

# Fires, Residential

## Why talk about residential fires?

Fire was the sixth leading cause of unintentional death due to injury in the United States in 2002. Fires and burns also rank as the third leading cause of unintentional home injury for children under the age of 15.

About 79 percent of all fire deaths in 2002 resulted from home fires. A disproportionate share of fatal fires occurs at night when people are likely to be less alert. Nearly one-half of home fire deaths result from fires reported between 10:00 p.m. and 6:00 a.m.

Most structure fires are preventable, including arson fires. Half (49.5 percent) of the people arrested in 2001 for arson were under 18 years of age. With education and counseling, fire-setting behavior can be prevented or deterred.

According to the National Fire Protection Association (NFPA), in the year 2002, home fires killed 2,670 people in reported home fires in the United States—roughly seven people per day. In addition, thousands of people were injured, many of them hospitalized for severe burns, and some disfigured for life. Victims are disproportionately young children or older adults. One-third of the fire-related deaths of children under age six result from children playing with fire.

Asphyxiation kills two to three times as many people as 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.

The heat from a major fire exceeds anything to which a person is normally exposed. A fully developed room fire has temperatures over 1,100° F (593° C).

## How can I protect myself from residential fire?

The most effective way to protect yourself and your home from fire is to prevent a fire from starting. Identifying and eliminating fire hazards in and around your home are your first line of defense.

If a fire should start in your home, smoke alarms can be the difference between safety and catastrophe. For new homes, interconnected smoke alarms are required on every level of the home, outside each sleeping area, and inside each bedroom. Although this approach is ideal for all homes, as a minimum, existing homes should have smoke alarms on every level and outside each sleeping area. The risk of dying from fires in homes without smoke alarms is twice as high as in homes that have working smoke alarms. Most fire victims die from inhalation of smoke and toxic gases, not as a result of burns. Most deaths and injuries caused by fire occur in fires that happen at night while the victims are asleep. A fire sprinkler system can also help protect you and your property.

It is imperative that all members of a household be thoroughly familiar with what to do in case of fire. 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

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were exits. It is impossible to navigate through such smoke, so fire escape routes should include at least two exits from every room—a primary route and a secondary route to use in case the primary route is blocked. Planning escape routes and physically practicing before a fire can save your life.

## **What to Tell Children**

Parents and caregivers should:

- Teach children how to prevent and survive a fire. In a calm, positive manner, adults should explain why fire safety is important and demonstrate safe behaviors when using fire, fire tools, and other heat sources.
- Include children, beginning when they are very young, in planning and practicing home fire drills. Very young children will need assistance in escaping a fire, but, as children mature, they can learn what to do to be safe even if an adult is not immediately on hand to help. The key is to conduct regular fire drills, at least twice a year, to allow children to practice using their primary and secondary escape routes. Allow children to master fire escape planning and practice before holding a fire drill at night when they are sleeping. The objective is to practice, not to frighten, so a drill that you have told the children about before they went to bed can be as effective as a surprise drill.
- If secondary escape routes involve going out of a second- or third-floor window, consider purchasing a window ladder. Young children are not strong enough to handle these ladders by themselves and will need adult assistance. Since exiting from a window poses the threat of a fall, you might wisely choose not to physically practice this. Explain to children which window is planned as a secondary escape route and tell them to meet there if smoke, heat, or flames prevent them from using the primary escape route.
- Some studies have shown that some children may not awaken to the sound of the smoke alarm. Know what your child will do before a fire.
- Be aware that children have a tendency to confuse "stop, drop, and roll" with messages about what to do during an earthquake, so be sure they understand that "stop, drop, and roll" is to be used only when clothing catches on fire.
- Tell children that firefighters are our friends and that they will help in case of a fire. Take children to visit a fire station to help ease their fears. If possible, introduce children to a firefighter who is dressed in a fire suit and mask, because a person wearing this gear can look frightening and children unfamiliar with it may try to hide from a firefighter in an emergency situation.
- Emphasize that matches and lighters are tools for "grown-ups." These tools help adults use fire for appropriate purposes. Instruct children to tell an adult right away if they find matches or lighters or see someone playing with fire, matches, or lighters. National Fire Protection Association research has shown that children associate tools with grown-ups, and "grown-up" is a term children use for someone in authority. Matches and lighters should be stored up high out of the reach of children, preferably in a locked cabinet.

