

# Cooperative Extension Service



## Residential Fire Safety

University of Arkansas, United States Department of Agriculture, and County Governments Cooperating

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Each year residential fires claim approximately 5,000 lives in the United States. Usually more than 60 Arkansans are among this number. Most home fires start between midnight and 6 a.m. when residents are asleep and least prepared to survive a fire.

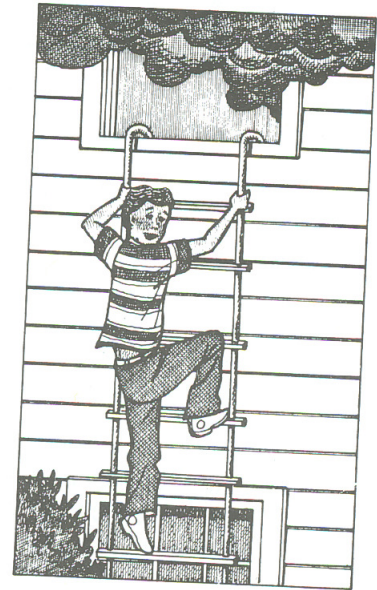
Most home fires start where they are likely to block your usual hall/stairway route. Your normal escape path can quickly become a death trap when you open your bedroom door. Fires occur in homes in this frequency: (1) living room - 37 percent, (2) kitchen - 22 percent, (3) basement - 14 percent, (4) bedrooms - 13 percent, and (5) other - 14 percent.

Fire experts estimate that most fires could be prevented if families were aware of common fire hazards in homes. They also estimate that up to 60 percent of all lives could be saved if homes were equipped with smoke detectors and families had escape plans. Many localized fires could be extinguished with proper extinguishing agents on hand.

Fire hazards, early warning devices, escape plans, and fire extinguishers will be discussed in this publication.

### Common Fire Hazards

Negligence, equipment malfunction, and lack of knowledge about fire safety are usually the reasons for most accidental home fires. Most mechanical equipment, whether an electric appliance, a gas-fired furnace, or a wood heater, normally will not cause a fire



**Sixty percent of all lives could be saved if homes had smoke detectors and families had escape plans.**

when it malfunctions **IF IT IS PROPERLY INSTALLED, PROPERLY MAINTAINED, AND PROPERLY USED.** This means following the manufacturer's instructions regarding installation, care, and use of a piece of equipment.

### Electrical Fires

The basics of home fire safety start with having all homes wired in accordance with the electric code for your locality. If you live in an area where there is no code, insist that the National Electric Code be followed and the wiring be installed by a competent professional. Do not alter your home wiring unless you know what you are doing. Never bypass a fuse or circuit breaker and do not increase the size of one that is in place. Every circuit must be protected by a correctly-sized fuse.



Permanently-wired appliances such as ranges, disposals, and dishwashers should be installed following the manufacturer's instructions. Pay particular attention to clearances, fuse and wire sizes for that circuit, and electrical grounding. Portable electric appliances should be frequently inspected for abuse. Carefully inspect the cord and plug for frayed or worn insulation. Do not use extension cords for permanent outlets and never nail or staple them around doors or windows or run them under carpeting or throw rugs. Never put oversize light bulbs in light fixtures. It not only shortens bulb life, but it also overheats the fixture and may deteriorate insulation on internal wiring connections.

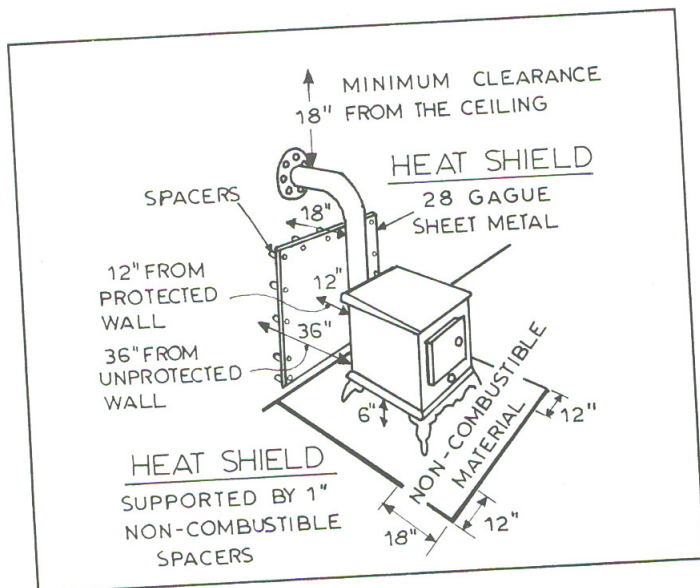
**Any extension cord or plug that gets hot to the touch is overloaded and too small for that job.**

## Heating Equipment

Home heating equipment should be inspected at least once per year. Gas furnaces require close attention, particularly heat exchangers and vents for flue gasses. Burned out heat exchangers along with rusted out burners are hazardous. Unburned gasses or carbon monoxide can accumulate in the house. Several months of dust accumulation can be hazardous especially if proper clearances are not maintained around the equipment. A safe flue system and adequate combustion air for gas equipment also ensure safety from carbon monoxide poisoning.

