

Home Fire Protection

Many Americans believe that "fires only happen to other people - not to me and not in my home." Yet over 70% of fire deaths occur in residences, most often claiming the lives of the young, the elderly and the disadvantaged. In addition to general safety and precautions for heating sources, there are three measures you can employ to warn you and your loved ones of smoke or fire. You must decide which one(s) will provide you with the level of assurance you need in protecting your family and home from fire.

Adapted from FEMA: Mitigation for Homeowners Independent Study Course Unit 5

Smoke Detectors

In the event of a fire, a smoke detector can save your life and those of your loved ones. A working smoke detector can double your chances of survival. They are the single most important means of preventing house and apartment fire fatalities by providing an early warning signal - so you and your family can escape. Smoke detectors are one of the best safety features you can buy and install.

The smoke detectors currently in place have saved thousands of lives, but several problems exist.

1. 12% of homes without detectors have more than half of the fires.
2. It is estimated that a third of the detectors in place are not working, often due to failure to replace a worn out battery.
3. Many homes do not have as many smoke detectors as are needed to protect the occupants properly.

Where do I get smoke detectors?

- Hardware stores
- Home improvement/supply stores
- Fire Departments sometimes offer smoke detectors for little or no cost

What kind of smoke detector should I get?

- An ion type smoke detector reacts faster to open flaming fires and is usually the least expensive.
- A photoelectric type smoke detector reacts to smoldering fires and is less likely to react to cooking.

Both types provide good protection and can be used without worry. If you need more than one detector, you might get one of each.

How many do I need and where do I put them?

- The primary job of your smoke detector is to protect you from fires while you are sleeping. Locate smoke detectors between any sleeping persons and the rest of the house - outside bedrooms or sleeping areas.
- In multi-story homes, fires on a floor level without a smoke detector can grow to dangerous conditions before sufficient smoke can rise in a stairway to set off a detector on the upper floor. Based on this observation, most codes require that additional smoke detectors be located on each floor level of the home, including the basement.
- Many fatal fires begin late at night or in the early morning. A closed door provides protection from smoke on the other side, but will also prevent smoke from reaching a smoke detector. This is particularly a problem in bedrooms. If you sleep with your bedroom door closed, you should add a smoke detector in the bedroom; particularly if you smoke in the bedroom or there is a TV, air conditioner, or other major appliance in the bedroom that might start a fire. If you sleep with the bedroom door open, the detector in the hall outside will detect a fire in the bedroom or elsewhere. For extra safety, install smoke detectors both inside and outside sleeping areas.
- Do not place a smoke detector near the kitchen. Cooking fumes are likely to set it off regularly.
- Do not place a smoke detector in the garage. Car exhaust fumes will likely set it off.
- Do not place a smoke detector in an unheated attic or crawl space. It can get too hot or too cold in these spaces for the electronics to work properly.

Are smoke detectors hard to install?

- Most are very easy to install. Some will require a screwdriver while others are self-adhesive and automatically stick to the wall or ceiling where they are placed.
- Follow the manufacturers instructions because each brand is different.
- If you are uncomfortable standing on a ladder, ask a relative or friend for help.
- Some fire departments will actually install a smoke detector in your home for you. Call you local fire department (use a non-emergency phone number) if you have problems installing a smoke detector.

How should a smoke detector be installed?

- Smoke detectors are normally installed on the ceiling or high on the wall, with the top of the detector not closer than 4 inches nor further than 12 inches from the ceiling.
- Smoke detectors should be no closer than 3 feet from supply registers of forced air heating systems (that might blow on the detector preventing it from seeing smoke).
- Smoke detectors should be no closer than 3 feet from the door to a kitchen or a bathroom containing a shower (steam can set the detector off when the door is opened).
- If mounting a smoke detector on a wall, place it on an interior wall rather than an exterior wall. Temperature variations at an exterior wall can prevent smoke from getting to the detector.
- Older adults may have difficulty reaching detectors on ceilings to change batteries. If house-powered detectors are impractical, wall mounting smoke detectors 12 inches down from the ceiling should be considered.

