

Home fires can generate lots of smoke and dangerous flames. They can cause enormous property damage and result in tragic injuries or loss of life. Installing working smoke alarms is the best protection against the threat of fire.

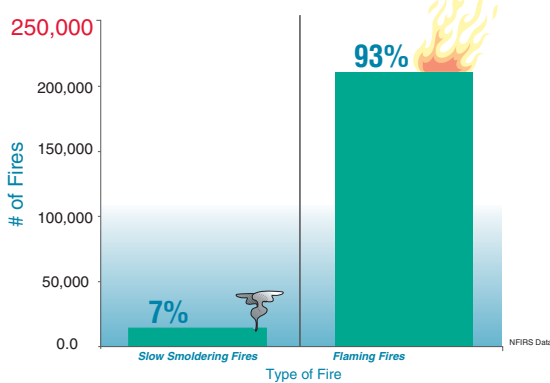
Flaming vs. Smoldering-Cause and Frequency

Experts divide home fires into the following groups:

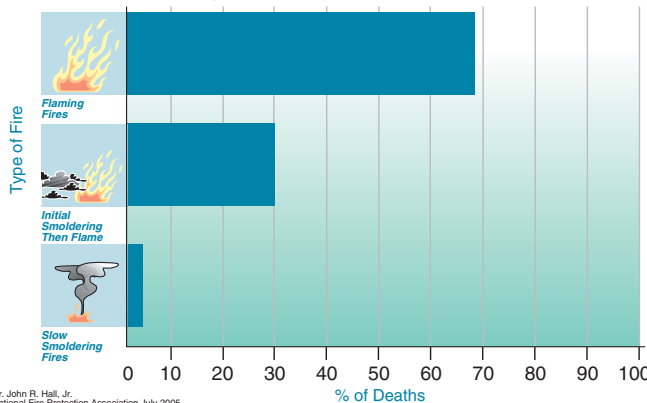
- **Flaming fires** result from the ignition of items such as flammable liquids, wood or paper, or from open flames, such as candles that ignite other items. These fires produce large quantities of flames and lesser amounts of smoke.
- **Smoldering fires** most often occur when smoking materials, such as cigarettes, are left unattended. These fires produce minimal amounts of flames, but larger quantities of smoke.

National Fire Incident Reporting System (NFIRS) data shows that 93 percent of all residential fires are flaming and that flaming fires account for 75 percent of residential fire deaths. Together, both types of residential fires claim about 2,700 lives annually.

Flaming fires are, by far, the most common.
Major Residential Structure Fires By Types, 1992-1996



The Majority of Deaths Occur in Flaming Fires
NFIRS Data, 2002-2005



Dr. John R. Hall, Jr.
National Fire Protection Association July 2005
Based on NFIRS 5.0 Data

Protecting Against both Types of Fires - Ionization and Photoelectric Technologies

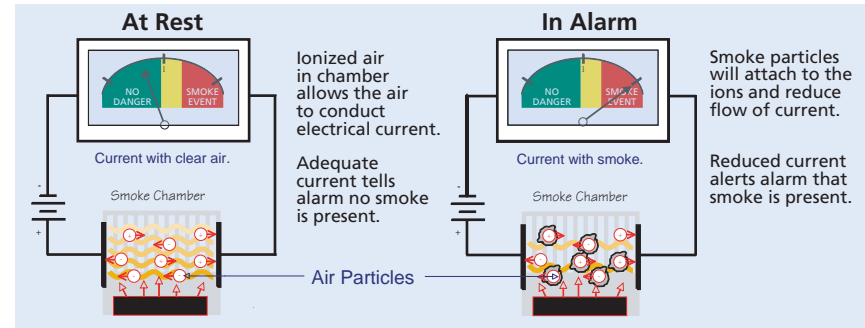
Ionization smoke alarms may detect flaming fires sooner as these fires generally release millions of smaller and less visible charged ("ionized") fire particles. These particles interfere with the electrical current that flows through the detection chamber which then triggers the alarm to sound.

Photoelectric smoke alarms may detect smoldering fires sooner as these fires generally produce larger, more visible fire particles. These particles interfere with and reflect the alarm's light beam, which then triggers the alarm to sound.

