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## Proper Placement, Testing, Periodic Maintenance, Life Expectancies and Replacement of Smoke & Carbon Monoxide Detectors and Heat Sensors

Smoke and heat detectors provide vital early warning of a fire danger and save lives. Smoke alarms are now code in all Colorado municipalities. Carbon monoxide poisoning is a real hazard in any home that burns any sort of combustible fuel. But there are some important things to follow when installing, testing, maintaining and replacing these units.

### SMOKE DETECTORS

According to the National Fire Protection Association (NFPA), while 94 percent of U.S. homes have smoke detectors, more than one-third of these alarms do not work due to dead, missing or disconnected batteries, or that the detector is past its useful design life. Nearly half of the nation's fire deaths occur in the six percent of homes that do not have smoke detectors, according to NFPA research.

According to the Consumer Product Safety Commission, the risk of dying in homes without smoke detectors is twice as high as it is in homes that have working smoke detectors.

### Smoke Detector Tips

- Smoke detectors should be installed in every room of the house including basements and finished attics, in each bedroom and hallways outside of every sleeping area, and at the top and bottom of stairways. In a fire, every second matters. The closer a detectors alarm is to a fire's origin, the earlier it will sound and the more time a person has to get out safely.
- Smoke detectors should be interconnected, that being if one senses a fire event, it sends a signal to all of the other alarms in the home for them to sound. This way you have the most amount of time to escape from the home. Newer homes have AC wired interconnected detectors. Older homes should consider installing wireless interconnected alarms instead of stand-alone detectors.
- Detectors should be replaced every 10 years. Detectors monitor the home every minute of every day and their lifespan is not infinite. If you do not know how old your smoke detector is, you should replace it.
- Test your smoke detectorss per manufacturer's instructions and replace the batteries as required.

- Just like if you have a stuffy nose, your detector can't work properly if there is something keeping the smoke from getting to the internal sensors. You should clean all of the smoke detectors annually with a shop vacuum with a brush attachment.
- Make sure everyone knows what the smoke detector sounds like.
- Do not disable a smoke detector in nuisance situations. Do not "borrow" smoke detector batteries for other uses such as toys or radios. Instead, consider replacing the detector with a newer model with a "hush" feature.
- If you have been away from your home for an extended period of time, you should test all of the smoke detectors to ensure that the battery has not gone dead.
- Install all new smoke detectors and batteries when you move into a new home, unless the seller/renter can certify that they are new.

### **Different Smoke Alarm Technologies**

There are two types of smoke detector sensor technology: photoelectric and ionization.

**Ionization Detectors**– These detectors have a high sensitivity to fires that produce small smoke particles coming from fast-burning, flaming fires that can burn for some time without generating much smoke. These detectors are widely used for general applications to detect flaming fire conditions, such as paper fires and those fed by flammable fluids.

**Photoelectric Detectors** - These are designed specifically to detect smoldering smoke conditions, such as bedding and upholstery fires that often kill sleepers. If these detectors are placed too close to a source of water vapor or droplets, they can be falsely detect a fire, so it is best to use ionization alarms near kitchens or bathrooms.

For maximum protection, install detectors with both photoelectric and ionization technology, which may provide the earliest opportunity of detecting either smoldering or fast flaming fires.

### **HEAT DETECTORS**

Heat detectors offer protection in areas such as kitchens, saunas and garages where the environment is dirty, moist or smoky under normal conditions or where there is a high presence of airborne particles such as water vapor or exhaust fumes. However, it must be recognized that any heat detector will respond only when a fire is well-established and generating a high heat output.

There are two types of heat detectors available:

- **Rate-Of-Rise Heat Detectors** are designed to sense a rapid increase in the temperature and are good for use in environments where the ambient

temperature is normal, such as domestic kitchens, workshops and refuse storage areas.

- Fixed Temperature Heat Detectors will signal an alarm once the temperature exceeds a pre-defined level. This type of heat detector is effective in environments with fluctuating temperatures (such as garages and boiler rooms) or where the ambient temperature is unusually high (for example in a foundry or kiln).

Heat Detectors need to be replaced every 10 years.

## **INSTALLATION OF SMOKE & HEAT DETECTORS**

- Smoke and heat detectors should never be installed on a ceiling within 4" of a side wall corner. The same goes for mounting on a wall in that the alarm should never be installed within 4" of the top edge. This area is a dead air space. The smoke or heat may not reach these until the fire has been burning for a long time.
- It is best for the detector to be mounted on the ceiling near the center of a room, although it is acceptable for the alarm to be mounted on a wall. If it is mounted on a wall, it should not be lower than 12" from the top edge. It should also be mounted away from an air vent so that smoke will not be pushed away from the detector.
- If the detector is being installed in a room with an angled ceiling, the detector should be positioned within three feet horizontally of the peak.
- For long rooms or hallways, a detector should be installed every 30 feet.
- Do not install detectors:
  - In garages.
  - In an area where the temperature may get lower than 40° F or higher than 100° F.
  - In dusty areas. Dust particles may cause nuisance alarms or may prevent the alarm from detecting a fire.
  - In very humid areas. Moisture or steam can cause nuisance alarms.
  - In insect infested areas. Spiders may build webs inside the detector preventing air and smoke from flowing over the sensor.
  - Within 3 feet of a door to a kitchen, bathroom containing a shower or tub, force air ducts for heating or cooling, ceiling fans, whole house fans or other high flow areas.
  - Near fluorescent lights. The electronic "noise" from these may cause nuisance alarms.

## **CARBON MONOXIDE DETECTORS**

According to the National Safety Council, 200-300 unintentional-injury deaths a year are due to carbon monoxide poisoning. According to the Home Safety Council, only about 29 percent of homes in the United States have carbon monoxide detectors. It is relatively easy to install one of these.

## **Carbon Monoxide Tips**

- Install at least one smoke detector and CO alarm on every level of your home and near sleeping areas.
- For homes with multiple furnaces, a carbon monoxide detector should be installed to monitor each furnace zone.
- Use carbon monoxide detectors that are plugged into an AC outlet, with a battery as a power backup (in case the circuit breaker for the outlet is tripped) and has a digital display to alert you to increasing levels of carbon monoxide.
- Replace the batteries and test the detectors according to the manufacturer's instructions.
- Annually clean the vents of the detector using a shop vacuum with a brush attachments.
- Annually have a trained professional inspect, clean and tune-up central heating system and repair leaks
- Keep gas appliances properly adjusted and serviced
- Avoid using a cooking stove to heat your home
- Never use a gas grill inside your home or in a closed garage

## **CHANGING FURNACE THERMOSTAT BATTERIES**

As part of your annually safety regimen, you should also change the batteries in your furnace thermostats. There have been many homes where the thermostat did not work when the owners were away and their pipes froze, causing a lot of damage when the pipes thaw.