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Outdoor Fires

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FINDINGS

- An estimated 867,300 outdoor fires each year cause approximately 850 civilian injuries and 30 civilian deaths.
- The property loss in each outdoor fire is estimated at $369; however, this loss is deceiving because of NFIRS sampling and because property value is difficult to determine.
- Arson is the leading cause of outdoor fires.
- 64% of outdoor fires occur on open land, fields, streets, and parking areas. 54% of these fires are ignited by open flame.
- Outdoor fires are particularly challenging to the fire service. Required firefighting skills cross the boundary between wildland fires and structure fires. Also, water supply is often lacking.

Sources: NFIRS & NFPA

This report examines the causes and characteristics of fires that occur outdoors. Each year between 1996 and 1998, there were an estimated 867,300 outdoor fires in the United States—approximately half of all fires reported to fire departments. Outdoor fires resulted in approximately 850 civilian injuries, 30 civilian deaths, and $55.3 million property loss.[1]

Loss Measures

Figure 1 compares the loss measures for all fires with those occurring exclusively outdoors. Outdoor fires tend to cause much less damage and far fewer casualties than other types of fires. These loss measures may be somewhat deceptive since the National Fire Incident Reporting System (NFIRS) represents a sample of U.S. fire departments, so it is possible that more outdoor fires occurred during the reporting period and were not captured. Also, determining the actual dollar loss from such fires is difficult.

Types of Outdoor Fires

NFIRS classifies outdoor fires in four category types. The most common type is one that ignites trees, brush, or grass (55%). Refuse fires are the second leading type of outdoor fire (36%). Fires occurring

Figure 1. Loss Measures for Outdoor Fires

(3-year average, NFIRS data 1996–98)

LOSS MEASURE	ALL REPORTED FIRES	OUTDOOR FIRES
Dollar Loss/Fire	$5,619	$369
Injuries/1,000 Fires	15.7	1.8
Fatalities/1,000 Fires	2.4	0.1

Source: NFIRS only

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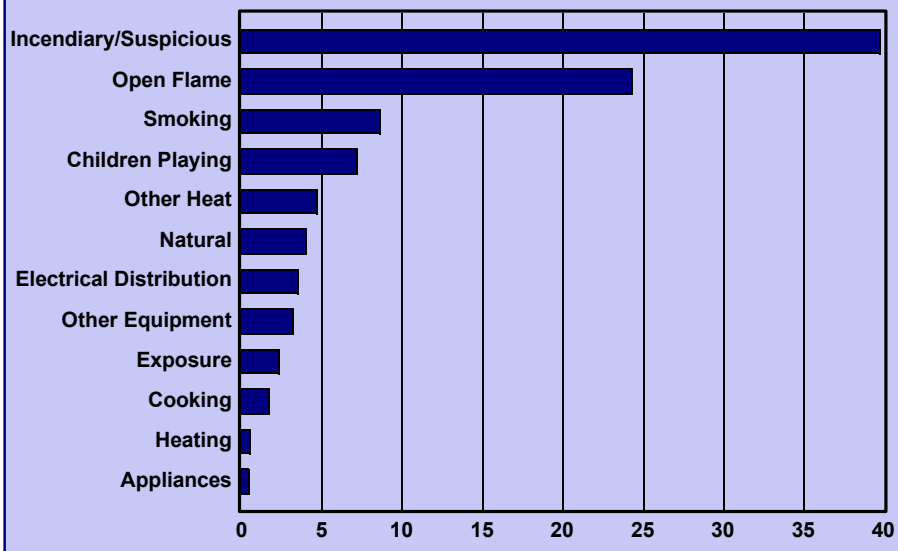
outside a structure where the material burning has some value (e.g., yard storage and crops) account for 8%. Less than 1% of outdoor fires result from some kind of spill or leak.

Causes of Outdoor Fires

Arson is the leading cause of outdoor fires (40%) (Figure 2). Other leading causes of outdoor fires are open flame (such as discarded matches or campfires), smoking, and children playing. Each of these four causes accounts for a higher proportion of outdoor fires than for reported fires generally. Structure fires are more likely to be caused by heating or cooking.

