



Fire

Produced by the National Disaster Education Coalition: American Red Cross, FEMA, IAEM, IBHS, NFPA, NWS, USDA/CSREES, and USGS

Why talk about home fires?

Home fire is the disaster that children are most likely to experience. It is the fifth leading unintentional cause of injury and death in the United States, behind motor vehicle crashes, falls, poisoning by solids or liquids, and drowning. It also ranks as the first cause of death for children under the age of 15 at home. Roughly 80 percent of all fire deaths occur where people sleep, such as in homes, dormitories, barracks, or hotels. The majority of fatal fires occur when people are likely to be less alert, such as nighttime sleeping hours. Nearly all home and other building fires are preventable, even arson fires. The majority of arson fires are caused by

juveniles, who often respond to counseling, and the rest can be deterred in a number of ways. No fire is inevitable.

In 1995, 3,640 people died in reported home fires in the United States — roughly 10 people per day. In addition, thousands of people were injured in home fires, many hospitalized for severe burns; some disfig-

ured for life. Victims are disproportionately children or elderly. Two of every five fires that kill young children are started by children playing with fire. Approximately 900 older adults die in fires annually.

Learn more about fire safety by contacting your local fire department, emergency management office, or [American Red Cross chapter](#).

Awareness Information

The leading cause of death in a fire is asphyxiation, by a three-to-one ratio over burns. Fire consumes the oxygen in the air, while increasing the concentration of deadly carbon monoxide and other toxic gases in the atmosphere. Inhaling carbon monoxide can cause loss of consciousness or death within minutes.

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The heat from a hostile fire exceeds anything to which a person is normally exposed. A fully developed room fire has temperatures over 1,100 degrees Fahrenheit.

Fire generates a black, impenetrable smoke that blocks vision and stings the eyes. It is impossible to navigate through such smoke, so fire drill participants should practice evacuating buildings by at least two routes.

Prepare for a Fire

Develop a Family Disaster Plan. Please see the **“Family Disaster Plan”** section for general family planning information. Home fire-specific planning should include the following:

- If smoke alarms are not already in place, install them outside each sleeping area and on each additional level of your home in accordance with local codes. Smoke alarms cut your chances of dying in a home fire nearly in half. Smoke alarms sense abnormal amounts of smoke or invisible combustion gases in the air. They can detect both smoldering and flaming fires. The National Fire Alarm Code® (NFPA 72) now requires hard-wired smoke alarms in new homes.
- Draw a floor plan of your home; mark two fire escape routes for each room. In thick, heavy, dark smoke it is easy to become disoriented. Creating a floor plan with two routes greatly helps everyone understand the safest routes during a frightening emergency.
- Consider escape ladders for sleeping areas on the second or third floor. Learn how to use them, and store them near the window. If main escape routes via stairs are blocked by smoke or fire, the windows may be your only alternative. Escape ladders permit quick exits, reducing time spent in smoke-filled, toxic environments while waiting for firefighters.
- Burglar bars and locks that block outside window entry must be easy to open from the inside. If a key is required to open bars or locks, keep a key near each window to use for fire escape. Quick-release devices are available for security bars. If smoke or fire is blocking the main exit, you must be able to use your alternate routes quickly. Fire deaths have occurred when people were trapped by security bars and were unable to get out and firefighters were unable to get in.
- Select a safe outside meeting place for everyone to meet after escaping from a fire. Make sure it will be a safe distance from heat, smoke, and flames. Family members may use different escape routes, exiting on different sides of the home. Gathering in a specific meeting place in front of the home will quickly let you know who is out, and allow you to advise firefighters of who may need help and their probable location inside.

