Electric	**450**	**470**	**390**	**530**	**460**
Fixed Heater	150	80	90	120	140
Portable Heater	140	260	130	160	120
Central Heating	20	10	10	30	10
Water Heater	30	*	20	10	10
Fixed, Central Air Conditioning	10	30	20	20	20
Portable Air Conditioner	50	10	40	30	20
Other	40	80	70	150	130
Liquid Fuel	**140**	**130**	**180**	**90**	**160**
Fixed Heater	20	10	*	*	*
Portable Heater	60	70	110	80	120
Fireplace, Chimney, Chimney Connector	*	*	*	*	*
Central Heating	40	10	50	*	*
Water Heater	10	20	*	*	10
Other	*	20	10	*	20
All Other Fuel	*****	**10**	*****	**10**	*

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the U.S. Fire Administration and NFPA.
Note: Injury estimates are rounded to the nearest 10. Estimates less than 10 are denoted by an asterisk (*). Selected product categories presented; subtotals do not necessarily add to heading totals. Estimates exclude losses from fires identifiable as intentionally set.

[1] There are confined fire injury estimates included in *Total Residential*, and *Total Heating and Cooling Equipment* categories. See Table 7b on pg 30 for details.

TABLE 3d
ESTIMATED RESIDENTIAL STRUCTURE FIRE PROPERTY LOSS (In Millions)
HEATING AND COOLING EQUIPMENT, 1999 – 2003

Equipment	1999	2000	2001	2002	2003
Total Residential[1]	**$4,239.5**	**$4,780.5**	**$4,390.0**	**$5,321.1**	**$5,311.5**
Total Heating and Cooling Equipment[1]	**$555.3**	**$637.2**	**$575.7**	**$846.9**	**$543.3**
Solid Fuel	**$160.4**	**$177.9**	**$113.4**	**$138.3**	**$143.9**
Fixed Heater	$28.1	$32.7	$18.1	$27.8	$21.6
Portable Heater	$0.8	$0.6	*	$0.5	$0.6
Fireplace, Chimney, Chimney Connector	$125.3	$139.9	$93.8	$101.7	$120.4
Central Heating	$1.4	$2.1	$0.1	$3.2	$0.8
Water Heater	$0.2	*	*	*	$0.2
Other	$4.6	$2.6	$1.3	$5.0	$0.4
Gas-Fired	**$116.4**	**$161.0**	**$143.5**	**$140.4**	**$119.1**
Fixed Heater	$18.5	$39.5	$13.0	$25.6	$20.1
Portable Heater	$9.6	$11.4	$8.3	$6.4	$8.4
Fireplace, Chimney, Chimney Connector	$8.4	$13.9	$4.7	$32.4	$4.9
Central Heating	$26.3	$26.5	$14.3	$21.9	$23.2
Water Heater	$45.9	$61.5	$39.9	$38.2	$49.6
Fixed, Central Air Conditioning[2]	*	*	$60.6	$0.3	$0.2
Other	$7.7	$8.1	$2.5	$15.7	$12.7
Electric	**$224.7**	**$246.3**	**$272.2**	**$507.6**	**$216.5**
Fixed Heater	$47.9	$38.8	$34.0	$29.7	$44.6
Portable Heater	$65.9	$82.6	$39.6	$129.3	$50.6
Central Heating	$27.4	$26.7	$15.2	$26.5	$17.2
Water Heater	$11.5	$10.0	$11.0	$16.4	$9.3
Fixed, Central Air Conditioning	$9.5	$16.8	$102.8	$209.7	$11.4
Portable Air Conditioner	$16.5	$10.3	$8.0	$8.4	$11.0
Other	$46.0	$61.2	$61.6	$87.5	$72.3
Liquid Fuel	**$46.2**	**$44.2**	**$36.7**	**$39.8**	**$34.1**
Fixed Heater	$4.4	$5.3	$4.5	$2.6	$4.2
Portable Heater	$13.9	$23.1	$9.1	$10.2	$15.6
Fireplace, Chimney, Chimney Connector	$5.2	$1.3	$2.5	$3.7	$3.3
Central Heating	$17.6	$10.5	$15.6	$13.1	$6.5
Water Heater	$2.8	$3.0	$1.8	$5.5	$0.7
Other	$2.3	$1.1	$3.1	$4.7	$3.8
All Other Fuel	**$0.6**	**$2.9**	**$1.5**	**$6.6**	**$12.1**

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the U.S. Fire Administration and NFPA.

Note: Property loss estimates are rounded to the nearest tenth of a million dollars. Estimates less than $0.1m are denoted by an asterisk (*). Selected product categories presented; subtotals do not necessarily add to heading totals. Estimates exclude losses from fires identifiable as intentionally set.

[1] There are confined fire property loss estimates included in *Total Residential,* and *Total Heating and Cooling Equipment* categories. See Table 7c on pg 30 for details.

[2] In 2001, there were only a few fires involving gas-fired central air-conditioning but they resulted in very high property losses.

