



1998 Residential Fire Loss Estimates

**U.S. National Estimates of Fires,
Deaths, Injuries and Property
Losses from Non-Incendiary,
Non-Suspicious Fires**

**Jean Mah, EPHA
Division of Hazard Analysis
Directorate for Epidemiology
U.S. Consumer Product Safety Commission
Washington, DC 20207**

Topic	Table
Introduction	
Part I - 1998 Fire Loss Estimates	
Selected Equipment	1
Selected Products	2
Heating Equipment	3
Selected Electrical Equipment	4
Selected Gas-Fired Equipment	5
Part II - 1994 – 1998 Fire Loss Estimates	
Fires	
Selected Equipment	6
Selected Products	7
Heating Equipment	8
Selected Electrical Equipment	9
Selected Gas-Fired Equipment	10
Deaths	
Selected Equipment	11
Selected Products	12
Heating Equipment	13
Selected Electrical Equipment	14
Selected Gas-Fired Equipment	15
Injuries	
Selected Equipment	16
Selected Products	17
Heating Equipment	18
Selected Electrical Equipment	19
Selected Gas-Fired Equipment	20
Methodology	

Introduction

The attached tables present estimated product-related fire losses that occurred in U.S. residential structure fires attended by the fire service during 1998, the most recent year for which these data are available. Part II of this report presents estimates for the most recent five years of data (1994 – 1998), plus a benchmark year.¹ All estimates were derived from data provided by the U.S. Fire Administration's (USFA) National Fire Incident Reporting System (NFIRS) and the National Fire Protection Association (NFPA).

All estimates presented in this report exclude losses associated with incendiary and suspicious fires. Estimates presented in this report are not comparable to those published in previous years due to changes in methodology.² The methodology used for deriving the fire loss estimates contained in this report is detailed in the *Methodology* section.

Below is an overview of the 1998 non-incendiary, non-suspicious fire losses:

- Fires in residential properties accounted for about 75 percent of all structure fires in 1998 and resulted in 90 percent of civilian fire deaths.³
- There were an estimated 332,300 residential structure fires in 1998. These fires resulted in an estimated 2,660 civilian deaths, 15,260 civilian injuries and \$3.56 billion in property losses. (Table 1)
- For the first time in at least five years, the percentage of fire deaths involving Cooking equipment (15%) exceeded the percentage involving Heating equipment (11%). Electric ranges and ovens accounted for the same percentage of deaths as their gas-fueled counterparts (6%). Electrical distribution equipment, like Heating equipment, was involved in about 11 percent of fire deaths. (Table 11)
- Cooking equipment was the type of equipment most frequently involved in fires and fire injuries (28% and 30%, respectively). Most cooking equipment-related fires and injuries involved electrical products (18% and 21%, respectively). (Table 1)
- Among the different forms of material first ignited in fires, upholstered furniture was most frequently involved in fire deaths (20%), followed by mattresses and bedding (15%). Mattresses and bedding accounted for more fires and injuries

¹ The Selected Electrical Equipment tables (tables 9, 14 and 19) present benchmark estimates from 1990, while all other tables present benchmark estimates from 1980. This is because additional NFIRS data fields used to produce the electrical estimates were not available in 1980.

² Fire loss estimates dating back to 1980 (excluding those for certain electrical products) have been computed using the methodology in this report and are available from CPSC staff by written request.

³ Figures derived from the following article: Michael J. Karter, Jr., "1998 Fire Loss in the U.S.", NFPA Journal, Sept./Oct.1999, pp. 89 - 95.

(6% and 15%, respectively) than upholstered furniture (3% and 9%, respectively). (Table 2)

- Among the different forms of heat involved in the ignition of fires, smoking material ignitions accounted for 30 percent of fire deaths. Candle fire deaths increased over the five-year period and accounted for 6 percent of fire deaths, followed by lighters (5%) and matches (3%). (Table 2)
- Smoking material ignitions accounted for 7 percent of fires and 13 percent of fire injuries. Candles accounted for 4 percent of fires and 8 percent of injuries. Although the number of candle fires increased over the five-year period, the number of related injuries remained fairly stable. Injuries from lighters (6%) exceeded injuries from matches (4%), while the percentage of fires involving these forms of heat were about equal (2%). (Table 2)

Fire loss estimates presented in this report are fires, deaths, injuries and property losses associated with consumer products. Estimates exclude losses from incendiary and suspicious fires. The product categories selected, except for smoking material, represent products within the jurisdiction of CPSC.

Only selected product categories are presented in the attached tables; therefore, the detail of the product categories may not add to the totals that appear in the headings. Estimates labeled as "Other" under a category heading (e.g., Heating Equipment, Other) correspond to NFIRS codes that were grouped together due to their relatively low individual estimates.

TABLE 1
ESTIMATED RESIDENTIAL STRUCTURE FIRES
SELECTED EQUIPMENT, 1998

Equipment	Fires	Civilian Deaths	Civilian Injuries	Property Loss (In Millions)
Total Residential	332,300	2,660	15,260	\$3,562.5
Total Heating Equipment	48,800	290	1,460	\$498.8
Fixed Heater	11,000	100	350	\$104.5
Portable Heater	3,900	110	340	\$69.6
Central Heating	8,300	30	230	\$70.9
Fireplace	6,200	20	90	\$73.6
Chimney or Connector	10,700	10	40	\$73.3
Water Heater	7,400	20	390	\$80.4
Other	1,300	*	20	\$26.5
Total Cooking Equipment	93,300	390	4,640	\$409.4
Range/Oven	82,900	340	4,170	\$315.2
Gas	22,500	150	890	\$60.5
Electric	51,800	150	2,980	\$212.3
Other	8,700	40	310	\$42.3
All Other Cooking	10,300	50	470	\$94.2
Gas	1,300	*	60	\$16.9
Electric	6,400	30	280	\$39.4
Other	2,600	20	130	\$37.9
Total Electric Distribution	38,800	280	1,230	\$680.0
Installed Wiring	14,000	110	320	\$286.5
Cord, Plug	7,000	60	420	\$142.5
Switch, Outlet	4,900	40	150	\$65.6
Lamp, Light Fixture	8,000	60	250	\$102.5
Other	4,900	10	100	\$82.9
Total Appliances (Except Above)	27,300	110	980	\$213.9
TV, Radio, Phono	1,900	30	140	\$28.6
Dryer	15,600	20	370	\$75.4
Washing Machine	1,600	*	30	\$5.4
Heat Producing Appliance	2,800	30	150	\$34.2
Non-Heat Producing Appliance	900	10	90	\$13.0
Other	4,500	30	200	\$57.2
Total Cooling, Air Conditioning	4,100	10	150	\$57.9

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

Note: Estimates exclude losses from incendiary and suspicious fires. Fire estimates are rounded to the nearest 100.

Death and injury estimates are rounded to the nearest 10. Property loss is rounded to the nearest tenth of a million.

Estimates less than 10 are denoted by an asterisk (*). Selected product categories presented; subtotals do not add up to heading totals.

