



# CENTRAL YORK FIRE SERVICES



## Smoke Alarms

Ontario law requires that working smoke alarms be located on every storey of the home and outside all sleeping areas.

The law applies to all single-family, semi-detached and town homes, whether owned or rented. It is also recommended that smoke alarms be checked regularly and replaced in accordance with manufacturers recommendations.

The fine for not complying with the [Ontario Fire Code](#) smoke alarm requirements can result in a ticket for \$235 or a fine of up to \$50,000 for homeowners, tenants and individual landlords.

As part of our Emergency Preparedness initiatives, the Town of Newmarket and Central York Fire Services recommends that everyone in your household knows what to do in case of an emergency such as a fire. The best way to prepare your family is to develop a [home emergency escape plan](#) and practice it with the entire household.

For more information on the new legislation, fire safety and emergency preparedness, please visit the links below:

- [www.ofm.gov.on.ca](http://www.ofm.gov.on.ca)

Most fatal fires happen at night when people are sleeping. A working smoke alarm can detect smoke and sound to alert you.

Because smoke rises, it is recommended that you place the alarms on the ceiling. Avoid installing smoke alarms in or adjacent to kitchens and bathrooms, or near air vents, windows and ceiling fans.

### Test your alarm

Test your smoke alarms monthly by pressing the test button.

### Replace batteries regularly

Install a new battery in each alarm once a year. When warning beeps sound, replace your battery immediately. Never wait. A good way to remember is to change your batteries when you change your clocks' in the Spring and Fall.

## **Cleaning you smoke alarm**

Dust can damage your detector's sensitivity. Most units need to be cleaned at least once a year, just use your vacuum cleaner to clean dust out of unit. Read the manufacturers instructions manual.

## **Types of Smoke Alarms**

There are two main types of smoke detectors: ionization detectors and photoelectric detectors. A smoke alarm uses one or both methods, sometimes plus a heat detector, to warn of a fire. The devices may be powered by a 9-volt battery, lithium battery, or 120-volt house wiring.

### **Ionization Detectors**

Ionization detectors have an ionization chamber and a source of ionizing radiation. The source of ionizing radiation is a minute quantity of americium-241 (perhaps 1/5000th of a gram), which is a source of alpha particles (helium nuclei). The ionization chamber consists of two plates separated by about a centimetre. The battery applies a voltage to the plates, charging one plate positive and the other plate negative. Alpha particles constantly released by the americium knock electrons off of the atoms in the air, ionizing the oxygen and nitrogen atoms in the chamber. The positively-charged oxygen and nitrogen atoms are attracted to the negative plate and the electrons are attracted to the positive plate, generating a small, continuous electric current. When smoke enters the ionization chamber, the smoke particles attach to the ions and neutralize them, so they do not reach the plate. The drop in current between the plates triggers the alarm.

### **Photoelectric Detectors**

In one type of photoelectric device, smoke can block a light beam. In this case, the reduction in light reaching a photocell sets off the alarm. In the most common type of photoelectric unit, however, light is scattered by smoke particles onto a photocell, initiating an alarm. In this type of detector there is a T-shaped chamber with a light-emitting diode (LED) that shoots a beam of light across the horizontal bar of the T. A photocell, positioned at the bottom of the vertical base of the T, generates a current when it is exposed to light. Under smoke-free conditions, the light beam crosses the top of the T in an uninterrupted straight line, not striking the photocell positioned at a right angle below the beam. When smoke is present, the light is scattered by smoke particles, and some of the light is directed down the vertical part of the T to strike the photocell. When sufficient light hits the cell, the current triggers the alarm.

### **Which Method is Better?**

Both ionization and photoelectric detectors are effective smoke sensors. Both types of smoke detectors must pass the same test to be certified as ULC smoke detectors. Ionization detectors respond more quickly to flaming fires with smaller combustion particles; photoelectric detectors respond more quickly to smouldering fires. In either type of detector, steam or high humidity can lead to condensation on the circuit board and sensor, causing the alarm to sound. Ionization detectors are less expensive than photoelectric detectors, but some users purposely disable them because they are more likely to sound an alarm from normal cooking due to their sensitivity to minute smoke particles. However, ionization detectors have a degree of built-in security not inherent to photoelectric detectors. When the battery starts to fail in an ionization detector, the ion current falls and the alarm sounds, warning that it is time to change the battery before the detector becomes ineffective. Back-up batteries may be used for photoelectric detectors.

**For more information, please call Central York Fire Services at 905-895-9222**