TABLE 4a
ESTIMATED RESIDENTIAL STRUCTURE FIRES
SELECTED ELECTRICAL EQUIPMENT, 1999 - 2003

Equipment	1999	2000	2001	2002	2003
Total Residential[1]	**338,100**	**337,600**	**361,200**	**369,000**	**374,700**
Total Electrical	**138,700**	**123,900**	**103,200**	**87,200**	**69,600**
Electrical Heating and Cooling	**14,300**	**13,900**	**13,600**	**13,200**	**10,900**
Central Heating	3,100	2,900	1,900	1,700	1,200
Local Fixed Heater	2,300	2,200	2,100	2,300	2,100
Portable Heater	2,500	2,400	2,000	2,000	1,600
Water Heater	1,700	1,600	1,700	1,600	1,100
Fixed, Central Air Conditioning	1,300	1,200	1,500	1,200	1,000
Portable Air Conditioner	900	700	700	500	500
Other	2,600	2,800	3,800	4,000	3,400
Electrical Cooking Equipment	**63,300**	**55,100**	**44,200**	**35,500**	**28,400**
Range / Oven	51,600	43,900	34,400	26,800	22,400
Range / Oven Hood	900	800	700	600	400
Deep Fat Fryer	300	200	300	200	100
Grill	100	100	*	100	*
Small Heat-Producing Appliance	2,900	2,800	2,200	1,700	1,300
Other	7,500	7,300	6,600	6,200	4,200
Electrical Distribution	**38,700**	**34,600**	**27,900**	**23,300**	**17,800**
Installed Wiring	13,700	12,300	9,700	8,100	6,400
Light Fixture	5,400	4,800	3,700	3,100	2,200
Receptacle, Switch	3,200	3,200	3,300	2,800	1,900
Cord, Plug	6,600	5,700	4,400	3,700	3,000
Lamp, Light Bulb	3,000	2,700	2,200	1,800	1,500
Panel Board	1,800	1,400	1,300	1,100	900
Meter	1,000	900	800	600	400
Transformer	400	300	300	200	100
Other	3,600	3,400	2,300	1,900	1,400
Other Selected Electrical Appliances	**16,400**	**14,400**	**11,700**	**10,200**	**8,400**
Clothes Dryer	11,400	9,900	8,300	7,300	6,000
Audio / Visual Equipment	1,600	1,500	1,300	1,000	800
Washing Machine	1,400	1,100	800	600	500
Refrigerator / Freezer	800	800	800	800	600
Shop / Garden Tools	900	900	500	300	300
Torch	300	200	200	200	200

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the U.S. Fire Administration and NFPA. Note: Fire estimates are rounded to the nearest 100. Estimates less than 100 are denoted by an asterisk (*). Selected product categories presented; subtotals do not necessarily add to heading totals. Estimates exclude losses from fires identifiable as intentionally set.

[1] There are confined fire estimates included in *Total Residential* category. See Table 7a on pg 29 for details.

TABLE 4b
ESTIMATED RESIDENTIAL STRUCTURE FIRE DEATHS
SELECTED ELECTRICAL EQUIPMENT, 1999 – 2003

Equipment	1999	2000	2001	2002	2003
Total Residential[1]	**2,400**	**2,720**	**2,570**	**2,270**	**2,740**
Total Electrical	**530**	**580**	**580**	**400**	**390**
Electrical Heating and Cooling	**100**	**130**	**70**	**140**	**80**
Central Heating	10	*	*	10	*
Local Fixed Heater	10	*	20	30	30
Portable Heater	50	120	30	90	30
Water Heater	*	*	10	*	*
Fixed, Central Air Conditioning	*	*	*	*	*
Portable Air Conditioner	20	*	*	*	10
Other	*	10	10	10	10
Electrical Cooking Equipment	**170**	**110**	**220**	**80**	**140**
Range / Oven	150	60	170	70	100
Range / Oven Hood	*	*	*	*	*
Deep Fat Fryer	*	*	*	*	*
Grill	*	*	*	*	*
Small Heat-Producing Appliance	10	20	20	10	10
Other	10	30	20	*	30
Electrical Distribution	**180**	**310**	**190**	**100**	**130**
Installed Wiring[2]	40	60	50	10	50
Light Fixture	20	30	10	10	10
Receptacle, Switch[2]	10	20	20	*	10
Cord, Plug	80	140	40	70	40
Lamp, Light Bulb	10	20	20	*	20
Panel Board	*	*	*	*	*
Meter	*	*	*	*	*
Transformer	*	*	30	*	*
Other	20	40	20	*	*
Other Selected Electrical Appliances	**50**	**10**	**20**	**10**	**10**
Clothes Dryer	*	10	10	10	*
Audio / Visual Equipment	40	*	10	*	10
Washing Machine	*	*	*	*	*
Refrigerator / Freezer	10	*	*	*	*
Shop / Garden Tool	*	*	*	*	*
Torch	*	*	*	*	*

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the U.S. Fire Administration and NFPA.
Note: Death estimates are rounded to the nearest 10. Estimates less than 10 are denoted by an asterisk (*). Selected product categories presented; subtotals do not necessarily add to heading totals. Estimates exclude losses from fires identifiable as intentionally set.

[1] Includes an estimated 10 deaths in 2002 from fires that were confined to the fire box of a burner/boiler but fuel type was unknown and an estimated 10 deaths in 2003 from confined cooking fires.
[2] Deaths from installed wiring and receptacle/switch were allocated in the same proportion as the fires. See discussion in Methodology section.