TABLE 2
ESTIMATED RESIDENTIAL STRUCTURE FIRES
SELECTED PRODUCTS, 1998

Product	Fires	Civilian Deaths	Civilian Injuries	Property Loss (In Millions)
Total Residential	332,300	2,660	15,260	\$3,562.5
By Form of Heat of Ignition				
Cigarette, Other Tobacco Prod.	22,200	800	1,990	\$284.6
Match	6,500	90	610	\$72.3
Child Play	5,000	80	470	\$62.1
Other	1,500	10	140	\$10.2
Lighter	6,000	140	920	\$98.8
Child Play	5,500	130	820	\$92.0
Other	500	10	100	\$6.8
Candle	12,800	170	1,200	\$174.6
By Form of Material First Ignited				
Upholstered Furniture	10,200	520	1,420	\$207.1
Smoking Material Ignition	4,900	370	760	\$91.1
Open Flame Ignition	1,900	100	410	\$40.7
Other	3,300	40	250	\$75.2
Mattress, Bedding	18,900	410	2,260	\$255.4
Smoking Material Ignition	5,800	250	690	\$69.8
Open Flame Ignition	6,000	80	980	\$89.0
Other	7,100	80	600	\$96.6
Other Materials				
Electric Cable Insulation	28,800	130	690	\$275.0
Interior Wall Covering	14,700	190	780	\$278.4
Wearing Apparel-Worn	500	110	160	\$4.6
Wearing Apparel-Not Worn	13,200	80	610	\$124.1
Floor Covering	6,900	70	320	\$100.9
Curtains, Drapes	3,400	20	270	\$37.0
Magazine, Newspaper	3,400	10	140	\$36.6
Thermal Insulation	4,500	*	50	\$37.6
Cabinet, Desk	6,800	60	430	\$90.9
Trash, Rubbish	21,400	60	320	\$85.3
Toy, Game	600	*	30	\$4.8

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

Note: Estimates exclude losses from incendiary and suspicious fires. Fire estimates are rounded to the nearest 100.

Death and injury estimates are rounded to the nearest 10. Property loss is rounded to the nearest tenth of a million.

Estimates less than 10 are denoted by an asterisk (*). Selected product categories presented; subtotals do not add up to heading totals.

TABLE 3
ESTIMATED RESIDENTIAL STRUCTURE FIRES
HEATING EQUIPMENT, 1998

Equipment	Fires	Civilian Deaths	Civilian Injuries	Property Loss (In Millions)
Total Residential	332,300	2,660	15,260	\$3,562.5
Total Heating Equipment	48,800	290	1,460	\$498.8
Solid Fuel	19,100	50	170	\$165.9
Fixed Heater	5,900	20	80	\$47.1
Portable Heater	100	*	*	\$1.9
Fireplace	4,100	10	50	\$54.9
Central Furnace	300	*	*	\$1.1
Chimney	6,700	10	20	\$39.1
Chimney Connector	1,600	*	10	\$17.1
Other	300	*	*	\$4.7
Gas-Fired	9,900	70	600	\$142.2
Fixed Heater	1,800	40	110	\$27.0
Portable Heater	600	10	60	\$11.4
Water Heater	4,300	10	320	\$55.9
Central Furnace	2,400	10	100	\$33.7
Other	800	*	20	\$14.2
Electric	9,400	50	330	\$102.9
Fixed Heater	1,800	10	110	\$19.3
Portable Heater	2,000	30	180	\$40.5
Water Heater	2,000	*	10	\$10.5
Central Furnace	2,900	10	20	\$21.1
Other	700	*	*	\$11.4
Liquid Fuel	3,500	80	190	\$24.1
Fixed Heater	500	30	30	\$2.0
Portable Heater	700	30	50	\$9.6
Water Heater	300	10	20	\$3.3
Central Furnace	1,900	10	70	\$7.7
Chimney or Connector	100	*	*	\$0.1
Other	100	*	10	\$1.3
All Other Fuel	6,900	50	170	\$63.7
Fixed Heater	1,000	*	30	\$9.1
Portable Heater	500	40	40	\$6.2
Fireplace	1,600	*	30	\$12.4
Water Heater	800	*	40	\$10.4
Central Furnace	800	*	30	\$7.3
Chimney	1,300	*	10	\$6.5
Chimney Connector	600	*	*	\$4.9
Other	300	*	*	\$6.8

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

Note: Estimates exclude losses from incendiary and suspicious fires. Fire estimates are rounded to the nearest 100.

Death and injury estimates are rounded to the nearest 10. Property loss is rounded to the nearest tenth of a million.

Estimates less than 10 are denoted by an asterisk (*). Selected product categories presented; subtotals do not add up to heading totals.

TABLE 4
ESTIMATED RESIDENTIAL STRUCTURE FIRES
SELECTED ELECTRICAL EQUIPMENT, 1998

Equipment	Fires	Civilian Deaths	Civilian Injuries	Property Loss (In Millions)
Total Residential	332,300	2,660	15,260	\$3,562.5
Total Electrical	155,900	800	6,810	\$1,680.2
Electrical Heating Equipment	9,400	50	330	\$102.9
Central Heating	2,900	10	20	\$21.1
Fixed Heater	1,800	10	110	\$19.3
Portable Heater	2,000	30	180	\$40.5
Water Heater	2,000	*	10	\$10.5
Other	700	*	*	\$11.4
Electrical Cooking Equipment	58,200	180	3,260	\$251.7
Range/Oven	51,800	150	2,980	\$212.3
Toaster/Toaster Oven	2,200	20	90	\$13.3
Microwave Oven	1,500	*	60	\$8.4
Range/Oven Hood	900	*	30	\$3.5
Coffee Maker, Teapot	300	*	20	\$2.0
Deep Fat Fryer	200	*	20	\$3.7
Hot Plate	200	*	10	\$1.5
Other	1,100	*	50	\$6.9
Electrical Distribution	38,800	280	1,230	\$680.0
Installed Wiring	14,000	110	320	\$286.5
Light Fixture	5,100	50	100	\$61.2
Receptacle	3,800	30	120	\$52.6
Extension Cord	2,800	20	170	\$57.5
Other Electrical Cord	2,400	20	140	\$48.5
Lamp, Light Bulb	2,900	10	150	\$41.3
Circuit Breaker	1,600	10	40	\$29.4
Switch	800	10	20	\$10.8
Meter	1,000	*	10	\$13.3
Fuse	900	*	20	\$16.2
Transformer	400	*	*	\$6.6
Other	3,100	20	140	\$56.2
Electrical Appliances	20,300	100	730	\$179.5
Clothes Dryer	10,400	20	240	\$54.9
Fan	2,600	10	120	\$35.9
Washing Machine	1,400	*	30	\$5.2
Heat Tape	100	*	10	\$1.4
Television	900	20	70	\$14.1
Iron	400	*	20	\$4.8
Dishwasher	600	*	30	\$8.4
Radio, Cassette Player, VCR	600	10	50	\$10.2
Hair Dryer, Curling Iron	700	10	40	\$8.8
Electric Blanket	400	*	20	\$4.5
Other	2,300	20	120	\$31.2
Cooling Equipment	3,800	10	140	\$51.2
Refrigerator, Freezer	1,100	*	40	\$14.4
Central Air Conditioning	1,000	*	10	\$6.9
Fixed Room Air Conditioning	700	*	20	\$8.0
Portable Air Conditioning	800	*	50	\$16.5
Other	300	*	20	\$5.4

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

Note: Estimates exclude losses from incendiary and suspicious fires. Fire estimates are rounded to the nearest 100.

Death and injury estimates are rounded to the nearest 10. Property loss is rounded to the nearest tenth of a million.

Estimates less than 10 are denoted by an asterisk (*). Selected product categories presented; subtotals do not add up to heading totals.

TABLE 5
ESTIMATED RESIDENTIAL STRUCTURE FIRES
SELECTED GAS-FIRED EQUIPMENT, 1998

Equipment	Fires	Civilian Deaths	Civilian Injuries	Property Loss (In Millions)
Total Residential	332,300	2,660	15,260	\$3,562.5
Total Gas-Fired Equipment	46,500	270	2,020	\$313.6
Gas Heating Equipment	9,900	70	600	\$142.2
Fixed Heater	1,800	40	110	\$27.0
Portable Heater	600	10	60	\$11.4
Central Furnace	2,400	10	100	\$33.7
Fireplace	300	*	20	\$5.5
Water Heater	4,300	10	320	\$55.9
Other	500	*	*	\$8.7
Gas Cooking Equipment	23,800	150	940	\$77.5
Range/Oven	22,500	150	890	\$60.5
Open Gas Grill	500	*	20	\$13.0
Portable Cooking	200	*	20	\$0.9
Other	500	*	20	\$3.0
Gas Appliances (Except Above)	3,500	*	80	\$14.5
Dryer	3,300	*	80	\$12.8
Other	200	*	*	\$1.7

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

Note: Estimates exclude losses from incendiary and suspicious fires. Fire estimates are rounded to the nearest 100.