- Conduct a home fire drill at least twice a year with all members of your household. Fires produce thick, dark smoke that irritates the eyes and breathing passages and can cause confusion. People who have become disoriented in fires have been found in closets, stairwells, and laundry rooms, thinking they were exits. Practicing your plan makes the actual response more of an appropriate reaction, requiring less thinking during an emergency situation.
 - Practice alerting other household members. Yell “Fire!” several times during your escape. In a real fire this will alert family members to get out.
 - Practice a crawl-low escape from your bedroom, as if you were crawling under a layer of smoke. Fires produce many toxic gases. Some are heavy and will sink low to the floor; others will rise, carrying soot towards the ceiling. Crawling with your head at a level of one to two feet above the ground will temporarily provide the best air. Close doors behind you.
 - Practice evacuating the building blindfolded. In a real fire situation, the amount of smoke generated by a fire will most likely make it impossible to see.
 - Learn the emergency number for your local fire department. After leaving your home, you will need to call this number from an outside phone or from a neighbor’s house.
 - Teach family members to get out first, then call for help from a neighbor’s house or outside phone. Get out of the house, away from toxic smoke and gases. If a portable phone is handy during your escape, you may take it with you, but do not waste precious time looking for one. Use your neighbor’s phone, a car phone, or nearby pay phone to call for help.
 - Practice getting out of your home during the day and night. Fire can happen at any time. Practicing your routes at night will help you move more quickly should a fire strike in the dark.
- Discuss fires with your family. Everyone should know what to do in case all family members are not together. Discussing disaster ahead of time helps reduce fear and lets everyone know how to respond during a fire.

What to Tell Children

- Practice stop, drop, and roll. Know how to stop, drop, and roll in case your clothes catch on fire. Stop what you are doing, drop to the ground, cover your face, and roll back and forth until the flames go out. Running will only make the fire burn faster. Practicing makes the actual response more of an appropriate reaction, requiring less thinking time

during an actual emergency situation. Children have a tendency to confuse this message with messages about escaping from a fire, so make sure that they understand that “stop, drop, and roll” is to be used only when clothing catches on fire. Once the flames are out, cool the burned skin with water for 10 to 15 minutes and get medical attention.

- Matches and lighters are tools for “grown-ups.” These tools help adults use fire properly. Instruct children to tell an adult right away if they find them or see someone playing with fire, matches, or lighters. **National Fire Protection Association (NFPA)** research has shown that children associate tools with grown-ups, and “grown-up” is a term children use for someone in authority.
- If a fire starts in your home or you hear the smoke alarm, yell “Fire!” several times and go outside right away. Smoke alarms go off because there is enough smoke and toxic gas to cause harm. Yell to let people know the emergency is real, and they should get out. If you live in a building with elevators, use the stairs. Never try to hide from fire. Leave all your things where they are and save yourself.
- If your escape route is filled with smoke, use your second way out. It is very hard to find your way through thick, heavy smoke. Using your second way out will provide a safer alternative.
- Practice crawling low. If you must escape through smoke, crawl low, under the smoke, to escape. Fires produce many poisonous gases. Some are heavy and will sink low to the floor; others will rise, carrying soot towards the ceiling. Crawling with your head at a level of one to two feet above the ground will temporarily provide the best air. Close doors behind you.
- If you are escaping through a closed door, feel the door, cracks, and doorknob with the back of your hand before opening the door. If it is cool and there is no smoke at the bottom or top, open the door slowly. If you see smoke or fire beyond the door, close it and use your second way out. If the door is at all warm, use your second way out. It is a natural tendency to automatically use the door, but fire may be right outside. Feeling the door will warn you of possible danger. The back of your hand is more sensitive to heat than the palm or fingers.
- If smoke, heat, or flames block your exit routes and you cannot get outside safely, stay in the room with the door closed. Open the window for ventilation, and hang a sheet outside the window so firefighters can find you. If there is a phone in the room, call the fire department and tell them where you are. Seal around doors and vents with duct tape, towels, or sheets to help slow deadly smoke from entering the room. Wait by the window for help. The first thing

firefighters will do when they arrive at a fire is check for trapped persons. Hanging a sheet out lets them know where to find you.

- Get out as safely and quickly as you can. The less time you are exposed to poisonous gases, heat, or flames, the safer you will be.
- Once you are outside, go to your meeting place and then send one person to call the fire department. Ask children if they know where their outside meeting place is. Tell them to go directly to this meeting place in case of a fire and stay there. Gathering in a specific outside location in front will quickly let you know who is outside, and allow you to advise firefighters of who may need help and their probable location inside.
- Once you are out, stay out. Children are often concerned about the safety of their pets, so discuss this issue before a fire starts. In many cases, pets are able to get out on their own. Many people are overcome by smoke and poisonous gases while trying to rescue others, pets, or possessions. No one should go into a burning or smoking building except a trained firefighter who has proper breathing apparatus and protective clothing.
- Firefighters are our friends, and they will help in case of a fire. Visit a fire station to help ease children's fears. A fire suit and mask are often frightening and children may try to hide from a firefighter in full protective gear.

