

Proposed Change 2257

Code Reference(s):	NBC25 Div.B 6.9.3. (first printing) NBC25 Div.B 9.32.3.9. (first printing)
Subject:	Fire Alarm and Detection Systems
Title:	Carbon Monoxide Detectors Installed in Lieu of Carbon Monoxide Alarms
Description:	This proposed change introduces requirements for carbon monoxide detectors that are connected to a building fire alarm system in lieu of carbon monoxide alarms.
Related Code Change Request(s):	CCR 1286, CCR 1288

This change could potentially affect the following topic areas:

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| ☐ Division A | ☒ Division B |
| ☐ Division C | ☐ Design and Construction |
| ☐ Building operations | ☐ Housing |
| ☒ Small Buildings | ☒ Large Buildings |
| ☒ Fire Protection | ☐ Occupant safety in use |
| ☐ Accessibility | ☐ Structural Requirements |
| ☐ Building Envelope | ☐ Energy Efficiency |
| ☐ Heating, Ventilating and Air Conditioning | ☐ Plumbing |
| | ☐ Construction and Demolition Sites |

Problem

Currently, the National Building Code of Canada (NBC) does not permit the connection of carbon monoxide (CO) detectors to a building fire alarm system in lieu of CO alarms. However, the installation and use of CO detectors would enable the monitoring of CO levels in real time, which is an added benefit compared to relying on alarms that sound only when CO levels become unsafe.

Justification

Recently, CAN/ULC 588:2024A, "Gas and Vapour Detectors and Sensors, Including Accessories," was published. Prior to the publication of this National Standard of Canada, there were no standards covering CO detectors in Canada, only CO alarms.

This proposed change updates Subsection 6.9.3. and Article 9.32.3.9. of the NBC to allow CO detectors that conform to CAN/ULC 588 to be installed in buildings in lieu of CO alarms.

CO detectors that conform to CAN/ULC 588 must be able to connect to a power source, signaling circuits and optional remote control circuits. Additional features, such as a heat detector, heat sensor, smoke detector, smoke sensor, or audible signaling appliance/device, are permitted to be incorporated into the toxic combustible gas and vapour detector assembly. However, these features must be evaluated in accordance with their respective applicable standards.

CO detectors can be used in a variety of applications, and this proposed change would give designers of buildings with a fire alarm system the option to install CO detectors in lieu of CO alarms.

PROPOSED CHANGE

NBC25 Div.B 6.9.3. (first printing)

[6.9.3.] 6.9.3. Carbon Monoxide Alarms

[6.9.3.1.] 6.9.3.1. Carbon Monoxide Alarms

- [1] 1)** This Article applies to every *building* that contains a *residential occupancy*, a *care occupancy* with individual *suites*, or a *care occupancy* containing sleeping rooms not within a *suite*, and that also contains
- [a] a) a fuel-burning *appliance*, or
 - [b] b) a *storage garage*.
- [2] 2)** Carbon monoxide (CO) alarms required by this Article shall
- [a] a) conform to CSA 6.19, "Residential carbon monoxide alarming devices",
 - [b] b) be equipped with an integral alarm that satisfies the audibility requirements of CSA 6.19, "Residential carbon monoxide alarming devices",
 - [c] c) have no disconnect switch between the overcurrent device and the CO alarm, where the CO alarm is powered by the electrical system serving the *suite* (see Note A-6.9.3.1.(2)(c)), and
 - [d] d) be mechanically fixed at a height above the floor as recommended by the manufacturer.
- [3] 3)** Where a fuel-burning *appliance* is installed in a *suite* of *residential occupancy* or in a *suite* of *care occupancy*, a CO alarm shall be installed
- [a] a) inside each bedroom, or
 - [b] b) outside each bedroom, within 5 m of each bedroom door, measured following corridors and doorways.
- [4] 4)** Where a fuel-burning *appliance* is installed in a *service room* that is not in a *suite* of *residential occupancy* nor in a *suite* of *care occupancy*, a CO

alarm shall be installed

- [a] a) either inside each bedroom, or if outside, within 5 m of each bedroom door, measured following corridors and doorways, in every *suite of residential occupancy* or *suite of care occupancy* that shares a wall or floor/ceiling assembly with the *service room*, and
- [b] b) in the *service room*.

