



# Fact Sheet: Home Fire Sprinklers Fact vs. Fiction

*Office of the Illinois State Fire Marshal*

*Pat Quinn, Governor • Larry Matkaitis, State Fire Marshal*

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Fire kills more people each year in the United States than all natural disasters combined. In 2011, fires in one- and two-family homes in the United States accounted for over half of all structure fires, over 2,000 deaths and more than \$5 billion in property damage. Annually, approximately 100 firefighters die, and tens of thousands are injured in the line of duty. Many of these firefighter fatalities and injuries are related to fighting residential structure fires. As a result, the installation of fire sprinklers in one- and two-family homes has now become a growing trend. Nationally-recognized model fire and life safety codes now require fire sprinklers to be installed in new homes.

This Fact Sheet is intended to dispel the many myths that opponents spread to prevent the adoption of residential sprinkler requirements.

**Fiction:** *Fire sprinklers will add an additional \$10,000 on average to the cost of a newly constructed home.*

**FACT:** A study conducted by the Fire Protection Research Foundation found the national average cost to install sprinklers in a new single family home is \$1.61 per square foot. The study considered costs in locations that utilized both municipal water supplies and well water stored in tanks. In a new 2,000 sq. ft. home, the cost of sprinkler installation (at \$1.61/sq. ft.) would be \$3,220.

**Fiction:** *Requiring residential sprinklers will hamper the sale of new homes and the revitalization of the housing industry.*

**FACT:** As with any cost associated with new home ownership, the cost of a sprinkler system can be amortized over the life of the home buyer's mortgage the same as electrical, plumbing and other systems. For example, when the \$3,220 sprinkler cost (\$1.61/sq. ft.) for the example house noted above is amortized over 30-years, for a \$150,000 mortgage at 3.5%, the sprinkler system adds \$14.46 to the monthly mortgage payment. In Illinois, increased savings can also be realized from insurers who offer discounts on insurance premiums up to 7% for partially sprinklered homes and 15% for fully sprinklered homes.

**Fiction:** *A smoke alarm provides enough fire protection in a home without sprinklers.*

**FACT:** Smoke alarms alert occupants to the presence of smoke, but do nothing to extinguish a fire. Smoke alarms can also be disabled or have batteries removed. Thirty-seven percent of fire deaths occur in homes with working smoke alarms. Working smoke alarms are missing in approximately 2/3 of deadly residential fires. Sprinklers apply water directly to the area on fire and reduce heat, flames, smoke, and poisonous gases, thereby giving occupants valuable time to evacuate. In a 2006 study, only 58% of a test group of children ages 6-12 awakened when a standard smoke alarm sounded; only 38% of the test group successfully evacuated. Compared to reported home fires with no fire protection, the death rate per 1,000 reported fires is 31% lower when hardwired smoke alarms are installed and 83% lower when both hardwired smoke alarms and a wet-pipe sprinkler system are present.

**Fiction:** *Fire codes require two separate water lines, or taps, from the municipal water main for a residential sprinkler system, resulting in additional charges.*

**FACT:** The nationally accepted design standard does not require two separate water lines to supply residential sprinkler systems. Therefore, sprinkler systems can be installed using a connection to a home's domestic water supply. While some local governments have adopted ordinances requiring separate water lines, backflow preventers, or imposing an extra charge for a larger diameter tap into the water main, such decisions are local and not mandated by the NFPA 2012 Life Safety Code that the OSFM is recommending for adoption in Illinois.

**Fiction:** *Sprinklers do not actually save lives or reduce property damage.*

**FACT:** Sprinklers do save lives and reduce property damage. The evidence on this point is overwhelming. For instance, there has not been a single residential fire fatality in either Napa, California or Cobb County, Georgia since each mandated residential sprinkler systems several years ago. A 15-year study in Prince George's County, Maryland found that not a single life was lost in 245 fires in sprinklered homes compared to 101 deaths in unsprinklered homes during the same period. In Scottsdale, Arizona where residential sprinklers have long been required, the average cost of fire damage in sprinklered residences was \$2,166 compared to average losses of \$45,019 in unsprinklered residences. Sprinklers work when a fire occurs and no one is home, which dramatically reduces damage to property and personal effects compared to a fire that burns uncontrolled and possibly unreported for several minutes. Statistics indicate that residential sprinklers reduce the average property loss by 75% per fire.

**Fiction:** *Newer homes are already safer than older homes in the event of a fire, even without sprinklers.*

**FACT:** Beyond the age of its electrical wiring, very little about a home's vintage has a bearing on fire safety. A fire at 2:00 a.m. is just as dangerous in a new home as it is in an older home. In fact, new methods of construction negatively impact occupant and firefighter safety. The current trend toward lightweight wood trusses and engineered lumber in residential roof and floor construction presents problems, as they are susceptible to collapse as early as six minutes from the onset of fire. The increased use of synthetic and plastic-based materials in modern homes also serves to increase risk by creating toxic smoke and providing greater fuel load which leads to faster fire buildup, quicker spread and a shorter time for escape.

**Fiction:** *All or many sprinklers heads activate during a fire, causing excessive water damage and large insurance claims.*

**FACT:** Because only those sprinkler heads heated by fire will activate, 90% of home fires are controlled by the activation of only ONE sprinkler head. Smoke, burned toast, cooking vapors, steam and smoke alarms do not activate sprinklers. A residential sprinkler head discharges about 13-14 gallons per minute compared to the fire hose used by firefighters that discharges 175-200 gallons per minute. Sprinklers control fires with approximately 1/10 of the water usage compared to firefighter efforts. Sprinklers are like having a firefighter in every room of your house but less water is used to control the fire.

**Fiction:** *Home sprinklers are not practical in colder climates as the pipes will freeze and cause water damage.*

**FACT:** With proper installation, home fire sprinkler systems should not freeze. The sprinkler installation standard (NFPA 13D) sets forth guidelines that prevent pipes from freezing.

**Fiction:** *Residential sprinklers often leak and require frequent, expensive maintenance to be reliable.*

**FACT:** Residential fire sprinkler systems are much like home plumbing systems – when installed and maintained properly, there is a very low risk of leaks. Loss records show that the probability of a sprinkler discharging accidentally due to a manufacturing defect is only 1 in 16 million sprinklers. Also, a residential sprinkler system requires very minimal maintenance. The only inspection and maintenance required on a regular basis is walking through a home and ensuring that sprinklers are not blocked, performing an annual opening of the drain valve to ensure water flow and alarm activation, and having the system's backflow prevention device inspected.

**Fiction:** *Residential sprinklers are ugly and ruin the aesthetics of a new home.*

**FACT:** Residential sprinklers are available in a variety of colors to match ceilings and walls. Most are partially recessed into the ceiling with only ¼" to ¾" showing below the ceiling. Concealed models of sprinklers are available allowing the sprinkler head to be hidden by a painted cover plate that melts in a fire and allows the sprinkler head to work.

**The Office of the Illinois State Fire Marshal's mission is to save lives and protect property. Residential sprinklers are essential to this effort.**