



**RISK RESILIENT**

Fire Alarm Systems

There's no doubt that all commercial businesses should prioritize fire safety. The devastating impacts of a fire are too great not to. However, even when precautions are in place, fires unfortunately still happen.

**Of the 110,811 reported fires between 2010 and 2019,**

**5%** of loss fires occurred within industrial workplaces.

**This was followed by businesses where people assemble (3%), mercantile industries (2%), and business and personal services sectors (2%).<sup>1</sup>**

Statistics from the Ontario Ministry of the Solicitor General (OMSG)



Although there are no guarantees a fire will never occur, a fire alarm system in the workplace can save lives and prevent losses. Fire alarms are designed to detect a fire before it gets out of control and alert people of the threat, thereby helping them make it to safety.

In addition to preventing injuries and loss of life, early fire detection can reduce the impact of a fire on the business itself. For example, when monitored offsite, a fire alarm can generate a quick emergency response from the fire department, which can mitigate property damage.

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## Know the Risks

Fire alarm systems aren't foolproof: Like any other equipment, they can break down and fail.

There are many factors that can impact the effectiveness of a fire alarm system, including maintenance issues like dust and dirt build-up; environmental exposures to temperature, humidity and voltage; system aging; and improper installation. These factors can pose a serious risk to the integrity of a fire alarm system and require close attention.<sup>2</sup>

When alarms fail to work properly and cause false alarms, it ties up the limited resources and personnel of emergency services that have to investigate, and as a result, they may not be able to respond to real emergencies.<sup>3</sup>

Another risk of false alarms is that people often become desensitized to fire alarms when they go off frequently. This can create a situation where people don't evacuate when there is a real emergency. False alarms may also be financially costly for a business, as many jurisdictions charge fees for repeated false alarms.<sup>4</sup>

Proper installation and maintenance of fire alarms is not only critical for people's safety, it's also the law. The National Canadian Fire Alarm Code and Standards carefully detail regulations regarding the installation and maintenance of all smoke detectors and fire alarm systems for commercial buildings. Failure to comply can result in heavy fines and legal consequences.<sup>5</sup>

Companies can also face liability issues due to improper maintenance of fire alarm systems in the event occupants are injured or surrounding properties are damaged or destroyed.<sup>6</sup>

Another potential cost stems from unwanted activation of fire-suppression systems. For example, in addition to downtime, unwanted activation of a water-based system can cause significant water damage.<sup>7</sup>

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## Be Prepared

The first step is selecting the right fire alarm system for your business. This will depend on the types of fire that can occur within your business and the different applications and environments in which it's needed. Some factors to consider are the nature and quantities of combustible materials present and their ease of ignition, as well as environmental factors such as temperature and humidity, cleanliness and type of work processes done in the area.<sup>8</sup>

### Smoke Detectors

Smoke detectors are a fundamental component of any comprehensive fire alarm system. **There are two primary types of sensor technology used to detect smoke:**



- 1 Ionization detectors** contain a chamber with two plates that generate a small, continuous electric current. When smoke enters the ionization chamber, the particles disrupt the current flow, which triggers the alarm.
- 2 Photoelectric detectors** (also called optical detectors) use a light beam and receptor (photocell). When smoke particles travel between the light and receptor, the change of light intensity on the photocell sensor triggers the alarm.



**Fire safety experts and the National Fire Protection Agency (NFPA) recommend installing combination alarms, which either detect both heat and smoke, or use both the ionization and photoelectric smoke sensing methods. Some combination alarms also include a carbon monoxide detection capability.**

All commercial buildings should carry out a Fire Risk Assessment (FRA) and continually update their FRA as their business operations change. The FRA establishes the building's fire alarm category, which determines what types of fire detection devices are required and where they should be installed.

National and provincial building codes require the installation of smoke detectors and fire alarm systems to current CAN/ULC standards. Choose smoke detectors with a label from a recognized testing laboratory (UL/ULC).

## Fire Alarm Maintenance

Once installed, fire alarm systems should be checked, cleaned and tested on a regular basis. This will help ensure that the alarm sounds only when there is a real threat. And when preventative measures such as proper installation and maintenance are in place, it can help protect material assets (such as supplies and inventory) from damage, loss, and the cost of repair or replacement.<sup>9</sup>



**Preventative maintenance checks can be organized into three categories: inspection, testing, and cleaning.** Regular inspection recognizes potential problems before they become critical, testing ensures the system is functioning correctly, and cleaning keeps the sensors operating smoothly.<sup>10</sup>

A fire alarm system is just one component of a comprehensive fire safety strategy, but it's a critical one. Being vigilant about your system can help protect your property and material goods, as well as your most valuable asset: your people.

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