

U.S. Fire Administration TOPICAL FIRE RESEARCH SERIES

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Christmas/Christmas Tree Fires

FINDINGS

- From December 24th through the 26th, fire deaths, injuries, and dollar loss increase an average of 50%, 61%, and 43%, respectively.
- As Christmas trees, which are in one-third of all households, dry out, the risk of fires increases.
- The use of candles contributes to the increase in the incidence of holiday fires.
- Cooking fires increase on Christmas Eve and Day, but children playing and arson fires decrease.

The Holiday season is typically regarded as extending from late November to early January and includes Hanukkah, Christmas, Kwanzaa, and New Year's Day. Using the latest 3 years of data, the yearly estimated fire loss for December 24, 25, and 26 is estimated at over \$80 million. Each year, these losses result from an estimated 11,600 fires that required a fire department response. These fires cause an annual average of approximately 250 injuries and 40 fatalities.

In addition to the holidays themselves, many people choose to celebrate the season by decorating their homes with electric lights, candles, banners, and wreaths. The Christmas tree is among the most popular of these decorations. The Bureau of the Census estimates that there were 101,041,000 households in America in 1998. According to the National Christmas Tree Association, 33 million natural Christmas trees were sold that same year, which means that nearly one-third of American households had a live or cut Christmas tree inside the home.

Each year, newspapers are filled with tragic stories of families killed by fires that are ignited by the family Christmas tree. As the season progresses and trees become drier, the incidence of Christmas tree fires worsens, as shown in Figure 1.

PERIOD	CHRISTMAS TREE FIRES/DAY
December 1-14	1.2
December 15-January 1	7.7

In residential structure fires where the ignition point is a Christmas tree or other holiday decoration, the fire is typically more severe in every measurable way. Injuries, fatalities, and property loss are higher than average. This is indicative of the potentially rapid ignition and spread of a tree or decoration fire. One fire official likened a dry Christmas tree to a “bomb” in the middle of one’s home. In reaction to winter’s cold weather, most people turn up the heat in their homes which dries Christmas trees even more. Coupled with faulty wiring or lit candles, a Christmas tree provides sufficient fuel to ignite a serious fire. Two examples:

- On January 9, 1999, an electrical short in a string of Christmas lights started a house fire that killed the homeowner, a 50-year old woman who lived alone.¹
- On December 27, 1998, candles ignited a Christmas tree and killed a father and his son. Both may have been asleep at the time the fire started.²

Holiday fires, including those occurring in the days preceding and following Christmas, are typically more severe than fires during the rest of the year (Figure 2).

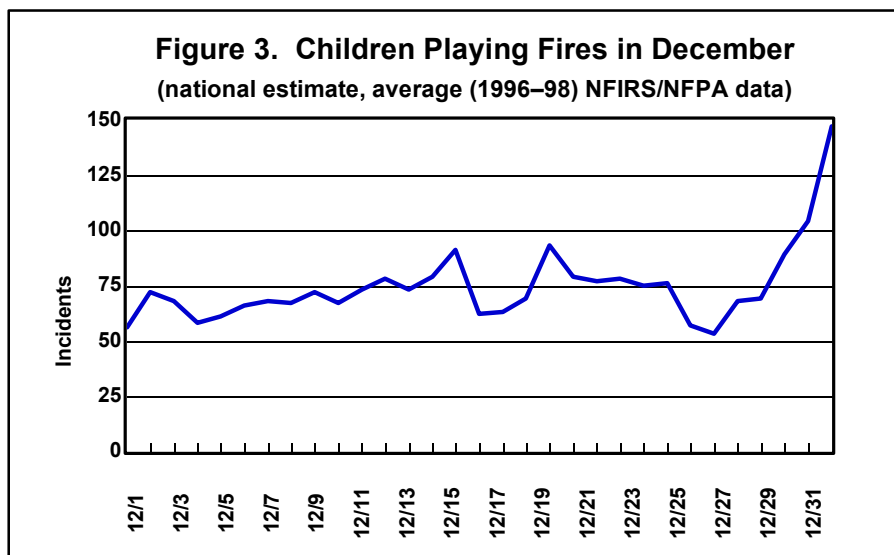
MEASURE	AVERAGE	DEC 24-26
Dollar Loss/Fire	\$5,619	\$8,063
Injuries/1,000 Fires	15.7	25.2
Fatalities/1,000 Fires	2.4	3.6

Similar to other holidays, including Thanksgiving, there is a somewhat higher incidence of cooking fires on Christmas Eve and Christmas Day. This is not surprising given the importance of holiday meals to families throughout the nation.

The incidence of fires caused by open flame also increases on Christmas Day—13 percent for all of 1998, but 16 percent on Christmas. Open flame fires include those from matches, lighters, and candles.³

The most common form of heat of ignition for Christmas fires is that of gas-fueled equipment, including pilot lights and gas fireplaces. Also, Christmas experiences a higher than average incidence of fires caused by candles.

Fires caused by children playing with fire decrease on Christmas Day (Figure 3). Children playing fires peak in the days just prior to Christmas and sharply decrease on Christmas Day and December 26. In the greater context of this time of year, these trends are not necessarily surprising. Perhaps most importantly, parents are home with their children and, while busy with holiday preparations, may not be able to supervise children as closely as is necessary. Seeking to emulate the behaviors of their parents, children might attempt to light holiday candles or other decorations. In addition, children are likely to be searching for hidden gifts throughout the home and in their search are probably encountering dangerous items such as lighters and matches. Naturally curious, children play with these items, with sometimes tragic results. Beginning on Christmas Eve, children become more occupied with the celebration and are perhaps less likely to set fires. This trend continues over the next several days until their interest in new toys and other gifts wanes.



The incidence of arson fires diminishes on Christmas Day and in the days before, but arson increases after Christmas and peaks on New Year’s Day.

NOTES

- ¹².Luo, Michael, “Christmas Tree Blaze Kills Woman,” *Los Angeles Times*, January 9, 1999, page B1.
- ¹³.“Holiday Season Keeps Branson Hopping: Cause of Fire Believed To Be Candles,” *The Kansas City Star*, December 27, 1998, page B2.
- ¹⁴.National estimates are based on National Fire Incident Reporting System (NFIRS) data (1996–98) and the National Fire Protection Association’s (NFPA) annual survey, *Fire Loss in the United States*.

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