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## Be Prepared for a Residential Fire

For general preparedness, every household should create and practice a Family Disaster Plan and assemble and maintain a Disaster Supplies Kit. In addition, since all homes are at risk for fire, every household should take fire-specific precautions and plan and practice what to do in the event of a fire. You can learn more about fire safety by contacting your local fire department, emergency management office, or American Red Cross chapter, or by contacting national organizations such as the National Fire Protection Association and the U.S. Fire Administration.

You should install and maintain smoke alarms on every level of your home, outside sleeping areas, and inside bedrooms, according to the manufacturer's instructions. Also consider keeping at least one working fire extinguisher and installing arc-fault circuit interrupters (AFCIs) and a fire sprinkler system in your home.

## Protect Yourself

To make your household fire escape plan, you should:

- Draw a floor plan of your home; mark two fire escape routes from each room—the primary route and the secondary route. In thick, heavy, dark smoke it is easy to become disoriented. Physically walking through your plan and identifying two escape routes greatly helps everyone understand the best ways to get out safely during a frightening emergency. Be sure the window exits you plan to use can be opened.
- Consider getting escape ladders for sleeping areas on the second or third floor. Learn how to use them, and store them near the windows. If the primary 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.
- Use quick-release devices on barred window and doors. Security bars without release devices can trap you in a deadly fire. If you have security bars on your windows, be sure one window in each sleeping room has a release device. If smoke or fire is blocking the primary exit, you must be able to use your secondary 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.
- Learn the emergency number for reporting a fire. After leaving your home, you will need to call this number from an outside phone or from a neighbor's home.
- Make sure your house number is easily readable from the street, even at night.
- Make sure that street signs in your neighborhood are clear and easy to find.

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## Practice escaping

With each member of your household in his or her bedroom, yell, "Fire," several times to alert everyone that they must get out. Each person should:

- Crawl low under smoke to your exit. "Crawling low" means crawling with your head one to two feet above the ground. You should crawl low when you practice because in a real fire there may be deadly smoke along your escape route. If you are escaping in a real fire and there is no smoke, you should get out of the building as quickly as possible.
- Practice feeling the doorknob and the space around the door with the back of your hand.
- Close doors after crawling through.
- Go to the specified meeting place.

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.

Practice the escape plan at least twice a year, making sure that everyone is involved—from kids to grandparents. If children or others do not readily waken to the sound of the smoke alarm, or if there are infants or family members with mobility limitations, make sure that someone is assigned to assist them when you practice and in the event of an emergency.

When you practice your escape plan, also practice taking your pets with you. Train them to come to you when you call. However, once you are out of a burning building, stay out and do not return for any pets you may have left behind.

Be sure that everyone in your household knows:

- To get out first, and then call for help from outside the burning building, 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 cell phone, or nearby pay phone to call for help.
- The two escape routes from each room.
- The location of the outside meeting place.
- If you cannot get out, stay in a room with the door closed and open the window for ventilation and to signal to firefighters.

Discussing disaster ahead of time helps reduce fear and lets everyone know how to respond during a fire.

Be sure to emphasize "once out, stay out." Only professional firefighters should enter a building that is on fire—even if the residents' pets or prized possessions are inside.

Get first aid training from your local American Red Cross chapter.

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## Protect Your Property

To help prevent fires in your home, you should:

- Conduct a fire-hazard hunt in and around your home. Many things around the home can be fire hazards. Taking time to look for and eliminate hazards greatly reduces your risk. In your hazard hunt, include your barns, outbuildings, or any other structures that house animals. Invite your local fire department to examine your barns and outbuildings and give you suggestions.
- 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 ashtrays. Douse cigarette and cigar butts with water before disposal. Smoking materials are 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 sources are 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.
- Be sure all portable and fixed space heaters have been certified by an independent testing laboratory. 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 rather than using an extension cord and unplug them when they are not in use.
- Use kerosene heaters only if permitted by law in your area. Refuel kerosene heaters only outdoors and after they have cooled. Kerosene has a low flash point. If mistakenly dripped on hot surfaces, it can cause fires. Do not substitute gasoline for kerosene in the heater.
- 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. Store ashes in a metal container with a tight-fitting lid.
- 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 if dragged across a hot burner.
- If you are cooking and a fire starts in a pan, 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

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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.