## Wood Heating Systems

A quality wood stove, set on a safe hearth or stove mat with proper clearance from combustible materials on all sides and top, should operate safely

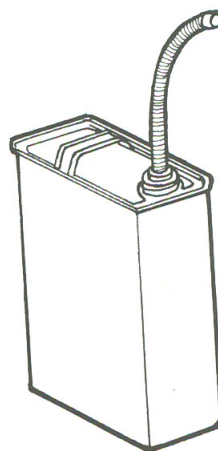


if it is connected to an approved flue that is frequently inspected and cleaned to prevent creosote accumulation. Be careful about homemade or burned out stoves. Be sure the hearth or mat is constructed so that sparks cannot burn through it. It also must be large enough to prevent sparks from popping out on the floor in front of the loading door or air vents. Clearances from combustible surfaces range from 18 to 36 inches on all sides depending on stove construction. Be sure to allow the 36-inch distance if you are not positive the stove is certified for less clearance. Clearance can be reduced by 12 inches from walls that have been protected by a noncombustible heat shield spaced at least 1 inch from the wall. Flues should be listed by Underwriters Laboratories (UL) (or similar independent testing laboratory) and should be the Class A, All Fuel type. Or, a flue can be tile-lined masonry, preferably with double brick around the tile. The connector pipe from the stove to the flue can be single wall stove pipe, not to exceed ten feet.

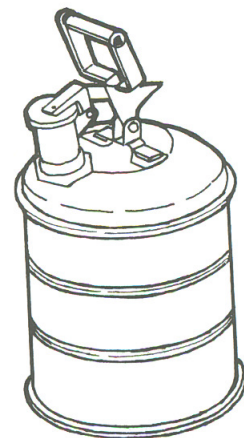
Most fires caused by wood stoves can probably be traced back to the flue fires in an inadequate or unserviceable flue. However, a flue fire can ignite a house even if the flue has been installed properly. Repetitive flue fires weaken and damage the best of flues so that they become unsafe to use.

## Flammable Liquids

Gasoline is often the most common flammable liquid around the home. It is one of the most dangerous. Homeowners may have a gallon or two of gasoline stored for use in a lawn mower, chain saw, motorcycle, etc. A gasoline container should be an approved safety can and should never be stored in the trunk of a car, inside the home, or in any storage



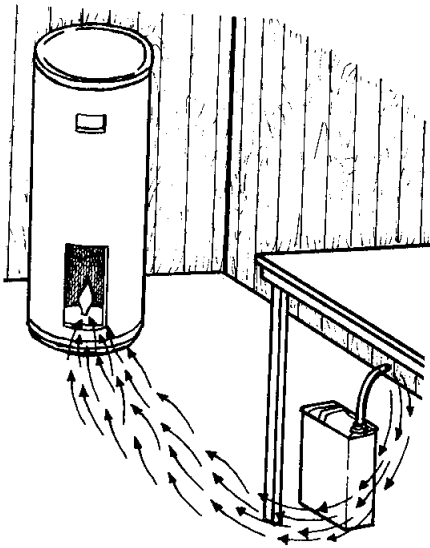
This is not a safety can.



This is a safety can.

room where an open flame (pilot light) is present. A typical hazard is a garage storage room housing a gas clothes dryer or water heater and a lawn mower

or chain saw and the gasoline can. Never store flammable liquids in rooms where gas-fired appliances are located. Remember that a closed area inside the home that houses a gas water heater should not be used for storage. Keep household chemicals, cleansers, and polishes in a well-ventilated area away from open flame and out of the reach of children.



Never use or store gasoline around ignition sources such as matches, pilot lights, or electrical equipment.

