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## Carbon Monoxide Detection in Public Schools

The editions of the International Building Code (IBC, 2015 edition), and the International Fire Code (IFC, 2015 edition) adopted by the Colorado Division of Fire Prevention and Control, both required Carbon Monoxide (CO) Detection in classrooms under specific conditions in Section 915.

Those conditions are:

915.1.2: In Classrooms that contain a fuel-burning appliance or fuel-burning fireplace. Some examples of fuel burning appliances in classrooms: gas-fired heating units, Bunsen burners, etc.

915.1.3 In classrooms that are serviced by a fuel-fired forced-air system. This section allows a single CO detector to serve multiple classrooms if it is located in first room or area (corridor, gym, library, etc.) to be served by the main duct leaving the furnace. FLSS interprets this to include a single CO detector located in the main duct leaving the furnace, prior to the first supply vent.

915.1.4 In classrooms in buildings that contain fuel-burning appliances or fireplaces, unless there are no communicating openings between where the appliances or fireplace are located and the classroom. An example here would be a building containing Shop classroom(s) in one part of the building, separated by solid wall with no openings, from Shop work areas serviced by fuel-fired heating units.

If there are openings in the partition, CO detection in the classroom(s) would be required. If there were a space between the classroom(s) and the work areas containing the fuel-fire appliance(s), such as a corridor, CO detection could be located in the corridor, or on the ceiling of the room(s) containing the fuel-fired appliances(s), and omitted from the classroom(s).

Paragraph 915.2.3 requires that when CO detection is required in paragraph 915.1.1, then CO detection shall be installed in classrooms of Group E occupancies, and that CO alarm signals shall be transmitted to an on-site location that is staffed by school personnel, unless the occupant load is less than 30.

Schools, and school buildings, that do not contain fuel-fired appliances, fireplaces, or forced-air systems do not require CO detection. Schools that are "All electric," whether on commercial power or off-grid power, do not require CO detection unless fuel-fire appliances, such as Bunsen burners are present.

Section 915.3 allows the required CO detection to be accomplished by either CO Alarms or CO Detectors.

Where CO Alarms are used, they shall be hard-wired to the school's power system, with a battery back-up. The wiring must be permanent and not have an on/off switch. If the building does not have commercial power, then battery-powered CO Alarms are permitted.

CO Alarms must be UL Listed for the purpose, UL 2034, and can be combination CO/Smoke Alarms, UL 2034 and 217.

Where CO Detectors are used, they must comply with NFPA 720 and be UL Listed in accordance with UL 2075. CO Detectors, if used, shall be installed where required by 915.1.2, which supersedes the location requirements of NFPA 720. Combination Smoke/CO Detectors are acceptable if they are listed for both UL 268 and UL 2075.

If a classroom is located in a school that otherwise does not require CO detection, but contains fuel-fired appliances such as Bunsen burners, a CO Alarm equipped with a local sounder located in the classroom containing the burners accomplishes the requirements of paragraph 915.2.3 by alerting the teacher present during any use of Bunsen burners in the classroom.

Likewise, a school building equipped with CO detection throughout the building due to having a fuel-fired forced-air system, or similar circumstances, can employ local sounders in classrooms equipped with Bunsen burners to alert the teacher present during any use of Bunsen Burners. Alternatively, if the classroom is protected from the furnace by a CO detector in the first classroom or area served by the main duct leaving the furnace (Paragraph 915.1.3), a hardwired CO Alarm can be installed in the classroom with the fuel-fire appliances.

Note: If a school allows students to use fuel-burning appliances at any time without a teacher physically present in the classroom, the CO alarm shall be transmitted to an on-site location that is staffed by school personnel, in accordance with paragraph 915.2.3.