- Use only flashlights when the power is out, not candles.
- Never leave a burning candle unattended, even for a minute.
- Check electrical wiring in your home. Fix or replace frayed extension cords, exposed wires, or loose plugs.
- Make sure wiring is not under rugs, attached by nails, or in high traffic areas.
- Make sure electrical outlets have cover plates and no exposed wiring.
- Avoid overloading outlets or extension cords.
- Purchase only appliances and electrical devices that bear the label of an independent testing laboratory.
- Buy only heaters certified for safety by an independent testing laboratory 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.
- Store combustible materials in open areas away from heat sources.
- Place rags used to apply flammable household chemicals in metal containers with tight-fitting lids.

## What to Do if a Fire Starts

If a fire starts in your home or you hear the smoke alarm, remain calm, and carry out your escape plan, as you have practiced. You should:

- 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.
- If you must escape 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 toward 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 doorknob and the space around the door 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 in your exit path, close the door and use your second way out. If the doorknob or the space around 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 doorknob and the space around the door will warn you of possible danger. The back of your hand is more sensitive to heat than the palm or fingers. Never use your palm or fingers to test for heat because burning those areas could make escaping more difficult by impairing, for example, your ability to crawl or use a ladder.
- 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 a few inches at

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the top and bottom for ventilation, turn on a light, and hang a light-colored object outside the window to alert firefighters to your presence. Hang anything white or light-colored you can find—the bigger the better—for example, a sheet, shirt, jacket, window shade or blind, or poster with the white back facing out. If there is a phone in the room, call the fire department and tell where you are. Seal around doors and vents with duct tape, towels, or sheets to help slow the entry of deadly smoke into 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. Everyone in the household should know where the outside meeting place is and should go directly to this meeting place in case of a fire and stay there. Gathering in a specific outside location in front of the home 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 as well as adults are often concerned about the safety of their pets, so discuss and plan for this before a fire starts. The safest option is for pets to sleep in the room of a family member. If escape is needed, grab your pet on the way out, but only if you can do this without delaying and endangering yourself or family members. 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 the proper breathing apparatus and protective clothing.

## What to Do If Your Clothes Catch on Fire

If your clothes catch on fire, you should:

- Stop what you are doing.
- Drop to the ground and cover your face if you can.
- Roll over and over or back and forth until the flames go out. Running will only make the fire burn faster. Practicing can help you respond properly and more quickly in an actual emergency situation.

THEN

- Once the flames are out, cool the burned skin with water for three to five minutes. Call for medical attention.

## 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 to reduce the chance of further injury or infection. People and animals that are seriously injured or burned should be transported to professional medical or veterinary help immediately.
- Stay out of fire-damaged homes until local fire authorities say it is safe to reenter. Fire may have caused damage that could injure you or your family. There may be residual smoke or gases that are unsafe to breathe.

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- Look for structural damage. Fire authorities may allow you to re-enter, but they 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 to inside walls and 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. Do not 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 may offer assistance for repairs.

## Facts and Fiction

Fiction: Water can be used to put out any fire.

Facts: Some fires, like those caused by grease, can be spread by throwing water on the fire. If a fire starts in a pot on the stove, you should slide a lid on the pot and turn off the burner.

Fiction: If a fire starts in my home, I can put it out with my fire extinguisher and not trouble the fire department.

Facts: While home fire extinguishers can put out some small fires, many fires start out small and grow quickly. Each year, hundreds of people die trying to put out fires. Much more damage to homes is caused by delaying a call to the fire department while trying to put out a fire. If you use a fire extinguisher on a small fire and the fire does not die down immediately, get out and call the fire department from outside.

Fiction: It's easy—anyone can use a fire extinguisher.

Facts: Only people who have been properly trained should attempt to put out a fire with a fire extinguisher.

Fiction: I'm a light sleeper and would smell a fire, even if I were asleep.

Facts: Smoke contains toxic substances/poisons that can put you into a deeper sleep. That's why for new homes, interconnected smoke alarms are required on every level of the home, outside each sleeping area, and inside each bedroom. Although this approach is ideal for all homes, as a minimum, existing homes should have smoke alarms on every level and outside each sleeping area. The best advice is: In case of fire, get out and, once outside, call the fire department right away from a neighbor's home, cell phone, or public pay phone.

Fiction: If one fire sprinkler goes off, they all will go off.

Facts: Fire sprinkler heads operate independently and are triggered individually by the heat of a fire.



