



Fire Safety Educators' Tip Sheet

Understand the Problem

Home fires are deadly because modern building materials and furnishings burn fast. Unchecked, a fire quickly spreads flames, high heat and poison gases. These travel from room to room, growing and spreading.

Flashover – the point where everything in the room explodes into flames – can occur in as few as three minutes. At this point, survival is nearly impossible.

According to the National Institute of Standards and Technology, or NIST, a home fire becomes deadly in as few as three minutes.

It's critical that you understand these three things:

1. Fire is fast. There isn't enough time to gather belongings or figure out the best route to escape once a fire has started. Smoke alarms, a well-rehearsed escape plan and fast action can save your life.
2. Smoke is deadly. What kills most people who die in fires is the smoke, not flames. Smoke from fire is hot and poisonous, and it moves quickly throughout the home. If you are sleeping when fire breaks out, the poisonous gases will put you into a deeper sleep rather than awaken you. The gases are super-heated and just one breath can fatally damage your lungs.
3. Flashover can happen in only three minutes. There is no time to waste. If fire strikes, get out fast. No one can survive the deadly flashover when everything in the room bursts into flames.

A system of home fire safety can save lives. Components of the system are prevention, detection, escape, and suppression.

- **Detection** – Every home needs working smoke alarms on each level and in each bedroom.
- **Escape** – An actual fire is not the time to figure out how to escape. A plan, regular home fire drills, and immediate action to get to a safe meeting place outside can save lives.
- **Suppression** is the final component. A home fire sprinkler system is the ultimate fire protection. It's like having the fire department on duty in your home.

Prevention - Understand the Primary Causes and Ways to Prevent Home Fires and Home Fire Injuries

Cooking is the number-one cause of both home fires and home fire injuries.

- Always stay in the kitchen while cooking on the range. Pay special attention when frying food: Keep an eye on what you fry.
- Keep things that can burn, such as dishtowels, paper, and curtains, at least three feet away from the range top.
- Wear short sleeves or roll up sleeves before cooking. Use oven mitts.
- Move propane and charcoal grills several feet away from the house and anything overhead before cooking.
- Do not let grease build up on the range or any cooking equipment.

Heating equipment is the second leading cause of home fires and home fire deaths.

- Keep things that can burn at least three feet away from portable space heaters, fireplaces and woodstoves.
- Turn off portable heaters before sleeping and before leaving the room.
- Have heating equipment, fireplaces and chimneys inspected every year and cleaned or repaired if needed.

Cigarettes, cigars and other smoking materials are the number-one cause of home fire deaths.

- If you or people in your home smoke, use fire-safe cigarettes.
- Smoke outdoors.
- Use large, deep ashtrays on a stable, flat surface.
- Fill ashtrays with water before dumping the butts in the trash.

Fires started by candles are a leading cause of home fire injury.

- When possible, use battery-powered candles instead of lit candles.
- Only burn candles when an adult is in the room and awake.
- Use a hurricane glass or other enclosure to surround the candle.
- Place candles far away from decorations and other things that can burn.
- Blow candles out when you leave the room or get sleepy.
- Don't permit children to have candles in their bedrooms.

The leading cause of fire death to young children is fires set by children themselves.

Keep all matches and lighters in a safe locked place if young children live in or visit your home.

If a child is showing interest or experimenting with fire, act immediately. Sometimes children are motivated by curiosity and lack of understanding. Calmly and firmly explain that matches and lighters are tools for grownups only and they are not to touch them.

If their interest or misuse should continue, notify your local fire department to inquire if they have a trained specialist who works with children and fire concerns. If not, contact the State Fire Marshal's office for help.

Detection - Understand the Importance of the Early Warning that Working Smoke Alarms Provide

- Smoke is silent.
- Smoke is superheated.
- Smoke is poison.
- It probably won't waken a sleeping person. Instead, the poisonous gases are likely to put the person into a deeper sleep.

Smoke alarms give families extra time to put their escape plans in action.