How do I keep my smoke detector working?

- Replace the batteries at least once a year. When the battery (usually a 9-volt) needs changing, the smoke detector will begin to "chirp" every 20 seconds or so, which will

persist for a month. To avoid this nuisance, pick a day and give your detectors new batteries each year on that day. Some fire safety organizations promote "change your clocks, change your batteries," when the change is made from daylight savings time each fall.

- Some smoke detectors now on the market come with a 10-year battery. These detectors are designed to be replaced as a whole unit, thus avoiding the need for battery replacement.
- Keep your smoke detector clean. Dust and debris can interfere with their operation, so vacuum over and around your smoke detector regularly.
- Smoke detectors operated from the household electrical power do not need replacement. These types all have a "power on" light to tell you that the detector has power. However, if there were a power failure due to the weather, then the smoke detector would not have power in case there is a fire. Smoke detectors are available that run on house power but also have a battery back-up. Since the battery is not normally in use, such back-up batteries will last about 6 years before they need replacing. They will begin to "chirp" to let you know it is time to be replaced.

Will I be able to hear my detectors?

- This is the ultimate test of a smoke detector. Most smoke detectors use a high pitched electronic horn that may be difficult for some people to hear. Test detectors before installation to make sure that all members of a household can hear them clearly.
- House-powered detectors can be wired together so that when one detector activates, all interconnected detectors will go off.
- For homes with battery-powered detectors, there are models that contain a radio transmitter that will activate a receiver that can be placed in the bedroom. An advantage to this type of smoke detector is that when you go on vacation, you can give the receiver to a neighbor who could call the fire department if a fire starts. Of course, these are a lot more expensive than the simple smoke detectors.
- People with hearing impairments can get smoke detectors with bright, flashing lights or vibrating signals. To awaken you, the light needs to be over the head of the bed and should be rated at least 110 candela. Such bright lights must be powered from house power, so if it battery operated, it is probably not bright enough to use in the bedroom.

What if the alarm goes off while I'm cooking?

- Smoke detectors are highly reliable but can sometimes be fooled by cooking or steam. Do not disable the smoke detector if it alarms due to cooking or other non-fire causes.
- Clear the air by waving a towel near the detector, leaving the batteries in place.
- The detector may need to be moved a few feet to a new position where it is not in the way of cooking vapors or steam.
- Another non-fire cause could be that it has insects in it, so you should take it down and vacuum it out.
- If it continues to "act up," simply replace it with a new detector. They are too inexpensive to fool with and risk the lives of those living in your household.

How long will my smoke detector last?

- Even if a smoke detector seems to be working, it should be replaced about every 8 to 10 years. Like most electrical devices, smoke detectors will wear out.

- Write your purchase date on the inside of the smoke detector cover. That way, you'll know when to replace it. Always follow the manufacturer's recommendations for replacement.
- Even though prices of today's smoke detectors are many times lower than you might have paid some years ago, the detectors themselves are generally more reliable. Thus, it is usually not worth keeping an old detector rather than buying a replacement.

What about testing and maintenance?

- Test each smoke detector at least once a month. All smoke detectors have a test button that you can push to check out the entire detector. If the testing mechanism does not work properly, the detector should be replaced immediately. **NEVER USE AN OPEN FLAME TO TEST A DETECTOR.**
- Those who would have difficulty reaching their detectors to test them can get a detector on which the test feature can be activated by shining a flashlight on it. Another brand has an automatic test that activates at the same time and day, once a week.
- Smoke detectors need no other maintenance than that already discussed. Be sure to read the homeowner booklet that comes with your smoke detector so that you understand what is required by that particular model. Keep this booklet in your Family Disaster Plan notebook for handy reference.

Residential Sprinklers

Fire sprinklers have been used to protect commercial buildings for more than 100 years. More recently, a new type of sprinkler system has been developed for residences that offers an unprecedented level of fire safety for both lives and property.