How to Protect Your Property

Smoke Alarms

- If smoke alarms are not already in place, install them outside each sleeping area and on each additional level of your home in accordance with local codes. Smoke alarms cut your chances of dying in a home fire nearly in half. Smoke alarms sense abnormal amounts of smoke or invisible combustion gases in the air. They can detect both smoldering and flaming fires. The National Fire Alarm Code® (NFPA 72) now requires hard-wired smoke alarms in new homes.
- If people sleep with doors closed, install smoke alarms inside sleeping areas too. If a fire occurs inside the room, dangerous gases can cause heavier sleep. Smoke alarms inside bedrooms will be more likely to wake you.
- Vacuum cobwebs and dust from your smoke alarms monthly. Smoke alarms are less sensitive when they are dirty. Keep them operating most efficiently.
- Use the test button to test your smoke alarms once a month. The test feature tests all electronic functions and is safer than testing

with a controlled fire (matches, lighters, cigarettes). If necessary, replace batteries immediately. Make sure children know what your smoke alarm sounds like.

- If you have battery-powered smoke alarms, replace batteries at least once a year. Some agencies recommend you replace batteries when the time changes from standard daylight savings each spring and again in the fall. “Change your clock, change your batteries,” is a positive theme and has become a common phrase. While replacing batteries this often certainly will not hurt, available data show that batteries will last at least a year, so more frequent replacement is not necessary. Also, time does not change in Arizona, Hawaii, the eastern portion of Indiana, Puerto Rico, American Samoa, and Guam.
- Replace your smoke alarms every 10 years. Smoke alarms become less sensitive over time. This is a joint recommendation by the National Fire Protection Association and the **U.S. Consumer Products Safety Commission**.

Fire Extinguishers

- Consider having one or more working fire extinguishers in your home. There are three home fire extinguisher ratings: “A” rated extinguishers are for wood or paper fires only; “B” rated extinguishers are for flammable liquid and grease fires; and “C” rated extinguishers are for electrical fires. You can get fire extinguishers that have multiple ratings. An extinguisher rated A-B-C is recommended for home use. Smaller fire extinguishers are designed for one-time use and cannot be recharged.
- Get training from the fire department or a fire extinguisher manufacturer on how to use your fire extinguisher. Fire extinguishers from various manufacturers operate in different ways. Unless you know how to use your extinguisher, you may not be able to use it effectively. There is no time to read directions during an emergency. Only adults should handle and use extinguishers.
- Install extinguishers high on the wall, near an exit and away from heat sources. Extinguishers should be easily accessible to adults trained to use them, and kept away from children’s curious hands. Heat may make the contents less effective or cause the extinguisher to lose its charge more quickly.
- If you try to use a fire extinguisher on a fire and the fire does not immediately die down, drop the extinguisher and get out. Most portable extinguishers empty in 8 to 10 seconds. After some residential fires, people have been found dead with fire extinguishers near them or in their arms.

- Look at your fire extinguisher to ensure it is properly charged. Fire extinguishers will not work properly if they are not properly charged. Use the gauge or test button to check proper pressure. Follow manufacturer's instructions for replacement or recharging fire extinguishers. If the unit is low on pressure, damaged, or corroded, replace it or have it professionally serviced.