### Whole House Ventilating Fans

Energy costs have encouraged many homeowners to install "attic fans." These fans are usually mounted in the ceiling and pull air into the home and discharge it through the attic. They create a negative pressure inside the house and can pull air backwards through gas flue vents creating a fire hazard if backdraft dampers or draft hoods are not properly attached to the gas flue. If the home has gas appliances and a whole house ventilating fan is installed, check appliances to be sure cover plates and draft hoods are intact, and that the appliances have been installed with proper clearances from combustibles.

### Other Hazards

Good personal habits and housekeeping practices can also prevent fire hazards in homes. Accumulations of papers, Christmas boxes, rags, and other dry items are fire hazards. They often are kept in the worst possible places – under the stairs or in a storage room where a hot water heater is located. Smoking is the biggest personal cause of fire. Use large ashtrays and never smoke in bed or while dozing in a chair. Keep matches and lighters away

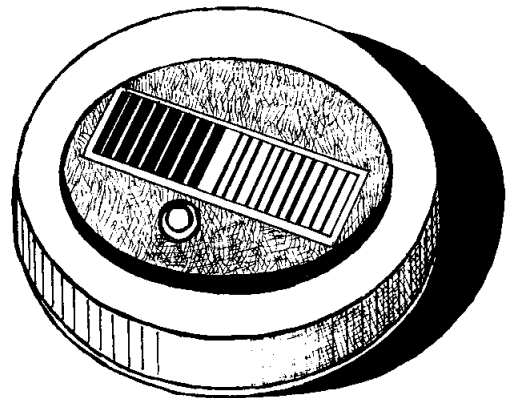
from children. Don't hang clothes over a stove to dry, and be sure curtains or towels can't blow over a flame.

Take the time to check your home for potential fire hazards. Prevent the fire if at all possible, but be prepared if a fire should strike your home.

## Early Warning Devices

Early warning devices can save lives in case of fire. Fire warning devices can be grouped into two general categories – SMOKE DETECTORS and HEAT DETECTORS. As the names imply, smoke detectors detect the presence of smoke and warn occupants, while heat detectors react in the same manner to the presence of heat. Studies show that most fires start by smoldering and that the majority of fire fatalities result from inhalation of smoke and toxic gasses. Therefore, it appears that a smoke detector is more suitable as an early warning detection device if only one device is going to be installed.

Two types of smoke detectors are (1) Ion-Chamber Detectors – This smoke detector uses a negligible radiation source to produce electrically charged molecules (ions) in the air. This sets up an electric current within the detector chamber. When smoke enters the chamber, it reduces the flow of current and sets off the alarm. (2) Photoelectric Detectors – This smoke detector uses a photoelectric bolt like the "electric eye." When smoke blocks light to the eye, current flow is reduced and thus triggers the alarm.



Smoke Detector

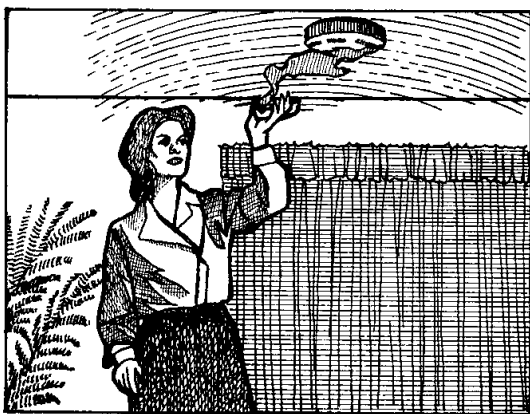
In general, photoelectric-type smoke detectors respond to small quantities of visible smoke particles. The ionization-type responds to small quantities of smoke containing particles which are invisible. Both are effective for fires in dwellings.

Smoke detectors are self-contained units that can either run on batteries or be plugged into existing electrical systems. Either kind is effective. The

batteries must be replaced periodically to maintain most units' warning capability. The most important thing is to buy a smoke detector with the label of a major testing organization and follow the installation and maintenance recommendations of the manufacturer. Make sure that smoke detectors are installed outside each bedroom area of the house. Others may be installed for additional protection.

Check your smoke detectors regularly to make sure they are ready for the real fire. For a small cost, you can protect your family from home fires.

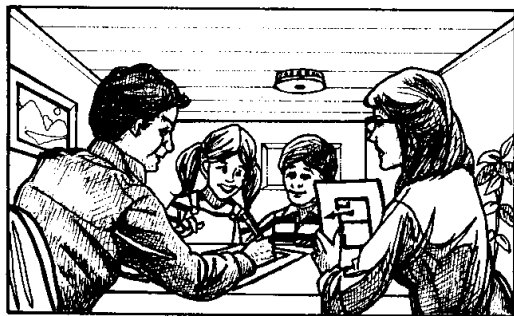
**SMOKE DETECTORS SAVE LIVES.**



**Fire Escape Plans**

The smoke detector can warn you before exits are on fire, but you have to make the best use of the time. What would you do if you awakened to the sound of your smoke detector? What would your children do?

