

## Smoke Alarms

- A **smoke alarm** combines smoke detection and alarm sounding together in one unit and is used in residential dwellings and sleeping areas. A smoke detector does not have a built in alarm but is used generally to activate a building fire alarm system. All smoke alarms in Canada must meet the Underwriters Laboratories of Canada (ULC) standard, CAN/ULC S-531 "Smoke Alarms."
- An **ionization type smoke alarm** uses a small amount of radioactive material to ionize air in the sensing chamber. As a result, the chamber becomes conductive permitting current to flow between two charged electrodes. When smoke particles enter the chamber, the conductivity of the chamber air decreases. When this reduction in conductivity reaches a predetermined level, the alarm is set off. Most smoke alarms in use are of this type. Because these types of detectors operate on the "ionization" principle, they are subject to false alarms from high moisture/steam, toasters, cooking appliances, etc., which do not emit smoke but do interrupt the ionization of air. This type of alarm is faster at detecting a flaming fire.
- A **photoelectric type smoke alarm** consists of a light emitting diode and a light sensitive sensor in the sensing chamber. The presence of suspended smoke particles in the chamber scatters the light beam. This scattered light is detected and sets off the alarm. This type of alarm is faster at detecting a smouldering type of fire which gives off large quantities of smoke.

Information provided by the National Fire Protection Association reveals that over 70% of fires that occur in residential homes, originate as a flaming fire, such as from children playing with matches or lighters.

The two types operate on different principles and therefore may respond differently to various conditions. Photoelectric smoke alarms may respond slightly faster to smouldering fires, while ionization alarms respond slightly faster to flaming fires. Both alarms will detect all types of fires that commonly occur in homes. To achieve ULC listing, both alarms must be tested in the same manner and meet the same requirements of the standard.

Smoke alarms are required in all new dwelling units and sleeping rooms not within dwelling units, in accordance with Article 3.2.4.21 and Subsection 9.10.18 of the National Building Code of Canada 1995. Smoke alarms are also required on every floor level and must be interconnected. They must be hardwired unless the building is not provided with electric power.

The National Fire Code of Canada 1995 requires smoke alarms to be installed in or adjacent to all sleeping areas of existing buildings, but permits them to be battery operated alarms and does not require them to be interconnected.

Smoke alarms are provided with test features to allow regular testing of the unit. Manufacturers also supply instructions as to how to test their units properly.

Dust and grime can affect the operation of a smoke alarm. If necessary, instructions for care and maintenance must be posted in a readily available location. If a smoke alarm is more than ten years old, it likely should be replaced.