

# INJURY UPDATE

*A Report to Oklahoma Injury Surveillance Participants\**

September 24, 2004

## Burn Injuries Due To Cigarette-Related Residential Fires, Oklahoma, 1988-2002

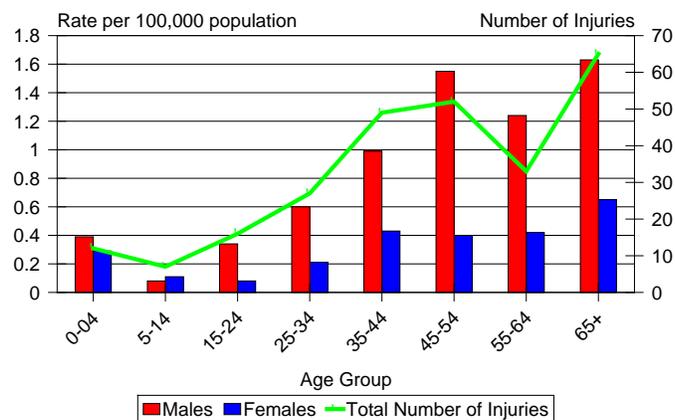
Fire and burn injuries are the sixth leading cause of unintentional injury death in the United States. Nonfatal burn injuries often result in long hospitalizations, high medical costs and substantial disfigurement and pain. Residential fires account for 76% of fire-related injuries and 79% of fire-related deaths in the United States. In 2002, United States fire departments responded to nearly half a million residential fires, or one every 79 seconds. According to the National Fire Protection Association (NFPA), cigarette-related fires cause almost 1,000 deaths and 2,500 injuries each year in the United States. Cigarettes are the nation's single leading cause of fire-related deaths. The economic costs of these deaths are estimated at \$4 billion per year. These costs include health care, lost productivity, personal property losses and pain and suffering.

The Oklahoma State Department of Health made burn/smoke inhalation injuries resulting in hospitalization or death a reportable condition in November 1986; active statewide data collection began in September 1987. Data are collected from burn centers and the Office of the Chief Medical Examiner. From 1988-2002, 7,234 Oklahomans were hospitalized in a burn center or died from burn/smoke inhalation injuries; residential fires caused 20% of the injuries (1,439/7,234). Residential fires accounted for 61% of all burn/smoke inhalation fatalities during the 15-year period. Cigarettes were the second leading cause of residential fire injuries and deaths in Oklahoma, behind heating devices. This report describes the occurrence and characteristics of burns due to cigarette-related residential fires in Oklahoma from 1988-2002.

There were 261 burn injuries from cigarette-related residential fires reported from 1988-2002; 76% (199/261) of persons died. Males were more than twice as likely to be injured as females. The majority of injuries occurred among persons 25 years of age and older (Figure 1). The annual injury rates were highest among African Americans (0.82 per 100,000 population) followed by whites and Native Americans (0.51 and 0.38, respectively).

Among survivors (62), the average hospital stay was 22 days with a range from 1 to 101 days. Among all cigarette-related injuries and deaths, the number of injuries was lowest on Monday with a gradual increase each day until peaking on Thursday (Figure 2).

Figure 1. Number and Rates of Injuries for Cigarette-Related Residential Fires by Age Group and Sex, Oklahoma, 1988-2002



\*The INJURY UPDATE is a report produced by the Injury Prevention Service, Oklahoma State Department of Health. Other issues of the INJURY UPDATE may be obtained from the Injury Prevention Service, Oklahoma State Department of Health, 1000 N.E. 10<sup>th</sup> Street, Oklahoma City, Oklahoma 73117-1299, 405/271-3430 or 1-800-522-0204 (in Oklahoma). INJURY UPDATES and other IPS information are also available at <http://ips.health.ok.gov>.

Over one-third of the injuries occurred from midnight until 4 a.m. (Figure 3). Fifty-six percent (145/261) of persons injured in a cigarette-related residential fire were asleep when the fire started. Overall case-fatality rates were highest for persons in houses (81%) followed by trailers (76%) and apartments (64%). However, persons in apartments and trailers had higher rates of fatal injuries than persons in houses (1.47, 1.26, and 0.84 per 100,000 structures, respectively). Smoke alarm status was reported for 74% (194/261) of cases; only 16% (31/194) had a working smoke alarm.

Among persons injured in a cigarette-related residential fire that were over the age of 14, 61% (148/242) had been drinking alcohol. Seventy percent (121/173) of males were reported to be using alcohol at the time of injury compared to 39% (27/69) of females. Fifty-three percent (79/148) of persons who were drinking were between the ages of 35 and 54 years. All but five of the 117 persons who had a positive blood alcohol test had a blood alcohol level above the legal limit of 0.08 g/dl. Seventy-six percent (89/117) had a blood alcohol concentration more than twice the legal limit and 40% (47/117) had a blood alcohol concentration more than three times the legal limit.

The following case briefs provide information detailing the circumstances that led to burn injuries due to cigarette-related residential fires.

### CASE BRIEFS

- A 22-year old woman and her 4 year old son died one day after moving into their home when a fire was started by an unextinguished cigarette placed in the trash. Evidence showed that she woke up, tried to dress, grabbed her son and tried to escape out the window but was overcome by smoke and heat.
- Two children, ages 1 and 3, and two adults died in a mobile home when a fire started in the living room from an improperly discarded cigarette. All occupants were found by the fire department in the bathroom in full arrest with wet towels over their mouths.
- A 64-year old man suffered burns on 100% of his body when he was smoking in bed while on oxygen and his bed caught on fire. He tried to put the fire out with water but was unable and was found in the living room by the fire department.