TABLE 4c
ESTIMATED RESIDENTIAL STRUCTURE FIRE INJURIES
SELECTED ELECTRICAL EQUIPMENT, 1999 – 2003

Equipment	1999	2000	2001	2002	2003
Total Residential[1]	**14,590**	**15,740**	**14,040**	**12,870**	**13,120**
Total Electrical	**5,200**	**5,010**	**4,210**	**3,560**	**3,440**
Electrical Heating and Cooling	**450**	**470**	**390**	**530**	**460**
Central Heating	20	10	10	30	10
Local Fixed Heater	150	80	90	120	140
Portable Heater	140	260	130	160	120
Water Heater	30	*	20	10	10
Fixed, Central Air Conditioning	10	30	20	20	20
Portable Air Conditioner	50	10	40	30	20
Other	40	80	70	150	130
Electrical Cooking Equipment	**3,000**	**2,830**	**2,380**	**1,990**	**2,000**
Range / Oven	2,530	2,340	1,980	1,570	1,680
Range / Oven Hood	10	40	30	10	30
Deep Fat Fryer	40	20	40	10	*
Grill	*	*	*	*	*
Small Heat-Producing Appliance	90	60	60	90	60
Other	330	370	270	300	230
Electrical Distribution	**1,060**	**1,100**	**840**	**600**	**530**
Installed Wiring[2]	200	240	210	170	160
Light Fixture	150	70	40	50	70
Receptacle, Switch[2]	50	60	70	60	50
Cord, Plug	350	460	250	210	150
Lamp, Light Bulb	140	120	130	50	60
Panel Board	30	30	30	10	10
Meter	20	20	10	10	*
Transformer	*	10	*	*	*
Other	120	90	80	50	30
Other Selected Electrical Appliances	**480**	**360**	**380**	**280**	**250**
Clothes Dryer	210	250	210	180	160
Audio / Visual Equipment	140	60	90	70	40
Washing Machine	*	*	10	10	10
Refrigerator / Freezer	70	20	30	10	20
Shop / Garden Tool	20	20	20	*	10
Torch	30	*	20	10	*

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the U.S. Fire Administration and NFPA.
Note: Injury estimates are rounded to the nearest 10. Estimates less than 10 are denoted by an asterisk (*). Selected product categories presented; subtotals do not necessarily add to heading totals. Estimates exclude losses from fires identifiable as intentionally set.

[1] There are confined fire injury estimates included in *Total Residential* category. See Table 7b on pg 30 for details.
[2] Injuries from installed wiring and receptacle/switch were allocated in the same proportion as the fires. See discussion in Methodology section.

TABLE 4d
ESTIMATED RESIDENTIAL STRUCTURE FIRE PROPERTY LOSS (In Millions)
SELECTED ELECTRICAL EQUIPMENT, 1999 – 2003

Equipment	1999	2000	2001	2002	2003
Total Residential[1]	**$4,239.5**	**$4,780.5**	**$4,390.0**	**$5,321.1**	**$5,311.5**
Total Electrical	**$1,567.3**	**$1,648.0**	**$1,371.3**	**$1,569.6**	**$1,306.5**
Electrical Heating and Cooling	**$224.7**	**$246.3**	**$272.2**	**$507.6**	**$216.5**
Central Heating	$27.4	$26.7	$15.2	$26.5	$17.2
Local Fixed Heater	$47.9	$38.8	$34.0	$29.7	$44.6
Portable Heater	$65.9	$82.6	$39.6	$129.3	$50.6
Water Heater	$11.5	$10.0	$11.0	$16.4	$9.3
Fixed, Central Air Conditioning	$9.5	$16.8	$102.8	$209.7	$11.4
Portable Air Conditioner	$16.5	$10.3	$8.0	$8.4	$11.0
Other	$46.0	$61.2	$61.6	$87.5	$72.3
Electrical Cooking Equipment	**$368.8**	**$411.0**	**$288.8**	**$333.9**	**$325.4**
Range / Oven	$272.8	$279.3	$203.4	$243.0	$239.3
Range / Oven Hood	$3.5	$5.2	$3.1	$2.8	$1.8
Deep Fat Fryer	$3.7	$5.3	$4.6	$1.9	$2.4
Grill	$0.3	$13.2	*	$0.1	$0.9
Small Heat-Producing Appliance	$25.3	$29.4	$23.9	$22.0	$22.3
Other	$63.2	$78.6	$53.9	$64.1	$58.6
Electrical Distribution	**$732.7**	**$723.5**	**$568.1**	**$491.0**	**$503.8**
Installed Wiring	$294.4	$267.5	$240.2	$166.0	$204.4
Light Fixture	$75.2	$78.4	$57.3	$47.3	$40.3
Receptacle, Switch	$39.9	$62.6	$44.5	$54.6	$35.0
Cord, Plug	$135.9	$120.1	$92.1	$95.4	$101.6
Lamp, Light Bulb	$51.9	$51.9	$39.6	$35.9	$32.2
Panel Board	$28.1	$17.8	$19.0	$23.7	$25.3
Meter	$13.8	$14.1	$7.7	$13.2	$10.4
Transformer	$4.7	$6.0	$5.3	$3.5	$2.3
Other	$88.7	$105.2	$62.4	$51.4	$52.4
Other Selected Electrical Appliances	**$136.4**	**$156.2**	**$115.8**	**$126.6**	**$147.4**
Clothes Dryer	$73.4	$82.0	$53.6	$63.6	$96.5
Audio / Visual Equipment	$28.0	$34.0	$22.4	$17.0	$22.2
Washing Machine	$4.2	$3.8	$1.6	$4.0	$2.1
Refrigerator / Freezer	$11.2	$20.9	$19.9	$15.6	$18.1
Shop / Garden Tool	$16.3	$15.2	$15.1	$6.8	$6.7
Torch	$3.4	$0.3	$3.3	$19.6	$1.8

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the U.S. Fire Administration and NFPA. Note: Property loss estimates are rounded to the nearest tenth of a million dollars. Estimates less than $0.1m are denoted by an asterisk (*). Selected product categories presented; subtotals do not necessarily add to heading totals. Estimates exclude losses from fires identifiable as intentionally set.

[1] There are confined fire property loss estimates included in *Total Residential* category. See Table 7c on pg 30 for details.

