



# Fire Prevention Canada

Working with the private and public sectors to achieve  
fire safety through education

## SMOKE KILLS

Hundreds of people die in residential fires in Canada every year. In many fires that have been extinguished in their early stages, people have been found dead of smoke inhalation without having suffered burns. It has been conservatively estimated that many of these lives could have been saved by the installation of properly functioning smoke alarms. Although these devices are no substitute for carefully planned fire prevention measures, they are invaluable to providing an early warning when fire strikes.

**Smoke is the cause of the majority of fire-related deaths.** Hot flames are low on the list of killers during a fire. A smouldering fire may go undetected for hours, especially while people are asleep. In addition to deadly carbon monoxide, smoke carries poisons such as hydrogen cyanide and irritants such as formaldehyde and acetic acid. Added to this lethal potion are other toxic substances that come from the burning of synthetic materials commonly found in the home, especially those emitted from plastics and foams. Oxides of nitrogen, sulphur dioxide and ammonia are just a few examples. These agents can have a lethal effect before a sleeper is even disturbed; especially when one considers that the fire itself consumes life-sustaining oxygen.

Normally, air is made-up of about 21 percent oxygen. When it falls below the 17 percent level, thinking and coordination become difficult. Below 16 percent, a person's behaviour turns irrational, hindering escape efforts. Breathing becomes impossible when oxygen levels fall below 6 percent.

**Super-heated air and gases rise quickly and produce what is known as a "hot" fire.** Temperatures above 370°C (700°F) are common in a "hot" fire. At such high temperatures, unconsciousness and death can occur within minutes. Bedrooms located in the upper floors of residences are frequently subjected to these conditions in the advanced stages of a fire.