Death and injury estimates are rounded to the nearest 10. Property loss is rounded to the nearest tenth of a million.

Estimates less than 10 are denoted by an asterisk (*). Selected product categories presented; subtotals do not add up to heading totals.

TABLE 6
ESTIMATED RESIDENTIAL STRUCTURE FIRES
SELECTED EQUIPMENT, 1994-1998

Equipment	1980	1994	1995	1996	1997	1998
Total Residential	655,000	392,300	369,200	371,200	357,700	332,300
Total Heating Equipment	208,800	73,900	68,300	63,000	60,000	48,800
Fixed Heater	42,400	22,300	19,500	15,900	14,600	11,000
Portable Heater	6,600	5,500	5,400	5,700	5,200	3,900
Central Heating	22,900	11,000	10,200	10,500	10,600	8,300
Fireplace	40,200	9,100	9,100	7,800	7,400	6,200
Chimney or Connector	78,700	15,900	14,400	13,000	12,900	10,700
Water Heater	15,400	8,200	8,000	8,400	7,700	7,400
Other	2,600	1,800	1,700	1,600	1,500	1,300
Total Cooking Equipment	139,800	102,300	96,900	98,700	102,300	93,300
Range/Oven	125,100	90,900	86,000	87,600	90,800	82,900
Gas	42,600	26,400	22,900	25,900	25,400	22,500
Electric	65,600	55,800	54,500	52,300	55,700	51,800
Other	16,800	8,700	8,600	9,500	9,600	8,700
All Other Cooking	14,700	11,400	10,900	11,100	11,500	10,300
Gas	1,100	1,500	1,500	1,500	1,500	1,300
Electric	8,800	7,100	6,700	6,800	7,200	6,400
Other	4,800	2,700	2,700	2,700	2,800	2,600
Total Electric Distribution	64,000	42,500	41,600	41,100	41,100	38,800
Installed Wiring	23,500	15,700	15,000	14,900	14,500	14,000
Cord, Plug	12,800	7,700	7,400	7,300	7,200	7,000
Switch, Outlet	7,600	5,000	5,100	4,900	4,700	4,900
Lamp, Light Fixture	12,500	8,800	8,800	9,000	9,600	8,000
Other	7,600	5,300	5,300	5,100	5,000	4,900
Total Appliances (Except Above)	49,500	30,400	29,300	28,900	29,000	27,300
TV, Radio, Phono	9,900	2,300	2,000	2,100	2,000	1,900
Dryer	19,500	15,800	16,300	16,100	16,500	15,600
Washing Machine	3,500	2,200	2,000	2,000	1,900	1,600
Heat Producing Appliance	8,000	3,900	3,400	3,400	3,300	2,800
Non-Heat Producing Appliance	2,300	1,000	900	900	900	900
Other	6,300	5,100	4,700	4,500	4,400	4,500
Total Cooling, Air Conditioning	6,300	4,400	4,600	4,000	3,800	4,100

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

Note: Estimates exclude losses from incendiary and suspicious fires. Fire estimates are rounded to the nearest 100.

Death and injury estimates are rounded to the nearest 10. Property loss is rounded to the nearest tenth of a million.

Estimates less than 10 are denoted by an asterisk (*). Selected product categories presented; subtotals do not add up to heading totals.

TABLE 7
ESTIMATED RESIDENTIAL STRUCTURE FIRES
SELECTED PRODUCTS, 1994-1998

Product	1980	1994	1995	1996	1997	1998
Total Residential	655,000	392,300	369,200	371,200	357,700	332,300
By Form of Heat of Ignition						
Cigarette, Other Tobacco Prod.	75,700	25,200	24,600	24,300	22,600	22,200
Match	27,200	10,600	9,100	8,700	7,000	6,500
Child Play	23,100	8,300	6,900	6,500	5,300	5,000
Other	4,100	2,300	2,200	2,200	1,700	1,500
Lighter	9,300	11,100	8,500	7,400	6,600	6,000
Child Play	8,600	10,400	7,800	6,800	6,100	5,500
Other	700	700	700	600	500	500
Candle	8,500	7,100	8,400	10,100	12,000	12,800
By Form of Material First Ignited						
Upholstered Furniture	33,100	11,800	11,400	11,000	10,200	10,200
Smoking Material Ignition	23,200	6,000	6,000	5,500	5,100	4,900
Open Flame Ignition	3,300	2,100	2,000	1,900	2,000	1,900
Other	6,600	3,700	3,400	3,600	3,200	3,300
Mattress, Bedding	60,100	25,500	22,200	21,700	20,000	18,900
Smoking Material Ignition	28,900	7,800	6,900	6,700	5,700	5,800
Open Flame Ignition	13,000	9,100	7,200	6,900	6,200	6,000
Other	18,200	8,600	8,200	8,100	8,100	7,100
Other Materials						
Electric Cable Insulation	46,600	34,500	33,900	32,400	30,600	28,800
Interior Wall Covering	31,900	15,700	15,200	15,100	14,900	14,700
Wearing Apparel-Worn	1,100	800	700	800	800	500
Wearing Apparel-Not Worn	17,800	13,700	13,400	14,100	13,800	13,200
Floor Covering	13,600	7,600	7,400	8,100	7,500	6,900
Curtains, Drapes	7,700	3,300	3,200	3,500	3,500	3,400
Magazine, Newspaper	5,800	3,800	3,800	4,000	3,900	3,400
Thermal Insulation	9,200	5,200	4,700	4,800	4,700	4,500
Cabinet, Desk	8,400	6,300	6,100	7,000	7,000	6,800
Trash, Rubbish	35,800	37,000	32,300	27,800	26,500	21,400
Toy, Game	1,200	800	700	700	800	600

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

Note: Estimates exclude losses from incendiary and suspicious fires. Fire estimates are rounded to the nearest 100.

Death and injury estimates are rounded to the nearest 10. Property loss is rounded to the nearest tenth of a million.

Estimates less than 10 are denoted by an asterisk (*). Selected product categories presented; subtotals do not add up to heading totals.

TABLE 8
ESTIMATED RESIDENTIAL STRUCTURE FIRES
HEATING EQUIPMENT, 1994-1998

Equipment	1980	1994	1995	1996	1997	1998
Total Residential	655,000	392,300	369,200	371,200	357,700	332,300
Total Heating Equipment	208,800	73,900	68,300	63,000	60,000	48,800
Solid Fuel	116,600	34,600	31,100	25,500	24,200	19,100
Fixed Heater	24,400	14,400	12,000	8,800	8,400	5,900
Portable Heater	1,400	100	200	100	100	100
Fireplace	29,600	6,900	7,000	5,700	5,100	4,100
Central Furnace	2,400	500	400	400	400	300
Chimney	48,800	9,900	9,000	8,000	7,800	6,700
Chimney Connector	9,300	2,400	2,200	2,000	2,000	1,600
Other	700	400	300	400	300	300
Gas-Fired	28,500	13,500	12,600	12,800	11,700	9,900
Fixed Heater	6,700	2,800	2,700	2,600	2,300	1,800
Portable Heater	700	800	900	900	900	600
Water Heater	12,200	5,300	5,000	5,200	4,600	4,300
Central Furnace	7,400	3,500	3,000	3,100	2,900	2,400
Other	1,600	1,000	1,000	900	1,000	800
Electric	16,400	12,000	11,800	12,000	11,400	9,400
Fixed Heater	5,000	3,000	2,800	2,500	2,100	1,800
Portable Heater	3,200	2,700	2,600	2,800	2,700	2,000
Water Heater	1,300	1,800	1,800	2,100	2,100	2,000
Central Furnace	5,700	3,400	3,500	3,600	3,600	2,900
Other	1,300	1,100	1,000	1,100	900	700
Liquid Fuel	9,800	5,300	4,900	4,900	4,700	3,500
Fixed Heater	1,700	700	700	600	600	500
Portable Heater	700	1,300	1,100	1,200	900	700
Water Heater	1,000	300	400	400	300	300
Central Furnace	5,200	2,600	2,400	2,400	2,700	1,900
Chimney or Connector	900	200	200	100	100	100
Other	300	100	100	100	100	100
All Other Fuel	37,500	8,500	8,000	7,800	8,000	6,900
Fixed Heater	4,600	1,400	1,200	1,300	1,200	1,000
Portable Heater	700	600	600	600	600	500
Fireplace	9,700	1,800	1,600	1,700	1,800	1,600
Water Heater	1,000	700	700	800	700	800
Central Furnace	2,200	900	900	900	1,000	800
Chimney	16,400	2,200	1,800	1,700	1,600	1,300
Chimney Connector	2,400	700	700	600	700	600
Other	500	400	400	300	300	300

