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Portable Heating Fires in Residential Structures

FINDINGS

- Portable heating fires in residences are more deadly than other types of heating fires. They account for only 10% of all heating fires, but 30% and 40% of heating injuries and deaths, respectively.
- The bedroom is the leading area of origin for portable heating fires.
- Fabric and wood/paper represent 59% of the types of materials ignited by heaters.
- The placement of combustibles too near portable heaters is a major problem.

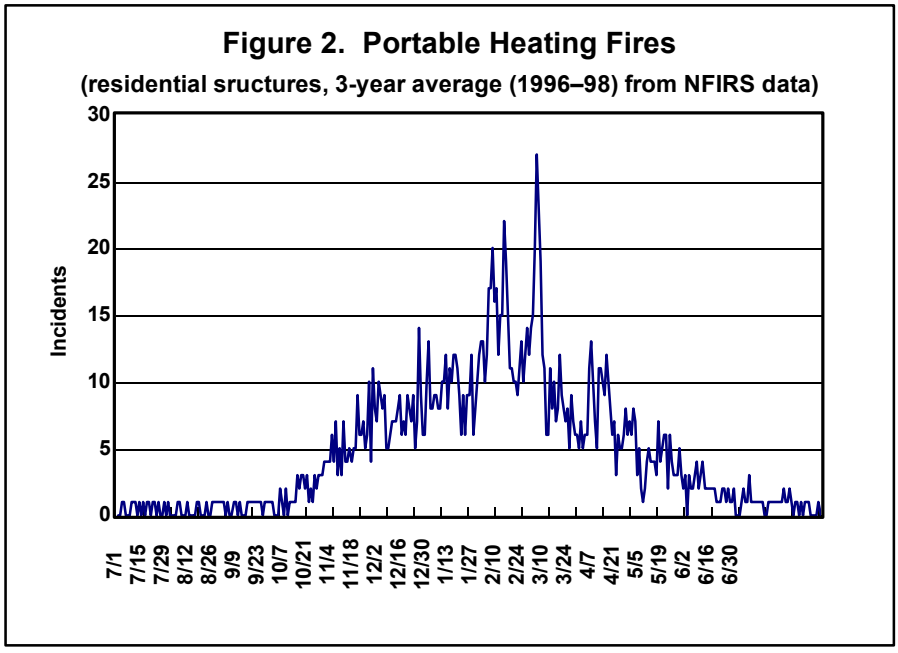
Each year, portable heating equipment—a subcategory of heating fires—is responsible for an average of 4,200 fires in U.S. residences. These fires are responsible for nearly 125 civilian fire deaths, 375 injuries, and $69.8 million in property loss.[1] Figure 1 shows that portable heating fires are more deadly and destructive than the average residential structure fire.

Figure 1. Loss Measures for Portable Heating Fires
(3-year average (1996–98) from NFIRS data)

MEASURE	ALL RESIDENTIAL STRUCTURE FIRES	ALL RESIDENTIAL HEATING FIRES	RESIDENTIAL PORTABLE HEATING FIRES
Dollar Loss/Fire	$11,271	$9,179	$16,791
Injuries/1,000 Fires	48.0	28.9	92.0
Fatalities/1,000 Fires	7.7	5.7	27.2

Heating is the second leading cause of residential structure fires, following cooking. (For a broader overview of heating fires, see "Heating Fires in Residential Structures," Vol. 2, Issue 5.) In the late 1970s and early 1980s, heating was the leading cause of such fires, in part due to a surge in the use of alternative space heaters and wood heating. Although other categories of fires (e.g., cooking, smoking) have held steady or declined slightly, the incidence of heating fires has decreased dramatically over the last decade. However, residential heating fires are the leading cause of fire deaths in rural areas. In these areas, alternative heat sources such as portable heaters are more widely used than in urban areas where central heating systems are prevalent.[2]

Figure 2 shows the pattern of portable heating fires reported to NFIRS throughout the year. As would be expected, the number of heating fires increases during the late fall and winter months (November through March). To stay warm, people increase their use of portable heaters and other alternative heat sources, such as fireplaces. Heating is the leading cause of fires in the winter months, just slightly higher than cooking, which is the leading cause over a 12-month period.



The peak months for residential portable heating fires are January and February, with a decline through the remainder of the winter season. This pattern is the same for general heating fires, and daily peaks are nearly identical.

A clear cause of many portable heating fires is when combustibles are placed too close to the heater. In December 1999, a portable heater placed too close to combustibles caused a fire, which killed four people including two children.[3] And in November 2000, two cousins were killed while visiting a relative's house; a space heater in the basement ignited a nearby bed and other combustibles.[4]