You might do the wrong thing unless you have planned what to do if fire strikes your home. Each family member must know where to go and how to act in case of fire. Escape may not be as easy as walking down the hallway and out the front door, so you must plan for the worst possible conditions. Your life could depend on it.



Plan ahead what to do if fire strikes your home.

The basis for a fire escape plan is simple, GET OUT! Seconds count. If you have a plan, you won't waste precious moments in trying to figure out how to escape.

All family members should become acquainted with EDITH (Exit Drills In The Home). EDITH can help you efficiently and quickly plan your family's escape.

Following are the basics for a good home escape plan as outlined by experts at the National Fire Protection Association (NFPA).

- Plan at least two routes to the outside from every room in the house, especially bedrooms.
- Arrange a home fire alert signal, such as sounding a whistle to make sure everyone is awake.
- Have everyone sleep with bedroom doors closed to hold back flame, heat, and smoke. This allows occupants extra time to escape by alternate routes.
- If a window is the only alternate escape route, be sure it opens easily. Have an escape ladder if on an upper floor.
- Designate an assembling point well away from the house where all members of the household meet for roll call. Be sure everyone understands that the house must not be reentered for any purpose.
- Always notify the fire department from someone else's telephone or from a street alarm box, not from inside your own burning house.

Other key safety precautions to remember:

- (1) Get down on your hands and knees and crawl if there is smoke.
- (2) Stop, drop, and roll if your clothes catch on fire to smother the flames.



Get down on your hands and knees and crawl if there is smoke.

Plan escape routes and practice escape routes. (THIS COULD MEAN THE DIFFERENCE BETWEEN LIFE AND DEATH DURING A FIRE EMERGENCY.)



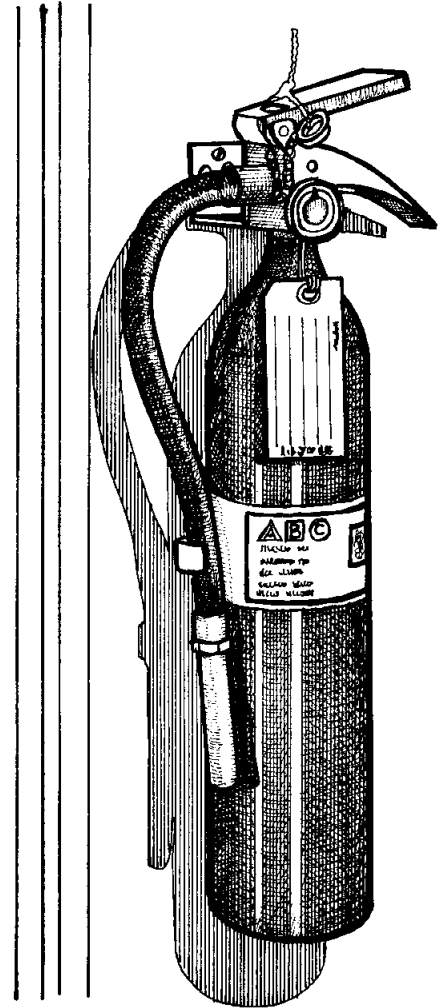
Stop, drop, and roll if your clothes catch fire.

## Fire Extinguishers

The right kind of fire extinguisher in a handy location can reduce fire losses tremendously. The most practical for household use is a multi-purpose dry chemical extinguisher labeled Class A-B-C. This means the extinguisher can be used on localized fires, smothering such material as wood, paper, cloth, flammable liquids, grease and electricity. Select a fire extinguisher which shows the label of a major testing laboratory. Follow regular maintenance and inspection procedures as recommended by the manufacturer. Take fire extinguishers to a competent fire extinguisher service establishment to be recharged after use on a fire even if only partially used in putting out a small fire.

## Protect Your Family from Home Fires

- Take some time and locate fire hazards around your home. Correct these hazards; prevent a fire if possible.
- Install smoke detectors to alert you in case of fire. Those few extra minutes or seconds may be extremely important to escape from the home.
- Have an escape plan. If the family has discussed and practiced the fire escape plan, chances are that training, rather than panic, will determine personal reaction.
- Have fire extinguishers in proper locations in the home for use on localized fires.



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