Home Fire Sprinkler Systems

- Consider installing an automatic fire sprinkler system in your home. Although smoke alarms are essential in every household, they're designed to detect, not control, a fire. Home fire sprinklers complement the alarms' work, providing a way to fight flames immediately. In less time than it would take the fire department to arrive on the scene, home fire sprinklers can contain and even extinguish a fire. There's less damage and less chance of deadly smoke and gases reaching your family. In addition, sprinkler systems can put out fire when you are away from home, and if they are connected to an alarm system, may notify the fire department in your absence.
 - When building a home, for about the same expenditure of installing carpet, upgrading cabinets, or adding a spa, you can install a home fire sprinkler system to safeguard your family. A good rule of thumb estimate is to add one to one-and-a-half percent to the cost of new housing. Fire sprinklers can also be installed in existing homes. When you consider the degree of built-in reliability and responsiveness that home fire sprinklers offer, the investment is a wise one.
 - Modern residential sprinklers are inconspicuous and can be mounted flush with walls or ceilings. Some sprinklers can even be concealed. Just like regular plumbing, pipes can be hidden behind ceilings or walls.
 - Some insurance companies provide significant discounts when automatic fire sprinkler systems are installed.
 - Sprinklers keep fires small. In sprinklered residences, 90 percent of fires are contained by the operation of just one sprinkler. Each head is independently activated by the heat of a fire as needed. Only the sprinkler heads in the immediate area of the flames will operate.
 - The odds are 1 in 16 million that a sprinkler will accidentally discharge because of a manufacturing defect. One study concluded that improper sprinkler operation is generally less likely and less severe than mishaps involving standard home plumbing systems. Despite the "sight gags" on television sit-coms, burnt toast or cigarette smoke is not enough to trigger sprinkler operation.

- Home fire sprinklers decrease fire damage by as much as two-thirds in residences with fire sprinklers when compared with those without sprinklers. Because the fire sprinkler system reacts so quickly, it can dramatically reduce the heat, flames, and smoke produced in a fire. And, home fire sprinkler systems release only 10 to 26 gallons of water per minute. In a home without sprinklers, a fire department often arrives after the fire has grown to dangerous levels. At that point, a number of hose streams must be applied to the fire at 125 gallons per minute for each hose. The resulting water damage is actually much lower with home fire sprinklers.
- To ensure sprinkler system reliability, be sure to use a qualified contractor who adheres to NFPA codes and standards and local fire safety regulations.

Media and Community Education Ideas

- Publish a newspaper series on how to recognize potential fire hazards in the home and workplace.
- Run a story featuring interviews with local fire officials about how to make homes fire-safe.
- Provide tips on conducting fire drills in the home, mentioning the need for multiple escape routes and a meeting place outside of the home.
- Highlight the importance of home smoke alarms by running monthly “battery-check reminders.”

Help Prevent Fires

- Avoid smoking in bed, or when drowsy or medicated. Bed linens are highly combustible. It is easier to be burned, and highly likely individuals will suffer severe burns, when fires start in beds. Drowsy or medicated people may forget lit materials, resulting in fire.
- Provide smokers with deep, sturdy ash trays. Douse cigarette and cigar butts with water before disposal. Smoking materials is the leading cause of residential fire deaths in the United States.
- Keep matches and lighters up high, away from children, preferably in a locked cabinet. Children are fascinated by fire and may play with matches and lighters if they are not kept out of reach.
- Make sure your home heating source is clean and in working order. Many home fires are started by poorly maintained furnaces or stoves, cracked or rusted furnace parts, or chimneys with creosote buildup.

- Use portable heaters in well-ventilated rooms only. Keep blankets, clothing, curtains, furniture, and anything that could get hot and catch fire at least three feet away from all heat sources. Plug heaters directly into the wall socket and unplug them when they are not in use. Portable heaters use oxygen and produce potentially toxic gases. It is best to keep them well-ventilated to avoid gas build-up.
- Use kerosene heaters only if permitted by law in your area. Refuel kerosene heaters outdoors only, after they have cooled. Kerosene has a low flash point. If mistakenly dripped on hot surfaces, it can cause fires.
- Have chimneys and wood stoves inspected annually and cleaned if necessary. Chimneys and wood stoves build up creosote, which is the residue left behind by burning wood. Creosote is flammable and needs to be professionally removed periodically.
- Keep the stove area clean and clear of combustibles, such as towels, clothing, curtains, bags, boxes, and other appliances. Combustible materials near stoves may catch fire quickly when your attention is elsewhere.
- Cook with short or restrained sleeves. Loose sleeves can catch fire quickly.
- Conduct a home hazard hunt. Many things around the home can be fire hazards. Taking time to look for and eliminate hazards greatly reduces your risk.
 - Check electrical wiring in your home. Fix frayed extension cords, exposed wires, or loose plugs.
 - Make sure wiring is not under rugs, over nails, or in high traffic areas.
 - Outlets should have cover plates and no exposed wiring.
 - Avoid overloading outlets or extension cords.
 - Only purchase appliances and electrical devices that bear the label of a testing laboratory such as Underwriter's Laboratories (UL), Factory Mutual (FM), etc.
 - Store combustible materials in open areas away from heat sources.
 - Place rags used to apply household chemicals in metal containers with tight-fitting lids.
- Buy only testing laboratory-labeled heaters and follow the manufacturer's directions. Heaters that have gone through rigorous testing and are approved for use in the home are less likely to cause fire.