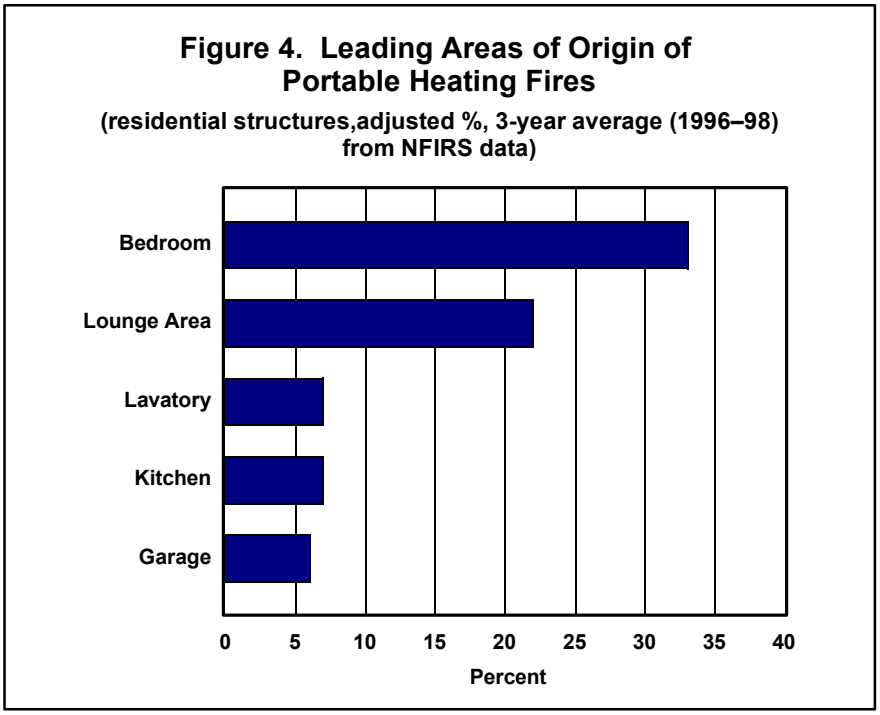
The leading materials first ignited in residential portable heating fires are fabric, wood/paper, flammable liquids (including kerosene), and plastics (Figure 3). These represent bedding, wall and floor coverings, and portable heating fuel that typically catch fire.

Figure 3. Material Ignited in Portable Heating Fires

MATERIAL	PERCENT
Fabric	33
Wood/Paper	26
Combustible Liquids	14
Plastics	9

Portable heaters cause less than 10% of residential heating fires; however, such fires are responsible for nearly 30% of heating fire injuries and 40% of heating fire fatalities, making them more deadly than other types of heating fires, such as those caused by chimneys or central heating units. A high number of portable heating fires begin in the bedroom, which likely contributes the to fact that the victim is asleep in nearly 35% of the cases involving civilian casualties (injuries and fatalities).

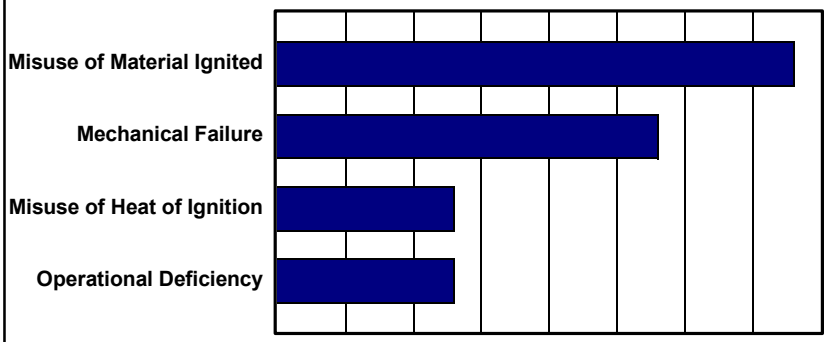
The leading areas where portable heating fires start are shown in Figure 4. Bedrooms and lounge areas combined account for 55% of all portable heater fires. Half of all portable heater fires are confined to the room of origin. (Overall, most heating fires originate in chimneys or heating equipment rooms, and nearly 70% are contained to the room of origin.)



Thirty-eight percent of portable heating fires are attributed to some kind of misuse of the material ignited, and 28% are caused by a mechanical failure (Figure 5). (In comparison, nearly 60% of all heating fires are caused by a mechanical failure of some kind.) The reasons for mechanical failure vary depending on the type of residential property involved in the fire. Lack of maintenance is responsible for twice the incidence of portable heating fires in one- and two-family residences as opposed to apartments. Fires caused by misuse of the material ignited occur slightly more often in apartments, and fires caused by mechanical failure occur slightly more often in one- and two-family residences. This same pattern is found in all heating fires.

Figure 5. Leading Factors Influencing the Ignition of Portable Heating Fires

(residential structures,adjusted %, 3-year average (1996–98) from NFIRS data)



Three important safety precautions related to portable heaters:

- Use and maintain the equipment as directed in the users manual.
- Never use portable heaters to dry clothes or otherwise be covered with fabric.
- Keep portable heaters at least 3 feet from any combustible (e.g. clothes, couches, beds, drapery, cabinetry).

For more tips on how to prevent heating fires, see USFA website www.usfa.fema.gov/safety/winter00-01.htm or contact the Consumer Product Safety Commission or local fire department.

NOTES

1. National estimates are based on National Fire Incident Reporting System (NFIRS) data (1996–1998) and the National Fire Protection Association's (NFPA) annual survey, *Fire Loss in the United States*.
2. *Profile of the Urban Fire Problem in the United States,* U.S. Fire Administration, FEMA, 1999.
3. "Four Dead in Pocomoke City Fire," *The Associated Press State and Local Wire,* December 1, 1999.
4. "Two Boys Killed in Mattapan House Fire: Blaze Is Blamed on Space Heater," *The Boston Globe,* November 26, 2000.
5. NFIRS analysis, 1998 data.

CLICK TO REVIEW THE DETAILED METHODOLOOGY USED IN THIS ANALYSIS

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