Install and maintain smoke alarms on every level of the home and inside all areas where people sleep.

Key messages that adults should know about installing smoke alarms:

- Smoke rises, so smoke alarms should be mounted high on walls or on ceilings.
- Install smoke alarms on every level of the home.
- Ceiling-mounted alarms should be installed at least four inches away from the nearest wall. Wall-mounted alarms should be installed four to 12 inches away from the ceiling.
- Put the alarm away from the path of bathroom steam and kitchen cooking vapors so they won't trigger the smoke alarm's signal.
- It is highly recommended that people install alarms inside each room where people sleep.

Interconnected smoke alarms work as a team. No matter where the fire starts, if one smoke alarm signals, they all do. That means that if you are sleeping upstairs and a fire starts in the basement, the smoke alarm near your bedroom will signal immediately. That's important, because if you didn't have interconnected alarms, you may not know there is a fire until the smoke travels upstairs. This wastes precious time needed to get loved ones outside to safety.

Interconnected smoke alarms add an extra layer of safety. These smoke alarms can be wired into a home's electrical system. Models are also now available that work wirelessly, making them easier and cheaper to install.

Because children often sleep through the sound of the smoke alarm, they will need help getting to safety in a real fire emergency. Plan for this. Practice how you will waken and help each child escape. This should be part of your regular fire drills. Remember, you may have as little as three minutes to get to safety before flashover occurs.

Older adults may also sleep through the sound of the smoke alarm. Plan for this, just as you do for a young child.

People who are deaf or have hearing loss will need special smoke alarms that use a different tone, vibration, special lights, and other technology to ensure they will wake.

Smoke alarms don't last forever. Newly purchased alarms can be expected to last 10 years. These are the key maintenance messages that adults need to know:

- When you purchase smoke alarms, look on the package for the testing laboratory label, such as ETL Listed or UL.
- When you install a new smoke alarm, use a marker pen to write the date on the inside cover.
- Replace smoke alarms after 10 years.
- Test all smoke alarms once a month. You can do this by pushing the "test" button. If you don't hear the "beep," replace the battery with a new one.
- If your alarms use a 9-volt battery, pick a date to replace all the batteries once a year, and mark it in your calendar so you will remember.
- Even smoke alarms that are wired into your home's electrical system have a back-up battery. Remember to replace these each year as well.
- If you hear the smoke alarm make occasional "chirps", that means the battery is getting low or the alarm's end of life is near. Replace it as soon as possible.
- When cooking smoke or steam travels from kitchens and bathrooms and reaches a smoke alarm, the alarm may signal. These used to be called "false alarms," but they aren't really false – they are actually demonstrating the smoke alarm's effectiveness at detecting smoke.
- They are inconvenient, and too often, people respond to them by removing the smoke alarm battery. This can be a deadly mistake.
- When these unintentional alarm signals happen, use something like a newspaper or cookie sheet to fan the smoke alarm until the signal stops. Never remove the alarm or battery.
- When sanding and doing dusty work inside the home, use a shower cap or baggy to temporarily cover the smoke alarm in that area. Be sure to remove it as soon as you have finished work.

Important Note to the Fire Service: New Smoke Alarm Standards

You do not need to try to explain this to the public, but we want you to be aware. Recent changes to the UL Standard for smoke alarms, Edition 8 of UL 217, have caused manufacturers to develop next-generation models of smoke alarms. At least one is already on the market. The new alarms will eventually take the place of photoelectric and ionization alarms. These next-generation models are more sophisticated — they can tell the difference between smoke from a real fire and smoke and vapors from cooking and steam. The goal is to reduce or eliminate the problem of unwanted alarms that lead people to disable their smoke alarms when they fry a hamburger or take a shower and the alarm goes off. By June of 2022, all smoke alarms installed in homes will be required to meet the new standard. For now, it is fine to continue to install alarms listed to Edition 7 of UL 217. If possible, install some of each kind or the "combination" smoke alarms that have both types of sensors.