What to Do During a Fire

- Get out as quickly and as safely as possible. The less time you are exposed to poisonous gases, the safer you will be.
- If a stove fire starts, slide a lid over the burning pan and turn off the burner. Leave the lid in place until the pan is completely cool. Using a lid to contain and smother the fire is your safest action. Getting the fire extinguisher or baking soda to extinguish the fire delays action. Flour and other cooking products can react explosively to flame and should never be sprinkled over fire. Moving the pan can cause serious injury or spread the fire. Never pour water on grease fires.
- If you try to use a fire extinguisher on a fire and the fire does not immediately die down, drop the extinguisher and get out. Most portable extinguishers empty in 8 to 10 seconds. After some residential fires, people have been found dead with fire extinguishers near them or in their arms.
- If you are escaping through a closed door, feel the door, cracks, and doorknob with the back of your hand before opening the door. If it is cool and there is no smoke at the bottom or top, open the door slowly. If you see smoke or fire beyond the door, close it and use your second way out. If the door is warm, use your second way out. It is a natural tendency to automatically use the door, but fire may be right outside. Feeling the door will warn you of possible danger.
- If you see smoke or fire in your first escape route, use your second way out. The less time you are exposed to poisonous gases or flames, the safer you will be.
- If you must exit through smoke, crawl low under the smoke to your exit. Fires produce many poisonous gases. Some are heavy and will sink low to the floor; others will rise carrying soot towards the ceiling. Crawling with your head at a level of one to two feet above the ground will temporarily provide the best air.
- Close doors behind you as you escape to delay the spread of the fire.
- If smoke, heat, or flames block your exit routes and you cannot get outside safely, stay in the room with the door closed. Open the window for ventilation, and hang a sheet outside the window so firefighters can find you. Wait by the window for help. The first thing firefighters will do when they arrive at a fire is check for trapped persons. Hanging a sheet out lets them know where to find you. If there is a phone in the room, call the fire department and tell them where you are.

- Once you are out, stay out! Firefighters are trained and equipped to enter burning buildings. If someone is still inside, direct them to that person's probable location.
- Get out first, away from toxic smoke and gases, then call the fire department from a neighbor's home or from an outside phone. If a portable phone is handy during your escape, you may take it with you, but do not waste precious time looking for one. Use your neighbor's phone, a car phone, or nearby pay phone to call for help.

What to Do After a Fire

- Give first aid where needed. After calling 9-1-1 or your local emergency number, cool and cover burns, which reduces the chance of further injury or infection. Seriously injured or burned victims should be transported to professional medical help immediately.
- Stay out of fire-damaged homes until local fire authorities say it is safe to re-enter. Fire may have caused damage that could injure you or your family. There may be residual smoke or gases that are unsafe to breathe.
- Look for structural damage. Fire authorities may allow you to re-enter, but may not have completed a thorough inspection. Look for damage that will need repair.
- Check that all wiring and utilities are safe. Fire may cause damage inside walls and to utility lines not normally visible.
- Discard food that has been exposed to heat, smoke, or soot. The high temperatures of fire and its by-products can make food unsafe.
- Contact your insurance agent. Don't discard damaged goods until an inventory has been taken. Save receipts for money spent relating to fire loss. Your insurance agent may provide immediate help with living expenses until you are able to return home, and offer assistance for repairs.