[5] 5) For each *suite of residential occupancy* or *suite of care occupancy* that shares a wall or floor/ceiling assembly with a *storage garage* or that is adjacent to an attic or crawl space to which the *storage garage* is also adjacent, a CO alarm shall be installed

- [a] a) inside each bedroom, or
- [b] b) outside each bedroom, within 5 m of each bedroom door, measured following corridors and doorways.

[6] --) CO detectors are permitted to be installed in lieu of CO alarms, provided the CO detectors

- [a] --) conform to CAN/ULC 588:2024A, "Gas and Vapour Detectors and Sensors, Including Accessories,"
- [b] --) are capable of independently sounding audible signals within the individual *suites*,
- [c] --) except as permitted in Sentence (7), are installed in conformance with CAN/ULC-S524, "Standard for Installation of Fire Alarm Systems," and
- [d] --) form part of the fire alarm system.

[7] --) The CO detectors described in Sentence (6) are permitted to sound localized alarms within individual *suites*, but need not sound an alarm throughout the rest of the *building*.

NBC25 Div.B 9.32.3.9. (first printing)

[9.32.3.9.] 9.32.3.9. Carbon Monoxide Alarms

(See Note A-9.32.3.9.)

- [1] 1)** This Article applies to every *building* that contains a *residential occupancy* and that also contains
 - [a] a) a fuel-burning *appliance*, or
 - [b] b) a *storage garage*.
- [2] 2)** Carbon monoxide (CO) alarms required by this Article shall
 - [a] a) conform to CSA 6.19, "Residential carbon monoxide alarming devices",
 - [b] b) be equipped with an integral alarm that satisfies the audibility requirements of CSA 6.19, "Residential carbon monoxide alarming devices",
 - [c] c) have no disconnect switch between the overcurrent device and the CO alarm, where the CO alarm is powered by the *dwelling unit's* electrical system, and
 - [d] d) be mechanically fixed at a height recommended by the

manufacturer.

- [3] 3)** Where a room contains a solid-fuel-burning *appliance*, a CO alarm conforming to CSA 6.19, "Residential carbon monoxide alarming devices", shall be mechanically fixed
- [a] a) at the manufacturer's recommended height where these instructions specifically mention solid-fuel-burning *appliances*, or
 - [b] b) in the absence of specific instructions related to solid-fuel-burning *appliances*, on or near the ceiling.
- [4] 4)** Where a fuel-burning *appliance* is installed in a *suite* of *residential occupancy*, a CO alarm shall be installed
- [a] a) inside each bedroom, or
 - [b] b) outside each bedroom, within 5 m of each bedroom door, measured following corridors and doorways.
- [5] 5)** Where a fuel-burning *appliance* is installed in a *service room* that is not in a *suite* of *residential occupancy*, a CO alarm shall be installed
- [a] a) either inside each bedroom, or if outside, within 5 m of each bedroom door, measured following corridors and doorways, in every *suite* of *residential occupancy* that shares a wall or floor/ceiling assembly with the *service room*, and
 - [b] b) in the *service room*.
- [6] 6)** For each *suite* of *residential occupancy* that shares a wall or floor/ceiling assembly with a *storage garage* or that is adjacent to an attic or crawl space to which the *storage garage* is also adjacent, a CO alarm shall be installed
- [a] a) inside each bedroom, or
 - [b] b) outside each bedroom, within 5 m of each bedroom door, measured following corridors and doorways.
- [7] 7)** Where CO alarms are installed in a house with a *secondary suite* including their common spaces, the CO alarms shall be wired so that the activation of any one CO alarm causes all CO alarms within the house with a *secondary suite* including their common spaces to sound.
- [8] --)** CO detectors are permitted to be installed in lieu of CO alarms, provided the CO detectors
- [a] --) conform to CAN/ULC 588:2024A, "Gas and Vapour Detectors and Sensors, Including Accessories,"
 - [b] --) are capable of independently sounding audible signals within the individual *suites*.
 - [c] --) except as permitted in Sentence (9), are installed in conformance with CAN/ULC-S524, "Standard for Installation of Fire Alarm Systems," and
 - [d] --) form part of the fire alarm system.
- [9] --)** CO detectors described in Sentence (8) are permitted to sound localized alarms within individual *suites*, but need not sound an alarm throughout the rest of the *building*.