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

Note: Estimates exclude losses from incendiary and suspicious fires. Fire estimates are rounded to the nearest 100.

Death and injury estimates are rounded to the nearest 10. Property loss is rounded to the nearest tenth of a million.

Estimates less than 10 are denoted by an asterisk (*). Selected product categories presented; subtotals do not add up to heading totals.

**TABLE 9
ESTIMATED RESIDENTIAL STRUCTURE FIRES
SELECTED ELECTRICAL EQUIPMENT, 1994-1998**

Equipment	1990	1994	1995	1996	1997	1998
Total Residential	402,600	392,300	369,200	371,200	357,700	332,300
Total Electrical	166,300	171,500	167,400	166,400	165,700	155,900
Electrical Heating Equipment	10,900	12,000	11,800	12,000	11,400	9,400
Central Heating	3,400	3,400	3,500	3,600	3,600	2,900
Fixed Heater	2,800	3,000	2,800	2,500	2,100	1,800
Portable Heater	2,500	2,700	2,600	2,800	2,700	2,000
Water Heater	1,400	1,800	1,800	2,100	2,100	2,000
Other	900	1,100	1,000	1,100	900	700
Electrical Cooking Equipment	61,800	62,900	61,200	59,100	63,000	58,200
Range/Oven	54,900	55,800	54,500	52,300	55,700	51,800
Toaster/Toaster Oven	2,700	2,700	2,200	2,100	2,400	2,200
Microwave Oven	1,000	1,500	1,300	1,800	1,700	1,500
Range/Oven Hood	900	1,000	900	900	1,100	900
Coffee Maker, Teapot	800	400	500	400	400	300
Deep Fat Fryer	400	300	300	200	300	200
Hot Plate	300	300	300	200	300	200
Other	800	900	1,100	1,100	1,100	1,100
Electrical Distribution	41,600	42,500	41,600	41,100	41,100	38,800
Installed Wiring	15,500	15,700	15,000	14,900	14,500	14,000
Light Fixture	5,100	5,400	5,300	5,500	5,800	5,100
Receptacle	3,900	4,000	4,000	4,000	3,500	3,800
Extension Cord	3,800	3,700	3,500	2,900	2,800	2,800
Other Electrical Cord	2,800	2,200	2,300	2,400	2,400	2,400
Lamp, Light Bulb	2,800	3,400	3,500	3,500	3,800	2,900
Circuit Breaker	1,900	2,000	1,800	1,800	1,600	1,600
Switch	600	700	800	700	900	800
Meter	700	900	900	900	1,000	1,000
Fuse	800	700	900	600	700	900
Transformer	400	500	500	400	400	400
Other	3,200	3,200	3,200	3,500	3,700	3,100
Electrical Appliances	22,600	22,700	22,100	21,300	21,900	20,300
Clothes Dryer	8,700	10,300	10,800	10,400	11,200	10,400
Fan	2,300	2,100	1,900	1,800	2,200	2,600
Washing Machine	2,200	1,800	1,700	1,600	1,400	1,400
Heat Tape	1,200	1,000	900	400	500	100
Television	1,500	1,100	900	1,000	800	900
Iron	500	500	400	300	300	400
Dishwasher	600	800	900	800	900	600
Radio, Cassette Player, VCR	900	900	800	800	900	600
Hair Dryer, Curling Iron	800	600	600	700	600	700
Electric Blanket	900	600	600	600	400	400
Other	3,000	3,000	2,800	2,800	2,700	2,300
Cooling Equipment	4,800	4,100	4,300	3,800	3,600	3,800
Refrigerator, Freezer	1,600	1,300	1,200	1,100	1,000	1,100
Central Air Conditioning	1,000	1,100	1,100	1,100	1,000	1,000
Fixed Room Air Conditioning	900	700	800	600	600	700
Portable Air Conditioning	700	700	900	700	700	800
Other	600	400	400	300	300	300

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

Note: Estimates exclude losses from incendiary and suspicious fires. Fire estimates are rounded to the nearest 100.

Death and injury estimates are rounded to the nearest 10. Property loss is rounded to the nearest tenth of a million.

Estimates less than 10 are denoted by an asterisk (*). Selected product categories presented; subtotals do not add up to heading totals.

Benchmark estimates are from 1990 because additional NFIRS fields used to produce the electrical estimates were not available in 1980.

TABLE 10
ESTIMATED RESIDENTIAL STRUCTURE FIRES
SELECTED GAS-FIRED EQUIPMENT, 1994-1998

Equipment	1980	1994	1995	1996	1997	1998
Total Residential	655,000	392,300	369,200	371,200	357,700	332,300
Total Gas-Fired Equipment	83,000	56,500	49,600	54,500	51,100	46,500
Gas Heating Equipment	28,500	13,500	12,600	12,800	11,700	9,900
Fixed Heater	6,700	2,800	2,700	2,600	2,300	1,800
Portable Heater	700	800	900	900	900	600
Central Furnace	7,400	3,500	3,000	3,100	2,900	2,400
Fireplace	500	300	300	300	300	300
Water Heater	12,200	5,300	5,000	5,200	4,600	4,300
Other	1,100	700	600	600	700	500
Gas Cooking Equipment	43,700	28,000	24,400	27,400	26,900	23,800
Range/Oven	42,600	26,400	22,900	25,900	25,400	22,500
Open Gas Grill	200	700	600	600	600	500
Portable Cooking	200	200	200	200	200	200
Other	800	600	600	700	600	500
Gas Appliances (Except Above)	5,600	4,000	3,900	3,900	3,600	3,500
Dryer	5,200	3,700	3,700	3,700	3,300	3,300
Other	300	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: Estimates exclude losses from incendiary and suspicious fires. Fire estimates are rounded to the nearest 100.

Death and injury estimates are rounded to the nearest 10. Property loss is rounded to the nearest tenth of a million.

Estimates less than 10 are denoted by an asterisk (*). Selected product categories presented; subtotals do not add up to heading totals.

