HOME FIRES INVOLVING COOKING EQUIPMENT

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Abstract

In 2005, an estimated 146,400 U.S. home structure fires involving cooking equipment resulted in 480 civilian deaths, 4,690 civilian injuries, and $876 million in direct property damage.

Ranges, with or without ovens, account for two-thirds (67%) of total reported confined or non-confined home structure fires involving cooking equipment and even larger shares of associated civilian deaths (85%) and civilian injuries (82%). Portable cooking or warming devices had the third largest share of home cooking fires but the second largest share of associated civilian deaths.

Keywords: Range, oven, microwave, toaster, grill, frying, fryer, fire statistics

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We are also grateful to the U.S. Fire Administration for its work in developing, coordinating, and maintaining NFIRS.

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Executive Summary

In 2005, an estimated 146,400 U.S. home structure fires involving cooking equipment resulted in 480 civilian deaths, 4,690 civilian injuries, and $876 million in direct property damage. Cooking is the leading cause of home structure fires and associated civilian injuries.

The numbers of home cooking fires in 2002-2005 were the highest totals estimated since 1981. Except for the 1990s, the number of estimated deaths in home structure cooking equipment fires has fallen in the range of 450 to 530 in most years covered in Table 1, and there has been no clear trend. Associated civilian injuries have shown no clear trend since 2002, when NFIRS Version 5.0 was well established, and the total is below the level in 1998, which was at the end of a decade-long downward trend. Associated direct property damage adjusted for inflation was the highest since 1981 except for the 1991 total, which is distorted by estimation problems unique to that year.

The recent increases in home cooking fires coincides with the introduction of confined cooking fire as a coding option. Therefore, it is not clear whether the increase reflects a real increase in fires or a shift in how incidents are coded. The increase in inflation-adjusted property damage is not so easily explained by the change in coding options.

Cooking equipment accounted for 40% of total home structure fires in 2005, 16% of associated civilian deaths, 36% of associated civilian injuries, and 13% of associated direct property damage.

Ranges, with or without ovens, account for two-thirds (67%) of total reported confined or non-confined home structure fires involving cooking equipment and even larger shares of associated civilian deaths (85%) and civilian injuries (82%). Note that fires in ovens that are parts of ranges often may be coded as range fires.

Portable cooking or warming devices had the third largest share of home cooking fires, after ranges and ovens, but the second largest share of associated civilian deaths.

In 2006, cooking equipment accounted for 67,240 estimated injuries reported to U.S. hospital emergency rooms.

The leading factors contributing to ignition for 2002-2005 non-confined home structure fires involving cooking equipment were equipment unattended (38%), heat source too close to combustibles (12%), unintentionally turned on or not turned off (10%), and abandoned or discarded material or product (8%).

Frying appears to be the cooking method with the highest risk of fire. Frying accounted for 63% of 218 range top cooking-material ignitions studied by the U.S. Consumer Product Safety Commission. Deep fryers involve larger quantities of hot cooking oil than that involved in

*All statistics are based on National Electronic Injury Surveillance system (NEISS) data obtained from the U.S. Consumer Product Safety Commission (CPSC) website, www.cpsc.gov, accessed on October 27, 2007.

regular frying, and turkey fryers involve extremely large quantities of hot cooking oil. These characteristics may add to the fire or scald risk of these devices.

Three-fifths (59%) of civilian injuries suffered in home structure fires involving cooking equipment occurred while the victim was trying to fight the fire, compared to one-third (35%) of injuries suffered in any other type of home structure fire.

Also, 7% of civilian deaths in home structure fires involving cooking occurred as a result of injuries while fighting the fire, compared to 3% of deaths in any other type of home structure fire.

The majority (54%) of 2002-2005 non-confined structure fires involving cooking equipment began with ignition of cooking materials.

Nearly all (93%) of 2002-2005 non-confined home structure fires involving cooking equipment began in the kitchen.

Electric powered ranges have a higher risk of fires and associated losses than gas-fueled ranges.

Home fires involving cooking equipment are a holiday tradition, peaking on dates that are major U.S. holidays with traditions of cooking, such as Thanksgiving, Christmas, and New Year's Eve.