Impact analysis

This proposed change enhances existing provisions in the NBC by allowing the installation of CO detectors conforming to CAN/ULC 588 in lieu of CO alarms. This proposed change would improve the reliability, accuracy and system integration of CO detectors while protecting occupants from exposure to hazardous levels of CO.

This proposed change should improve the safety and performance of CO detectors, as the proposed change would require the CO detectors that are installed in buildings in lieu of CO alarms to conform to CAN/ULC 588, which may improve the reliability of CO monitoring devices and better integrate such devices with building systems while maintaining compliance with the NBC.

A CO alarm that conforms to CSA 6.19, "Residential carbon monoxide alarming devices," costs approximately \$35–\$90, whereas a CO detector that conforms to CAN/ULC 588 costs approximately \$140–\$270. Although a CO detector costs approximately \$105–\$180 more than a CO alarm, this proposed change would allow either to be installed. This proposed change does not make the use of CO detectors the only compliance option.

Enforcement implications

This proposed change can be enforced without requiring additional resources, as a CO detector conforming to CAN/ULC 588 would be installed in place of a CO alarm. However, since CAN/ULC 588 is a standard that has not been previously referenced in the NBC, regulators may need to become familiar with this standard to facilitate enforcement of the requirement.

Who is affected

Stakeholders such as designers, specifiers, manufacturers, building owners, building officials and contractors may need additional training to become familiar with, understand and apply the requirements of CAN/ULC 588 in order to design for the use of or install acceptable CO detectors.

Manufacturers may need to adapt their products to meet the new regulatory requirements.

Building owners may need training to better understand the operating mechanisms of all the monitoring devices installed in their buildings.

OBJECTIVE-BASED ANALYSIS OF NEW OR CHANGED PROVISIONS

NBC25 Div.B 6.9.3. (first printing)

[6.9.3.1.] 6.9.3.1. ([1] 1) no attributions

[6.9.3.1.] 6.9.3.1. ([2] 2) ([a] a),([b] b),([d] d) [F44-OS3.4]

[6.9.3.1.] 6.9.3.1. ([2] 2) ([c] c) [F81-OS3.4]

[6.9.3.1.] 6.9.3.1. ([3] 3) [F44-OS3.4]

[6.9.3.1.] 6.9.3.1. ([4] 4) [F44-OS3.4]

[6.9.3.1.] 6.9.3.1. ([5] 5) [F44-OS3.4]

[6.9.3.1.] -- ([6] --) [F44-OS3.4]

[6.9.3.1.] -- ([7] --) no attributions

NBC25 Div.B 9.32.3.9. (first printing)

[9.32.3.9.] 9.32.3.9. ([1] 1) no attributions

[9.32.3.9.] 9.32.3.9. ([2] 2) ([a] a),([b] b),([d] d) [F44-OS3.4] ([c] c) [F81-OS3.4]

[9.32.3.9.] 9.32.3.9. ([3] 3) [F44-OS3.4]

[9.32.3.9.] 9.32.3.9. ([4] 4) [F44-OS3.4]

[9.32.3.9.] 9.32.3.9. ([5] 5) [F44-OS3.4]

[9.32.3.9.] 9.32.3.9. ([6] 6) [F44-OS3.4]

[9.32.3.9.] 9.32.3.9. ([7] 7) [F11-OS3.4]

[9.32.3.9.] -- ([8] --) [F44-OS3.4]

[9.32.3.9.] -- ([9] --) no attributions