



# Smoke & Carbon Monoxide Alarms

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Residential

This handout is intended only as a guide and is based in part on the 2020 Minnesota State Building Code, Blaine City ordinances, and good building practice. While every attempt has been made to insure the correctness of this handout, no guarantees are made to its accuracy or completeness. Responsibility for compliance with applicable codes and ordinances falls on the owner or contractor.

## **SMOKE ALARM VS. CARBON MONOXIDE ALARMS**

It is important to recognize the differences between smoke alarms and carbon monoxide (CO) alarms. CO alarms activate based on the concentration of CO over a period of time; this allows for a brief period to ensure that everyone is alright and for the occupant(s) to investigate possible sources of CO accumulation within the home. When a smoke alarm sounds, all occupants should immediately vacate the premise and call 911. Alternatively, if a CO alarm sounds in the residence a person should verify that the occupants are not showing signs of CO poisoning (headache, nausea, vomiting, disorientation, etc.). If anyone in the home has symptoms of CO poisoning, call 911 immediately. If no one has symptoms of CO poisoning, open windows or doors to allow fresh air to enter and contact the utility company or appliance repair company as soon as possible.

There is a difference between smoke alarms and carbon monoxide alarms and they shall not be used interchangeably. The Minnesota State Fire Code (MSFC) has regulations on the location, placement and power supply of smoke alarms inside residential dwelling units depending on the date of construction. For additional information on this subject please review the State Fire Marshal Division Information Sheet titled *R-3/Foster Care Information Sheet*, Section 8. Some manufacturers, however, have devices that are combination smoke alarm/carbon monoxide alarms. These devices are acceptable. In the case that these combination devices are installed, the smoke alarm installation requirements shall be followed.

## **SMOKE DETECTORS (R314)**

Alarms in new construction (including most basement finishes) must receive their power from the building wiring and have a battery backup in the event of electrical power loss. During remodeling, where connection to the building wiring is difficult to achieve, battery operated alarms may be used (R314.4). An important feature of the requirement for alarms being connected into the building's electrical wiring is there must be no disconnecting means other than the primary over current protection (fuse or circuit breaker). Alarms must be wired directly into the building's wiring system and no switches, plugs or mechanical disconnects are permitted between the electric service panel and the alarm.

## **Alterations, repairs and additions**

When alterations, repairs or additions requiring a permit occur, or when one or more sleeping rooms are added or created in existing dwellings, the individual dwelling unit shall be equipped with smoke alarms located as required for new dwellings, the smoke alarms shall be interconnected and hard wired.

### **Exceptions:**

1. Interconnection and hardwiring of smoke alarms in existing areas shall not be required to be hardwired where the alterations or repairs do not result in the removal of interior wall or ceiling finishes exposing the structure.
2. Work on the exterior surfaces of dwellings, such as the replacement of roofing or siding are exempt from the requirements of this section.
3. Permits involving only alterations or repairs to plumbing, electrical and mechanical are exempt from the requirements of this section (R314.2.2).

## **Smoke alarms shall be installed in each of the following locations:**

1. Within each sleeping room.
2. Outside of each separate sleeping area in the immediate vicinity of the bedrooms.
3. On each additional story of the dwelling, including basements but not including crawl spaces and uninhabitable attics. In dwellings or dwelling units with split levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level.

## **Product listings**

All smoke alarms/detectors shall be listed in accordance with Underwriters Laboratory 217 (UL 217) and installed in accordance with the provisions of this code and the household fire warning equipment provisions of National Fire Protection Agency (NFPA) 72.

Household fire alarm systems installed in accordance with NFPA 72 that include smoke alarms, or a combination of smoke detector and audible notification device installed as required by this section for smoke alarms, shall be permitted. The household fire alarm system shall provide the same level of smoke detection and alarm as required by this section for smoke alarms in the event the fire alarm panel is removed or the system is not connected to a central station (R314.7).

## **CARBON MONOXIDE ALARMS (R315)**

### **1.1 When Required - MN Rules Chapter 1309, Section R315; Chapter 1300.0120**

CO detectors are required in existing dwellings where work requiring a permit occurs on the interior of a building including alterations, additions, adding sleeping rooms. "In existing dwellings" refers to work inside of the home and not work involving the exterior surfaces such as the replacement of roofing or siding, the addition of a deck, or chimney repairs. It does include replacement of windows & doors.

These rules only apply to existing dwellings that have attached garages, or existing dwellings within which fuel-fired appliances exist.

#### **Examples when required w/ permit**

**-window/door replacement  
-adding sleeping room/rooms  
-home addition  
-any interior work requiring a  
Building permit**

#### **Examples when not required w/ permit**

**-siding  
-roofing  
-chimney repair  
-building a deck**

### **1.2 Underwriters Laboratories listing requirements**

All carbon monoxide alarms must be certified by a nationally recognized testing laboratory that conform to the latest Underwriters Laboratories (U/L) Standards known as UL-2034.

### **1.3 Combination Smoke and Carbon monoxide detectors**

Combination carbon monoxide alarms and smoke alarms shall be permitted to be used in lieu of carbon monoxide alarms. Combination alarms shall be listed in accordance with UL-2034 and UL-217.

### **1.4 Carbon monoxide alarm life-span.**

Carbon monoxide alarms have an effective life-span of 5-7 years. Many manufacturers recommend these devices be replaced at six (6) year intervals.

## **2.1 Location**

Every single family dwelling and every multifamily dwelling unit shall be provided with a minimum of one approved and fully operational carbon monoxide alarm installed outside of but within ten (10) feet of each room lawfully used for sleeping purposes. If bedrooms are located on separate floors additional carbon monoxide alarms would be necessary outside of but within ten feet of these areas. If bedrooms are located in separate areas (on the same level), additional carbon monoxide alarms would be necessary outside of but within ten (10) feet of these areas.

It is important that these devices be installed in accordance with the manufacturer's installation instructions and not be placed in 'dead' air pockets such as corners of rooms, at the junction of walls and ceilings or within thirty-six (36) inches of ventilation ducts.

## **2.2 Height requirements**

Carbon monoxide alarms shall be installed at the height specified in the manufacturer's installation instructions.

## **MULTI-FAMILY DWELLING UNITS & STATE OPERATED FACILITIES**

### **3.1 Owner responsibilities in multifamily dwellings**

It shall be the owner's responsibility of a multifamily dwelling that is required to be equipped with carbon monoxide alarms to:

- 1) provide and install one approved and operational carbon monoxide alarm within ten feet of each room lawfully used for sleeping (please see section 2.1 above for alternatives); and,
- 2) Replace any required carbon monoxide alarm that has been stolen, removed, found missing, or rendered inoperable during a prior occupancy of the dwelling unit and which has not been replaced by the occupant prior to the commencement of a new occupancy of a dwelling unit.

### **3.2 Battery removal and tampering prohibited**

No person shall remove batteries from, or in any way render inoperable, a required carbon monoxide alarm.