TABLE 5a
ESTIMATED RESIDENTIAL STRUCTURE FIRES
SELECTED GAS-FIRED EQUIPMENT, 1999 - 2003

Equipment	1999	2000	2001	2002	2003
Total Residential[1]	**338,100**	**337,600**	**361,200**	**369,000**	**374,700**
Total Gas-Fired Equipment	**42,000**	**38,000**	**28,700**	**24,500**	**17,300**
Gas Heating Equipment	**10,400**	**9,900**	**7,600**	**6,900**	**5,400**
Fixed Heater	1,800	1,900	1,700	1,600	1,100
Portable Heater	600	600	500	300	300
Central Heating	2,500	2,100	1,200	1,300	1,100
Fireplace, Chimney, Connector	700	600	400	400	300
Water Heater	4,200	4,100	3,400	2,600	2,300
Fixed, Central Air Conditioning	*	*	*	*	*
Other	500	600	400	500	300
Gas Cooking Equipment	**25,000**	**22,100**	**16,400**	**13,400**	**8,600**
Range/Oven	22,200	19,800	14,100	11,700	7,400
Open Gas Grill	1,100	700	500	500	400
Other	1,700	1,700	1,900	1,200	900
Other Selected Gas Equipment	**6,200**	**5,600**	**4,200**	**3,800**	**3,100**
Clothes Dryer	3,000	2,600	2,000	2,000	1,500
Torch	3,200	2,900	1,900	1,600	1,300
Shop / Garden Tool	*	100	200	300	300

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the U.S. Fire Administration and NFPA. Note: Fire estimates are rounded to the nearest 100. Estimates less than 100 are denoted by an asterisk (*). Selected product categories presented; subtotals do not necessarily add to heading totals. Estimates exclude losses from fires identifiable as intentionally set.

[1] There are confined fire estimates included in *Total Residential* category. See Table 7a on pg 29 for details.

TABLE 5b
ESTIMATED RESIDENTIAL STRUCTURE FIRE DEATHS
SELECTED GAS-FIRED EQUIPMENT, 1999 - 2003

Equipment	1999	2000	2001	2002	2003
Total Residential[1]	**2,400**	**2,720**	**2,570**	**2,270**	**2,740**
Total Gas-Fired Equipment	**250**	**190**	**120**	**120**	**160**
Gas Heating Equipment	**110**	**100**	**20**	**70**	**70**
Fixed Heater	50	40	10	40	50
Portable Heater	10	*	*	10	*
Central Heating	20	20	*	*	*
Fireplace, Chimney, Connector	10	*	*	*	*
Water Heater	10	20	10	10	20
Fixed, Central Air Conditioning	*	*	*	*	*
Other	10	20	*	*	*
Gas Cooking Equipment	**130**	**90**	**80**	**40**	**90**
Range/Oven	100	70	80	30	70
Open Gas Grill	*	*	*	*	10
Other	20	10	10	10	*
Other Selected Gas Equipment	**10**	**10**	*****	**10**	*****
Clothes Dryer	*	10	*	10	*
Torch	10	*	*	*	*
Shop / Garden Tool	*	*	*	*	*

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the U.S. Fire Administration and NFPA. Note: Death estimates are rounded to the nearest 10. Estimates less than 10 are denoted by an asterisk (*). Selected product categories presented; subtotals do not necessarily add to heading totals. Estimates exclude losses from fires identifiable as intentionally set.

[1]Includes an estimated 10 deaths in 2002 from fires that were confined to the fire box of a burner/boiler but fuel type was unknown and an estimated 10 deaths in 2003 from confined cooking fires.

TABLE 5c
ESTIMATED RESIDENTIAL STRUCTURE FIRE INJURIES
SELECTED GAS-FIRED EQUIPMENT, 1999 - 2003

Equipment	1999	2000	2001	2002	2003
Total Residential[1]	**14,590**	**15,740**	**14,040**	**12,870**	**13,120**
Total Gas-Fired Equipment	**1,590**	**1,750**	**1,010**	**920**	**830**
Gas Heating Equipment	**540**	**560**	**310**	**300**	**290**
Fixed Heater	50	110	90	90	50
Portable Heater	70	50	40	10	10
Central Heating	80	140	40	60	60
Fireplace, Chimney, Connector	30	20	10	*	*
Water Heater	260	240	130	130	160
Fixed, Central Air Conditioning	*	*	*	*	*
Other	50	20	*	10	10
Gas Cooking Equipment	**810**	**1,030**	**540**	**490**	**380**
Range/Oven	730	910	440	420	290
Open Gas Grill	30	50	20	20	20
Other	40	60	80	40	60
Other Selected Gas Equipment	**230**	**140**	**110**	**90**	**110**
Clothes Dryer	80	50	50	40	30
Torch	140	90	50	30	70
Shop / Garden Tool	*	*	10	20	10

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the U.S. Fire Administration and NFPA.
Note: Injury estimates are rounded to the nearest 10. Estimates less than 10 are denoted by an asterisk (*). Selected product categories presented; subtotals do not necessarily add to heading totals. Estimates exclude losses from fires identifiable as intentionally set.

[1] There are confined fire injury estimates included in *Total Residential* category. See Table 7b on pg 30 for details.