TABLE 11
ESTIMATED RESIDENTIAL STRUCTURE FIRE DEATHS
SELECTED EQUIPMENT, 1994-1998

Equipment	1980	1994	1995	1996	1997	1998
Total Residential	4,560	2,980	3,010	3,440	2,760	2,660
Total Heating Equipment	800	480	440	620	380	290
Fixed Heater	320	160	140	140	160	100
Portable Heater	90	180	150	270	100	110
Central Heating	80	70	80	30	20	30
Fireplace	100	10	10	60	20	20
Chimney or Connector	110	10	10	40	10	10
Water Heater	90	30	20	50	30	20
Other	10	20	20	20	30	*
Total Cooking Equipment	390	290	280	340	280	390
Range/Oven	320	230	240	290	260	340
Gas	200	110	170	160	130	150
Electric	70	70	60	110	100	150
Other	50	40	10	10	30	40
All Other Cooking	60	60	40	50	30	50
Gas	10	10	*	*	*	*
Electric	40	40	30	40	30	30
Other	10	10	10	*	*	20
Total Electric Distribution	450	370	380	370	260	280
Installed Wiring	200	150	170	120	110	110
Cord, Plug	160	110	90	120	100	60
Switch, Outlet	20	40	40	30	10	40
Lamp, Light Fixture	40	60	50	60	30	60
Other	30	10	20	30	*	10
Total Appliances (Except Above)	260	80	120	140	100	110
TV, Radio, Phono	150	10	50	30	20	30
Dryer	*	10	10	20	30	20
Washing Machine	*	*	*	*	*	*
Heat Producing Appliance	40	40	40	70	30	30
Non-Heat Producing Appliance	70	10	*	*	*	10
Other	*	20	20	30	20	30
Total Cooling, Air Conditioning	20	60	10	*	*	10

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

Note: Estimates exclude losses from incendiary and suspicious fires. Fire estimates are rounded to the nearest 100.

Death and injury estimates are rounded to the nearest 10. Property loss is rounded to the nearest tenth of a million.

Estimates less than 10 are denoted by an asterisk (*). Selected product categories presented; subtotals do not add up to heading totals.

TABLE 12
ESTIMATED RESIDENTIAL STRUCTURE FIRE DEATHS
SELECTED PRODUCTS, 1994-1998

Product	1980	1994	1995	1996	1997	1998
Total Residential	4,560	2,980	3,010	3,440	2,760	2,660
By Form of Heat of Ignition						
Cigarette, Other Tobacco Prod.	1,940	860	1,020	1,100	860	800
Match	220	140	110	100	100	90
Child Play	190	130	90	70	90	80
Other	30	10	20	20	10	10
Lighter	270	260	200	150	160	140
Child Play	240	230	190	130	160	130
Other	30	30	10	20	10	10
Candle	20	80	80	130	160	170
By Form of Material First Ignited						
Upholstered Furniture	1,350	680	670	650	640	520
Smoking Material Ignition	1,180	440	520	510	470	370
Open Flame Ignition	130	140	80	50	50	100
Other	40	110	80	80	120	40
Mattress, Bedding	850	470	480	660	460	410
Smoking Material Ignition	500	230	270	330	230	250
Open Flame Ignition	130	150	90	100	100	80
Other	210	90	120	230	130	80
Other Materials						
Electric Cable Insulation	160	170	140	160	80	130
Interior Wall Covering	530	170	240	200	210	190
Wearing Apparel-Worn	140	120	150	120	130	110
Wearing Apparel-Not Worn	100	110	90	120	80	80
Floor Covering	140	90	70	90	120	70
Curtains, Drapes	20	60	20	20	30	20
Magazine, Newspaper	70	60	30	50	70	10
Thermal Insulation	10	10	10	*	10	*
Cabinet, Desk	70	60	50	80	90	60
Trash, Rubbish	100	40	60	80	30	60
Toy, Game	*	*	*	20	10	*

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

Note: Estimates exclude losses from incendiary and suspicious fires. Fire estimates are rounded to the nearest 100.

Death and injury estimates are rounded to the nearest 10. Property loss is rounded to the nearest tenth of a million.

Estimates less than 10 are denoted by an asterisk (*). Selected product categories presented; subtotals do not add up to heading totals.

**TABLE 13
ESTIMATED RESIDENTIAL STRUCTURE FIRE DEATHS
HEATING EQUIPMENT, 1994-1998**

Equipment	1980	1994	1995	1996	1997	1998
Total Residential	4,560	2,980	3,010	3,440	2,760	2,660
Total Heating Equipment	800	480	440	620	380	290
Solid Fuel	350	80	130	150	70	50
Fixed Heater	150	50	70	60	50	20
Portable Heater	10	10	*	10	*	*
Fireplace	80	10	10	50	10	10
Central Furnace	30	10	10	*	*	*
Chimney	50	10	10	20	10	10
Chimney Connector	30	*	*	20	*	*
Other	*	*	20	*	*	*
Gas-Fired	140	190	110	200	140	70
Fixed Heater	20	70	30	40	80	40
Portable Heater	10	30	20	60	20	10
Water Heater	80	30	10	50	20	10
Central Furnace	30	60	50	20	20	10
Other	*	*	*	30	10	*
Electric	70	130	110	150	90	50
Fixed Heater	20	40	20	10	10	10
Portable Heater	60	90	100	140	60	30
Water Heater	*	*	*	*	*	*
Central Furnace	*	*	*	*	*	10
Other	*	10	*	*	20	*
Liquid Fuel	140	50	50	90	20	80
Fixed Heater	100	*	10	20	*	30
Portable Heater	10	40	30	50	20	30
Water Heater	*	*	*	*	*	10
Central Furnace	30	10	10	10	*	10
Chimney or Connector	*	*	*	*	*	*
Other	*	*	*	*	*	*
All Other Fuel	90	30	40	30	40	50
Fixed Heater	30	10	20	*	30	*
Portable Heater	*	10	10	20	*	40
Fireplace	20	*	*	*	*	*
Water Heater	10	*	10	*	*	*
Central Furnace	*	*	10	*	10	*
Chimney	30	*	*	*	*	*
Chimney Connector	*	*	*	*	*	*
Other	10	10	*	*	*	*

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

Note: Estimates exclude losses from incendiary and suspicious fires. Fire estimates are rounded to the nearest 100.

Death and injury estimates are rounded to the nearest 10. Property loss is rounded to the nearest tenth of a million.

Estimates less than 10 are denoted by an asterisk (*). Selected product categories presented; subtotals do not add up to heading totals.

**TABLE 14
ESTIMATED RESIDENTIAL STRUCTURE FIRE DEATHS
SELECTED ELECTRICAL EQUIPMENT, 1994-1998**

Equipment	1990	1994	1995	1996	1997	1998
Total Residential	3,370	2,980	3,010	3,440	2,760	2,660
Total Electrical	970	920	960	1,060	810	800
Electrical Heating Equipment	120	130	110	150	90	50
Central Heating	*	*	*	*	*	10
Fixed Heater	20	40	20	10	10	10
Portable Heater	110	90	100	140	60	30
Water Heater	*	*	*	*	*	*
Other	*	10	*	*	20	*
Electrical Cooking Equipment	170	100	100	150	120	180
Range/Oven	150	70	60	110	100	150
Toaster/Toaster Oven	10	20	20	20	10	20
Microwave Oven	*	10	*	10	10	*
Range/Oven Hood	*	*	*	*	*	*
Coffee Maker, Teapot	*	*	*	*	*	*
Deep Fat Fryer	*	*	*	*	*	*
Hot Plate	*	*	*	*	*	*
Other	*	*	10	10	*	*
Electrical Distribution	340	370	380	370	260	280
Installed Wiring	80	150	170	120	110	110
Light Fixture	30	40	30	30	10	50
Receptacle	30	40	30	30	10	30
Extension Cord	70	50	40	50	40	20
Other Electrical Cord	50	30	30	40	30	20
Lamp, Light Bulb	40	20	20	30	20	10
Circuit Breaker	*	*	10	10	*	10
Switch	*	10	10	*	*	10
Meter	*	*	*	*	*	*
Fuse	*	*	*	*	*	*
Transformer	*	*	*	10	*	*
Other	40	30	30	40	30	20
Electrical Appliances	90	50	120	110	100	100
Clothes Dryer	10	10	10	*	20	20
Fan	10	*	10	10	10	10
Washing Machine	*	*	*	*	*	*
Heat Tape	10	10	10	10	10	*
Television	20	10	20	10	10	20
Iron	*	*	10	10	*	*
Dishwasher	*	*	*	10	*	*
Radio, Cassette Player, VCR	10	10	20	10	10	10
Hair Dryer, Curling Iron	10	*	10	10	10	10
Electric Blanket	10	10	10	10	*	*
Other	10	10	20	30	20	20
Cooling Equipment	10	40	10	*	*	10
Refrigerator, Freezer	10	10	*	*	*	*
Central Air Conditioning	*	*	*	*	*	*
Fixed Room Air Conditioning	*	20	*	*	*	*
Portable Air Conditioning	*	*	10	*	*	*
Other	*	*	*	*	*	*

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

Note: Estimates exclude losses from incendiary and suspicious fires. Fire estimates are rounded to the nearest 100.