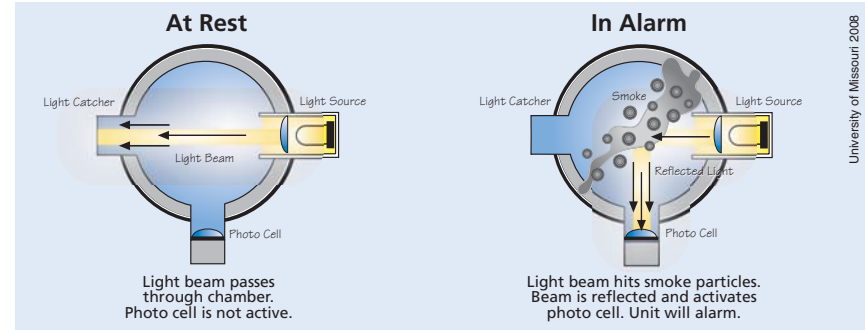
Regardless of technology, all smoke alarms must pass identical tests in order to obtain third-party approval and meet Underwriters Laboratories (UL) 217, the independent standard to which alarms are listed.

UL 217 was created by representatives from national and independent research organizations dedicated to testing products and protecting the consumer in conjunction with industry experts. This standard tests alarms in both flaming and smoldering fire conditions. Some of the tests include time to detect limits, while others include smoke density levels.

Ionization Smoke Alarms



Photoelectric Smoke Alarms



University of Missouri 2008

Experts Recommend Having Both Technologies

Virtually every recognized fire authority - including the National Fire Protection Association (NFPA), the International Association of Fire Chiefs (IAFC), the U.S. Fire Administration (USFA), the National Institute of Standards and Technology (NIST), Consumer Product Safety Commission (CPSC), the National Association of State Fire Marshals (NASFM) and UL - recommends the installation of both ionization and photoelectric alarms in order to maximize protection from either flaming or smoldering fires.

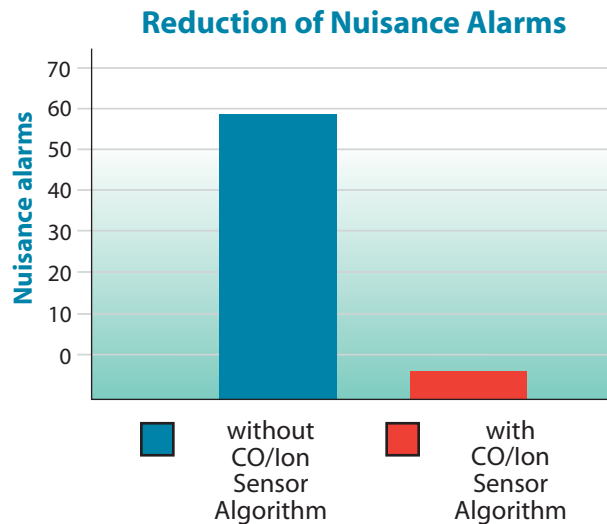
A 2004 NIST study found that both technologies are effective in providing adequate escape time to occupants in "real life" home fire conditions.

In 2008, an NFPA task group released a report concluding "... that smoke alarms using either ionization or photoelectric technologies, installed per NFPA 72-2007, are generally providing acceptable response to smoldering fires.

Smoke Alarm Technology -What's Next?

New technological advances could make smoke alarms even more effective in protecting life and property. Those advances could be based on existing technology, or could stem from technologies not currently on the market. That's one reason why industry experts urge regulators to resist efforts to require only one technology, or restrict the use of another. Smoke alarm technology is likely to change dramatically in the future, and laws that require only one technology or restrict the use of another limit the ability to offer consumers new, innovative alarms tomorrow.

Preliminary field tests indicate that using the right combination of sensors and algorithms can produce a smoke alarm that will reduce the rate of nuisance alarms - a common reason why consumers disable smoke alarms, leaving themselves unprotected.



Over the course of a 6-month field test, the alarm with algorithm has recorded up to a 75% reduction in nuisance alarms.

Emphasize Fire Safety Awareness and Education

Smoke alarms have helped reduce home fire fatalities by **nearly 50 percent** since they were first introduced.

NIST data found that placing smoke alarms in bedrooms as well as in hallways could increase a family's escape time by up to 15 minutes. The NFPA recommends installing smoke alarms on every floor and outside of sleeping areas. New homes are required to have alarms in each bedroom, too. Yet, while 96% of US homes have smoke alarms, one in five units are inoperable, mainly due to dead or missing batteries. **Consumers without a sufficient number of working smoke alarms are still under protected, regardless of whether the smoke alarm employs ionization or photoelectric technology.**

Families also must know what to do when an alarm sounds. A 2004 NFPA survey found that while 66 percent of respondents had created an escape plan, only 35 percent had actually practiced one.

We need to continue to work together to educate the public about the best way to protect against the dangers of residential fires. By increasing public awareness on fire safety and following the recommendations set by leading authorities, we can continue to reduce fire fatalities and injuries.

Ionization and Photoelectric Smoke Alarms

What Both Contribute to Full Fire Protection



For more information visit
www.kidde.com