TABLE 5d
ESTIMATED RESIDENTIAL STRUCTURE FIRE PROPERTY LOSS (In Millions)
SELECTED GAS-FIRED EQUIPMENT, 1999 - 2003

Equipment	1999	2000	2001	2002	2003
Total Residential[1]	**$4,239.5**	**$4,780.5**	**$4,390.0**	**$5,321.1**	**$5,311.5**
Total Gas-Fired Equipment	**$300.8**	**$332.3**	**$253.2**	**$282.1**	**$301.3**
Gas Heating Equipment	**$116.4**	**$161.0**	**$143.5**	**$140.4**	**$119.1**
Fixed Heater	$18.5	$39.5	$13.0	$25.6	$20.1
Portable Heater	$9.6	$11.4	$8.3	$6.4	$8.4
Central Heating	$26.3	$26.5	$14.3	$21.9	$23.2
Fireplace, Chimney, Connector	$8.4	$13.9	$4.7	$32.4	$4.9
Water Heater	$45.9	$61.5	$39.9	$38.2	$49.6
Fixed, Central Air Conditioning[2]	*	*	$60.6	$0.3	$0.2
Other	$7.7	$8.1	$2.5	$15.7	$12.7
Gas Cooking Equipment	**$82.9**	**$94.6**	**$52.6**	**$66.9**	**$82.7**
Range/Oven	$48.2	$64.2	$30.1	$39.7	$43.9
Open Gas Grill	$17.4	$15.9	$6.2	$11.7	$22.3
Other	$17.3	$14.4	$16.2	$15.5	$16.5
Other Selected Gas Equipment	**$99.4**	**$68.8**	**$51.6**	**$67.5**	**$91.2**
Clothes Dryer	$12.3	$16.0	$14.2	$11.2	$10.8
Torch	$87.1	$50.2	$33.5	$52.1	$63.8
Shop / Garden Tool	*	$2.6	$3.9	$4.2	$16.7

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the U.S. Fire Administration and NFPA. Note: Property loss estimates are rounded to the nearest tenth of a million dollars. Estimates less than $0.1m are denoted by an asterisk (*). Selected product categories presented; subtotals do not necessarily add to heading totals. Estimates exclude losses from fires identifiable as intentionally set.

[1] There are confined fire property loss estimates included in *Total Residential* category. See Table 7c on pg 30 for details.
[2] In 2001, there were only a few fires involving gas-fired central air-conditioning but they resulted in very high property losses.

Methodology

This report is based on the National Fire Protection Association's (NFPA) annual survey of fire departments and the U.S. Fire Administration's (USFA) National Fire Incident Reporting System (NFIRS) data. The NFPA survey is a stratified random sample of fire departments in the U.S. The sample is stratified by the size of the community protected by the department. The NFPA makes national estimates of aggregated fires, deaths, injuries, and property loss by weighting sample results according to the proportion of the total U.S. population accounted for by communities of each size. The table below shows the NFPA estimates of residential structure fires and the associated losses for 1999 through 2003.

NFPA Estimates of Residential Structure Fires and Associated Losses 1999 - 2003

	1999	2000	2001	2002	2003
Structure Fires	383,000	379,500	396,500	401,000	402,000
Civilian Deaths	2,920	3,445	3,140	2,695	3,165
Civilian Injuries	16,425	17,400	15,575	14,050	14,075
Property Loss	$5.09 billion	$5.67 billion	$5.64 billion	$6.06 billion	$6.07 billion

Source: National Fire Protection Association (NFPA).

The NFIRS is a compilation of voluntarily submitted incident reports completed by U.S. fire departments. These reports came from 39 (in 1999) to 50 (in 2003) states and the District of Columbia. Not all the states reporting data included data from all fire departments in the state. The number of participating fire departments increased from about 7,000 in 1999 to over 9,000 in 2003. The table below shows the number of residential structure fires and the corresponding losses reported to USFA during the years 1999 through 2003.

Residential Structure Fires and Associated Losses Reported to USFA 1999 - 2003

	1999	2000	2001	2002	2003
Structure Fires	128,287	122,291	141,861	156,631	213,161
Civilian Deaths	977	950	1,049	1,029	1,370
Civilian Injuries	5,864	5,721	5,154	5,908	7,108
Property Loss	$1.56 billion	$1.63 billion	$2.07 billion	$2.00 billion	$2.35 billion

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the U.S. Fire Administration.

Fire Incident Characteristics of Interest

The NFIRS version 5.0 coding system includes many variables but CPSC staff has used only the following for this report:

Variable	Description
Civilian Deaths	Number of people who died in connection with the fire incident other than fire service personnel.
Civilian Injuries	Number of people who were injured (but did not die) in connection with the fire incident other than fire service personnel.

Property Loss	Estimate of loss, in whole dollars, if structure sustained damage from flame, smoke, or suppression efforts.
Contents Loss	Estimate of loss in whole dollars for contents (which had value) that sustained damage from flame, smoke, suppression efforts, or otherwise.
Property Use	Refers to the specific use of the property where the incident occurred. For residential structure fires, the properties that were deemed appropriate were single / multi family dwellings, any type of boarding houses, dormitories, sorority / fraternity houses, and hotels / motels.
Incident Type	Identifies the various types of incidents to which fire departments respond. It may include fires, rescue and emergency medical services, false alarms, etc. For this report, the incident codes of interest included structure fires (which include confined fires) and fires in mobile property used as a fixed structure.
Equipment Involved	Equipment that provided the heat which started the fire, e.g., heater, clothes dryer, etc.
Power Source	The type of power for the equipment involved in the fire's ignition. These are grouped into electrical, gas-fueled, liquid-fueled, solid-fueled, and other.
Equipment Portability	Identifies the equipment involved as stationary or portable.
Heat Source	Source of heat that ignited the fire, e.g., candle, lighter, cigarette, heat from operating equipment, hot object, etc.
Item First Ignited	The functional description or use of that which ignited, e.g., upholstered furniture, mattress, bedding, electric cable insulation, curtains or drapes, etc.
Cause of Ignition	This indicates the general causal factor that resulted in a heat source igniting a combustible material. The cause code values are: 1: intentional 2: unintentional 3: failure of equipment or heat source 4: act of nature 5: cause under investigation 0: cause, other U: cause undetermined after investigation.

CPSC staff regrouped the codes as:
1: intentional
0, 2, 3, 4 or fire involving child play*: unintentional
5, U, missing information: unknown.

Factors Contributing to Ignition — The event that allowed the heat source and the material first ignited to combine to start the fire. Factors adding specificity to the cause of ignition, such as playing with heat source, heat source too close to combustibles, equipment malfunction, etc.

Human Factors Contributing to Ignition — Factors relating to the person or persons involved with the start of the fire. Examples are asleep, possibly impaired by alcohol or drugs, age was a factor, unattended or unsupervised person, etc.