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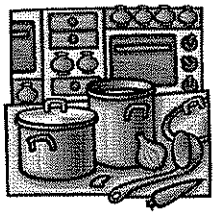
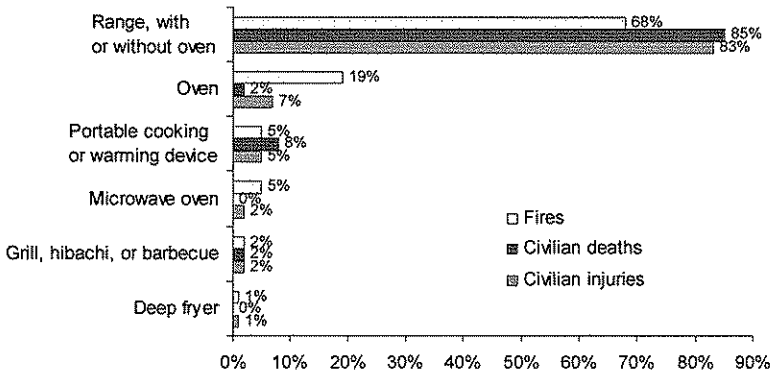


Home Fires Involving Cooking Equipment

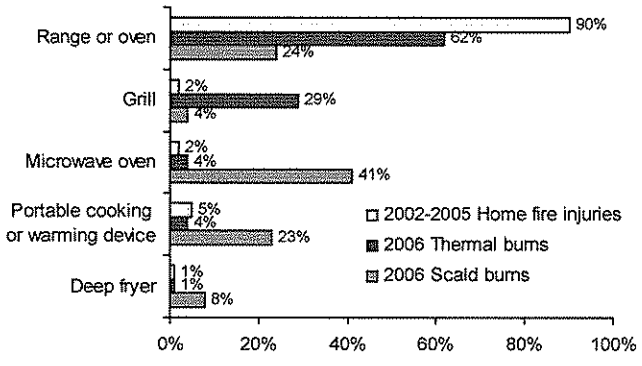
In 2005, U.S. fire departments responded to **146,400** home[1] structure fires that involved cooking equipment in 2005. These fires caused 480 civilian fire deaths, 4,690 civilian fire injuries, $876 million in direct property damage.

- Cooking equipment fires are the leading cause of home structure fires and associated civilian injuries.
- Ranges accounted for the largest share (67%) of home cooking fire incidents in 2005. Ovens accounted for 19%.
- Thanksgiving is the peak day for home cooking fires.
- In 2002-2005, unattended cooking equipment was the leading factor contributing to home cooking fires (38%), deaths (45%), injuries (46%) and direct property damage (37%).
- Twelve percent of the fire occurred when something that could catch fire was too close to the equipment.
- Three-fifths (59%) of reported home cooking fire injuries occurred when victims tried to fight the fire themselves.
- In a 1999 study of range fires by the U.S. Consumer Product Safety Commission, 83% of frying fires began in the first 15 minutes of cooking.

Home Cooking Equipment Fires by Equipment Involved, 2005



Reported Fire Injuries and Emergency Room Treated Burns Involving Cooking Equipment



- Only 1% of cooking fires began with clothing but these clothing fires caused 12% of the cooking fire deaths.
- One out of every five cooking fires that began with clothing resulted in a death.
- In 2006, hospital emergency rooms treated around 29,850 thermal burns and 8,460 burns caused by cooking equipment. Ranges accounted for 62% of these thermal burns and grills 28%. Microwaves accounted for 41% of the scald burns.

[1] Homes are dwellings, duplexes, manufactured homes, apartments, townhouses, rowhouses and condominiums.

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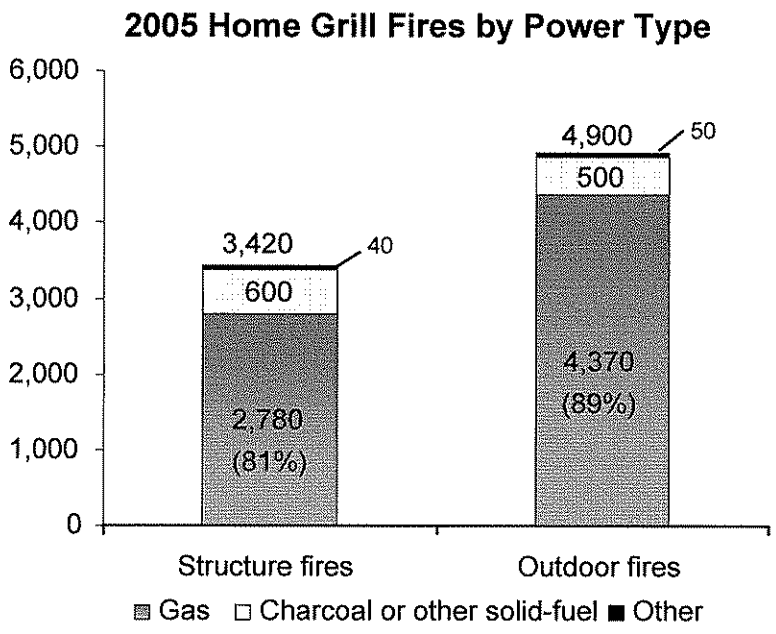
Home Fires Involving Grills

In 2005, U.S. fire departments responded to an estimated **8,300** home[1] fires involving grills, hibachis or barbecues, including 3,400 structure fires and 4,900 outside fires. These 8,200 fires caused 10 civilian deaths (to the nearest ten), 110 reported injuries and $137 million in direct property damage.

