

School Fires

Findings:

- Fatalities from school fires are rare.
- The three leading causes for school structure fires are incendiary or suspicious (32%), cooking (29%), and heating (9%).
- The leading area of fire origin for school structure fires is the lavatory.
- Kindergarten through high school fires increase at the beginning and end of the academic year. School fires peak in July due to a spike in elementary school fires.

Using the past 3 years of data, for 2003 to 2005, from the National Fire Incident Reporting System (NFIRS) database, the yearly national fire loss for fires on nonadult school properties¹ is estimated at \$85 million. Such losses are the result of an estimated annual average of 14,700 fires that required a fire department response. Fires on school properties caused an average of approximately 100 injuries. No fatalities were reported to NFIRS during this period.^{2,3} Forty percent of these school-related fires occurred outdoors on school property.⁴ Trash fires accounted for 36% of these outside fires, and fires in open fields or woods accounted for an additional 19%. Forty-three percent of fires on school properties, an estimated 6,300 fires, were structure fires.⁵ Slightly over half of these structure fires were confined to the object where the fire started, such as a small cooking fire (20%) or a fire confined to a trash can (28%). Six percent of fires on school properties were vehicle fires.

Making Schools Safe

Given the improved safety of school structures today, the likelihood of a fire, such as the one that burned the school of Our Lady of Angels in 1958, where 92 children and 3 nuns died⁶ after being trapped with no means of escape, is reduced greatly. Most schools built since the late 1970s are required to have sprinkler systems and use safer construction materials. However, due to high-profile events, such as the 1999 Columbine High School shootings, the needs of school security sometimes conflict with the requirements of fire safety. For example, exits may be restricted for security

reasons preventing escape should a fire occur.⁷ As a result, fire safety experts have increasingly been asked to work in conjunction with security advisors to recommend security procedures that are consistent with the needs of fire safety. Such cooperation is necessary, especially since injuries per school fire are slightly higher than non-residential structure fires, as shown in Table 1.

Table 1. Loss Measures for School Structure Fires (3-year average, 2003-2005)

Loss Measure	All Non-residential Structure Fires	School Structure Fires
Loss per fire	\$25,349	\$14,948
Injuries per 1,000 fires	12.8	13.1
Deaths per 1,000 fires	0.9	0.0

Source: NFIRS 5.0 data only

Note: Loss per fire is computed for only those fires where loss information was provided.

When Fires Start on School Properties

Overall, the average peak month for fires on school properties was July; fire incidence was at its lowest between December and February, in the middle of the academic year (Figure 1). The July peak is driven by a sharp increase in fires at elementary schools as shown in Figure 2. It may be that elementary schools were more attractive targets for incendiary or suspicious fires during the summer when

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Where School Structure Fires Start

The three leading areas of fire origin in school structure fires are the bathroom, kitchen, and small assembly areas. One quarter of school structure fires start in bathrooms. These fires typically start in bathroom trash cans and are primarily of an incendiary or suspicious origin. Older students smoking in bathrooms also may increase the risk of such fires — over three quarters of fires in school bathrooms (78%) occur in high school, junior high school, or middle school bathrooms. Bathrooms present children and young teens with a place to set a fire without having to contend with constant adult supervision. Kitchens (7%) are the second leading area of origin for structure fires, reflecting cooking fires. Most of these kitchen fires, 43 percent, occur in preschool and day care kitchens. Small assembly areas for less than 100 people are the third most frequent place for school structure fires and typically occur in high schools, junior high schools, or middle schools.

Table 2. Leading Areas of Fire Origin of School Structure Fires by Type of School (percent of fires, 3 year average, 2003–2005)

Type of School	Area of Fire Origin		
	Bathroom	Kitchen	Assembly area < 100 persons
Overall	25	7	6
Preschool and Day Care	4	43	9
Kindergarten and Elementary	13	27	29
High School/Junior High School/Middle School	78	24	53
Other Nonadult School	6	7	8

Source: NFIRS 5.0 data only

Material Ignited in School Structure Fires

The most common materials ignited in school structure fires are paper (25%), plastic (14%), wood¹³ (11%), and fabric (9%). These materials, reflecting the high incidence of both incendiary and trash fires, are consistent with materials frequently used by juvenile firesetters and are accessible materials found in and around schools.

Examples

Each year, newspapers are filled with stories regarding school fires. Below are four examples of such fires:

- On April 23, 2007, a 16-year-old Needville High School student in Fort Bend County, Texas confessed to setting the fire that destroyed two Needville High School buildings.¹⁴
- On March 26, 2007, a possible arson fire tore through the courtyard of Peralta Elementary School in Oakland, California, damaging parts of the office, library, and adjacent classrooms, causing an estimated \$500,000 in damage.¹⁵
- On May 22, 2007, two teenagers were charged with trying to burn down Wake Forest-Rolesville High School in Wake Forest, North Carolina, so they wouldn't have to go to school. The teens tried to burn toilet paper rolls and a garbage can in a bathroom.¹⁶
- On June 26, 2007, a fire destroyed the playground at Edgemere Elementary School in El Paso, Texas. Witnesses reported seeing three teenagers flee the scene. Damage was estimated at \$100,000.¹⁷

Conclusion

School security must not compromise fire safety. Both school safety and security needs should be addressed through cooperation between school security and the local fire service.

Early identification of young firesetters through teacher, fire service, and judicial system partnerships gives communities the opportunity to provide fire education and, if necessary, psychological intervention, which will reduce future juvenile-set fires.

Like most fires, those in schools are largely preventable through increased fire safety education, supervision, intervention, and technological innovation. For further information, particularly on juvenile firesetter intervention programs, contact your local fire department or the U.S. Fire Administration.

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