Missing Data

As mentioned above, only a few of the available fire incident characteristics were used to generate estimates in this report. Of these, only the variables Incident Type, Property Use, Cause of Ignition, Item First Ignited, Heat Source, and the loss variables are required to be filled out by the fire departments. Even less is required for confined fires, which will be discussed in the next section. Tables 1, 3, 4, and 5 in this report rely heavily on the variables Equipment Involved and the Equipment Power Source. In an effort to lessen the extent of missing data, CPSC staff has performed some edits as deemed necessary upon consultation with USFA technical staff. For example, if the heat source is known to be matches, lighters, or candles, and no equipment is reported, then it is likely that no equipment was involved. Similarly, if the factor contributing to the ignition of a fire is reported to be an act of nature such as an earthquake or a storm but there is no information on the equipment, then it is likely that no equipment was involved. Another scenario would be when the reported equipment code is electrical but the equipment power source is missing. In this case, it is evident that the power source should have been reported as electrical. On the other hand, when it is known that there is no equipment involved, power source should be reported as "none" instead of "unknown". Tables 6a-6c below show the extent of data still missing after the edits were put in place. Since most of the data fields for confined fires were not reported, they have been excluded from the tabulations below.

Table 6a
Missing Data on Residential Structure Fires: 1999 - 2003

	1999	2000	2001	2002	2003
Cause of Ignition	16%	17%	29%	26%	25%
Heat Source	23%	22%	32%	29%	29%
Item First Ignited	16%	18%	29%	27%	28%
Equipment Involved	14%	16%	33%	36%	39%
Equipment Power	21%	22%	38%	40%	41%

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the U.S. Fire Administration and NFPA.

* See discussion on child play in the Methodology section.

Table 6b
Missing Data on Residential Structure Fire Deaths: 1999 - 2003

	1999	2000	2001	2002	2003
Cause of Ignition	39%	38%	41%	47%	50%
Heat Source	46%	46%	46%	48%	54%
Item First Ignited	35%	37%	40%	43%	50%
Equipment Involved	27%	29%	36%	42%	48%
Equipment Power	31%	31%	40%	45%	50%

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the U.S. Fire Administration and NFPA.

Table 6c
Missing Data on Residential Structure Fire Injuries: 1999 - 2003

	1999	2000	2001	2002	2003
Cause of Ignition	17%	17%	22%	23%	24%
Heat Source	22%	23%	23%	25%	25%
Item First Ignited	16%	17%	20%	22%	22%
Equipment Involved	13%	14%	23%	29%	34%
Equipment Power	20%	20%	28%	32%	38%

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the U.S. Fire Administration and NFPA.

Confined Fires

By NFIRS definition, a fire that is confined to a non-combustible container causing no flame damage beyond the container is considered to be confined.

In NFIRS version 5.0, the following incident type codes are used to identify the different types of confined fires.

Incident Type Code	***Definition***
113	Fire involving the contents of a cooking vessel without fire extension beyond the vessel.
114	Fire originating in and confined to a chimney or flue.
115	Fire caused by overload or malfunction of an incinerator, with no flame damage outside the incinerator.
116	Fire caused by delayed ignition or malfunction of a fuel or oil burner / boiler, with no flame damage outside the fire box.
117	Fire originating in and confined to contents of a trash compactor. Home trash compactors are excluded.
118	Fire involving a trash or rubbish fire in a structure with no flame damage to structure or its contents.

These Incident Type codes are unavailable in version 4.1 of NFIRS. It was believed that many of these cases were not being reported; so in version 5.0, these codes were created to simplify the coding of these fires. When reporting confined fires, the cause of ignition, equipment involved, item first ignited, or power source is not required to be reported.

From 1999 through 2003, more and more of the NFIRS data has been reported in version 5.0. With the opportunity to identify confined fires using the specific codes, more and more "confined" fires are also being reported to NFIRS. However, very little other useful information about them is available. With the proportion of reported confined fires increasing, the proportion of missing data also increased. Imputation of the unknowns based on so little known information from the confined fires would yield misleading estimates. As such, CPSC staff separated out all confined fires from the data before the product-specific estimates were derived. The confined fire and fire loss counts were weighted up to the NFPA estimates using the same weights as the rest of the data and presented at the aggregate levels (and sometimes at more specific levels as allowed by the Incident Type definitions). See the section on Estimation Procedure below for a discussion on the weights used. Tables 7a through 7c below present all estimates related to the confined fires. These estimates are also included in Tables 1a through 5d, as appropriate. Note that they do not appear in Tables 4a through 5d at any of the specific levels since there is no information available on equipment power source.

Table 7a
Estimated Residential Confined Fires: 1999 - 2003

Included in Table Categories:	Appear in Tables:	1999	2000	2001	2002	2003
Total Residential	1a, 2a, 3a, 4a, 5a	8,300	23,700	71,600	103,100	145,300
Total Heating and Cooling Equipment	1a, 3a	2,900	7,000	19,000	27,100	35,400
Fireplace, Chimney, Connector	*1a, 3a*	*2,600*	*6,100*	*14,700*	*20,600*	*21,300*
Other (Burner / Boiler)	*1a, 3a*	*300*	*900*	*4,300*	*6,500*	*14,100*
Cooking	1a, 2a	4,200	13,600	45,100	66,300	94,500
Trash, Rubbish	2a	1,200	3,000	7,100	9,200	13,100
Incinerator		*	100	300	400	600
Trash Compactor		*	*	100	100	1,700

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the U.S. Fire Administration and NFPA.
Note: Fire estimates are rounded to nearest 100. Fire estimates less than 100 are denoted by an asterisk (*). Subtotals do not necessarily add to heading totals. No information was available on the intentionality of these fires.