- Almost all the losses occurred in structure fires.
- The 3,400 home structure fires involving grills accounted for 2% of the reported home cooking equipment fires, 3% of associated civilian deaths, and 2% of associated civilian injuries, but 16% of the associated property damage.
- One-third (35%) of the non-confined[2] home structure fires involving grills started on an exterior balcony or unenclosed porch, 18% started on a courtyard, terrace or patio, and 11% started on an exterior wall surface.



Fires rounded to the nearest 10.

- Gas grills were involved in a total of 7,200 home fires, including 2,800 structure fires and 4,400 outdoor fires.
  - Leak or break was the leading factor contributing to gas grill fires.
  - Flammable or combustible gas or liquid was the leading item first ignited in gas grill fires.
- Charcoal or other solid-fueled grills were involved in a total 1,100 home fires, including 600 structure fires and 500 outside fires.
  - The leading cause was something that could burn being too close to the grill.
  - Structural member or framing was first ignited in one-fifth of the charcoal-or other solid-fueled grill non-confined structure fires. Exterior wall covering or finish was first ignited in another one-fifth.

An estimated 8,610 people were seen at hospital emergency rooms for thermal burns caused by grills.[3] Most of these burns were due to contact with the grill, not fire.

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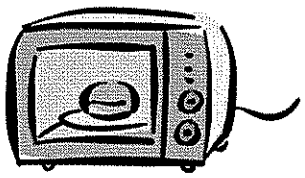
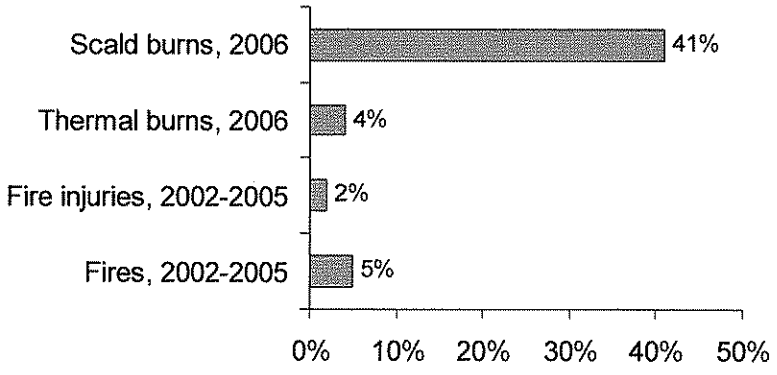


Home Fires Involving Microwave Ovens

Microwave ovens were involved in an estimated 7,400 home[1] structure fires in 2005, resulting in 87 civilian injuries and $18 million direct property damage. There were no reported fire deaths.

- Nearly one-third (30%) of 2002-2005 non-confined microwave oven home structure fires cited appliance housing or casing as the item first ignited.
- Microwave ovens involve more emergency room scald burn injuries than any other cooking device.
- Nearly half (41%) of the microwave oven injuries seen at emergency rooms in 2006 were scalds.
- Microwave ovens accounted for 41% of cooking equipment scald burns but only 5% of home cooking structure fires.

Microwave Oven Share of Cooking Equipment Injuries and Fires



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Home* Natural Gas and LP-Gas Structure Fires

U.S. fire departments responded to an estimated annual average of **2,410 home structure fires** in which **natural gas** was the type of material first ignited and **1,390** in which material ignited was **LP-gas** in 2000-2004. These fires caused annual averages of :

	Civilian Deaths	Civilian Injuries	Direct Property Damage (in Millions)
Natural Gas	43	211	$48
LP-Gas	23	193	$49

Estimates are derived from the U.S. Fire Administration national Fire Incident Reporting System (NFIRS) Version 5.0 and NFPA's annual fire department experience survey.

- In 2000-2004, for both types of gases, the **leading**
  - Area of origin was the **kitchen** or cooking area.
  - Heat source was **spark, ember, or flame** from operating equipment.
- In **natural gas** home structure fires, the **stove** was leading equipment involved.
- In **LP-gas** home structure fires, the leading equipment involved was **a grill, hibachi, or barbecue.**

*Homes are dwellings, duplexes, manufactured homes, apartments, townhouses, rowhouses, and condominiums.

Source: *Home Natural Gas and LP-Gas Structure Fires*, Jennifer D. Flynn, NFPA, Quincy, MA
August 2007