Figure 2. Burn Injuries Die to Cigarette-Related Residential Fires by Day of Week, Oklahoma, 1988-2002

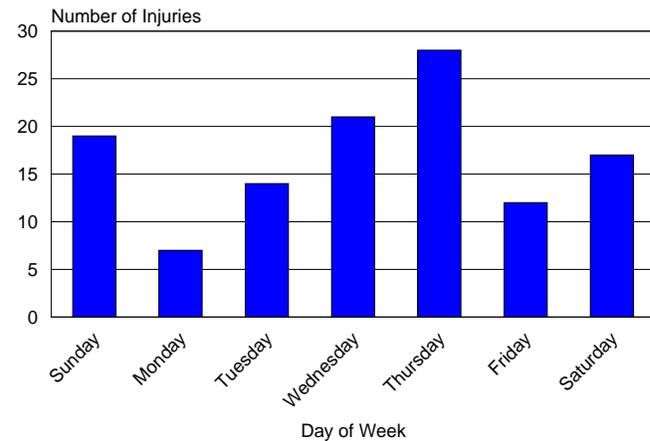
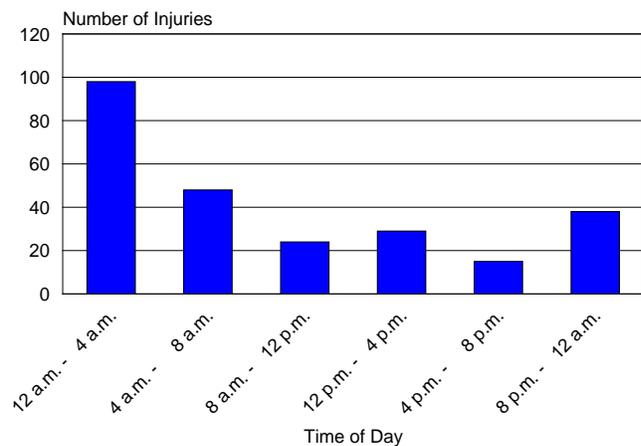


Figure 3. Burn Injuries Due to Cigarette-Related Residential Fires by Time of Day, Oklahoma, 1988-2002



- Two men, ages 40 and 49, died in a trailer fire when they fell asleep and one dropped a cigarette which caught the trailer on fire. They had blood alcohol concentrations that were three and four times the legal limit, respectively.
- A 1-year old boy died in an apartment fire when a cigarette and ashtray left on a chair ignited the chair. No smoke alarms were found in the home at the time of the fire.
- A 25-year old male died in a mobile home fire after a cigarette caught a seat cushion on the sofa on fire. The cigarette had fallen on the cushion earlier in the day, and residents of the mobile home had poured water on it. They thought it was out, but the cigarette continued to smolder and the cushion re-ignited later. During the fire, the decedent was apparently disoriented and could not find a way out of the home.
- A 76-year old woman was burned in an apartment fire when she was smoking in bed while on oxygen. The oxygen concentrator on her tank exploded, catching her bed on fire. She was hospitalized in a burn center with 3.5% total body surface area burns and died 34 days later.

## PREVENTION

Cigarette-related fires are unusually lethal and extract a large toll in human life and property. Cigarettes have been expressly manufactured not to go out until they are totally consumed, and therefore when dropped, can burn through the cover of a seat cushion or a mattress starting fires which may smolder for hours. These hidden fires produce carbon monoxide that is toxic and may cause sleeping victims to fall into an even deeper sleep before the cushion or mattress bursts into flames.

The Fire Safe Cigarette Act of 1984 created a Congressionally appointed technical study group that determined in 1987 that it was “technically and economically feasible to produce a cigarette with a significantly reduced propensity for igniting upholstered furniture fires.” Fire-safe cigarettes would extinguish themselves instead of smoldering if dropped or left unattended. The manufacture of cigarettes is highly standardized and concentrated in a few major companies. Additionally, the shelf life of cigarettes is only a few months. Any change in the process of cigarette manufacture could affect the entire product supply almost immediately, and would not depend on compliance by users. Fire service and health professionals and their organizations should support efforts to encourage the production of fire-safe cigarettes to reduce the toll from cigarette-related burn injuries and deaths.

In August 2000, New York became the first state to pass legislation requiring that all cigarettes be self-extinguishing. Under the new law, which went into effect June 30, 2004, all cigarettes sold in New York must be designed in such a way that they will extinguish after a while if the smoker does not take a puff. The legislation also mandates that fire-safe cigarettes cannot be more toxic to smokers than conventional cigarettes. A similar bill was passed in the Canadian parliament.

A variety of measures to prevent burn injuries due to cigarette-related residential fires should be employed. Traditional efforts to prevent residential fires such as installing smoke alarms and educating consumers about careless smoking should continue, however, there are limits to what can be accomplished through these efforts. Smoke alarms require periodic maintenance and may not provide enough warning for persons who ignite themselves or persons who are heavily intoxicated. The greatest decline in burns due to cigarette-related residential fires can be realized by combining technology, legislation, and educational efforts.

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