The prevalence of children playing as a cause of fires is troubling. Research shows that as juvenile firesetters get older, they tend to direct their fire-starting behavior away from their homes toward outdoor locations.[2] Also, since NFIRS does not record the age of children involved in firesetting (only the age of the victims), it is not possible to determine how many arson fires involve juveniles or the age of the children playing with fire starting materials.

Figure 2. Leading Causes of Outdoor Fires
(3-year average, NFIRS data 1996–98)



Source: NFIRS only

Sources of Ignition

About 54% of outdoor fires are ignited by an open flame, which includes matches, lighters, and open fires such as rubbish and campfires. Other leading ignition sources are smoking materials (cigarettes, etc.) and natural sources (lightning, spontaneous, etc.). Fifteen percent of outdoor fires are ignited when someone abandons or improperly discards an ignition source.

Where Fires Occur

Approximately two-thirds of outdoor fires occur on open land, fields, public streets, highways, and parking areas (Figure 3). Another 17% occur on residential properties, including apartments and single-family homes.

Figure 3. Leading Property Types for Outdoor Fires
(3-year average, NFIRS data 1996–98, adjusted percentage)

PROPERTY TYPE	PERCENT OF FIRES
General Outdoors	41
Roads, Parking Areas	23
Residential	17
Industrial	5

Source: NFIRS only

Firefighting Considerations

Outdoor fires pose a variety of challenges to the fire service, particularly when homes and other structures are threatened. Rural areas adjacent to urban centers are becoming increasingly attractive to home buyers. Areas where homes and other structures meet combustible vegetation are known as the "urban/wildland interface." Firefighting tactics in the urban/wildland interface must be adapted to combat different types of fires, each with their own unique features. Important tactical decisions include determining which structures to defend in a wildfire, when to evacuate residents, and how to establish a water supply for firefighting operations.

Fire prevention efforts in the wildland/urban interface are also unique. Attention must be paid to the prevention of wildfires and conventional structure fires. To prevent wildfires generally and in the wildland/urban interface, some experts advocate prescribed burns and other techniques to reduce the fuel load in our forests. Also, communities and private landowners are increasing their role in providing "defensible space" to protect their own properties.

For further information on the wildland/urban interface, contact the National Interagency Fire Center (http://www.nifc.org), the National Wildfire Coordinating Group (http://www.nwcg.gov), or the USFA (http://www.usfa.fema.gov/wildfire/).

Examples

The following are some recent and reasonably representative examples of outdoor fires. These were all reported by the media, though many outdoor fires, particularly smaller fires, receive little or no media attention.

- In August 2001, children playing with matches near the Los Angeles–Ventura County line ignited a 76-acre brush fire that threatened nearby homes and took 300 firefighters 3 hours to control.[3]

- In July 2001, a poorly constructed campfire ignited a brush fire in the Okanogan–Wenatchee National Forest in Washington. The "Thirty Mile Fire," destroyed nearly 10,000 acres and killed four wildland firefighters.[4]

- In July 2000, a hot charcoal from a cooking fire ignited a 9,500-acre brush fire near Helena, MT. The fire destroyed about 40 homes and other structures.[5]

Conclusion

The prevalence of outdoor arson fires is troubling. Firesetters, particularly juveniles, initially tend to start fires outdoors before directing their firesetting activities to homes and other structures. This is an area in need of further study.

For further information on the prevention of outdoor fires and juvenile firesetting, contact your local fire department or the USFA.

To review the detailed methodology used in this analysis, click **METHODOLOGY**

Notes:

1. National estimates are based on data from the National Fire Incident Reporting System (NFIRS) (1996–1998) and the National Fire Protection Association's (NFPA's) annual survey, *Fire Loss in the United States*
2. *Arson and Juveniles, Responding to the Violence,* U.S. Fire Administration, 1995.
3. "Brush Fire Blamed on Children With Matches," *Los Angeles Times,* August 27, 2001.
4. "4 Wildland Firefighters Killed in Washington State," *Firehouse Magazine,* September 2001.
5. "The Buck Snort Fire," *Firehouse Magazine,* October 2000.