The bottom line is that every home needs plenty of working smoke alarms and everyone in the home should plan and practice what to do if an alarm goes off.

Safety researchers believe it's best to purchase "long-life" smoke alarms that have permanent batteries designed to last up to 10 years. The smoke alarms that have these batteries have the battery "locked in" – it cannot be removed. They are meant to be replaced in 8-10 years. These smoke alarms should be tested every month, just as other smoke alarms are. If the signal doesn't work or if there is a chirping signal, the entire smoke alarm should be replaced.

Escape - Every Household Needs a Plan for Escape and Regular Practice of Home Fire Drills

As people age and needs change, the plan should be modified and practiced again. It is recommended that you practice your family fire drill at least twice a year.

- Plan with everyone in the household; even young children should be involved.
- Draw a map of your home. Mark all the doors and windows that can be used for escape. Show the location of all the smoke alarms.
- Find the best ways to escape.
- Know two ways out of every room.
- Know how to get out if doors are blocked.
- If upper-story windows are part of the plan, invest in an escape ladder. But do not practice going down the ladder. The risk of being hurt in a fall is too great.
- Check all your exits so you know that windows and doors can be opened, locks work, and no ways out are blocked.
- Post 9-1-1 or the fire department emergency number on every phone and teach children to call for help after they escape. Make sure they know their address and can tell someone what it is.

These are key steps for home fire drills:

- Hold regular fire drills with everyone.
- Practice how you will get out in a fire.
- Determine which adults will help young children and others who cannot respond to the smoke alarm on their own.

Suppression - Home Fire Sprinklers Save Lives and Prevent Injuries

If there is a fire, a sprinkler system turns on automatically. It quickly sprays water on the flames, keeping the fire small and preventing flashover.

Know the basics of home fire sprinkler protection.

- Fire sprinklers work automatically and are individually activated by high **heat**. It is a myth that fire sprinklers are triggered by **smoke**.
- If there's a fire, the sprinkler will spray water in the area of the fire. That fast action controls heat and smoke. A controlled fire will not go to flashover. This gives families time to safely escape. By limiting the fire damage to one area, it also protects their family photos and other treasures that could never be replaced.
- A sprinkler activates when the temperature from flames reaches 130 to 165°F.
- Fire sprinkler systems are fed from the household water main, or from a tank if water pressure is low.
- Sprinkler piping is similar to household plumbing, installed behind walls and ceilings in finished areas.
- Systems are custom designed for each house.
- The national standard for one- and two-family homes is "NFPA 13D." The standard requires sprinklers only in living areas of the home, so small closets, unfinished attics and half-bathrooms aren't sprinklered.
- Each sprinkler works individually.

- 90% of home fires are controlled with the activation of just one sprinkler.
- Fire sprinklers do not activate all at once. Only the sprinkler nearest the heat from a fire activates.
- Smoke can't make a sprinkler activate. Sprinklers are designed to be activated only by the high temperature of a fire.
- Sprinklers flow about 15 gallons per minute; fire hoses flow about 250 gallons per minute.
- The water damage in a sprinklered fire is far less than in a non-sprinklered fire.
- Sprinklers can be installed in regions where freezing occurs. The standard provides direction for proper installation and insulation.
- Many insurance companies offer a discount on the fire portion of homeowners' premiums for sprinklered homes.
- Sprinklers in homes look very different from commercial sprinklers. They can even be concealed in walls and ceilings.
- The cost of installing fire sprinklers in new homes averages only \$1.61 per sprinklered square foot. (According to a recent study conducted by Newport Partners for the Fire Protection Research Foundation.)

Maintenance for home systems (NFPA 13D):

- Do routine visual checks to make sure nothing is blocking sprinklers.
- Once a month, make sure that the water controls are in the "open" position and the tank is full if there is a tank. Test the pump if there is one.
- Water flow devices – if any – should be tested twice a year. A flow test should be conducted by the homeowner or sprinkler contractor.