Death and injury estimates are rounded to the nearest 10. Property loss is rounded to the nearest tenth of a million.

Estimates less than 10 are denoted by an asterisk (*). Selected product categories presented; subtotals do not add up to heading totals.

Benchmark estimates are from 1990 because additional NFIRS fields used to produce the electrical estimates were not available in 1980.

TABLE 15
ESTIMATED RESIDENTIAL STRUCTURE FIRE DEATHS
SELECTED GAS-FIRED EQUIPMENT, 1994-1998

Equipment	1980	1994	1995	1996	1997	1998
Total Residential	4,560	2,980	3,010	3,440	2,760	2,660
Total Gas-Fired Equipment	410	380	280	430	330	270
Gas Heating Equipment	140	190	110	200	140	70
Fixed Heater	20	70	30	40	80	40
Portable Heater	10	30	20	60	20	10
Central Furnace	30	60	50	20	20	10
Fireplace	*	*	*	10	*	*
Water Heater	80	30	10	50	20	10
Other	*	*	*	10	10	*
Gas Cooking Equipment	210	130	170	170	130	150
Range/Oven	200	110	170	160	130	150
Open Gas Grill	*	*	*	*	*	*
Portable Cooking	10	*	*	*	*	*
Other	*	10	*	*	*	*
Gas Appliances (Except Above)	*	*	*	20	10	*
Dryer	*	*	*	20	10	*
Other	*	*	*	*	*	*

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

Note: Estimates exclude losses from incendiary and suspicious fires. Fire estimates are rounded to the nearest 100.

Death and injury estimates are rounded to the nearest 10. Property loss is rounded to the nearest tenth of a million.

Estimates less than 10 are denoted by an asterisk (*). Selected product categories presented; subtotals do not add up to heading totals.

TABLE 16
ESTIMATED RESIDENTIAL STRUCTURE FIRE INJURIES
SELECTED EQUIPMENT, 1994-1998

Equipment	1980	1994	1995	1996	1997	1998
Total Residential	18,350	17,540	17,010	17,030	16,080	15,260
Total Heating Equipment	3,110	1,940	1,840	1,790	1,380	1,460
Fixed Heater	750	380	380	390	260	350
Portable Heater	310	580	500	490	420	340
Central Heating	440	280	280	260	240	230
Fireplace	440	140	130	130	80	90
Chimney or Connector	170	60	80	70	80	40
Water Heater	940	430	420	400	260	390
Other	60	70	50	50	40	20
Total Cooking Equipment	4,520	4,820	4,670	4,780	5,020	4,640
Range/Oven	4,010	4,340	4,150	4,320	4,510	4,170
Gas	1,160	1,010	900	1,030	970	890
Electric	2,160	2,980	2,860	2,830	3,130	2,980
Other	690	350	390	450	410	310
All Other Cooking	510	480	510	460	520	470
Gas	30	90	90	90	70	60
Electric	220	240	300	270	310	280
Other	260	150	130	100	130	130
Total Electric Distribution	1,560	1,440	1,510	1,420	1,390	1,230
Installed Wiring	420	390	420	360	420	320
Cord, Plug	490	480	500	480	370	420
Switch, Outlet	120	130	170	140	140	150
Lamp, Light Fixture	400	310	310	330	340	250
Other	120	120	110	100	110	100
Total Appliances (Except Above)	1,050	1,010	780	950	950	980
TV, Radio, Phono	300	150	70	170	120	140
Dryer	230	340	280	330	420	370
Washing Machine	40	20	20	20	30	30
Heat Producing Appliance	220	260	170	200	190	150
Non-Heat Producing Appliance	150	70	60	40	50	90
Other	100	170	180	200	140	200
Total Cooling, Air Conditioning	140	150	140	90	130	150

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

Note: Estimates exclude losses from incendiary and suspicious fires. Fire estimates are rounded to the nearest 100.

Death and injury estimates are rounded to the nearest 10. Property loss is rounded to the nearest tenth of a million.

Estimates less than 10 are denoted by an asterisk (*). Selected product categories presented; subtotals do not add up to heading totals.

**TABLE 17
ESTIMATED RESIDENTIAL STRUCTURE FIRE INJURIES
SELECTED PRODUCTS, 1994-1998**

Product	1980	1994	1995	1996	1997	1998
Total Residential	18,350	17,540	17,010	17,030	16,080	15,260
By Form of Heat of Ignition						
Cigarette, Other Tobacco Prod.	4,420	2,460	2,300	2,490	1,980	1,990
Match	1,130	910	890	770	890	610
Child Play	810	690	640	600	730	470
Other	330	220	250	170	160	140
Lighter	960	1,760	1,440	1,190	890	920
Child Play	800	1,610	1,300	1,110	810	820
Other	160	160	140	90	80	100
Candle	510	850	1,010	1,200	1,290	1,200
By Form of Material First Ignited						
Upholstered Furniture	2,950	1,580	1,630	1,600	1,420	1,420
Smoking Material Ignition	2,040	870	910	980	750	760
Open Flame Ignition	540	430	430	360	450	410
Other	380	280	300	260	220	250
Mattress, Bedding	3,090	2,820	2,490	2,400	2,210	2,260
Smoking Material Ignition	1,530	870	750	750	720	690
Open Flame Ignition	770	1,300	1,130	1,030	910	980
Other	790	660	610	630	580	600
Other Materials						
Electric Cable Insulation	580	780	850	740	670	690
Interior Wall Covering	830	500	570	530	520	780
Wearing Apparel-Worn	290	190	190	200	190	160
Wearing Apparel-Not Worn	450	820	630	770	720	610
Floor Covering	380	330	480	410	410	320
Curtains, Drapes	320	290	220	390	350	270
Magazine, Newspaper	160	170	280	260	230	140
Thermal Insulation	100	110	120	70	80	50
Cabinet, Desk	310	350	400	550	420	430
Trash, Rubbish	590	490	400	360	290	320
Toy, Game	40	60	70	80	80	30

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

Note: Estimates exclude losses from incendiary and suspicious fires. Fire estimates are rounded to the nearest 100.

Death and injury estimates are rounded to the nearest 10. Property loss is rounded to the nearest tenth of a million.

Estimates less than 10 are denoted by an asterisk (*). Selected product categories presented; subtotals do not add up to heading totals.

