**HOME SAFETY: SMOKE ALARMS**

Smoke alarms are one of the simplest and most efficient ways of protecting a home and household members from severe injury or death caused by a home fire. The U.S. Department of Housing and Urban Development (HUD) estimates that a home fire occurs every 66 seconds in the United States. The National Fire Protection Association (NFPA) estimates that having a functioning home smoke alarm in the home reduces by 50 percent the chances of dying from a fire. Unfortunately, approximately one-third of all smoke alarms placed in homes do not function properly.

**Types of Smoke Alarms**

The two common types of smoke alarms are ionization and photoelectric. An ionization detector is the most common and uses ionization sensors to detect smoke. Ionization detectors are very sensitive and are designed to detect hot and fast-moving fires that produce minimal smoke. Photoelectric detectors detect the presence of visible particulars in the air. Inside the detector a light emitting diode (LED) directs a narrow beam of infrared light across the detection chamber. When smoke or particles enter the chamber, the infrared light beam is scattered. When a preset amount of light is detected, the detector alarm sounds. Photoelectric detectors are not as sensitive as ionization detectors and are designed to detect cool or slow-moving fires that produce a lot of smoke.

**Placing Smoke Alarms**

For existing homes, smoke alarms usually are required on every habitable level and within the vicinity of all bedrooms. In new construction, the minimum requirements are much greater. All smoke alarms must be interconnected and hooked directly to the electrical wiring and are required inside each bedroom. Smoke alarms are typically not placed in kitchens and bathrooms since the steam may set them off.

Where a smoke alarm is positioned in a home varies depending on the size and layout of the home and where household members sleep at night. Since the primary job of the smoke alarm is to wake up sleeping people, a smoke alarm should be positioned as close as possible to the bedrooms or other places where people frequently sleep. If sleeping areas are separated, each area should have its own detector.

If a person generally sleeps with the bedroom door closed or smokes in bed, a smoke alarm should be placed in the bedroom. A closed bedroom door may offer some protection from fire and smoke coming from outside the room but a smoke alarm outside the bedroom may be difficult to hear. In a multiple-level home with bedrooms upstairs, a smoke alarm should be placed near the top of the stairs. If the home contains a basement, a smoke alarm should be placed on the basement ceiling near the steps to the rest of the house. A smoke alarm should not be placed within six inches of where a wall and ceiling meet or near heating and cooling ducts. Smoke alarms placed in these locations may not receive the flow of smoke required to activate the alarm.

**Developing an Escape Plan**

Someone in every household should develop an escape plan in case of fire and practice the plan with all members of the home. When developing an escape plan, consider the following:

* Draw a floor plan of the home that identifies at least two methods of escape from every room.
* Practice evacuating the home while blindfolded since the amount of smoke generated by a house fire will impair vision.
* Practice staying low to the ground while escaping.
* Practice stopping, dropping to the ground, and rolling in case clothing catches on fire.
* Identify a safe meeting place outside the home.
* Practice alerting other members of the household.

**Safety Tips**

Along with the development of an escape plan, a member of the household should post emergency telephone numbers near the telephone. However, in the case of a home fire, household members should leave the house first and then place the emergency call from a safe location. A person in a multiple-level home should purchase collapsible ladders and have each household member practice using them. A-B-C type fire extinguishers should be available in the home and each household member should know how to use them. Combustible materials should not be stored in closed areas or near a heat source.

When cooking in the home, keep the stove area clean and clear of combustibles such as bags and boxes and other appliances. If a fire does occur in the kitchen, put a lid over the burning pan or use a fire extinguisher. Never pour water on grease fires.

Have a certified electrician check all electrical wiring in the house and replace any frayed or cracked wiring. Make sure no wiring is located under rugs, over nails, or in high traffic areas and do not overload outlets or extension cords. All outlets should have cover plates and no wiring should be exposed. A homeowner should only purchase appliances and electrical devices that have a label indicating that they have been inspected by a testing laboratory such as Underwriter’s Laboratories (UL) or Factory Mutual (FM).

For additional safe tips, contact the local fire department, the Office of the State Fire Commissioner, or a chapter of the American Red Cross.

**Taking Care of Smoke Alarms**

A member of the household should establish a system for monitoring and taking care of all smoke alarms in the home. Smoke alarms require regular testing and battery and lamp replacements.

**Monthly Testing:** Once a month, a member of the household should test all smoke alarms in the home. To test an ionization detector, hold a burning candle approximately six inches under the detector. To test a photoelectric detector, extinguish the candle flame and let visible smoke draft into the detector. The smoke alarm’s alarm should sound within twenty seconds. Some detectors have a more refined test system that simulates the presence of smoke. Check the smoke alarm package to determine if the smoke alarm has this feature.

**Cleaning Detectors:** Dust and cobwebs can interfere with the operation of a smoke alarm so detectors should be cleaned on a regular basis and according to the manufacturer’s instructions. Do not remove the detector’s cover and use a standard vacuum cleaner hose and attachment when cleaning the detector.

**Replacing Batteries and Lamps:** If the battery power is running low in a smoke alarm, the detector emits a low-power warning sound. When this happens, remove the battery and replace it with a new one. Replace batteries according to the manufacturer’s instructions. Replace batteries immediately when moving into a new home. A photoelectric detector contains a lamp that needs to be replaced on a periodic basis. Keep a supply of replacement lamps on hand to replace in the detector as needed.