Sprinklers are affordable and can increase property value and lower insurance rates. New technology will allow sprinklers to be connected directly to your standard home plumbing system. Individual sprinkler heads are only activated where fire strikes. Consider a home sprinkler system whenever renovating, buying or building a house. Contact your local fire department if you need more information.

How much do residential sprinklers cost?

- The cost of a sprinkler system is about \$1.50 per square foot in a new home. For a 1000 square foot home this would be \$1500.
- The cost of a sprinkler system in an existing home ranges from \$2.50 to \$5 per square foot depending on how difficult it is to run the pipes. This assumes the availability of adequate and reliable water supply.

How do residential sprinklers differ from commercial sprinklers?

- The sprinklers that you find in hotels, offices and other commercial buildings are there primarily to protect property and to protect people who are not in the immediate vicinity of the fire's point of origin.

- These sprinklers use larger quantities of water because fires in these types of buildings can involve large fuel loads.
- Residential sprinkler systems use a fast acting element to allow the sprinkler to activate when the fire is still in its very early stages of development.
- No matter what type of building sprinklers are in, inadvertent operation of the sprinkler system is extremely unlikely.
- Smaller fuel loads coupled with activation when the fire is smaller allow residential sprinklers to require much less water, so much so that the typical home's domestic water supply is usually sufficient.

Why are sprinklers so powerful?

- As soon as it activates, the sprinkler sprays water on the burning object and puts out or controls the fire.
- The sprinkler system not only stops the growth of the fire, it also acts directly on the potentially deadly effect of the fire, for example, by lowering the air temperature.

What about water damage?

- Unlike fires you often see on TV and in the movies, in a real fire, only one or two sprinklers near a fire activate and discharge water.
- Residential sprinklers discharge water at a low rate, so your home will not be flooded.
- After the fire is out, the supply valve can be simply shut off - but never do this yourself. Always call the fire department and let the professionals determine when it is safe to shut off the water.

Do you need smoke detectors too?

- YES!
- The combination of smoke detectors and sprinklers in your home greatly increase your chances of surviving a fire.
- Smoke detectors will tend to react first, providing extra time to escape.
- In some fires, sufficient smoke can be released to impair judgment or even threaten persons with pre-existing medical problems before enough heat is released to set off the sprinkler system.
- Smoke detectors provide early warning of fires that may start out of range of the sprinklers, such as within a wall space.

Fire Alarms

A home fire alarm system is usually part of a total security system providing burglary protection in addition to fire protection. Such a system supervises doors and windows and spaces within the home for break-in and may also provide monitoring services by dialing your telephone to report a fire or intrusion to a security office, where it will be reported to your local police or fire department.

Due to their relatively high cost, these systems are generally found only in larger homes. The

system can cost \$1000 or more to install, with 24-hour monitoring service adding \$15 to \$20 per month.

What are the components of the system?

- A central control panel to which smoke and heat detectors are connected, along with bells or horns that are activated when the system triggers an alarm.
- The control panel operates from house power but also usually contains an emergency battery that can operate the system for about 24 hours during a power outage.
- Sensors associated with the burglary functions connect to doors and windows or monitor rooms for motion or body heat.
- Fire alarm systems that provide remote monitoring services can also be used to provide medical alert services. Here, a person with health problems who lives alone carries a radio transmitter that can trigger the system in case the need assistance.
- Signals received at the monitoring station are identified by type (fire, burglary, medical alert) so that the proper response can be made.

Why have a residential fire alarm system?

- Increased reliability and the ability to place detectors and bells exactly where needed.
- The cost of adding fire alarm features to a residential burglary system is relatively small.
- They are the only way to obtain remote monitoring services. This becomes important in cases where family members may not be capable of escaping from a fire without assistance.
- A feature of most monitoring services is the ability to keep special information on the residence that comes up on a computer when an alarm is received from that home. Thus, if there is a disabled person in the home who needs special assistance, this fact will be known to the operator and can be passed along to the fire department when they are called.