TABLE 18
ESTIMATED RESIDENTIAL STRUCTURE FIRE INJURIES
HEATING EQUIPMENT, 1994-1998

Equipment	1980	1994	1995	1996	1997	1998
Total Residential	18,350	17,540	17,010	17,030	16,080	15,260
Total Heating Equipment	3,110	1,940	1,840	1,790	1,380	1,460
Solid Fuel	660	240	300	230	140	170
Fixed Heater	190	80	110	80	40	80
Portable Heater	10	10	*	*	10	*
Fireplace	290	90	90	90	40	50
Central Furnace	50	10	20	*	10	*
Chimney	70	20	60	30	30	20
Chimney Connector	60	10	20	20	10	10
Other	*	30	10	10	*	*
Gas-Fired	1,390	740	720	660	530	600
Fixed Heater	210	120	140	140	110	110
Portable Heater	20	90	80	80	60	60
Water Heater	850	350	370	300	210	320
Central Furnace	220	160	120	130	120	100
Other	90	20	20	20	30	20
Electric	550	440	460	490	350	330
Fixed Heater	240	130	80	120	60	110
Portable Heater	220	230	280	240	210	180
Water Heater	30	30	20	40	10	10
Central Furnace	40	30	60	60	40	20
Other	20	20	20	40	30	*
Liquid Fuel	150	280	160	210	170	190
Fixed Heater	50	30	10	20	20	30
Portable Heater	20	180	90	130	100	50
Water Heater	10	10	10	20	20	20
Central Furnace	40	40	50	40	40	70
Chimney or Connector	20	10	*	*	*	*
Other	*	10	*	*	*	10
All Other Fuel	350	240	200	190	180	170
Fixed Heater	50	20	40	30	30	30
Portable Heater	40	70	50	40	40	40
Fireplace	70	50	40	20	30	30
Water Heater	40	40	30	50	20	40
Central Furnace	90	30	30	30	30	30
Chimney	*	20	*	*	20	10
Chimney Connector	10	*	*	10	10	*
Other	40	20	10	10	10	*

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

Note: Estimates exclude losses from incendiary and suspicious fires. Fire estimates are rounded to the nearest 100.

Death and injury estimates are rounded to the nearest 10. Property loss is rounded to the nearest tenth of a million.

Estimates less than 10 are denoted by an asterisk (*). Selected product categories presented; subtotals do not add up to heading totals.

**TABLE 19
ESTIMATED RESIDENTIAL STRUCTURE FIRE INJURIES
SELECTED ELECTRICAL EQUIPMENT, 1994-1998**

Equipment	1990	1994	1995	1996	1997	1998
Total Residential	18,180	17,540	17,010	17,030	16,080	15,260
Total Electrical	7,190	7,140	6,840	7,060	6,940	6,810
Electrical Heating Equipment	480	440	460	490	350	330
Central Heating	30	30	60	60	40	20
Fixed Heater	150	130	80	120	60	110
Portable Heater	240	230	280	240	210	180
Water Heater	40	30	20	40	10	10
Other	10	20	20	40	30	*
Electrical Cooking Equipment	3,250	3,210	3,160	3,110	3,440	3,260
Range/Oven	3,010	2,980	2,860	2,830	3,130	2,980
Toaster/Toaster Oven	80	90	80	80	90	90
Microwave Oven	30	50	70	80	80	60
Range/Oven Hood	20	20	30	20	30	30
Coffee Maker, Teapot	20	20	30	20	20	20
Deep Fat Fryer	40	20	30	30	30	20
Hot Plate	10	10	10	10	10	10
Other	30	30	50	50	50	50
Electrical Distribution	1,370	1,440	1,510	1,420	1,390	1,230
Installed Wiring	340	390	420	360	420	320
Light Fixture	100	140	150	140	130	100
Receptacle	110	120	140	130	110	120
Extension Cord	240	230	230	190	150	170
Other Electrical Cord	180	140	150	160	120	140
Lamp, Light Bulb	150	170	160	190	210	150
Circuit Breaker	50	50	40	40	40	40
Switch	20	20	30	20	30	20
Meter	10	10	*	10	10	10
Fuse	20	20	20	10	20	20
Transformer	*	20	10	10	10	*
Other	150	140	150	160	140	140
Electrical Appliances	850	790	600	750	780	730
Clothes Dryer	150	190	180	220	300	240
Fan	110	90	80	80	90	120
Washing Machine	30	20	20	20	30	30
Heat Tape	70	70	40	20	30	10
Television	100	70	30	90	50	70
Iron	30	30	20	20	20	20
Dishwasher	20	30	30	30	30	30
Radio, Cassette Player, VCR	60	60	30	70	50	50
Hair Dryer, Curling Iron	50	40	30	40	30	40
Electric Blanket	60	50	30	30	20	20
Other	150	150	120	130	120	120
Cooling Equipment	110	130	140	80	120	140
Refrigerator, Freezer	60	60	60	30	70	40
Central Air Conditioning	*	10	20	*	10	10
Fixed Room Air Conditioning	20	40	20	30	10	20
Portable Air Conditioning	20	20	40	20	20	50
Other	*	*	10	10	10	20

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

Note: Estimates exclude losses from incendiary and suspicious fires. Fire estimates are rounded to the nearest 100.

Death and injury estimates are rounded to the nearest 10. Property loss is rounded to the nearest tenth of a million.

Estimates less than 10 are denoted by an asterisk (*). Selected product categories presented; subtotals do not add up to heading totals.

Benchmark estimates are from 1990 because additional NFIRS fields used to produce the electrical estimates were not available in 1980.

TABLE 20
ESTIMATED RESIDENTIAL STRUCTURE FIRE INJURIES
SELECTED GAS-FIRED EQUIPMENT, 1994-1998

Equipment	1980	1994	1995	1996	1997	1998
Total Residential	18,350	17,540	17,010	17,030	16,080	15,260
Total Gas-Fired Equipment	3,190	2,430	2,240	2,240	2,110	2,020
Gas Heating Equipment	1,390	740	720	660	530	600
Fixed Heater	210	120	140	140	110	110
Portable Heater	20	90	80	80	60	60
Central Furnace	220	160	120	130	120	100
Fireplace	70	10	*	10	10	20
Water Heater	850	350	370	300	210	320
Other	20	10	10	*	20	*
Gas Cooking Equipment	1,190	1,100	990	1,130	1,050	940
Range/Oven	1,160	1,010	900	1,030	970	890
Open Gas Grill	*	30	20	40	30	20
Portable Cooking	10	30	40	10	10	20
Other	20	30	20	40	30	20
Gas Appliances (Except Above)	100	120	90	90	100	80
Dryer	80	110	60	70	80	80
Other	20	10	30	10	20	*

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

Note: Estimates exclude losses from incendiary and suspicious fires. Fire estimates are rounded to the nearest 100.

Death and injury estimates are rounded to the nearest 10. Property loss is rounded to the nearest tenth of a million.

Estimates less than 10 are denoted by an asterisk (*). Selected product categories presented; subtotals do not add up to heading totals.

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 community protected by the department. The NFPA makes national estimates of 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 NFIRS system is a compilation of voluntarily submitted incident reports completed by U.S. fire departments. In 1998, the NFIRS contained reports of 156,661 residential structure fires (including incendiary and suspicious fires) that resulted in 1,229 civilian deaths, 7,379 civilian injuries, and over \$1.8 billion in property loss from 40 states. The NFIRS contains data on roughly 1 out of every 2.4 estimated residential structure fires in the U.S., 1 out of every 2.6 estimated deaths and 1 out of every 2.3 estimated injuries in those fires. It is believed that the distribution of participating fire departments is reasonably representative of all fire departments in the U.S.

These data capture only those fires attended by fire departments. Due to the size of the NFIRS data set and the broad scope of this report, no edits were performed on the data prior to computing the estimates. It should be noted that product-specific death and injury estimates fluctuate year-to-year and that a small increase or decrease in any one year is not sufficient to denote a trend.

Fire Incident Characteristics of Interest

Although the NFIRS captures dozens of characteristics about each fire loss, only the following characteristics were of interest for this report:

<u>Characteristic</u>	<u>Description</u>
Equipment	Equipment (if any) that provided the heat which started the fire, e.g., water heater, fixed wiring, etc.
Form of Heat	Form of heat energy igniting the fire, e.g., cigarette, match, spark from electrical equipment, spark from fuel-burning equipment, etc.
Form of Material	The item first ignited, apart from its composition, e.g., upholstered furniture, newspaper, etc.

Ignition Factor

Factor that allowed the heat of ignition and the material first ignited to combine to start the fire. This variable indicates whether the fire was incendiary (arson), suspicious in nature, or due to another ignition factor, such as misuse of heat, misuse of material, etc.