There were 10 deaths estimated in 2002 from residential confined fires involving Burners / Boilers (under Total Heating & Cooling Equipment) and 10 deaths estimated in 2003 from residential confined cooking fires. There were no deaths from confined fires in the other three years.

Table 7b
Estimated Residential Confined Fire Injuries: 1999 - 2003

Included in Table Categories:	Appear in Tables:	1999	2000	2001	2002	2003
Total Residential	1c, 2c, 3c, 4c, 5c	60	220	860	1,010	1,300
Total Heating and Cooling Equipment	1c, 3c	*	10	40	60	100
Fireplace, Chimney, Connector	*1c, 3c*	*	*	*20*	*20*	*30*
Other (Burner / Boiler)	*1c, 3c*	*	*10*	*20*	*40*	*70*
Cooking	1c, 2c	60	200	780	920	1,150
Trash, Rubbish	2c	10	10	40	30	50
Incinerator		*	*	*	*	*
Trash Compactor		*	*	*	*	*

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the U.S. Fire Administration and NFPA.

Note: Injury estimates rounded to nearest 10. Estimates less than 10 are denoted by an asterisk (*). Subtotals do not necessarily add to heading totals. No information was available on the intentionality of these fires.

Table 7c
Estimated Residential Confined Fire Property Loss (In Millions): 1999 - 2003

Included in Table Categories:	Appear in Tables:	1999	2000	2001	2002	2003
Total Residential	1d, 2d, 3d, 4d, 5d	$15.4	$14.9	$21.7	$39.5	$46.6
Total Heating and Cooling Equipment	1d, 3d	$7.0	$4.8	$8.5	$14.2	$17.5
Fireplace, Chimney, Connector	*1d, 3d*	*$6.6*	*$4.3*	*$6.8*	*$10.4*	*$13.1*
Other (Burner / Boiler)	*1d, 3d*	*$0.4*	*$0.5*	*$1.7*	*$3.8*	*$4.4*
Cooking	1d, 2d	$8.2	$9.2	$10.8	$22.2	$26.1
Trash, Rubbish	2d	$0.2	$0.7	$0.8	$2.7	$2.9
Incinerator		*	$0.2	$1.6	$0.3	$0.1
Trash Compactor		*	*	*	*	*

Source: U.S. Consumer Product Safety Commission/EPHA, from data obtained from the U.S. Fire Administration and NFPA.

Note: Property loss estimates are rounded to the nearest tenth of a million dollars. Estimates less than $0.1m are denoted by an asterisk (*). Subtotals do not necessarily add to heading totals. No information was available on the intentionality of these fires.

Child Play

When a fire is caused by the act of a child (under 10 years of age) playing with a source of heat, the cause of fire is considered child play.

In version 4.1 of NFIRS data, the variable Ignition Factor had specific codes to indicate the cause of the fire. The codes allowed defining cause as a) intentional, b) unintentional-child play, c) unintentional-not

child play, or d) unknown. Unknown fire causes were allocated among the known causes as described below in the section on Estimation. Resulting estimates in tables included only unintentional fire losses; child play fire losses were identified and associated with matches and lighters. In version 5.0, there is no one variable reserved to identify child play cases. A combination of variables such as Factors Contributing to Ignition, Human Factors Contributing to Ignition, and Age (of fire starter) provides the means to identify these scenarios. However, for data that is reported in version 5.0, fire departments are not required to fill in these three variable fields. Consequently, much of the data is missing and estimates of child play fires (which were presented in pre 1999 years) have become unreliable for post 1999 years. However, to keep consistency with version 4.1, whenever a fire can be identified as involving child play in version 5.0, the intentionality is designated to be "unintentional".

Exposure Fires

Some fires involved more than one residential structure. The initial structure is identified as exposure zero in the data file. Structure fires that spread from the initial fire are identified as exposure fires numbered from "one" to however many are necessary. CPSC staff transferred the fire cause values such as cause of ignition, equipment involved, heat source, etc. from the initial fire to the exposure fires. Thus, if the initial fire was caused by a portable heater, all exposures would be considered portable heater fires. All associated deaths, injuries, and property loss also would be attributed to portable heaters. Any residential structure exposure fire that originated from a non-residential structure fire is considered within scope for this report. The effect of this transfer of information will likely be higher fire and fire loss numbers for specific products than there would otherwise be. Cases that, in previous years, were classified as involving no equipment since they were not the initial fire are now being associated with the specific product, if any, that the initial fire was associated with.

Change in Coding Structure

In version 4.1, each of the data characteristics was assigned a two-digit numerical code by the reporting fire departments. Each two-digit code corresponded to a description appropriate for that characteristic. The codes were organized using a nested structure so that the first digit of a two-digit code indicated the particular category. For example, all equipment codes beginning with '2' belonged to *cooking* equipment. All codes for 4.1 *cooking* equipment are listed below.

2 – Cooking Equipment

20 – cooking equipment, insufficient information to classify further
21 – fixed, stationary surface unit
22 – fixed, stationary oven
23 – fixed, stationary food warming appliance
24 – deep fat fryer
25 – portable, cooking, warming unit
26 – open fired grill
27 – grease hood, duct
29 – cooking equipment, not classified above

Note here that code 29 is distinct from code 20. If code 29 was used, it meant that the fire department was able to identify the specific type of cooking equipment but that the identified cooking equipment was not among the listed equipment codes. When code 20 was used, the fire department was not able to identify the equipment further than the fact that it was *cooking* equipment. Equipment coded as 20 was a

"partial" unknown because, while the exact equipment was not known, it was at least known that the equipment was some sort of *cooking* equipment. In the allocation process, fires with such partial unknown values were distributed among the more specific codes in the *cooking* equipment group, maintaining the marginal distributions for the known data. In this example, a fire with equipment coded as 20 would be distributed among codes 21 through 29.