Specifically, Equipment and Form of Heat were the characteristics of interest in the *Selected Equipment*, *Heating Equipment*, *Electrical Equipment* and *Gas-Fired Equipment* tables. The Fuel categories presented in these tables were defined by groups of Form of Heat values. For the *Selected Products* tables, estimates contained in the top half of the tables had Form of Heat and Ignition Factor as characteristics of interest, while the estimates in the bottom half had Form of Material and Form of Heat as characteristics of interest.

NFIRS Coding Structure

For each fire loss in the NFIRS, each of the above characteristics of interest was assigned a two-digit code by the reporting fire departments. Each two-digit numerical code corresponds to a description appropriate for that characteristic. The codes are organized using a nested structure so that the first digit of a two-digit code indicates the particular category. For example, all Form of Material codes beginning with '2' belong to the *furniture* category. An example of a two-digit code in this category is 21 – *upholstered furniture*. Within each category, the two-digit code ending in '0' is used for cases where enough information is known to assign the category, but not enough information is known to describe the characteristic in detail. An example of this is where the Form of Material first ignited is known to be furniture of some sort, but no further level of detail is known. All Form of Material codes in the furniture category are listed below as an example:

2 - Furniture Category⁴

- 20 – furniture, not specified
- 21 – upholstered furniture
- 22 – nonupholstered furniture
- 23 – cabinetry
- 24 – ironing board
- 25 – appliance housing or casing
- 29 – furniture, not classified above

In the NFIRS data, if no information was reported or available for a fire loss characteristic, then the fire loss was considered to be a “complete unknown” in that characteristic. In cases where a code ending in '0' was assigned to a characteristic, the

⁴ NFPA Committee on Fire Reporting, Uniform Coding for Fire Protection: NFPA No. 901 - 1976, May 1976.

fire loss was considered to be a “partial unknown” in that characteristic. Since each fire loss had several characteristics of interest, a fire loss could be known in some characteristics while having a complete unknown or partial unknown in other characteristics.

Estimation Procedures

Estimates were derived by computing a percentage in NFIRS corresponding to the type of fire loss of interest and multiplying this percentage by the NFPA national estimate. For example, to compute the national fire estimate for upholstered furniture fires involving smoking material ignitions, we computed the percentage of fires in the NFIRS where:

- Ignition Factor was not coded as *incendiary* or *suspicious*
- Form of Material was coded as *upholstered furniture*
- Form of Heat was coded in the *smoking material* category

Then the percentage was multiplied by the NFPA national fire estimate, resulting in the national estimate for upholstered furniture fires involving smoking material ignitions. This procedure of scaling the NFIRS results to the NFPA national estimates is further explained by Hall and Harwood⁵.

Similar to the 1997 estimation methodology, fire losses having complete unknowns in a characteristic of interest were assumed to follow the distribution of fire losses having known values and partial unknowns for that characteristic. Also similar to the 1997 methodology, 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. For example, fire deaths where the Form of Material was coded as *furniture, not specified* were assumed to follow the distribution of fire deaths where Form of Material was coded as *upholstered furniture, nonupholstered furniture, cabinetry, etc.*

For this year’s report, an iterative mathematical procedure called “raking” was used to allocate complete unknowns and partial unknowns in the data.⁶ The raking was performed using a SAS macro.⁷ The raking procedure guaranteed that the pre-raking marginal distributions across known values in a characteristic of interest were preserved for all characteristics of interest. In previous methodologies, the marginal distribution of only one characteristic of interest was preserved.

⁵ John R. Hall, Jr. and Beatrice Harwood, “The National Estimates Approach to U.S. Fire Statistics”, Fire Technology, May 1989, Volume 25, Number 2, pp. 99-113.

⁶ W.E. Deming and F.F. Stephen, “One Least Squares Adjustment of a Sampled Frequency Table when the Expected Marginal Totals are Known”, Annals of Mathematical Statistics II, 1940, pp. 427-444.

⁷ 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.

The raking procedure was applied to the data in two stages. The first stage allocated fire losses with complete unknowns in any characteristic of interest to the fire losses with known values and partial unknowns. The second stage allocated fire losses with partial unknowns in any characteristic of interest to the fire losses with known, specified values. Partial unknowns were allocated only within their respective categories. The raking procedure was applied separately to the fire, death, injury and property loss data.

Selected Electrical Equipment Estimates

For the most part, the levels at which estimates are presented in this report are defined by the NFIRS codes themselves. For example, the percentage of non-incendiary, non-suspicious electric dryer fire injuries in the NFIRS can be identified by simply subsetting the injury data by Ignition Factor codes (non-incendiary/suspicious), Form of Heat codes (electric) and Equipment code (clothes dryer). However, certain electrical products of interest to CPSC staff, such as microwave ovens and electric blankets, are not completely defined by the NFIRS Equipment codes. Rather, they represent a subgroup of one or more NFIRS Equipment code(s). In order to identify fires that involved these products, we relied on the text fields included with each fire incident.

Estimates for these special products were computed by first identifying NFIRS Equipment codes that were likely to contain the products. The text fields for all fires within the selected Equipment codes were then searched. If any recognizable product was identified in the text field, the fire incident was considered “identifiable”; otherwise, the incident was “unidentifiable”. The text fields of the identifiable fires were then searched for mention of each of the special products. The proportion of identifiable fires that each special product represented within each selected NFIRS Equipment code was computed. These proportions were multiplied by the national estimates for the respective Equipment codes, and the results were summed over each special product to arrive at the special product estimates. In this way, the unidentifiable fires in a selected NFIRS Equipment code were assumed to follow the distribution of identifiable fires in the same code. The estimation procedure for deaths, injuries and property loss involving these electrical products assumed that they occurred in the same proportions as fires. An example follows:

Special product: *Microwave Oven*

<u>Selected Equipment Code</u>	<u>National Fire Estimate</u>	<u>% of Identifiable Fires that were Microwaves</u>	<u>Partial Microwave Estimate</u>
23	230	51.15%	118
25	3,015	10.58%	319
29	2,000	51.15%	1,023

Microwave Oven National Fire Estimate (rounded to the nearest 100)= 1,500

Listed below are the special products whose estimates were derived using the above procedure, along with the NFIRS Equipment codes that contributed to the estimates:

Electrical Cooking Products

Toaster/Toaster Oven
 Microwave Oven
 Coffee Maker, Teapot
 Hot Plate

Cooking Equipment Codes Searched*

23 - Stationary food warming appliance
 25 - Portable cooking, warming unit
 29 - Cooking equipment, not elsewhere classified

*Searched only where Fuel was Electric.

Electrical Distribution Products

Receptacle
 Extension Cord
 Other Electrical Cord
 Circuit Breaker
 Switch
 Fuse

Elec. Distn. Equipment Codes Searched

44 - Power switch gear, overcurrent protection devices
 45 - Switch, receptacle, outlet
 47 - Cord, plug
 49 - Electrical distribution equipment, not elsewhere classified

Electrical Appliance Products

Fan
 Heat Tape
 Television
 Iron
 Dishwasher
 Radio, Cassette Player, VCR
 Hair Dryer, Curling Iron
 Electric Blanket

Appliance Equipment Codes Searched*

51 - Television, radio, phonograph
 54 - Floor care equipment
 55 - Separate motor, generator
 56 - Hand tools
 57 - Portable heat producing appliance
 58 - Portable non-heat producing appliance
 59 - Appliances, not elsewhere classified

*Searched only where Fuel was Electric.

In this year's report, these electrical products were put into mutually exclusive groups: Cooking, Electrical Distribution or Appliance products. Therefore, the set of fire incidents searched depended upon the group in which the electrical product was classified. For example, we searched for Heat Tape only within the Appliance Equipment codes and not within the Electrical Distribution Equipment Codes. In previous years, all NFIRS codes in the right-hand column were searched for each of the electrical products. The revised method may account for consistently higher totals in the "Other" categories and lower estimates for individual products.