In version 5.0, the codes are often more specific and extensive than the 4.1 codes. However, there is no provision to code any partially unknown data element. There are 28 three-digit codes available to classify "Kitchen and Cooking Equipment". However, the *cooking equipment, insufficient information to classify further* case can only be placed now under the code "Kitchen & cooking equipment, other".

This affects every subsection of Tables 1, 3, 4, and 5. In previous years, the "Other" category at the bottom of each of these subsections was comprised of two things. One was all the individual products within these categories whose estimates were not deemed substantial enough to be given their own line in the table. The second was for the codes ending in "not classified above" such as code 29. In version 5.0, these "Other" entries are also comprised of two groups. The first consists of individual products without enough data to stand on their own, just as in version 4.1. The second includes codes ending in "other", such as "Kitchen & cooking equipment, other". The latter codes are now a combination of the "not classified above" codes and the "insufficient information to classify further" codes. The consequence of this is that the "Other" categories include more cases and the specific product categories include fewer cases than they would have if it was feasible to allocate the partial unknowns amongst them.

Change in Product-Specific Categories in Tables 1-5

Since 1999, the NFIRS data provided by the U.S. Fire Administration was constructed using a new version of NFIRS, version 5.0. However, the reporting fire departments have been allowed to switch over to the new version gradually. In 1999, most fire departments recorded incident and loss data using the older system, NFIRS 4.1. When fire departments transmitted their data to USFA in the 4.1 version, the data was converted to the 5.0 version using specially designed computer programs[1]. The 5.0 codes for some variables are more specific and extensive than the 4.1 codes. When there is no one-to-one mapping from the old system to the new, it is sometimes not possible to be sure if the data captured by the fire departments using version 4.1 and the data converted from version 4.1 to 5.0 include the same set of products. For example, data originally coded (in 4.1) as "Indoor fireplace" had the option to convert to "Fireplace, chimney, other", "Fireplace, masonry", "Fireplace, factory built", or "Fireplace, insert/stove" (in 5.0). Since the original data did not contain the specificity required by the latter three categories, it had to be coded as "Fireplace, chimney, other". A similar situation arose for chimneys. This resulted in the collapsing of the two separate categories, "Fireplace" and "Chimney", that existed in 1998 and previous years into one.

In version 5.0, the variable that identifies fuel is called "Power Source" and refers only to the power source of the equipment involved at the start of the fire. In NFIRS version 4.1, the variable that captured fuel was called "Form of Heat of Ignition" and did not always pertain to the equipment involved. So in the new version, if there was no equipment involved in the fire, there is no fuel-type (Power Source) associated with the fire. Power Source is not considered missing so nothing is allocated for power source in these "no

[1] U.S. Fire Administration, "National Fire Incident Reporting System Version 5.0 Design Documentation", January 2002, pp 248 –309. The version 5.0 variables and formats are included in USFA's "National Fire Incident Reporting System Version 5.0 Quick Reference Guide". Both documents are available at www.nfirs.fema.gov.

equipment" cases. These cases maintain no value for power source. As a result of this change, the estimates for 'All Other Fuel' fires and associated losses under Heating and Cooling Equipment (Tables 3a-3d) are lower than in previous years.

In the past, some electrical products which were not defined uniquely by the NFIRS codes were included in the estimates. These estimates were achieved with the help of the NFIRS text fields. The codes for which this was done include microwave oven, dishwasher, electric blanket, television, and heat tape. In version 5.0 there are specific codes for many of these products. As the proportion of fires that are reported in version 5.0 increases, losses associated with these products may again be estimated. Until then, these products are either grouped with other products or are not included in the tables.

Estimation Procedures

After completing all the edits as necessitated by the issues discussed above, the estimation process was carried out. For each year, CPSC staff computed weights for residential fires, civilian deaths, civilian injuries, and property content loss respectively by dividing the NFPA estimated totals for these losses by the corresponding NFIRS totals. These weights were multiplied by the NFIRS product-specific frequency counts which were then used to produce the estimates in the tables. As already mentioned, the confined fires were separated out and the estimates for them were computed separately.

To obtain the NFIRS estimates, an assumption was made that the unknown values for a characteristic have the same distribution as the known values for that characteristic. To allocate these unknowns for the various characteristics, "raking" was used. A SAS® macro[1] performed the raking. The raking maintains the marginal distributions for the known data while allocating the unknown data for all characteristics involved. For each year, the raking procedure was applied separately for fires, deaths, injuries, and property loss. No raking was performed on the confined fires.

As already discussed, data for 1998 and previous years contained partial unknowns. Fire losses having complete unknowns in a characteristic were assumed to follow the distribution of fire losses having known values and partial unknowns for that characteristic. Fire losses having partial unknowns in a characteristic were assumed to follow the distribution of losses having known values within the respective category for the characteristic. The raking procedure was applied to the data in two stages. The first stage allocated the complete unknowns among the known values and the partially unknown values. The second stage allocated the partially unknown values in a category among the known values within their respective categories. In 1999 and later years, with the gradual disappearance of partial unknowns, the second-stage raking process had to be eliminated.

Finally, version 5.0 now provides product-specific codes for installed wiring, receptacles, and switches. However, very few deaths and injuries in the data file were associated with these products. Since the raking algorithm cannot appropriately produce raked results when cell values are zero or very low, installed wiring, and receptacle/switch deaths and injuries were allocated in the same proportion as the fires involving installed wiring and receptacle/switch.

[1] M. Battaglia, D. Hoaglin and D. Izrael, "A SAS Macro for Balancing a Weighted Sample", SAS® Users Group International (SUGI) 25th Annual Conference, April 9-12, 2000, Paper #258-25.